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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 377TH AIR BASE WING (AFMC)

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Kirtland AFB NM 87117-5659

Mr. Benito Garcia, Chief
Hazardous and Radioactive Materials Bureau
NM Environment Department
P.O. Box 26110
Santa Fe NM 87502

Dear Mr. Garcia

APPW I

As part of our on-going partnering meetings, Kirtland AFB agreed to provide NMED with a summary of risks identified to date at Landfill 2 (IRP Site LF-02). This summary represents our current understanding of the nature and extent of contamination at the site in qualitative terms, stressing the potential effect that contaminants may have on nearby human and environmental receptors, and identifies the risks and compares them to factors included within the RCRA/HSWA permit as being important when considering use of early corrective action directives or orders to achieve risk reduction.

This letter is not intended to satisfy any quarterly, RCRA Facility Assessment, or RCRA Facility Investigation reporting requirement stipulated within Kirtland AFB's RCRA/HSWA permit. Our goal is to lend focus to our on-going restoration efforts by communicating to the public potential risks at selected high relative risk sites. This should encourage public participation in the planning and implementation of necessary activities to reduce risk as early and expeditiously as possible.

Site Description

Landfill 2 is located between the Trestle and ARES facilities to the north and the active channel of the Tijeras Arroyo to the south. Its eastern and western boundaries are not as clearly defined. They extend to the "limits of selected man-made surface disturbances" according to the Phase II report (SAIC, 1985). Landfill 2 lies entirely in the Tijeras Arroyo floodplain and ranges in altitude from 5,243 feet on the western edge to 5,278 feet on the eastern edge (SAIC, 1985). Kirtland AFB Production Well No. 8 is approximately 2,100 feet northeast of the landfill, and Production Well No. 4 is 2,400 feet to the north.

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Landfill 2 was operated between 1943 and 1967 (ESI, 1981). Operations at the landfill reportedly consisted of trench and fill operations. According to the 1988 Kearney/Centaur report, no written records of the quantities or nature of the materials disposed in Landfill 2 have been recovered. Informal, undocumented interviews conducted during previous investigations implied that the landfill contained general refuse, hardfill, and possibly hazardous material, including 55-gallon drums containing liquid solvents and plastic wastes, with the depths of these materials ranging from nine to 20 feet over approximately 35 acres. The volume of the landfill's constituents was estimated to be one million cubic yards in the 1981 Phase I report (ESI, 1981). The northernmost portion of Landfill 2 was removed and relocated to Landfill 3 to accommodate the construction of the Trestle Facility in the early 1970s.

Two buried sewer pipes cross Landfill 2. The City of Albuquerque's Tijeras Interceptor Sanitary sewer line is a 21-inch line running east-west in the northeast region of Landfill 2, 200 feet south of monitoring well DM-02. The sewage effluent transmission line (IRP Site ST-51) runs from the corner of the Trestle and ARES fenceline through the southeast corner of the landfill and joins the sewage lagoons to the Golf Course Main Pond.

The landfill was completely covered with two to six feet of silty sand, but by 1985, widespread litter and exposed debris in the north bank of the Tijeras Arroyo channel was reported (SAIC, 1985). The banks of the active channel have since been stabilized with riprap and wire mesh along the contact with Landfill 2 (USGS, 1993). Kirtland AFB has completed the last phase of riprap construction, which was coordinated with the local flood control district and the USACE.

Landfill 2 rests on recent alluvium of the Tijeras Arroyo which overlies the Santa Fe Group. The depth of this deposit is not certain but has been estimated to be greater than 50 feet. This site lies west of the Hubble Springs Fault. The water table was 395 feet below ground surface in 1990, but has been falling at a rate of about 2.4 feet per year due to withdrawals from service wells. Groundwater gradient is to the northwest at 10 feet to 20 feet/mile (USGS, 1993).

Surface irregularities have caused ponding in the northern portion of the landfill. The Tijeras Arroyo 100-year floodplain covers all of Landfill 2. In the event of a flood of that magnitude, this site would be covered with two to three feet of water, according to SAIC's 1985 report. This could result in infiltration problems as well as the erosion of large sections of the landfill.

Summary of Previous Investigations

Data collection under Phase II included seismic exploration, the drilling of an exploratory borehole to 100 feet below ground surface, installation of two lysimeters, and installation of a groundwater monitoring well. The results of the seismic refractions indicated that the landfill depth was approximately 20 feet. The analytical results from the exploratory borehole and soil samples from the lysimeter boreholes were inconclusive because of analytical problems and because naturally occurring background levels are not known. Monitoring well DM-02 groundwater samples contained 0.1 milligrams per liter (mg/L) of an organic chloride, 0.004 mg/L of an organic bromide, and 4 mg/L of nitrates (as nitrogen).

Stage 2 RFI data collections included 13 hand-augered soil samples from 12 different sites along the southern face of the landfill. TRPH, SVOCs, nitrogen, and copper were detected in these soil samples at moderate levels (USGS, 1993). Monitoring well DM-02 was sampled during this investigation. Chromium concentrations were slightly above the maximum contaminant level (MCL). No other analytes were found in high concentrations.

During the Stage 2A RFI, five boreholes were drilled to 100 feet below ground surface, 12 shallow soil gas locations were sampled, a geophysical survey was performed, and five monitoring wells were installed and sampled, and monitoring well DM-02 was sampled. Data from the Stage 2A soil analyses suggest only minor amounts of contamination at LF-02. Beryllium and manganese are the contaminants found above action levels and UTLs but these compounds are probably naturally occurring in most soils on the base (USGS, 1993). The presence of acetone, di-n-octylphthalate and bis(2-ethylhexyl)phthalate suggest possible lab contamination but may also be present in the soils. Data from the soil gas survey confirm the presence of minor amounts of contaminants in the soils; specifically, the presence of trichloroethene, tetrachloroethene, and tetrachloroethene each at one soil gas site suggests that there may be potentially contaminated areas which require further investigation (USGS, 1993). Data from the groundwater analyses suggest very little evidence of groundwater contamination.

Summary of Future RFI Activities

The following is a summary of planned Stage 2A Phase 2 RFI activities that will be performed at Landfill 2:

Site Location	Sampling Rationale	Type of Activities	Sampling Locations
LF-02 Landfill 2	<p>A geophysical survey is being conducted in an area where no previous geophysical information is available. Color coded contour maps that exhibit areas of large-scale waste disposal will be generated from the geophysical data. This data will be used to determine areas where waste disposal activities occurred at the site, to determine the boundaries of disposal activities, and if necessary to enable the location of borings in close proximity to the edge of trenches or pits. Boreholes are or will be located to provide data to support the potential restoration activities for this landfill. The sampling scheme will assess the vertical and lateral extent of contamination remaining after the landfill undergoes corrective action. Two boreholes will be located near Stage 2A soil gas sampling sites 5 and 9, respectively, where multiple organic analytes were detected. A borehole will be located in an area where data from the Stage 2A geophysical investigation indicated waste burial. Geotechnical analyses will be conducted on selected soil samples to determine the engineering properties of the soil beneath the site.</p>	<p>A geophysical survey will be conducted on five acres in the eastern portion of the site. Five boreholes will be completed with five soil samples collected from each borehole (25 soil samples total) and submitted for chemical analyses. Twenty soil samples will be screened for methane. Twenty soil samples will be collected for geotechnical analyses. A topographic survey of the entire site will be conducted.</p>	<p>Tentative borehole locations were determined based on previous geophysical survey data and other available information. The locations of two of the boreholes will be determined based on the results of the geophysical survey conducted during this investigation, available information, and aerial photograph information.</p>

Qualitative Assessment of Potential Risks

The Stage 2A RFI Report (USGS, December 1993) identified potential risks that will be further investigated as part of the Phase 2 RFI to be conducted later this year. The following summary table identifies the risks and compares them to factors included within the RCRA/HSWA permit as being important when considering use of early actions to achieve risk reduction:

Stage 2A RFI Report Finding	RCRA/HSWA Permit Risk Factor				
	Actual or potential exposures of nearby populations or animals to hazardous constituents	Actual or potential contamination of drinking water supplies or sensitive ecosystems	Presence of hazardous wastes or hazardous constituents drums, barrels, or other bulk storage containers that may pose a threat of release	Weather conditions which may cause releases of hazardous constituents or migration of existing contamination	Risks of fire or explosion or the potential for exposure to hazardous constituents as a result of an accident or failure of a container or handling system
Possible hazardous materials, including 55-gallon drums.			X		
Two buried sewer pipes cross the landfill. Lines have failed in the past and could transport hazardous constituents off-site or generate leachate.		X			X
Widespread litter and exposed debris in the north bank of the Tijeras Arroyo channel.	X				
The Tijeras Arroyo 100-year floodplain covers all of Landfill 2. In the event of a flood of that magnitude, this site would be covered with two to three feet of water.				X	X
Kirtland AFB Production Well No. 8 is approximately 2,100 feet northeast of the landfill, and Production Well No. 4 is 2,400 feet to the north.		X			
Potential receptors of surface water contamination would be any downstream users along the Rio Grande. In the event of a 100-year flood, and the removal of large quantities of fill material from the landfill, anyone along the Tijeras Arroyo could be receptors.	X	X		X	X
Surface irregularities have caused ponding in the northern portion of the landfill. This could result in infiltration and leachate generation.		X		X	

Kirtland AFB looks forward to our continuing partnering efforts and hopes the public gains a better understanding of the current situation at Landfill 2 and the potential risks that have been identified. Through on-going studies of the nature and extent of contaminants as well as consideration of expedited actions to achieve early risk reduction, Kirtland AFB believes that all stakeholders will recognize significant progress towards

the understanding of site conditions and the necessary planning that will ultimately result in site closure.

Please call me at (505) 846-0053 if you have any questions or need additional information.

Sincerely



CHRISTOPHER B. DeWITT, R.P.G.
Chief, Restoration Branch
Environmental Management Division

cc:

NMED-HRMB (Mr. Pullen)
EPA Region 6 (Ms. Morlock)