STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VI
ID # 1235
NM2750211235

U.S. Army White Sands Missile Range

Tularosa Basin, New Mexico
(Signed December 29, 1995)

Facility/Unit Type:	**Testing site for rocket, missile, and laser weapon systems**
Contaminants:	**Arsenic, Barium, Lead, Mercury, Cadmium, Chromium, Beta-BHC, 4,4'DDE, 4,4'DDT, Total cyanide, Methylene chloride, Silver, Benzo(a)pyrene**
Media:	**Soil**
Remedy:	**No further action**

FACILITY DESCRIPTION

In accordance with Section 3004(u) of RCRA, EPA Region 6 entered into a compliance agreement with the U.S. Army White Sands Missile Range (WSMR) for corrective action at its solid waste management units (SWMUs). WSMR is located in Tularosa Basin of south central New Mexico, about thirty miles east of Las Cruces, New Mexico. The range covers an area of approximately 3,200 square miles. WSMR is a government owned facility under the command of the U.S. Army Testing and Evaluation Command. The facility was established in July 1945 as the White Sands Proving Ground.

WSMR encompasses an area larger than the states of Delaware, Rhode Island, and the District of Columbia combined. WSMR principally uses the land for rocket and missile testing. There exist co-use areas that nearly double the size of the range. The areas are inhabited largely by ranching families. New Mexico has a 49 percent minority population, however, less than one percent of the households within 50 square mile of the facility boundaries are minority or economically stressed.

Due to the enormous size of the installation, each work area has its own water distribution system rather than one system for the entire installation. Eleven water wells are located throughout the Main Post Area (MPA). The Small Missile Range (SMR) is located approximately 11 Km north of the MPA complex and overlies a potable water aquifer. The Multifunction Array Radar (MAR) area is 18 Km north of the SMR complex . Two wells located 13 Km from the site supply potable (chlorinated) water to a ground level storage tank at the MAR site. The Stallion Range Center (SRC) is in the northwestern sector of the installation. Two wells produce nonpotable water to an electrodialysis plant for conversion to potable water. A ground storage tank, distribution lines, and pumps furnish potable water within the SRC. Water is hauled by tanker to other locations where there are no potable water sources. Each location is equipped with storage tanks and small water pressure systems.

WSMR lies within the Mexican Highland Section of the basin and range province, which is characterized by a series of tilted fault blocks forming longitudinal ridges or mountains, and broad intervening basins. The major portion of WSMR lies within the Tularosa Basin; the northwest portion lies within the Jornada del Muerto Basin. The basin is bounded on the west by the Organ and San Andres Mountains. The eastern limit of the Tularosa Basin lies just outside WSMR proper, and is formed from north-to-south by the Jicarilla, Sierra Blanca, and Sacramento Mountains.

The primary aquifer in the Post Area is a wedge-shaped unconfined aquifer in the bolson deposits of the Tularosa Basin. Recharge for the aquifer is supplied by drainage from the alluvial fans and accumulations of storm runoff in natural depressions on the bolson surface. Beneath and to the east of the freshwater wedge, the groundwater is saline. Dependent upon groundwater production rates, depth to groundwater in the MPA may be greater than 350 feet. The source of groundwater at WSMR is from precipitation, of which only 25 percent reaches the saturated zone. Yearly precipitation ranges from less

than 7 inches in Tularosa Basin to 25 inches in the higher mountains. In many of the outlying areas, the quality of the groundwater is poor due to very high dissolved solids content. The groundwater flow direction is to the east, toward the center of the valley. In the MPA, groundwater flow is greatly affected by pumping from the MPA well field, which provides potable water for the MPA and adjacent facilities. The overall impact on the groundwater elevation and flow direction varies with the rate of pumping from each well and with recharge from the vicinity of the mountains to the west. Under static, nonpumping conditions, groundwater elevation may be expected to vary from 200 to 300 feet below general level in the MPA. Various perched water conditions have been identified at the High Energy Laser System Test Facility (HELSTF). They are unconfined and groundwater mounding has been observed throughout the location. These conditions are the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities.

There are no surface waters or intermittent streams located in the operational areas; and the MPA and HELSTF areas are not within the 100-year floodplain. Surface waters at WSMR are normally scarce due to low precipitation, high evaporation, and the absorption characteristics of the soils. There are several creeks and springs in the mountains that are dry except immediately following excessive rainfall or snowmelt. None of the surface water on the Installation is potable. There are no off-site surface waters that would be affected by the SWMUs addressed in this SB/RTC.

WSMR's headquarters is at an elevation of almost 4,000 feet. Snowfall is infrequent, although heavy snows have occurred. WSMR is considered a dry area with an average rainfall of 10.8 inches, mostly occurring during the late summer as thunderstorms, often accompanied by hail. Flash floods usually follow heavy rainfalls. The average summer high temperature is 92 degrees F with lows of about 62 degrees F. During the winter months (December through February), the average high is 57 degrees F with an average low of 36 degrees F. Average annual humidity readings are only 37 percent. The dominant climate factor at WSMR is wind from February through May. The prevailing southerly winds blow unimpeded across the desert and at times reach gale force proportions. Storms last for days at a time in the spring.

The property is currently being used to test rocket, missile, and laser weapon systems. Wastes generated at the facility are mainly related to missile testing operation and associated support facilities, fire training, refueling facilities, equipment maintenance, and vehicle maintenance. The hazardous wastes of concern are spent solvents, paint strippers, waste paints, waste oils, waste hydraulic fluids, and waste fuel. Prior to the mid 1980's, hazardous wastes generated at the facility may have been disposed of in on-site SWMUs. Since then, however, hazardous waste has been disposed of off-site through the Defense Reutilization and Marketing Office.

A RCRA facility assessment (RFA) was performed on the WSMR for EPA Region 6 in August 1988. WSMR was issued a RCRA corrective action permit on October 24, 1989. As a result of the RFA, 139 SWMUs and 26 areas of concern (AOC) were identified. Of those identified, 93 SWMUs were included in the HSWA permit and required to be included in the RCRA facility investigation (RFI). The SWMUs were divided into four groups; groups I, II, III, and IV.

Under the corrective action process, WSMR was required to determine the type, concentration, and extent of hazardous waste released into the environment at all SWMU sites. Once the delineation was completed, WSMR was required to recommend corrective action options to remove hazardous waste from the affected media. The Phase I RFI for group I was approved in April 1992 and the Phase I RFI for groups II, II, and IV were approved in September 1993. The Phase I RFI reported the finding of the investigation conducted at 80 SWMUs and Phase II reported the finding of 52 SWMUs.

The results of the field and analytical tests indicated that little or no contamination existed at most of the units investigated. The hazardous constituents found included: arsenic, barium, lead, mercury, cadmium, chromium, beta-BHC, 4,4'DDE, 4,4'DDT, total cyanide, methylene chloride, silver, and benzo(a)pyrene. All of these constituents were found in concentrations under the EPA action levels. An insignificant volume of soil associated with the SWMUs was contaminated and no releases occurred from the listed SWMUs. WSMR subsequently submitted a Class III permit modification requesting that 38 SWMUs be designated as requiring no further action. Upon review of the RFI report and the Class III permit modification, EPA determined

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/l)	MCL Action Level (mg/l)	MCL Cleanup Goal	Point of Compliance
Soil	Unknown	Arsenic	22	80	Residen-	Throughout
		Barium	1600	4000	cial risk-	the plume
		Lead	35	NA	based	
		Mercury	0.13	20	concen-	
		Cadmium	1.0	40	tration	
		Chromium	63	NA	levels and	
		Beta-BHC	0.0059	4	proposed	
		4,4'DDE	0.022	2	Federal	
		4,4'DDT	0.06	2	action	
		Total cyanide	1.8	2000	levels;	
		Methylene chloride	0.023	90	State and Federal	
		Silver	48	200	concen-	
		Benzo(a)pyrene	52	NA	tration levels	

that 24 of the 38 SWMUs required no further investigation. The remaining SWMUs will be investigated as part of the Interim Corrective Measures.

EXPOSURE PATHWAYS

Soil is the potential exposure pathway of concern. Direct contact is the major vehicle of concern for WSMR employees only. Off-site personnel would not experience direct contact due to time and distance for potential waste constituents migration pathways. With the exception of POL, WSMR uses few volatile toxic organic substances for routine purposes. Use is low in number, quantity, and frequency. Small quantities of volatile organics may be released during waste evaporation treatment. Release of particulates from site operations is minimal. WSMR has no continuous running surface water near site operations. The stormwater drainage system may act as a pathway during severe precipitation events. The stormwater drainage system provides a moderate potential pathway for contaminats to enter the environment if located near the surface discharge zones of treated wastes and those land-based units which have no release controls.

The saturated zone and aquifer are found at relatively great depths beneath ground level. However, the permeable soil could allow contaminate transport to and by groundwater. Therefore, the groundwater is considered to have a low potential for transport and release. The highly permeable soils may act as a pathway for release from the units mentions under surface water pathways.

Potential receptors are WSMR residents, WSMR employees (occupational exposures), and range site residents. There are no towns within the area. Nearby residents outside the WSMR boundaries are few in number and minimally exposed. Water supply wells on site are used to meet the potable water needs. Since these wells are screened in a permeable alluvial aquifer, a potential for receiving contaminated water through ingestion exists. However, depending upon groundwater production rates, potable groundwater is about 200 feet to 350 feet below the ground surface and the contaminants would have to travel through the vadose zone before they could spread in the uppermost aquifer.

SELECTED REMEDY

EPA determined that no further action was necessary for 24 of the 38 SWMUs of concern. This determination was based on the analytical and fieldwork results which indicated that there were no or insignificant release(s) of hazardous waste into the environment. In addition, EPA performed risk screening tests which indicated that the releases had no impact on human health and the environment.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Three public hearings were held by WSMR at different locations. The first hearing was held on March 22, 1994, in Alamogrodo, New Mexico. Six individuals attended the meeting including representatives from WSMR, Alamogrodo Daily News, and Alamogrodo citizens. Five questions were asked concerning the history of the paint dump site, cleanup criteria, and disposal of ordinance. WSMR responded by stating that abandoned paint cans were found in a dump site. The cans were removed and the underlying soils were tested for hazardous waste; analytical results from confirmation samples showed no hazardous materials in the soils. WSMR representatives said that specific bombing areas are designated for warhead impacts, and any unexploded or exploded ordinances are recovered. The area has been made pristine for further ordinance testing.

The second hearing was held on March 23, 1994 in El Paso, Texas, however, no one attended the meeting. The third hearing was held on March 24, 1994, in Las Cruces, New Mexico. Seven people attended the hearing including two representatives from WSMR. Five questions were asked concerning what the taxpayers might gain by holding this hearing and by removing the 24 units that were determined to pose no threat to human health or the environment. In addition, questions were asked about further investigations at WSMR, and how to expedite removing units that pose no threat to the public. WSMR responded that by removing these units, funding can be redirected to more practical and useful purposes. WSMR also stated that the facility is regulated by a RCRA/HWSA permit and under the permit it is required to continuously monitor the facility for potential threats to human health and the environment. In addition, WSMR indicated that by good communication and providing adequate evidence to the regulatory community, the process of requesting and receiving approval to remove units which pose no threat to human health and the environment can be streamlined.

NEXT STEPS

The final decision will be advertised and EPA will notify the applicant of each person on the public comment mailing list of the final decision. The final decision will become effective 30 days after the service of notice of the decision unless a later date is specified or review is requested under regulation 40 CFR 124.19. If no comments are received to request a change in the final determination, the decision to approve the application will become effective immediately upon issuance.

KEYWORDS:
soil; arsenic, barium, lead, mercury, cadmium, chromium, beta-BHC, 4,4'DDE, 4,4'DDT, total cyanide, methylene chloride, silver, benzo(a)pyrene; no further action.

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