

ATTACHMENT H
POST-CLOSURE PLAN

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ATTACHMENT H

POST-CLOSURE PLAN

Introduction

This Attachment contains the Post-Closure Plan, which describes activities required to maintain the Waste Isolation Pilot Plant (**WIPP**) facility after completion of final facility closure. The Permittees will periodically reapply for an operating permit in accordance with 20.4.1.900 New Mexico Administrative Code (**NMAC**) (incorporating Title 40 of the Code of Federal Regulations (**CFR**) §270.10(h)).

This plan was submitted to the New Mexico Environment Department (**NMED**) in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(13)). The Post-Closure Plan includes the implementation of institutional controls to limit access and groundwater monitoring to assess disposal system performance. Until final facility closure is complete and has been certified in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.115), a copy of the approved Post-Closure Plan and all approved revisions will be on file at the WIPP facility and will be available to the Secretary of the NMED upon request.

H-1 Post-Closure Plan

The post-closure care period begins after completion of closure of the first underground hazardous waste disposal unit (**HWDU**) and continues for 30 years after final closure of the facility. The post-closure care period may be shortened or lengthened by the Secretary of the NMED, based on evidence that human health and the environment are being protected or are at risk. During the post-closure period, the WIPP facility shall be maintained in a manner that complies with the environmental performance standards applicable to the facility. During this period, the Permittees will employ active institutional controls as necessary.

This post-closure plan focuses on activities following final facility closure. However, some discussion of post-closure following panel closure is warranted since some panel closures will occur long before final facility closure. As discussed in Attachment G (Closure Plan), Section G-1e(1), panel closures have been designed to require minimum post-closure maintenance. The Permittees have defined a post-closure care program for closed panels that has three aspects. These are routine inspections of the openings in the vicinity of the closures and bulkheads used as part of the closures coupled with repair or replacement of bulkheads that no longer serve their purpose as panel closures; the sampling of ventilation air for harmful constituents; and a Repository Volatile Organic Compound Monitoring Program (**RVMP**). The rules of the Mine Safety and Health Administration as well as Permit Attachment E (Inspection Schedule, Process and Forms) drive the implementation of the first two programs. These rules require that underground mines monitor air quality to assure good breathing air whenever personnel are underground and that mine operators provide safe ground conditions for personnel in areas that require access. Routine monitoring of the openings in the access ways to panels will be continued and these openings will be maintained for as long as access into them is needed. This includes continued reading of installed geomechanical instrumentation, sounding the areas, visual inspection and maintenance activities as required and as described in Permit Attachment A2. In addition, areas in the underground that are occupied by personnel are checked prior to each day's work activities for accumulations of harmful gases. Action levels for

1 increasing ventilation to areas that show high levels of harmful gases are specified as described
2 in standard operating procedures on file at the WIPP facility.

3 Monitoring programs will be carried out during the period between the closure of the first panel
4 and the initiation of final facility closure for the underground facility. The Permittees have
5 prepared a RVMP which has been implemented to confirm that the annual average
6 concentration of volatile organic compounds (**VOCs**) in the air emissions from the underground
7 HWDUs do not exceed the VOC action levels (10^{-5} for carcinogens and hazard index >1 for non-
8 carcinogens) listed in Permit Part 4, Section 4.6.2.3. The RVMP is provided in Attachment N.
9 The RVMP includes monitoring design, sampling and analysis procedures and quality
10 assurance objectives. This plan is required to demonstrate compliance with 20.4.1.500 and .900
11 NMAC (incorporating 40 CFR §264.602 and §270.23(a)(2)).

12 The Permittees will operate in accordance with the RVMP until after certification of the closure
13 of the last underground HWDU.

14 The RVMP is implemented under a Quality Assurance Plan that conforms to the document
15 entitled "EPA Requirements for Quality Assurance Project Plans for Environmental Data
16 Operations." Quality Assurance criteria required for the target analytes are presented in Table
17 N-2 in Permit Attachment N.

18 H-1a Post-Closure Plan after Final Facility Closure

19 A number of regulations deal with the period of time that begins once the WIPP facility has
20 undergone final facility closure and decommissioning. Under 40 CFR Part 191, the period
21 consists of an active control period and a passive control period; only 100 years of the active
22 control period can be used in performance assessment. The Land Withdrawal Act (LWA) of
23 1992 requires that the U.S. Department of Energy (**DOE**) prepare and submit a post-
24 decommissioning land management plan. The New Mexico hazardous waste regulations at
25 20.4.1.500 NMAC (incorporating 40 CFR §264.117) require post-closure care, including
26 monitoring, security, and control of property use. Because of the numerous regulations, the
27 Permittees have prepared a single strategy for post-closure management of the WIPP site. This
28 strategy consists of three elements: 1) active controls, 2) monitoring, and 3) passive controls.
29 Only the first and second elements occur within the post-closure period covered by this permit.

30 H-1a(1) Active Institutional Controls

31 Once a facility is decommissioned, positive actions (referred to as "active institutional controls")
32 will be taken to assure proper maintenance and monitoring. The EPA, in 40 CFR §191.14(a)
33 has specified that active controls will be maintained for as long as practicable and that no more
34 than 100 years of active institutional control can be assumed in predictions of long-term
35 performance. This assumption assures that future protection and control does not rely on
36 positive actions by future generations.

37 The Permittees' active institutional control program has a primary objective of addressing
38 applicable requirements, including restoring the WIPP site as nearly as possible to its original
39 condition, and thereby equalizing any preference over other areas for development by humans
40 in the future. Restoration of the WIPP site includes any necessary remedial actions or cleanup
41 of releases resulting from decommissioning. In addition, as part of the active institutional control

1 program implemented under 40 CFR §194.14(a), the Permittees will implement monitoring
2 systems suitable for assessing disposal system performance if such monitoring is feasible.

3 The Permittees will implement the active institutional control program as described in more
4 detail below:

5 Identification of Active Institutional Control Measures

6 A detailed explanation of the active institutional controls selected by the Permittees as part of
7 this first step is provided in Permit Attachment H1 (WIPP Active Institutional Controls). This is
8 the Permittees' reference design for active institutional controls. The reference design will be
9 reviewed periodically and updated by the Permittees as appropriate during WIPP disposal
10 operations. The ongoing review and evaluation ensure that the active institutional controls
11 implemented are appropriate for the conditions that may exist at that time. The Permittees will
12 review the reference design prior to implementation and all affected regulatory agencies will be
13 consulted as part of this review. If updating the reference design proposes any changes in the
14 Post-Closure Plan as described in this permit, the Permittees shall apply for a permit
15 modification to include those changes or submit the reference design and revised Post-Closure
16 Plan as part of a routine permit renewal application, as required by 20.4.1.500 NMAC
17 (incorporating 40 CFR §264.118(d)).

18 As part of the active institutional controls program, the Permittees have developed a set of
19 active institutional controls which will be implemented. These are as follows:

- 20 • A fence line shall be established to control access to the repository's footprint area (the
21 waste disposal area projected to the surface). A standard wire fence shall be erected
22 along the perimeter of the repository surface footprint. The fence shall have gates placed
23 approximately midway along each of the four sides.
- 24 • An unpaved roadway along the perimeter of the barbed wire fence shall be constructed
25 to provide ready vehicle access to any point around the fenced perimeter, to facilitate
26 inspection and maintenance of the fence line, and to permit visual observation of the
27 repository footprint to the extent permitted by the lay of the land. This roadway shall
28 connect to the paved south access road.
- 29 • To ensure visual notification, the fence line shall be posted with signs having as a
30 minimum, a legend reading "Danger—Unauthorized Personnel Keep Out" and a warning
31 against entering the area without specific permission of the Permittees.
- 32 • Contractual arrangements shall be developed to ensure that periodic inspection and
33 necessary corrective maintenance is conducted on the fence line, its associated warning
34 signs, and the roadway. The Permittees will maintain control over all contractual work
35 and will maintain, in the operating record, the results of all inspections and maintenance
36 activities.
- 37 • Through direct Permittee staffing support and/or contractual arrangements, procedures
38 shall be established to provide routine periodic patrols and surveillances of the protected
39 area by personnel trained in security surveillance and investigation.

- 1 • Mitigating actions will be taken to address any abnormal conditions¹ identified during
2 periodic surveillance and inspections.
- 3 • Reports of activities associated with the post-disposal active access controls shall be
4 prepared in accordance with regulatory requirements for submittal to the appropriate
5 regulatory and legislative authority.

6 Details on meeting these criteria are found in Permit Attachment H1.

7 Preparation of a Post-Decommissioning Land Management Plan

8 Section 13(b) of the LWA requires the DOE to prepare and submit a plan for managing the land
9 withdrawal area after decommissioning the WIPP facility. This plan will include a description of
10 both the active and passive institutional controls that will be imposed after decommissioning is
11 complete. This plan will be prepared in consultation with the Department of Interior and the state
12 of New Mexico. If the land management plan proposes any changes in the Post-Closure Plan as
13 described in this permit, the Permittees shall apply for a permit modification to include those
14 changes or submit the land management plan and revised Post-Closure Plan as part of a
15 routine permit renewal application, as required by 20.4.1.500 NMAC (incorporating 40 CFR
16 §264.118(d)).

17 Preparation of the Active Institutional Control Plan

18 An active institutional control plan will be initiated prior to actual plant closure and will contain
19 the information needed to implement the active and passive institutional controls for the WIPP
20 facility. Active institutional control planning will be based on the reference design and will take
21 into account the most current information regarding the facility and its vicinity and will make use
22 of state-of-the-art materials and techniques. This plan will include acceptable radiological
23 decontamination levels pursuant to 10 CFR Part 835, sampling and analysis plans, and QA/QC
24 specifications. If the Active Institutional Controls Plan contains provisions different from those in
25 this Post-Closure Plan or Permit Attachment H1 (Active Institutional Controls), the Permittees
26 shall submit a request for modification of the Post-Closure Plan and the WIPP Permit. The
27 changes must be approved and made part of the revised Permit before the changes are
28 implemented, in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.118(d)).

29 Implementation of Active Institutional Control Measures

30 Most of the active institutional control measures, such as long-term site monitoring and site
31 remedial actions, will be implemented simultaneously with facility closure. However, it may be
32 possible to implement some measures earlier. For example, salt disposal may begin prior to
33 final plant closure. Reclamation and restoration of unused disturbed surface areas has already
34 begun. Guarding and maintenance activities, which are already in place, could evolve into an
35 appropriate type of post-closure activity, subject to appropriate modifications of the Permit.

¹ "Abnormal conditions" include any natural or human-caused conditions which could affect the integrity of active institutional controls required by the Permit or which could affect compliance of the WIPP facility with applicable RCRA standards.

1 H-1a(2) Monitoring

2 Post-closure groundwater monitoring will involve a continuation of the monitoring plan in Permit
3 Attachment L as described in Permit Part 5. The sampling frequency may be changed to a
4 frequency of every two years after final facility closure is complete by modification of the Permit
5 as approved by the Secretary of the NMED in accordance with 20.4.1.901.B NMAC
6 (incorporating 40 CFR §270.42). In addition, the final target analyte list specified in Permit
7 Attachment L may be changed by permit modification based on final TRU mixed waste volume.

8 H-2 Notices Required for Disposal Facilities

9 H-2a Post-Closure Certification

10 Within 60 days of completion of the post-closure care period after final facility closure, the
11 Permittees will submit to the Secretary of the NMED, via registered mail, a certification that
12 post-closure care was performed in accordance with the specifications of the approved post-
13 closure plan. The certification will be signed by the Permittees and by an independent New
14 Mexico registered professional engineer. Documentation supporting the independent registered
15 engineer's certification and a copy of the certification will be furnished to the Secretary of the
16 NMED.

17 H-2b Post-Closure Notices

18 Within 60 days after certification of closure of each underground HWDU or final facility closure,
19 the Permittees will submit to the Secretary of the NMED, and to the Eddy County government or
20 other applicable local government agencies, a record of the type, location, and quantity of
21 hazardous wastes disposed of in each underground HWDU as required in 20.4.1.500 NMAC
22 (incorporating 40 CFR §264.119).