Headquarters, Air Combat Command
Langley Air Force Base,
Virginia

Strategic Plan

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Holloman Air Force Base,
New Mexico

HOLLOMAN AIR FORCE BASE

STRATEGIC PLAN

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1.0 INTRODUCTION

As a result of past waste and resource management practices at Holloman Air Force Base (AFB), areas of the base have become contaminated by various toxic and/or hazardous compounds. In response, a number of environmental restoration projects have been initiated at the base. These restoration projects are initiated through the Installation Restoration Program (IRP) and the Environmental Compliance Program. The IRP is a Department of Defense (DoD) initiative with funds furnished to the site from the Defense Environmental Restoration Account (DERA). The Environmental Compliance Program is base-specific and is funded from the Environmental Compliance Operations and Maintenance Account. The restoration program is executed to comply with applicable laws and regulations and ensures present waste and resource management practices are carried out in a manner protective of human health and the environment.

1.1 OVERVIEW OF STRATEGIC PLAN

This Strategic Plan outlines a comprehensive strategy and the tools available to accelerate the base's environmental restoration program and associated environmental compliance programs. The tools that are considered in this plan focus upon contracting mechanisms, use of risk assessments, the Superfund Accelerated Cleanup Model (SACM), and effectively packaging sites together. The Strategic Plan is a dynamic living document that will require periodic revision as programmatic, regulatory, and technological changes affect program execution or status.

1.1.1 Strategic Plan Objectives

The objective of the Strategic Plan is to provide the conceptual plan and the tools to accelerate the base's restoration program to achieve early site close out. Reducing environmental restoration costs while being protective of human health and the environment are equally important objectives that are considered within the Strategic Plan.

1.1.2 Accelerated Cleanup Program

The Accelerated Cleanup Program (ACP) is a programmatic concept that was developed by the Air Force Air Combat Command (ACC) in 1993. The ACP concept embraced the idea of having a dedicated team of professionals drawn from bases, ACC, the U.S. Army Corps of Engineers (USACE), and the regulatory agencies to implement base restoration activities. These dedicated professionals were to form a formal partnership with each agency signing up to the philosophy and goals of the ACP. The ACP was established to perform site restoration activities using sound risk assessments based on realistic land use data. The ACP needed a contracting mechanism that would allow one contractor to perform the gamut of environmental restoration activities at a given installation. The USACE, Omaha District, procured Total Environmental Restoration Contract (TERC) contractors in 1993 to execute the ACP; TERC #4 utilizes Holloman AFB as its anchor base.

Figure 1-1 illustrates the concept of the ACP. The ACP has expanded since 1993 to include several additional restoration initiatives that are discussed in Section 3.0.

1.1.3 Regulatory Concerns

Regulatory concerns from the U.S. Environmental Protection Agency (EPA) and the New Mexico Environmental Department (NMED) include:

- Acceleration of the program affects the regulators ability to respond to technical and proposed plan submittals
- Regulators need to ensure that remedial actions are protective of human health and the environment
- The NMED is concerned about access to additional DoD Defense State Memorandum of Agreement (DSMOA) funds
- There are jurisdictional concerns between federal and state regulators on some sites

1.1.4 Overview/Background of Existing Sites

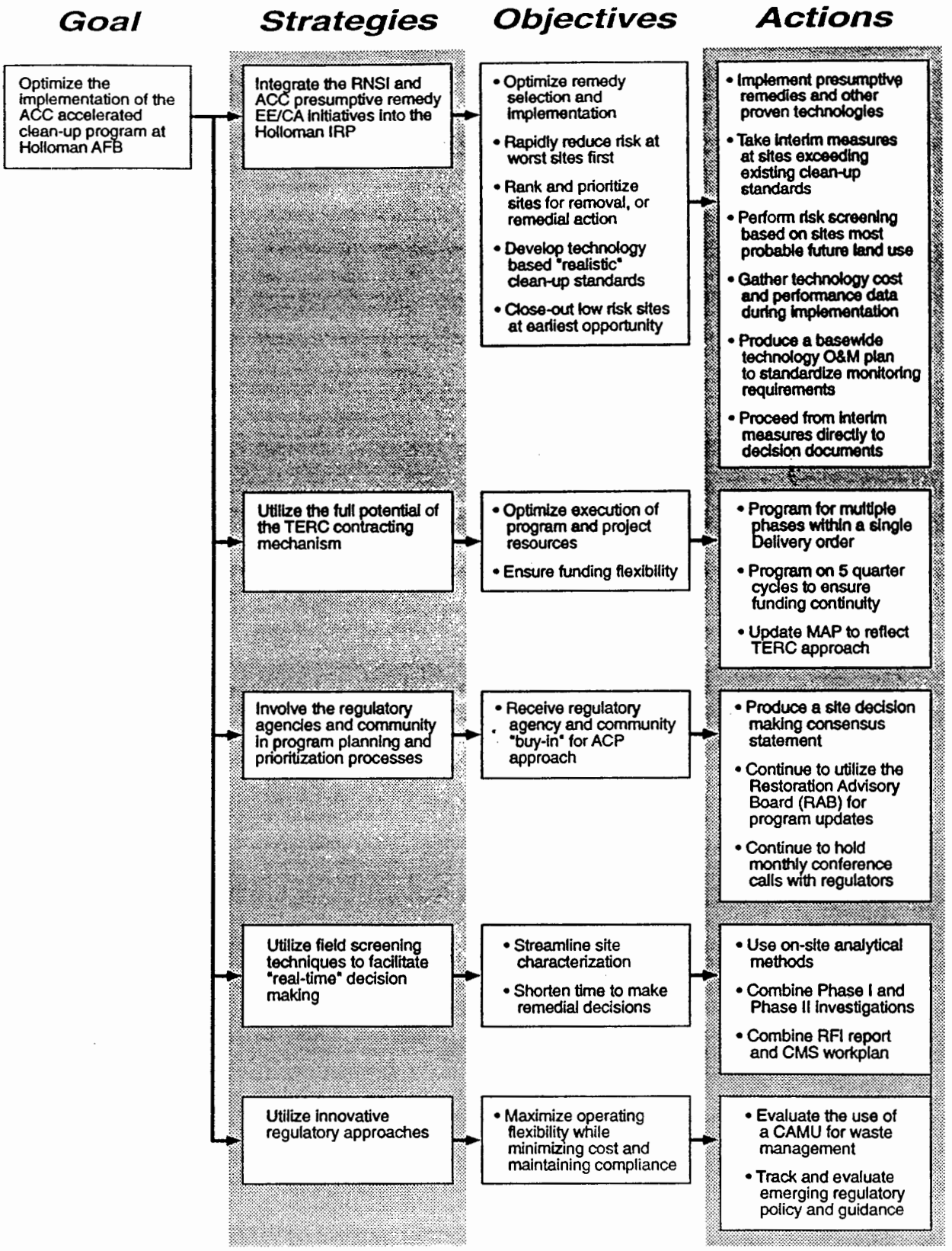
Currently there are 60 IRP sites and two Areas of Concern (AOCs) identified at the base. Of the 60 IRP sites, 22 sites are active. In addition, there is long term ground water monitoring on ten sites in the IRP.

The base environmental compliance program includes a total of 231 Solid Waste Management Units (SWMUs) as defined by the Resource Conservation and Recovery Act (RCRA). Each SWMU is assigned a unique identification number within the permit. There are 119 SWMUs that require investigation. The SWMUs are listed on the base's RCRA permit in three tables: Table I includes 40 SWMUs, Table II includes 40 SWMUs, and Table III includes 39 SWMUs. A number of these SWMUs are also IRP sites and must be managed in accordance with both the IRP and the base compliance program. There are three other environmental compliance sites not listed in the base permit that require restoration: T-38 Test Cell, Bldg. 828, and Holloman Lakes.

1.1.5 TERC Team

The Holloman AFB TERC Team has been established to accelerate the base's restoration program and is led by the Base Remedial Program Manager (RPM). The TERC Team meets regularly to resolve programmatic, regulatory, and technical issues and ensures that the base's restoration program stays on schedule. The TERC Team members are listed in Table 1-1. The team members signed their partnering agreement on April 5, 1994 and the document is on file at the base's environmental office. The team members are committed to implementing the ACP and the following:

Figure 1-1



Holloman AFB Accelerated Clean-up Program (ACP)
Strategies, Objectives, and Actions

TABLE 1-2

TERC TEAM Members			
Name	**Title**	**Phone/FAX**	**Role/Responsibility**
Warren Neff	Base Remedial Program Manager	(505) 475-5395 (505) 475- 7015	Holloman AFB Program Manager
Lowell Seaton	EPA Region VI Regulator	(214) 655-8304 (214) 655-8103	EPA Project Manager
David Morgan	State Regulator DSMOA	(505) 827-2754 (505) 827-2965	Project Manager Groundwater Protection and Remediation Bureau
Jim Haggins	Command Program Manager	(804) 764-3432 (804) 764-5339	HQ ACC CES/ESV Command Program Manager
Tom Zink	Program Manager USACE	(402) 221-7711 (402) 221-7838	Program Management/ Contract Oversight
Mark Mercier	Technical Manager USACE	(402) 221-7666 (402) 221-7796	Program Management Technical Oversight
William Kitto	Program Manager	(201) 460-6093 (201) 460 6505	Contractor - Foster Wheeler Environmental Corp.

- Open and frequent communication, including monthly conference calls and semi-annual meetings
- Establishment and maintenance of appropriate cleanup standards that protect human health and environment and are in full compliance with appropriate regulations
- Establishment and maintenance of schedules
- Review and revise objectives at periodic meetings
- High quality products
- Concurrent development of plans and deliverables

1.2 ORGANIZATION OF STRATEGIC PLAN

Section 1.0 outlines the objectives of the Strategic Plan, provides an overview of the ACP, examines regulatory concerns, provides a brief overview/background of existing sites, and introduces the TERC Team and partnerships formed to implement the Strategic Plan. Section 2.0 provides an overview of the regulatory framework within which the base must execute its restoration program. Section 3.0 examines restoration initiatives and tools that can help in accelerating the base's restoration program. Section 4.0 outlines the implementation strategy for the Strategic Plan and introduces the Execution Plan.

2.0 REGULATORY FRAMEWORK

This chapter provides an overview of the statutory and regulatory framework within which the base must execute its restoration program. The chapter provides an overview of applicable State and Federal regulations that bear most directly on corrective action, and also discusses several regulations still in the proposed stage which may affect the base's program. Also summarized are DoD guidance documents, base-specific agreements, and DSMOA.

Table 2-1 presents the specific regulated media and/or actions that are evaluated in relation to both State of New Mexico regulatory programs and Federal regulatory programs. The following media and/or activities are addressed:

- Surface and groundwater quality
- Surface and groundwater discharge
- Groundwater extraction
- Underground storage tanks
- Air emissions
- Hazardous waste
- Solid waste
- DoD guidance documents
- Emergency planning and community right-to-know
- Pollution prevention
- Proposed State regulations
- Proposed Federal regulations
- Base specific agreements
- Defense State Memorandum of Agreement

Table 2-1 provides a brief summary of the enforcing agency, regulatory citations, and applicability to Holloman AFB's ACP.

TABLE 2-1

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Surface and groundwater quality				
- Groundwater Quality Standards	NMWQCC Reg. Section 3-104 NMEIB/USTR Part XII Section 1219 (w/r to USTs)	NMED/GWPRB	- Dissolved pollutant standards apply to groundwater that has TDS levels <10,000 mg/l.	- Majority of groundwater at Holloman AFB contains TDS >10,000 mg/l, therefore dissolved standards do not apply at the site. - Removal of any measurable LNAPL is required at Holloman AFB.
- Surface Water Quality Standards	NMWQCC Regs. 1-100.A.	NMED/SWQB	- Establishes surface water quality standards and non-degradation policy.	- Dissolved pollutant standards for surface water apply at Holloman AFB.
Surface and groundwater discharge				
- Planned subsurface effluent discharges of nonhazardous waste to infiltration galleries, injection wells, non-household septic systems, surface impoundments, etc.	NMWQCC Parts 1, 3, and 5	NMED/GWPRB	- Requires the filing of a discharge plan with specified requirements, and established discharge limits.	
- Accidental releases from pipelines, above-ground storage tanks, underground storage tanks, surface spills, etc.	NMWQCC	NMED/GWPRB and/or NMED/SWQB	- Requires notification to NMED within 24 hours.	
- Surface effluent discharge to surface waters (including arroyos and ephemeral streams).	CWA 40CFR122.2	USEPA Region VI (issuing authority) NMED/SWQB (Review and certification authority)	- Requires NPDES permit to discharge any pollutant to navigable waters. - Exceptions include wastewater treatment systems (ponds and lagoons) and certain on-site response actions conducted under Superfund.	- Applicable to Holloman when evaluating design options for discharging recovered water associated with Corrective Action activities.
- Surface effluent discharge via any stormwater convalance system.	CWA 40CFR112 Stormwater NOI	USEPA Region VI	- Requires permit for discharges from any stormwater system associated with an industrial activity (includes: industrial facilities, transportation facilities with vehicle maintenance, hazardous waste and TSD facilities, landfills, construction area larger than 5 acres, etc.).	
- Discharge of dredged or fill material into wetlands	CWA Wetlands Permit Section 404	USEPA Region VI	- Regulates discharge of dredged or fill material to protect wetland habitats.	- Not anticipated to apply to Holloman, however, any cleanup activities in or near wetlands should be carefully monitored.
- Discharge of dredged material into waters of the U.S.	58 CFR 45008	USACE	- Requires permit to add or re-dispose of dredged material that destroys or degrades waters of the U.S.	- Disposing of dredged materials to waters of the U.S. should not be considered as an available option at Holloman AFB.

TABLE 2-1 (Cont)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Groundwater Extraction				
- Extraction of groundwater associated with proposed treatment systems.	NMSEO Articles 1 through 7	NMSEO	- Requires permit to be obtained and if the majority of the extracted groundwater is not returned, water rights need to be purchased.	- If Holloman does not own water rights, then must apply for NMSEO permit and show deminimus loss.
Underground Storage Tanks				
- Permit, operation, closure, and corrective actions from releases.	NMEIB/USTR Parts XII and XIII	NMED/USTB	- Establishes operational standards for maintaining UST. - Specifically excludes oil-water separators, flow through process tanks, sumps, and hydraulic lifts.	
- Soil, LNAPL, and Groundwater Restoration Levels and Remediation Requirements.	NMEIB/USTR Part XII Section 1209	NMED/USTB	- Specifies soil restoration levels for UST releases.	- The established state restoration levels have been superseded at Holloman AFB to TPH < 1,000 ppm, Benzene < 25 ppm, and removal of measurable LNAPL (NMED correspondence dated 1/25/93).
- Unable to obtain the regulatory standards with BAT.	NMEIB/USTR Part XII Section 1220	NMED/USTB	- Provides a mechanism for the UST owner/operator to petition the NMED/ USTB for less stringent cleanup standards.	- Could restore UST sites under UST program rather than CERCLA program.
Air Emissions				
- Air Quality Standards	NMAQCR	NMED/APCB	- TNMHCs < 0.19 ppm for 3-hour average. - Any regulated contaminant <10 tons/year.	
- Construction or operation of a stationary or portable source (e.g. vapor extraction system, air stripper, storage tanks, etc.).	NMAQCR Section 702 and 703	NMED/APCB	- Requires air permitting and registration with the State for emissions from vapor treatment systems with the potential to to emit sources >10 lbs/hr or 25 tons/year, and/or a potential to emit any regulated contaminant <10 tons/year.	- The need for air permitting is significant since it can substantially slow down the implementation of a remedial action (30 to 360 days review and public comment process).
- Emission sources of contaminants associated with remedial treatment systems.	CAA Title I	NMED/APCB	- Establishes NAAQ for individual areas.	- Holloman AFB is located within a "clean air zone" so the PSD program will apply at the base.
	PSD	NMED/APCB	- Regions which meet the NAAQs may fall within the PSD program which is intended to maintain "clear air zones".	
	HAP	NMED/APCB	- HAP is a federal program that applies emission standards and requires permitting for listed chemical compounds, individual compounds >10 tons/year, combination of compounds >25 tons/year.	- Permitting trailer/skid-mounted units as portable stationary sources per NMAQCR Parts 700/702 may decrease the total number of permits necessary on base, permit fees, and permitting burden. Units could be moved from site to site as remediation progresses without reapplying for new permits.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Air Emissions (Cont.)	Title V operating permits	NMED/APCB (issuing permits) USEPA (notification and revisions)	- Federal Law requiring operating permits that will apply to almost all air pollution sources. - While other state and federal provisions requires permits (new source, PSD, other), Title V requires that all former permitting requirements be brought into one comprehensive document.	- Implementation of this program will affect the permitting progress for several of the proposed restoration activities at Holloman AFB. Since the program is new, preparing a permit strategy and maintaining regular communication with the NMED/APCB while the operating permit program develops is recommended.
Hazardous Waste				
- Generator, storage, treatment, and disposal	HWMR Section 6	NMED/HRMB	- State program incorporates majority of RCRA subtitle C. - State of New Mexico is a RCRA-authorized state with exception for the HSWA portion.	- Part B permit for Holloman is granted and regulated by the HWMR. - RCRA Corrective Action allows for use of interim measures to expedite remedial activities.
- Generator, storage, treatment, and disposal	RCRA-HSWA 40 CFR Part 264 Subpart C	USEPA Region VI	- This statute is designed to provide "craddle to-grave" control of waste by imposing management requirements on generators and transporters of waste and owners of TSD facilities.	
- Generator, storage, treatment, and disposal	RCRA-HSWA 40 CFR Part 264 Corrective Action Program Part 264 Section 3004	USEPA Region VI	- Requires TSD owners/operators to take corrective action for all releases from from SWMUs regardless of when the waste was placed in the unit or whether the unit is currently active. - SWMUs can include tanks, lagoons, waste piles, or other types of units.	
- Generator, storage, treatment, and disposal	RCRA-HSWA 40 CFR Subpart S	USEPA Region VI	- Provides provisions for "voluntary" cleanup, phased RCRA facility investigations, range of cleanup levels for site-specific circumstances, and "conditional remedies".	- While this section provides mechanisms for accelerated cleanups, Holloman AFB has experienced resistance from EPA Region VI from applying the rule. - Continued communication with EPA Region VI and NMED regarding the provision in this rule at Holloman AFB should be pursued.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Hazardous Waste (Cont.)				
- Corrective Action Management Units and Treatment Units	RCRA - HSWA 40 CFR Subpart S	USEPA Region VI	- CAMU and TU are designed to reduce administrative delays and encourage use of innovative remedial technologies by allowing movement of remedial waste without triggering land disposal restrictions and minimum technology requirements (e.g., double liners and leachate collection systems).	- While implementation of this process has not been aggressively been pursued at this time, as EPA Region VI develops the implementation standards, this method should be considered by Holloman AFB to reduce the total cost of the projects. - Requires formal Part B permit modification which may limit timeliness of response action.
- Investigation/Remediation of Waste Sites	CERCLA/NCP Plan 40 CFR300	USEPA Region VI NMED/GWPRB (DERA-IRP)	- Establishes protocol for assessment, selection of remedy and remedial actions.	- IRP sites follow CERCLA/NCP process. - Can use non-time critical removal actions and engineering evaluation and cost analysis (EECA) approach. - At sites where IRP/SWMU overlap occurs between CERCLA/RCRA both programs must be satisfied.
Solid Waste				
- Solid Waste Management and Disposal	NMEIB/SWMR-4 (8/94)	NMED/SWB	- Establishes operating standards, financial responsibility requirements, and closure standards for landfills. - This regulation brings the State in compliance with RCRA subtitle D requirements.	- Applies to Holloman AFB environmental restoration activities in regards to off-site disposal of the non-hazardous waste generated (e.g., petroleum-contaminated soils, construction, and demolition debris, etc.).
- Landfill Requirements	SWMR (August 1994)	NMED/SWB	- Sections with pertinent changes to active landfills include: permit application requirements, registration of sitings in wetlands or flood plains, methane monitoring program, groundwater monitoring requirements, etc. - Standards for remediation are less stringent (remediation required when dissolved concentrations reach corrective action levels) but more parameters need to be monitored on a regular schedule. - Recently adopted landfill requirements: bring the state program in line with federal program	- Holloman AFB has an existing operating landfill which will need to abide by these regulations. - While the regulations specifies requirements for daily cover, waivers can be obtained for landfills that generate less than 20 tons/day. - Holloman AFB also contains several formerly used landfills which may require closure to be in compliance with the former or existing standards.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Solid Waste (Cont.)				
- Landfill Requirements	RCRA Subtitle D Sect. 7003	USEPA Region VI	- EPA uses this regulation to prove that waste generated during investigation and implementation associated with remedial actions is not hazardous.	
DoD Guidance Documents				
- Yearly Program Guidance	Yearly Extension Policy (4/14/94)	DUSD/ES	- This policy establishes management priortization and funding of the DoD's restoration programs. - It also sets forth performance measures that are used in monitoring the progress of the restoration program.	- Specific priorities as they apply to Holloman AFB are examined in Chapter 1 of the Execution Plan.
- Remedial Restoration Program Guidance	ACCRPM Guide	Air Force ACCRPM	- This document was developed for beginning RPMs as a primer in project management and as a reference document for experienced RPMs. - The book is based on successful restoration experiences and provides the basic outline for project execution within Air Force restoration management system.	
Emergency Planning and Community Right-to-Know	- RCRA 1986: includes 40 CFR 302, 40 CFR 370, Section 313, 40 CFR 304, 40 CFR 355 (Append. A & B) - Title III of Superfund Amendments includes EO-12856	SERC LEPC	- Four major elements of EPCRA include 1) Community Emergency Planning (Section 302-303), 2) Emergency notifications; 3) Hazardous chemical reporting, and 4) Toxic chemical release inventory (TRI) reporting. - DoD prepared a guidance document called "DoD Guidance for Implementation of EO 12856 of August 3, 1993". - EPA prepared a guidance document called "EPA Interim Guidance for Implementing EO 12856".	- Storage or release of threshold quantities of certain chemicals during remedial actions may require inclusion of feasibility studies in the Base's yearly Title 313 Report. - Remedial designs should include analysis of potential EPCRA compliance issues. - The guidance document should be referenced for the listed deliverables and associated due dates, due in 1994 and 1995.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Pollution Prevention	EO-12856 Section 313	SERC LEPC	- States that by 1999 total releases and off-site transfers of identified toxic chemicals must be reduced 50% at a particular facility and/or agency-wide (DoD facilities) reduction of 50% must be reached. - Each facility that exceeds any EPCRA threshold needs to prepare a PPP	- Remediation releases (e.g., air releases during bioremediation of contaminated soil) of toxic chemicals are reportable under Section 313 - Depending on Holloman AFB's schedule of remedial activities, this aspect of PPA could have a significant impact on the Base's ability to meet the 50% reduction goal - Draft PPPs for DoD review are due 6/1/95 and Final PPPs are due 12/15/95
Proposed State Regulations - Abatement of Water Pollution	NMWQCC 3-200 Series	NMED/GWPRB	- Section 3-203A establishes standards for the vadose zone (soil), vapor, and LNAPL. - Sections 3-203F and 3-203G establish criteria for proposing that a standard is technically infeasible and allow the responsible party to petition alternative abatement standards.	- These new regulations are ARAR for restoration at the Base. Adoption of the proposed regulations may facilitate the use of risk-based standards in the context of future land use and the cost-benefit of attempting to obtain non-achievable standards, or achieving these standards with little or no additional benefit. - May allow adoption of alternative TPH standard for soil cleanup.
Proposed Federal Regulations - Superfund	CERCLA	USEPA Region VI	- Both the House of Representatives (HR 3800) and the Senate (S 1834) are preparing bills for reform of the existing regulations. - Pending measures include: elimination of pre-1987 cleanup liability, retroactive tax insurance premiums if PRPs would agree not to sue their issures, allow groundwater cleanup standards to be met only at site borders (rather than throughout site), and expand EPA's cost recovery authority to to pollutants and contaminants. - Most of the proposed changes are aimed at streamlining the remediation process and reducing the cost of cleanup.	- When, how, and if these reforms are enacted will take a lot of time and require regulatory development prior to implementation.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

MEDIA/ACTIVITY	REGULATORY CITATION	ENFORCING AGENCY	SUMMARY OF REGULATION	APPLICABILITY TO HOLLOMAN AFB ACP
Proposed Federal Regulations (Cont.)				
- Air Emissions	EPA Draft Rule	USEPA Region VI	- Would regulate organic air emissions from hazardous waste storage active tanks, containers, and surface impoundments (excludes: waste piles, landfills, and land treatment units). - Purpose of the regulation is to control toxic and ozone precursors that are not addressed by CAA HAP requirements. - Rule would apply to owners and operators of permitted interim status facilities and generators who store waste for greater than 90 days.	- Emission reductions of up to 95% are expected where the waste contains organics >100 ppm. - Emission control equipment expected to be employed includes covers and closed-vent systems connected to control devices.
Base Specific Agreements				
- Base wide clean up levels	NMED letter dated 1/25/93	NMED/WWM		- Basewide soil cleanup standard for TPH <1,000 ppm, providing no RCRA hazardous constituents are involved. - Site groundwater cleanup standards were superseded and groundwater restoration is not required unless a human or ecological receptor is exposed, but no additional containment must take place.
- Federal Facilities Compliance Agreement (FFCA) (1988)		Signed between USEPA Region VI, State of New Mexico, & Holloman AFB	- Establishes closure requirements for sewage lagoons	- Restoration activities at sewage lagoons must be conducted in accordance with the FFCA.
Defense State Memorandum of Agreement (DSMOA)				
- DOD Funding for state oversight	DSMOA	DoD Deputy under Secretary of Defense	- Agreement establishes the DoD to set up a fund to reimburse NMED for state review of environmental permits, reports, and plans associated with DoD installation environmental restoration programs.	- DSMOA funds NMED regulators to review and approve IRP program activities.

TABLE 2-1 (Cont.)

SUMMARY OF REGULATORY REQUIREMENTS

STATE ABBREVIATIONS:

NMWQCC - New Mexico Water Quality Control Commission
NMEIB/USTR - New Mexico Environmental Improvement Board/ Underground Storage Tank Regulations
NMAQCR - New Mexico Air Quality Control Regulations
HWMR - New Mexico Hazardous Waste Management Regulations
SWMR - New Mexico Solid Waste Management Regulations
NMED/GWPRB - New Mexico Environment Department Groundwater Protection and Remediation Bureau
NMED/USTB - New Mexico Environmental Department/UST Bureau
NMED/APCB - New Mexico Environmental Department/Air Pollution Control Bureau
NMED/SWQB - New Mexico Environmental Department/Surface Water Quality Bureau
NMED/HRMB - New Mexico Environmental Department/Hazardous and Radioactive Materials Bureau
NMED/SWB - New Mexico Environmental Department/Solid Waste Bureau
NMED/WWMD - New Mexico Environmental Department/Water and Waste Management Division
NMSEO - New Mexico State Engineer's Office
BAT - Best Available Technologies
ARAR - Applicable and/or Relevant and Appropriate Requirements

GENERAL ABBREVIATIONS:

TDS - Total Dissolved Solids
mg/l - milligrams per liter
ppm - parts per million
TNMHC - Total Non Methane Petroleum Hydrocarbons
LNAPLS - Light Non-Aqueous Phase Liquids

FEDERAL ABBREVIATIONS:

EPA Region VI - Local Regional Office for the Environmental Protection Agency
CWA - Clean Water Act
NPDES - National Pollutant Discharge Elimination System
CFR - Code of Federal Regulations
NOI - Notice of Intent
USACE - United States Army Corps of Engineers
FR - Federal Register
CAA - Clean Air Act
NAAQ - National Standards for Ambient Air Quality
PSD - Prevention of Signifiicant Deterioration
HAP - Hazardous Air Pollutants Program
RCRA - Resource Conservation and Recovery Act of 1976
HSWA - Hazardous and Solid Waste Amendments of 1984
TSD - Treatment, Storage, and Disposal
CERCLA (Superfund) - Comprehensive Environmental Response, Compensation, and Liability Act of 1980
NCP - National Contingency Plan
SWMU - Solid Waste Management Unit
CAMU - Corrective Action Management Units
TU - Temporary Units
DoD - Department of Defense
DERA-IRP - Defense Environmental Restoration Account-Instllation Restoration Program
DUSD/ES - Deputy Under Secretary of Defense of Environmental Study
ACCRPM - Air Combat Command Installation Restoration Program Remedial Project Manager
EO - Executive Order
EPCRA - Emergency Planning and Community Right-to-Know
SERC - State Emergency Response Commissions
LEPC - Local Emergency Planning Committees
PPA - Pollution Prevention Act
PPP - Pollution Prevention Plan
PRP - Partially Responsible Party

3.0 RESTORATION INITIATIVES

This chapter examines restoration initiatives and tools that can help in accelerating the base's restoration program. These initiatives include: Total Environmental Restoration Contract (TERC), Rational National Standards Initiative (RNSI), the Superfund Accelerated Cleanup Model (SACM), Corrective Action Management Units (CAMU), Pilot Studies, Economies of Scale Project Packaging (ESPP), Real Time Decision Making and the Observational Method, and Restoration Advisory Boards.

3.1 TOTAL ENVIRONMENTAL RESTORATION CONTRACT

The TERC concept was developed by the USACE, Omaha District to support the ACP concept by providing an innovative contracting mechanism by which one contractor is able to provide "cradle to grave, fence to fence" environmental restoration. The TERC was also developed to save time and money by reducing the number of contracting actions between phases of work. The TERC has served to eliminate coordination problems between phases of the work, particularly coordinating one contractor's investigation work with another contractor's design/construction work on the same project. The TERC focuses upon accountability throughout program execution by having one contractor responsible for all phases of a job.

3.2 RATIONAL NATIONAL STANDARDS INITIATIVE

The Rational National Standards Initiative (RNSI), an ACC-wide program, is specifically designed to establish realistic, risk-based, site restoration "targets" such as cleanup levels. By utilizing RNSI targets it is possible to develop remedial action (RA) cost estimates for each of four potential land uses at Holloman AFB sites: commercial, industrial, open land, and residential. The most probable clean-up "target" is based on the site's anticipated or predicted future land use.

While it has not yet been implemented on a systematic basis at Holloman AFB, RNSI principles have been utilized in past risk assessments and accepted by the regulatory agencies for use at Holloman AFB sites. Regulatory agency approval of a RNSI program at Holloman AFB will enable the base to consistently establish screening cleanup levels for each site under each of the four land use scenarios. Decision-making would be streamlined after RNSI cleanup levels are applied to sites that require risk evaluations. Sites that have existing contamination less than RNSI targets can potentially be recommended for no further action. Contrarily, if contaminant levels are higher than the screening cleanup levels, the RNSI-derived cleanup levels could serve as the initial removal goals for a presumptive remedy effectiveness evaluation.

RNSI also fosters risk management at the base because it gives decision makers the ability to calculate and evaluate the costs and benefits associated with different end uses of the site if and when land use changes. Coordination of cleanup and the Base Comprehensive Plan as it relates to land use is a major step in establishing effective cleanup objectives.

3.3 SUPERFUND ACCELERATED CLEANUP MODEL

The EPA's Superfund Accelerated Cleanup Model (SACM) promotes using the rapid reduction of risk at sites posing the greatest threat to human health and the environment through use of early actions. SACM was initiated to streamline and accelerate the remedy selection and site cleanup process to facilitate early "risk reduction." Key aspects of SACM include implementation of early actions and the use of presumptive remedies.

3.3.1 Early Actions

Within the SACM framework, early actions represent environmental restoration activities with the primary goal of rapidly reducing risk. There are several benefits gained from implementing early actions:

- Source Reduction - By removing the primary mass of contaminants (LNAPLs, saturated soils, or the residual contamination at former waste management units), source reduction effectively minimizes short-term risks and prevents a manageable problem from becoming formidable. Protection of human health and the environment is a direct benefit obtained from the reduction of contaminant sources.

- Real Time Data - Operation of an early action remediation system can provide valuable data necessary to fine-tune the design of a full-scale final remediation system, if one is deemed necessary.

- Containment - Containment applies to surface and subsurface environmental problems. Early capping actions reduce immediate risks posed by contaminants in landfills and burial pits and provides the added benefit of reducing leachate generation. Prevention of dissolved-phase or free product plume migration can reduce the ultimate time and cost to closure by limiting the areal extent of contamination.

- Intelligent Selection of Technology - In many cases, early actions can be implemented with limited technology screening. Knowledge of waste characteristics, site geology, and other factors can lead to the selection of an appropriate remedial technology immediately following confirmation of contaminant concentrations in excess of applicable remediation standards. This concept is explained in greater detail in Section 3.3.2, which describes the use of presumptive remedies.

- Expedited Time and Reduced Cost to Closure - Early action commences upon recognition of the nature, but not necessarily the total extent of contaminant concentrations in excess of applicable remediation goals. This expedites site closure by immediately initiating a remedy early in the life of the project. Additional investigative work may still be necessary to completely define the nature and extent of contamination; however, this work can be performed concurrently with the early action. In many cases, a full-scale corrective measures/feasibility study may ultimately not be necessary if the early action remedy produces

results beyond initial expectations. If expansion of an early action remediation system is necessary, design and construction can be initiated much earlier in the overall program.

Early actions can be implemented as either removal actions or remedial actions. The basis for determining if removal or remedial action is appropriate for a particular area of concern is largely dependent upon an evaluation of site-specific restorations goals as they relate to the programmatic goals for cleanup at the base.

3.3.1.1 Non-Time-Critical Removal Actions

EPA has indicated that non-time-critical removal actions should be used extensively to accomplish SACM goals. Non-time-critical removal actions can be utilized to reduce risk when planning phases for restoration activities exceed six months. Removal action planning is not preferred for long-term complex activities such as ecosystem restoration (wetlands, surface water bodies, etc.) or large groundwater restoration projects. Remedial action planning is utilized in these instances.

Non-time-critical removal actions include an analysis of alternatives in an engineering evaluation/cost analysis (EE/CA). The SACM approach allows for the preparation of base-wide removal action plans to satisfy EE/CA requirements. A base-wide removal action plan supports the use of a particular remedial approach by structuring the technical and regulatory decision-making process as it relates to an area of concern:

- Criteria for technology application are specified to facilitate rapid evaluation during the planning phase for a given area of concern

- A removal action implementation decision tree and responsibility matrix are formalized to establish procedures and scheduling mechanisms for:

  - Review of submittals
  - Notification of planned activities
  - Agency/public commenting
  - Issuance of Action Memoranda

After a Base-wide removal action plan is approved and a technology can be applied, site-specific removal action plans are prepared in accordance with established procedures considering technology-specific criteria. To satisfy EE/CA requirements, conceptual designs and cost estimates for removal actions are developed. Regulatory concurrence with a site-specific removal action plan is provided within an Action Memorandum, which binds all affected parties to implementing removal action activities, including design, construction, monitoring, and close-out, within a stipulated schedule.

Recognizing that critical technical issues are addressed during the base-wide removal action planning process, SACM allows for concurrent regulatory reviews of plans and design submittals as design/construction phases of work proceed. By recognizing the benefits obtained from technically sound front-end planning, the requirement for in-depth regulatory review by the entire

team is minimized and work proceeds unhindered even during review cycles. Significant gains in efficiency are realized and the intent of SACM is put into action.

3.3.1.2 Interim Remedial Actions

Interim Remedial Actions (IRAs) are generally intended to address short-term threats while permanent remedial solutions are being developed. They can be implemented at any point during the remedial investigation/feasibility study (RI/FS) process. IRAs differ from non-time-critical removal actions in the flexibility they afford planners. Within the context of SACM, non-time-critical removal actions are approached programatically by evaluating technologies on a site-specific basis after developing the criteria for their application base-wide. Removal actions are viewed as a means of obtaining closure at specific areas of concern on a systematic basis. IRAs are reserved for addressing threats that must be mitigated under tight schedule constraints to increase the manageability of growing problems. An IRA could be used contain a migrating plume in an area of concern where a removal action is planned for source control and a permanent remedial action is planned for groundwater restoration. The use of focused IRAs within the framework of programmatic removal actions gives planners the needed tools to achieve early reduction of risks and accelerated cleanup at areas of concern as site conditions and applicable technologies deem appropriate.

3.3.2 Presumptive Remedies

Presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. EPA has evaluated technologies that have been consistently selected at past sites using the remedy selection criteria set out in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). They have reviewed performance data and determined that certain remedies are presumptively the most appropriate for addressing specific types of sites.

The use of presumptive remedies allows the remedy selection process to be accelerated. In particular, the technology identification and screening steps in an FS or EE/CA can be directly eliminated by going directly to the detailed analysis of technology options. Presumptive remedies are predicated on the process of technology screening. There are many potentially applicable technologies for addressing site contamination. The effectiveness of these technologies is dependent on contaminant and site characteristics, regulatory requirements, closure criteria, and cost limitations. To design, construct, and operate the most cost-effective and applicable restoration technologies to achieve site closure, it is necessary to screen out inappropriate or costly restoration options. The following information is needed to select appropriate technologies:

- Applicability of Technology to Site Contaminants - Contaminant properties can often provide an indication regarding applicability.

- Site Characteristics - The applicability of treatment technologies is highly dependent on site characteristics such as soil lithology, depth to groundwater, vertical and horizontal transmissivity in the saturated and unsaturated zone, soil and groundwater chemistry, and

surface improvements (roadways, utilities, buildings, runways, etc.).

- Regulatory Acceptance of Technology and Required Permits - Regulatory acceptance is necessary for the implementation of a selected remediation technology. The necessity for various permits, and the ability or inability to procure those permits, can make the implementation of a technically feasible technology impossible.

- Treatment Time Objectives - The length of time to achieve desired restoration goals is a critical factor in the technology screening process. Reducing treatment times to accommodate a particular technology may increase the total cost to closure.

- Project Life-Cycle Costs: Project life-cycle costs consist of all expenses that are incurred for site assessment and restoration over a project's lifetime. These costs include site investigation, site engineering design, capital costs, operation and maintenance requirements, monitoring, and project management. The restoration system having the lowest possible present worth cost, which achieves project objectives in terms of both closure goals and treatment time, should be selected. Obviously, capital costs must be carefully weighed against the estimated treatment time required to achieve closure. Administrative and potential litigation costs should also be considered in selecting the restoration strategy.

Administratively, the selection of a presumptive remedy is facilitated by reviewing Records of Decision (RODs) issued for sites similar to those being considered for remediation at the base. A search of RODs provides regulatory agencies with the precedented use of a particular technology for remediation of similar contaminants under similar conditions. Documenting the results of the ROD search within an administrative record eliminates timely preparation of a ROD for each site at the base and allows regulators to focus upon technical issues associated with implementing a particular technology.

3.4 CORRECTIVE ACTION MANAGEMENT UNITS/TEMPORARY UNITS

The recently promulgated Corrective Action Management Unit/Treatment Unit (CAMU/TU) Final Rule has significant implications to the management of wastes generated during remedial/corrective actions. These "remediation wastes", when placed in CAMUs or TUs, are exempt from many of the RCRA regulations and standards, including land disposal restrictions (LDRs) and minimum technology requirements (MTRs) that normally apply to the treatment, storage, and disposal of hazardous solid wastes. The use of these special units during remedial/corrective actions will facilitate common-sense remedial decisions, leading to expedited cleanups and cost savings for an area of concern undergoing remedial action. The use of CAMUs would have to be evaluated carefully due to the permitting and monitoring requirements associated with these units.

3.5 PILOT STUDIES

Pilot studies are utilized to establish technical feasibility of established and innovative remedial technologies and obtain necessary design information for development of full-scale remedial design. At

some sites, pilot studies can be utilized to completely address contamination which is limited in nature and extent (e.g. limited POL contamination in soil). Under various programs, pilot studies have been performed previously or are planned at the Base.

Pilot studies are useful at sites for which a "presumptive remedy" has been selected to account for site-specific factors such as heterogeneity in subsurface soil and groundwater conditions. In many cases, economies of scale can be realized by expanding pilot projects to full-scale remedial action using the equipment mobilized for the pilot testing phase, by expanding the area of influence, time of operation, or location of mobile skid-mounted equipment. Pilot studies can also target residual source areas for immediate abatement of contamination.

3.6 ECONOMIES OF SCALE PROJECT PACKAGING (ESPP)

The concept of ESPP is to group projects of similar work into packages for execution. When similar work is grouped together savings in work time and overall costs can be achieved. This is especially true for field work where one subcontractor can be hired to do the drilling, sampling, or any other field effort for several separate projects. The cost is reduced by providing one subcontractor a larger scale of work and time is saved by avoiding several mobilization/demobilization events. In addition, it encourages all team members to develop and stick to a much tighter performance schedule. ESPP can also be applied to the design and construction portion of a project to achieve time and costs savings through the same rationale applied to the field work.

3.7 REAL TIME DECISION MAKING AND THE OBSERVATIONAL METHOD

The concept of "Real Time Decision Making" involves empowering the project team at the working level to make substantial decisions in the field that directly affect the work at hand. Real time decision making is made possible through the use of flexible work plans and designs which incorporate a decision-making framework. The decision making framework is referred to as the Observational Method.

The Observation Method relies upon approaching problems with an acceptable level of uncertainty. The ability to account for the uncertainty and to modify activities as predictable events occur in the field facilitate reduced sampling/analysis, design, and construction costs. The general approach to utilizing the Observational Method is:

- Gather existing information on general site conditions and set remedial goals and general responses

- Gather information and refine knowledge of general site conditions and nature and extent of contaminants

- Establish the most probable site conditions and reasonable deviations that could be encountered in the field during remediation

- Design the remedial action based on the most probable conditions and prepare contingency plans to account for anticipated reasonable deviations

- Select measurable quantities to observe during remediation to detect deviations during construction and operation

- In advance, select a course of action or design modification for each reasonable deviation

- Implement the remedial alternative measuring the selected parameters and instituting the contingency plans and design modifications as deviations occur

With an acceptable level of uncertainty it is possible to implement remedial actions that use real-time measurements to increase the level of certainty while addressing the problem actively. The Observational Method satisfies regulatory requirements because nature and extent are characterized during and after the implementation of remedial activities. The flexibility of this approach helps to accelerate site restoration, achieves regulatory requirements by design, and reduces overall costs with value added throughout the process.

3.8 RESTORATION ADVISORY BOARD (RAB)

The RAB was established by DUSD/ES to provide the local community access to the restoration decision making process. The purpose of the RAB is to:

- Act as a forum for discussion and exchange of information between agencies and the community

- Provide an opportunity for stakeholders to review progress and participate in dialogue with the decision makers

The RAB is comprised of DoD constituents, EPA and/or state representatives, and members of the local community. DoD ensures the members reflect diverse interest within the community. DoD has developed a coordinated, open process for nominating and selecting RAB members. This process is a cooperative effort with regulators and affected community members. The RAB is jointly chaired by the DoD constituents and a community representative. The community co-chair is selected by community members of the RAB.

4.0 IMPLEMENTATION OF STRATEGIC INITIATIVES

The implementation of the strategic initiatives and tools described in Section 3.0 is addressed in this section. Key aspects associated with the strategic plan include identification of presumptive remedies, development of an execution plan, initiating the execution plan on a trial basis for selected sites, and documenting proposed approaches as well as program results.

Presumptive remedies must be identified with candidate sites selected for future removal action implementation. Planning for future removal actions involves packaging of sites into workable groups as well as prioritization of sites to comply with RCRA permit requirements. Implementation of the execution plan on a trial basis at selected sites precedes full-scale program execution, providing opportunities for real-time evaluation of the program. Formalization of the execution plan and establishment of program goals facilitates team commitment to results and provides a basis for evaluating progress.

4.1 OVERVIEW OF PRESUMPTIVE REMEDIES

A fundamental component of the Strategic Plan is the use of presumptive remedies to achieve SACM objectives. To date, EPA has selected presumptive remedies for only a few types of sites. The types of sites most applicable to the Holloman AFB Strategic Plan are sites with volatile organic compounds (VOCs) in soils and municipal landfills. In order for Holloman AFB to use other presumptive remedies, EPA and NMED must concur on the remedy. To this end, the USAF is currently establishing patterns for remedy selection at bases across the country. Their efforts focus upon showing that particular technologies have been implemented successfully numerous times at similar sites. The use of performance data from technology implementation provides the basis for documenting success and soliciting concurrence from EPA and state regulatory agencies. As concurrence is obtained, an administrative record is created to document that a remedy works, is superior to other remedies under similar situations, and can be utilized presumptively at sites. The use of presumptive remedies is established by individual bases recognizing that permit and other EPA/state mandates must be satisfied.

The remainder of this section presents brief process descriptions of the applicable EPA presumptive remedies, ACC's innovative technologies, and descriptions of other remedies likely to be applicable to Holloman AFB sites. Because the only applicable groundwater restoration standard for the base applies to removal of free floating product, remedies considered focus on soil restoration to comply with the base-wide total petroleum hydrocarbon (TPH) standard for petroleum/oil/lubricant (POL) sites, removal of light non-aqueous phase liquids (LNAPL), reduction of risk with respect to occupational exposure, current and future land use scenarios, and stabilization of residual sources to prevent possible future releases to groundwater or surface water bodies.

4.1.1 Applicable Technologies

4.1.1.1 Presumptive Remedy for Contaminated Soils: Soil Vapor Extraction

EPA has selected three remedies for VOCs in soil: soil vapor extraction (SVE), thermal desorption, and incineration. SVE is the primary focus and is anticipated to be the most likely remedy at similar sites Holloman AFB.

SVE is generally an in situ process that physically removes contaminants from vadose zone soils. It can also be performed ex situ in biopile remediation systems. Vacuum is applied through extraction wells to create a pressure gradient that induces air flow through the soil matrix. The flowing air strips VOCs from the soil and carries them to extraction wells. Off-gas treatment may be required. Performance data have indicated that SVE effectively treats waste in place at a relatively low cost. It is appropriate for substances with relatively high vapor pressures, such as gasoline and solvents, but will not effectively remediate soils contaminated with low volatility substances such as oils or jet fuel. SVE is less effective in soils with low permeability, high moisture content, or high organic content.

4.1.1.2 Presumptive Remedy for Contaminated Soils: Municipal Landfill Containment

EPA has selected containment for municipal landfills as a presumptive remedy. This could include capping, source area groundwater control, leachate collection and treatment, and landfill gas collection and treatment. Institutional controls such as fencing/access controls are also included. Some landfills at Holloman AFB could be considered similar to municipal landfills because of the wastes that were disposed of historically. Capping is a potential technology that may be used at many of these landfills.

Subtitle D closure requirements will be used generally to govern response actions at municipal-type landfills. The final cap may consist of a variety of protective layers, including a vegetated soil layer, a drainage layer, a geomembrane liner, compacted clay, and a gas vent layer. RCRA Subtitle C closure requirements may be applicable if hazardous wastes are present in the landfill. A Subtitle C cap can be designed in a variety of ways, but a typical design would consist of vegetated soil layer, filter fabric, drainage layer, geomembrane liner, compacted clay or geosynthetic clay liner, and a gas vent layer, as appropriate.

Leachate collection, groundwater control, and gas venting/control are incorporated into presumptive remedies on a site-specific basis.

4.1.1.3 Presumptive Remedy for Contaminated Soils: Bioventing

Bioventing is a technology that has been demonstrated successfully at many USAF sites. It has been demonstrated to be an effective technology for treating non-halogenated volatile and semivolatile organic compounds, including jet fuel.

Bioventing involves delivering oxygen to contaminated vadose zone soils by forced air movement. Air is generally injected into the contaminated zone to stimulate aerobic, biological decomposition of contaminants. Air can also be induced into the contaminated soils by installing extraction wells around the area of contamination.

USAF has developed a technical protocol for field treatability testing of bioventing systems. This was developed for Air Force Center of Environmental Excellence (AFCEE) in its "Test Plan and Technical Protocol for a Field Treatability Test for Bioventing" (Miller et al., AFCEE, January 1992). The protocol was developed with EPA support based on research and USAF experience in installing and operating systems at numerous sites.

4.1.1.4 Presumptive Remedy for Contaminated Soils: Landfarming

Landfarming has been used in the petroleum refining industry as an effective means of treating waste petroleum sludges. It has been used at some ACC installations for treating POL-contaminated soils resulting from leaking underground storage tanks (USTs).

Landfarming involves spreading organic wastes over an area of land and periodically tilling the waste and soil to aerate the waste. Natural soil microorganisms (bacteria, fungi) degrade the organic compounds. Nutrient addition, pH control, and moisture control are sometimes incorporated to optimize the biological activity.

4.1.1.5 Presumptive Remedy for Contaminated Soils: Composting

Composting is an aboveground soil treatment technique that has proven to be cost-effective for soil treatment at federal facilities. It can be effective on most POL-contaminated soils.

Amended soil containing organic wastes is placed in large static piles or windrows and aerated to enhance microbial degradation and volatilization. Aeration can be either through vacuum extraction or air injection for a static pile or frequent turning for windrows. Soils and/or sludges are normally amended with a bulking agent (e.g., wood chips) to increase porosity and facilitate gas exchange and mixing. Other organic amendments (e.g., manure), nutrients, and microbial inocula are often added to accelerate and optimize the process. Moisture and temperature must be monitored and controlled. Composting is advantageous to landfarming when space limitations are a factor.

4.1.1.6 Presumptive Remedy for Contaminated Groundwater: Pump and Treat

There will be a variety of preferred treatment technologies. Hydraulic containment of plumes rather than total groundwater cleanup will be the focus of this remedy at Holloman AFB because the underlying aquifer is not a suitable potable water source.

4.1.1.7 Presumptive Remedy for Groundwater: Air Sparging

This is a relatively new technology for groundwater remediation that is somewhat analogous to bioventing in soils. It has been tested on USAF installations and can be appropriate for VOCs and some semivolatile compounds under the proper hydrogeologic conditions. It can be both a physical process (in situ air stripping) and a biological process. The latter is sometimes called bio-sparging.

Air is injected into wells in the saturated zone. For stripping, injection wells are installed in a row near the downgradient edge of a VOC plume and air is injected at a high rate to strip the VOCs out of the groundwater and into the vadose zone. The vapors either migrate to the surface or are biodegraded in place. It is sometimes combined with SVE. For bio-sparging, wells are installed within the plume and air is injected at a low rate so that the dissolved oxygen content of the groundwater is increased without stripping significant quantities of VOCs. Aerobic microbial activity in the groundwater degrades both VOCs and semivolatile compounds.

4.1.1.8 Protocols for Innovative Technologies

ACC is pursuing an initiative to develop innovative remediation technologies in conjunction with AFCEE. The purpose is to reduce the overall cost of site restoration, particularly through alternative solutions to expensive, inefficient pump and treat systems.

Protocols are being developed for two technologies: intrinsic remediation (natural attenuation) and bioslurping. The Technical Protocol for data collection and modeling in support of intrinsic remediation for dissolved-phase fuel contamination in groundwater has been developed by AFCEE in cooperation with EPA. Also, a field test and evaluation of a bioslurping pilot system is being developed. Bioslurping is a vacuum-assisted LNAPL free product recovery and bioremediation technology. It combines vacuum extraction to physically remove LNAPL with bioventing to enhance biodegradation of residual contaminants.

4.1.2 Site-Specific Assessment of Presumptive Remedies

Table 4-1 summaries potential presumptive remedies for sites at Holloman AFB that may require remedial action. The presumptive remedies suggested are either based on known site conditions or site conditions anticipated at sites where no investigation has been implemented.

Some sites are candidates for use of more than one presumptive remedy. During base-wide removal action planning, site selection criteria will be established. These criteria will be applied to individual sites during the preparation of site-specific removal action plans to determine the most applicable remedy for a given site.

Table 4-1

Potential Presumptive Remedies for Holloman Air Force Base Sites

IRP		Soil Contaminants		Groundwater Sources		Soil Presumptive Remedies					Groundwater Presumptive Remedies		
Site ID #	HSWA SWMU No.	Primary	Secondary	LNAPL	DNAPL	SVE	Containment	Biovent	Landfarm	Composting	Bioslurping	Pump/Treat	Air Sparging
LF-01	106	Landfill				No Further Action							
SS-02	AOC-T	TRPH & BTEX				X							
SS-05	AOC-T	TRPH & BTEX				X							
SS-06	NA	TRPH & BTEX		X		X		X	X	X	X		
SD-08	82	Pesticides and Metals					X						
OT-14	197	Pesticides					X						
OT-11	107	TRPH	PCBs						X	X			
SD-15	NA	Metals					X						
OT-16	132/118/AOC-A	TRPH	PCBs and Pesticides			Recommending No Further Action							
SS-17	NA	TRPH & BTEX		X		X							
OT-24	134	TRPH & BTEX				Recommending No Further Action							
SD-27	NA	TRPH & BTEX						X	X	X			
LF-29	104	Landfill	Ordnance				X						
FT-31	170/171/135/39/127	TRPH & BTEX	Solvents	X	X	X		X	X	X	X		
SS-39	165/177/178	Metals and Solvents				Recommending No Further Action							
OT-43	AOC-G	TRPH	PCBs						X	X			
OT-44	AOC-P	TRPH & BTEX		X		X		X	X	X			
OT-45	NA	TRPH & BTEX		X		X		X	X	X			
WP-49	NA	Pesticides and Metals	PCBs and Sulfide				X						
SS-57	AOC-V	TRPH & BTEX				X							
LF-58	231	Landfill/Unconventional Fuels					X						
SS-59	NA	TRPH & BTEX		X		X		X	X	X	X		
SS-60	NA	TRPH & BTEX		X		X		X	X	X	X		
	Table 2												
	123	TRPH & BTEX						X	X	X			
	36	TRPH & BTEX						X	X	X			
	138	TRPH & BTEX						X	X	X			
	136	TRPH & BTEX						X	X	X			
	129	TRPH & BTEX						X	X	X			
	183	Sewer System		X	X	X		X	X	X	X		
	Table 3												
	3	TRPH & BTEX						X	X	X			
	4	TRPH & BTEX						X	X	X			
	6	TRPH & BTEX						X	X	X			
	10	TRPH & BTEX						X	X	X			
	18	TRPH & BTEX						X	X	X			
	1	TRPH & BTEX						X	X	X			
	5	TRPH & BTEX						X	X	X			
	6	TRPH & BTEX						X	X	X			
	7	TRPH & BTEX						X	X	X			
	8	TRPH & BTEX						X	X	X			
	9	TRPH & BTEX						X	X	X			
	11	TRPH & BTEX						X	X	X			
	12	TRPH & BTEX						X	X	X			
	13	TRPH & BTEX						X	X	X			
	14	TRPH & BTEX						X	X	X			
	16	TRPH & BTEX						X	X	X			
	19	TRPH & BTEX						X	X	X			
	20	TRPH & BTEX						X	X	X			
	23	TRPH & BTEX						X	X	X			
	24	TRPH & BTEX						X	X	X			
	25	TRPH & BTEX						X	X	X			
	26	TRPH & BTEX						X	X	X			
	27	TRPH & BTEX						X	X	X			
	28	TRPH & BTEX						X	X	X			
	29	TRPH & BTEX						X	X	X			
	30	TRPH & BTEX						X	X	X			
	31	TRPH & BTEX						X	X	X			
	33	TRPH & BTEX						X	X	X			
	34	TRPH & BTEX						X	X	X			
	35	TRPH & BTEX						X	X	X			
	37	TRPH & BTEX						X	X	X			
	38	TRPH & BTEX						X	X	X			
	41	TRPH & BTEX						X	X	X			
	229	TRPH & BTEX		X		X		X	X	X	X		
	230	TRPH & BTEX		X		X		X	X	X	X		

4.1.3 Risk Assessment

Traditionally, Holloman AFB has used risk assessment in all stages of the IRP. Although extremely conservative baseline risk assessments have been performed to evaluate residential land use, EPA, NMED, and the base recognize that the assumptions used for this exercise are unrealistic given the remote location of Holloman AFB, the quality of groundwater at the base (non-potable), and the four proposed future land uses at the facility. The baseline assessments are primarily used to fulfill regulatory requirements and to have a point of reference for residential exposure.

This section explores in greater detail the role of risk assessments as they relate to presumptive remedies and the implementation of the strategic plan.

4.1.3.1 Site Cleanup Levels

As stated in Section 3.2, RNSI principles have been utilized in past risk assessments and accepted by the regulatory agencies for use at Holloman AFB sites. Within the context of the strategic plan, Holloman AFB intends to prepare risk assessments at areas of concern systematically as a means of obtaining closure at sites. Site closure will not be achieved until risk-based, technology-based, or NMED-mandated cleanup levels are obtained.

Cleanup levels for contaminants of concern will be developed for selected sites using residential, open space, commercial, and industrial land use models prescribed within the RNSI approach. The most probable future land use cleanup level will applied to each site. Holloman AFB frequently updates the status of future land use at the base; however, the majority of sites at the base have clearly defined future land uses. In instances where future land use cannot be determined, Holloman AFB may select a somewhat conservative risk-based cleanup level to broaden the applicability of a site for future uses.

At sites where RNSI target numbers cannot be achieved technically or cost-effectively, technology-based cleanup targets will be proposed. Holloman AFB will coordinate with EPA and NMED when establishing technology-based cleanup levels. Coordination will commence during the preparation of a base-wide removal action plan for a particular presumptive remedy and continue through site-specific planning until an achievable cleanup level is agreed upon.

Adequate documentation, particularly related to compliance with pending groundwater abatement regulations (NMED Ground Water Protection and Remediation Bureau, June 1994), will be provided to NMED when risk-based cleanup standards that are less stringent than existing base-wide standards are proposed.

4.1.3.2 Streamlined Risk Evaluation

EPA promotes the use of streamlined risk assessments to facilitate presumptive remedy selection and implementation of early actions. When selecting a presumptive remedy, a "risk evaluation that identifies only contaminants of concern in the affected media, contaminant concentrations, and the toxicity associated with the chemical can be sufficient to justify taking an action" (EPA, Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA, August 1993). In the limited situations where base-wide cleanup levels have not been agreed upon with NMED and risk- or technology-based cleanup levels have not yet been developed, Holloman AFB will utilize streamlined risk evaluation as a means of accelerating site cleanup and reduction of risk. The streamlined risk assessment will not serve as a substitute for RNSI- or technology-based cleanup levels; rather, streamlining will allow the strategic program to move forward according to front-end planning and help reduce risks to human health and the environment. Achieving acceptable cleanup levels and obtaining regulatory concurrence will precede site closure for all sites.

4.2 REMOVAL ACTION PLANNING

Removal action planning transforms the current base strategic plan into a working program execution plan. Individual sites are grouped together in packages and evaluated for applicability in light of available presumptive remedies. As sites are packaged, the best means of executing removal actions is formulated considering implementability issues and the relative degree of risk posed by sites. The degree of risk is an important factor that will dictate the order in which sites are addressed because the base RCRA HSWA permit prioritizes the cleanup of high risk sites. Approaching the execution of removal actions in this manner ensures permit compliance and a smooth transition from the traditional means of achieving site closure to the preferred approach embraced by SACM.

4.2.1 Project Packaging

Holloman AFB sites have been conceptually evaluated for candidacy utilizing the presumptive remedies presented in Section 4.1. Prior to the preparation of base-wide removal action plans for each presumptive technology, sites will packaged according to the applicability of the technology to the site after additional evaluation. Sites may be considered candidates for more than one presumptive remedy after this evaluation phase. The final selection of a preferred presumptive technology will occur after the application of technology screening criteria to each site. Screening criteria will be formalized within each base-wide removal action plan.

Packaging will also consider economies of scale when implementing future project activities. Economies of scale are proposed for the following types of work to be performed at the base:

- Grouping of all sites requiring soil vapor surveys/hydropunch/drilling. Where feasible, work will be performed in one mobilization with a single subcontractor.

- Preparing concurrent remedial designs for multiple sites, considering the use of skid-mounted and pre-designed equipment as well as boilerplates for standard drawing and design details.

- Simultaneously performing removal actions at multiple sites to reduce mobilizations and equipment costs while working with a trained labor pool that is familiar with site operations.

- Scheduling long-term monitoring sites such that monitoring of sites is conducted in one mobilization biannually, rather than multiple mobilizations each year.

- Scheduling and performing operation and maintenance of multiple systems in a single mobilization to the base, to reduce the costs of travel, per diem, and equipment rental.

4.2.1.1 Corrective Action Management Units

CAMUs may be utilized if ex situ treatment units are required for multiple sites at the base. The use of CAMUs will be compared with the economics and permitting associated with performing removal actions at each site. If a CAMU is deemed appropriate for an ex situ remedy such as landfarming, candidate sites will be packaged accordingly and presented for consideration within a base-wide removal action plan.

4.2.1.2 Pilot Studies

Pilot studies will provide indications of likely success for the use of presumptive technologies at candidate sites. Pilot study results for SVE and bioventing will be evaluated as part of site packaging for these technologies. The similarities of contaminants at candidate sites for both technologies require field-generated information to discriminate between the potential applicability of the technologies. Additional screening criteria presented in base-wide removal action plans will further assist in the evaluation and selection of the most appropriate remedy for given sites.

4.2.2 Prioritization of Sites

Prioritization of sites is performed concurrently with site packaging. Site prioritization considers the implementability of remedies at the base with particular emphasis on achieving success with proven technologies early in the execution of the program. The relative risk of sites, particularly as risk relates to existing RCRA permit requirements, is also a key factor in the scheduling of removal action activities at sites. Achieving success with proven technology must be balanced with the need to address high risk sites when prioritizing presumptive remedies for sites.

4.2.2.1 Implementability

Presumptive remedies can be designed, installed, operated, and monitored at different sites with varying degrees of difficulty. From an engineering/construction perspective, it is desirable to address sites in order of increasing complexity. The lessons learned from tackling problems encountered at relatively simple sites can be applied to more complex sites with savings in both cost and schedule.

By considering implementability factors at the base, sites will be prioritized to gain familiarity with site-related obstacles without sacrificing the progress of the removal action program. Site complexity factors will be balanced against site risks to determine the most prudent means of prioritizing sites.

4.2.2.2 Degree of Risk

Environmental restoration activities at Holloman AFB have been driven by the RCRA HSWA permit. The permit established the priority that sites received attention according to potential risks. As the focus of the restoration activities shifts from defining nature and extent of contamination to implementation of early actions, the degree of risk posed by sites will be re-evaluated in order to determine the relative risks posed by sites which will ensure compliance with the intent of the RCRA permit.

The prioritization of sites for early action will consider site risks as indicated by recent available data. Depending upon the nature of risks as determined by data evaluation and assessment, it may be necessary to modify previous assumptions regarding the relative risks posed by sites. These modifications will be substantiated by sound technical judgment and will not be recommended as a means of conveniently accelerating the removal action program.

4.3 BASE-WIDE INITIATIVE

The execution of Holloman AFB's base-wide removal action initiative will be accomplished in a phased manner. Initially, pilot projects will be implemented at selected sites to familiarize the project team with operant and administrative issues that will be encountered throughout the life of the removal action program. After the pilot projects are completed and the project team is comfortable with removal action management and administration, full-scale implementation of the base-wide initiative will commence and removal action planning/execution will ensue for all potential presumptive remedies.

4.3.1 Pilot Projects

Pilot projects will be selected to familiarize the project team with the mechanisms of the base-wide initiative. Key issues to be considered when selecting representative projects are the applicability of presumptive technologies to sites at the base, the complexity of implementing the chosen remedy, and the ability to gain experience in the administration of the base-wide initiative

without being hindered by technical issues. As the pilot program is executed, it will be evaluated by the project team to streamline the eventual full-scale implementation of the base-wide initiative.

4.3.1.1 Selection of Presumptive Remedies

The success of the base-wide initiative to execute removal actions requires efficient utilization of resources during every phase of every removal action project. As with any new venture, a learning curve must be experienced in order to achieve the most gains from the project team. To this end, it is advantageous to initiate the removal action program with a focus on remedies that are demonstrated as being very effective and are relatively simple to implement. SVE and bioventing are two examples of remedies that satisfy these criteria.

As depicted in Figure 4-1, both SVE and bioventing have potential wide-spread use at Holloman AFB. Both remedies are relatively "low-tech" and can be designed and installed at sites quickly and inexpensively. By placing the initial focus of the removal action program on SVE and bioventing sites, the project team will have an opportunity to proceed along the learning curve and settle programmatic and coordination issues without being hindered by the complexities posed by sites or remedial systems. After the project team becomes comfortable with the mechanisms of executing the base-wide removal action initiative, other remedies will be pursued. If a high risk site must be addressed early in the program and the risks posed by the site cannot be mitigated utilizing either of these "low-tech" approaches, an exception will have to be made in order to comply with permit requirements.

4.3.1.2 Pilot Program Evaluation

As part of scheduled project meetings, project team members will review the progress of the removal action pilot program. Discussions will focus on team members' expectations, coordination issues, regulatory compliance, resource management, and continuous process improvement. Frequent and open communications will serve to identify and resolve concerning issues before they become unmanageable and hinder progress.

4.3.2 Full-Scale Implementation

After site closure is obtained for selected pilot program sites, full-scale implementation of the base-wide removal action initiative will commence. Base-wide removal action plans will be prepared for the gamut of potentially applicable presumptive remedies. Plan preparation will be phased to best utilize project team resources.

The phasing of the full-scale base-wide removal action initiative will consider the status of on-going projects in light of planned work. Removal action plans and designs will be submitted to EPA and NMED in manageable packages to assist the agencies with their efforts in reviewing project deliverables and executing action memoranda. Experience gained from the pilot program will be put into action during full-scale implementation as follows:

- Project team members working on removal action plans will proceed immediately into

detailed design after submittal of plans to EPA and NMED. With expectations established during the pilot program, design activities will be able to proceed and submittals that address agency requirements will be produced.

- Standard designs and equipment packages will be developed during the pilot program with the intent of gaining regulatory concurrence for later efforts. After designs are completed during the full-scale phase of the program, construction procurement will commence and every effort will be made to expedite field implementation. Again, the familiarity gained during the pilot program will build trust between project team members and facilitate a smooth transition between planning, design, and construction phases without hindering progress and maintaining compliance with applicable requirements.

4.4 EXECUTION PLAN

The steps needed to make the transition from the strategic plan to full-scale implementation of the removal action program will be formalized in an execution plan. The plan will address the use of existing and planned contracting mechanisms, regulatory agency concurrence, and community involvement. The methods for evaluating progress throughout the life of the program will be included within the execution plan as well.

4.4.1 Formalization of Strategic Initiatives

Project team concurrence with the execution of the strategic plan is tantamount to the ultimate success of the environmental restoration program at Holloman AFB. To this end, the execution plan will formalize the roles of each active participant in the program and define how the various parties involved with removal action activities will interact with each other. Coordination between the TERC team and the community will be addressed.

4.4.1.1 Use of TERC Resources

Holloman AFB, the USACE, the regulatory agencies, and the TERC contracting team will be the driving force behind the execution of strategic initiatives. Program goals for removal actions will be established for the team. Experience gained towards achieving removal action goals will be applied to improve performance. Performance will be measured periodically to assess overall progress.

The efficient coordination and use of TERC resources will be key factors in the ultimate success of the base-wide initiative. Essential elements of the execution plan related to the TERC team will include:

- Establishing teams to prepare site-specific removal action plans and subsequent detailed designs for presumptive remedies. Maintaining continuity from the early stages of planning through design and construction will instill feedback into all phases of work. Team members will be motivated to work efficiently during each phase because they will be targeting and working towards site closure on a continuing basis.

- Utilizing flexible contracting mechanisms to expedite procurement and subsequent construction efforts. By developing a pool of prequalified contractors and vendors, procurement can be expedited and site closure goals can be achieved sooner.

- Improving processes and adding value to work efforts. Project team members will have the responsibility of assessing their roles on the program and determining how best to accomplish project goals. As project requirements change, planned activities will have to demonstrate value added to the program before they can be approved and implemented.

4.4.1.2 Regulatory Agency Commitment

The execution plan will address the need to obtain regulatory commitment to planned program activities from the outset. To this end, EPA and NMED expectations will be defined and addressed. Furthermore, the ability of the agencies to respond to submittals, including plans for review or permit applications, will be incorporated into the execution plan.

Regulatory agency expectations will be defined for:

- Technical content of submittals
- Timing for submittal and review of plans, designs, reports, and permit applications
- Responsibilities of project team members and the definition of authority when deviations to planned activities occur
- Issuance of action memoranda and site closure certifications
- Other issues as deemed appropriate

4.4.1.3 Community Involvement

The NCP requires a number community involvement efforts prior to and during the implementation of removal actions. The concerns of the community will be incorporated within the execution plan along with the means by which requirements will be achieved. The RAB will factor heavily into community relations and involvement efforts.

4.4.2 Program Execution and Evaluation

As with the pilot program, project team members will review the progress of the base-wide removal action program. Fulfilling expectations, managing effectively, complying with regulations, and instilling quality into work efforts will be issues addresses on a regular basis.