

#### IV. MODULE IV - GEOLOGIC REPOSITORY DISPOSAL

##### IV.A. DESIGNATED DISPOSAL UNITS

This Module authorizes the management and disposal of contact-handled (**CH**) and remote-handled (**RH**) transuranic (**TRU**) mixed waste containers in the Underground Hazardous Waste Disposal Units (**Underground HWDUs**) identified herein. Specific facility and process information for the management and disposal of CH and RH TRU mixed waste in the Underground HWDUs is incorporated in Permit Attachment M2 (Geologic Repository).

##### IV.A.1. Underground Hazardous Waste Disposal Units

The Underground HWDUs are located at the WIPP facility approximately 2150 feet (665 meters) below the ground surface within the Salado formation. An Underground HWDU is a single excavated panel, consisting of seven rooms and two access drifts, designated for disposal of TRU mixed waste containers.

The Permittees may dispose TRU mixed waste in the Underground HWDUs, provided the Permittees comply with the following conditions:

##### IV.A.1.a. Disposal Containers

The Permittees shall dispose TRU mixed waste in containers specified in Permit Condition [IV.C.1](#).

##### IV.A.1.b. Disposal Locations and Quantities

The Permittees shall dispose TRU mixed waste containers in seven (7) Underground HWDUs, as specified in Table [IV.A.1](#) below and depicted in Permit Attachment M2, Figure M2-1. The Permittees may dispose quantities of TRU mixed waste containers in these locations not to exceed the maximum capacities specified in Table [IV.A.1](#) below. The Permittees may increase these capacities subject to the following conditions:

- i. The Permittees may submit a Class 1 permit modification requiring prior approval of the Secretary in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.42(a)) to increase the CH TRU mixed waste capacity by 35,300 ft<sup>3</sup> (1,000 m<sup>3</sup>) or less, and the RH TRU mixed waste capacities in Panels 5 and 6 to a maximum of 22,950 ft<sup>3</sup> (650 m<sup>3</sup>).

At least fifteen (15) calendar days before submittal to NMED, the Permittees shall post a link to the Class 1 permit modification on the WIPP Home Page and inform those on the e-mail notification list.

- ii. Notwithstanding Permit Condition [IV.A.1.b.i](#), any Underground HWDU CH TRU waste capacity may be increased by up to 25 percent of the total maximum capacity in Table [IV.A.1](#) by submitting a Class 2 permit modification request in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)).

<b>Table IV.A.1 - Underground HWDUs</b>				
<b>Description<sup>1</sup></b>	<b>Waste Type</b>	<b>Maximum Capacity<sup>2</sup></b>	<b>Container Equivalent</b>	<b>Final Waste Volume</b>
Panel 1	CH TRU	636,000ft <sup>3</sup> (18,000 m <sup>3</sup> )		370,800 ft <sup>3</sup> (10,500 m <sup>3</sup> )
Panel 2	CH TRU	636,000 ft <sup>3</sup> (18,000 m <sup>3</sup> )		635,600 ft <sup>3</sup> (17,998 m <sup>3</sup> )
Panel 3	CH TRU	662,150 ft <sup>3</sup> (18,750 m <sup>3</sup> )		603,600 ft <sup>3</sup> (17,092 m <sup>3</sup> )
Panel 4	CH TRU	662,150 ft <sup>3</sup> (18,750 m <sup>3</sup> )		503,500 ft <sup>3</sup> (14,258 m <sup>3</sup> )
	RH TRU	12,570 ft <sup>3</sup> (356 m <sup>3</sup> )	400 RH TRU Canisters	6,200 ft <sup>3</sup> (176 m <sup>3</sup> )
Panel 5	CH TRU	662,150 ft <sup>3</sup> (18,750 m <sup>3</sup> )		
	RH TRU	15,720 ft <sup>3</sup> (445 m <sup>3</sup> )	500 RH TRU Canisters	
Panel 6	CH TRU	662,150 ft <sup>3</sup> (18,750 m <sup>3</sup> )		
	RH TRU	18,860 ft <sup>3</sup> (534 m <sup>3</sup> )	600 RH TRU Canisters	
Panel 7	CH TRU	662,150 ft <sup>3</sup> (18,750 m <sup>3</sup> )		
	RH TRU	22,950 ft <sup>3</sup> (650 m <sup>3</sup> )	730 RH TRU Canisters	
<b>Total</b>	<b>CH TRU</b>	<b>4,582,750 ft<sup>3</sup></b> <b>(129,750 m<sup>3</sup>)</b>		
	<b>RH TRU</b>	<b>70,100 ft<sup>3</sup></b> <b>(1,985 m<sup>3</sup>)</b>	<b>2230 RH TRU</b> <b>Canisters</b>	

<sup>1</sup> The area of each panel is approximately 124,150 ft<sup>2</sup> (11,533 m<sup>2</sup>).

<sup>2</sup> "Maximum Capacity" is the maximum volume of TRU mixed waste that may be emplaced in each panel. The maximum repository capacity of "6.2 million cubic feet of transuranic waste" is specified in the WIPP Land Withdrawal Act (Pub. L. 102-579, as amended)

IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

IV.B.1. Permitted Waste

The Permittees may dispose TRU mixed waste in the Underground HWDUs, provided the Permittees comply with the following conditions:

IV.B.1.a. Waste Analysis Plan

The TRU mixed waste shall be characterized to comply with the waste analysis plan specified in Permit Condition II.C.1.

IV.B.1.b. TSDF Waste Acceptance Criteria

The TRU mixed waste shall comply with the treatment, storage, and disposal facility (**TSDF**) waste acceptance criteria specified in Permit Condition II.C.3.

IV.B.1.c. Hazardous Waste Numbers

The TRU mixed waste shall contain only hazardous waste numbers specified in Permit Condition II.C.4.

Derived waste may be disposed in the Underground HWDUs as specified in Permit Condition II.C.5.

IV.B.2. Prohibited Waste

IV.B.2.a. General Prohibition

The Permittees shall not dispose any TRU mixed waste that fails to comply with Permit Condition [IV.B.1](#).

IV.B.2.b. Specific Prohibition

After this Permit becomes effective, the Permittees shall not dispose non-mixed TRU waste in any Underground HWDU unless such waste is characterized in accordance with the requirements of the WAP specified in Permit Condition II.C.1. The Permittees shall not dispose TRU mixed waste in any Underground HWDU if the Underground HWDU contains non-mixed TRU waste which was disposed of after this Permit became effective and was not characterized in accordance with the requirements of the WAP.

IV.C. DISPOSAL CONTAINERS

IV.C.1. Acceptable Disposal Containers

The Permittees shall use containers that comply with the requirements for U.S. Department of Transportation shipping container regulations (49 CFR §173 - Shippers - General Requirements for Shipment and Packaging, and 49 CFR §178 - Specifications for Packaging) for disposal of TRU mixed waste at WIPP. The Permittees are prohibited from disposing TRU mixed waste in any container Not specified in Permit Attachment M1, Section M1-1b, as set forth below:

IV.C.1.a. Standard 55-gallon (208-liter) Drum

Configured as a 7-pack or as an individual unit.

IV.C.1.b. Standard Waste Box (SWB)

As an individual unit.

IV.C.1.c. Ten-drum Overpack (TDOP)

As an individual unit.

IV.C.1.d. 85-gallon (322-liter) Drum

Configured as a 4-pack or as an individual unit.

IV.C.1.e. 100 gallon (379-liter) Drum

Configured as a 3-pack or as an individual unit.

IV.C.1.f. RH TRU Canister

As an individual unit.

IV.C.2. Condition of Containers

If a container holding TRU mixed waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak prior to disposal in an Underground HWDU, the Permittees shall manage the TRU mixed waste containers specified in Permit Condition [IV.C.1](#) as specified in Permit Attachment M1 and in compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.171).

IV.D. VOLATILE ORGANIC COMPOUND LIMITS

The Permittees shall limit releases to the air of volatile organic compound waste constituents (**VOCs**) as specified by the following

conditions, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601(c)):

IV.D.1. Room-Based Limits

The measured concentration of VOCs in any open (active) room and in each closed room in active panels within an Underground HWDU shall not exceed the limits specified in Table [IV.D.1](#) below:

<b>Table IV.D.1 - VOC Room-Based Limits</b>	
<b>Compound</b>	<b>VOC Room-Based Concentration Limit (PPMV)</b>
Carbon Tetrachloride	9625
Chlorobenzene	13000
Chloroform	9930
1,1-Dichloroethene	5490
1,2-Dichloroethane	2400
Methylene Chloride	100000
1,1,2,2-Tetrachloroethane	2960
Toluene	11000
1,1,1-Trichloroethane	33700

There are no maximum concentration limits for other VOCs.

IV.D.2. Determination of VOC Room-Based Limits

The Permittees shall confirm the VOC concentration and emission rate limits identified in Permit Condition [IV.D.1](#) using the VOC Monitoring Plan specified in Permit Attachment N (Volatile Organic Compound Monitoring Plan). The Permittees shall conduct monitoring of VOCs as specified in Permit Conditions [IV.F.2](#) and [IV.F.3](#).

IV.D.3. Ongoing Disposal Room VOC Monitoring in Panels 3 Through 7

The Permittees shall continue disposal room VOC monitoring in Room 1 of Panels 3 through 7 after completion of waste emplacement until final panel closure unless the explosion-isolation wall specified in Permit Attachment I1 is installed in the panel.

IV.E. DESIGN, CONSTRUCTION, AND OPERATION REQUIREMENTS

The Permittees shall design, construct, and operate the Underground HWDUs as specified by the following conditions and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601):

IV.E.1. Repository Design

The Permittees shall construct each Underground HWDU in conformance with the requirements specified in Permit Attachment M2 and Permit Attachment M3 (Drawing Number 51-W-214-W, "Underground Facilities Typical Disposal Panel").

IV.E.2. Repository Construction

IV.E.2.a. Construction Requirements

Subject to Permit Condition [IV.E.1](#), the Permittees may excavate the following Underground HWDUs, as depicted in Permit Attachment M2, Figure M2-1, "Repository Horizon", and specified in Section M2-2a(3), "Subsurface Structures (Underground Hazardous Waste Disposal Units (HWDUs))":

Panel 10 (Disposal area access drift)  
Panel 2  
Panel 9 (Disposal area access drift)  
Panel 3  
Panel 4  
Panel 5  
Panel 6  
Panel 7  
Panel 8

Prior to disposal of TRU mixed waste in a newly constructed Underground HWDU, the Permittees shall comply with the certification requirements specified in Permit Condition I.E.11.

IV.E.2.b. Notification Requirements

At least thirty (30) calendar days prior to the projected start date of excavation of each Underground HWDU, the Permittees shall provide written notification to the Secretary and to the WIPP facility mailing list stating the projected start date of excavation, along with supporting rationale (e.g., projected waste receipt rate, etc.).

Prior to disposal of TRU mixed waste in a newly constructed Underground HWDU, the Permittees shall comply with the certification requirements specified in Permit Condition I.E.11.

IV.E.3. Repository Operation

IV.E.3.a. Underground Traffic Flow

The Permittees shall restrict and separate the ventilation and traffic flow areas in the underground TRU mixed waste handling and disposal areas from the ventilation and traffic flow areas for mining and construction equipment as specified in Permit Attachment G (Traffic Patterns), Figure G-4. TRU mixed waste handling and disposal traffic shall use the waste area intake ventilation drift to access the Underground HWDUs. Mining and construction equipment traffic may use either the construction area intake ventilation drift or the exhaust ventilation drift to access the mining and construction areas.

IV.E.3.b. Ventilation

The Permittees shall maintain a minimum running annual average mine ventilation exhaust rate of 260,000 standard ft<sup>3</sup>/min and a minimum active room ventilation rate of 35,000 standard ft<sup>3</sup>/min when workers are present in the room, as specified in Permit Attachment M2, Section M2-2a(3), "Subsurface Structures (Underground Ventilation System Description)" and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601(c)).

IV.E.3.c. Ventilation Barriers

The Permittees shall construct ventilation barricades in active Underground HWDUs to prevent the flow of mine ventilation air through full disposal rooms, as specified in Permit Attachment M2, Section M2-2a(3), "Subsurface Structures (Underground Ventilation System Description)" and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601(c)).

IV.F. MAINTENANCE AND MONITORING REQUIREMENTS

The Permittees shall maintain and monitor the Underground HWDUs as specified by the following conditions and as required by 20.4.1.500 NMAC (incorporating 40 CFR §§264.601 and 264.602):

IV.F.1. Geomechanical Monitoring

IV.F.1.a. Implementation of Geomechanical Monitoring Program

The Permittees shall implement a geomechanical monitoring program in each Underground HWDU as specified in Permit Attachment M2, Section M2-5b(2), "Geomechanical Monitoring" and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602).

IV.F.1.b. Reporting Requirements

The Permittees shall submit to the Secretary an annual report, beginning twelve (12) months after issuance of this Permit, evaluating the geomechanical monitoring program and shall include geomechanical data collected from each Underground HWDU during the previous year, as specified in Permit Attachment M2, Section M2-5b(2), "Geomechanical Monitoring", and shall also include a map showing the current status of HWDU mining. The Permittees shall also submit at that time an annual certification by a registered professional engineer certifying the stability of any explosion-isolation walls. The Permittees shall also notify the e-mail notification list within seven (7) calendar days of submittal of this certification.

IV.F.1.c. Notification of Adverse Conditions

When evaluation of the geomechanical monitoring system data identifies a trend towards unstable conditions which requires a decision whether to terminate waste disposal activities in any Underground HWDU, the Permittees shall provide the Secretary with the same report provided to the WIPP Operations Manager within seven (7) calendar days of its issuance, as specified in Permit Attachment M2, Section M2-5b(2)(a), "Description of the Geomechanical Monitoring System".

IV.F.2. Repository Volatile Organic Compound Monitoring

IV.F.2.a. Implementation of Repository VOC Monitoring

The Permittees shall implement repository VOC monitoring as specified in Permit Attachment N

(Volatile Organic Compound Monitoring Plan) and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)). The Permittees shall implement repository VOC monitoring within thirty (30) calendar days of issuance of this Permit until the certified closure of all Underground HWDUs.

IV.F.2.b. Reporting Requirements

The Permittees shall report to the Secretary semi-annually, beginning twelve (12) months after issuance of this Permit, the data and analysis of the VOC Monitoring Plan.

IV.F.2.c. Notification Requirements

The Permittees shall notify the Secretary in writing, within seven (7) calendar of obtaining validated analytical results, whenever the concentration of any VOC specified in Table [IV.D.1](#) exceeds the concentration of concern specified in Table [IV.F.2.c](#) below.

The Permittees shall notify the Secretary in writing, within seven (7) calendar days of obtaining validated analytical results, whenever the running annual average concentration (calculated after each sampling event) for any VOC specified in Table [IV.D.1](#) exceeds the concentration of concern specified in Table [IV.F.2.c](#) below.

<b>Table IV.F.2.c - VOC Concentrations of Concern</b>		
<b>Compound</b>	<b>Drift E-300 Concentration</b>	
	<b>ug/m3</b>	<b>ppbv</b>
Carbon Tetrachloride	2625	412.5
Chlorobenzene	1015	220
Chloroform	890	180
1,1-Dichloroethene	410	100
1,2-Dichloroethane	175	45
Methylene Chloride	6700	1930
1,1,2,2-Tetrachloroethane	350	50
Toluene	715	190
1,1,1-Trichloroethane	3200	590

IV.F.2.d. Remedial Action

If the running annual average concentration for a VOC specified in Table [IV.D.1](#) exceeds the concentration of concern specified in Table [IV.F.2.c](#), the Permittees shall cease disposal in the active disposal room and install ventilation barriers as specified in Permit Condition [IV.E.3.c](#).

If the running annual average concentration for a VOC specified in Table [IV.D.1](#) exceeds the concentration of concern specified in Table [IV.F.2.c](#) for six (6) consecutive months, the Permittees shall close the affected Underground HWDU as specified in Permit Condition [IV.I.1](#).

For any remedial action taken under this Permit Condition, the Permittees shall submit to the Secretary written quarterly status reports, beginning thirty (30) calendar days after the Permittees submit the initial notification in Permit Condition [IV.F.2.c](#) which resulted in the remedial action. The quarterly status report shall analyze the cause of exceedance, describe the implementation and results of the remedial action, and describe measures taken to prevent future exceedances. The Permittees shall submit such reports until the Secretary determines the remedial action has been completed in accordance with all applicable requirements of this Permit.

IV.F.3. Disposal Room Volatile Organic Compound Monitoring

IV.F.3.a. Implementation of Disposal Room VOC Monitoring

The Permittees shall implement disposal room VOC monitoring as specified in Permit Attachment N and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)).

IV.F.3.b. Notification Requirements

The Permittees shall notify the Secretary in writing, within seven (7) calendar days of obtaining validated analytical results, whenever the concentration of any VOC specified in Table [IV.D.1](#) in any closed room in an active panel or in the immediately adjacent closed room exceeds the action levels specified in Table [IV.F.3.b](#) below.

<b>Table IV.F.3.b - Action Levels for Disposal Room Monitoring</b>		
<b>Compound</b>	<b>50% Action Level for VOC Constituents of Concern in Any Closed Room, ppmv</b>	<b>95% Action Level for VOC Constituents of Concern in Active Open or Immediately Adjacent Closed Room, ppmv</b>
Carbon Tetrachloride	4,813	9,145
Chlorobenzene	6,500	12,350
Chloroform	4,965	9,433
1,1-Dichloroethene	2,745	5,215
1,2-Dichloroethane	1,200	2,280
Methylene Chloride	50,000	95,000
1,1,2,2-Tetrachloroethane	1,480	2,812
Toluene	5,500	10,450
1,1,1-Trichloroethane	16,850	32,015

IV.F.3.c. Remedial Action

Upon receiving validated analytical results that indicate one or more of the VOCs specified in Table [IV.D.1](#) in any of the closed rooms in an active panel has reached the "50% Action Level" in Table [IV.F.3.b](#), the sampling frequency for such closed rooms will increase to once per week. The once per week sampling will continue either until the concentrations in the closed room(s) fall below the "50% Action Level" in Table [IV.F.3.b](#), or until closure of Room 1 of the panel, whichever occurs first. If one or more of the VOCs in Table [IV.D.1](#) in the active open room or immediately adjacent closed room reaches the "95% Action Level" in Table [IV.F.3.b](#), another sample will be taken to confirm the existence of such a condition. If the second sample confirms that one or more of VOCs in the immediately adjacent closed room have reached the "95% Action Level" in Table [IV.F.3.b](#), the active open room will be abandoned, ventilation barriers will be installed as specified in Permit Condition [IV.E.3.c](#), waste emplacement will proceed in the next open room, and monitoring of the subject closed room will continue at a frequency of once per week until commencement of panel closure.

IV.F.4. Mine Ventilation Rate Monitoring

IV.F.4.a. Implementation of Mine Ventilation Rate Monitoring Plan

The Permittees shall implement the Mine Ventilation Rate Monitoring Plan specified in Permit Attachment Q (Mine Ventilation Rate Monitoring Plan) and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.602 and §264.601(c)). The Permittees shall implement this plan within thirty (30) calendar days of approval by the Secretary until the certified closure of all Underground HWDUs.

IV.F.4.b. Reporting Requirements

The Permittees shall report to the Secretary annually, beginning twelve (12) months after issuance of this Permit, the results of the data and analysis of the Mine Ventilation Rate Monitoring Plan.

IV.F.4.c. Notification Requirements

The Permittees shall calculate the running annual average mine ventilation exhaust rate on a monthly basis. In addition, the Permittees shall evaluate compliance with the minimum active room ventilation rate specified in Permit Condition [IV.E.3.b](#) on a monthly basis. Whenever the evaluation of the mine ventilation monitoring program data identifies that the ventilation rates specified in Permit Condition [IV.E.3.b](#) have not been achieved, the Permittees shall notify the Secretary in writing within seven (7) calendar days.

IV.F.5. Hydrogen and Methane Monitoring Program

IV.F.5.a. Implementation of Hydrogen and Methane Monitoring

The Permittees shall implement the Hydrogen and Methane Monitoring Plan specified in Permit Attachment N1.

IV.F.5.b. Reporting Requirements

The Permittees shall report to the Secretary semi-annually, beginning twelve (12) months

after issuance of this Permit, the data and analysis of the Hydrogen and Methane Monitoring Plan.

IV.F.5.c. Notification Requirements

The Permittees shall notify the Secretary in writing, within seven (7) calendar days of obtaining validated analytical results, whenever the concentration of hydrogen or methane in a filled panel exceeds the action levels specified in Table [IV.F.5.c](#) below.

The Permittees will also notify the e-mail notification list, within seven (7) calendar days of obtaining validated analytical results, if the concentration of hydrogen or methane in a filled panel exceeds these action levels.

<b>Compound</b>	<b>Action Level 1</b>	<b>Action Level 2</b>
Hydrogen	4,000 ppm	8,000 ppm
Methane	5,000 ppm	10,000 ppm

IV.F.5.d. Remedial Action

Upon receiving validated analytical results that indicate at least one compound exceeded "Action Level 1" in Table [IV.F.5.c](#), the sampling frequency in that filled panel will increase to once per week. Upon receiving validated analytical results that indicate at least one compound exceeded "Action Level 2" in Table [IV.F.5.c](#) in two consecutive weekly samples, the Permittees shall install in that panel the explosion-isolation wall specified in Permit Attachment I1.

IV.F.5.e. Sampling Line Loss

The Permittees shall notify the Secretary in writing and the e-mail notification list within seven (7) calendar days of the discovery of loss of sampling line(s). The Permittees shall evaluate any loss of sampling lines as described in Permit Attachment N1, Section N1-5b, "Sample Tubing", and shall notify the Secretary in writing and the e-mail notification list within

seven (7) calendar days the results of such evaluation.

IV.G. INSPECTION SCHEDULES AND PROCEDURES

The Permittees shall inspect the Underground HWDUs at least weekly, as specified in Permit Attachment D (Inspection Schedule/Procedures, Tables D-1 and D-1a), and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.15). The Permittees shall perform these inspections to detect malfunctions, signs of deterioration, operator errors, discharges, or any other factors which have caused or may cause a release of hazardous wastes or hazardous waste constituents to the environment or which may compromise the ability of any Underground HWDU to comply with the environmental performance standards in 20.4.1.500 NMAC (incorporating 40 CFR §264.601).

IV.H. RECORDKEEPING

IV.H.1. Underground HWDU Location Map

The Permittees shall maintain, in the operating record, a map containing the exact location and dimensions of each Underground HWDU with respect to permanently surveyed benchmarks.

IV.H.2. Disposal Waste Type and Location

The Permittees shall maintain, in the operating record, a record identifying the types and quantities of TRU mixed waste in each Underground HWDU and the disposal location of each container or container assembly (e.g., a 7-pack of standard 55-gallons drums) within each Underground HWDU, using the following fields from the WWIS data dictionary:

1. Panel Number
2. Room Number or Drift Number
3. Row Number (for CH TRU mixed waste) or Borehole Number (for RH TRU mixed waste)
4. Column Number (for CH TRU mixed waste)
5. Column Height (for CH TRU mixed waste)
6. Container Type Code
7. Container Identification Number
8. Manifest Document Number
9. Disposal Date

The Permittees shall also maintain, in the operating record, a map or diagram depicting the location and quantity of each waste. The map or diagram shall include a cross reference to specific manifest document numbers, if the waste was accompanied by a manifest, as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.73(b)(2)).

IV.H.3. Ventilation Rates

The Permittees shall maintain, in the operating record, a record identifying any non-conformance to the ventilation rates specified in Permit Condition [IV.E.3.b.](#)

IV.I. CLOSURE

IV.I.1. Panel Closure

Upon completion of disposal in an Underground HWDU, the Permittees shall provide written notification to the Secretary stating the final volume of TRU mixed waste emplaced in the Underground HWDU. The Permittees shall also close the Underground HWDU as specified in Permit Attachment I (Closure Plan) and Permit Attachment I1 (Technical Specifications, Panel Closure System, Waste Isolation Pilot Plant).

IV.I.2. Repository Closure

Upon completion of disposal in the repository and closure of all Underground HWDUs, the Permittees shall close the repository as specified in Permit Attachment I and Permit Attachment I2 (Shaft Sealing System Compliance Submittal Design Report).

IV.I.3. Repository Post-Closure

Upon completion of repository closure as specified in Permit Condition [IV.I.2](#), the Permittees shall comply with all post-closure requirements as specified in Permit Module VI, Post-Closure Care.

IV.J. COMPLIANCE SCHEDULE

The Permittees shall provide a Mine Ventilation Rate Monitoring Plan to the Secretary within ninety (90) calendar days of issuance of this Permit.

IV.J.1. Objective

The Mine Ventilation Rate Monitoring Plan shall specify a monitoring program that will result in the collection of data of adequate quantity and quality to allow the Permittees to demonstrate compliance with the ventilation requirements of Permit Condition [IV.E.3.b.](#)

IV.J.2. Content of the Mine Ventilation Rate Monitoring Plan

The Mine Ventilation Rate Monitoring Plan shall address the following at a minimum: objectives of the monitoring; design of the monitoring program (including monitoring schedule and monitoring equipment); monitoring procedures; equipment calibration and

maintenance; data evaluation, reporting and recordkeeping; and quality assurance.

IV.J.3. Incorporation of Permit Requirements

The Permittees shall incorporate the implementation, reporting and notification requirements of Permit Condition [IV.F.4](#) into the appropriate section(s) of the Mine Ventilation Rate Monitoring Plan.

IV.J.4. Approval of the Plan

After the Permittees submit the Mine Ventilation Rate Monitoring Plan, the Secretary may approve, disapprove, or modify and approve the Mine Ventilation Rate Monitoring Plan in writing.

If the Secretary approves the Mine Ventilation Rate Monitoring Plan, the Secretary will modify the permit in accordance with Permit Condition I.B.1.

In the event of disapproval (in whole or in part) of the Mine Ventilation Rate Monitoring Plan, the Secretary shall specify deficiencies in writing. The Permittees shall correct these deficiencies and submit a modified Mine Ventilation Rate Monitoring Plan within thirty (30) calendar days of such written notification to the Secretary for review.

PERMIT ATTACHMENTS

Permit Attachment D (as modified from WIPP RCRA Part B Permit Application, "Procedures to Prevent Hazards" - Chapter F).

Permit Attachment G (as modified from the WIPP RCRA Part B Permit Application, "Facility Description" - Chapter B).

Permit Attachment I (as modified from WIPP RCRA Part B Permit Application, "Closure Plans, Post-Closure Plans, and Financial Requirements" - Chapter I).

Permit Attachment I1 (as modified from WIPP RCRA Part B Permit Application, "Detailed Design Report for an Operational Phase Panel-Closure System" - Appendix I1).

Permit Attachment I2 (as modified from WIPP RCRA Part B Permit Application, "Waste Isolation Pilot Plant Shaft Sealing system Compliance Submittal Design Report" - Appendix I2, as replaced by Sandia Report SAND 96-1326).

Permit Attachment M1 (as modified from WIPP RCRA Part B Permit Application, "Facility and Process Information" - Chapter D).

Permit Attachment M2 (as modified from WIPP RCRA Part B Permit Application, "Facility and Process Information" - Chapter D).

Permit Attachment M3 (as modified from WIPP RCRA Part B Permit Application, "Underground Facilities Typical Disposal Panel" - Drawing Number 51-W-214-W).

Permit Attachment N (as modified from WIPP RCRA Part B Permit Application, "Confirmatory Volatile Organic Compound Monitoring Plan" - Appendix D20).

Permit Attachment N1 ("Hydrogen and Methane Monitoring Plan")

Permit Attachment Q ("Mine Ventilation Rate Monitoring Plan").

IV.	MODULE IV - GEOLOGIC REPOSITORY DISPOSAL.....	1
IV.A.	DESIGNATED DISPOSAL UNITS .....	1
	IV.A.1. Underground Hazardous Waste Disposal Units .....	1
	IV.A.1.a. Disposal Containers .....	1
	IV.A.1.b. Disposal Locations and Quantities .....	1
IV.B.	PERMITTED AND PROHIBITED WASTE IDENTIFICATION.....	3
	IV.B.1. Permitted Waste.....	3
	IV.B.1.a. Waste Analysis Plan .....	3
	IV.B.1.b. TSDF Waste Acceptance Criteria.....	3
	IV.B.1.c. Hazardous Waste Numbers.....	3
	IV.B.2. Prohibited Waste.....	3
	IV.B.2.a. General Prohibition.....	3
	IV.B.2.b. Specific Prohibition .....	3
IV.C.	DISPOSAL CONTAINERS .....	4
	IV.C.1. Acceptable Disposal Containers .....	4
	IV.C.1.a. Standard 55-gallon (208-liter) Drum .....	4
	IV.C.1.b. Standard Waste Box (SWB).....	4
	IV.C.1.c. Ten-drum Overpack (TDOP).....	4
	IV.C.1.d. 85-gallon (322-liter) Drum .....	4
	IV.C.1.e. 100 gallon (379-liter) Drum.....	4
	IV.C.1.f. RH TRU Canister.....	4
	IV.C.2. Condition of Containers.....	4
IV.D.	VOLATILE ORGANIC COMPOUND LIMITS .....	4
	IV.D.1. Room-Based Limits .....	5
	IV.D.2. Determination of VOC Room-Based Limits .....	5
	IV.D.3. Ongoing Disposal Room VOC Monitoring in Panels 3 Through 7.....	5
IV.E.	DESIGN, CONSTRUCTION, AND OPERATION REQUIREMENTS.....	5
	IV.E.1. Repository Design.....	6
	IV.E.2. Repository Construction .....	6
	IV.E.2.a. Construction Requirements.....	6
	IV.E.2.b. Notification Requirements.....	6
	IV.E.3. Repository Operation.....	7
	IV.E.3.a. Underground Traffic Flow .....	7
	IV.E.3.b. Ventilation .....	7
	IV.E.3.c. Ventilation Barriers.....	7
IV.F.	MAINTENANCE AND MONITORING REQUIREMENTS.....	7
	IV.F.1. Geomechanical Monitoring .....	8
	IV.F.1.a. Implementation of Geomechanical Monitoring Program.....	8
	IV.F.1.b. Reporting Requirements .....	8
	IV.F.1.c. Notification of Adverse Conditions.....	8
	IV.F.2. Repository Volatile Organic Compound Monitoring .....	8
	IV.F.2.a. Implementation of Repository VOC Monitoring.....	8
	IV.F.2.b. Reporting Requirements .....	9

IV.F.2.c.	Notification Requirements .....	9
IV.F.2.d.	Remedial Action .....	10
IV.F.3.	Disposal Room Volatile Organic Compound Monitoring.....	10
IV.F.3.a.	Implementation of Disposal Room VOC Monitoring .....	10
IV.F.3.b.	Notification Requirements .....	10
IV.F.3.c.	Remedial Action .....	11
IV.F.4.	Mine Ventilation Rate Monitoring .....	12
IV.F.4.a.	Implementation of Mine Ventilation Rate Monitoring Plan .....	12
IV.F.4.b.	Reporting Requirements .....	12
IV.F.4.c.	Notification Requirements .....	12
IV.F.5.	Hydrogen and Methane Monitoring Program.....	12
IV.F.5.a.	Implementation of Hydrogen and Methane Monitoring.....	12
IV.F.5.b.	Reporting Requirements .....	12
IV.F.5.c.	Notification Requirements .....	13
IV.F.5.d.	Remedial Action .....	13
IV.F.5.e.	Sampling Line Loss .....	13
IV.G.	INSPECTION SCHEDULES AND PROCEDURES .....	14
IV.H.	RECORDKEEPING .....	14
IV.H.1.	Underground HWDU Location Map .....	14
IV.H.2.	Disposal Waste Type and Location .....	14
IV.H.3.	Ventilation Rates.....	15
IV.I.	CLOSURE .....	15
IV.I.1.	Panel Closure .....	15
IV.I.2.	Repository Closure .....	15
IV.I.3.	Repository Post-Closure .....	15
IV.J.	COMPLIANCE SCHEDULE.....	15
IV.J.1.	Objective.....	15
IV.J.2.	Content of the Mine Ventilation Rate Monitoring Plan .....	15
IV.J.3.	Incorporation of Permit Requirements .....	16
IV.J.4.	Approval of the Plan .....	16