Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

May 29, 1996

RECEIVED
MAY 31 1996

Mr. Mark Weidler, Secretary
New Mexico Environment Department
P.O. Box 26110
Santa Fe, N.M. 87502

Dear Mr. Weidler:

Please find enclosed an updated Part A segment of the Waste Isolation Pilot Plant (WIPP) Resource Conservation and Recovery Act (RCRA) permit application. The purpose of the update is to include three additional hazardous waste codes recently brought to our attention by the Idaho National Engineering Laboratory. Additionally, we wish to make a few minor page changes for editorial reasons which were identified by both WIPP and your staff in the Hazardous and Radioactive Materials Bureau (HRMB). These page changes will be designated as Revision 6.1. This update does not introduce any new or substantive technical information. Copies of the changes will also be provided to those locations where the Revision 6 version of the application was sent.

We have been in discussion with the HRMB regarding these changes and understand that, at this time, a technical adequacy decision has not been reached. We therefore have the opportunity to submit this updated information. I understand that once the New Mexico Environment Department (NMED) begins drafting the permit, any future changes will be required to go through the formal process of a permit modification.

If you have any questions or require further information, please do not hesitate to contact me at (505) 234-7300.

Sincerely,

George E. Dials
Manager

Enclosure

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960524

cc w/enclosure:
B. Garcia, NMED (6)
C. Walker, A.T. Kearney (3)

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

December 1, 1997

DEC 1997

Ms. Susan McMichael
Assistant General Counsel
NMED
PO Box 26110
Santa Fe, New Mexico 87501-6110

Re: Replacement Pages (Revision 6.3) and New Mexico Reading Room Inspections

Dear Ms. McMichael:

Pursuant to your written request, dated November 20, 1997, and based upon our telephone conversation with Eric Ames on November 24, 1997, we have enclosed replacement pages from our "Revision 6.3" of the permit application, dated July 18, 1997. The enclosed replacement pages are the same pages provided to the New Mexico Hazardous and Radioactive Materials Bureau (HRMB) in our submittal dated July 18, 1997, with the addition of "stamped clarifying information," consistent with your request and our telephone discussion. Each page of the 6.3 revision that had been modified in our submittal dated July 18, 1997, has been stamped with the following statement: "Revision 6.3, July 18, 1997, Supersedes all prior versions." We have enclosed five (5) sets of the replacement pages for your use.

Also, pursuant to your request, we have enclosed a list of state-wide locations at which copies of the permit application have been made available for public review by the Department of Energy (DOE) and the Westinghouse Waste Isolation Division (WID). We have also included the New Mexico Environment Department's district locations, which we understand have received copies of the application from the HRMB. The DOE and WID staff will inspect all applications at the locations identified on the enclosed list to confirm that the applications contain complete and accurate information. It is also our intent to include the latest revision to the application (Revision 6.5) during our inspections as well as any other necessary information that is not currently included in the copies. We intend to complete these inspections after the HRMB's acceptance of Revision 6.5 and the application is deemed complete.

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We trust the enclosed information fully addresses your concerns. If you have any questions or need additional information, we will be happy to provide it as expeditiously as possible. Please contact me at (505) 234-7329, if you need additional information.

Sincerely,

Cooper Wayman
Area Office Counsel

Enclosures

cc: w/o enclosures
Eric Ames
Benito Garcia

CAO:ORC:CS:97-2421:UFC:5486.00

New Mexico Repositories of the WIPP RCRA Part B Permit Application
11/20/97

Environmental Evaluation Group
Mr. R. H. Neill, Director
7007 Wyoming, NE, Suite F2
Albuquerque, NM 87109
(505) 828-1003

NMED District I Office
Mr. Bill Bartles
4131 Montgomery Blvd., NE
Albuquerque, NM 87109
(505) 841-9450

Sandia Technical Library - MS-0899
Mary Compton
P.O. Box 5800
Albuquerque, NM 87185-0899

Sandia National Laboratories - MS-1330
Nuclear Waste Management Library
Ferne Allan
P.O. Box 5800
Albuquerque, NM 87185-1330

Tech Vocational Institute Library
2000 Coal Avenue NE
Albuquerque, NM 87106
(505) 224-3292

Zimmerman Library
Ms. T. Marquez
Government Publications Dept.
University of New Mexico
Albuquerque, NM 87138
(505) 277-5441

WIPP Library - MS-050
Ms. L. Desai
P.O. Box 2078
Carlsbad, NM 88220

Carlsbad Public Library
Ms. E. Harbaugh
101 S. Halagueno St.
Carlsbad, NM 88220

NMED District III Office
Mr. Ken Smith
1001 North Solano Drive
Las Cruces, NM 88001

Environmental Evaluation Group
Mr. J. Kenney
State of New Mexico
P.O. Box 3149
Carlsbad, NM 88220
(505) 885-9675

Raton Public Library
Mr. R. Azar
Roma Ave. and Yale Blvd.
244 Cook Ave.
Raton, NM 87740

NMED District IV
Mr. Gary McCaslin
1914 West Second
Roswell, NM 88201

New Mexico State Library
MS. I. Vollnhofer
325 Don Gaspar
Santa Fe, NM 87501-2777

Energy Minerals & Natural Resources
Mr. Chris Wentz
2040 Pacheco Street
Santa Fe, NM 87505

NMED Hazardous & Radioactive Materials Bureau
Mr. Steve Zappe
2041A Galisteo Street
Santa Fe, NM 87502
(505) 827-1557

NMED Library
Ms. Donna Bevacqua r Ms. Susan McMichael
1190 St. Francis Drive
Santa Fe, NM 87502

Santa Fe Community College Library
Ms. Monica Valiaire-Garcia
South Richards Aventu
P.O. Box 41877
Santa Fe, NM 87502
(505) 438-1352

NM Institute of Mining & Technology
Ms. M. Jonas
Leroy Bullock, Campus Station
Socorro, NM 87801

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

November 19, 1997

NOV 1997
RECEIVED

Dr. Ed Kelley, Director
Water and Waste Management Division
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, NM 87502

Subject: Response to Letters of September 24 and October 15, 1997, Regarding Financial Information

Dear Dr. Kelley:

This letter is in response to New Mexico Environment Department's (NMED's) letters dated September 24 and October 15, 1997, in which NMED requested information pursuant to the Hazardous Waste Act and regulations [40 CFR 270.14(b)(15), (16), and (17)]. We enclose Revision 6.5 to our permit application which addresses your request. This information is provided without waiving any rights to challenge the applicability of the requirements of Subpart H of 20 NMAC 4.1 Subpart V to DOE and Westinghouse.

As part of this revision, we are re-certifying the application by providing an updated Chapter M "Certification" statement. Pursuant to NMED's request, this certification encompasses all previous submittals, including those provided to NMED since NMED's initial completeness determination of June 1996.

With this information, we believe that the NMED should be able to expeditiously issue a draft permit for the Waste Isolation Pilot Plant. If you have any questions regarding the enclosed materials, please contact me at (505) 234-7300 as soon as possible so that we may address them as expeditiously as possible.

Sincerely,

George E. Dials
Manager

CAO:ORC:CAS 97-2534 (UFC 5486.00)

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November 20, 1997

New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
Santa Fe, New Mexico

RE: WIPP RCRA Part B Permit Application

The following material is being transmitted to you by the Department of Energy/Westinghouse Waste Isolation Division:

Response to Letters of September 24 and October 15, 1997, Regarding Financial Information

Four clean copies, one redline/strikeout copy, and an electronic copy of:

- WIPP RCRA Part B Permit Application, DOE/WIPP 91-005, Chapter I Closure Plans, Post-Closure Plans, and Financial Requirements, Revision 6.5 including:

  — Appendix I5: Westinghouse Self-Insurance Program Contract DE-AC04-86AL31950
  — Appendix I6: Nuclear Hazards Indemnity Agreement Contract DE-AC04-86AL31950

One original signed and three copies of:

- WIPP RCRA Part B Permit Application, DOE/WIPP 91-005, Chapter M Certification Statement, Revision 6.5

Delivery method: Hand Delivery
Delivered by: Wille Most, Westinghouse Waste Isolation Division

Received by: STEVE ZAPPE, NMED/HRMB
RCRA Permit Writer
NMED Signature/ Print Name/ Title

Nov 20, 1997 10:00 AM
Date/ Time

When Letter of Transmittal is complete, return **original** to Department of Energy/Westinghouse Waste Isolation Division.

NOV 1997 RECEIVED

NOV 1997
RECEIVED

CHAPTER I
CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

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CHAPTER I
CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

Introduction

This chapter contains the Closure Plan that describes the activities necessary to close the Waste Isolation Pilot Plant (WIPP) facility after termination of the operating permit. Since the current plans for operations extend over several decades, the Department of Energy (DOE) will periodically reapply for an operating permit in accordance with Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, §270.10(h). Consequently, this Closure Plan describes several types of closure. The first type is panel closure, which occurs as underground hazardous waste management units (HWMU) are filled. Secondly, final closure at the end of the Disposal Phase is described. Finally, in the event a new permit is not issued prior to expiration of an existing permit, a modification to this Closure Plan will be sought to perform contingency closure. Contingency closure defers the final closure of waste management facilities such as the Waste Handling Building (WHB), the conveyances, the shafts, and the haulage ways because these will be needed to continue operations with non-mixed Transuranic (TRU) waste.

The HWMUs addressed in this Closure Plan include the aboveground HWMU in the WHB, the parking area HWMU, and Panels 1 through 8, each consisting of seven rooms. In addition, the disposal area access drifts shown as E-300, E-140, W-30, and W-170 between S-1600 and S-3650 on Figure I-1 may, at some time in the future, be needed for waste disposal as discussed in Section D-9a(3)(f). These access drifts, if used for disposal, are also subject to the contents of this Closure Plan.

This plan is submitted to the New Mexico Environment Department (NMED) and the U.S. Environmental Protection Agency (EPA) in accordance with 20 NMAC 4.1, Subpart IX, §270.14(b)(13). Closure at the panel level will include the construction of barriers to limit the emission of hazardous waste constituents from the panel into the mine ventilation air stream below levels that meet environmental performance standards as described in Section D-9d(3)[1]

[1]As discussed in Section D-9d(3), the mechanism for air emissions prior to closure is different than the mechanism after closure. Prior to closure, volatile organic compounds (VOC) will diffuse through drum filters based on the concentration gradient between the disposal room and the drum headspace. These VOCs are swept away by the ventilation system, thereby maintaining a concentration gradient that is assumed to be constant. Hence, the VOCs in the ventilation stream are a function of the number of containers only. After closure, the panel air will reach an equilibrium concentration with the drum headspace and no more diffusion will occur. The only mechanism for release into the mine ventilation system is due to pressure that builds up in the closed panel. This pressure arises from the creep closure mechanism that is reducing the volume of the rooms and from the postulated generation of gas as the result of microbial degradation of organic matter in the waste. Consequently, the emissions after panel closure are a direct function of pressurization processes and rates within the panel. Details of these factors are found in Appendix I1 and in Section D-9b.

and to mitigate the impacts of methane buildup and deflagration that may be postulated for some closed panels. Closure also includes the implementation of institutional controls to limit access, the implementation of passive institutional controls, and the long-term monitoring to assess disposal system performance. Until final closure is complete and has been certified in accordance with 20 NMAC 4.1, Subpart V, §264.115, a copy of the approved plan and all approved revisions will be on file at the WIPP facility and will be available to the Secretary of the NMED or the EPA Region VI Administrator upon request.

DOE and Westinghouse interpret 20 NMAC 4.1, Subpart V, §264.140(c), as exempting permit applicants at a facility owned by the federal government from the requirements of Subpart H (Financial Requirements) of 20 NMAC 4.1, Subpart V. However, the NMED has indicated its intent to apply the Subpart H requirements to private contractors who are co-operators at federal facilities. NMED has requested that DOE and Westinghouse provide cost estimates for closure and post-closure activities at the WIPP and information demonstrating Westinghouse's compliance with financial assurance and liability provisions of Subpart H. Without waiving any rights to challenge the applicability of the requirements of Subpart H of 20 NMAC 4.1 Subpart V, DOE and Westinghouse submit information to address 20 NMAC 4.1, Subpart IX, §270.14(b)(15); 20 NMAC 4.1, Subpart V, §264.142; 20 NMAC 4.1, Subpart V, §264.143; 20 NMAC 4.1, Subpart IX, §270.14(b)(16); 20 NMAC 4.1, Subpart V, §264.144; 20 NMAC 4.1, Subpart V, §264.145; 20 NMAC 4.1, Subpart IX, §270.14(b) (17); 20 NMAC 4.1, Subpart V, §264.147(a); and 20 NMAC 4.1, Subpart V, §264.147(b).

I-1 Closure Plan

This Closure Plan is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart V, Closure and Post-Closure, Use and Management of Containers, and Miscellaneous Units. The WIPP underground HWMUs, including Panels 1 through 8 and the disposal area access drifts, designated as Panels 9 and 10 on Figure I-1, will be closed to meet the performance standards in 20 NMAC 4.1, Subpart V, §264.601. The WIPP surface facilities including Waste Handling Building Container Storage Unit and the Parking Area Container Storage Unit will be closed in accordance with 20 NMAC 4.1, Subpart V, §264.178. For final facility closure, this plan also includes closure and sealing of the facility shafts in accordance with 20 NMAC 4.1, Subpart V, §264.601.

Following completion of waste emplacement in each underground HWMU, the HWMU will be closed. The DOE will notify the NMED of the closure of each underground HWMU. For the purpose of this Closure Plan, panel closure is defined as the process of rendering HWMUs in the underground repository inactive and closed according to the facility Closure Plan. The Closure Plan addresses requirements for future monitoring that are deemed necessary for the post-closure period, including monitoring closed panels prior to final facility closure.

For the purposes of this Closure Plan, final facility closure is defined as closure that will occur when all waste disposal areas are filled or when the WIPP achieves its capacity of 6.2 million cubic feet (ft^3) (175,600 cubic meters (m^3)) of TRU waste. At final facility closure, the surface container storage areas will be closed, and equipment that can be decontaminated and used at other facilities will be cleaned and sent off site. Equipment that cannot be decontaminated plus any derived waste resulting from decontamination will be placed in the last open underground

facility) has been closed in accordance with the specifications of this Closure Plan. The certification will be signed by the cognizant DOE Manager and by an independent registered professional engineer. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED with the certification.

I-3b Survey Plat

Within 60 days of closure activities for an HWMU or within 60 days of final facility closure, the DOE will submit to the Secretary of the NMED, via certified mail, a survey plat indicating the location and dimensions of hazardous waste disposal units with respect to permanently surveyed benchmarks. The plat will be prepared and certified by a professional land surveyor and will contain a prominently displayed note that states the DOE's obligation to restrict disturbance of the hazardous waste disposal unit. In addition, the land records in the Eddy County Courthouse, Carlsbad, New Mexico, will be updated through filing of the final survey plats.

I-3c Post-Closure Certification

Within 60 days of completion of the post-closure care period for each hazardous waste disposal unit and for final facility closure, the DOE will submit to the Secretary of the NMED, via certified mail, documentation that post-closure care was performed in accordance with the specifications of the approved post-closure plan. The certification will be signed by the cognizant DOE Manager and by an independent registered professional engineer. Documentation supporting the independent registered engineer's certification and a copy of the certification will be furnished to the Secretary of the NMED.

I-3d Post-Closure Notices

Within 60 days after certification of closure of each hazardous waste disposal unit or final facility closure, the DOE will submit to the Secretary of the NMED, and other applicable local and federal government agencies, a record of the type, location, and quantity of hazardous wastes disposed of in the disposal unit of the facility. Plans exist for extensive archiving of records beyond those required in 20 NMAC 4.1, Subpart V, §264.119. These are discussed in I-2a(3).

I-4 Closure Cost Estimate

~~In accordance with 20 NMAC 4.1, Subpart V, §264.140(c), the WIPP facility, as a federal facility, is exempt from the requirement to provide cost estimates for closure actions.~~ At the NMED's request, a closure cost estimate has been developed pursuant to 20 NMAC 4.1, Subpart V, §264.142(a) for the WIPP. This estimate equals the cost of final closure at the point in the facility's active life when the extent and manner of its operations would make closure the most expensive, in accordance with the requirements of 20 NMAC 4.1, Subpart V, §264.142(a)(1). Accordingly, panel closures are based on Option D in Figure I-4 which is the most expensive option. Contingency Closure is assumed at a time when decontamination of all waste handling areas (storage areas, shafts, and access drifts) and associated equipment is necessary. Final facility closure is assumed to occur at the end of planned facility operations. It is anticipated that the maximum extent of decontamination will be necessary and that the greatest volume of disposable facilities and equipment will exist at that point in the facility's life. A total cost of $294,053,735 (1997 dollars) has been estimated to perform the closure activities in this Closure

Plan. Table I-9 contains a detailed description of the closure activities and their costs. The closure cost estimate encompasses the costs associated with the following activities, which are described in this Closure Plan: operational support during closure, performance of site contamination surveys, decontamination, dismantling, and disposal of underground and surface facilities, panel closure of the last open underground HWMU, emplacement of the four shaft seals, the plugging of the ten existing boreholes, and regrading the surface to approximately original contours.

The closure cost estimate reflects the on-site disposal of the mixed waste generated at the facility by closure activities as described in Section I-1e(2)(c) of the Closure Plan. This waste will be placed in the last open underground HWMU to the extent that such waste does not exceed the permitted capacity for the facility. If capacity is not available at the WIPP, mixed TRU waste generated during closure will be sent to a facility permitted to receive mixed TRU waste. The closure of the ten existing boreholes is described in Section I-1e(2)(e) of the Closure Plan and will be performed in accordance with applicable federal and state standards as shown in Table I-3.

I-5 Financial Assurance Mechanism for Closure

~~In accordance with 20 NMAC 4.1, Subpart V, §264.140(c), the WIPP facility, as a federal facility, is exempt from the requirement to provide financial assurance mechanisms for closure actions.~~ If a final permit condition is imposed pursuant to 20 NMAC 4.1, Subpart IX, §270.14(b)(15), the DOE and Westinghouse intend to submit documentation to demonstrate financial assurance for closure costs and activities as set forth in 20 NMAC 4.1, Subpart V, §264.143, at least 60 days prior to the initial receipt of hazardous wastes for disposal at WIPP.

I-6 Post-Closure Cost Estimate

~~In accordance with 20 NMAC 4.1, Subpart V, §264.140(c), the WIPP facility, as a federal facility, is exempt from the requirement to provide cost estimates for post-closure actions.~~ At the NMED's request, a post-closure cost estimate has been developed in accordance with 20 NMAC 4.1, Subpart V, §264.144(a). A total cost of $110,640,380 (1997 dollars) has been estimated to perform the post-closure activities in this Closure Plan. The post-closure cost estimate is based on the projected costs for the entire post-closure period of 30 years. The detailed post-closure cost estimate is presented in Table I-10. The post-closure cost estimate encompasses the costs associated with the following activities as described in this Closure Plan: construction of fencing around the protected area, periodic surveillance monitoring of the protected area, subsidence monitoring, and periodic groundwater monitoring to evaluate the performance of the repository.

I-7 Financial Assurance Mechanism for Post-Closure

~~In accordance with 20 NMAC 4.1, Subpart V, §264.140(c), the WIPP facility, as a federal facility, is exempt from the requirement to provide financial assurance mechanisms for post-closure actions.~~ If a final permit condition is imposed pursuant to 20 NMAC 4.1, Subpart IX, §270.14(b)(15), the DOE and Westinghouse intend to submit documentation to demonstrate financial assurance for post-closure costs and activities as set forth in 20 NMAC 4.1, Subpart V, §264.145, at least 60 days prior to the initial receipt of hazardous wastes for disposal at WIPP.

I-8 Liability Requirement

~~In accordance with 20 NMAC 4.1, Subpart V, §264.140(c), the WIPP facility, as a federal facility, is exempt from the requirement to provide liability insurance.~~ At the NMED's request, the following information is submitted regarding coverage for sudden accidental occurrences, pursuant to 20 NMAC 4.1, Subpart V, §264.147(a), and for non-sudden accidental occurrences, pursuant to 20 NMAC 4.1, Subpart V, §264.147(b). In accordance with the provisions of DOE/Westinghouse Contract, No. DE-AC04-86AL31950, Westinghouse maintains a self-insurance program for purposes of addressing third-party liabilities (see Appendix I5). Third-party liability coverage is available for sudden accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million, as required by 20 NMAC 4.1, Subpart V, §264.147(a); and for non-sudden accidental occurrences in the amount of at least $3 million per occurrence with an aggregate of at least $6 million, as required by 20 NMAC 4.1, Subpart V, §264.147(b) (see Appendix I5).

In addition, as permit applicants for a federal nuclear facility subject to the Atomic Energy Act of 1954 (AEA), the DOE and Westinghouse demonstrate financial responsibility for bodily injury and property damage to third parties caused by sudden and non-sudden accidental occurrences arising from contractor operations through their Nuclear Hazards Indemnity Agreement (see Appendix I6). The DOE/Westinghouse Contract, No. DE-AC04-86AL31950, incorporates this agreement, which generally provides that the DOE will indemnify Westinghouse against claims of "public liability," (i.e., liability which arises out of or in connection with the activities under the contract and arises out of or results from a nuclear incident or precautionary evacuation), and that Westinghouse will not be required to maintain financial protection to cover any such "public liability." A "nuclear accident" is defined, in relevant part, as "any occurrence, including an extraordinary nuclear occurrence, within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material." Accordingly, bodily injury or property damage to third parties caused by accidental occurrences involving source, special nuclear, or byproduct material components of TRU mixed waste, which arise from contractor operations at WIPP, would be subject to the Nuclear Hazards Indemnity Agreement in the DOE/Westinghouse Contract.

Section 170(d) of the AEA requires DOE to indemnify Westinghouse against claims of public liability and for associated legal costs, in the aggregate for each nuclear incident or precautionary evacuation occurring within the United States, provided that the costs do not exceed the limits set forth in the AEA. Section 170(j) of the AEA provides that the required indemnification agreement may be entered into in advance of appropriation and thus the agreement is not subject to the availability of funds. In addition, in the event a nuclear incident involves damages in excess of the amount of aggregate public liability, Section 170(e) of the AEA provides that the United States Congress will thoroughly review the particular incident, and in accordance with applicable procedures, take whatever action is determined to be necessary to provide full and prompt compensation of the public for all public liability claims resulting from the incident.

TABLE I-9
RCRA CLOSURE COST ESTIMATE

This estimate equals the cost of final closure at the point in the facility's active life when the extent and manner of its operation would make closure the most expensive, in accordance with the requirements of 20 NMAC 4.1, Subpart V, §264.142(a)(1).

		Partial Closure Cost	Contingency Closure Cost (3 years)	Final Closure Cost (10 years)
Infrastructure	Labor	NA	NA	$159,723,200
Section I-3a	RCRA Permit Fee	$27,500	$82,500	$275,000
	Engineering Certification	$140,472	$2,321,187	$4,194,393
Subtotal		**$167,972**	**$2,403,687**	**$164,192,593**
Panel Closure	Excavate salt for concrete barriers	$42,000	$42,000	$84,000
Section I-1e(2)(d) Section I-1e(1)	Excavate salt for explosion-isolation walls	$14,000	$14,000	$28,000
Figure I-4 Appendix I1	Steel for concrete barriers	$150,000	$150,000	$300,000
	Concrete for concrete barriers	$676,000	$676,000	$1,352,000
	Grout for concrete barriers	$370,000	$370,000	$740,000
	Concrete blocks in place for explosion-isolation walls	$290,000	$290,000	$580,000
Subtotal		**$1,542,000**	**$1,542,000**	**$3,084,000**
Shafts/Borehole Closure	Equipment	NA	NA	$5,450,000
Section I-1e(2)(e)	Mobilization and Demobilization	NA	NA	$4,090,800
	Decommissioning and Disposal	NA	NA	$1,451,950
	Seal materials	NA	NA	$43,549,220
	Grouting	NA	NA	$1,454,842
	Borehole plugging	NA	NA	$1,300,000
Subtotal		**$0**	**$0**	**$57,296,812**
Underground Facilities Dismantlement	Supervision	NA	NA	$660,941
Section I-1e(2)	Engineering	NA	NA	$919,597
Section I-1e(2)(c)	Operations, Maintenance, Configuration Labor	NA	NA	$2,202,296
	Materials	NA	NA	$43,500
Subtotal		**$0**	**$0**	**$3,826,335**
Surface Facilities Dismantlement	Waste Handling Building	NA	NA	$3,472,955
Section I-1e(2) Section I-1e(2)(c)	TRUPACT-II Maintenance Facility	NA	NA	$657,043
	Support Building	NA	NA	$763,516
	Pump House and Water Tanks	NA	NA	$159,454

TABLE I-9
RCRA CLOSURE COST ESTIMATE (CONTINUED)

		Partial Closure Cost	Contingency Closure Cost (3 years)	Final Closure Cost (10 years)
Surface Facility Dismantlement (Continued)	Exhaust Filter Building	NA	NA	$322,326
	Warehouse Annex	NA	NA	$180,880
	Training Building	NA	NA	$140,182
	Engineering Building	NA	NA	$180,891
	Warehouse Shops	NA	NA	$199,987
	Vehicle Maintenance Building	NA	NA	$92,401
	Core Storage Building	NA	NA	$66,078
	Guard and Security Building and Gate House	NA	NA	$336,002
	Hazmat	NA	NA	$54,600
	Safety and Emergency Building	NA	NA	$493,625
	Trailers	NA	NA	$120,000
	Security Fencing	NA	NA	$99,500
	Concrete Pavements	NA	NA	$328,489
	Asphalt Paving	NA	NA	$894,882
	RCRA Flood Berms	NA	NA	$222,480
	Hoists and Adjacent Buildings	NA	NA	$210,000
	Railroad and Yard	NA	NA	$1,268,770
	Lagoons	NA	NA	$218,860
	Surface Part of U/G Ventilation	NA	NA	$1,220,000
	Finish Grading	NA	NA	$575,000
Subtotal		**$0**	**$0**	**$12,277,921**
Disposal of Released Materials in Construction Landfill	Landfill Cover	NA	NA	$411,186
Section I-1e(2)	Underground Materials D&D	NA	NA	$169,347
	Surface Materials D&D	NA	NA	$1,475,403
Subtotal		**$0**	**$0**	**$2,055,936**
Site Contamination Surveys	Surface	NA	$1,354,182	$1,354,182
Section I-1e(2)(a)	Underground	NA	$1,227,607	NA
Subtotal		**$0**	**$2,581,789**	**$1,354,182**
Decontamination	Surface	NA	957,000	957,000
Section I-1e(2)(b)	Underground	NA	798,590	NA
Subtotal		**$0**	**$1,755,590**	**$957,000**
Subtotals		**$1,709,972**	**$8,283,066**	**$245,044,779**
Contingency (20%)		**$341,994**	**$1,656,613**	**$49,008,956**
Totals		**$2,051,966**	**$9,939,679**	**$294,053,735**

TABLE I-10
RCRA POST-CLOSURE COST ESTIMATE

		Post-Closure Cost (30 years)
Infrastructure Section I-3a	RCRA Permit Fee	$165,000
Subtotal		**$165,000**
Active Institutional Controls[a]	Groundwater Monitoring	$14,000,000
Section I-2a(1) Appendix I4	Repository Footprint Fencing	$1,138,526
	Surveillance Monitoring	$528,653
	Subsidence Monitoring	$510,954
	Monitoring Disposal System Performance	$857,184
Subtotal		**$17,035,317**
Passive Institutional Controls Section I-2a(3)	Passive Institutional Controls	$75,000,000
Subtotal		**$75,000,000**
Subtotals		**$92,200,317**
Contingency (20%)		**$18,440,063**
Totals		**$110,640,380**

[a] Labor costs are included in each line item under active institutional controls.

APPENDIX I5

WESTINGHOUSE SELF-INSURANCE PROGRAM
CONTRACT DE-AC04-86AL31950

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Contract No. DE-AC04-86AL31950
Modification No. M121

H.6 INSURANCE - LITIGATION AND CLAIMS

(a) The Contractor may, with the prior written authorization of the Contracting Officer, and shall, upon the request of the Government, initiate litigation against third parties, including proceedings before administrative agencies, in connection with this contract. The Contractor shall proceed with such litigation in good faith and as directed from time to time by the Contracting Officer, and in accordance with DOE approved Contractor litigation management procedures.

(b) The Contractor shall give the Contracting Officer immediate notice in writing of any action, including any proceeding before an administrative agency, filed against the Contractor arising out of the performance of this contract. Except as otherwise directed by the Contracting Officer, in writing, the Contractor shall furnish immediately to the Contracting Officer copies of all pertinent papers received by the Contractor with respect to such action.

(c) (1) Except as provided in subparagraph (2) immediately following, the Contractor shall provide and maintain workers' compensation, employer's liability, comprehensive general liability (bodily injury), comprehensive automobile liability (bodily injury and property damage) insurance, and such other bonds and insurance required by law, this contract, or by the written direction of the Contracting Officer.

(2) The Contractor may, with the approval of the Contracting Officer, maintain a self-insurance program; provided that, with respect to workers' compensation, the Contractor is qualified pursuant to statutory authority.

(3) All bonds and insurance required by this clause shall be in a form and amount and for those periods as the Contracting Officer may require or approve and with sureties and insurers approved by the Contracting Officer.

(d) The Contractor agrees to submit for the Contracting Officer's approval, to the extent and in the manner required by the Contracting Officer, any other bonds and insurance that is maintained by the Contractor in connection with the performance of this contract and for which the Contractor seeks reimbursement.

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(e) Except as provided in subparagraphs (g) and (h) of this clause, the Contractor shall be reimbursed–

(1) For that portion of the reasonable cost of bonds and insurance allocable to this contract required in accordance with contract terms or approved under this clause; and

(2) For certain liabilities (and expenses incidental to such liabilities) to third persons not compensated by insurance or otherwise without regard to and as an exception to the clause of this contract entitled "DEAR 970.5204-15 Obligation of Funds (Feb 1993)". These liabilities must arise out of the performance of this contract, whether or not caused by the negligence of the Contractor or of the Contractor's agents, servants, or employees, and must be represented by final judgments or settlements approved in writing by the Government. These liabilities are for–

(i) Loss of or damage to property;

(ii) Losses, damages, or judgments of a type for which written approval by the Contracting Officer has been provided (e.g., medical malpractice, errors or omissions, and comprehensive general liability); or

(iii) Death or bodily injury.

(f) The Government's liability under paragraph (e) of this clause is subject to the availability of appropriated funds at the time a contingency occurs. Nothing in this contract shall be construed as implying that the Congress will, at a later date, appropriate funds sufficient to meet deficiencies.

(g) The Contractor shall not be reimbursed for liabilities (and expenses incidental to such liabilities)–

(1) For which the Contractor is otherwise responsible by law or the provisions of this contract.

(2) For which the Contractor has failed to insure or to maintain insurance as required by law or by written direction of the Contracting Officer.

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(h) (1) Notwithstanding any other provision of this contract, the Contractor's liabilities to third persons are not allowable unless the Contractor demonstrates to the Contracting Officer that such liabilities were not caused by either (i) the willful misconduct or lack of good faith of the Contractor's managerial personnel, or (ii) the failure of the Contractor's managerial personnel to exercise prudent business judgment.

(2) Punitive damages are not allowable unless the Contractor demonstrates to the Contracting Officer that they were incurred as a result of compliance with specific terms and conditions of the contract or written instructions from the Contracting Officer.

(3) The cost of insurance procured by the Contractor to cover the third-party liabilities referenced in subparagraph (h)(1) of this clause is not allowable.

(4) The term "Contractor's managerial personnel" as used in subparagraph (h)(1) of this clause means the Contractor's directors, officers and any of its managers, superintendents, or other equivalent representatives who have supervision or direction of (i) all or substantially all of the Contractor's business; or (ii) all or substantially all of the Contractor's operation at any one facility or separate location at which this contract is being performed; or (iii) a separate and complete major industrial operation in connection with the performance of this contract; or (iv) a separate and complete major construction, alteration, or repair operation in connection with performance of this contract; or (v) a separate and discrete major task or operation in connection with the performance of this contract.

(i) The Contractor may at its own expense and not as an allowable cost procure for its own protection insurance to compensate the Contractor for any unallowable or unreimbursable costs incurred in connection with contract performance.

(j) If any suit or action is filed or any claim is made against the Contractor, the cost and expense of which may be reimbursable to the Contractor under this contract, and the risk of which is then uninsured or is insured for less than the amount claimed, the Contractor shall--

(1) Immediately notify the Contracting Officer and promptly furnish copies of all pertinent papers received;

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(2) Authorize Government representatives to collaborate with (i) in-house or approved outside counsel in settling or defending the claim, or (ii) counsel for the insurance carrier in settling or defending the claim when the amount of the liability claimed exceeds the amount of coverage, unless precluded by the terms of the insurance contract; and

(3) Authorize Government representatives to settle or defend the claim and to represent the Contractor in or to take charge of any litigation, if required by the Government, when the liability is not insured or covered by bond. The Contractor may, at its own expense, be associated with the Government representatives in any such claim or litigation.

APPENDIX I6

NUCLEAR HAZARDS INDEMNITY AGREEMENT
CONTRACT DE-AC04-86AL31950

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Contract No. DE-AC04-86AL31950
Modification No. M121

I.66 DEAR 952.250-70 NUCLEAR HAZARDS INDEMNITY AGREEMENT (JAN 1992)

(a) *Authority*. This clause is incorporated into this contract pursuant to the authority contained in subsection 170d. of the Atomic Energy Act of 1954, as amended (hereinafter called the Act.)

(b) *Definitions*. The definitions set out in the Act shall apply to this clause.

(c) *Financial Protection*. Except as hereafter permitted or required in writing by DOE, the Contractor will not be required to provide or maintain, and will not provide or maintain at Government expense, any form of financial protection to cover public liability, as described in paragraph (d)(2) below. DOE may, however, at any time require in writing that the Contractor provide and maintain financial protection of such a type and in such amount as DOE shall determine to be appropriate to cover such public liability, provided that the costs of such financial protection are reimbursed to the Contractor by DOE.

(d) *Indemnification*. (1) To the extent that the Contractor and other persons indemnified are not compensated by any financial protection permitted or required by DOE, DOE will indemnify the Contractor and other persons indemnified against (i) claims for public liability as described in subparagraph (d)(2) of this clause; and (ii) such legal costs of the Contractor and other persons indemnified as are approved by DOE, provided that DOE's liability, including such legal costs, shall not exceed the amount set forth in section 170e.(1)(B) of the Act in the aggregate for each nuclear incident or precautionary evacuation occurring within the United States or $100 million in the aggregate for each nuclear incident occurring outside the United States, irrespective of the number of persons indemnified in connection with this contract.

(2) The public liability referred to in subparagraph (d)(1) of this clause is public liability as defined in the Act which (i) arises out of or in connection with the activities under this contract, including transportation; and (ii) arises out of or results from a nuclear incident or precautionary evacuation, as those terms are defined in the Act.

(e) *Waiver of Defenses*. (1) In the event of a nuclear incident, as defined in the Act, arising out of nuclear waste activities, as defined in the Act, the Contractor, on behalf of

Contract No. DE-AC04-86AL31950
Modification No. M121

itself and other persons indemnified, agrees to waive any issue or defense as to charitable or governmental immunity.

(2) In the event of an extraordinary nuclear occurrence which:

(i) Arises out of, results from, or occurs in the course of the construction, possession, or operation of a production or utilization facility; or

(ii) Arises out of, results from, or occurs in the course of transportation of source material, by-product material, or special nuclear material to or from a production or utilization facility; or

(iii) Arises out of or results from the possession, operation, or use by the Contractor or a subcontractor of a device utilizing special nuclear material or by-product material, during the course of the contract activity; or

(iv) Arises out of, results from, or occurs in the course of nuclear waste activities, the Contractor, on behalf of itself and other persons indemnified, agrees to waive:

(A) Any issue or defense as to the conduct of the claimant (including the conduct of persons through whom the claimant derives its cause of action) or fault or persons indemnified, including, but not limited to:

1. Negligence;
2. Contributory negligence;
3. Assumption of risk; or
4. Unforeseeable intervening causes, whether involving the conduct of a third person or an act of God;

(B) Any issue or defense as to charitable or governmental immunity; and

(C) Any issue or defense based on any statute of limitations, if suit is instituted within 3 years from the date on which the claimant first knew, or reasonably could have known, of his injury or change and the cause thereof. The waiver of any such issue or defense shall be effective regardless of whether such issue or defense may otherwise be deemed jurisdictional or relating to an element in the cause of action. The waiver shall be judicially

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enforceable in accordance with its terms by the claimant against the person indemnified.

(v) The term extraordinary nuclear occurrence means an event which DOE has determined to be an extraordinary nuclear occurrence as defined in the Act. A determination of whether or not there has been an extraordinary nuclear occurrence will be made in accordance with the procedures in 10 CFR part 840.

(vi) For the purposes of that determination, "offsite" as that term is used in 10 CFR part 840 means away from "the contract location" which phrase means any DOE facility, installation, or site at which contractual activity under this contract is being carried on, and any Contractor-owned or controlled facility, installation, or site at which the Contractor is engaged in the performance of contractual activity under this contract.

(3) The waivers set forth above:

(i) Shall be effective regardless of whether such issue or defense may otherwise be deemed jurisdictional or relating to an element in the cause of action;

(ii) Shall be judicially enforceable in accordance with its terms by the claimant against the person indemnified;

(iii) Shall not preclude a defense based upon a failure to take reasonable steps to mitigate damages;

(iv) Shall not apply injury or damage to a claimant or to a claimant's property which is intentionally sustained by the claimant or which results from a nuclear incident intentionally and wrongfully caused by the claimant;

(v) Shall not apply to injury to a claimant who is employed at the site of and in connection with the activity where the extraordinary nuclear occurrence takes place, if benefits therefor are either payable or required to be provided under any workmen's compensation or occupational disease law;

(vi) Shall not apply to any claim resulting from a nuclear incident occurring outside the United States;

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Modification No. M121

(vii) Shall be effective only with respect to those obligations set forth in this clause and in insurance policies, contracts or other proof of financial protection; and

(viii) Shall not apply to, or prejudice the prosecution or defense of, any claim or portion of claim which is not within the protection afforded under (A) the limit of liability provisions under subsection 170e. of the Act, and (B) the terms of this agreement and the terms of insurance policies, contracts, or other proof of financial protection.

(f) *Notification and litigation of claims*. The Contractor shall give immediate written notice to DOE of any known action or claim filed or made against the Contractor or other person indemnified for public liability as defined in paragraph (d)(2). Except as otherwise directed by DOE, the Contractor shall furnish promptly to DOE, copies of all pertinent papers received by the Contractor or filed with respect to such actions of claims. DOE shall have the right to, and may collaborate with, the Contractor and any other person indemnified in the settlement or defense of any action or claim and shall have the right to (1) require the prior approval of DOE for the payment of any claim that DOE may be required to indemnify hereunder; and (2) appear through the Attorney General on behalf of the Contractor or other person indemnified in any action brought upon any claim that DOE may be required to indemnify hereunder, take charge of such action, and settle or defend any such action. If the settlement or defense of any such action or claim is undertaken by DOE, the Contractor or other person indemnified shall furnish all reasonable assistance in effecting a settlement or asserting a defense.

(g) *Continuity of DOE obligations*. The obligations of DOE under this clause shall not be affected by any failure on the part of the Contractor to fulfill its obligation under this contract and shall be unaffected by the death, disability, or termination of existence of the contractor, or by the completion, termination or expiration of this contract.

(h) *Effect of other clauses*. The provisions of this clause shall not be limited in any way by, and shall be interpreted without reference to, any other clause of this contract, including the clause entitled Contract Disputes, provided, however, that this clause shall be subject to the clauses entitled Covenant Against Contingent Fees, Officials Not to Benefit, and Examination of Records by the Comptroller General, and any provisions that are later added to this contract as required by applicable Federal law, including statutes, executive orders and regulations, to be included in Nuclear Hazards Indemnity Agreements.

(i) *Civil penalties*. The Contractor and its subcontractors and suppliers who are indemnified under the provisions of this clause are subject to civil penalties, pursuant to

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Modification No. M121

234A of the Act, for violations of applicable DOE nuclear-safety related rules, regulations, or orders.

(j) *Criminal penalties*. Any individual director, officer, or employee of the Contractor or of its subcontractors and suppliers who are indemnified under the provisions of this clause are subject to criminal penalties, pursuant to 223c. of the Act, for knowing and willful violation of the Atomic Energy Act of 1954, as amended, and applicable DOE nuclear safety-related rules, regulations or orders which violation results in, or, if undetected, would have resulted in a nuclear incident.

(k) *Inclusion in subcontracts*. The Contractor shall insert this clause in any subcontract which may involve the risk of public liability, as that term is defined in the Act and further described in paragraph (d)(2) above. However, this clause shall not be included in subcontracts in which the subcontractor is subject to Nuclear Regulatory Commission (NRC) financial protection requirements under section 170b. of the Act or NRC agreements of indemnification under section 170c. or k. of the Act for the activities under the subcontract.

(l) *Effective Date*. This indemnity agreement shall be applicable with respect to nuclear incidents occurring on or after October 1, 1990.

(m) To the extent that the Contractor is compensated by any financial protection, or is indemnified pursuant to this clause, or is effectively relieved of public liability by an order or orders limiting same, pursuant to 170e of the Act, the provisions of the clause providing general authority indemnity shall not apply.

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

July 18, 1997

JUL 1997
RECEIVED

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau (HRMB)
New Mexico Environment Department
2044-A Galisteo Street
Santa Fe, NM 87505

Subject: Response to NMED Letter of June 18, 1997: WIPP Groundwater Monitoring Plan EPA I.D. Number NM4890139088

Dear Mr. Garcia:

In response to your letter dated June 18, 1997, we have enclosed a revised Groundwater Monitoring Plan (GMP) for the Waste Isolation Pilot Plant. The corresponding electronic file, Cross Reference Summary Table, redline/strikeout version, and responses to comments will be provided upon our receipt of material from the contract laboratory. This material will be provided to you early in the week of July 21, 1997. This revised plan replaces Appendix D18 in the WIPP Resource Conservation and Recovery Act (RCRA) Permit Application. Due to the extent of the changes, the entire plan is marked as Revision 6.4 and should replace the plan submitted as Revision 6.2 in its entirety. All changes have been made to either modify, clarify or supplement previously submitted information.

We have deleted the two attachments that contained the various standard operating procedures (SOPs) associated with the GMP. These SOPs will be provided to the HRMB through other mechanisms as specified in your letter. Specifically, a revised set of contract laboratory SOPs will be provided as soon as the revisions are received from the laboratory. We anticipate providing these to you in early September. This will be an informational copy as indicated in your letter. If changes are made to these SOPs, they will be provided to the HRMB in a timely manner. WIPP procedures referenced in the GMP are among those routinely supplied to the HRMB through the WIPP Controlled Document distribution system. The HRMB will continue to receive routine updates to these procedures.

In your letter, you requested clarification regarding our request for a groundwater monitoring waiver. We have decided to withdraw this request based on the NMED's stated intent to draft a permit that requires the operation of a groundwater contamination detection program. Given your intent, we believe that withdrawing the request is the best course of action to facilitate your timely review of the application and issue a draft permit. We maintain that the demonstration of no-migration, found in Appendix E1 of the permit application, which forms the basis for the waiver request, is valid. Therefore, we do not believe that a revision to the permit application to remove this information is necessary or warranted. We request that this letter provide adequate notification of withdrawal of the waiver request.

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Finally, in your letter, you asked for clarification of the term "new text" in our response to your February 25, 1997 comments on the GMP. In all cases, the "new text" was provided to either supplement, clarify, or modify the previously provided information consistent with your specific February 25, 1997 comments and requests. As stated previously, a "Cross Reference Summary Table" showing which text supplemented, clarified or modified existing text will be provided.

For the purpose of establishing the pedigree for the electronic version of this submittal, the following information is relevant:

> The attached Appendix D18 was generated from file R4180D18.WPD created on 3/23/95. It was submitted to NMED on 4/12/96 as Appendix D18, Revision 6.0 as file APD18.WPD (2,142 bytes) dated 4/10/96, 3:22 p.m.; it was revised and submitted to NMED on 3/20/97, Appendix D18, Revision 6.2 as file R4134D18 (346,221 bytes) dated 3/19/97, 11:55 p.m.; it has been revised and printed and is attached to this letter as Appendix D18, Revision 6.4 as a hard copy and as an electronic file named APPD18.FNL (306,783 bytes) dated 7/15/97, 10:09 a.m. All electronic submittals have been converted to WordPerfect 5.1/5.2 format at the request of NMED.

If you have any questions regarding this material, please contact Mr. Craig Snider at 234-7452.

Sincerely,

for George E. Dials
Manager

Enclosures

cc w/encl:
C&C File

cc w/o encl:
C. Wayman, CAO
M. McFadden, CAO
K. Hunter, CAO
A. Miner, CAO
J. Epstein, WID
G. Barnes, WID
K. Donovan, WID
B. Kehrman, WID
P. Kilgore, CAO

97-0920
UFC 5486

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

March 20, 1997

MAR 1997
RECEIVED

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 A Galisteo St.
Santa Fe, New Mexico 87505

Subject: Groundwater Monitoring Program Plan - Response to February 25, 1997 Request

Dear Mr. Garcia:

Please find enclosed a revised Appendix D18 entitled "Groundwater Monitoring Program Plan." This package is designed to replace the material currently found in the RCRA Part B permit application.

This submittal is being provided in response to your February 25, 1997, letter received by this office on March 6, 1997. Additionally, we are providing both a cross reference summary table which identifies the location where we previously described the monitoring efforts or added additional material to your request, along with responses to the specific requests outlined in your letter.

A hard and electronic copy is being provided to your technical contractor at the request of Mr. Steve Zappe. If we can be of any further assistance or provide any additional information, please contact Craig Snider at (505) 234-7452.

Sincerely,

For George E. Dials
Manager

Enclosure

cc:
C. Walker, AT Kearney

Printed on recycled paper

cc: w/o encl.
C&C File
K. Day, WID
L. Kilgore, CAO
L. King, CAO

Response to Comments and Information Requests by the NMED on Appendix D18, the WIPP Groundwater Monitoring Program

The NMED submitted a letter to the DOE on February 25, 1997 outlining the additional information that they require in the new Groundwater Monitoring Program Plan (Appendix D18 in the RCRA Part B Permit Application). Old Appendix D18 has been completely rewritten, by extracting existing information from various sections of the application, adding new data, and rewriting some of the existing text. The new monitoring plan addresses all of the specific information requirements of a complete detailed groundwater monitoring plan. The new plan was also written to respond to each of the information requests contained in the above-mentioned letter. The following discussion summarizes each NMED comment (bullet list) and the area of the monitoring plan where the comment is addressed.

- **Specify explicitly the proposed monitoring network.**

  Response: Chapter D18-3d describes the monitor well locations and clearly discusses that the GMP will use Wells WQSP-1 through -6A for background and detection monitoring. Figure D18-9 shows the monitor well network location and the WIPP compliance point which is the WIPP site boundary.

- **Identify the point of compliance for groundwater monitoring.**

  Response: Chapter D18-3d also clearly describes the WIPP monitoring point of compliance. The point of compliance which is the WIPP site boundary, is shown on Figures D18-2 and D18-9.

- **Provide a complete discussion of the appropriateness of the monitor well locations and suitability of the monitored interval to detect releases of hazardous constituents. In particular, address what appears to be a detection gap between Wells WQSP-3 and WQSP-4.**

  Response: Chapter D18-3d addresses the technical information and the previous investigations at WIPP which led to the selection of the monitor well locations. The general rationale for monitoring in the Culebra is also discussed in this chapter. D18-3d also describes how pumping and other activities at WIPP have impacted potentiometric surfaces and groundwater flow directions over the short term, and that using nondensity corrected flow maps gives inaccurate and misleading interpretations and should not be used to judge the adequacy of well placement. Figure D18-9 shows the most recent Culebra freshwater head potentiometric surface and the proposed monitor well network.

  Furthermore, even if one assumes the highest transmissivities occur throughout the region, travel time to the compliance point are on the order of 50 to 100 years. Consequently, any downgradient monitoring well located midway between the release point and the compliance point would detect a release prior to it reaching the compliance point.

- **Provide geologic/hydrologic information (or reference other sections of the permit application) to support the well locations and monitoring intervals.**

  Response: New Appendix D18, Groundwater Monitoring Plan, has considerable added information summarizing the WIPP area geology and hydrology. Chapters D18-1, D18-3, and D18-6 all have discussion of the physical characteristics of the site. Numerous references to Chapters D and E and Appendices D6 and E1 of the existing application have been added to direct the reader to greater detail on hydrology and geology. In addition, reference to a recent Sandia report on model simulations of the groundwater basin have been added as a source of additional information.

- **Provide well construction documentation, including installation diagrams, installation methodologies, construction techniques, well development, core logs, soil sampling, and justification from any deviations from typical well construction standards as defined by the RCRA Groundwater Monitoring Technical Enforcement Guidance Document and the RCRA Groundwater Monitoring: Draft Technical Guidance.**

  Response: Chapter D18-3d(1) provides all details of the drilling, coring, and well installation for Wells WQSP-1 through -6A. These descriptions include depths drilled, casing and well screen configurations, core intervals, materials used, and sand, gravel, bentonite sealing, and well annulus cementing. Figures D18-10 through 16 illustrate "as builts" and construction details of each well proposed for the monitoring program.

- **Identify the proposed monitoring frequency for the detection monitoring program.**

  Response: Chapter D18-6b describes the proposed monitoring frequency and Table D18-1 summarizes both sampling and water-level-monitoring frequencies for the background and detection monitoring programs. These frequencies are water-level monitoring, conducted monthly, and sampling, conducted semiannually, for both background and detection monitoring, respectively.

- **Include detailed sampling procedures, types of containers used for sample collection, sample collection methodologies, sample preservation requirements, volumes required for analyses, chain of custody programs, etc.**

  Response: Sampling procedures are discussed in Section D18-6(d) and in Attachment A. Types of containers used are discussed in Section D18-6(d) and in Attachment B (specified in the contract laboratory's SOPs). Sample preservation requirements are found in Attachment B. Volumes required for analyses are found in Attachment B. Chain of custody protocols are discussed in Section D18-7, Sample Documentation and Custody.

- **Describe equipment decontamination, management of investigation-derived waste, and surveying procedures.**

  Response: Surveying procedures for the existing monitor wells are addressed in Section D18-6(a), pg. D18-20. Decontamination procedures are discussed in Section D18-6d(2),

pg. D18-23. Management of investigation-derived waste is discussed in Section D18-6d(2), pg. D18-23.

- **Include discussions of quality assurance/quality control for sample collection, such as frequency of duplicate, trip blank, and other sample collections.**

  Response: QA/QC protocols are discussed in Section D18-5. Sample collection frequency is discussed in Section D18-6(b). WIPP sample collection procedures are included as Attachment A and are described in Section D18-6(d).

- **Provide a complete proposed list of indicator parameters, waste constituents, and reaction products for monitoring, the rationale for their selection, and the analytical methods to be used.**

  Response: Laboratory and field analytical parameters are addressed in Section D18-6(c), and in Table D18-2. The DOE plans to analyze for all Appendix IX compounds for background monitoring. Detection monitoring will target TCLP metals and eight organic compounds shown to constitute the greatest hazard associated with the waste.

- **Identify the contract laboratory performing the sample analyses and include all associated SOPs.**

  Response: The current contract laboratory SOPs are included in Attachment B. The relationship between WIPP and the contract laboratory is described in Section D18-6d(3). This section describes how the contract laboratory is selected, and that the selected laboratory may change over time.

- **Include applicable and necessary quality assurance information within the plan, rather than reference governing documents.**

  Response: QA/QC is addressed in Section D18-5, pgs. D18-14 through D18-19. Specific QA/QC information is also addressed in Attachments A and B, WIPP Operating Procedures, and Contract Laboratory Operating Procedures.

- **Provide procedures to statistically evaluate data.**

  Response: A discussion of statistical analyses is included in Section D18-6e(1) through (4), pgs. D18-25 through D18-27.

- **Include procedures and frequencies for collecting water level measurements.**

  Response: Included in Section D18-8b, pgs. D18-32 through D18-35, Section D18-6b, pgs. D18-20 through D18-21, and in Table D18-1.

- **Provide a table summarizing groundwater quality data obtained to date.**

  Response: Relevant water quality data collected to date for Wells WQSP-1 through -6A are included as Attachment C of revised Appendix D18.

Cross Reference Summary Table

Section of New Appendix D18 Groundwater Monitoring	Where Located Previously in Permit Application; or New Text
D18-1	Chapter E
D18-1a	WIPP Environmental Monitoring Plan
D18-1b	New Text
D18-1c and 1c(1)	Chapter D and Appendix D6
D18-1c(2)	Chapter D and Appendix D6
D18-2	Appendix E1
D18-3	New Text
D18-3a, 3b, 3c, and 3d	New Text, Appendix D18, and Appendix D6
D18-4	New Text
D18-5a and 5b	New Text
D18-5c through 5k	Appendix D18 and New Text
D18-6	New Text (modified from various sources)
D18-6a	Appendix D18
D18-6b	New Text
D18-6c	New Text, Chapter C, and Appendix C6
D18-6d	Appendix D18
D18-6d(1) and (2)	Appendix D18
D18-6d(3)	Appendix D18 and Chapter D
D18-6e(1) and (2)	New Text and Chapter D
D18-6e(3)	Chapter D
D18-6e(4)	New Text
D18-7	New Text following QA Guidance from EPA
D18-8	New Text
D18-8a(1), (2), (3), and (4)	Appendix D18 and New Text
D18-8b(1), (2), (3), (4), (5), and (6)	Appendix D18
D18-8c, 8d, and 8e	Appendix D18
D18-9	Appendix D18 and New Text
D18-10	Appendix D18 and New Text

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

June 3, 1996

JUN 1996
RECEIVED
HAZARDOUS WASTE
PROGRAM

Ms. Barbara Hoditschek
RCRA Permits Program Manager
New Mexico Environment Department
Hazardous & Radioactive Materials Bureau
P.O. Box 26110
Santa Fe, N.M. 87502

Subject: RCRA Part B Application Editorial Page Change Submission

Dear Ms. Hoditschek:

Enclosed are additional pages of our editorial page change submission to the Resource Conservation and Recovery Act (RCRA) Part B application missing from the May 29, 1996, submittal to Secretary Weidler. As in the May 29, 1996 submittal, we acknowledge this change can be submitted prior to the decision of technical adequacy. This enclosure does not introduce any new or substantive technical information. Pursuant to previous guidance, we are providing three copies of this submittal to Ms. Connie Walker of A. T. Kearney, Inc.

If you need any information or clarification of previous submittals, please contact Mr. Craig Snider of my staff at (505) 234-7452.

Sincerely,

James A. Mewhinney

James Mewhinney
Compliance Team Leader
Office of Regulatory Compliance

Enclosure

cc w/enclosure:
S. Zappe, NMED (6)
C. Walker, A.T. Kearney (3)

CAO:ORC:JAM96-1416

RCRA Part B Permit Application
Revision 6.1
Redline/Strikeout Pages

TABLE A1-1
ACTIVE ENVIRONMENTAL PERMITS/APPROVALS AS OF 4/1/96

Granting Agency	Type of Permit	Number	Granted/Submitted	Expiration	Permit Status
Department of Interior, Bureau of Land Management	Right-of-Way for Water Pipeline	NMM53809	8/17/83	None	Active
Department of Interior, Bureau of Land Management	Right-of-Way for the North Access Road	NM55676	8/24/83	None	Active
Department of Interior, Bureau of Land Management	Right-of-Way for Railroad	NM55699	9/27/83	None	Active
Department of Interior, Bureau of Land Management	Right-of-Way for Dosimetry and Aerosol Sampling Sites	NNM63136	7/31/86	None	Active
Department of Interior, Bureau of Land Management	Right-of-Way for Seven Subsidence Monuments	NM65801	11/7/86	None	Active
Department of Interior, Bureau of Land Management	Right-of-Way for Aerosol Sampling Site	NM77921	8/18/89	8/18/2019	Active
Department of Interior, Bureau of Land Management	Right-of-Way for Ten Raptor Nesting Platforms	NM82212	9/12/89	12/13/2019	Active
Department of the Interior, Bureau of Land Management	Right-of-Way for Survey Monument Installation	NM82245	12/13/89	12/13/2019	Active
Department of Interior, Bureau of Land Management	Approval to Drill 2 Additional Test Wells on Existing Pads at P-1 and P-2	None	9/18/86	None	Active[1]
Department of Interior, Bureau of Land Management	Free Use Permit for Caliche Extraction	NM-FU5 94405	6/6/95	5/12/98	Active
New Mexico Environment Department	Open Burning Permit to Train Fire Control Crews	None	2/120/95	3/1/96	Canceled 10/25/95 Open burn training no longer conducted on site.
New Mexico Environment Department	Operating Permit for two Backup Generators	310-M-2	12/7/93	None	Active
New Mexico Environment Department	Discharge Plan Approval	DP-831	1/16/92	1/16/97	Active
New Mexico Environment Department	Acknowledgement of Notification of Hazardous Waste Activity (WIPP)	NM48901 39088	1/88	None	Active
New Mexico Department of Game and Fish	Individual Banding	1961	2/16/96		Pending

TABLE A1-1 (CONTINUED)
ACTIVE ENVIRONMENTAL PERMITS/APPROVALS AS OF 4/1/96

Granting Agency	Type of Permit	Number	Granted/Submitted	Expiration	Permit Status
New Mexico Department of Game and Fish	Master Collecting	1894	3/1/95	3/1/97	Active
New Mexico Department of Game and Fish	Concurrence that WIPP construction activities will have no significant impact on State-listed threatened or endangered Species	None	5/26/89	None	Active
New Mexico State Engineer Office	H-19b1 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2420	11/10/94	1/31/98	Active
New Mexico State Engineer Office	H-19b2 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2421	11/10/94	1/31/98	Active
New Mexico State Engineer Office	H-19b3 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2422	11/10/94	1/31/98	Active
New Mexico State Engineer Office	H-19b4 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2423	11/10/94	1/31/98	Active
New Mexico State Engineer Office	H-19b5 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2424	11/10/94	1/31/98	Active
New Mexico State Engineer Office	H-19b6 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2425	11/10/94	1/31/98	Active
New Mexico State Engineer Office	WQSP-1 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2413	11/10/94	1/31/96	Resubmittal Pending
New Mexico State Engineer Office	WQSP-2 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2414	11/10/94	1/31/96	Resubmittal Pending
New Mexico State Engineer Office	WQSP-3 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2415	11/10/94	1/31/96	Resubmittal Pending

TABLE A1-1 (CONTINUED)
ACTIVE ENVIRONMENTAL PERMITS/APPROVALS AS OF 4/1/96

Granting Agency	Type of Permit	Number	Granted/Submitted	Expiration	Permit Status
New Mexico State Engineer Office	WQSP-4 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2416	11/10/94	1/31/96	Resubmittal Pending
New Mexico State Engineer Office	WQSP-5 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2417	11/10/94	1/31/96	Resubmittal Pending
New Mexico State Engineer Office	WQSP-6 well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2418	11/10/94	1/31/96	Resubmittal Pending
New Mexico State Engineer Office	WQSP-6a well, permit to appropriate the underground waters of New Mexico for monitoring and characterization	C-2419	11/10/94	1/31/96	Resubmittal Pending
U.S. Department of the Interior, Fish and Wildlife Service	Master Personal Banding	22478	5/19/93	6/30/98	Active
U.S. Department of the Interior, Fish and Wildlife Service	Concurrence that WIPP construction activities will have no significant impact on Federally-listed threatened or endangered species	None	5/29/80	None	Active
New Mexico Commissioner of Public Lands	Right-of-Way for High Volume Air Sampler	RW-22789	10/3/85	10/3/2012~~0~~	Active
New Mexico Department of Finance and Administrative Planning Division, Historic Preservation Bureau	Concurrence that the DOE Archaeological Resources Protection Plan is adequate to mitigate any adverse impacts upon cultural resources resulting from construction of the WIPP facility	None	7/25/83	None	Active
New Mexico Environment Department	Notification of the presence of 2 Underground Storage Tanks	None	4/15/86	None	Active
U.S. Environmental Protection Agency	Conditional No-Migration Determination for the Test Phase	None	11/14/90	11/14/2000	Active
U.S. Environmental Protection Agency	NESHAPS (Radionuclides)	None	2/19/91 Data package submitted to the EPA		
U.S. Environmental Protection Agency	NPDES Storm Water General Permit	NMR00A021	12/31/92	12/31/97	Active

TABLE A1-1 (CONTINUED)
ACTIVE ENVIRONMENTAL PERMITS/APPROVALS AS OF 4/1/96

[1]Existing pads P-1 and P-2, as of October 1992, belong to the U.S. Department of Energy (DOE). Therefore this permit is no longer needed through the granting agency.

WAC-prohibited materials are present in the waste. Section C-5 includes a description of the waste verification process that the DOE intends to conduct prior to receiving a shipment at the WIPP.

The WIPP will manage TRU mixed waste in a manner that mitigates the buildup of explosive or flammable gases within the waste. Containers are vented through individual carbon composite particulate filters, allowing any gases that are generated by radiolytic and microbial processes within a waste container to escape; to prevent over pressurization. Gas generation is discussed in detail in Chapter I, Section I-1e(4).

The WIPP facility is designed to manage only compatible waste. Therefore, a compatibility analysis was performed to identify potential incompatibilities for all defense generated TRU mixed waste reported in the WTWBIR. Wastes were screened for incompatibilities based on their chemical content and physical waste form by comparing information presented in 20 NMAC 4.1, Subpart V, Appendix V, and the EPA document "*A Method for Determining the Compatibility of Hazardous Wastes*," (Hatayama et al., 1980). The compatibility analysis also took into account waste compatibility with various aspects of the repository such as shaft, seal, and panel closure materials, backfill, and fire suppressant materials. Appendix C1 provides additional details and results of this analysis.

To ensure the integrity of the WIPP facility, waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be shipped to WIPP unless they are treated to remove the incompatibility. Only those waste streams that are compatible or have been treated to remove incompatibilities will be shipped to WIPP.

As described in Chapter D, Section D-9b(4), the potential risks to human health and the environment are due to emissions of VOCs from the waste containers into the air pathway. The most stringent environmental performance standard of 20 NMAC 4.1, Subpart V, §264.601(~~b~~c) is the acceptable excess risk levels for residential (chronic) exposure to carcinogens (10^{-6} for Class A and B carcinogens and 10^{-5} for Class C carcinogens). In addition, the risk assessment in Chapter D examined occupational exposures and compared them to Occupational Safety and Health Administration risk standards. WAC have been developed to limit the VOC concentrations in the headspace of waste containers to those which when averaged will ensure compliance with the performance standards. These limits are presented in Table C-5 as VOC headspace concentration limits. In reality, these are maximum <u>average</u> headspace concentrations. This means that some containers can exceed these values as long as averages in a disposal room do not. For a generator to ship waste that exceeds any of these values, a WAC exception must be requested at which time WIPP personnel will evaluate the impact on the average concentrations in the disposal room.

The DOE will only allow generators to ship those waste streams with EPA Hazardous Waste Codes listed on Part A of this application. Characterization of all waste streams will be performed as required by this WAP. If during the characterization process, new hazardous

The toxicity characteristic of homogeneous solids and soil/gravel wastes will be determined using total analysis of toxicity characteristic parameters, rather than the TCLP. Appendix C3 discusses comparability of these analytical results to those of the TCLP method.

Representativeness of containers selected for visual examination and waste subjected to homogeneous solids and soil/gravel sampling and analysis will be validated via examination of documentation that shows that true random samples were collected. (Because representativeness is a quality characteristic that expresses the degree to which a sample or group of samples represent the population being studied, the random sampling of waste streams ensures representativeness.)

Acceptable knowledge, along with radiography and headspace-gas sampling and analysis, is used to characterize debris waste. RCRA-regulated metals present in debris wastes are associated with specific waste materials (i.e., lead in leaded rubber gloves, leaded glass, or lead shielding). Knowledge of the materials and operations that generated these waste streams is used to determine if they contain RCRA-regulated metals. Acceptable knowledge is further explained in Section C-4b and Appendix C9.

Specific waste analysis methods are documented in the Methods Manual. Alternative methods will also be approved by the DOE/CAO Manager and accepted by the NMED. The procedure for this method of submittal and approval is provided in Appendix C7. Appendix C8 discusses required analytical method quality assurance objectives (QAO) and analytical procedures. Site-specific sampling and analysis activities will be documented in the QAPjP prepared by the generator sites, and approved by the WIPP facility personnel.

C-4 Characterization Methods

The characterization techniques used by sites include acceptable knowledge, headspace-gas sampling and analysis, radiography, and solidified waste sampling and analysis. All characterization activities are performed in accordance with the QAPP and the Methods Manual. Table C-8 provides a summary of the characterization requirements for TRU mixed waste.

As part of characterization efforts, waste containers will be tested in testing batches. A testing batch is a suite of waste containers undergoing radiography using the same testing equipment. A testing batch can be up to 20 waste containers without regard to waste matrix. Samples will be collected in sampling batches. A sampling batch is a suite of samples of similar matrix (i.e., gas or solid) collected consecutively, using the same sampling equipment within a specific time period. A sampling batch can be up to 20 samples (excluding field QC samples), all of which must be collected within 14 days of the first sample in the batch. Samples will be analyzed in analytical batches. An analytical batch is a suite of samples of similar matrix (i.e., gas or solid) processed as a unit, using the same analytical method within a specific time period. An analytical batch can be up to 20 samples (excluding laboratory QC samples), all of which must be received by the laboratory within 14 days of the validated time of sample receipt of the first sample in the batch. ~~For on-line integrated headspace-gas sampling/analytical systems, samples~~

~~sample in the batch.~~ For on-line integrated headspace-gas sampling/analytical systems, samples will be collected and analyzed in on-line batches. An on-line batch is the number of headspace gas samples that are collected and analyzed within a 12-hour period using the same on-line integrated sampling/analysis system.

C-4a Sampling and Analytical Methods

Headspace Gas Sampling and Analysis

All TRU waste will be sampled and analyzed to determine the concentrations of VOCs (presented in Table C-9) in headspace gases. Sampling protocols, equipment, and QA/QC methods for headspace-gas sampling are provided in Appendix C4, Section C4-1. In accordance with EPA convention, identification of compounds detected by gas chromatography/mass spectrometry methods that are not on the list of target analytes must be reported. These compounds are reported as tentatively identified compounds in the waste data package and must be added to the target analyte list if detected in 25 percent of all samples from a given waste stream and if they appear in the 20 NMAC 4.1, Subpart II, 264, Appendix IX list as implemented in the QAPP. The headspace gas analysis method QAOs are specified in Appendix C8.

Homogeneous and Soil/Gravel Sampling and Analysis

The goal of sampling of homogeneous and soil/gravel wastes is to collect a sample that is representative of the waste stream. This is accomplished through core sampling, which is described in Appendix C4, Section C4-2. The waste containers for sampling and analysis are selected randomly from the population of containers for the waste stream. The random selection methodology is specified in Appendix C6.

Totals analyses for VOCs, SVOCs, and RCRA-regulated metals are used instead of the TCLP to determine waste parameters that may be important to the performance within the disposal system (Tables C-10 and C-11). If sample preparation and/or cleanup methods are required, the analyst must use the procedures specified in the Methods Manual. Alternate sample preparation or cleanup methods must be submitted for review and approval in accordance with the DOE/CAO procedure contained in Appendix C7. The generator may use the results from these analyses to determine if a waste exhibits a toxicity characteristic. The mean concentration of toxicity characteristic contaminants are calculated for each waste stream such that it can be reported with an upper 90 percent confidence limit (UCL_{90}). The UCL_{90} values for the mean measured contaminant concentrations in a waste stream will be compared to the specified regulatory levels in 20 NMAC 4.1, Subpart II, expressed as total values, to determine if the waste stream exhibits a toxicity characteristic. A comparison of total analyses and TCLP analyses is presented in Appendix C3, and a discussion of the UCL_{90} is included in Appendix C6, Section C6-3.

calibration records, QA sample results, and that sample holding times and preservation methods were met or exceptions documented. Completed data must be signed by the technical supervisor. At the second level of verification, the Site Project Manager, the Site Data Validation Officer, and the Site Data QA Officer will also ensure that a repeat of this review is performed for at least one randomly chosen container quarterly. Finally, a check for the data package elements required by the QAPP will be performed by the WIPP Waste Operations section as the third level of verification for data packages to assure that data packages are complete. Figure C-5 shows the components of each level of data verification. Data verification is discussed in more detail in Appendix C8, Section C8-10.

Records Management

Records related to waste characterization sampling and analysis activities at the generator sites will be maintained in the testing, sampling, or analytical facility files or site project files for those facilities located on sites. Contract waste analytical facilities will forward testing, sampling, and analytical QA documentation along with testing, sampling, and analytical batch data reports to the site project office for inclusion in site central files.

~~All waste characterization data and related QA/QC records in the site project files for waste to be shipped to the WIPP facility are designated according to NQA-1, Supplement 17S-1, as either Lifetime Records or Non-Permanent Records. Records designated as Lifetime Records shall be maintained for the life of the waste characterization program at a participating site plus six years then offered to the DOE/CAO. Waste characterization records designated as Non-Permanent Records shall be maintained for five years from the date of (record) generation. Table C-13 provides a listing of records designated as Lifetime Records and Non-Permanent Records. Records, both Lifetime and Non-Permanent, shall also be maintained during the course of any enforcement action for which they are relevant. An appropriate records inventory and disposition schedule shall be prepared and approved by appropriate site personnel. Site personnel responsible for all aspects of records management shall be identified in the QAPjPs.~~

~~All waste characterization data and related records sent to the DOE/CAO are designated as Permanent by the WIPP facility. These records shall be maintained by DOE/CAO or WID for the active life of the WIPP facility plus two years. The active life of the WIPP facility is defined as the Disposal Phase and the Decommissioning Phase. These records shall also be maintained during the course of any enforcement action for which they are relevant. At the time of records disposition, the records shall be sent to the Federal Records Center. These records will then be transferred to the National Archives after an additional 30 years. However, this disposition requirement does not preclude the inclusion of these records in the permanent marker system or other requirements for institutional control.~~

An appropriate records inventory and disposition schedule (RIDS) shall be prepared and approved by appropriate site personnel. All records relevant to an enforcement action, regardless of disposition, shall be maintained at the generator site until they are no longer needed for enforcement action, and then dispositioned per the approved RIDS. All waste

characterization data and related QA/QC records in the site project files for waste to be shipped to the WIPP facility are designated according to NQA-1, Supplement 17S-1, as either Lifetime Records or Non-Permanent Records. Records that are designated as Lifetime Records shall be maintained for the life of the waste characterization program at a participating site plus six years, then offered to the DOE/CAO or transferred to the appropriate Federal Records Center (FRC). Waste characterization records designated as Non-Permanent Records shall be maintained for ten years from the date of (record) generation and then dispositioned according to their approved RIDS. If a site ceases to operate, all records shall be transferred before closeout. Table C-13 provides a listing of records designated as Lifetime Records and Non-Permanent Records.

All waste characterization data shall be maintained by DOE/CAO or WID for the active life of the WIPP facility plus two years. The active life of the WIPP facility is defined as the Disposal Phase and the Decommissioning Phase. After their active life, the records shall be retired to the FRC and maintained for 30 years. These records will then be offered to the National Archives. However, this disposition requirement does not preclude the inclusion of these records in the permanent marker system or other requirements for institutional control.

Raw data obtained by testing, sampling, and analyzing TRU waste in support of this WAP will be identifiable, legible, and provide documentary evidence of quality. The reporting requirements are different for each technique used, but the forms for data reporting will be pre-approved forms, provided in site-specific documentation

C-5 Verification for TRU Mixed Waste

The third level of data verification, which is performed at the WIPP facility, involves screening and verification of waste stream data and waste shipments. Documentation on waste streams will be screened and verified to ensure that the waste is acceptable for disposal at the WIPP facility according to applicable RCRA requirements. Quality controls related to waste labeling, identification, transport, and screening will ensure that the waste packages arriving at the WIPP facility are the same as those transported from the generator sites and are correctly identified on the EPA Hazardous Waste Manifest.

WIPP waste screening is a two-phased process. Phase I will occur prior to transporting the waste to the WIPP facility. Phase II will occur after the waste shipment arrives but before it is emplaced. Figure C-6 presents the waste shipment screening process.

C-5a Phase I Waste Stream Screening and Verification

The first phase of the waste screening and verification process will occur before waste is shipped to the WIPP site. Before WIPP will begin the process of accepting waste from a generator site, an initial audit of that site will be conducted as part of the Generator/Storage Site Waste Screening and Acceptance Audit Program (Appendix C11). The RCRA portion of the generator site audit program will provide on-site verification of characterization procedures, data package preparation, and recordkeeping. The secondary verification step is the waste-characterization

TABLE C-13
REQUIRED PROGRAM RECORDS MAINTAINED IN SITE PROJECT FILES

Lifetime Records

- Field sampling data forms
- Field and laboratory chain-of-custody forms
- Test facility and laboratory analytical data reports
- Summary data packages
- ~~Analytical results of all QA/QC samples~~
- ~~Reports and data transmittals sent to DOE/CAO~~
- ~~Nonconformance and corrective action documentation~~
- Sampling Plans
- ~~Audit plans, reports, responses, and final closure of corrective actions~~
- ~~Quality assurance reports to management~~
- Data reduction, validation, and reporting documentation~~records~~
- ~~Gas canister tags~~
- ~~Audio/video tapes~~
- Acceptable knowledge documentation
- Data reconciliation report
- Waste Stream Profile Form

Non-Permanent Records

- Nonconformance documentation
- Variance documentation
- Assessment documentation
- Gas canister tags
- Methods performance documentation
- Performance Demonstration Program documentation~~analytical results~~
- ~~Sampler certifications~~
- Sampling equipment certifications
- Calculations and related software documentation
- ~~All pertinent incoming and outgoing correspondence, memoranda, and telephone records related to QA/QC~~
- ~~Documentation of calculations and computer programs with associated verification~~
- ~~Reference material relevant to the waste characterization program~~
- Training/qualification documentation~~records~~
- ~~Documentation of revisions or changes to the QAPP or QAPjPs~~
- QAPP (CAO)/QAPjPs (sites) documentation (all revisions)
- Calibration documentation~~records~~
- Analytical raw data
- ~~Electronic instrument data (e.g., GC/MS files)~~
- Procurement documentation~~records~~
- ~~QC standard certification statements~~
- QA procedures (all revisions)
- Technical implementing procedures (all revisions)
- Audio/video recording (RTR, visual, etc.)

Container Compatibility

All containers are made of steel, and some contain rigid, molded polyethylene liners. The compatibility study, documented in Appendix C1, included container materials to assure containers are compatible with the waste. Therefore, these containers meet the requirements of 20 NMAC 4.1, Subpart V, §264.172.

D-1a(1)(a) CH Bay and RH Bay Storage Areas

Upon receipt and removal of CH TRU waste containers from the TRUPACT-IIs, the waste containers will be checked for physical damage and for external surface contamination. If a primary waste container does not meet the requirements for acceptability, corrective action will be taken to mitigate unacceptable conditions. Such unacceptable conditions may be mitigated by initiating local decontamination, returning unacceptable containers to a DOE generator site, or sending the TRUPACT-II to the third party contractor.~~, or emplacing the TRUPACT-II in the WIPP underground.~~ If local decontamination activities are opted for, the work will be conducted inside the WHB on the TRUPACT-II Dock (TRUDOCK). These processes are described in Section D-10a. The area previously designated as the Overpack and Repair Room will not be used for TRU mixed waste management in any instances.

When RH canisters are removed from the road cask in the unloading room of the hot cell complex, they will be transported to the Hot Cell and checked for external surface contamination and container integrity. If an unacceptable condition is identified, the canister will be overpacked. The overpacked canister will then reenter the normal waste management process line.

D-1a(1)(b) Parking Area Storage Unit

Wastes placed in the Parking Area Storage Unit will remain sealed in their transportation containers at all times while in this area. The Certificate of Compliance requires that sealed TRUPACT-IIs, which contain waste, be vented every 60 days to avoid unacceptable levels of internal pressure. Internal primary waste containers will be checked for container integrity and surface contamination when the waste is unloaded for emplacement in the underground. The Nuclear Regulatory Commission (NRC) has not established a maximum sealing time for RH TRU transportation casks.

D-1a(2) Container Management Practices

20 NMAC 4.1, Subpart V, §264.173 requires that containers be managed in a manner that does not result in spills or leaks. Containers are required to be closed at all times, unless waste is being placed in the container or removed. Because containers at the WIPP will contain radioactive waste, safety concerns require that containers be continuously vented to obviate the buildup of gases within the container. These gases could result from radiolysis, which is the

Shielded Storage Room. In either case the waste containers will be elevated approximately six inches from the floor surface. The storage capacity of this area is one pallet load (i.e., 4 SWBs, 2 TDOPs, or 28 drums, or combinations of all three).

The amount of RH TRU mixed waste disposal planned is two canisters per day or eight per week on the same shifts as CH waste operations.

During normal operations, a maximum of five RH canisters will be stored in the Hot Cell and a maximum of seven canisters will be stored in the Transfer Cell, as shown in Figures D-7 and D-8. The combined storage capacity of the Hot Cell and the Transfer Cell is 377 ft^3 (10.7 m^3). The floor and wall coatings provide an impermeable surface that serves as secondary containment in the Hot Cell and the Transfer Cell. The storage positions that hold the canisters have openings which keep the canisters from standing in liquid. (The Hot Cell and the Transfer Cell are discussed in Section D-10a(2)(b)(ii).)

Aisle space shall be maintained in all CH Bay waste storage areas. The aisle space shall be adequate to allow unobstructed movement of fire-fighting personnel, spill-control equipment, and decontamination equipment that would be used in the event of an off-normal event. An aisle space of 44 in. (1.1 m) between facility pallets will be maintained in all CH TRU waste storage areas. Aisle space requirements shall not be met for RH canisters. Because of the high radiation fields, inspections and cleanup of spills and releases will not be conducted while waste is located in these storage areas. If a release were to occur, all waste would be removed from the Hot Cell prior to initiating any clean up activities.

D-1a(2)(a)(ii) Parking Area

The area extending south from the WHB across the rail sidings is defined as the parking area container storage unit (HWMU) (Figure D-6). This area provides space for 12 loaded TRUPACT-IIs and three loaded road casks or four rail casks, corresponding to 1,536 ft^3 (~~3.543~~ 5 m^3) of CH waste and 125.6 ft^3 (3.56 m^3) of RH waste. Secondary containment and protection of the waste containers from standing liquid are provided by the transportation containers.

The maximum number of TRUPACT-IIs that will be stored in the parking area is 20 percent of the TRUPACT-II fleet. This is equivalent to 12 TRUPACT-IIs, containing a maximum of 24 SWBs or 168 drums of CH waste. The TRUPACT-II safety criteria require that they be opened and vented at a frequency of at least once every 60 days. In addition, three road casks or four rail casks containing RH waste will be stored in this area. During normal operations the maximum residence time of any one container in the parking area storage area is five days. Therefore, during normal waste handling operations, no TRUPACT-IIs will require venting while located in the parking area storage area. Any off-normal event that drives residence times to 60 days or greater in this storage area shall be mitigated by moving the TRUPACT-IIs or casks inside the WHB for the venting process prior to returning them to the parking area.

Backfill

As specified in Appendix D22, magnesium oxide (MgO) will be used as a backfill in order to provide chemical control over the solubility of radionuclides in order to comply with the requirements of 40 CFR 191.13. The MgO backfill will be purchased prepackaged in the proper containers for emplacement in the underground. Purchasing prepackaged backfill eliminates handling and placement problems associated with bulk materials, such as dust creation. In addition, prepackaged materials will be easier to emplace, thus reducing potential worker exposure to radiation. Should a backfill container be breached, MgO is benign and cleanup is simple. No hazardous waste would result from a spill of backfill. A Material Safety Data Sheet is attached in Appendix D22.

The MgO backfill will be purchased and received in two different containers: 1) a supersack holding 4,000 lbs (1,814 kg); and 2) a mini sack holding 25 lbs (11.3 kg). Quality assurance requirements, such as material quality and quantity, will be addressed by using current quality assurance procedures in the procurement process and receipt inspection. The filled containers will be shipped by road or rail and will be delivered underground using current shaft and material handling procedures and processes.

The mini sack will be 34 in. (86.4 cm) long, 6 in. (15 cm) in diameter and will be fabricated of a single layer of polyethylene or other suitable material. It will have an integral handle/hook attached into the sack closure. Six sacks will be manually placed in the external voids of each 7-pack unit just before the 7-pack is positioned on the waste stack. The mini sack will be lifted up behind the shrink wrap around the top of the 7-pack, slid into place, and held there by the four inch hole in the lower slip sheet. See Figure D-30A. Once the sacks are in place, the 7-pack will be positioned on the waste stack in the normal manner. No new equipment or training of operators is necessary.

A similar process will be used for standard waste boxes (SWB) except that the sacks will be hung from the lift clips on these units. See Figure D-30A. Again, no new equipment or training is necessary.

Super sacks will be handled and placed using the slip sheet/BRUDI technique used for normal waste handling operations. Hence, no new equipment, procedures, or training are required. Once each row of waste units is in place, a layer of 6 super sacks will be placed on top of them. See Figure D-30B. The super sack will be 5 ft (1.5 m) wide by 6 ft (1.8 m) deep by 1.5 ft (0.45 m) high and will be of multi-wall construction with a vapor/moisture barrier. The super sack will have an integral slip sheet or base attachment so that it can be handled and placed in a manner that is identical to how waste units are emplaced, using a BRUDI-like attachment on a lift truck.

Finally, mini sacks will be manually stacked on the floor in the space between the waste stack and ribside. These sacks can be placed horizontally or vertically as may be convenient and loading rates up to 100 lbs per linear foot (148.8 kg per linear meter) can be achieved. ~~simply~~

completely filled with waste; be idle, awaiting waste handling operations; or being prepared for waste receipt. Approximately 35,000 ft^3 (990 m^3) per min will be required in each of these active rooms during operations. This quantity of air is required to support the numbers and types of diesel equipment that are expected to be in operation in the area, to support the underground personnel working in that area, and to exceed a minimum air velocity of 60 ft (18 m) per min as specified in the WIPP Ventilation Plan. The remainder of the air is needed in order to account for air leakage through inactive rooms.

Air will be routed into a panel from the intake side. Air is routed through the individual rooms within a panel using underground bulkheads and air regulators. Bulkheads are constructed by erecting framing of rectangular steel tubing and screwing galvanized sheet metal to the framing. Figure D-34A shows a typical bulkhead with a flow regulator installed. In order to accommodate creep, bulkhead members use telescoping extensions that are attached to the framing and which can be adjusted periodically. Since bulkheads are intended to seal the ventilation system, they use either a sheetmetal or rubber gasket that is attached to the bulkhead on one side and the salt on the other. Flow is also controlled using brattice cloth barricades. These consist of chainlink fence that is bolted to the salt and covered with brattice cloth; and are used in instances where the only flow control requirement is to block the air. A brattice cloth air barricade is shown in Figure D-34B. Ventilation will be maintained only in all active rooms within a panel until waste emplacement activities are completed and the panel-closure system is installed. The air will be routed simultaneously through all the active rooms within the panel. The rooms that are filled with waste will be isolated from the ventilation system, while the rooms that are actively being filled will receive a greater volume of air to assure worker safety. After all rooms within a panel are filled, the panel will be closed using a closure system described in Chapter I of this permit application.

Once a disposal room is filled and is no longer needed for emplacement activities, it will be barricaded against entry and isolated from the mine ventilation system by ~~closing the air regulator and constructing a chain link/brattice cloth barricade~~removing the air regulator bulkhead and constructing chain link/brattice cloth barricades at each end. There is no requirement for air for these rooms since personnel and/or equipment will not be in these areas. For air dispersion modeling purposes in Appendix D9, it is assumed that no air goes through each filled room.

The ventilation path for the waste disposal side is separated from the mining side by means of air locks, bulkheads, and salt pillars. A pressure differential is maintained between the mining side and the waste disposal side to ensure that any leakage is towards the disposal side. The pressure differential is produced by the surface fans in conjunction with the underground air regulators.

Underground Ventilation Modes of Operation

The underground ventilation system is designed to perform under two modes of operation: normal (the HEPA exhaust filtration system is bypassed), and filtered (the exhaust is filtered through the HEPA filtration system, if the concentrations of radioactive contaminants exceed pre-set limits).

TABLE D-6
MAXIMUM ESTIMATED OCCUPATIONAL AND PUBLIC EXPOSURE FROM UNDERGROUND WASTE VOC EMISSIONS

Indicator Volatile Organic Compounds (ppmv)	Worker Receptor Concentration		OSHA 8 Hour TWA[b] (ppmv)	Estimated Risk for Carcinogens and Hazard Quotients for Non-Carcinogens for Public Exposure to Waste Emissions	Acceptable Level of Risk[f]
	Surface	Underground			
Carbon Tetrachloride	3.0E-04	1.2E-02	10	3E-08	1E-06
Chlorobenzene[a]	6.9E-04	2.9E-02	75	4E-06[e]	1
Chloroform	2.7E-04	1.0E-02	50[c]	2E-09	1E-06
1,1-Dichloroethylene	1.2E-03	4.7E-02	5[d]	2E-09	1E-05
1,2-Dichloroethane	3.8E-04	~~1.6E-01~~ 1.5E-01	100	8E-10	1E-06
Methylene Chloride	4.5E-03	~~1.3E-02~~ 1.6E-02	500	6E-10	1E-06
1,1,2,2-Tetrachloroethane	3.2E-04	~~6.7E-02~~ 1.3E-02	5	3E-09	1E-05
Toluene[a]	1.6E-03	6.7E-02	200	3E-07[e]	1
1,1,1-Trichloroethane	4.0E-03	1.6E-01	350	2E-08	1E-05

a. Non-Carcinogen (all others are class B2 or C carcinogens)
b. 8 hour time weighted averages (TWA) except for chloroform
c. TWA for up to a 10 hour day in a 40 hour workweek
d. TWA from ACGIH
e. Non-Carcinogen hazard quotient
f. Acceptable level of risk for carcinogens is the probability of developing cancer, and for non-carcinogens is a hazard quotient less than or equal to 1

D9-5.3.2 Non-Carcinogens

As for carcinogens, noncarcinogen VOC contaminant concentrations in air for the Surface Worker and the Underground Worker and OSHA 8 hour TWAs are presented (Table D9-9). This information provides a mechanism for evaluating occupational exposures in addition to the risk assessment approach. The receptor concentrations for the Surface Worker are seven orders of magnitude below the TWAs and those for the Underground Worker are more than six orders of magnitude below the TWAs.

Human health risk from non-carcinogens can be calculated using equation D9-23 with EF = 1920 hours/year for the surface worker and 33 hours per year for the underground worker, ED = 10 years, and EC = ECS in Table 9-9. The calculated hazard quotient from Chlorobenzene is 4E-01 for the surface worker and 3E-02 for the underground worker. The risk from Toluene, the hazard quotient is 3E-02 for the surface worker and 3E-03 for the underground worker.

TABLE D9-8
VOC CONTAMINANT CONCENTRATIONS IN AIR FOR THE SURFACE WORKER AND THE UNDERGROUND WORKER

Compound	ECS_{max} Exhaust Shaft Concentration for Surface Worker (µg/m³)	ECU_{max} Exposure Concentration for Underground Worker (µg/m³)	Receptor Concentration (ECS x ADF) Surface Worker (ppmv)	Receptor Concentration Underground Worker (ppmv)	OSHA TWA[a] (ppmv)
Carbon Tetrachloride	1.54E+02	7.70E+01	3.00E-04	1.22E-02	10
Chloroform	1.06E+02	5.03E+01	2.67E-04	1.03E-02	50
1,1,-Dichloroethylene	4.01E+02	1.86E+02	1.24E-03	4.68E-02	5[b]
1,2-Dichloroethane	1.25E+02	6.00E+01	3.81E-04	~~1.63E-01~~ 1.48E-01	100
Methylene Chloride	1.26E+02	5.66E+02	4.45E-03	~~1.29E-02~~ 1.63E-02	500
1,1,2,2-Tetrachloroethane	1.77E+02	8.86E+01	3.17E-04	~~6.70E-02~~ 1.29E-02	5
1,1,1-Trichloroethane	~~3.31E+03~~ 1.77E+03	~~1.66E+03~~ 8.89E+02	4.00E-03	1.63E-01	350

a. 8 hour TWAs except chloroform TWA for up to a 10 hour day in a 40 hour work week.
b. TWA from ACGIH

TABLE F-1
INSPECTION SCHEDULE

System/Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Deterioration[b]	Leaks/ Spills	Other
Air Intake Shaft Hoist	Mine Operations	Preoperational[c] See Lists 1b and c	Yes	NA	Inspect per Mine Safety and Health Administration (MSHA) requirements
Ambulances and related emergency supplies and equipment	Emergency Management	Weekly See List 11	Yes	NA	Depletion and expiration dates
Adjustable Center of Gravity Lift Fixture	Waste Operations	Preoperational See List 8	Yes	NA	NA
Standby/Emergency Power Backup Diesel Generators	Facility Operations	Monthly See List 3	NA	Yes	Starting and operating both generators
Facility Inspections	Facility Engineering	Annually See List 4	Yes	NA	NA
Central Monitoring Systems (CMS)	Facility Operations	Continuous See List 3	NA	NA	Automatic Self-Checking
Contact-Handled (CH) TRU Underground Transporter	Waste Operations	Preoperational See List 8	Yes	NA	Inspect area around transporter for obstacles
Conveyance Loading Car	Waste Operations	Preoperational See List 8	Yes	NA	Tracks clear of obstacles, guards in the proper place
Exhaust Shaft	Mine Operations	Quarterly See List 1a	Yes	Yes	NA
Eye Wash and Shower Equipment	Industrial Safety	Weekly See List 5	Yes	NA	NA
		Semi-annually See List 2a	Yes	NA	Water replaced
Fire Detection and Alarm System	Industrial Safety	Semiannually See Lists 2b and 11	Yes	NA	Operability of indicator lights. Inspection includes underground fuel station dry chemical suppression system.
Fire Extinguishers[k]	Emergency Management	Monthly See List 11	Yes	Yes	Expiration, seals, fullness, pressure

TABLE F-1 (CONTINUED)
INSPECTION SCHEDULE

System/Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Deterioration[b]	Leaks/ Spills	Other
Fire Hoses	Industrial Safety	Annually (minimum) See List 11	Yes	Yes	NA
Fire Hydrants	Emergency Management	Monthly/ quarterly See List 11	Yes	Yes	NA
Fire Pumps	Emergency Management	Weekly/annually See List 11	Yes	Yes	NA
Fire Sprinkler Systems—	Industrial Safety	Monthly/ quarterly See Lists 2b and 11	Yes	Yes	NA
Fire Trucks	Emergency Management	Weekly See List 11	Yes	Yes	NA
Forklifts Used for Waste Handling	Waste Operations	Preoperational See List 8	Yes	NA	On board fire suppression system
Hazardous Material Response Equipment	Emergency Management	Weekly See List 11	Yes	NA	Depletion and expiration dates
Miners First Aid Station	Emergency Management	Quarterly See List 11	NA	NA	Depletion
Mine Pager Phones (between surface and underground)	Facility Operations	Quarterly See List 3	NA	NA	Monthly battery change check
MSHA Air Quality Monitoring	Mine Operations	Daily[c] See List 1	NA	NA	Underground Air Quality Monitoring - MSHA
Perimeter Fence, Gates, Signs	Security	Daily See List 6	Yes	NA	NA
Personal Protective Equipment (not otherwise contained in emergency vehicles or issued to individuals): —Self-Contained Breathing Apparatus	Emergency Management	Weekly See List 11	Yes	NA	NA
	Industrial Safety	Quarterly See List 2a	Yes	NA	NA
Public Address (and Intercom System)	Facility Operations	Monthly See List 3	NA	NA	Systems operated in test mode
Radiation Monitoring Equipment	Radiation Safety	Preoperational See List 7	Yes	NA	Instrument calibrations

TABLE F-1 (CONTINUED)
INSPECTION SCHEDULE

System/Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Deterioration[b]	Leaks/ Spills	Other
Radio Equipment	Information Resource Management[i]	Daily[j]	NA	NA	Radios are used until they fail
Rescue Truck	Emergency Management	Weekly See List 11	Yes	Yes	Depletion and expiration dates
Salt Handling Shaft Hoist	Mine Operations	Preoperational See List 1b and c	Yes	NA	Inspect per MSHA requirements
Self-Rescuers	Mine Operations	Quarterly See List 1c	Yes	NA	Inspect per MSHA requirements
Surface TRU Mixed Waste Handling Area[n]	Waste Operations	Preoperational or Weekly[f,j]	Yes	Yes	Floor coating integrity
TRU Mixed Waste Decontamination Equipment	Waste Operations	Annually See List 8	NA	NA	Depletion
Underground Openings—Roof Bolts	Mine Operations	Monthly See List 1a	Yes	NA	NA
Underground Openings—Travelways	Mine Operations	Weekly/ annually See List 1a	Yes	NA	NA
Underground—Geo-mechanical Instrumen-tation System (GIS)	Mine Operations	Monthly See List 9	Yes	NA	NA
Underground TRU Mixed Waste Disposal Area—(mine pager phones, equipment, aisle space, signs, debris, ventilation)	Waste Operations	Preoperational See List 8	Yes	Yes	NA
Uninterruptible Power Supply (Central UPS)	Facility Operations	Daily See List 3	Yes	NA	No malfunction alarms
Vehicle Siren	Emergency Management	Weekly See List 11	Yes	NA	Functional Test
Ventilation Exhaust	Maintenance Operations	Quarterly See List 10	Yes	NA	NA
Waste Handling Cranes	Waste Operations	Preoperational See List 8	Yes	Yes	NA
Waste Hoist	Mine Operations	Preoperational See List 1b and c	Yes	Yes	Inspect per MSHA requirements
Water Tank Level	Facility Operations	Daily See List 3	Yes	NA	Record water levels

TABLE F-1 (CONTINUED)
INSPECTION SCHEDULE

System/Equipment Name	Responsible Organization	Inspection[a] Frequency and Job Title of Personnel Normally Making Inspection	Deterioration[b]	Leaks/ Spills	Other
Brudi	Waste Operations	Preoperational See List 8	Yes	NA	NA
Trailer Jockey	Waste Operations	Preoperational See List 8	Yes	NA	NA
Canister Shuttle	Waste Operations	Preoperational[h, l] See List 8	Yes	NA	NA
Facility Cask	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Facility Cask Transfer Car	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Facility Cask Turntable	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Facility Grapple	Waste Operations	Preoperational[h, l] See List 8	Yes	NA	NA
15-Ton Bridge Crane	Waste Operations	Preoperational[h, l] See List 8	Yes	NA	NA
Grapple Hoist	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Hook and Rope on 50/25-Ton Bridge Crane	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Manipulator	Waste Operations	Preoperational[h, l] See List 8	Yes	NA	NA
RH Emplacement Machine -Subassemblies -Emplacement Machine	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
Road Cask Transfer Car	Waste Operations	Preoperational[l] See List 8	Yes	NA	NA
RH Hot Cell	Waste Operations	Preoperational or Weekly[h, l, m]	Yes	Yes	Floor coating integrity

TABLE F-1 (CONTINUED) INSPECTION SCHEDULE

List 1: Mine Operations

a. Mining Technician *
   Senior Mining Technician *
   Continuous Mining Specialist *
   Senior Mining Specialist *
   Mine OPS Supervisor *
b. Waste Hoist Operator
   Waste Hoist Shaft Tender
c. Senior Dispatcher* - Self Rescuers
   Shaft Technician *

List 2: Industrial Safety

a. Safety Technician *
   Senior Safety Technician *
   Safety Specialist *
   Safety Engineer *
   Industrial Hygienist *
b. Fire Protection Engineering *

List 3: Facility Operations

Facilities Technician *
Senior Facilities Technician *
Facility Operations Specialist *
Central Monitoring Room Operator *
Central Monitoring Room Specialist *
Operations Engineer
Senior Operations Engineer *
Supervisor General U/G Services *
Facility Shift Manager
Operations Technical Coordinator *

List 4: Facility Engineering

Senior Engineer *

List 5: General

Building Landlord *

List 6: Security

Security Protective *
Security Protective Supervisor *

List 7: Radiation Safety

Radiological Control Technician

List 8: Waste Operations

Manager, Waste Operations
TRU-Waste Handler

List 9: Geotechnical Engineering

Engineer Technician *
Associate Engineer *
Engineer *
Senior Engineer *

List 10: Maintenance Operations

Maintenance Technician *
Maintenance Specialist *
Senior Maintenance Specialist *
Contractor *

List 11: Emergency Management

Emergency Services Technician

[a] Inspection may be accomplished as part of or in addition to regularly scheduled preventive maintenance inspections for each item or system. Certain structural systems of the WHB, Waist Hoist and Station A are also subject to inspection following severe natural events including earthquakes, tornados, and severe storms. Structural systems include columns, beams, girders, anchor bolts and concrete walls.

[b] Deterioration includes: cracks, erosion, salt build-up, damage, corrosion, loose or missing parts, malfunctions, and structural deterioration.

[c] "Preoperational" signifies that inspections are required prior to the first use during a calendar day. For calendar days in which the equipment is not in use, no inspections are required. For an area this includes: area is clean and free of obstructions (for emergency equipment); adequate aisle space; emergency and communications equipment is readily available, properly located and sign-posted, visible, and operational. For equipment, this includes: checking fluid levels, pressures, valve and switch positions, battery charge levels, pressures, general cleanliness, and that all functional components and emergency equipment is present and operational.

[d] "Postoperational" signifies that inspections are required after the last use during a calendar day. For calendar days in which the equipment is not in use, no inspections are required.

[e] These weekly inspections apply to container storage areas when containers of waste are present for a week or more.

[f] Otherwise, these are inspected as indicated above.

[g] In addition, the water tank levels are maintained by the CMR and level readouts are available at any time.

[h] The inspections/maintenance activities associated with these pieces of equipment will be performed when the hot cell is empty of RH waste. If contamination is present, a radiation work permit may be needed.

[i] This organization is responsible for obtaining licenses for radios and frequency assignments. They do periodic checks of frequencies and handle repairs which are performed by a vendor.

[j] Radios are not routinely "inspected." They are operated daily and many are used in day-to-day operations. They are used until they fail, at which time they are replaced and repaired. Radios are used routinely by Emergency Management, Security,

TABLE F-1 (CONTINUED)
INSPECTION SCHEDULE

Environmental Monitoring, and Facility Operations.

k Fire extinguisher inspection is paperless. Information is recorded into a database using barcodes. The database is then printed out. A current copy of the database and barcodes is provided in Appendix F1.

l Inspections of all RH equipment and areas only apply after RH TRU waste receipt begins.

m For the RH Hot Cell limited weekly camera inspections will be done when RH waste is in the Hot Cell.

n Surface TRU mixed waste handling areas include the RH Bay, Cask Unloading Room, Facility Cask Loading Room, CH Container Storage Units, Derived Waste Area and unloading areas.

* No log forms are used for daily readings. However, readings that are out of tolerance are reported to the CMR and logged by CMR operator.

* Positions are not considered RCRA positions (i.e., personnel do not manage TRU mixed waste).

APPENDIX F1
TABLE OF CONTENTS

CH TRU Waste Handling
Air-Intake Shaft Hoist
Ambulances and Related Emergency Supplies and Equipment
- Surface Ambulance
- Underground Ambulances

Adjustable Center of Gravity Lift Fixture
Standby/Emergency Power Backup Diesel Generators
Facility Inspections
CH TRU Underground Transporter
Conveyance Loading Car
Exhaust Shaft
Eye Wash and Shower Equipment
Fire Detection and Alarm System
Fire Extinguishers
Fire Hose Inspection Record
Fire Hydrants
Fire Pumps
Fire Sprinkler Systems
Fire Trucks
Fork Lifts Used for Waste Handling
Hazardous Material Response Equipment
Miners First Aid Station
Mine Pager Phones
Perimeter Fence, Gates, and Signs
Personal Protective Equipment
Public Address
Radiation Monitoring Equipment
Radio Equipment
Rescue Truck
- Surface R.T.
- Underground R.T.

Salt-Handling Shaft
Self Rescuers
Surface TRU Mixed Waste Handling Area
TRU Mixed Waste Decontamination Equipment
Underground Openings, Roofbolts, Travelways
Underground Geomechanical Instrumentation System (GIS)
Underground TRU Mixed Waste Disposal Area
Uninterruptible Power Supply (Central UPS)
Vehicle Siren
Ventilation Exhaust
Waste Handling Cranes
Waste Shaft Hoist

can arrive in any combination of 7-packs and SWBs, a fixed volume is not set for each panel. Furthermore, the placement of backfill materials to modify chemical nature of brines over the long-term will likely result in fewer containers per panel as described in Section D-9a. For planning purposes, a ~~mix of 60 percent drums and 40 percent SWBs is used~~maximum achievable volume is used. This equates to 662,400 ft^3 (18,750 m^3) of contact handled (CH) TRU and 22,900 ft^3 (649 m^3) of RH TRU per panel. A number of 81,000 containers is used in design calculations since for air dispersion modeling, it is important to maximize the number of container vents through which volatile organic compounds (VOC) may be released. In reality, using the 40 percent-60 percent mix, there would be only 51,000 containers in a panel, containing 56,000 vents (2 vents per SWB). The areas designated as Panels 9 and 10 in Figure I-1 will not be used for RH waste.

The maximum extent of operations during the term of this permit is expected to be Panels 1 through 4 and Panels 9 and 10 as shown on Figure I-1, the WHB container storage unit, and the parking area container storage unit. Note that panels 4, 9, and 10 are scheduled for excavation only under this permit. If other waste management units are permitted during the Disposal Phase, this Closure Plan will be revised to include the additional waste management units. At any given time during disposal operations, it is anticipated that two rooms may be receiving waste for disposal at the same time. The overlap is necessary because RH TRU mixed waste emplacement in a room will precede CH TRU mixed waste emplacement in that room. Consequently, CH TRU mixed waste may be emplaced in one room of a panel while RH TRU mixed waste is emplaced in another room of the same panel. HWMU panels in which disposal has been completed (i.e., in which RH and CH TRU mixed waste emplacement activities have ceased) will undergo panel closure.

I-1d Schedule for Closure

For the purpose of establishing a schedule for closure, an operating and closure period of no more than 35 years (25 years for disposal operations and 10 years for closure) is assumed. This operating period may be extended or shortened depending on a number of factors, including the rate of waste approved for shipment to the WIPP facility and the schedules of TRU mixed waste generator sites, and future decommissioning activities.

I-1d(1) Schedule for Panel Closure

The anticipated schedule for the closure of each of the underground HWMUs known as Panels 1 through 8, is shown in Figure I-2. This schedule assumes there will be little contamination within the exhaust drift of the panel. The following assumptions are made in estimating the time that closure will be initiated at each HWMU: RH emplacement precedes CH emplacement and does not impede CH throughput; waste operations are assumed to begin in July 1998 for planning purposes; throughput for CH waste is 784 drums per week (7 pallets per day, 4 days per week, 28 drums per pallet); and the capacity of a panel is 81,000 drums. Under these assumptions, a minimum of 104 weeks is needed to emplace the waste. Allowing a 25 percent contingency for maintenance delays and time to transition from one room to another, it is estimated that a panel will be filled 2.5 years after emplacement is initiated. This means that

Department of Energy
Carlsbad Area Office
P. O. Box 3090
Carlsbad, New Mexico 88221

July 18, 1997

1997 JUL
RECEIVED
HAZARDOUS WASTE
PROGRAM

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044-A Galisteo Street
Santa Fe, NM 87505

Subject: Response to NMED Letter of June 30, 1997: Revision 6.3 to WIPP RCRA Permit Application

Dear Mr. Garcia:

We have received your letter dated June 30, 1997, regarding the Department of Energy/Westinghouse Waste Isolation Division's (DOE/WID's) Revision 6.3 to the Waste Isolation Pilot Plant (WIPP) Resource Conservation and Recovery Act (RCRA) Part B Permit Application, EPA ID Number NM890139088. As you know, the DOE/WID's June 13, 1997, submission of Revision 6.3 contained changes to the permit application which were meant to clarify, modify or supplement material previously submitted in the permit application. At that time, we submitted a clean printed paper version of the replacement pages. In addition, as a courtesy to the Hazardous and Radioactive Materials Bureau (HRMB) and consistent with previous practice, we also provided HRMB with a redlined paper version of the replacement pages and electronic copies of the clean and redlined versions.

We are aware that the redlined version and the electronic versions of Revision 6.3 which were submitted to you on June 13, 1997 were not entirely consistent with the clean copy versions of the replacement pages. In order to correct these inconsistencies, we have investigated each affected file to ensure that the electronic versions are consistent with the printed versions. The result of this investigation is as follows:

1. Revision 6.3 is resubmitted in hard and electronic copy. According to your instructions, we reprinted the files from the electronic version that is on the enclosed disks and have enclosed entire chapters or appendices instead of only page changes with the exception of Appendix C8 and Appendix D9. These two appendices, because of the complex equations in these appendices, would not successfully convert between versions of WordPerfect. Consequently, these two appendices are being provided in whole, however, only the changed pages were reprinted for Revision 6.3 from the files on the enclosed disk. In all other cases, we were able to format the printed files to resemble the original submittal, consequently, printed chapters reflect individual page changes as before. A redline/strikeout paper copy is attached for your convenience.

2. A pedigree has been determined for each electronic file. This was developed by tracing file changes from Revision 6.0 through Revision 6.3 and documenting the date and time of the final file. This pedigree is attached.

We have re-evaluated the previous submittal of Revision 6.3 and determined that the previous hard copy version of the June 13, 1997, submittal was correct except for a few minor editorial errors.

In Table D9-9 four values that were changed in Revision 6.1 were inadvertently changed back to their original values in our Revision 6.3 submittal. The correct values were retained in the corresponding table in Chapter D (Table D-5).

The word "overpack" was misspelled on page D-63, line 32.

In Table D-6 , page D-112, the concentration units notation was moved to the correct column.

In Chapter G, page G-49, the names of the two hospitals have been corrected to reflect the changes on page G-44.

Chapter G, Figure G-12, the form in this figure has been replaced with a copy of the actual form from procedure WP 12-ER4902. Previously, the Figure contained an unofficial version of the form.

Chapter I, page I-20, line 44, "and" changed to "are" at the end of the line.

Chapter I, page I-26 references Table I-8, however, Table I-8 was inadvertently left out of Revision 6.0. It has been added in Revision 6.3 as pages I-57 and I-58. (This table is identical to one in Appendix E1.)

Chapter I, page I-42, the reference in the fourth bullet is changed from DOE, 1994, to Appendix D5 to reflect the most current version of the Environmental Monitoring Plan.

Chapter I, page I-44, the reference to the DOE, 1994 has been deleted since it was replaced in the text with Appendix D5.

Chapter J, page J-1, the introductory text has been modified to be consistent with the subsequent discussion of the shaft sumps.

Chapter L and Appendix L1, the acronym LDRs was spelled out .

Appendix D9, page D9-30 line 14, clarified the wording on this line.

Appendix D9, Attachment 1, is being provided an electronic format. It previously was not available in electronic format.

Minor editorial errors such as these have been corrected in the attached resubmittal. Therefore, we trust this submittal fully responds to your letter and will facilitate the development of the draft permit.

As usual, we have enclosed three hard copies of Revision 6.3 and one set of electronic files. In addition, future transmittals related to this permit application will be prepared and submitted consistent with the conditions set forth in your letter.

Should you have any questions regarding this material, or have need of further assistance in understanding the submitted materials, please contact Mr. Craig Snider at 234-7452.

Sincerely,

for George E. Dials
Manager

Enclosures

cc w/encl:
C & C File

cc w/o encl:
C. Wayman, CAO
M. McFadden, CAO
K. Hunter, CAO
A. Miner, CAO
J. Epstein, WID
K. G. Barnes, WID
L. K. Donovan, WID
M. B. Kehrman, WID
P. Kilgore, CAO

97-0917
UFC 5486

APPENDIX C4 WASTE CHARACTERIZATION SAMPLING METHODS

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: apc4.fnl **File size:** 220,719 **Date:** 4/3/96 **Time:** 2:04:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: apc4.fnl **File size:** 220,719 **Date:** 4/3/96 **Time:** 2:04:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: apc4-63.wpd **File size:** 235,689 **Date:** 7/14/97 **Time:** 2:42:00 PM

The NMED name for this file is: **APPC4.FNL**

APPENDIX C8 QUALITY ASSURANCE OBJECTIVES AND DATA VALIDATION TECHNIQUES FOR WASTE CHARACTERIZATION SAMPLING AND ANALYTICAL METHODS

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: apc8.fnl **File size:** 279,243 **Date:** 4/4/96 **Time:** 4:39:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: apc8.fnl **File size:** 279,243 **Date:** 4/4/96 **Time:** 4:39:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: apc8-63.wpd **File size:** 295,535 **Date:** 7/15/97 **Time:** 9:31:00 AM

The NMED name for this file is: **APPC8.FNL**

ATTACHMENT 1 TO APPENDIX D9

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: apd9att1.doc **File size:** 149,941 **Date:** 7/14/97 **Time:** 11:15:00 AM

The NMED name for this file is: **APPD9AT1.FNL**

CHAPTER J CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: apj1.fnl **File size:** 76,311 **Date:** 4/8/96 **Time:** 6:50:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: apj1.fnl **File size:** 76,311 **Date:** 4/8/96 **Time:** 6:50:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chpj63.wpd **File size:** 167,832 **Date:** 7/16/97 **Time:** 11:25:00 AM

The NMED name for this file is: **APPJ1-FNL**

APPENDIX L1

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: apl1-63.wpd **File size:** 6,201 **Date:** 7/14/97 **Time:** 9:54:00 AM

The NMED name for this file is: **APPL1.FNL**

APPENDIX D20 AIR PATHWAY CONFIRMATORY MONITORING PLAN

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: appd20.fnl **File size:** 124,112 **Date:** 4/9/96 **Time:** 8:54:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: appd20.fnl **File size:** 124,112 **Date:** 4/9/96 **Time:** 8:54:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: appd20.fnl **File size:** 499,705 **Date:** 7/17/97 **Time:** 4:02:00 PM

The NMED name for this file is: **APPD20.FNL**

APPENDIX D5 ENVIRONMENTAL MONITORING PLAN

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: None **File size:** 0 **Date:** **Time:**

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: appd5.wpd **File size:** 335,713 **Date:** 7/15/97 **Time:** 10:16:00 AM

The NMED name for this file is: **APPD5.FNL**

APPENDIX D9 EXPOSURE ASSESSMENT FOR PROTECTION OF THE ATMOSPHERE

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: appd9r60.fnl **File size:** 176,530 **Date:** 4/10/96 **Time:** 4:09:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: appd9r61.fnl **File size:** 114,819 **Date:** 6/3/96 **Time:** 11:21:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: apd9-63.wpd **File size:** 193,477 **Date:** 7/14/97 **Time:** 2:52:00 PM

The NMED name for this file is: **APPD9.FNL**

CHAPTER D FACILITY AND PROCESS INFORMATION

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: ch-d60.fnl **File size:** 537,079 **Date:** 4/9/96 **Time:** 3:44:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: ch-d.fnl **File size:** 522,943 **Date:** 5/29/96 **Time:** 1:03:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chd6-3.wpd **File size:** 682,926 **Date:** 7/15/97 **Time:** 10:31:00 AM

The NMED name for this file is: **CH-D.FNL**

CHAPTER G RCRA CONTINGENCY PLAN

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: ch-g.fnl **File size:** 316,779 **Date:** 4/10/96 **Time:** 7:32:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: ch-g.fnl **File size:** 316,779 **Date:** 4/10/96 **Time:** 7:32:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chg-63.wpd **File size:** 347,565 **Date:** 7/13/97 **Time:** 2:19:00 PM

The NMED name for this file is: **CH-G.FNL**

CHAPTER I CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: CH-I.FNL **File size:** 304,060 **Date:** 4/9/96 **Time:** 8:30:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: ch-i.fnl **File size:** 304,112 **Date:** 5/24/96 **Time:** 12:40:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chi-63.wpd **File size:** 352,947 **Date:** 7/15/97 **Time:** 10:00:00 AM

The NMED name for this file is: **CH-I.FNL**

CHAPTER L NO-MIGRATION VARIANCE PETITION

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: ch-l.fnl **File size:** 47,815 **Date:** 4/8/96 **Time:** 6:56:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: ch-l.fnl **File size:** 47,815 **Date:** 4/8/96 **Time:** 6:56:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: ch-l.fnl **File size:** 70,717 **Date:** 7/14/97 **Time:** 9:53:00 AM

The NMED name for this file is: **CH-L.FNL**

CHAPTER C WASTE ANALYSIS PLAN

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: chapc.fnl **File size:** 278,710 **Date:** 4/12/96 **Time:** 1:17:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: chapc.fnl **File size:** 262,641 **Date:** 5/24/96 **Time:** 1:59:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chc6-3.wpd **File size:** 350,943 **Date:** 7/15/97 **Time:** 9:26:00 AM

The NMED name for this file is: **CH-C.FNL**

CHAPTER F PROCEDURES TO PREVENT HAZARDS

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: chf.fnl **File size:** 171,332 **Date:** 4/11/96 **Time:** 4:37:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: chf.fnl **File size:** 171,332 **Date:** 4/11/96 **Time:** 4:37:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: chf-63.wpd **File size:** 225,812 **Date:** 7/13/97 **Time:** 1:36:00 PM

The NMED name for this file is: **CH-F.FNL**

CHAPTER G TABLES

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name: tbl1&2.fnl **File size:** 38,895 **Date:** 4/8/96 **Time:** 3:47:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name: tbl1&2.fnl **File size:** 38,895 **Date:** 4/8/96 **Time:** 3:47:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name: tg1&263.wpd **File size:** 59,691 **Date:** 7/13/97 **Time:** 2:42:00 PM

The NMED name for this file is: **CH-G.TB1**

CHAPTER C TABLES

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.0 of the Permit Application with the following characteristics:

File name:	tbls-c.r6	**File size:**	131,854	**Date:**	4/10/96	**Time:**	12:58:00 PM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.1of the Permit Application with the following characteristics:

File name:	tbls-c.r6	**File size:**	66,175	**Date:**	5/28/96	**Time:**	9:55:00 AM

The electronic file for this Section/Appendix of the WIPP RCRA Permit Application was included in Revision 6.3 of the Permit Application with the following characteristics:

File name:	tbls-c63.wpd	**File size:**	169,370	**Date:**	7/13/97	**Time:**	9:43:00 AM

The NMED name for this file is: **CH-C.TBL**

RCRA Part B Permit Application Changes (Revision 6.3)

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
1	Information updates for application items associated with a No-Migration Variance Petition or Determination	C-45	10-18	Replace with: "TRU mixed waste is exempted from LDRs by the Land Withdrawal Amendment (Public Law 104-201). This amendment states that WIPP 'waste is exempt from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S. C. 6924(m)) and shall not be subject to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act.' Therefore, with each waste shipment of LDR waste, the generator must provide the WIPP facility with a notice that the waste is not prohibited from land disposal. WIPP personnel will review the LDR notice for accuracy and completeness. The generator will prepare this notice in accordance with the requirements of 20 NMAC 4.1, 268.7(s)(3)."	Modifies
		C-108, C-109, C-110, C-111, C-113,C-114, C-115, C-116	2nd Row 4th Bullet	Replace "Support a demonstration of no-migration by headspace VOCs" with "Ensure that environmental performance standards are not exceeded."	
		C8-22	7-15	Replace the first two bullets with "The concentration of VOC constituents in the headspace in the total waste inventory has not exceeded the environment performance standards of 20 NMAC 4.1, Subpart V, 264.601 (b)."	
		C8-22	27-28	In the last bullet, delete "the WIPP facility no-migration variance petition"	
		Appendix D20	All	Replace all of Appendix D20, Confirmatory VOC Monitoring Plan with the updated version, which includes changes in references to a Disposal No-Migration Variance and updated Concentrations of Concern that reflect 40 CFR 264.601 Standards instead of 40 CFR 268 Standards.	
		I-37	24	Delete Bullet starting "The No-Migration Variance Petition..."	
		Chapter L All	All	Replace this Chapter/Appendix with a page containing the following statement: "TRU mixed waste is exempted from LDRs by the Land Withdrawal Act Amendment (Public Law 104-201). This amendment states that WIPP 'waste is exempt from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S. C. 6924(m)) and shall not be subject to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act.' "	
		Appendix L1	All		
2	Clarification of the description for the minimization of movement of waste material when core samples are drilled for characterization	C4-13	15	Change "...prevent the liner inside the coring tool from rotating with the coring tool..." with "...minimize the rotation of the liner inside the coring tool..."	Clarifies

RCRA Part B Permit Application Changes (Revision 6.3)

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
3	Elimination of information from the Waste Analysis Plan that is not relevant to RCRA compliance	C8-21	7-8, 13	Delete the bullets containing "Total masses of VOCs, hydrogen..." and "Total masses of VOCs, SVOCs..."	Clarifies
4	Clarification of which core sample will be used when more than one is taken from a waste form	C8-8	7-8	Replace the sentence beginning with "The core from the second location..." with "The most representative core shall be used for sample collection."	Clarifies
5	Clarification that forklifts and transporters used in the waste handling process do not have speed governors	D-33	30-32	Delete the sentence "Forklifts that handle waste in the underground have speed governors to prevent speeds that could lead to accidents that would rupture containers."	Clarifies
		F-18	20	Replace "...speed governor..." with "...fire suppression system..."	
6	Change in the Continuous Air Monitor (CAM) for radiation detection that is used to initiate an automatic switch in the mine ventilation system to direct air flow through High Efficiency Particulate Air (HEPA) filters	D-74	29	Replace "...one continuous air monitor at Station A (a monitoring system near the exhaust discharge point)." with "...the continuous air monitor in the exhaust drift of the active waste panel."	Modifies
7	Plan for the installation of a third main mine ventilation fan to improve system reliability	D-75	8	Add the following paragraph after line 8: "Planned Upgrade - Underground Ventilation Normal Mode Redundancy: The underground ventilation system will be provided redundancy in normal ventilation mode by the addition of a third main fan. Ductwork leading to that new fan will tie into the existing main exhaust duct. The connecting saddle, wye, and elbow with an integral damper, is scheduled to be installed and blanked-off, and the hole in the main duct is to be cut before waste receipt. The later addition of the third fan and associated ductwork will then not interfere with the facility operation."	Supplements

RCRA Part B Permit Application Changes (Revision 6.3)

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
8	Update of the Environmental Monitoring Plan (Appendix D5 of the permit application)	Appendix D5	All	Replace all of Appendix D5 with DOE/WIPP 96-2194, Waste IsolationPilot Plant Environmental Monitoring Plan.	Modifies
9	Correct an error on the OSHA 8 hour time-weighted average (TWA) limit for 1,2-Dichloroethane	D-112	14	For 1,2-Dichloroethane, change the OSHA 8 Hour TWA from "100" to "50".	Modifies
		D9-30	21		
		D9-Att.1-9	15		
10	Update of the WIPP Contingency Plan	G-44	15	Replace "Guadalupe Medical Center" with "Columbia (formerly Guadalupe) Medical Center"	Modifies
		G-44	22-23	Replace "Lea Regional Hospital" with "Columbia (Formerly Lea) Regional Hospital", and "August 17, 1993" with "February 15, 1995".	
		G-54	10-14	Delete the rows for: "J. R. (Joe) Franco" and "M. B. (Byron) Cherry", and add the following: Name / Address / Office Phone / Home Phone E. R. (Ed) Flynn[2] / 2110 LaHuerta Drive / 234-8272 or 234-8276 / 887-0151 G. L. (Gary) Kessler[2] / 1313 E. Wood / 234-8326 / 885-9214 A. E. (Alvy) Williams[2] / 113 Coleman Rd. / 234-8216 or 234-8276 / 885-4811 K. (Kim) Jackson[2] / 1120 Tracy Place / 234-8272 or 234-8276 / 887-7345	
		G-87, G-88	All	Update the Pre-Fire Survey Plans with plans dated 2/10/97.	
		G-89 to G-91	All	Update the WIPP Hazardous Material Incident Report forms.	
11	Correction of the administrative limit for action levels for Threshold Limit Values	D-51	15-17	Replace "one/tenth" with "one-half", and "ten percent" to "fifty percent".	Modifies

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
12	Clarification of the prefilter system for the Waste Handling Building ventilation system	D-61	26	Replace "two stages of prefilters" with "a prefilter".	Modifies
13	Update of the Solid Waste Management Units to include the Exhaust Shaft Catchment Basin	J-2	33	Add a new section: " J-1b SWMUs added since April 12, 1996 Since the submittal of Revision 6.0 of the permit application, the DOE has closed one SWMU and has created another. These are in the area of the base of the Exhaust Shaft and are discussed in DOE 1997a. A summary follows. The RFA documents that a visual inspection of the area of SWMU 010c, which is at the base of the Exhaust Shaft, revealed no evidence of past releases of the waste typically expected at the base of the shaft (cement, grout, metal, concrete, grease, brine). Characterizations of waste removed from the area have shown that the contents of this area are consistently below RCRA hazardous waste criteria. In June 1995, increased volumes of brine flow into the Waste Shaft sump (SWMU 010b) were noticed. This brine was tested and determined to contain RCRA levels of lead. A corrective action plan was immediately implemented. The source of the increased flow into the Waste Shaft sump was traced to water entering the mine from condensation and seepage in the Exhaust Shaft (DOE 1997b). The source of the lead in the brine appears to be chain-link mesh used for support in the Exhaust Shaft (DOE 1996). As part of the corrective action, the debris and muck at the base of the Exhaust Shaft were cleared and a catchment basin installed to collect water coming down the shaft and to prevent further flow to the Waste Shaft sump. The collected water is managed in accordance with New Mexico Solid Waste and Water Quality Control Commission (WQCC) Regulations. The lead containing waters are currently being managed and disposed of at an off-site treatment, storage, and disposal facility in accordance with the requirements of 20 NMAC 4.1 Subpart III. Alternatively, when the levels of lead are below the limits in the DOE's WQCC Discharge Plan DP-831, the water is discharged to the WIPP sewage lagoon along with other waters collected from the WIPP underground. Since the corrective action involved removal of debris and muck at the base of the Exhaust Shaft, the SWMU previously identified as SWMU 010c is considered closed. The catchment basin has been designated as a new SWMU and assigned the designation SWMU 010e. Figure J-2 shows the location of SWMU 010e. These shaft sumps, including the new SWMU, have been added to Table J-1 and Appendix J1."	Supplements

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
13 (cont.)	Update of the Solid Waste Management Units to include the Exhaust Shaft Catchment Basin	J-4	3-5	Add References: "Department of Energy, 1996, Analysis of Corrosion Testing Results for Galvanized Mesh Material Obtained from the Waste Isolation Pilot Plant, New Mexico, DOE/WIPP 96-2212, Westinghouse Electric Corporation, Carlsbad, NM, December 1996. Department of Energy, 1997a, Final Solid Waste Management Unit Assessment Report, DOE/WIPP 97-2220, Westinghouse Electric Corporation, Carlsbad, NM, January 10, 1997. Department of Energy, 1997b, Composition and Origin of Nonindigenous Brine and Water in the Vicinity of the Exhaust Shaft Waste Isolation Pilot Plant, New Mexico, DOE/WIPP 97-2226, Westinghouse Electric Corporation, Carlsbad, NM, February 1997. "	Supplements
		J-6	end of table	Add SWMU "010" unit type "Shaft Sumps", with a unit description: "An area at the bottom to each of the four WIPP shafts that collected construction debris or accumulates brine, including a catchment basin" and waste description: "Welding residue, scrap wood and metal, salt; Class C cement; chemseal; bentonite; grease and oil; cement and chem grout; Salado and overlying formation groundwaters;, condensate from the underground ventilation system; washwater; leaded brine from the Exhaust Shaft"	
		J-9	All	Add figure J-2 for the location of Shaft Sump SWMUs.	

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
13 (cont.)	Update of the Solid Waste Management Units to include the Exhaust Shaft Catchment Basin	J1-6	All	Add: "010 SHAFT SUMPS Unit type: Shaft Sumps Unit use: Collection/Storage Operational status: Active Use period: 1981 - Present Materials managed: Solid Waste Hazardous Waste Hazardous release: Lead Radioactive release: None Information source(s): Process Knowledge, Sampling and Analysis <u>Unit Description</u> Refer to Figure J-2 for location. Four shafts have been completed to the WIPP facility underground. The Salt Handling and the Waste Shafts have sumps (010-a and 010-b) that extend below the facility horizon (148 feet and 119 feet, respectively). The sumps have been cut into the salt and are not lined. The other two shafts, the Exhaust Shaft and the Air Intake Shaft, end at the facility horizon and do not have sumps. The bottoms of these shafts are 010-c and 010-d, respectively. The bottoms of all four shafts have received construction debris. All shafts are lined and grouted to minimize wastewater accumulation. The solid material cleaned up from the bottom of the shafts without sumps is disposed of on the main salt storage area. The Waste Shaft sump periodically collects brine. In June 1995, increased volumes of brine flow into the Waste Shaft sump (SWMU 010b) were noticed. The brine was tested and was determined to contain RCRA levels of lead. A corrective action plan was immediately implemented. The source of the increased flow into the Waste Shaft sump was traced to water entering the mine from condensation and seepage in the Exhaust Shaft. The source of the lead in the brine appears to be chain-link mesh used for support in the Exhaust Shaft. As part of the corrective action, the debris and muck at the base of the Exhaust Shaft were cleared and a plastic catchment basin installed to collect water coming down the shaft and to prevent further flow to the Waste Shaft sump. The collected water is managed in accordance with New Mexico Solid Waste and Water Quality Control Commission (WQCC) Regulations. The lead containing waters are currently being managed and disposed of at an off-site treatment, storage, and disposal facility in accordance with the requirements of 20 NMAC 4.1 Subpart III. Alternatively, when the levels of lead are below the limits in the DOE's WQCC Discharge Plan DP-831, the water is discharged to the WIPP sewage lagoon along with other waters collected from the WIPP underground. Since the corrective action involved the removal of the debris and muck at the base of the Exhaust Shaft, the SWMU previously identified as SWMU 010c is considered closed. The catchment basin has been designated as a new SWMU and assigned the designation SWMU 010e."	Supplements

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
13 (cont.)	Update of the Solid Waste Management Units to include the Exhaust Shaft Catchment Basin	J1-8	All	Add Table J1-2:	Supplements

TABLE J1-2
SWMU DATA-SHAFT SUMPS

SWMU	Dates	*Location and Description	Status	Material Stored
010-a Salt Handling Shaft	1981 to Pres.	D/O Sump extends 148 feet below the facility horizon	Active	Welding residue, scrap wood and metal, salt, Class C cement, Chemical seal, bentonite, grease, and oil
010-b Waste Shaft	1982 to Pres.	640D/E30 Sump extends 119 feet below the horizon.	Active	Concrete, salt, cement grout, chemical grout, brine from Rustler Formation, wash water, grease, and oil, lead
010-c Exhaust Shaft	1985 to 1995	640D/E48D Shaft ends at the facility horizon.	Closed	Salt, concrete, cement grout, chemical grout, brine from Rustler Formation, grease, and oil
010-d Air Intake Shaft	1989 to Pres.	O/W620 Shaft ends at the facility horizon.	Active	Salt, brine from Rustler Formation, concrete, grease, and oil
010-e Exhaust Shaft	1995 to Pres.	640D/E48D Catchment Basin at base of shaft	Active	Salt, brine, lead

* All locations given by underground coordinates.

14	Clarification on the format in which waste characterization data will be transmitted to the WIPP from the generator sites	C-35	12, 19, 20	After "hard copy" add "or electronically (provided a hard copy is available on demand)" the first time, then "or electronically" thereafter.	Clarifies
		C-35	24	Replace "both hard copy and electronic." with "hard copy and/or electronically."	
		C8-22	38	After "Data shall be transmitted by hard copy" add "or electronically (provided a hardcopy is available on demand)"	
		C8-23	17	After "hard copy" add "or electronically"	
		C8-23	19	After "hard" add "or electronic"	

Item	Identifier	Application Page	Application Line(s)	Change	Relation to Previously Submitted Information
15	Clarification on the use of facility pallet hold down clamps and slip sheets	D-63	28-38	Replace text with: "The Facility pallet is a fabricated steel unit designed to support 7-packs of drums, SWBs, TDOPs, or groups of overpack drums, and has a rated load of 25,000 lbs. (11340 kg). The Facility pallet will accommodate up to four 7-packs of drums or four SWBs (in two stacks of two units), two TDOPs, or two groups of overpack drums (maximum of four drums per group). Loads are secured to the Facility Pallet during transport to the emplacement area. Facility pallets are shown in Figure D-29."	Modifies
		D-157	All	Delete this figure. Replace the page with a "intentionally left blank" note, or renumber the subsequent figures.	

Data Transmittal

The DOE/CAO, through the QAPP and generator site QAPjPs, controls aspects of the waste-characterization data transmittal process. Data reports document the analytical results from the required characterization analyses and contain the characterization data plus documentation of required QA/QC activities associated with the sampling and analyses. The QAPP implements the WAP requirements for maintaining the integrity of the data in data reports by requiring data validation at both the data-generation level and the generator-site project level before the data are transmitted to the WIPP facility. Section C8-10 of Appendix C8 discusses the data validation process in more detail.

Data will be transmitted by hard copy or electronically (provided a hard copy is available on demand) from the data generation level to the generator site TRU mixed waste characterization project level. Transmitted data will include testing, sampling, and analytical data reports and data review checklists on forms approved under the generator sites QAPjP. Testing, sampling, and analytical data will be reported for each waste container. These data will also be input electronically into the WWIS. Data will be entered into the WWIS in the exact format required by the database (see Section C-5a for WWIS data requirements and Appendix C13 for the WWIS data dictionary). Summarized characterization information will be reported on a waste stream basis and transmitted by hard copy or electronically to the WIPP Waste Operations when requested. Hard copy or electronic data packages will include site name, program identification, waste container numbers, release signatures from the generator Site Project Manager and Site Project QA Officer, and a concise narrative summarizing the results of the site project-level review. Section C8-12 of Appendix C8 provides the format requirements for generator/storage site hard copy and/or electronic data reports; ~~both hard copy and electronic~~. The report will briefly describe any problems or noteworthy observations (e.g., nonconformance reports, operational variances).

Once a waste stream is fully characterized, the site project manager will also submit to the WIPP facility a summary of the waste stream information and reconciliation with DQOs (Section C8-11 of Appendix C8). Based on this summary, the generator site project manager will complete a Waste Stream Profile Form (Figure C-4). This will be used as the basis for acceptance of waste characterization information on wastes to be disposed of at the WIPP.

Data Verification

The first level of data verification by the generator site will confirm that the waste characterization data are properly reported for the characterized waste containers that will be shipped to the WIPP. Data review, validation, and verification procedures used by the generator sites are required by the QAPP to assure that 100 percent of the data reported has received an independent technical review to assure that data generation and reduction were conducted in a technically correct manner, calculations have been verified correct, and all variances from accepted analytical methods (appropriate to the waste type being analyzed) have been documented and approved. Data packages will be reviewed for completeness to verify that they include field sampling records, raw analytical data, calculation records, COC documentation,

Documentation of the returned containers will be covered by Waste Operations protocols and the WWIS. Changes will be made to the WWIS data to indicate the current status of the container(s), and a reason will be required to change the data. This reason, plus the record of the WWIS data change will be maintained in the change log of the WWIS and will provide an auditable record of the returned shipment.

The Waste Operations section will be responsible for resolution of discrepancies, notification of the NMED, as well as returning the original copy of the manifest to the generator. The manifest will be returned within 30 days of delivery of the waste.

Examination of the Land Disposal Restriction (LDR) Notice

TRU mixed waste is exempted from LDRs by the Land Withdrawal Amendment (Public Law 104-201). This amendment states that WIPP "Waste is exempted from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S. C. 6924(m)) and shall not be subjected to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act." Therefore, with each waste shipment of LDR waste, the generator must provide the WIPP facility with a notice that the waste is not prohibited from land disposal. WIPP personnel will review the LDR notice for accuracy and completeness. The generator will prepare this notice in accordance with the requirements of 20 NMAC 4.1, 268.7(a)(3). ~~Unless TRU mixed waste is otherwise exempted from the LDRs, the DOE intends to petition the EPA for a variance from the prohibition on land disposal of untreated TRU mixed waste at the WIPP facility. If successful, the WIPP facility may dispose of the restricted waste. With each waste shipment of LDR waste, the generator must provide the WIPP facility with a LDR determination and a notice that the waste is not prohibited from land disposal because the waste is covered by a no migration determination (NMD). (This assumes that a Disposal Phase NMD will be made by the EPA. Wastes will be in conformance with conditions of the NMD.) WIPP facility personnel will review this notice for accuracy and completeness. The generator will prepare this notice in accordance with the requirements of 20 NMAC 4.1, §268.7(a)(3).~~

Verification

Waste Operations will make a determination of waste shipment irregularities. The following items will be noted for each waste shipment arriving at the WIPP facility:

- The number and type of containers holding TRU mixed waste match the information in the WWIS
- Container defects

Waste Operations will verify that the containers (as identified by their container ID numbers) are the containers for which accepted data already exists in the WWIS. A check will be performed by Waste Operations comparing the data on the WWIS Shipment Summary Report for the shipment to the actual shipping papers (including the EPA Hazardous Waste Manifest). This check also verifies that the containers included in the shipment are those for which approved shipping data already exist in the WWIS Transportation Data Module (Table C-12). For SWBs and TDOPs, this check will include comparing the barcode on the container with the shipping papers and the data on the WWIS Shipment Summary Report. For 7-pack assemblies, one of the seven container barcodes will be read by the barcode reader and compared to the assembly

TABLE C-6
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR CH TRANSURANIC MIXED WASTE (STORED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids S4000-Soil/Gravel	• Solidified inorganics • Salt waste • Solidified organics • Contaminated soil/debris	Physical waste form	100% radiography or visual examination	• Verify waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas volatile organic compounds (VOC)	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of transuranic (TRU) waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers • ~~Support demonstration of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded
		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Statistical sampling[a] (see Tables C-10 and C-11)	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-6 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR CH TRANSURANIC MIXED WASTE (STORED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Composite filter waste	Physical waste form	100% Radiography Visual examination (statistical sample)[a]	• Verify waste matrix • Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers ~~• Support demonstration of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded • Verify acceptable knowledge

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Acceptable knowledge	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-6 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR CH TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids S4000-Soil/Gravel	• Solidified inorganics • Salt waste • Solidified organics • Contaminated soil/debris	Physical waste form	Documentation and verification[b]	• Verify waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs (VOCs)	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers ~~• Support demonstration of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Statistical sampling[a] (see Tables C-10 and C-11)	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-6 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR CH TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Composite filter waste	Physical waste form	Documentation and verification[b]	• Verify waste matrix • Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers ~~• Support demonstration of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded • Verify acceptable knowledge

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Acceptable knowledge	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-6 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR CH TRANSURANIC MIXED WASTE~~(STORED WASTE)~~

[a] Number determined per Quality Assurance Program Plan (QAPP), Section 5.0.

[b] See discussion in Section 5.3.3 of the QAPP.

U.S. Department of Energy (DOE), 1995, "TRU Waste Characterization Quality Assurance Program Plan," CAO-94-1010, Rev 0, Carlsbad Area Office, Carlsbad, New Mexico.

TABLE C-7
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR RH TRANSURANIC MIXED WASTE (STORED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids S4000-Soil/Gravel	• Solidified inorganics • Salt waste • Solidified organics • Contaminated soil/debris	Physical waste form	Radiography for wastes <1 rem/hour Acceptable knowledge	• Verify waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable volatile organic compounds (VOCs) • Determine potential flammability of transuranic (TRU) waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers ~~• Support demonstation of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded
		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Statistical sampling (see Tables C-10 and C-11)	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-7 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR RH TRANSURANIC MIXED WASTE (STORED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Composite filter waste	Physical waste form	100% Radiography	• Verify waste matrix • Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers • ~~Support demonstation of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded • Verify acceptable knowledge

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Acceptable knowledge	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-7 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR RH TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids S4000-Soil/Gravel	• Solidified inorganics • Salt waste • Solidified organics • Contaminated soil/debris	Physical waste form	Documentation and verification	• Verify waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas volatile organic compounds (VOCs)	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers • ~~Support demonstation of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Statistical sampling (see Tables C-10 and C-11)	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

TABLE C-7 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR RH TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S5000–Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous waste • Composite filter waste	Physical waste form	Documentation and verification	• Verify waste matrix • Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Headspace gases • Gas VOCs	100% gas sampling and analysis (see Table C-9)	• Quantify concentration of flammable VOCs • Determine potential flammability of TRU waste headspace gases • Quantify concentrations of VOC constituents in headspace of containers ~~• Support demonstration of no migration by headspace VOCs~~ • Ensure that environmental performance standards are not exceeded • Verify acceptable knowledge

		Hazardous constituents • Total metals • Total VOCs • Total semi-VOCs	Acceptable knowledge	• Determine characteristic metals and organics • Determine total quantity of metals, VOCs, and semi-VOCs

through undisturbed geologic units is negligible. (The most recent report on the BSEP is Deal et. al., 1993). This mechanism also implies that brine inflow decreases with time and that the available brine reservoir is limited in extent.

D-9b(1)(b)(ii) Engineered Features and Operations

With regard to the engineered aspects, their design and operation are described in Section D-10 and in Section I-1e(2)(e). The key aspects of the facility design and operation that prevent releases that could contaminate soils, surface water, or groundwater are the use of multiple containments and the prohibition on opening containers of off-site generated waste at the WIPP facility. This is embodied in a "Start Clean-Stay Clean" operating philosophy.

Waste Containment

Primary containment is provided by the waste container. Secondary containment on the surface is provided by the shipping container and the WHB. Once waste is in its final disposal location, containment during the balance of the operational period is provided by the containers until panels are closed and then by the panel closures. Analyses performed by the WIPP architect and engineer and included in Appendix D1, considered expected creep closure rates in determining disposal room sizes. Figures 12-21 and 12-22, in the Final Design Validation Report in Appendix D1, show the creep closure histories used for designing the disposal rooms. The specified size was selected to assure no CH containers would breach due to creep closure while a panel is being filled with waste. A nominal five year life is used for operational purposes for mining, emplacement, and closure with no risk of CH waste containers breaching. RH canisters will not breach in this time period due to the canister wall thickness and the 2 to 4 in. creep tolerance in each RH emplacement hole.

Waste Handling Operations

Operations are conducted in a manner that minimizes the possibility of accidents or fires. ~~Fork lifts that handle waste in the underground have speed governors to prevent speeds that could lead to accidents that would rupture containers.~~ In addition, diesel powered waste handling equipment in the underground are equipped with rupture-proof fuel tanks and on-board automatic fire suppression systems for the engines to preclude fires that might involved the waste. On the surface all waste handling equipment is electric (battery), and all loads are secured prior to moving them to avoid spillage. Other safety measures taken to protect the waste, the employees, and the public and environment are discussed in Chapter F.

Repository Seals

After operations and during the post closure period, isolation of waste is provided by the shaft seals and the geologic barriers including the nearly impermeable Salado Formation. The characteristics of the Salado are detailed in Sections D-9a(1)(b) and D-9a(1)(c). The characteristics of the panel closures are detailed in Section I-1e(1). The effectiveness of these barriers is dependent on gas generation, brine inflow, and creep closure.

assessments. The Agency considers a number of factors such as the type of risk presented by the substance, the quality of the underlying data, the reasonableness of the risk assessment, the statistical significance of the findings, and the significance of risk. In the second step, OSHA considers which, if any, of the regulatory provisions being considered will substantially reduce the identified risks. In the third step, OSHA looks at the best available data to set permissible exposure limits that, to the extent possible, both protect employees from significant risks and are technologically and economically feasible. In the fourth step, OSHA considers the most cost-effective way to fulfill its statutory mandate. Because of this process, it is not possible to relate occupational risk to terms that make it directly comparable to public risk such as chances for excess cancer fatality. Therefore, the occupational risk levels used in this analysis are shown as a dose.

In the analysis of occupational exposure, the DOE compares the expected dose to the OSHA recommended permissable exposure limit (PEL) which is an 8-hour time weighted average. In practice, at the WIPP facility, the DOE implements the dose levels endorsed by the American Conference of Governmental Industrial Hygienists (ACGIH). Action levels for WIPP are at ~~one/tenth~~ one-half of the ACGIH Level. This means that the DOE will take action to mitigate further exposure if an employee's exposure reaches ~~ten~~ fifty percent of the ACGIH Level.

D9-b(4)(a)(ii) Environmental Risk

The performance standard for environmental exposure to carcinogens has been established by the EPA and is based on excess risk of developing cancer in a population. The acceptable excess risk for the public to exposures from class A and B carcinogens is 1×10^{-6}, (i.e., one chance in one million of developing cancer) and class C carcinogens is 1×10^{-5}. The acceptable level of risk for the public to exposures from non-carcinogens is expressed in terms of a hazard quotient. A hazard quotient of less than 1.0 from exposure to emissions poses no known health risk and is acceptable.

D-9b(4)(b) Potential for Health Risks

This section is a summary of the exposure assessment presented in Appendix D9. The exposure assessment includes an analysis of the potential releases of hazardous waste emissions, the physical and chemical properties of the waste, the release pathways, and human exposure to potential releases to the atmosphere. The potential risk to human health from waste emissions is compared to acceptable levels and is summarized in Table D-6.

Since the only substances to be released are gases from the headspace of waste containers, the assessment focused on the release of those VOCs in the gas phase that represent approximately 99 percent of the risk to human health. The only pathway assessed is the atmosphere, or releases to the air from the mine ventilation system. Occupational exposures are assessed from potential VOC concentrations in the mine ventilation air underground and in the atmosphere on the surface of the facility. Public exposures are assessed at all locations where public exposure can occur from potential VOC concentrations in the atmosphere from releases of the mine ventilation air.

Once loaded, the facility cask will be rotated to the horizontal position on the facility-cask transfer car (Figure D-25) and will then be ready for transfer onto the waste hoist. The Cask Loading Room functions as an air lock between the Waste Shaft and the Transfer Cell and RH Bay.

RH TRU Mixed Waste Support Facilities

The Hot Cell Operating Gallery, the Crane Maintenance Room, the Manipulator Repair Room, and the Hot Cell Filter Gallery support RH TRU mixed waste handling operations (see Figure D-26).

The Hot Cell Operating Gallery

The Hot Cell Operating Gallery, adjacent to the Hot Cell, provides the space for Hot Cell operating personnel to monitor and control operations. The fixed manipulators will be operated from this area, and they can be removed through this area to the Manipulator Repair Room for maintenance and repair. To prevent the spread of contamination, manipulators will be bagged out as they are removed from the Hot Cell. After transfer to the Manipulator Repair Room, the manipulators will be surveyed and decontaminated, if necessary. The Hot Cell Operating Gallery also contains closed-circuit television monitors and control-panel stations for selecting and monitoring the Hot Cell and Transfer Cell cameras.

D-10a(2)(b)(iii) Other TRU Mixed Waste Support Systems

Ventilation

The WHB HVAC system provides a filtered-air exhaust path consisting of ~~two stages of prefilters~~ a prefilter (to remove larger dust particles and to prolong the useful life of the HEPA filters) and two stages of HEPA filters (to remove radioactive particulate contamination). These filters will be tested to American National Standards Institute (ANSI) requirements (ANSI-N-510) and have a combined 99.95 percent removal efficiency per stage of 0.3 micron particles.

Except for local air-handling units and the hot-cell exhaust filters, WHB HVAC equipment is contained within the mechanical equipment room, located on a second level of the CH side of the WHB. This room houses the exhaust fans and associated ducting that control WHB ventilation flow.

The WHB ventilation system channels exhaust through a single stack at a nominal flow of 55,000 ft^3 (1,556.5 m^3) per min. The final exhaust from the stack will be continuously monitored for radioactive particulate contamination.

In the event of a tornado, tornado dampers will close to prevent the outward rush of air caused by a rapid drop in atmospheric pressure. Damper closure mitigates the destruction of HEPA filters and ducts by preventing a high-pressure differential from affecting the filters.

and has successfully completed rigorous container-integrity tests. The payload consists of 7,265 lbs (3,295 kg) gross weight in up to fourteen 55-gal (208-L) drums, two SWBs, or one TDOP.

Unloading Docks

Each TRUDOCK is designed to accommodate up to two TRUPACT-II shipping containers. The TRUDOCK functions as a work platform, providing TRU mixed waste handling personnel easy access to the container during unloading operations (see Figure D-28 and Drawing 41-M-001-W in Appendix D3).

Forklifts

Forklifts will be used to transfer the TRUPACT-II shipping containers into the WHB and to transfer palletized CH TRU mixed waste to the conveyance loading car. Another forklift will be used for general-purpose transfer operations. This forklift has attachments and adapters to handle individual TRU mixed waste containers, if required.

Cranes and Adjustable Center-of-Gravity Lift Fixtures

At each TRUDOCK, an overhead bridge crane is used with a specially designed lift fixture for disassembly of the TRUPACT-IIs. Separate lifting attachments have been specifically designed to accommodate SWBs and TDOPs. The lift fixture, attached to the crane, has built-in level indicators and two counterweights that can be moved to adjust the center of gravity of unbalanced loads and to keep them level.

Facility Pallets

~~Facility pallets are fabricated steel units designed to support drums, TDOPs, or SWBs ad have a rated load of 25,000 lbs (11,340 kg). the facility pallets designed to support SWBs have two recesses on the upper surface sized to accept SWBs. Hold down plates are used to clamp the lower lip of the SWBs to the facility pallet. The facility pallet will accommodate a maximum of four SWBs (two stacks of two high) with a total weight of 16,000 lbs (7,260 kg). If SWBs are stacked two high, tie down straps are used to strap the SWBs to the holding bars in the hold down plate of the facility pallets. The facility pallets designed to support 7-packs have pockets approximately 3 in. (76 mm) deep in the top plate of the pallet to accommodate two sets of two high 7-packs, two sets of two high 4 packs of 85 gal (321 L) drums, or one TDOP. Each stack of waste drums is strapped down to holding bars in the top reinforcement plate of the facility pallet. Sets of 7-packs, SWBs, or 4-packs are separated by slipsheets. Facility pallets are shown in Figures D-29 and D-30.~~ The facility pallet is a fabricated steel unit designed to support 7-packs of drums, SWBs, TDOPs, or groups of overpack drums, and has a rated load of 25,000 lbs. (11,430 kg). The facility pallet will accommodate up to four 7-packs or drums of four SWBs

In the normal mode, the two main surface exhaust fans, located near the Exhaust Shaft, will provide continuous ventilation of the underground areas. All underground flows join at the bottom of the Exhaust Shaft before discharge to the atmosphere.

Outside air will be supplied to the mining areas, the waste disposal areas, and the experimental complex through the Air Intake Shaft, the Salt Handling Shaft, and access entries. A small quantity of outside air will flow down the Waste Shaft to ventilate the Waste Shaft station. The ventilation system is designed to operate with the Air Intake Shaft as the primary source of fresh air. Under these circumstances, sufficient air will be available to simultaneously conduct all underground operations (e.g., waste handling, mining, experimentation, and support).

If the nominal flow of 425,000 cfm (12,028 m^3/min) is not available underground operations may proceed, but the number of activities that can be performed in parallel may be limited depending on the quantity of air available. Ventilation may be supplied by operating one or two of the filtration exhaust fans. To accomplish this, the isolation dampers will be opened, which will permit air to flow from the main exhaust duct to the filter outlet plenum. The filtration fans may also be operated to bypass the HEPA plenum. The isolation dampers of the filtration exhaust fan(s) to be employed will be opened, and the selected fan(s) will be switched on. In this mode, underground operations will be limited, because filtration exhaust fans cannot provide sufficient airflow to support the use of diesel equipment.

In the filtration mode, the exhaust air will pass through two identical filter assemblies, with only one of the three Exhaust Filter Building filtration fans operating (all other fans are stopped). This system provides a means for removing the airborne particulates that may contain radioactive and hazardous waste contaminants in the reduced exhaust flow before they are discharged through the exhaust stack to the atmosphere. The filtration mode is activated manually or automatically if the radiation monitoring system detects abnormally high concentrations of airborne radioactive particulates. Automatic activation will also occur if an alarm is received from the continuous air monitor ~~at Station A (a monitoring system near the exhaust discharge point).~~in the exhaust drift of the active waste panel. The filtration mode is not initiated by the release of gases such as VOCs. This is for three reasons. First, the HEPA filters would not remove VOCs from the air stream. Second, VOCs are continuously being released at concentrations that are shown in Section D-9b(4) to be of little consequence to occupational or environmental receptors and, therefore, do not require filtration. Third, based on the types of accidents modeled in the Safety Analysis Report (SAR), the most severe credible accident results in the breaching of 21 drums of waste in a roof fall in an active panel results in a release (for carbon tetrachloride). That is, at most, 3.3% of the allowable off site dose.[12] This low dose is not a threat to human health or the environment. VOCs will be monitored in the underground using the VOC Confirmatory Monitoring Plan described in Section D-10d(1)(d)(xiv).

[12]For the analysis in the SAR the standard used is the threshold limit value/short term exposure limit (TLV/SLEL).

(in two stacks of two units), two TDOPs, or two groups of overpack drums (maximum of four drums per group). Loads are secured to the facility pallet during transport to the emplacement area. Facility pallets are shown in figure D-29. Fork pockets in the side of the pallet allow the facility pallet to be lifted and transferred by forklift to prevent direct contact between TRU mixed waste containers and forklift tines. This arrangement reduces the potential for puncture accidents. WIPP facility operational documents define the operational load of the facility pallet as the contents of two TRUPACT-IIs. Since the maximum TRUPACT-II load is 7,265 lbs (3,300 kg), the maximum weight of a loaded facility pallet is less than 19,000 lbs (8,630 kg), including the pallet weight.

A set of three booster fans will allow selective reversal of airflow in the mining area, the northern experimental area, the Air Intake Shaft and its associated station, and the Salt Handling Shaft and its associated station. In these modes, airflow can be reversed by opening and closing certain ventilation doors and air regulators and by operating the underground booster fans (in either the forward or the reverse direction). These fans will normally be turned off and will be isolated, with air bypassing the fans and flowing through the air lock. The surface fans will be stopped before attempting any underground air reversals. These modes of ventilation will only be implemented under manual control for off-normal conditions (such as a fire).

Planned Upgrade

Underground Ventilation Normal Mode Redundancy: The underground ventilation system will be provided redundancy in normal ventilation mode by the addition of a third main fan. Ductwork leading to that new fan will tie into the existing main exhaust duct. The connecting saddle, wye, and elbow with an integral damper, is scheduled to be installed and blanked-off, and the hole in the main duct is to be cut before waste receipt. The later addition of the third fan and associated ductwork will then not interfere with the facility operation.

Electrical System

The WIPP facility uses electrical power (utility power) supplied by Southwestern Public Service. If there is a loss of utility power, TRU mixed waste handling and related operations will cease.

Backup, alternating current power will be provided on site by two 1,100-kilowatt diesel generators. These units provide 480-volt power with a high degree of reliability. Each of the diesel generators can carry predetermined equipment loads while maintaining additional power reserves. Predetermined loads include lighting and ventilation for underground facilities, lighting and ventilation for the TRU mixed waste handling areas, and the Air Intake Shaft hoist. The diesel generator can be brought on line within 30 minutes either manually or from the control panel in the Central Monitoring Room (CMR).

Uninterruptible power supply units are also on line providing power to predetermined monitoring systems. These systems ensure that the power to the radiation detection system for airborne contamination, the local processing units, the computer room, and the CMR will always be available, even during the interval between the loss of off-site power and initiation of backup diesel generator power.

D-10a(3) TRU Mixed Waste Management Operations

Prior to receipt of TRU mixed waste at the WIPP facility, waste operators will be thoroughly trained in the safe use of TRU mixed waste handling and transport equipment. The training will include both classroom training and on-the-job training.

TABLE D-6
MAXIMUM ESTIMATED OCCUPATIONAL AND PUBLIC EXPOSURE FROM UNDERGROUND WASTE VOC EMISSIONS

Indicator Volatile Organic Compounds ~~(ppmv)~~	Worker Receptor Concentration (ppmv)		OSHA 8 Hour TWA[b] (ppmv)	Estimated Risk for Carcinogens and Hazard Quotients for Non-Carcinogens for Public Exposure to Waste Emissions	Acceptable Level of Risk[f]
	Surface	Underground			
Carbon Tetrachloride	3.0E-04	1.2E-02	10	3E-08	1E-06
Chlorobenzene[a]	6.9E-04	2.9E-02	75	4E-06[e]	1
Chloroform	2.7E-04	1.0E-02	50[c]	2E-09	1E-06
1,1-Dichloroethylene	1.2E-03	4.7E-02	5[d]	2E-09	1E-05
1,2-Dichloroethane	3.8E-04	1.5E-01	~~100~~ 50	8E-10	1E-06
Methylene Chloride	4.5E-03	1.6E-02	500	6E-10	1E-06
1,1,2,2-Tetrachloroethane	3.2E-04	1.3E-02	5	3E-09	1E-05
Toluene[a]	1.6E-03	6.7E-02	200	3E-07[e]	1
1,1,1-Trichloroethane	4.0E-03	1.6E-01	350	2E-08	1E-05

a. Non-Carcinogen (all others are class B2 or C carcinogens)
b. 8 hour time weighted averages (TWA) except for chloroform
c. TWA for up to a 10 hour day in a 40 hour workweek
d. TWA from ACGIH
e. Non-Carcinogen hazard quotient

CMS. A battery powered FM transmitter/receiver allow communication between the hoist conveyance and the hoist house.

The waste hoist shaft system has two pairs of brake calipers acting on independent brake paths. The hoist motor is normally used for braking action of the hoist. The brakes are used to hold the hoist in position during normal operations and to stop the hoist under emergency conditions. Each pair of brake calipers is capable of holding the hoist in position during normal operating conditions and stopping the hoist under emergency conditions. In the event of power failure, the brakes will set automatically.

The hoist is protected by a fixed automatic fire suppression system. Portable fire extinguishers are also provided at several points on the hoist floor and in equipment areas.

Once underground, the facility pallet is removed from the hoist cage by the underground waste transporter (see Figure D-31), a commercially available articulated diesel vehicle. The trailer is designed specifically for transporting palletized TRU mixed waste and is sized to accommodate the facility pallet. All motorized waste handling equipment is equipped with on-board fire-suppression systems.

The underground waste transporter is equipped with a ~~speed governor~~ fire suppression system, rupture-proof diesel fuel tanks, and reinforced fuel lines to minimize the potential for a fire involving the fuel system. Waste containers will be placed into underground waste management areas using a battery-powered forklift.

For the RH waste transport, a shuttle car operates beneath the Hot Cell in the canister-transfer cell to move the RH canister to the cask-loading room, where the waste is placed in the facility cask (see Figure D-24) for subsequent transfer underground. The waste hoist is used to move the facility cask to the underground HWMU for emplacement. Transfer operations are monitored by closed-circuit television cameras. The facility cask will be used to move the RH waste underground from the waste hoist to the emplacement area.

All TRU mixed waste transport equipment is inspected at a frequency indicated in Table F-1.

RH inspections in Table F-1 do not apply until receipt of RH waste. The forms in Appendix F1 are primarily for preventive maintenance, to assure the equipment is maintained operational. Logbooks for recording preoperational inspections of RH equipment noted in Table F1 will be established to provide the inspection records. These logs will be established and used as discussed in Section F-2 above.

coordination of emergency plans, including the DOE emergency radiological response plans; provides for participation in periodic exercises, drills, and training; provides for establishing and maintaining an alternate EOC at the Living Desert State Park; and assigns responsibilities to the participants.

- A memorandum of agreement between the City of Carlsbad, New Mexico, and the WIPP MOC for ambulance service assistance (August 13, 1981) provides that, upon notification by the WIPP MOC, the Carlsbad Fire Department will be dispatched from Carlsbad toward the WIPP site by a designated route and will accept the transfer of patient(s) being transported by the WIPP facility ambulance at the point both ambulances meet. If the patient(s) is not transferrable, the Carlsbad Ambulance Service will provide equipment and personnel to the WIPP facility ambulance, as necessary.

- A MOU between the DOE and the ~~Guadalupe~~ Columbia (formerly Guadalupe) Medical Center Emergency Radiological Treatment Center for the Waste Isolation Pilot Plant (February 1, 1994) provides for the treatment of radiologically contaminated personnel who have incurred injuries beyond the treatment capabilities at the WIPP facility. The DOE will provide transport of the patient(s) to the ~~Guadalupe~~ Columbia Medical Center Emergency Radiological Treatment Center for decontamination and medical treatment.

- A MOU between the DOE and the ~~Lea~~ Columbia (formerly Lea) Regional Hospital Radiological Treatment Center for the WIPP ~~(August 17, 1993)~~ (February 15, 1995) provides for the treatment of radiologically contaminated personnel who have incurred injuries beyond the treatment capabilities at the WIPP facility. The DOE will provide transport of the patient(s) to the ~~Lea~~ Columbia Regional Hospital Emergency Radiological Treatment Center for decontamination and medical treatment.

- A MOU between the DOE and the U.S. Department of Interior (DOI), represented by the Bureau of Land Management (BLM), Roswell District (July 19, 1994), provides for a fire-management program that will ensure a timely, well-coordinated, and cost-effective response to suppress wild fire within the withdrawal area using the WIPP incident commander for fire-management activities. The DOI will provide firefighting support if requested. In addition, the MOU provides for responsibilities concerning cultural resources, grazing, wildlife, mining, gas and oil production, realty/lands/rights-of-way, and reclamation.

- A mutual-aid firefighting agreement between the Eddy County Commission and the DOE (February 1, 1994) provides for the assistance of the Otis and Joel Fire Departments (a volunteer fire district created under the Eddy County Commission and the New Mexico State Fire Marshall's Office), including equipment and

In accordance with 20 NMAC 4.1, Subpart V, §264.56(i), the DOE will notify the Secretary of the NMED and EPA Region VI Administrator that the WIPP facility is in compliance with requirements for the cleanup of areas affected by the emergency and that emergency equipment used in the emergency response has been cleaned, repaired, or replaced and is fit for its intended use prior to the resumption of waste management operations in affected areas. The means the WIPP facility will use to meet these requirements are described in Sections G-4e, G-4f, G-4g, and G-4h.

The WIPP requires the EST to initiate the "WIPP Hazardous Materials Incident Report" if the Contingency Plan is implemented. A form is attached as Figure G-12. The form is initiated by the EST. The RCRA Emergency Coordinator, CMRO, Environmental Compliance & Support representative, and a Hazardous Waste Operations representative complete their respective sections.

G-9 Location of the Contingency Plan and Plan Revision

The owner/operator of the WIPP facility will ensure that copies of this Contingency Plan are present at controlled-document locations throughout the facility and are, consequently, available to all emergency personnel and organizations described in Section G-2. In addition, the owner/operator will make copies available to the following outside agencies:

- Mississippi Potash Inc., Western Agriculture Minerals, IMC Fertilizer, Eddy Potash Inc., and New Mexico Potash
- New Mexico Energy, Minerals, and Natural Resources Department for Alternate EOC at the Living Desert State Park Office, Carlsbad
- Carlsbad Fire Department, Carlsbad
- ~~Guadalupe~~ Columbia (formerly Guadalupe) Medical Center, Carlsbad
- ~~Lea~~ Columbia (formerly Lea) Regional Hospital, Hobbs
- Otis Fire Department, Otis
- Hobbs Fire Department, Hobbs
- Joel Fire Department, Carlsbad
- BLM, Carlsbad
- Department of Public Safety, Carlsbad
- New Mexico State Police

TABLE G-2
RESOURCE CONSERVATION AND RECOVERY ACT EMERGENCY COORDINATORS

Name	Address*	Office Phone	Home Phone*
G. A. (Gerry) Burns (primary)[1]		234-8276 or 234-8635	
R. A. (Richard) Marshall (primary)[1]		234-8276 or 234-8695	
R. E. (Bob) Wade (primary)[1]		234-8272	
T. J. (Tim) Wygant (primary)[1]		234-8276 or 234-8377	
B. J. (James) VanWinkle[2] ~~J. R. (Joe) Franco (Primary)[1]~~		234-8276 ~~234-8276 or 234-8635~~	
G. L. (Garrod) Ashford[2] ~~M. B. (Byron) Cherry[2]~~		234-8272 ~~234-8276 or 234-8635~~	
R. C. (Russ) Stroble[2] ~~B. J. (James) VanWinkle[2]~~		~~234-8554~~ ~~234-8276~~	
E. R. (Ed) Flynn[2] ~~G. L. (Garrod) Ashford[2]~~		234-8272 or 234-8276 ~~234-8272~~	
G. L. (Gary) Kessler[2] ~~R. C. (Russ) Stroble[2]~~		234-8326 ~~234-8554~~	
A. E. (Alvy) Williams[2]		234-8216 or 234-8276	
K. (Kim) Jackson[2]		234-8272 or 234-8276	

*NOTE: Personal information (home addresses and phone numbers) has been removed from information copies of this application.

[1]The on-duty Facility Shift Manager is the primary RCRA Emergency Coordinator pursuant to 20 NMAC 4.1, Subpart V §264.52, and is designated to serve as the RCRA Emergency Coordinator.

[2]The on-duty Facility Operations Engineer is the alternate RCRA Emergency Coordinator and is available as needed.

Attachment 3- WIPP Hazardous Materials Incident Report

WIPP HAZARDOUS MATERIAL INCIDENT REPORT

Date:_____ Location:_____ Page 1 of 3

I. INITIAL INFORMATION: DATE:_____ TIME:_____

EST:_____ REPORTED LOCATION:_____

REPORTED BY:_____ DEPT.:_____

INITIALLY REPORTED TO:_____ DEPT.:_____

RESPONSIBLE MANAGER:_____ DEPT.:_____

II. WEATHER CONDITIONS: WIND DIRECTION:_____ WIND SPEED:_____mph TEMP.:_____F

CONDITIONS (ie. icy, snowing, raining, cloudy, sunny):_____

III. TYPE OF INCIDENT (SPILL, LEAK, ETC.):_____ Fire Involved: [ ]YES [ ]NO

(If fire is involved attach a copy of the fire report)

MATERIALS INVOLVED	UN/NA NO.	QUANTITY	HAZARD CLASS	N.F.P.A. CLASS

IV. PERSONNEL INVOLVED IN CLEAN-UP ACTIVITIES

PERSONNEL/DEPT.	DECON METHOD/MEDICAL TEATMENT

V. PERSONNEL CONTAMINATED NOT INVOLVED IN THE CLEANUP ACTIVITIES

PERSONNEL/DEPT.	MATERIAL CONTACTED	DECON/MEDICAL TREATMENT

Figure G-12

WIPP Hazardous Materials Incident Report

Page 1 of 3
CONTROLLED COPY

Attachment 3 - WIPP Hazardous Material Incident Report (continued)

WIPP HAZARDOUS MATERIAL INCIDENT REPORT

Date: _____ Location: _____ Page 2 of 3

V. EQUIPMENT USED FOR CLEAN-UP AND CONTROL MEASURES

EQUIPMENT/MATERIAL/PPE	QUANTITY	DISPOSITION (decon or replacement)

VI. DESCRIPTION OF INCIDENT AND RESPONSE (including containment and control)

VII. TO BE COMPLETED BY ENVIRONMENTAL COMPLIANCE AND SUPPORT SECTION

Date: _____ Time: _____ of evaluation.

Waste Category _____ ~~Disposal Method~~ _____

Organization	DATE	TIME

EC&S Representative: _____

Print name Signature Date

Figure G-12 (Continued)

WIPP Hazardous Materials Incident Report

Page 2 of 3
CONTROLLED COPY

Attachment 3 - WIPP Hazardous Material Incident Report (continued)

WIPP HAZARDOUS MATERIAL INCIDENT REPORT

Date: _____ Location: _____ Page 3 of 3

~~VIII.~~ IX. INITIAL NOTIFICATION ~~TO BE COMPLETED~~ BY ~~THE~~ CMRO ~~AND FSM~~

DEPARTMENT	PERSON CONTACTED	TIME	NOTIFIED BY
Facility Ops. (FSM)			
Emerg. Mgmt. (EST)			
EC&S			
Industrial Safety			
Facility Ops. (FM/FMD)			

CMRO: _____
Print name Signature Date

FSM: _____
Print name Signature Date

~~IX.~~ X. ~~TO BE COMPLETED BY HAZARDOUS~~ WASTE OPERATIONS

Disposition: _____

~~Hazardous~~ Waste Operations Representative: _____
Print name Signature Date

X. REVIEWS

Report submitted by: _____
Print name Signature Date

Emergency Management Manager: _____
Print name Signature Date

EC&S Manager: _____
Print name Signature Date

COMMENTS: _____

X. CONTINGENCY PLAN IMPLEMENTATION

Contingency Plan Implemented [ ] YES [X] NO

ESM: _____
Print Name Signature Date

Figure G-12 (Continued)
WIPP Hazardous Materials Incident Report

Page 3 of 3
CONTROLLED COPY

I-1e(2)(f) Final Contouring and Revegetation

In the preparation of its Final Environmental Impact Statement (DOE, 1980), the DOE committed to restore the site to as near to its original condition as is practicable. This involves removal of access roads, unneeded utilities, fences, and any other structures built by the DOE to support WIPP operations. Provisions would be left for active post-closure controls of the site and for the installation of long-term markers and monuments for the purpose of permanently marking the location of the repository and waste. Section I-1e(3) discusses the active and long-term controls proposed for the WIPP. Installation of borehole seals are anticipated to take 12 months, shaft seals 52 months, and final surface contouring 8 months.

I-1e(2)(g) Closure, Monuments, and Records

A record of the WIPP Project shall be listed in the public domain in accordance with the requirements of 20 NMAC 4.1, Subpart V, §264.116. Active access controls will be employed for at least the first 100 years after final facility closure. In addition, a passive control system consisting of monuments or markers shall be erected at the site to inform future generations of the location of the WIPP repository (see "Permanent Marker Conceptual Design Report" [DOE, 1995b]).

Closure of the WIPP facility will contribute to the following:

- Prevention of the intrusion of fluids into the repository by sealing the shafts
- Prevention of human intrusion after closure
- Minimization of future physical and environmental surveillance

Detailed records shall be filed with local, state, and federal government agencies to ensure that the location of the WIPP facility is easily determined and that appropriate notifications and restrictions are given to anyone who applies to drill in the area. This information, together with land survey data, will be on record with the U.S. Geological Survey and other agencies. The federal government will maintain permanent administrative authority over those aspects of land management assigned by law. Details of post-closure activities are in Section I-2.

I-1e(3) Performance of the Closed Facility

20 NMAC 4.1, Subpart V, §264.601 requires that a miscellaneous unit be closed in a manner that protects human health and the environment. The following addresses the performance of the closed facility during the 30-year post closure period.

The principal barriers to the movement of hazardous constituents from the facility or the movement of waters into the facility are the halite of the Salado Formation (natural barrier) and the repository seals (engineered barrier). Data and calculations that support this discussion ~~and are~~ presented. The majority of the calculations performed for the repository are focused on long-term performance and making predictions of performance over 10,000 years. In the short term, the repository is reaching a steady state configuration where the hypothetical brine inflow rate is

- An unpaved roadway along the perimeter of the barbed wire fence shall be constructed to provide ready vehicle access to any point around the fenced perimeter, to facilitate inspection and maintenance of the fence line, and to permit visual observation of the repository footprint to the extent permitted by the lay of the land. This roadway shall connect to the paved south access road.

- To ensure visual notification, the fence line shall be posted with signs having as a minimum, a legend reading "Danger—Unauthorized Personnel Keep Out" and a warning against entering the area without specific permission of the DOE (or other local authority such as the Eddy County Sheriff's Office).

- Contractual arrangements shall be developed to ensure that periodic inspection and necessary corrective maintenance is conducted on the fence line, its associated warning signs, and the roadway. The DOE will maintain control over all contractual work and will maintain, in the operating record, the results of all inspections and maintenance activities.

- Through direct DOE staffing support and/or contractual arrangements, procedures shall be established to provide routine periodic patrols and surveillances of the protected area by personnel trained in security surveillance and investigation.

- Processes will be developed for monitoring and controlling the long-term testing requirements of the PMS.

- Processes will be developed for implementing the periodic monitoring requirements of the disposal system's monitoring program. Initially, the procedures currently in place in such documents as the Environmental Monitoring Plan (~~DOE, 1994~~ see Appendix D5) will be used.

- Recommendations will be developed for modifications to the active institutional controls appropriate for access control and surveillance upon installation of the PMS.

- Guidelines will be developed for recommending mitigating actions to be taken to address any abnormal conditions identified during periodic surveillance and inspections.

- Reports of activities associated with the post-disposal active access controls shall be prepared in accordance with regulatory requirements for submittal to the appropriate regulatory and legislative authority.

Details on meeting these criteria are found in Appendix I4.

Step 2 - Preparation of a Post-Decommissioning Land Management Plan

Section 13(b) of the LWA requires the DOE to prepare and submit by October 30, 1997, a plan for managing the land withdrawal area after decommissioning the WIPP facility. This plan will include a description of both the active and passive institutional controls that will be imposed

Subsurface markers would be less than 2 ft (0.6 m) in the longest dimension, made of inert material, and spaced so that they are likely to be discovered by drilling crews and professional archaeologists. The warning message would be engraved so that slight erosion or fracture of the marker would not render it completely unintelligible. In addition, the markers would be buried at a greater depth than that used for plowing/tilling operations or for amateur archaeological excavation, so that such activities would be unlikely to disturb them. Further details on the subsurface markers may be obtained from the WIPP Active Access Controls After Disposal Design Concept Description (March 1995b).

Written Records

Written documentation of the WIPP will be placed in local, state, and federal agencies. Documentation will also be provided to international entities and commercial organizations that act as resource information centers for the petroleum and gas industries. Records will use the most stable and durable media available at the time that the record deposits are made. These records will describe the location of the repository; the nature and hazard of the waste; the geologic, geochemical, and hydrologic data pertinent to waste containment; and environmental monitoring data from preoperational baseline and summaries of data collected during D&D activities. Overall record selection for storage at the agencies selected will be in accordance with federal, state, and local regulations.

Specific documents which will be included in the archived information portfolio include:

- Detailed maps describing the exact location of the repository
- The SAR and the addenda which describes the disposal phase of the WIPP
- The Final Environmental Impact Statement for WIPP and the Supplement(s) to the Environmental Impact Statement
- ~~The No-Migration Variance Petition and the No-Migration Determination for Disposal~~
- The RCRA Permit
- The Certification of Compliance with 40 CFR Part 191 and associated application
- Environmental and ecological background data collected during the preoperational phase of WIPP and summaries of data collected during the disposal and decommissioning phases of WIPP
- Records of the waste containers' contents and disposal locations within the WIPP repository
- Drawings defining the construction and configuration of the repository and shafts

References

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TABLE I-8

OUTPUT VALUES FOR FIRST 300 YEARS OF MODELED REPOSITORY PERFORMANCE

Time (Years After Closure)	Repository Pressure (MPa)	Gas Generated (Moles Per Drum)	Pore Volume (m^3 Per Panel)	Cumulative Brine (m^3 Per Panel)	Repository Saturation (Unitless)	Quantity of Ferrous Materials (kg Per Drum)	Quantity of Cellulosic Material (kg Per Drum)
0	0.101	0.037	36900	0	0.0153	85.09	33.92
1	0.138	3.69	33000	320.3	0.0264	85.01	33.83
2	0.167	7.62	32100	383.1	0.0289	84.93	33.74
3	0.196	11.23	31300	413.0	0.0304	84.86	33.65
4	0.226	14.85	30500	432.8	0.0317	84.78	33.56
5	0.266	19.29	29600	450.5	0.0331	84.69	33.45
6	0.301	23.15	28800	462.2	0.0342	84.60	33.35
7	0.345	27.96	28100	473.6	0.0352	84.50	33.23
8	0.371	30.77	27700	479.2	0.0358	84.44	33.16
9	0.405	34.22	27200	485.6	0.0365	84.37	33.08
10	0.441	37.77	26700	491.3	0.0372	84.30	32.99
15	0.646	56.54	24300	512.9	0.0407	83.90	32.52
20	0.863	74.52	22500	525.8	0.0435	83.52	32.08
25	1.134	95.40	20700	536.3	0.0463	83.08	31.56
30	1.397	114.41	19300	543.9	0.0486	82.68	31.09
35	1.634	132.59	18400	549.5	0.0500	82.29	30.64
40	1.906	153.59	17600	554.7	0.0510	81.85	30.12
45	2.09	168.05	17200	557.7	0.0513	81.54	29.77
50	2.403	192.59	16600	562.0	0.0512	81.02	29.16
55	2.652	211.70	16300	564.9	0.0508	80.62	28.69
60	2.888	229.90	16000	567.3	0.0501	80.23	28.24
75	3.585	283.34	15500	572.7	0.0474	79.10	26.92

TABLE I-8
OUTPUT VALUES FOR FIRST 300 YEARS OF MODELED REPOSITORY PERFORMANCE (CONTINUED)

Time (Years After Closure)	Repository Pressure (MPa)	Gas Generated (Moles Per Drum)	Pore Volume (m^3 Per Panel)	Cumulative Brine (m^3 Per Panel)	Repository Saturation (Unitless)	Quantity of Ferrous Materials (kg Per Drum)	Quantity of Cellulosic Material (kg Per Drum)
100	4.881	385.30	15000	578.9	0.0400	75.95	24.39
125	5.873	457.32	14500	583.0	0.0353	75.54	22.53
150	6.508	496.44	14000	585.4	0.0332	74.80	21.50
175	7.062	529.48	13600	587.4	0.0309	74.10	20.69
200	7.654	565.23	13300	589.0	0.0282	73.35	19.80
250	8.737	631.64	12700	591.4	0.0223	71.94	18.16
300	9.816	699.19	12300	593.1	0.0156	70.52	16.49

CHAPTER J

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

CHAPTER J
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS
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CHAPTER J
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

Introduction

This chapter describes the solid waste management units (SWMU) within the 16-square-mile (mi) (41.4 square-kilometer [km]) Waste Isolation Pilot Plant (WIPP) facility boundary (Title 20 of the New Mexico Administrative Code Chapter 4, Part 1 [20 NMAC 4.1], Subpart V §264.101[a]) which have been identified by U.S. Environmental Protection Agency (EPA) Region 6 as requiring further investigation. SWMU characterization sheets are presented in Appendix J1 in response to regulatory requirements in 20 NMAC 4.1, Subpart IX, §270.14(d).

Corrective actions are only required for SWMUs from which releases of Resource Conservation and Recovery Act (RCRA) hazardous wastes or hazardous constituents have occurred. Hazardous waste is defined in 20 NMAC 4.1, Subpart II, §261.3. Hazardous constituents are listed in 20 NMAC 4.1, Subpart II, Appendix VIII. Based on the RCRA Facility Assessment (RFA) conducted by the New Mexico Environment Department (NMED) for the EPA, 16 SWMUs have been identified as requiring further action (NMED, 1994). These SWMUs are listed in Table J-1. Since the preparation of the RFA, the U.S. Department of Energy (DOE) has created ~~seven~~ eight additional SWMUs and ~~is closing~~ has closed SWMU 009-f, the Underground Wash Rack and SWMU 010c, the Exhaust Shaft, in accordance with written site procedures.

The definition of a SWMU has not yet been finalized by the EPA. The most recent definition, presented in the proposed Subpart S to RCRA regulations in Title 40 of the Code of Federal Regulations (CFR), Part 264, has been used to define SWMUs at the WIPP facility. This definition states that SWMUs are "any discernible unit at which solid wastes have been placed at any time irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units also include any area at or around a facility at which solid wastes have been routinely and systematically released."

J-1 Solid Waste Management Units

According to 20 NMAC 4.1, Subpart §264.90(d), the SWMU requirements of 20 NMAC 4.1, Subpart V, Releases from Solid Waste Management Units, "may apply to miscellaneous units when necessary to comply with §§264.601 through 264.603." The DOE believes compliance with the aforementioned sections is demonstrated in this permit application. Section D-9d(1), Chapter E, and Appendix E1 of this permit application address the requirements of 20 NMAC 4.1, Subpart V, §264.601(a). Section D-9d(2) and D-9d(3) of this permit application address the requirements of 20 NMAC 4.1, Subpart V, §§264.601(b) and (c), respectively. Chapter I of this permit application addresses the requirements of 20 NMAC 4.1, Subpart V, §264.603.

In addition, the DOE will institute corrective actions that are necessary to protect human health and the environment for any releases of hazardous waste or hazardous constituents from SWMUs at the WIPP site. Corrective actions will be performed in compliance with 20 NMAC 4.1, Subpart V, §264.101. Any releases from a SWMU deemed an immediate threat to human health or the environment will be responded to in accordance with the WIPP facility Contingency Plan (Chapter G) of this permit application.

The requirements of 20 NMAC 4.1, Subpart V, §§264.601 through 264.603, including corrective actions, are addressed in this permit application. Therefore, the requirements of 20 NMAC 4.1, Subpart V, Releases from Solid Waste Management Units, are not necessary to show compliance.

To eliminate repetition of information, units that are similar in physical characteristics use or waste type are grouped and described within a SWMU description for the particular type of discernible unit.

The following sections describe characterization of SWMUs identified in the RFA, assessment of potential releases, and corrective actions. Table J-1 provides a list of SWMUs.

J-1a Characterization of the SWMUs

SWMUs at the WIPP facility are identified by a unique number designation shown in the upper left-hand corner of the SWMU characterization sheets in Appendix J1. The individual units grouped within a SWMU are designated by a letter following the SWMU number. The locations of the SWMUs and individual units, if any, within SWMUs are shown in Figure J-1.

The SWMU characterization sheets in Appendix J1 include the name, type, and period of operation for each unit. The unit description includes all available information on the unit, including location, size, dates of operation for the individual units within a SWMU, materials of construction, and waste descriptions. Information on the extent and nature of known releases is also included. The figure showing the location of each individual unit within a SWMU is indicated on the SWMU characterization sheet.

J-1b SWMUs added since April 12, 1996

Since the submittal of Revision 6.0 of the permit application, the DOE has closed one SWMU and has created another. These are in the area of the base of the Exhaust Shaft and are discussed in DOE 1997a. A summary follows.

The RFA documents that a visual inspection of the area of SWMU 010c, which is at the base of the Exhaust Shaft, revealed no evidence of past releases of the waste typically expected at the base of the shaft (cement, grout, metal, concrete, grease, brine). Characterizations of waste

removed from the area have shown that the contents of this area are consistently below RCRA hazardous waste criteria. In June 1995, increased volumes of brine flow into the Waste Shaft sump (SWMU 010b) were noticed. This brine was tested and determined to contain RCRA levels of lead. A corrective action plan was immediately implemented. The source of the increased flow into the Waste Shaft sump was traced to water entering the mine from condensation and seepage in the Exhaust Shaft (DOE 1997b). The source of the lead in the brine appears to be chain-link mesh used for support in the Exhaust Shaft (DOE 1996). As part of the corrective action, the debris and muck at the base of the Exhaust Shaft were cleared and a catchment basin installed to collect water coming down the shaft and to prevent further flow to the Waste Shaft sump. The collected water is managed in accordance with New Mexico Solid Waste and Water Quality Control Commission (WQCC) Regulations. The lead containing waters are currently being managed and disposed of at an off-site treatment, storage, and disposal facility in accordance with the requirements of 20 NMAC 4.1 Subpart III. Alternatively, when the levels of lead are below the limits in the DOE's WQCC Discharge Plan DP-831, the water is discharged to the WIPP sewage lagoon along with other waters collected from the WIPP underground.

Since the corrective action involved removal of debris and muck at the base of the Exhaust Shaft, the SWMU previously identified as SWMU 010c is considered closed. The catchment basin has been designated as a new SWMU and assigned the designation SWMU 010e. Figure J-2 shows the location of SWMU 010e. These shaft sumps, including the new SWMU, have been added to Table J-1 and Appendix J1.

J-2 Releases

Releases from the SWMUs identified in the RFA are described in this section.

J-2a Assessment of Potential Releases

The identified SWMUs were reviewed to assess potential releases. A summary of this assessment is presented in Appendix J1. The assessment includes a description of the material released and the nature of the release.

J-2b Corrective Actions

Based on sampling and analysis data, visual site inspections, and document/record reviews, the DOE believes that no releases of hazardous materials have occurred at any of the WIPP facility SWMUs. The DOE has initiated a voluntary Phase 1 RFI/Release Assessment process as described in the RCRA Corrective Action Plan (EPA 520-R-94-004) to define closure

requirements for SWMUs. If corrective actions are required, they will be completed in compliance with applicable regulations.

Potential closure requirements for selected SWMUs will be defined through a voluntary Phase I RFI/Release Assessment process as described in the RCRA Corrective Action Plan (EPA 520-R-94-004). If corrective actions are required at selected SWMUs, all corrective actions will be completed in accordance with the requirements established by the regulator. Final closure of all other SWMUs described in the Resource Conservation and Recovery Act (RCRA) Operating permit will be completed to demonstrate compliance with the Closure Performance Standards contained in 20 NMAC 4.1, Subpart V, 264.111.

References

Department of Energy, 1996, Analysis of Corrosion Testing Results for Galvanized Mesh Material Obtained from the Waste Isolation Pilot Plant, New Mexico, DOE/WIPP 96-2212, Westinghouse Electric Corporation, Carlsbad, NM, December 1996.

Department of Energy, 1997a, Final Solid Waste Management Unit Assessment Report, DOE/WIPP 97-2220, Westinghouse Electric Corporation, Carlsbad, NM, January 10, 1997.

Department of Energy, 1997b, Composition and Origin of Nonindigenous Brine and Water in the Vicinity of the Exhaust Shaft Waste Isolation Pilot Plant, New Mexico, DOE/WIPP 97-2226, Westinghouse Electric Corporation, Carlsbad, NM, February 1997.

New Mexico Environment Department (NMED), 1994, "Assessment of Solid Waste Management Units at the Waste Isolation Pilot Plant," NMED/WIPP 93-001, New Mexico Environment Department, Santa Fe, New Mexico.

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TABLES

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TABLE J-1
SOLID WASTE MANAGEMENT UNIT (SWMU) DESCRIPTIONS

SWMU No.	Unit Type	Unit Description	Waste Description
001	Mud Pits	Thirteen decommissioned mud pits on drill pads are identified in the RCRA Facility Assessment (RFA). Additional mud pits associated with seven groundwater monitoring well sites have been created since the RFA. These were used for settling drill cuttings out of the drilling fluids being used in drilling holes to support hydrologic testing and monitoring, potash evaluation, and drilling for hydrocarbons.	Sodium- and potassium chloride-saturated brine; starch; bentonite gel; diesel fuel; drill cuttings; metal cuttings; grease; hydraulic fluid; motor oil.
002	Landfills	Two landfills used for disposal of construction debris are identified in the RFA.	Foundation excavation soils; concrete; scrap wood; and metal.
003	Storage Yards	One yard used for storage of construction and maintenance materials, wastewater, and used oils or materials that can be reclaimed or recycled has been identified in the RFA.	Water contaminated with motor oil, hydraulic oil, and diesel fuel; used hydraulic oil, motor oil, antifreeze, glycol-based oils, chemical grout; used lead acid batteries; scrap metal. Used hydrocarbons are collected in containers.
010	Shaft Sumps	An area at the bottom to each of the four WIPP shafts that collected construction debris or accumulates brine, including a catchment basin.	Welding residue, scrap wood and metal, salt; Class C cement; chemseal; bentonite; grease and oil; cement and chem grout; Salado and overlying formation groundwaters;, condensate from the underground ventilation system; washwater; leaded brine from the Exhaust Shaft

CHAPTER L
NO-MIGRATION VARIANCE PETITION

TRU mixed waste is exempted from Land Disposal Restrictions by the Land Withdrawal Act Amendment (Public Law 104-201). This amendment states that WIPP "waste is exempt from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S.C. 6924(m)) and shall not be subjected to the Land Disposal prohibitions in section 3004 (d), (e), (f), and (g) of the Solid Waste Disposal Act."~~In March 1989, the U.S. Department of Energy (DOE) submitted to the U.S. Environmental Protection Agency (EPA) a no-migration variance petition (NMVP) under 40 CFR §268.6 for the Waste Isolation Pilot Plant (WIPP) facility. The document was subsequently expanded to include an addendum and was resubmitted to the EPA in March 1990. The addendum provided additional information specifically requested by the EPA. The petition demonstrated that site characteristics (i.e., the ability of the bedded salt to isolate emplaced wastes from groundwater); operational practices, which would prevent releases to air, soil, and surface water; and characteristics of the waste designated for disposal at the WIPP were sufficient to prevent migration of hazardous constituents beyond the unit boundary during the Test Phase.~~

~~On November 14, 1990, the EPA issued a Conditional No-Migration Determination (NMD) for the WIPP facility (55FR47700). The Federal Register notice provided information relevant to the NMD, described the EPA's responses to comments provided on the proposed NMD (55FR13068), and specified the conditions and limitations of the NMD.~~

~~The DOE abandoned plans for a Test Phase at the WIPP facility. Prior to initiating disposal operations, the DOE must seek another NMD from the EPA for disposal operations. The DOE will not receive transuranic mixed waste for disposal at the WIPP facility unless a disposal-phase NMD is granted by the EPA or this waste is otherwise exempted from the Land Disposal Restrictions (LDR) of 40 CFR Part 268. Currently, the DOE has no plans for treatment of the waste to meet the LDR, and in the event that a variance is not granted, the DOE would manage only non-mixed waste until appropriate treatment methods have been identified and that waste has been treated.~~

~~In May 1995, the DOE issued a draft NMVP for the disposal phase. This draft submittal focused on a demonstration of compliance with the no-migration standards during disposal operations and the closure period. The long-term demonstration of no migration will be presented in the final NMVP, which is scheduled to be submitted to the EPA in June 1996. Once an NMD has been issued by the EPA for the disposal phase, the DOE will comply with all associated terms and conditions.~~

~~In order to fulfill the requirement of Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1, Subpart IX, §270.14(b)(21), a copy of the Test Phase NMD is included as Appendix L1. However, as previously stated, the DOE has abandoned plans for a Test Phase and does not~~

~~propose to conduct any activities relating to a Test Phase.~~

surfaces of the extruder that may come into contact with the core must be cleaned in accordance with the requirements in Section C4-2(b) prior to use.

- Coring tools must be of sufficient length to hold the liner and must be constructed to allow placement of the liner leading edge as close as possible to the coring tools leading edge.

- All surfaces of the coring tool that have the potential to contact the sample core must be cleaned in accordance with the requirements in Section C4-2(b) prior to use.

- The leading edge of the coring tools must be sharpened and tapered to a diameter equivalent to, or slightly smaller than, the inner diameter of the liner. Based on tests conducted with the coring tools described in the Methods Manual, a diameter slightly smaller (e.g., 1/10 in.) has demonstrated a reduction in the drag of the homogenous solids and soil/gravel against the internal surfaces of the liner, thereby enhancing sample recovery.

- Rotational coring tools must have a mechanism to ~~prevent~~ minimize the rotation of the liner inside the coring tool ~~from rotating with the coring tool~~ during coring activities, thereby minimizing physical disturbance to the core.

- Rotational coring must be conducted in a manner that minimizes transfer of frictional heat to the core, thereby minimizing potential loss of VOCs.

- Nonrotational coring tools must be designed such that the tool's kerf width is minimized. Kerf width is defined as one-half of the difference between the outer diameter of the tool and the inner diameter of the tool's inlet.

Sample Collection

Sampling must be conducted in accordance with the following requirements:

- Sampling must be conducted as soon as possible after core collection. If a substantial delay (i.e., more than 60 minutes) is expected between core collection and sampling, the core must remain in the liner and the liner must be capped at each end. If the liner containing the core is not extruded from the coring tool and capped, then two alternatives are permissible: 1) the liner must be left in the coring tool and the coring tool must be capped at each end, or 2) the coring tool must remain in the waste container with the air-lock mechanism attached.

- Samples of homogenous solids and soil/gravel for VOC analyses must be collected prior to extruding the core from the liner. The sampling location must be randomly selected along the long axis of the liner and access to the waste must be gained by making a perpendicular cut through the liner and the core. Sites must develop procedures to select, and document the selection, of random sampling locations. True random sampling involves the proper use of random

- Coring operations and tool selection should be designed to minimize alteration of the in-place waste characteristics. Minimal waste disturbance must be verified by visually examining the core and describing the observation (e.g., undisturbed, cracked, or pulverized) in the field logbook.

If core recovery is less than 50 percent of the depth of the waste, a second coring location shall be randomly selected. The most representative core ~~from the second location~~ shall be used for sample collection~~ regardless of the core recovery~~.

$$\cancel{MDC = K_1K_2 (2.71 + 4.65 * s_0)} \qquad \cancel{C8\text{-}11}$$

C8-4 Radiography

Quality Assurance Objectives

The QAOs for radiography are detailed in this section. If the QAOs described below are not met, then corrective action, such as additional operator training must be taken. It should be noted that radiography does not have a specific MDL because it is primarily a qualitative determination. The objective of radiography for the program is to verify the waste matrix parameters for each waste container and to estimate each waste material parameter weight (Table C8-1). All activities required to achieve these objectives must be described in the site quality assurance project plan (QAPjP) and standard operating procedures (SOP).

Data to meet these objectives must be obtained from an audio/videotaped scan provided by trained radiography operators at the sites. Results must also be recorded on a radiography data form. The precision, accuracy, completeness, and comparability objectives for radiography data are presented below.

Precision

The qualitative determinations, such as verifying the waste matrix code, made during radiography do not lend themselves to statistical evaluation of precision. However, comparison of data derived from radiography and visual examination on the same waste containers at the Rocky Flats Environmental Technology Site and the Idaho National Engineering Laboratory indicates that radiography operators can provide estimated inventories and weights of waste items in a waste container. As a measure of precision, the Site Project QA Officer shall calculate and report the RPD between the estimated waste material parameter weights as determined by radiography and these same parameters as determined by visual examination.

Accuracy

The accuracy with which the waste matrix code and waste material parameter weights can be determined must be documented through visual examination of a randomly selected statistical portion of waste containers. The percentage of waste containers that require assignment to a

- Waste matrix code
- Waste material parameter weights
- Average mass and activity of each radionuclide of concern
- If each waste container of waste is TRU radioactive waste
- Average concentration of hydrogen, methane, and each VOC in the headspace gas of waste containers in the waste stream
- ~~Total masses of VOCs, hydrogen, and methane in the headspace gas of the waste stream~~
- The potential flammability of TRU waste headspace gases
- Mean concentrations, UCL_{90} for the mean concentrations, standard deviations, and number of samples collected for VOCs, SVOCs, and metals in the waste stream
- ~~Total masses of VOCs, SVOCs, and metals in the waste stream~~
- Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C
- Whether the waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level
- Whether a sufficient number of waste containers have been visually examined to determine with a reasonable level of certainty that the UCL_{90} for the miscertification rate is less than 14 percent

If the Site Project Manager determines that insufficient data have been collected to make the determinations listed above, additional data collection efforts must be undertaken.

The statistical procedure presented in Appendix C6 shall be used by participating Site Project Managers to evaluate and report waste characterization data from the analysis of homogenous solids and soil/gravel. The procedure, which calculates UCL_{90} values, shall be used to assess compliance with the DQOs in Section 1.5 as well as with RCRA regulations. The procedure must be applied to all laboratory analytical data for total VOCs, total SVOCs, and total metals. For RCRA regulatory compliance (40 CFR § 261.24), data from the analysis of the appropriate metals and organic compounds shall be compared to the TC levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the Program. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC analyte that would give the regulatory weight/volume concentration (in the toxicity characteristic leaching procedure (TCLP) extract), assuming 100-percent analyte dissolution.

Reconciliation at the CAO Level

CAO must also ensure that data of sufficient type, quality, and quantity have been collected to meet Program DQOs. The CAO Office of Regulatory Compliance manager is responsible for determining if sufficient data have been collected to determine the following:

- The concentration of VOC constituents in the headspace in the total waste inventory has not exceeded the environment performance standards of 20 NMAC 4.1, Subpart V, 264.601(b);

- ~~The concentration of VOC constituents in the headspace in the total waste inventory has not exceeded the environment performance standards of 20 NMAC 4.1, Subpart V, 264.601 (b);~~

- ~~The total curie, hydrogen, and methane concentrations in TRU waste to support revision of the thermal power restrictions for shipment of waste in the Transuranic Package Transporter (TRUPACT-II);~~

- An inventory of radioactive materials and physical waste forms to support an assessment of repository performance;

- Whether waste streams proposed for disposal in WIPP have been adequately characterized; and

- Whether data supports the preparation of the ~~WIPP facility no-migration variance petition, the~~ WIPP RCRA permit application, the WIPP facility 40 CFR Part 191 Certification Application, and a revised safety analysis report for the TRUPACT-II.

C8-12 Data Reporting Requirements

Data reporting requirements define the type of information and the method of transmittal for data transfer from the data generation level to the project level and from the project level to CAO.

Data Generation Level

Data shall be transmitted by hard copy or electronically (provided a hardcopy is available on demand) from the data generation level to the project level. Transmitted data shall include all testing, sampling, and analytical batch data reports, and data review checklists. The report forms and checklists used must contain all of the information required by the testing, sampling, and analytical techniques described in Sections 7.0 through 15.0 of the QAPP, as well as the signature releases to document the review, validation, and verification as described in Section C8-10. All testing, sampling, and analytical batch data reports and checklists shall be on approved forms, as provided in site-specific documentation.

testing of the last waste container in a testing batch. Sampling batch data reports shall be forwarded to the site project office within 28 days of sample collection of the last sample in a sampling batch. Analytical batch data reports shall be forwarded to the site project office within 28 days of the VTSR of the last sample in an analytical batch. After review by the Site Project QA Officer, all batch data reports will be forwarded to the Site Project Manager. All testing, sampling, and analytical batch data reports shall be assigned serial numbers, and each page shall be numbered at the bottom. The serial number used for data reports can be the same as the testing, sampling, or analytical batch number.

QA documentation shall be maintained in either testing, sampling, and analytical facility files, or site project files for those facilities located on sites. Contract waste operation facilities shall forward testing, sampling, and analytical QA documentation along with testing, sampling, and analytical batch data reports to the site project office for inclusion in site central files.

Project Level

There are two aspects to project level reporting. First, summarized testing, sampling, and analytical data must be reported on a per-waste container basis. Second, summarized characterization information must be reported on a waste stream basis.

Summarized testing, sampling, and analytical data shall be transmitted by hard copy or electronically from the Site Project Manager to CAO when requested. Participating sites shall combine data from individual waste containers into data packages for reporting. Hard copy or electronic data packages shall consist of the following:

- Cover page with the site name, program identification, waste container numbers for containers included in the data package, and release signatures of the Site Project Manager and Site Project QA Officer

- Table of contents; and

- A concise narrative that summarizes the results of the project-level review and briefly describes any problems or other noteworthy items of interest associated with the data (i.e., nonconformance reports, operational variances). The narrative shall include separate sections which address results of duplicates/replicates and nonconformance reports associated with the waste containers being reported in the package.

For each waste container being reported in the data package, the following information shall be included:

- Cover page with the site name, program identification, waste container number, and approval/release signatures of the Site Project Manager and Site Project QA Officer

- A table that relates sample numbers (testing, sampling, and analytical) to waste container number

D9-5.3.2 Non-Carcinogens

As for carcinogens, noncarcinogen VOC contaminant concentrations in air for the Surface Worker and the Underground Worker and OSHA 8 hour TWAs are presented (Table D9-9). This information provides a mechanism for evaluating occupational exposures in addition to the risk assessment approach. The receptor concentrations for the Surface Worker are seven orders of magnitude below the TWAs and those for the Underground Worker are more than six orders of magnitude below the TWAs.

Human health risk from non-carcinogens can be calculated using equation D9-23 with EF = 1920 hours/year for the surface worker and 33 hours per year for the underground worker, ED = 10 years, and EC = ECS in Table 9-9. The calculated hazard quotient from Chlorobenzene is 4E-01 for the surface worker and 3E-02 for the underground worker. The risk from Toluene is the hazard quotient ~~is~~ 3E-02 for the surface worker and 3E-03 for the underground worker.

TABLE D9-8
VOC CONTAMINANT CONCENTRATIONS IN AIR FOR THE SURFACE WORKER AND THE UNDERGROUND WORKER

	ECS_{max}	ECU_{max}	*Receptor Concentration*		
Compound	**Exhaust Shaft Concentration for Surface Worker ($\mu g/m^3$)**	**Exposure Concentration for Underground Worker ($\mu g/m^3$)**	**(ECS x ADF) Surface Worker (ppmv)**	**Underground Worker (ppmv)**	**OSHA TWA[a] (ppmv)**
Carbon Tetrachloride	1.54E+02	7.70E+01	3.00E-04	1.22E-02	10
Chloroform	1.06E+02	5.03E+01	2.67E-04	1.03E-02	50
1,1,-Dichloroethylene	4.01E+02	1.86E+02	1.24E-03	4.68E-02	5[b]
1,2-Dichloroethane	1.25E+02	6.00E+01	3.81E-04	1.48E-01	~~100~~ 50
Methylene Chloride	1.26~~e~~E+02	5.66E+02	4.45E-03	1.63E-02	500
1,1,2,2-Tetrachloroethane	1.77E+02	8.86E+01	3.17E-04	1.29E-02	5
1,1,1-Trichloroethane	1.77E+03	8.89E+02	4.00E-03	1.63E-01	350

a. 8 hour TWAs except chloroform TWA for up to a 10 hour day in a 40 hour work week.
b. TWA from ACGIH

Table D9-ATT 1-1. Exposure Limits[a]

Substance	OSHA PEL[b]	ACGIH TLV	NIOSH REL[c]
Carbon tetrachloride (Tetrachloromethane)	10 ppm TWA (C) 25 ppm 200 ppm peak for 5 min in any 4 hrs	5 ppm TWA, 31 mg/m^3 10 ppm STEL, 63 mg/m^3 Animal carcinogen	2 ppm STEL (60 min), 12.6 mg/m^3 Carcinogen 200 ppm IDLH
Chlorobenzene	75 ppm TWA, 350 mg/m^3	10 ppm TWA, 46 mg/m^3	NL[d] 1,000 ppm IDLH
Chloroform (Trichloromethane)	(C) 50 ppm, (C) 240 mg/m^3	10 ppm TWA, 49 mg/m^3 Suspected human carcinogen	NL[e] 2 ppm STEL (60 min), 9.78 mg/m^3 Carcinogen 500 ppm IDLH
1,1-Dichloroethylene (Vinylidene chloride)	NL	5 ppm TWA, 20 mg/m^3 20 ppm STEL, 79 mg/m^3	NL[e] Carcinogen IDLH not determined
1,2-Dichloroethane (Ethylene dichloride)	~~100~~ 50 ppm TWA (C) 200 ppm 300 ppm peak for 5 min in any 3 hrs	10 ppm TWA, 40 mg/m^3	NL[e,f] 1 ppm TWA, 4 mg/m^3 2 ppm STEL, 8 mg/m^3 Carcinogen 50 ppm IDLH
Methylene chloride (Dichloromethane)	500 ppm TWA (C) 1,000 ppm 2,000 ppm peak for 5 min in any 2 hrs	50 ppm TWA, 174 mg/m^3 Suspected human carcinogen	NL[e] Carcinogen 2,300 ppm IDLH
1,1,2,2-Tetrachloroethane	5 ppm TWA, 35 mg/m^3 Skin designation	1 ppm TWA, 6.9 mg/m^3 Skin designation	NL[e,f] 1 ppm TWA, 7 mg/m^3 Carcinogen, skin designation 100 ppm IDLH
Toluene	200 ppm TWA (C) 300 ppm 500 ppm peak for 10 min	50 ppm TWA, 188 mg/m^3 Skin designation	100 ppm TWA, 375 mg/m^3 150 ppm STEL, 560 mg/m^3 500 ppm IDLH
1,1,1-Trichloroethane (Methyl chloroform)	350 ppm TWA, 1,900 mg/m^3	350 ppm TWA, 1,910 mg/m^3 450 ppm STEL, 2,460 mg/m^3	(C) 350 ppm (15 min), (C) 1,900 mg/m^3 700 ppm IDLH

APPENDIX J1
SOLID WASTE MANAGEMENT UNIT
CHARACTERIZATION SHEETS

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APPENDIX J1
SOLID WASTE MANAGEMENT UNIT CHARACTERIZATION SHEETS

001 MUD PITS

Unit Type:	Mud Pits
Unit Use:	Storage/Settling
Operational Status:	Decommissioned/In Use
Use Period:	1970s - Present
Materials Managed:	Solid Waste
Hazardous Release:	None
Radioactive Release:	None
Information source(s):	Process Knowledge

Unit Description

Refer to Figure J-1 for location. Thirteen decommissioned mud pits are identified in the WIPP RFA. Additional mud pits associated with seven groundwater monitoring well sites have been created since the RFA. They were used for settling drill cuttings out of the drilling fluids being used in drilling holes to support hydrologic testing and monitoring, potash evaluation, and drilling for hydrocarbons. These mud pits ranged in size from approximately 150 by 150 by 5 feet (ft) (46 by 46 by 1.5 m) to 10 by 30 by 5 ft (3 by 9 by 1.5 m). Diesel fuel, foaming agents and other organic additives were added to the drilling mud to reduce dissolution of the water-soluble rocks, promote hole stability, and to help lubricate the drill rods. It is not known how many of the wells were drilled using diesel in the drilling mud. Each mud pit was lined with a plastic sheet and used for one to two months during drilling, then allowed to dry out. To facilitate drying, holes were cut in the bottom of the liner of some pits. In general, once a pit was dry, it was covered with the soil that had been removed to make the berms and then graded to the original contours. The individual mud pits in SWMU No. 001 are listed on Table J1-1. It is difficult to determine the exact location of most of the mud pits because of the grading and revegetation that has taken place.

Many of these mud pits were the result of exploration activity that was conducted prior to the selection of the area for the WIPP facility and, therefore, were not created by DOE in support of the WIPP Project. All such locations are indicated in Table J1-1.

Waste Description

Materials in the mud pits consisted of sodium- and potassium chloride-saturated brine to which starch, bentonite gel, and diesel fuel were added; drill cuttings; metal cuttings; trace amounts of hydraulic fluid, grease, and motor oil; and the plastic liner.

Release Information

Potential releases from each of the drill sites occurred when the mud pits were drained by cutting holes in the liner. The materials released consisted of saturated brines, which are not considered hazardous under the RCRA. All of the solids confined in the plastic liner of the mud pits were buried when the pits were covered with soil and graded.

TABLE J1-1
SWMU DATA — MUD PITS

SWMU[a]	Location[b]	Hole No.	No. of Pits[c]	Period of Use	Well Status	Size of Drill Pad (Acres/ Hectares)
001-x	NW, NE, SW, 17	WIPP-13	2	8/78 & 10/85	Open	4/1.6
001-p	SW, NE, SW, 34	Cotton Baby	2	1973-1974	Plugged	3/1.2
001-o	NW, NE, SW, 15	Badger Unit	1	1974	Plugged	2/0.8
001-t	SE, SE, SW, 30	IMC-374	1	Unknown (pre-1975)	Plugged	1/0.4
001-q	SE, SE, SE, 28	DOE-1	2	1982	Open	3/1.2
001-n	SW, SW, SW, 31	P-15	1	10/76	Plugged	1/0.4
001-g	SW, SW, SW, 29	H-14 P-1	2	9/86 8/76	Sampled once/3 yrs. Plugged	1/0.4
001-h	NE, NE, NE, 28	H-15 P-2	2	10/86-11/86	Sampled once/3 yrs.	1/0.4
001-s	SE, SE, SE, 20	ERDA-9	1	4/76-6/76	Open	2/0.8
001-j	SE, SE, SW, 20	P-3	1	8/76-9/76	Plugged	0.5/0.2
001-k	SE, SW, SE, 28	P-4	1	8/76-9/76	Plugged	.75/0.3
001-l	SE, SE, SE, 17	P-5 WIPP-12	4	9/76 11/78 & 10/85	Plugged Open	6/2.4
001-m	SW, SW, NW, 30	P-6	1	9/76	Plugged	1/0.4
001-ah	SE, NW, SW, 28	H-19	multiple	1994-present	Open	4.65/1.9
001-ai	NW, NE, NW, 20	WQSP-1	2	1994-present	Open	0.46/0.19
001-aj	SW, NW, SW, 16	WQSP-2	2	1994-present	Open	0.46/0.19
001-ak	SE, SW, SW, 16	WQSP-3	2	1994-present	Open	0.46/0.19
001-al	SE, NW, SW, 28	WQSP-4	2	1994-present	Open	0.46/0.19
001-am	SE, SE, SE, 29	WQSP-5	2	1994-present	Open	0.46/0.19
001-an	SW, NE, SW, 29	WQSP-6 WQSP-6A	4	1994-present	Open	0.46/0.19

[a]SWMU designation in parentheses is the designation used in the WIPP RCRA Facility Assessment.
[b]All of the mud pits are in T22S, R31E. The location column gives the 1/4 of the 1/4 of the 1/4 of the section.
[c]Probable number of mud pits. Many of the drill pads were used to drill several holes, requiring the use of more than one mud pit.
[d]These are wells that were not drilled at the request of DOE; they were drilled for hydrocarbon and potash exploration.

002 LANDFILLS

Unit type:	Landfill
Unit use:	Disposal
Operational status:	Active
Use period:	1976 - Present
Materials managed:	Solid Waste
Hazardous release:	None
Radioactive release:	None
Information source(s):	Process Knowledge Aerial Photos

Unit Description

Refer to Figure J-1 for location. Two areas have been used as landfills at the WIPP facility. The older location, called the Brinderson Landfill (003-a), is located 1 mi (1.6 km) due south of Zone I. Prior to use as a construction landfill, the area was used as a quarry for road-bed materials. It was an active landfill from 1976 to January 1988 and covers about 4 acres (ac) (1.6 hectares [ha]). The closure of the Brinderson Landfill was approved by the U.S. Department of Interior, Bureau of Land Management (BLM). Since it was closed, the Brinderson Landfill has been covered over and reseeded. The new landfill (003-b) is located ½ mi (0.8 km) south of Zone I. The new construction landfill was developed in two parts. The first part, to the south of the current one, was excavated on BLM land and operated under a BLM permit until 1989. It was closed at the request of the BLM. The second part of the landfill was opened on land designated by the BLM as part of the DOE Exclusive Use Area in Public Land Order 6403. Ground was first broken for the new landfill area in November 1989; it is still active and covers about 15 ac (6 ha). Permits were obtained from the BLM for both landfills on BLM-administered land.

Waste Description

Both of the landfills have been used to bury construction debris consisting of foundation excavation soils, waste concrete, scrap wood, and metal. In addition, it has been reported that small amounts of nonconstruction debris (most likely office wastes) were dumped in the Brinderson Landfill. No asbestos materials are known to have been disposed of in the landfills. Disposal of RCRA hazardous waste or hazardous constituents in the construction landfill is done in accordance with written procedures.

Release Information

Releases of RCRA hazardous waste or hazardous constituents have not occurred at these sites.

003 STORAGE YARDS

Unit type:	Storage Areas
Unit use:	Storage
Operational status:	Active
Use period:	1976 - Present
Materials managed:	Solid Waste Hazardous Waste Oils
Hazardous release:	Potential
Radioactive release:	None
Information source(s):	Process Knowledge Aerial Photos

Unit Description

Refer to Figure J-1 for location. One area presently used for storage was designated in the RFA. This storage yard, the Portacamp (004-a), is located about 1,000 ft (305 m) southeast of Zone I. The yard is used to store construction and maintenance materials and as temporary storage for wastewater and waste oils awaiting laboratory analysis or recycling. The waste oils are recycled if free of hazardous contamination. The area is approximately 2 ac (0.8 ha) in extent and has been active since 1976.

Waste Description

The wastes stored at the Portacamp are water contaminated with motor oil, hydraulic oil, and diesel fuel from the vehicle wash bays; used hydraulic oil; used motor oil; glycol-based oils; used antifreeze; discontinued oils and empty 55-gallon drums. In 1987 the excess chemical grout from grouting the Exhaust Shaft and the Waste Shaft was stored in this yard prior to being shipped off site for disposal as hazardous waste.

Release Information

There have been no releases of RCRA hazardous waste or hazardous constituents from the area; however, small areas of stained soil under the pallets where excess or used petroleum products are stored indicate there have been minor releases of oil and petroleum products (non-RCRA regulated materials) from the drums. Any releases from the area used for staging wastewater and waste oils are remediated according to the applicable WIPP facility procedure.

010 SHAFT SUMPS

Unit type:	Shaft Sumps
Unit use:	Collection/Storage
Operational status:	Active
Use period:	1981 - Present
Materials managed:	Solid Waste
	Hazardous Waste
Hazardous release:	Lead
Radioactive release:	None
Information source(s):	Process Knowledge, Sampling and Analysis

Unit Description

Refer to Figure J-2 for location. Four shafts have been completed to the WIPP facility underground. The Salt Handling and the Waste Shafts have sumps (010-a and 010-b) that extend below the facility horizon (148 feet and 119 feet, respectively). The sumps have been cut into the salt and are not lined. The other two shafts, the Exhaust Shaft and the Air Intake Shaft, end at the facility horizon and do not have sumps. The bottoms of these shafts are 010-c and 010-d, respectively. The bottoms of all four shafts have received construction debris. All shafts are lined and grouted to minimize wastewater accumulation. The solid material cleaned up from the bottom of the shafts without sumps is disposed of on the main salt storage area. The Waste Shaft sump periodically collects brine. In June 1995, increased volumes of brine flow into the Waste Shaft sump (SWMU 010b) were noticed. The brine was tested and was determined to contain RCRA levels of lead. A corrective action plan was immediately implemented. The source of the increased flow into the Waste Shaft sump was traced to water entering the mine from condensation and seepage in the Exhaust Shaft. The source of the lead in the brine appears to be chain-link mesh used for support in the Exhaust Shaft. As part of the corrective action, the debris and muck at the base of the Exhaust Shaft were cleared and a plastic catchment basin installed to collect water coming down the shaft and to prevent further flow to the Waste Shaft sump. The collected water is managed in accordance with New Mexico Solid Waste and Water Quality Control Commission (WQCC) Regulations. The lead containing waters are currently being managed and disposed of at an off-site treatment, storage, and disposal facility in accordance with the requirements of 20 NMAC 4.1 Subpart III. Alternatively, when the levels of lead are below the limits in the DOE's WQCC Discharge Plan DP-831, the water is discharged to the WIPP sewage lagoon along with other waters collected from the WIPP underground.

Since the corrective action involved the removal of the debris and muck at the base of the Exhaust Shaft, the SWMU previously identified as SWMU 010c is considered closed. The catchment basin has been designated as a new SWMU and assigned the designation SWMU 010e.

Waste Description

The wastes consist of welding debris, scrap steel, concrete from the shaft lining, cement grout, chemical grout, grease, wash water, brine from the Salado and overlying formations some of which contains RCRA levels of lead, and salt.

Release Information

Brine containing lead in excess of RCRA levels has flowed through the Exhaust Shaft area and collected in the Waste Shaft sump. No other RCRA hazardous wastes or hazardous constituents have been detected at these sites.

TABLE J1-2
SWMU DATA-SHAFT SUMPS

SWMU	Dates	*Location and Description	Status	Material Stored
010-a Salt Handling Shaft	1981 to Pres.	0/0 Sump extends 148 feet below the facility horizon	Active	Welding residue, scrap wood and metal, salt, Class C cement, Chemical-seal, bentonite, grease, and oil
010-b Waste Shaft	1982 to Pres.	S400/E30 Sump extends 119 feet below the horizon.	Active	Concrete, salt, cement grout, chemical grout, brine from Rustler Formation, wash water, grease, and oil, lead
010-c Exhaust Shaft	1985 to 1996	S400/E480 Shaft ends at the facility horizon.	Closed	Salt, concrete, cement grout, chemical grout, brine from Rustler Formation, grease, and oil
010-d Air Intake Shaft	1989 to Pres.	0/W620 Shaft ends at the facility horizon.	Active	Salt, brine from Rustler Formation, concrete, grease, and oil
010-e Exhaust Shaft	1996 to Pres.	S400/E480 Catchment Basin at base of shaft	Active	Salt, brine, lead

* All locations given by underground coordinates.