01-030

HSWA LANL 3/1082/16 TA16

ENVIRONMENTAL RESTORATION PROJECT

Los Alamos National Laboratory/University of California
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U.S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-7203/FAX (505) 665-4504

Date: December 20, 2001
Refer to: ER2001-1048

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

2001 RECEIVED

SUBJECT: SUBMITTAL OF CLASS 1 CLOSURE PLAN MODIFICATION FOR MDA-P

Dear Mr. Young:

The purpose of this letter is to submit a Class 1 modification of the previously approved Closure Plan for MDA-P. This modification responds to the Hazardous Waste Bureau's request that the Closure Plan be amended to include an updated waste volume and schedule change.

This modification is being submitted pursuant to Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1, Section 600 [40 CFR 265.112(c)(4)] within 60 days of the verbal request from HWB (October 29, 2001). LANL recognizes that MDA-P is included in Module VIII of our Hazardous Waste Facility Permit as a Solid Waste Management Unit (potential release site 16-018). Once MDA-P meets the closure performance standards and closure certification is complete, a Class III permit modification will be submitted to remove PRS 16-018 from the permit.

Enclosed please find two hard copies and one disk copy in Microsoft Word, which includes a redline strikeout version for ease of review. The replacement pages for the MDA-P Closure Plan Modification correct typographical errors from the previous modification, change the closure schedule, and includes a change in the estimated

6328

volume of waste to be generated as part of closure. If you have any questions regarding this matter, please call Dave McInroy at (505) 667-0819 or Mat Johansen at (505) 665-5046.

Sincerely,

Julie A. Canepa

Julie A. Canepa, Program Manager
Environmental Restoration Project
Los Alamos National Laboratory

Sincerely,

Gene Turner
FOR

Mat Johansen, Project Manager
Department of Energy
Los Alamos Area Office

JC/MJ/nr

Enclosures: Certification
Closure Plan Amendment, MDA-P Replacement Pages

Cy (w/enc)
K. Bostick, EES-15, MS M992
B. Criswell, Roy F Weston, MS M992
S. Den-Baars, The IT Group, MS K490
J. Ellvinger, ESH-19, MS K490
R. Romero, ESH-19, MS K490
S. Veenis, ESH-18, MS M992
E. Louderbough, LC-GL, MS A187
D. Neleigh, US EPA (2 copies)
N. Riebe, E/ER, MS M992
W. Woodworth, DOE/LAAO, MS A316
M. Johansen, LAAO, MS A316
D. Hickmott, EES-1, MS D462
B. Osheim, LAAO, MS A316
J. Davis, NMED-HWB
G. Saums, NMED-SWQB
S. Yanicak, NMED-DOE OB, MS J993
RPF, MS M707

Cy (w/o enc):
J. Canepa, E/ER, MS M992
J. Bearzi, NMED-HWB
W. Neff, E/ER, MS M992
D. McInroy, E/ER, MS M992
J. Parker, NMED-OB
M. Kirsch, E/ER, M992
IM-5, MS A150
E/ER File, MS M992

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Document Title: *"Closure Plan Amendment MDA-P Replacement Pages"*

Name: Julie A. Canepa Date: 12/20/01

Julie A. Canepa, Program Manager
Los Alamos National Laboratory
Environmental Restoration Project

or

Michael P. Baker, Acting Division Director
Los Alamos National Laboratory
Environmental Science & Waste Technology

Name: Gene Turner Date: 12/20/01

FOR Mat Johansen, Project Manager
Environmental Restoration Program
DOE-Los Alamos Area Office

or

Joseph Vozella, Assistant Area Manager
of Environmental Projects
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

CLOSURE PLAN AMENDMENT
MDA P REPLACEMENT PAGES

accordance with EPA guidance (EPA, 1991a). Appendix C contains photographs of the waste pile and run-on control trench. Appendix D describes vadose-zone observations from 1998 at MDA-P. Appendix E provides historical records associated with TA-16 and MDA-P. Appendix F describes the composition of explosives produced at the Laboratory. Appendix G describes sampling procedures for MDA-P closure. Appendix H presents an evaluation of the 20 NMAC 4.1 Section 261, Appendix VIII (Appendix VIII) hazardous constituents for selection of analytical methods. Appendix I provides site-specific standard operating procedures. Appendix J describes the site geology and hydrology at TA-16, Area P

Compliance with specific regulatory requirements for closure are addressed in Chapter 6.0. The 20 NMAC 4.1 have incorporated, with a few minor exceptions, the Code of Federal Regulations (CFR) Title 40, Parts 260 to 266 and 268 to 270 through July 1, 1993. Most regulatory citations in this closure will, therefore, be referenced to 20 NMAC 4.1. Table 1-1 lists the regulations applicable for closure of waste piles and identifies which sections of Chapter 6.0 address compliance with these regulations.

1.1 Closure Strategy

In the past, the disposal site at Area P was referred to as a landfill. However, RCRA regulations do not explicitly provide a clean-closure option for landfills. The U.S. Environmental Protection Agency (EPA) has addressed this problem by issuing guidance that allows a landfill, if clean closed under 40 CFR 265 standards, to make an equivalency demonstration under 40 CFR Section 270.1(c)(5),(6), by redefining the landfill as a waste pile (Lowrance 1989). Therefore, to clean close this unit and make an equivalency demonstration as described above, the Laboratory is referring to the MDA-P landfill as the MDA-P waste pile.

1.1.1 MDA-P and Nearby Potential Contaminated Sites

MDA-P is shown in Figure 1-1 (see map in pocket at the end of this chapter), which shows the area directly influenced by waste disposal activities and any possible subsequent contamination. The waste and contamination located within this area is specifically subject to the requirements outlined in this Closure Plan. Four other potentially contaminated areas are located in the vicinity of MDA-P; these areas (or sites) are PRSs 16-006(e), 16-010(a), 16-016(c) and 16-010(b). These PRSs are also depicted on Figure 1-1. Descriptions as well as regulatory status of these PRSs are briefly outlined below:

1.1.3 Technical Approach

To achieve closure, the entire waste pile, including hazardous and nonhazardous waste and soil, will be removed. Approximately 60,000 cubic yards (yd^3) of debris and contaminated media will be excavated. The primary decontamination technique will be steam cleaning. The waste contained within the pile is very heterogeneous; most of it appears to be structural steel and miscellaneous debris, which cannot be easily sampled or characterized because of the impracticality of drilling through the material and the physical size of the material. Chapter 3.0 of this plan describes what is known about the waste pile, both from process knowledge and from the limited number of samples that have been taken to characterize the waste pile.

During closure, the waste will be characterized during excavation as sections of the pile are removed. For safety reasons, the debris will be decontaminated using steam and hot water to remove potential high explosives (HE) contamination. If the HE materials cannot be effectively removed from the debris, the debris will be flashed at the TA-16 open burn pad. If a significant amount of debris is generated beyond the estimates of this plan, alternate waste treatment methods will be explored. After decontamination and/or flashing, most of the debris is expected to be designated as nonhazardous.

All debris will be steam cleaned prior to off-site management. Steam cleaning meets the alternative treatment standard for hazardous debris; thus, visual inspection will be used to verify that hazardous debris is no longer considered contaminated.

Soil, decontamination wastes (i.e., liquids and sludges), or free liquids (i.e., those liquids found in pockets or containers within the waste pile) that contain HE materials or exceed the regulatory levels for toxicity characteristic (TC) metals (e.g., barium, chromium, lead) may be treated onsite or offsite at a permitted facility. On-site treatment of this waste may include stabilization on a batch basis for metals, such as barium, chromium, or lead. The batches of material will be approximately 100 yd^3. Treatment that may be conducted onsite will occur inside tanks meeting the requirements of 20 NMAC 4.1, Sections 264.192 through 264.199. This treatment will occur

4.1.2 Sampling to Establish Baseline

Before any waste is removed, baseline levels will be established for the soil at the top of the mesa in the approximate location of the closure waste handling/management areas (e.g., staging, decontamination, treatment, storage, and loading areas). Baseline levels will be established by collecting 10 samples from locations distributed over the waste handling/management area. Baseline levels will reflect the possible presence of contaminants derived from nearby Laboratory operations that are not related to MDA-P. Baseline concentrations are represented by the 95% UTL calculated from concentrations of Appendix VIII hazardous constituents and radioactive constituents measured in soil from these areas.

Following the completion of all waste removal operations and final equipment decontamination, the areas on top of the mesa will be resampled and the sampling data compared with baseline UTLs concentrations to determine if any releases occurred during the waste removal operations.

4.1.3 Sampling of the Waste Pile

During waste removal operations, the waste pile will be sampled for potential contaminants to characterize the waste for selection of treatment and disposal options. The material to be sampled includes excavated soil and tuff, as well as debris within the waste pile. Before excavation, this material will be visually inspected and spot-tested for HE to ensure safe handling.

4.1.3.1 Soil and Tuff

One composite sample will be taken from each 100 yd^3 of waste soil and tuff. Based on the estimated volume of the waste-pile and contaminated media (60,000 yd^3), a total of approximately 500 composite samples will be collected. Composite sampling will provide data on the average concentration of contaminants required for selecting treatment and disposal options.

Each composite sample will consist of grab samples collected from 3 to 10 locations within the 100 yd^3 of soil and tuff. A larger number of grab samples could result in excessive dilution of contaminant concentrations. Sufficient volume will be collected for each grab sample to ensure adequate composite sample volume for the prescribed analyses. The composite samples will

Table 4-2 Summary of Samples and Analyses

Analysis (EPA SW-846 Method except where otherwise noted)	Metals 6020[a] 1311[a]	Volatile Organics 8240A[b]	Semi-volatile Organics 3520A, 3540A/ 8270A[c]	Reactive Cyanide/ Sulfide 9010A, 9030A[d,k]	Total Cyanide 9011/ 9010A 9012A[e]	High Explosives 8330	Gamma Spectro-scopy	Gross Alpha 9310[f]	Gross Beta 9310[f]	Asbestos NIOSH Method 7400[g]	Organo-chlorine Pesticides and PCBs 8080A[g,h]	Chlorinated Herbicides 8150B[g,h]	pH 9020	Dioxin 8280[g]
Phase 1 Number of Samples														
Background Soil and Tuff[i]	20	0	20	0	0	0	20	20	20	0	0	0	0	0
Baseline Soil (Staging Area)	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Waste Pile Soil/Tuff	500	500	500	125	0	500	500	500	500	500	125	125	125	125
Duplicate[j]	25	25	25	7	0	25	25	25	25	25	7	7	7	7
Rinsate Blank[k]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Matrix Spike[l]	25	25	25	7	0	25	25	25	25	25	7	7	7	7
Total Samples, Phase 1	580	560	580	149	10	560	580	580	580	560	149	149	149	149
Phase 2 Number of Samples[m]														
Soil/Tuff	317	11	319	2	2	319	2	2	2	2	2	2	2	2
Post-closure Baseline Soil (Staging Area)	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Duplicate[j]	30	1	30	0	0	30	0	0	0	0	0	0	0	0
Rinsate Blank[k]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Matrix Spike[l]	16	0	16	0	0	16	0	0	0	0	0	0	0	0
Total Samples, Phase 2	371	20	373	10	10	373	10	10	10	10	10	10	10	10

[a] Method 3005A and 3050A is digestion for water and soil, 6020 is the analytical method for most total metals. Method 7740 is the analytical method for total selenium. Methods 7470 and 7471 are the analytical methods for total mercury. Other methods may also be used (Method 6010A and 7000A series methods) as described in Section 4.6.1. Method 1311 is the TCLP method.

[b] Method 8260 may be substituted for 8240A.

[c] Method 3520A and 3540A are extraction methods for water and soil, 8270A is the analytical method.

[d] Determination of reactive cyanide is described is SW-846, Chapter 7, Section 7.3.3. This determination includes portions of Method 9010A. Determination of reactive sulfide is described in Section 7.3.4. This determination includes portions of Method 9030A.

[e] Method 9011 is digestion of soil for cyanide analyses. Methods 9010A and 9012A are the analytical methods for cyanide.

[f] Method 9310 is for water samples. Soil samples will be measured using calibrated field instruments.

[g] Analyses for asbestos, organochlorine pesticides and PCB, dioxin, and chlorinated herbicides will be performed in Phase 2 only if they are detected in the Phase 1 sampling.

[h] For soil/tuff samples will be taken from every fourth 100 cubic yard batch of waste that is to be deposited.

[i] The number of background samples will be identified in the Background Sampling Plan that will be submitted separately.

[j] Duplicates will be collected at a frequency of one per 20 soil or tuff samples for Phase 1, and one per 10 water samples. As required by the New Mexico Environment Department, duplicates were collected at a frequency of one per 10 soil or tuff samples during Phase 2.

[k] Equipment rinsate blanks will be collected at a frequency of one per 20 soil or tuff samples, and one per 10 water samples.

[l] Matrix spike samples will be collected at a frequency of one per sample delivery group per matrix, with a maximum of 20 samples per delivery group.

[m] The number of samples is estimated based on the number of sample grids within the proposed waste pile project boundary. After the waste pile boundary is surveyed, the number of grids will be totaled and the number of samples will be changed if necessary.

For this project, an extension of the 90-day and 180-day closure time frames will be necessary. Removal of wastes and completion of closure activities as described in Sections 6.2.4, 6.2.5, and 6.2.6 will extend until the end of October 2002. This extended time frame is necessary because the Laboratory was unable to meet the original project schedule for waste removal due to safe operating practices at the site having to be re-evaluated when detonable pieces of HE were observed during excavation. The extended time frame is also necessary because of the following factors:

- the Cerro Grande fire delayed completion of excavation;
- the Phase II Sampling and Analysis Plan was submitted in August 1999 and verbally approved on May 30, 2001; and
- during Phase II sampling, contamination was found and excavated from a small drainage on the eastern edge of the site. Significant analytical backlogs at the off-site analytical laboratories have delayed completion of this analysis.

For these reasons, the Laboratory requests that NMED approve the extended project schedule until October 2002 for final closure. The anticipated closure schedule is presented in Section 6.2.7.

6.1.2.2 Time Frame for Demonstrations or Extensions (20 NMAC 4.1, Section 265.113[c])

As indicated in Figure 6-2, removal of wastes and completion of closure activities will need to be extended until October 2002. If completion of final closure activities will take longer than the end of October 2002 the Laboratory will submit a closure plan amendment in accordance with 265.112(c).

6.1.3 Disposal or Decontamination of Equipment, Structures, Debris and Soils (20 NMAC 4.1, Section 265.114)

During the final closure period, all equipment, structures, debris, and soil that is contaminated above acceptable levels must be properly disposed of or decontaminated. Contaminated equipment will be decontaminated in accordance with the procedures described in Section 6.3.1. Contaminated structures and soils will be identified, decontaminated, removed, and disposed of in accordance with the procedures described in Sections 6.2.4, 6.2.5, and 6.2.6. Section 6.3.2 describes how wastes generated during closure will be managed. Section 6.3.3 describes the criteria used to determine when decontamination and closure activities have met the closure performance standard. Section 6.3.4 describes the specific sampling and analysis procedures to be used to verify that all materials remaining onsite after closure meet the closure performance standard.

ID	Task Name	Duration	Start	Finish
1	Submit Closure Plan	0 days	Mon 2/6/95	Mon 2/6/95
2	Closure Plan Approved	0 days	Thu 2/20/97	Thu 2/20/97
3	Permit Modifications	90 days	Fri 5/7/99	Thu 9/9/99
4	Begin Operations	0 days	Mon 5/13/96	Mon 5/13/96
5	Preliminary Construction	665 days	Mon 5/13/96	Fri 11/27/98
6	Procure Equipment & Subcontractors	348 days	Mon 6/3/96	Wed 10/1/97
7	Readiness Review	1 day	Wed 10/29/97	Wed 10/29/97
8	Excavate, Decontaminate & Sample	888 days	Wed 11/5/97	Fri 3/30/01
9	Waste Treatment (as needed)	294 days	Thu 7/1/99	Tue 8/15/00
10	Phase 2 Sampling	106 days	Tue 6/19/01	Tue 11/13/01
11	East Drainage Remediation	6 days	Thu 9/13/01	Thu 9/20/01
12	Waste Disposal	810 days	Mon 12/21/98	Fri 1/25/02
13	Final Closure Report	214 days	Mon 1/7/02	Thu 10/31/02
14	Reseed/Replant Vegetation	134 days	Tue 10/1/02	Fri 4/4/03

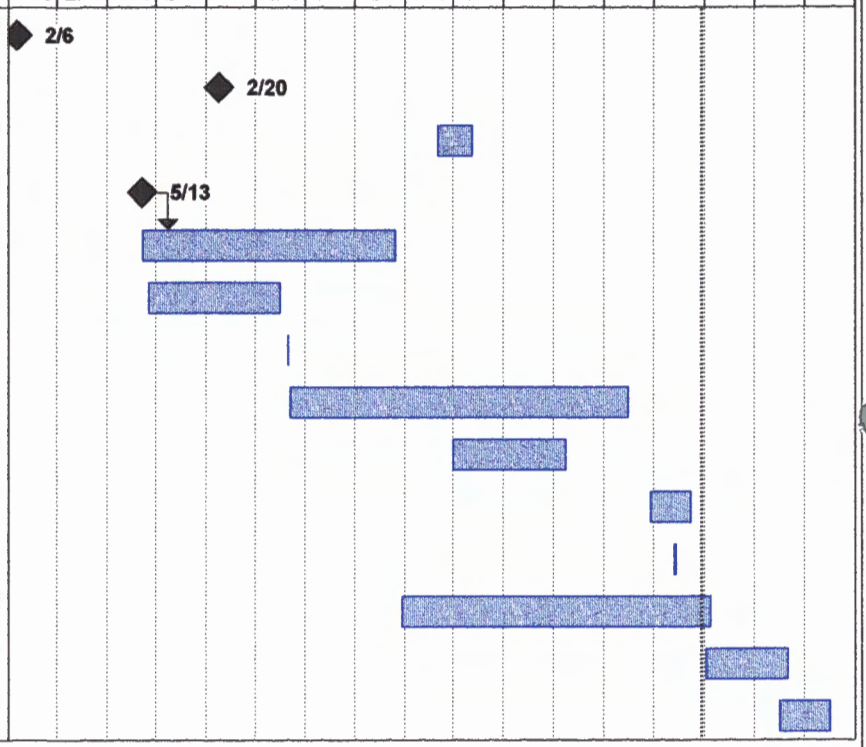

Figure 6-2:
ESTIMATED PROJECT SCHEDULE
Date: December 2001

Task
Split
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Split
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary

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a landfill as required by 20 NMAC 4.1, Section 265.258(b), and an amended closure/postclosure plan will be prepared and submitted to the NMED.

6.2.2 Identification of Maximum Extent of Operation [20 NMAC 4.1, Section 265.112(b)(2)]

The estimated maximum extent of operation of the waste pile is shown in Figure 1-1. The waste pile was operated from the early 1950's to 1984.

6.2.3 Estimate of the Maximum Inventory of Hazardous Waste [20 NMAC 4.1, Section 265.112(b)(3)]

The MDA-P waste pile contains an estimated 60,000 yd^3 of waste, debris, and contaminated media. It is anticipated that 500 yd^3 of excavated soil will require treatment. This estimate is based on professional judgement and visual inspection of the waste pile.

6.2.4 Detailed Description of Removal of Waste Inventory [20 NMAC 4.1, Sections 265.112(b)(3) and (4)]

Prior to the excavation of the waste, several activities will occur. A staging area will be set up for the segregation of waste material (see Figure 2-4 in pocket at the end of Chapter 2.0). This staging area will be constructed on a 200-ft by 200-ft, 80-mil high-density polyethylene (HDPE) liner overlain by a protective layer of plywood or steel. Material will be placed at this staging area, inspected, sampled, and segregated based on physical characteristics. Immediately adjacent to this staging area, a decontamination pad will be constructed of concrete covered with an 80-mil HDPE liner. This liner will be overlain by a protective layer of plywood or steel. This decontamination pad will measure approximately 40 ft by 40 ft and will have 2-in. curbing to contain any liquids. During decontamination, plastic splash guards will be placed inside the curb of the decontamination pad to prevent liquids from coming into contact with surrounding soils. This decontamination pad will be placed inside a secondary containment system constructed of 80-mil HDPE with 4-in. curbing made of wood covered by the liner. During decontamination, the liquids in the decontamination pad will be vacuumed out into a container to prevent the liquid from overtopping curb levels. Nearby, two 40-ft by 40-ft evaporation ponds will be constructed

CLOSURE PLAN AMENDMENT
MDA P REPLACEMENT PAGES

accordance with EPA guidance (EPA, 1991a). Appendix C contains photographs of the waste pile and run-on control trench. Appendix D describes vadose-zone observations from 1998 at MDA-P. Appendix E provides historical records associated with TA-16 and MDA-P. Appendix F describes the composition of explosives produced at the Laboratory. Appendix G describes sampling procedures for MDA-P closure, Appendix H presents an evaluation of the 20 NMAC 4.1 Section 261, Appendix VIII (Appendix VIII) hazardous constituents for selection of analytical methods. Appendix I provides site-specific standard operating procedures. Appendix J describes the site geology and hydrology at TA-16, Area P

Compliance with specific regulatory requirements for closure are addressed in Chapter 6.0. The 20 ~~M~~NMAC 4.1 have incorporated, with a few minor exceptions, the Code of Federal Regulations (CFR) Title 40, Parts 260~~0~~ to 266 and 268 to 270 through July 1, 1993. Most regulatory citations in this closure will, therefore, be referenced to 20 NMAC 4.1. Table 1-1 lists the regulations applicable for closure of waste piles and identifies which sections of Chapter 6.0 address compliance with these regulations.

1.1 Closure Strategy

In the past, the disposal site at Area P was referred to as a landfill. However, RCRA regulations do not explicitly provide a clean-closure option for landfills. The U.S. Environmental Protection Agency (EPA) has addressed this problem by issuing guidance that allows a landfill, if clean closed under 40 CFR 265 standards, to make an equivalency demonstration under 40 CFR Section 270.1(c)(5),(6), by redefining the landfill as a waste pile (Lowrance 1989). Therefore, to clean close this unit and make an equivalency demonstration as described above, the Laboratory is referring to the MDA-P landfill as the MDA-P waste pile.

1.1.1 MDA-P and Nearby Potential Contaminated Sites

MDA-P is shown in Figure 1-1 (see map in pocket at the end of this chapter), which shows the area directly influenced by waste disposal activities and any possible subsequent contamination. The waste and contamination located within this area is specifically subject to the requirements outlined in this Closure Plan. Four other potentially contaminated areas are located in the vicinity of MDA-P; these areas (or sites) are PRSs 16-006(e), 16-010(a), 16-016(c) and 16-010(b). These PRSs are also depicted on Figure 1-1. Descriptions as well as regulatory status of these PRSs are briefly outlined below:

1.1.3 Technical Approach

To achieve closure, the entire waste pile, including hazardous and nonhazardous waste and soil, will be removed. Approximately 160,0500 cubic yards (yd^3) of debris and contaminated media will be excavated. The primary decontamination technique will be steam cleaning. The waste contained within the pile is very heterogeneous; most of it appears to be structural steel and miscellaneous debris, which cannot be easily sampled or characterized because of the impracticality of drilling through the material and the physical size of the material. Chapter 3.0 of this plan describes what is known about the waste pile, both from process knowledge and from the limited number of samples that have been taken to characterize the waste pile.

During closure, the waste will be characterized during excavation as sections of the pile are removed. For safety reasons, the debris will be decontaminated using steam and hot water to remove potential high explosives (HE) contamination. If the HE materials cannot be effectively removed from the debris, the debris will be flashed at the TA-16 open burn pad. If a significant amount of debris is generated beyond the estimates of this plan, alternate waste treatment methods will be explored. After decontamination and/or flashing, most of the debris is expected to be designated as nonhazardous.

All debris will be steam cleaned prior to off-site management. Steam cleaning meets the alternative treatment standard for hazardous debris; thus, visual inspection will be used to verify that hazardous debris is no longer considered contaminated.

Soil, decontamination wastes (i.e., liquids and sludges), or free liquids (i.e., those liquids found in pockets or containers within the waste pile) that contain HE materials or exceed the regulatory levels for toxicity characteristic (TC) metals (e.g., barium, chromium, lead) may be treated onsite or offsite at a permitted facility. On-site treatment of this waste may include stabilization on a batch basis for metals, such as barium, chromium, or lead. The batches of material will be approximately 100 yd^3. Treatment that may be conducted onsite will occur inside tanks meeting the requirements of 20 NMAC 4.1, Sections 264.192 through 264.199. This treatment will occur

4.1.2 Sampling to Establish Baseline

Before any waste is removed, baseline levels will be established for the soil at the top of the mesa in the approximate location of the closure waste handling/management areas (e.g., staging, decontamination, treatment, storage, and loading areas). Baseline levels will be established by collecting 10 samples from locations distributed over the waste handling/management area. Baseline levels will reflect the possible presence of contaminants derived from nearby Laboratory operations that are not related to MDA-P. Baseline concentrations are represented by the 95% UTL calculated from concentrations of Appendix VIII hazardous constituents and radioactive constituents measured in soil from these areas.

Following the completion of all waste removal operations and final equipment decontamination, the areas on top of the mesa will be resampled and the sampling data compared with baseline UTLs concentrations to determine if any releases occurred during the waste removal operations.

4.1.3 Sampling of the Waste Pile

During waste removal operations, the waste pile will be sampled for potential contaminants to characterize the waste for selection of treatment and disposal options. The material to be sampled includes excavated soil and tuff, as well as debris within the waste pile. Before excavation, this material will be visually inspected and spot-tested for HE to ensure safe handling.

4.1.3.1 Soil and Tuff

One composite sample will be taken from each 100 yd^3 of waste soil and tuff. Based on the estimated volume of the waste-pile and ~~volume~~ contaminated media (~~1~~60,~~0~~500 yd^3), a total of approximately ~~165~~ 500 composite samples will be collected. Composite sampling will provide data on the average concentration of contaminants required for selecting treatment and disposal options.

Each composite sample will consist of grab samples collected from 3 to 10 locations within the100 yd^3 of soil and tuff. A larger number of grab samples could result in excessive dilution of contaminant concentrations. Sufficient volume will be collected for each grab sample to ensure adequate composite sample volume for the prescribed analyses. The composite samples will

Table 4-2 Summary of Samples and Analyses

Analysis (EPA SW-846 Method except where otherwise noted)	Metals 6020[a] 1311[a]	Volatile Organics 8240A[b]	Semi-volatile Organics 3520A, 3540A/ 8270A[c]	Reactive Cyanide/ Sulfide 9010A, 9030A[d,k]	Total Cyanide 9011/ 9010A 9012A[e]	High Explosives 8330	Gamma Spectro-scopy	Gross Alpha 9310[f]	Gross Beta 9310[f]	Asbestos NIOSH Method 7400[g]	Organo-chlorine Pesticides and PCBs 8080A[g,h]	Chlorinated Herbicides 8150B[g,h]	pH 9020	Dioxin 8280[g]
Phase 1 Number of Samples														
Background Soil and Tuff[i]	20	0	20	0	0	0	20	20	20	0	0	0	0	0
Baseline Soil (Staging Area)	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Waste Pile Soil/Tuff	500	500	500	125	0	500	500	500	500	500	125	125	125	125
Duplicate[j]	25	25	25	7	0	25	25	25	25	25	7	7	7	7
Rinsate Blank[k]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Matrix Spike[l]	25	25	25	7	0	25	25	25	25	25	7	7	7	7
Total Samples, Phase I	580	560	580	149	10	560	580	580	580	560	149	149	149	149
Phase 2 Number of Samples[m]														
Soil/Tuff	317	11	319	2	2	319	2	2	2	2	2	2	2	2
Post-closure Baseline Soil (Staging Area)	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Duplicate[j]	30	1	30	0	0	30	0	0	0	0	0	0	0	0
Rinsate Blank[k]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Matrix Spike[l]	16	0	16	0	0	16	0	0	0	0	0	0	0	0
Total Samples, Phase 2	371	20	373	10	10	373	10	10	10	10	10	10	10	10

[a] Method 3005A and 3050A is digestion for water and soil, 6020 is the analytical method for most total metals. Method 7740 is the analytical method for total selenium. Methods 7470 and 7471 are the analytical methods for total mercury. Other methods may also be used (Method 6010A and 7000A series methods) as described in Section 4.6.1. Method 1311 is the TCLP method.
[b] Method 8260 may be substituted for 8240A.
[c] Method 3520A and 3540A are extraction methods for water and soil, 8270A is the analytical method.
[d] Determination of reactive cyanide is described is SW-846, Chapter 7, Section 7.3.3. This determination includes portions of Method 9010A. Determination of reactive sulfide is described in Section 7.3.4. This determination includes portions of Method 9030A.
[e] Method 9011 is digestion of soil for cyanide analyses. Methods 9010A and 9012A are the analytical methods for cyanide.
[f] Method 9310 is for water samples. Soil samples will be measured using calibrated field instruments.
[g] Analyses for asbestos, organochlorine pesticides and PCB, dioxin, and chlorinated herbicides will be performed in Phase 2 only ~~is~~f they are detected in the Phase 1 sampling.
[h] For soil/tuff samples will be taken from every fourth 100 cubic yard batch of waste that is to be deposited.
[i] The number of background samples will be identified in the Background Sampling Plan that will be submitted separately.
[j] Duplicates will be collected at a frequency of one per 20 soil or tuff samples for Phase 1, and one per 10 water samples. As required by the New Mexico Environment Department, duplicates were collected at a frequency of one per 10 soil or tuff samples during Phase 2.
[k] Equipment rinsate blanks will be collected at a frequency of one per 20 soil or tuff samples, and one per 10 water samples.
[l] Matrix spike samples will be collected at a frequency of one per sample delivery group per matrix, with a maximum of 20 samples per delivery group.
[m] The number of samples is estimated based on the number of sample grids within the proposed waste pile project boundary. After the waste pile boundary is surveyed, the number of grids will be totaled and the number of samples will be changed if necessary.

~~Table 4-2 Summary of Samples and Analyses~~

~~Analysis (EPA SW-846 Method except where otherwise noted)~~	~~Metals 6020[a] 1311[a]~~	~~Volatile Organics 8240A[b]~~	~~Semi-volatile Organics 3520A, 3540A/ 8270A[c]~~	~~Reactive Cyanide/ Sulfide 9010A, 9030A[d,k]~~	~~Total Cyanide 9011/ 9010A 9012A[e]~~	~~High Explosives 8330~~	~~Gamma Spectro-scopy~~	~~Gross Alpha 9310[f]~~	~~Gross Beta 9310[f]~~	~~Asbestos NIOSH Method 7400[g]~~	~~Organo-chlorine Pesticides and PCBs 8080A[g,h]~~	~~Chlorinated Herbicides 8150B[g,h]~~	~~pH 9020~~	~~Dioxin 8280[g]~~
~~Phase 1 Number of Samples~~														
~~Background Soil and Tuff[i]~~	~~20~~	~~0~~	~~20~~	~~0~~	~~0~~	~~0~~	~~20~~	~~20~~	~~20~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Baseline Soil (Staging Area)~~	~~10~~	~~10~~	~~10~~	~~0~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~	~~10~~
~~Waste Pile Soil/Tuff~~	~~165~~	~~165~~	~~165~~	~~41~~	~~0~~	~~165~~	~~165~~	~~165~~	~~165~~	~~165~~	~~41~~	~~41~~	~~41~~	~~41~~
~~Duplicate[j]~~	~~26~~	~~25~~	~~26~~	~~2~~	~~17~~	~~25~~	~~26~~	~~26~~	~~26~~	~~25~~	~~7~~	~~7~~	~~7~~	~~7~~
~~Rinsate Blank[k]~~	~~26~~	~~25~~	~~26~~	~~2~~	~~17~~	~~25~~	~~26~~	~~26~~	~~26~~	~~25~~	~~7~~	~~7~~	~~7~~	~~7~~
~~Matrix Spike[l]~~	~~18~~	~~17~~	~~18~~	~~2~~	~~9~~	~~17~~	~~18~~	~~18~~	~~18~~	~~17~~	~~4~~	~~4~~	~~4~~	~~4~~
~~Total Samples, Phase I~~	~~265~~	~~242~~	~~265~~	~~47~~	~~53~~	~~242~~	~~265~~	~~265~~	~~265~~	~~242~~	~~69~~	~~69~~	~~69~~	~~69~~
~~Phase 2 Number of Samples[m]~~														
~~Soil/Tuff~~	~~94~~	~~94~~	~~94~~	~~0~~	~~94~~	~~94~~	~~94~~	~~94~~	~~94~~	~~94~~	~~94~~	~~94~~	~~0~~	~~94~~
~~Post-closure Baseline Soil (Staging Area)~~	~~6~~	~~6~~	~~6~~	~~0~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~	~~6~~	~~0~~	~~6~~
~~Duplicate[j]~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~
~~Rinsate Blank[k]~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~
~~Matrix Spike[l]~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~5~~	~~0~~	~~5~~
~~Total Samples, Phase 2~~	~~115~~	~~115~~	~~115~~	~~0~~	~~115~~	~~115~~	~~115~~	~~115~~	~~115~~	~~115~~	~~115~~	~~115~~	~~0~~	~~115~~

~~[a] Method 3005A and 3050A is digestion for water and soil, 6020 is the analytical method for most total metals. Method 7740 is the analytical method for total selenium. Methods 7470 and 7471 are the analytical methods for total mercury. Other methods may also be used (Method 6010A and 7000A series methods) as described in Section 4.6.1. Method 1311 is the TCLP method.~~
~~[b] Method 8260 may be substituted for 8240A.~~
~~[c] Method 3520A and 3540A are extraction methods for water and soil, 8270A is the analytical method.~~
~~[d] Determination of reactive cyanide is described is SW-846, Chapter 7, Section 7.3.3. This determination includes portions of Method 9010A. Determination of reactive sulfide is described in Section 7.3.4. This determination includes portions of Method 9030A.~~
~~[e] Method 9011 is digestion of soil for cyanide analyses. Methods 9010A and 9012A are the analytical methods for cyanide.~~
~~[f] Method 9310 is for water samples. Soil samples will be measured using calibrated field instruments.~~
~~[g] Analyses for asbestos, organochlorine pesticides and PCB, dioxin, and chlorinated herbicides will be performed in Phase 2 only is they are detected in the Phase 1 sampling.~~
~~[h] For soil/tuff samples will be taken from every fourth 100 cubic yard batch of waste that is to be deposited.~~
~~[i] The number of background samples will be identified in the Background Sampling Plan that will be submitted separately.~~
~~[j] Duplicates will be collected at a frequency of one per 20 soil or tuff samples, and one per 10 water samples.~~
~~[k] Equipment rinsate blanks will be collected at a frequency of one per 20 soil or tuff samples, and one per 10 water samples.~~
~~[l] Matrix spike samples will be collected at a frequency of one per sample delivery group per matrix, with a maximum of 20 samples per delivery group.~~
~~[m] The number of samples is estimated based on the number of sample grids within the proposed waste pile project boundary. After the waste pile boundary is surveyed, the number of grids will be totaled and the number of samples will be changed if necessary.~~

For this project, an extension of the 90-day and 180-day closure time frames will be necessary. Removal of wastes and completion of closure activities as described in Sections 6.2.4, 6.2.5, and 6.2.6 will extend until the end of October ~~September~~ 200~~1~~2. This extended time frame is necessary because the Laboratory was unable to meet the original project schedule for waste removal due to safe operating practices at the site having to be re-evaluated when detonable pieces of HE were observed during excavation. The extended time frame is also necessary because of the following factors:

- the ~~logistics of removing relatively large amounts of waste from a steep incline~~ Cerro Grande fire delayed completion of excavation;
- the Phase II Sampling and Analysis Plan was submitted in August 1999 and verbally approved on May 30, 2001;~~decontaminating waste in an area that is limited in size;~~ and
- during Phase II sampling, contamination was found and excavated from a small drainage on the eastern edge of the site. Significant analytical backlogs at the off-site analytical laboratories have delayed completion of this analysis. ~~weather conditions that cannot be predicted with any high degree of accuracy.~~

For these reasons, the Laboratory requests that NMED approve the extended project schedule until ~~September~~ October 2002~~2001~~ for final closure. The anticipated closure schedule is presented in Section 6.2.7.

6.1.2.2 Time Frame for Demonstrations or Extensions (20 NMAC 4.1, Section 265.113[c])

As indicated in Figure 6-2, removal of wastes and completion of closure activities will need to be extended until October ~~September~~ 200~~1~~2. If completion of final closure activities will take longer than~~t~~n the end of October ~~September~~ 200~~1~~2 the Laboratory will submit a closure plan amendment in accordance with 265.112(c).

6.1.3 Disposal or Decontamination of Equipment, Structures, Debris and Soils (20 NMAC 4.1, Section 265.114)

During the final closure period, all equipment, structures, debris, and soil that is contaminated above acceptable levels must be properly disposed of or decontaminated. Contaminated equipment will be decontaminated in accordance with the procedures described in Section 6.3.1. Contaminated structures and soils will be identified, decontaminated, removed, and disposed of in accordance with the procedures described in Sections 6.2.4, 6.2.5, and 6.2.6. Section 6.3.2 describes how wastes generated during closure will be managed. Section 6.3.3 describes the criteria used to determine when decontamination and closure activities have met the closure performance standard. Section 6.3.4 describes the specific sampling and analysis procedures to be used to verify that all materials remaining onsite after closure meet the closure performance standard.

ID	Task Name	Duration	Start	Finish
1	Submit Closure Plan	0 days	Mon 2/6/95	Mon 2/6/95
2	Closure Plan Approved	0 days	Thu 2/20/97	Thu 2/20/97
3	Permit Modifications	90 days	Fri 5/7/99	Thu 9/9/99
4	Begin Operations	0 days	Mon 5/13/96	Mon 5/13/96
5	Preliminary Construction	665 days	Mon 5/13/96	Fri 11/27/98
6	Procure Equipment & Subcontractors	348 days	Mon 6/3/96	Wed 10/1/97
7	Readiness Review	1 day	Wed 10/29/97	Wed 10/29/97
8	Excavate, Decontaminate & Sample	888 days	Wed 11/5/97	Fri 3/30/01
9	Waste Treatment (as needed)	294 days	Thu 7/1/99	Tue 8/15/00
10	Phase 2 Sampling	106 days	Tue 6/19/01	Tue 11/13/01
11	East Drainage Remediation	6 days	Thu 9/13/01	Thu 9/20/01
12	Waste Disposal	810 days	Mon 12/21/98	Fri 1/25/02
13	Final Closure Report	214 days	Mon 1/7/02	Thu 10/31/02
14	Reseed/Replant Vegetation	134 days	Tue 10/1/02	Fri 4/4/03

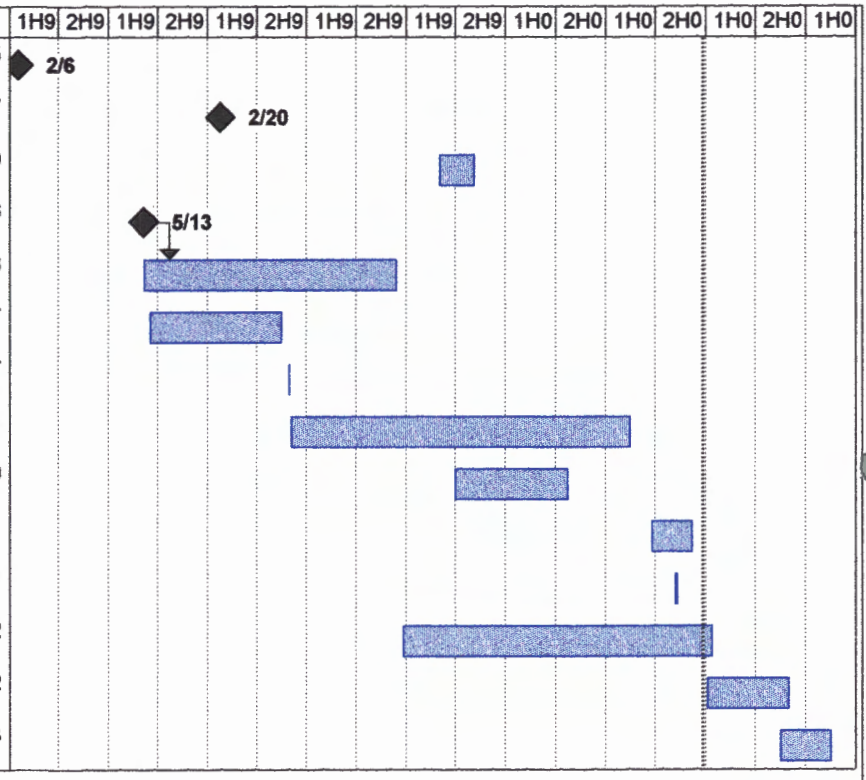

Figure 6-2:
ESTIMATED PROJECT SCHEDULE
Date: December 2001

Task
Split
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Split
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary

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a landfill as required by 20 NMAC 4.1, Section 265.258(b), and an amended closure/postclosure plan will be prepared and submitted to the NMED.

6.2.2 Identification of Maximum Extent of Operation [20 NMAC 4.1, Section 265.112(b)(2)]

The estimated maximum extent of operation of the waste pile is shown in Figure 1-1. The waste pile was operated from the early 1950's to 1984.

6.2.3 Estimate of the Maximum Inventory of Hazardous Waste [20 NMAC 4.1, Section 265.112(b)(3)]

The MDA-P waste pile contains an estimated ~~1~~60,0~~5~~00 yd^3 of waste, ~~and~~ debris, and contaminated media. It is anticipated that 500 yd^3 of excavated soil will require treatment. This estimate is based on professional judgement and visual inspection of the waste pile.

6.2.4 Detailed Description of Removal of Waste Inventory [20 NMAC 4.1, Sections 265.112(b)(3) and (4)]

Prior to the excavation of the waste, several activities will occur. A staging area will be set up for the segregation of waste material (see Figure 2-4 in pocket at the end of Chapter 2.0). This staging area will be constructed on a 200-ft by 200-ft, 80-mil high-density polyethylene (H~~P~~DPE) liner overlain by a protective layer of plywood or steel. Material will be placed at this staging area, inspected, sampled, and segregated based on physical characteristics. Immediately adjacent to this staging area, a decontamination pad will be constructed of concrete covered with an 80-mil HDPE liner. This liner will be overlain by a protective layer of plywood or steel. This decontamination pad will measure approximately 40 ft by 40 ft and will have 2-in. curbing to contain any liquids. During decontamination, plastic splash guards will be placed inside the curb of the decontamination pad to prevent liquids from coming into contact with surrounding soils. This decontamination pad will be placed inside a secondary containment system constructed of 80-mil HDPE with 4-in. curbing made of wood covered by the liner. During decontamination, the liquids in the decontamination pad will be vacuumed out into a container to prevent the liquid from overtopping curb levels. Nearby, two 40-ft by 40-ft evaporation ponds will be constructed