

11/10/95
HAFB

Declaration

Statutory Preference for Treatment as a Principal Element is Applicable and a Five-Year Review is Required

Site Name and Location

IRP Site OT-14 (RCRA SWMU 197)
Former Entomology Shop
Holloman Air Force Base, New Mexico

Statement of Basis and Purpose

This decision document presents the selected remedial action for the referenced site chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. This decision is based on the administrative record file for this site.

The State of New Mexico concurs on the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this decision document, may present a current or potential threat to public health, welfare, or the environment.

Description of the Selected Remedy

The selected remedy will reduce the risks associated with exposure to pesticide-contaminated soils at the site and will reduce the potential for infiltration of contaminants to groundwater. The major components of the selected remedy include the following:

- Placement of an impermeable cap over the affected soils;
- Installation of stanchions to restrict access to the site; and
- Annual inspection and maintenance of the cap.

Declaration Statement

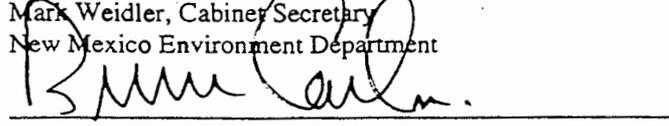
The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practical and satisfies the statutory preferences for remedies that employ treatment that reduces toxicity mobility or volume as a principal element.

Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.



Mark Weidler, Cabinet Secretary
New Mexico Environment Department

9/29/95
Date



Bruce Carlson
Brigadier General, USAF Commander

10 Nov 95
Date

Decision Summary

Site Name, Location and Description

IRP Site OT-14, the Former Entomology Shop, occupies approximately two-tenths acre in the northwestern corner of the Civil Engineering yard in the Main Base Area. The site is bound on the northwest by the Civil Engineering yard fence, on the southeast by Building 66, and by a smaller building to the northeast. The topography of the site is generally flat and there is no vegetation on site. The site is unpaved but is surrounded by paved areas. Figure 1-1 shows the location of Site OT-14 on Holloman AFB, and Figure 2-1 shows the site layout.

Soils at the site consists of interbedded sands, silts, and clays. The soils are low to moderately permeable and mildly alkaline. Regional groundwater flow is controlled by southwest-trending arroyos and is to the southwest, following the Dillard Draw surficial drainage system (see Figure 1-2). Groundwater occurs at 5 ft bgl at the site and flows to the south/southwest toward Dillard Draw.

The unconfined aquifer beneath the site and the remainder of Holloman AFB exceeds the New Mexico Human Health Standards for total dissolved solids and sulfate concentrations and has been designated as unfit for human consumption based on the NM WQCC 82-1, as amended through August 18, 1991, Parts 3-100 through 3-103. On the basis of the *Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy* (EPA, 1986), the unconfined aquifer beneath Holloman AFB is classified as a Class III-B aquifer and is considered nonpotable.

Site History and Enforcement Activities

The Former Entomology Shop was in operation from 1968 until 1977. Building 67 served as the Entomology Shop Office and the area adjacent to Building 66 as the mixing and storage area. During these years, the open area was used to store drums of concentrated pesticides and as a wash and rinse area for pesticide application equipment. Pesticides commonly stored and mixed at the site included 4,4'-DDT and chlordane. Diesel fuel was routinely used to solubilize the pesticides.

In July 1977, soil samples were collected from the site indicated the presence of several pesticides. In an effort to stabilize this contamination, the top 6 to 8 in. of soil were treated with lime and powdered charcoal and subsequently tilled.

The site was identified as a potential contaminant source during an IRP records search conducted in 1983. As a result, the site was included in a Phase I RI conducted in 1991. Results of the investigation indicated that pesticide contamination was present in the shallow soils beneath the site and that a remedial action was necessary to protect human health and the environment. The results also indicated that additional soil samples were necessary to fully define the lateral extent of pesticide contamination. After reviewing the Phase I RI report, the U.S. EPA Region VI concurred with the recommendations. A corrective measure study and a feasibility study were conducted in 1992 and 1993, respectively, to recommend a remedial action. A Phase II RFI was conducted in 1994 to fully delineate the lateral extent of soil contamination.

The site is also listed as SWMU 197 on the Hazardous and Solid Waste Amendments permit issued to Holloman AFB by the U.S. EPA Region VI in 1987. This SWMU was investigated during a RCRA facility assessment conducted in 1992. All site investigation and studies performed for the site have met the requirements of the IRP and RCRA program.

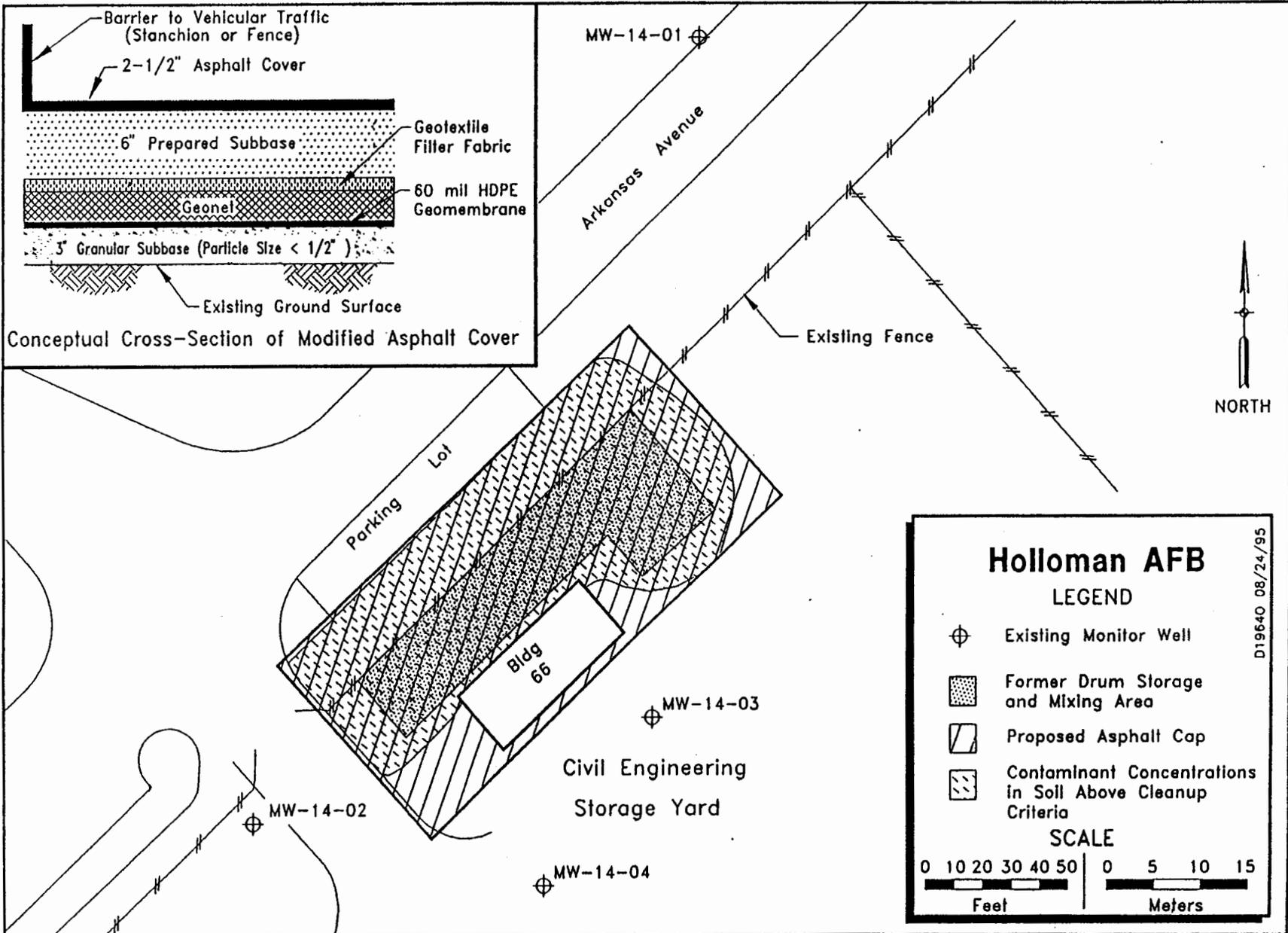


Figure 2-1. Map of Site OT-14

Highlights of Community Participation

Copies of the following reports, which contain information pertaining to the site, are available to the public through the administrative record located at the Holloman AFB and Alamogordo Libraries:

- *Remedial Investigation Report—Investigation, Study and Recommendation for 29 Waste Sites* (Holloman AFB, 1992a);
- *Risk Assessment Report for the Remedial Investigation—Investigation, Study and Recommendation for 29 Waste Sites* (Holloman AFB, 1992b); and
- *Phase II RCRA Facility Investigation, Table 1 Solid Waste Management Units, Draft Final* (Holloman AFB, 1995).

Public Restoration Advisory Board meetings are held semiannually by Holloman AFB to announce the availability of reports and present issues pertaining to the IRP sites on the Base. At least one week prior to the meeting date, public announcements of the meeting are published in the local newspaper and/or area radio stations. Representatives from Holloman AFB and the U.S. Army Corps of Engineers (Omaha District) are present at these meetings to address public comments. No comments were received regarding the site at these meetings.

This decision document presents the selected remedial action for the site as chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan.

Scope and Role of the Response Action

Pesticide concentrations in the shallow soil at Site OT-14 pose an unacceptable occupational health risk. The selected remedial action to mitigate the risk is source containment by the placement of an impermeable cap over the affected soils. In addition, stanchions will be erected to restrict access to the site. Once the remedial action has been implemented, exposure pathways to the site will be eliminated, as will the unacceptable human health risk. Annual inspection and maintenance of the cap will be conducted to ensure protection of human health and the environment.

Summary of Site Characteristics

The initial investigation conducted at the site in 1977 indicated that pesticides were present in on-site soils. The presence and extent of pesticide contamination in the soil at the site was delineated during the Phase I RI conducted in 1991, and the Phase II RFI conducted in 1994. A summary of the field investigations is presented below.

Soil

During the Phase I RI, five soil borings were drilled in the former drum storage and mixing area. Each soil boring was drilled to groundwater depth (5 ft). Samples were collected from 0-2 and 2-4 ft. All soil samples were analyzed by a certified laboratory for VOCs, TPH, organochlorine pesticides, organophosphate pesticides, and chlorinated herbicides. Laboratory results showed the highest concentrations of constituents (chlordane, 34 mg/kg; heptachlor, 0.77 mg/kg; gamma-BHC, 2.8 mg/kg; aldrin, 1.7 mg/kg; 4,4'-DDD, 10 mg/kg; 4,4'-DDE, 6.1 mg/kg; and 4,4'-DDT, 36 mg/kg) to be at or near the surface along the fence where drums were

stored and where most of the mixing occurred. Constituent concentrations attenuated with depth, indicating that detected constituents are limited to the near-surface soils.

Soil samples were collected from 12 soil borings during the 1994 field investigation to determine the extent of pesticide contamination at the site relative to the cleanup criteria established in a corrective measure study conducted for the site in 1992. All samples were collected from 0 to 2 ft. Of the 12 soil samples, 8 were collected from within the area estimated during the feasibility study to exceed cleanup criteria, and 4 were found to contain one or more pesticides in excess of the cleanup criteria. Chlordane exceeded the cleanup criteria in all four of these samples, with concentrations ranging from 0.23 to 26 mg/kg. Aldrin, heptachlor, 4,4'-DDT, and 4,4'-DDE all exceeded the cleanup criteria in a sample from the central portion of the site. None of the four samples collected from outside the estimated area were found to contain any pesticides in excess of the cleanup criteria. Analytical results from this field investigation indicate that pesticide contamination is concentrated in a band that runs approximately east to west in the central portion of the site.

Groundwater

Four groundwater monitor wells were installed at the site during the Phase I RI. One round of samples was collected during the investigation and analyzed by a certified laboratory for VOCs, organochlorine pesticides, organophosphate pesticides, chlorinated herbicides, anions, and total dissolved solids. No organochlorine pesticides were detected in the samples, indicating that groundwater beneath the site has not been adversely impacted by site activities.

Summary of Site Risks

A risk assessment was conducted to estimate the potential consequences to human health and the environment that could result if the soil contamination at this site is not remediated. The risk assessment consisted of four basic steps: 1) data analysis and selection of chemicals of concern; 2) identification of exposure pathways and receptors (i.e., skin, ingestion, or inhalation); 3) toxicity assessment or discussion of hazards and dose-response relationships associated with each contaminant; and 4) quantification of potential carcinogenic and noncarcinogenic risks. A detailed description of the risk assessment is contained in the *Risk Assessment Report for the Remedial Investigation—Investigation, Study and Recommendation for 29 Waste Sites* (HAFB, 1992).

Human Health Risks

The human health risks evaluated for the site were based on potential residential and occupational exposure to contaminated soil via dermal contact, inhalation, and ingestion.

Generally, total carcinogenic risk of 10^{-6} or lower for each contaminant is considered acceptable. This is equivalent to a one-in-a-million excess cancer risk from lifetime exposure to that chemical at that site. A cumulative total (sum of risk from all chemicals) must be at or below 10^{-4} (or a one-in-ten-thousand excess cancer risk). The carcinogenic risk for the average occupational exposure scenario was 1×10^{-4} . The carcinogenic risks estimated for the residential exposure scenarios ranged from 7×10^{-10} to 2×10^{-9} indicating that carcinogenic effects are not likely.

The carcinogenic risk estimated for the occupational exposure scenario was 1×10^{-4} , which indicates that an unacceptable human health risk may be posed by the site.

For a noncarcinogenic risk to be acceptable, the sum of the hazard index may not exceed a value of 1. The hazard index is the ratio of the chemical intake to a reference dose (the acceptable dose). However, the noncarcinogenic risk for the average occupational exposure scenario was 3. This value indicates that adverse human health effects may result from exposure to site contaminants.

Ecological Risks

Ecological risk was evaluated for the site using an ecological quotient. The ecological quotient estimates the potential ecological risks associated with the contaminants of concern primarily through the ingestion of soil and/or contaminated plants. An ecological quotient of less than 1 indicates a low probability of adverse effects, a value between 1 and 10 indicates that is a possibility of adverse ecological effects.

The ecological quotient for the site is 1.3 for the black-tailed rabbit, selected as the indicator species. However, since the site is not currently vegetated and experiences heavy traffic during the day, it is unlikely that jackrabbits will ingest vegetation.

Description of Alternatives

Remedial action objectives were developed for the site during a corrective measures study to ensure that the selected action adequately protects human health and the environment. The remedial action objectives and cleanup criteria for Site OT-14 are presented in the following table.

Remedial Action Objectives for Site OT-14

Objective	Contaminant	Cleanup Criteria (mg/kg)
Prevent dermal contact with pesticide concentrations that are in excess of the cleanup criteria in the soil.	4,4'-DDD	1.5
	4,4'-DDE	1.0
	4,4'-DDT	1.3
	Aldrin	0.01
	Chlordane	0.2
	Heptachlor	0.1
	gamma-BHC	0.7

The established remedial action objectives were then used during a feasibility study to evaluate the following seven remedial alternatives.

No Action Alternative—The no action alternative provides a baseline for comparison of the other alternatives. This alternative does not institute any type of remedial action to reduce the potential exposure, nor does it include institutional action, containment, excavation, treatment, or disposal technologies. The no action alternative relies entirely on natural processes for any reduction in the concentration of contaminants. The no action alternative is readily implementable and no capital or O&M costs are associated with this alternative.

Land Use Restrictions Alternative—This alternative institutes land use restrictions to limit exposure to constituents at the site. The restrictions would prohibit certain uses of the land (e.g., residential use), as well as extraction of groundwater from the area. Under this alternative, work could not continue at the site. As with the no action alternative, this alternative depends entirely on natural processes for reduction in constituent concentrations.

The actions to be instituted in the land use restrictions alternative are readily implementable. Adequate materials and labor resources exist to meet the requirements of this alternative. The capital cost for this alternative is estimated to be \$15,000. The major capital cost is the installation of additional fencing to enclose the area. The O&M cost associated with the alternative is minimal (e.g., fence repair), so the total cost for this alternative is \$15,000.

Asphalt Capping and Land Use Restrictions Alternative—This alternative involves capping the area with constituent concentrations exceeding the cleanup criteria with an asphalt cap to meet the remedial action objectives. In addition, actions instituted in the land restrictions alternative would be incorporated into this alternative. However, this alternative would allow work and storage of equipment to continue at the site.

This alternative is readily implementable; adequate equipment, materials, and labor are available to meet the requirements of the alternative. The capital cost for this alternative is estimated to be \$100,000. The major component of the capital cost is the asphalt capping. The asphalt cap would be approximately 12,000 ft². The activities and services associated with maintaining the asphalt cap represent the major portion of the O&M costs. The period of performance is assumed to be 30 years. The annual O&M costs are estimated to be \$6700, yielding a total cost of \$200,000 for this alternative. Capping and fence installation could be completed within one year after design completion.

Excavation, On-site Thermal Treatment, and On-site Disposal Alternative—This alternative involves excavation and on-site treatment of soils with constituent concentrations above the cleanup criteria to meet the remedial action objectives. A front-end loader would be used to excavate approximately 740 yd³ of soil. The excavated soil would then be treated in a portable infrared thermal desorption unit located at the Base. The treated soil would be used to backfill the excavation.

This alternative is considered to be implementable. However, infrared thermal desorption technology has not been widely tested in full-scale remediation projects. The capital cost for this alternative is estimated to be \$580,000, most of which is due to the cost of operating the thermal desorption system. No O&M costs are associated with this alternative because no constituents with concentrations above the cleanup criteria would remain on site. Remediation could be completed within one year after design completion.

Excavation, On-site Thermal Treatment, and Off-site Disposal Alternative—This alternative involves excavation and on-site treatment of soils with constituent concentrations above the cleanup criteria to meet the remedial action objectives. A front-end loader would be used to excavate approximately 740 yd³ of soil. The excavated soil would then be treated in a portable infrared thermal desorption unit located at the Base. The treated soil would be disposed of in an off-site industrial solid waste landfill. The excavation would be backfilled with clean soil obtained from other areas of the Base.

This alternative is considered to be implementable. However, infrared thermal desorption technology has not been widely tested in full-scale remediation projects. The capital cost for this alternative is estimated to be \$630,000, most of which is due to the cost of operating the thermal desorption system. No long-term O&M costs are associated with this alternative because no constituents with concentrations above the cleanup criteria would remain on site. Remediation could be completed within one year after design completion.

Excavation and Off-site Incineration Alternative—This alternative involves excavation and off-site incineration of soils with constituent concentrations above the cleanup criteria to meet the remedial action objectives. This alternative is based on the assumption that the soil contains a hazardous waste. A front-end loader would be used to excavate approximately 740 yd³ of soil. The excavated soil would then be sent to a RCRA-permitted incinerator. The excavation would be backfilled with clean soil obtained from other areas of the Base.

This alternative is considered to be implementable. The capital cost for this alternative is estimated to be \$1,800,000, most of which is due to the cost of excavation and incineration. No long-term O&M costs are associated with this alternative because no constituents above the cleanup criteria concentration would remain on site. Remediation could be completed within one year after design completion.

Excavation and Off-site Disposal Alternative—This alternative involves excavation and off-site disposal in a RCRA hazardous waste landfill of soils with constituent concentrations above the cleanup criteria to meet the remedial action objectives. This alternative is based on the assumption that the soil contains a hazardous waste. A front-end loader would be used to excavate approximately 740 yd³ of soil. The excavated soil would then be sent to a RCRA hazardous waste landfill. The excavation would be backfilled with clean soil obtained from other areas of the Base.

This alternative is considered to be implementable. The capital cost for this alternative is estimated to be \$610,000, most of which is due to the cost of landfilling the soil. No long-term O&M costs are associated with this alternative because no constituents above the cleanup criteria concentration would remain on site. Remediation could be completed within one year after design completion.

Summary of Comparative Analysis of Alternatives

During the initial review of the proposed alternatives during the feasibility study, three alternatives were selected to receive no further consideration: 1) the land use restrictions alternative; 2) the excavation, on-site thermal treatment, and on-site disposal alternative; and 3) the excavation, on-site thermal treatment, and off-site disposal alternative. The land use restrictions alternative did not meet the remedial action objectives and the other two alternatives relied on a technology that has yet to be proved widely effective.

The remaining three alternatives and the no action alternative are compared in a detailed analysis. The results of this comparative analysis are presented in Table 2-1.

Selected Remedy

On the basis of the comparison of alternatives, the asphalt capping and land use restrictions alternative was selected during the feasibility study. However, upon review of the selected alternative, the U.S. EPA Region VI requested that the asphalt cap be enhanced to provide a greater degree of protection.



**Table 2-1
Comparative Analysis of Alternatives for Site OT-14**

Evaluation Criteria	No Action	Asphalt Capping and Land Use Restrictions Alternative	Excavation/Incineration	Excavation and Off-Site Disposal Alternative
OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT				
Protection of Human Health	No reduction in risk. Would not prevent dermal contact with contaminated soil.	Could reduce the risk of dermal contact with contaminated soil.	Could significantly reduce the risk of dermal contact with contaminated soil.	Could significantly reduce the risk of dermal contact with contaminated soil.
Protection of Environment	Would not prevent impacts to the environment.	Could curtail migration of contaminants caused by erosion and by percolation of rainwater through the soil.	Should protect the environment.	Should protect the environment.
COMPLIANCE WITH ARARS				
Chemical-Specific ARARs	Would not meet ARARs or RAO.	Would meet RAO.	Could reduce contaminant concentrations in remaining soil to cleanup levels specified in RAO.	Could reduce contaminant concentrations in remaining soil to cleanup levels specified in RAO.
Location-Specific ARARs	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.
Action-Specific ARARs	No action-specific ARARs were identified since this is the no-action alternative.	No action-specific ARARs were identified.	Should meet action-specific ARARs.	Should meet action-specific ARARs.
Other Criteria and Guidance	No other criteria.	No other criteria.	No other criteria.	No other criteria.
LONG-TERM EFFECTIVENESS AND PERMANENCE				
Magnitude of Residual Risk	No reduction in risk.	Could reduce risk to acceptable levels.	Could reduce risk to acceptable levels.	Could reduce risk to acceptable levels.
Adequacy and Reliability of Controls	No controls over existing contamination. No reliability.	Reliability of cap would be high if maintained.	Should be adequate and reliable, since contaminated soils would be taken off site.	Should be adequate and reliable, since contaminated soils would be taken off site.
Need for 5-Year Review	Review would be required.	Review would be required to ensure that protection of human health was maintained.	Review would be required to ensure that remedial actions are successful.	Review would be required to ensure that remedial actions are successful.

Holloman Air Force Base

IRP Site OT-14
Decision Document

**Table 2-1
(Continued)**

Evaluation Criteria	No Action	Asphalt Capping and Land Use Restrictions Alternative	Excavation/Incineration	Excavation and Off-Site Disposal Alternative
REDUCTION OF TOXICITY, MOBILITY, AND VOLUME THROUGH TREATMENT				
Treatment Process Used	None.	Asphalt capping.	Excavation by front-end loader. Incineration, stabilization, and disposal in RCRA facilities.	Excavation by front-end loader. Disposal in a RCRA hazardous waste landfill.
Amount of Hazardous Materials Destroyed or Treated	Would not treat or destroy any hazardous materials.	Would not treat or destroy any hazardous materials.	Excavated soil (approximately 850 bulk cu yd) would be incinerated.	Would not treat or destroy any hazardous materials.
Reduction of Toxicity, Mobility, or Volume	None.	Would not reduce the toxicity, mobility, or volume of the contaminants.	Would reduce toxicity, mobility, and volume of contaminants in excavated soil. Remaining contaminants should be within acceptable levels.	Could remove all soil with contaminant concentrations above acceptable levels. Remaining contaminants should be within acceptable levels.
Irreversibility of Treatment	Not applicable.	Action not irreversible.	Irreversible.	Irreversible.
Type and Quantity of Residuals Remaining After Treatment	None. No treatment residuals.	No treatment residuals. 740 cu yd of contaminated soils remain.	Approximately 850 cu yd of ash remaining after incineration. No remaining soil with contaminant concentrations above cleanup levels.	No treatment residuals. No remaining soil with contaminant concentrations above cleanup levels.
Statutory Preference for Treatment	Does not satisfy.	Does not satisfy.	Does not satisfy.	Does not satisfy.
Statutory Preference for On-Site Management of Waste	Does not satisfy.	Does not satisfy.	Satisfies.	Does not satisfy.

**Table 2-1
(Continued)**

Evaluation Criteria	No Action	Asphalt Capping and Land Use Restrictions Alternative	Excavation/Incineration	Excavation and Off-Site Disposal Alternative
SHORT-TERM EFFECTIVENESS				
Protection of Community	No change in risk to community.	No substantial risks to community.	Slight risk during excavation and transportation of soils from possible release of dust and semi-volatile organics to the air.	Slight risk during excavation and transportation of soils from possible release of dust and semivolatile organics to the air.
Protection of Workers	No significant risk to workers.	Protection against dermal contact with contaminated soil required during asphalt cap construction.	Protection against dermal contact with contaminated soil required during excavation and transportation activities.	Protection against dermal contact with contaminated soil required during excavation and transportation activities.
Environmental Impacts	No significant environmental impact from taking no action.	Should have minimal environmental impacts.	Should have minimal environmental impacts.	Should have minimal environmental impacts.
Time Requirements to Achieve RAOs	Indefinite.	Asphalt cap installed within 1 year. Could achieve RAO within 1 year after design completion.	Excavation and incineration of soil completed within 1 year. Could achieve RAO within 1 year after design completion.	Excavation and disposal of soil completed within 1 year. Could achieve RAO within 1 year after design completion.
IMPLEMENTABILITY				
Ability to Construct and Operate Reliability of Technology	No construction or operation. No technology used.	Simple to construct and operate. Asphalt capping technology is reliable.	Simple to implement. Excavation and disposal technologies are reliable.	Simple to implement. Excavation and disposal technologies are reliable.
Ease of Carrying Out Additional Remedial Action If Necessary	No action should not significantly hinder implementation of future remedial actions.	Simple to extend asphalt cap. Only slight difficulties would be encountered if excavation were needed later.	Simple to extend remedial action.	Simple to extend remedial action.
Ability to Monitor Effectiveness of Remedial Actions	No monitoring provided.	No monitoring provided.	Confirmation sampling should be adequate to determine the effectiveness of remedial actions.	Confirmation sampling should be adequate to determine the effectiveness of remedial actions.
Ability to Obtain Approvals and Coordinate with Other Agencies	No approval necessary.	No approval necessary.	Approval may be required for incineration at the off-site RCRA facility.	Approval required for disposal of soil at the off-site RCRA hazardous waste landfill.

**Table 2-1
(Continued)**

Evaluation Criteria	No Action	Asphalt Capping and Land Use Restrictions Alternative	Excavation/Incineration	Excavation and Off-Site Disposal Alternative
Availability of TSD facilities	Not applicable.	Not applicable.	Incineration and disposal facilities are readily available.	Disposal facilities are readily available.
Availability of Required Equipment and Specialists	Not applicable.	Equipment and specialists are available.	Equipment and specialists are available.	Equipment and specialists are available.
Availability of Required Materials and Services	Not applicable.	Materials and services are widely available.	Materials and services are widely available.	Materials and services are widely available.
Availability of Prospective Technologies	Not applicable.	Asphalt capping technology is readily available.	Excavation, incineration, and land disposal technologies are readily available.	Excavation and land disposal technologies are readily available.
COST				
Capital Cost	\$0	\$100,000	\$1,800,000	\$610,000
Annual O&M Cost	\$0	\$6,700	\$0	\$0
Present Worth Cost	\$0	\$200,000	\$1,800,000	\$610,000

As a result of the agency's comments, Holloman AFB modified the asphalt cap design to conform to the following configurations:

- 2.5-in. asphalt cover
- 6-in. prepared subbase
- Geotextile filter fabric
- Geonet drainage layer
- 60-mil HDPE geomembrane
- 3-in. granular subgrade that is free of particles greater than 0.5-in. and angular fragments

The cap will cover the area with constituent concentrations exceeding the cleanup criteria, approximately 12,000 ft². Stanchions, instead of fencing, will limit access to the site; land use restrictions will be used to restrict future land uses at the site (i.e., residential use or groundwater extraction). This remedy will allow light work (no heavy vehicles) to be performed at the site. Routine inspections and maintenance of the cap will be conducted. The total cost of the modified alternative is \$400,000 and the remedy should be completed within six months after design completion. The selected remedy is presented in Figure 2-2.

Statutory Determination

The selected remedial alternative meets the statutory requirements of CERCLA Section 121. A brief description of the statutory requirements and compliance with each evaluation criterion is provided in this section.

Overall protection of human health and the environment—The geomembrane liner will prevent the infiltration of precipitation and reduce the transport of contaminants into the subsurface aquifer. The geomembrane liner and the asphalt cover will prevent dermal contact with contaminated soils. With maintenance of the cover system and barriers to vehicular traffic, the proposed remedy will provide long-term protection to human health and the environment.

Compliance with Applicable of Relevant and Appropriate Requirements (ARARs)—The selected remedy complies with all ARARs presented in the feasibility study.

Long-term effectiveness and permanence—The selected remedy has a typical operational life in excess of 30 years. Construction quality assurance will include inspection and testing of installation and seaming procedures to meet the manufacturer's specifications. Maintenance of the asphalt cover, including the use of sealants and periodic asphalt overlays, will enhance the long-term performance of the entire cover system and extend the operating life of the liner. Punctures in the HDPE liner can be repaired with an extrusion-welded patch that will perform as well as the entire liner.

Reduction of toxicity, mobility, or volume through treatment—The proposed remedy does not reduce the toxicity or volume of the contaminants. However, the mobility of the contaminants is reduced, since the asphalt cover and HDPE liner prevent the infiltration of rain water to transport the contaminants to the groundwater.

Short-term effectiveness—The proposed remedy could be completed within six months of design approval.

Implementability—Asphalt capping with a geomembrane liner is a well-known construction technique and should not be difficult to implement.

Cost—The selected remedy is estimated to cost \$400,000.

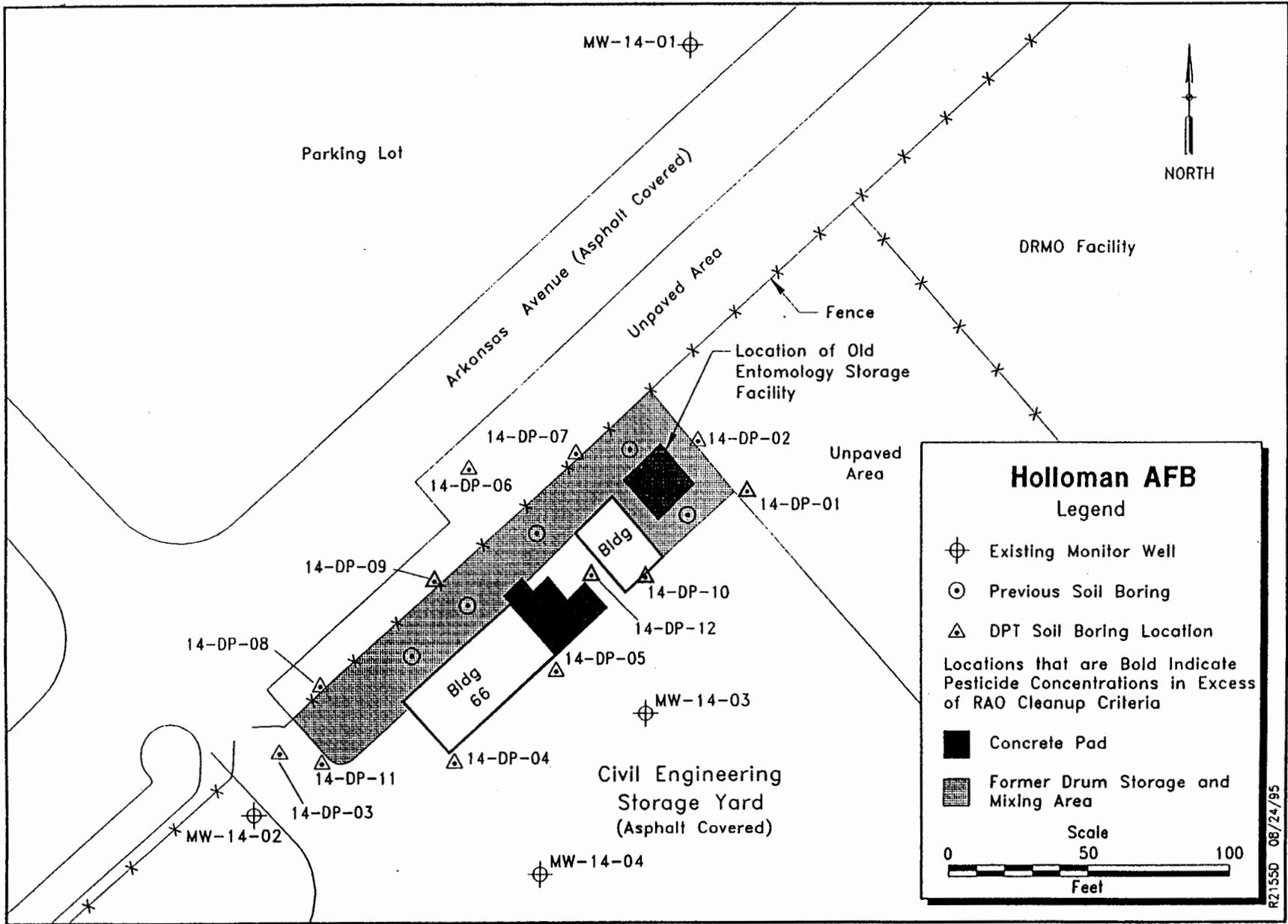


Regulatory acceptance—The U.S. EPA Region VI and the NMED have reviewed and accepted the proposed remedy.

Community acceptance—Holloman AFB held semiannual public meetings to discuss proposed actions at IRP sites on the Base. No comments were received during these meetings pertaining to the site.

Responsiveness Summary

Restoration Advisory Board meetings were held semiannually to present information about the site to the public. Representatives from Holloman AFB and the U.S. Army Corps of Engineers (Omaha District) were present at these meetings to answer questions pertaining to the site. No comments were received during the meetings; therefore, no significant changes to the selected remedial action, as presented, were necessary.



R2155D 08/24/95

Figure 2-2. Map of Selected Remedial Action at Site OT-14