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

January 29, 1997

Mr. Steve Zappe
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 A Galisteo
Santa Fe, New Mexico 87505

Subject: **Final Solid Waste Management Unit Assessment Report**

Dear Mr. Zappe:

This letter is transmitting the Final Solid Waste Management Unit (SWMU) Assessment Report, DOE/WIPP 97-2220, for the SWMUs at the Waste Isolation Pilot Plant. This Final SWMU Assessment Report replaces the Data Summary Report No. 4, Solid Waste Management Units identified in the Waste Isolation Pilot Plant RCRA Facility Assessment which was sent to you on May 29, 1996.

As you are aware, a total of 97 SWMUs have been identified at the WIPP during and following the Resource Conservation and Recovery Act Facility Assessment (RFA) for WIPP, NMED/DOE/AIP94/1. Sixteen of these 97 SWMUs were addressed in Final Voluntary Release Assessment/Corrective Action Report, DOE/WIPP 96-2209, which was sent to you on November 22, 1996. Information on the remaining SWMUs were originally discussed in Data Summary Report No. 4 but have been updated and finalized in this Final SWMU Assessment Report. This document demonstrates through sampling activities, management practices, inspections, and reports that the potential of these SWMUs to release hazardous constituents to the surrounding environment at or above applicable risk-based action levels is extremely low to nonexistent.

If you have any questions, or if you would like to discuss the attached results, please contact me at (505) 234-7452.

Sincerely,

Craig A. Snider
Compliance Engineer

UFC1200

Enclosure

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DOE/WIPP 97-2220

Final Solid Waste Management Unit Assessment Report

January 10, 1997

Waste Isolation Pilot Plant
Carlsbad, New Mexico

Processing and final preparation of this report were performed by the Westinghouse Electric Corporation's Waste Isolation Division, the management and operating contractor for the Waste Isolation Pilot Plant, under U. S. Department of Energy contract DE-AC04-86AL31950.

This document has been submitted as required to:

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ACRONYMS

AIP	Agreement in principle
AIS	Air Intake Shaft
APD	Application for Permit to Drill
Bldg.	Building
BLM	Bureau of Land Management
CA	Corrective Action
CFR	Code of Federal Regulations
CW	Chemical Wash
DOE	Department of Energy
DOT	Department of Transportation
DSP	Duval Sulphur and Potash Company
EC&S	Environmental Compliance & Support
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Administration
FR	Federal Register
GWPRB	Groundwater Protection and Remediation Bureau
Haz	Hazardous
HSWA	Hazardous and Solid Waste Amendments
HWO	Hazardous Waste Operations
IMC	International Minerals Corporation
KCl/NaCl	Potassium chloride/sodium chloride
LAB	Laboratory
LUP	Land use permit
MC	Management Charter
MP	Management Policy
NEPA	National Environmental Policy Act of 1969
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environmental Department
NMOCD	New Mexico Oil Conservation Division
RA	Release Assessment
RCRA	Resource Conservation and Recovery Act
Reg. Auth.	Regulatory authority
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RH	Remote Handling
SAA	Satellite Accumulation Area
SAT/HAZ	Satellite Accumulation Trailer/Hazardous
SHS	Salt Handling Shaft
SNL	Sandia National Laboratories
SPDV	Site Preliminary Design Validation
SWMU	Solid Waste Management Unit

USGS	U.S. Geological Survey
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant
WQSP	Water Quality Sampling Program

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE), Carlsbad Area Office has completed an assessment of Solid Waste Management Units (SWMU) at the Waste Isolation Pilot Plant (WIPP). This *Final SWMU Assessment Report* has been prepared for submittal to the U.S. Environmental Protection Agency (EPA) Region VI, Hazardous Waste Management Division and the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau to provide additional information regarding the SWMU sites and provide recommendations regarding future action at these SWMUs.

This *Final SWMU Assessment Report* has been prepared in response to a letter from NMED to DOE, dated April 23, 1996, that requested supplemental information about SWMUs described in the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) for WIPP, *(NMED/DOE/AIP 94/1)*. The NMED requested this information for assistance in the development of a "Statement of Basis" to justify the inclusion or exclusion of SWMUs in the Hazardous and Solid Waste Amendments (HSWA) permit module of the RCRA Part B Permit for the WIPP facility. An initial response to NMED's April 23, 1996, letter was contained in *Data Summary Report No. 4, Solid Waste Management Units Identified in the Waste Isolation Pilot Plant RCRA Facility Assessment*, submitted by DOE to NMED and EPA on May 29, 1996. Additional supplemental information regarding SWMU sites at the WIPP has been compiled since *Data Summary Report No. 4* was submitted, however. Therefore, this *Final SWMU Assessment Report* has been prepared as a final response to NMED's April 23, 1996, letter and supersedes *Data Summary Report No. 4*. This report also incorporates findings of the Voluntary Release Assessment/Corrective Action (RA/CA) program conducted by DOE and has been prepared as a supplement to the *Final Voluntary Release Assessment/-Corrective Action Report (DOE/WIPP 96-2209)* dated November 12, 1996.

The NMED letter of April 23, 1996, requested the following information: (1) a map or maps depicting all of the SWMU sites described in the RFA; (2) the identity of SWMUs that are currently inaccessible (i.e., covered by pavement or permanent structures that may impact future investigation or remediation efforts); (3) the identity of any SWMU sites that may be regulated under dual regulatory authority; and (4) supplemental information that may be useful in determining which SWMUs will be identified for corrective action in the HSWA permit module of the RCRA Part B permit.

A total of ~~97~~ 93 SWMUs have been identified at WIPP based on the findings of the RFA. These SWMUs have been classified into the following SWMU groups:

SWMU Group	Group Name	Number of Sites
001	Mudpits/drillpads	~~45~~ 40
002	Salt & topsoil storage areas	4
003	Landfills	2
004	Storage yards	3
005	Concrete batch plants	3
006	Holding ponds	2
007	Evaporation ponds	3
008	Surface satellite accumulation areas (SAA)	17
009	Underground SAAs	~~11~~ 12
010	Shaft sumps	4
011	Sewage treatment facility	1
012	Nonhazardous waste collection bins	2
		93

DOE's findings and recommendations regarding each of the SWMUs in these groups are summarized in Table 1. As shown, the information compiled by DOE supports the exclusion of these SWMUs from the HSWA module of the RCRA Part B Permit, arguing that the potential of these units to release hazardous constituents to the surrounding environment at or above applicable risk-based action levels is extremely low to nonexistent. Moreover, many of these units are closed, and/or have not apparently generated or managed solid or hazardous wastes based on available information. Hence, the DOE formally requests that a "No Further Action" determination be provided by EPA and NMED for the SWMUs discussed in this *Final SWMU Assessment Report*.

In response to the NMED letter of April 23, 1996, this report includes five maps of the WIPP facility that display locations of the SWMUs. This report also documents that of the 97 SWMUs currently identified at WIPP, the following 40 SWMUs are or have been subject to dual regulatory authority (i.e., subject to regulations other than 40 CFR 264/265 and/or oversight from agencies other than EPA Region VI or the NMED Hazardous and Radioactive Materials Bureau):

SWMU 001o	Badger Unit Mudpit
SWMU 001p	Cotton Baby Mudpit
SWMU 001ah	H-19 Mudpit
SWMU 001aq	Mudpit between H-14 and H-4
SWMU 003a	Brinderson Landfill
SWMU 003b	Construction Landfill
SWMUs 008a-008q	Surface SAAs
SWMUs 009a-009L	Underground SAAs

SWMU 010b	Waste Handling Shaft Sump
SWMU 010c	Exhaust Shaft Sump
SWMU 011	Sewage Treatment Facility
SWMU 012a	Waste Bins, Surface
SWMU 012b	Waste Bins, Underground

This report provides additional information to indicate that the following four SWMUs have become inaccessible due to replacement by other site facilities:

SWMU 005a	Concrete Batch Plant, Waste Handling Building
SWMU 006a	Salt Shaft Holding Pond
SWMU 006b	Waste Handling Building Pond
SWMU 007a	Evaporation Pond

In addition to the above inaccessible SWMUs, another 18 SWMUs have been closed and reclaimed, or otherwise inactivated (see Table 1).

The DOE's request of No Further Action at the WIPP SWMU sites is supported by the information provided in this report as well as the analytical data collected at representative SWMUs sampled during the Voluntary RA/CA program, which indicated no potential releases of hazardous constituents to the surrounding environment above applicable action levels proposed in Title 40 of the Code of Federal Regulations, Part 264.514, the Subpart S rule. Because it is the EPA's intent to encourage voluntary assessments and corrective actions as described in the preamble of the proposed Subpart S Rule, the DOE requests that a No Further Action determination be granted for these SWMUs prior to the issuance of the RCRA Part B Permit for the WIPP. Any delay in the issuance of No Further Action determination may require the DOE to submit a Class III permit modification to remove these SWMUs from the list of sites requiring evaluation under the RFI process. This type of permit modification represents an unreasonable expense to remove sites with no potential to impact human health or the environment. If this determination is supported by both the EPA and NMED, applicable sites will be reclaimed in accordance with the *WIPP Land Management Plan (DOE/WIPP-93-004)* guidelines.

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
Mudpits					
001a H-1 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001b H-2 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001c H-3 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.1 and 2.2.10).
001d H-5/P-21 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001e H-6/P-13 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001f H-11/P9 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.2 and 2.2.10).
001g H-14/P-1 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001h H-15/P-2 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001i H-18 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
001j P-3 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001k P-4 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001L WIPP-12/P-5 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001m P-6 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001n P-15 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001o Badger Unit mudpit		X		X	Permitted by NMOCD and BLM, and previously regulated under 40 CFR 261.4. Proposed voluntary corrective action involves capping-in-place (see Section 2.5.1 and Final Voluntary RA/CA Report).
001p Cotton Baby mudpit		X		X	Permitted by NMOCD and BLM, and previously regulated under 40 CFR 261.4. Proposed voluntary corrective action involves capping-in-place (see Section 2.5.1 and Final Voluntary RA/CA Report).
001q DOE-1 mudpit				X	Soil sampling indicates no release of hazardous constituents above action levels. Proposed voluntary corrective action involves capping-in-place (see Final Voluntary RA/CA Report).
001r D-123 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.4 and 2.2.10).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
001s ERDA-9 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001t IMC-374 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001u IMC-376 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001v IMC-456 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001w IMC-457 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.5 and 2.2.10).
001x WIPP-13 mudpit				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
001y WIPP-18 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001z WIPP-19 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001aa WIPP-21 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).
001ab WIPP-22 mudpit				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 2.4).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
001ac DSP-207 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.6 and 2.2.10).
001ad IMC-375 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.7 and 2.2.10).
001ae IMC-377 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.8 and 2.2.10).
001af H-16 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.2.9 and 2.2.10).
001ah H-19 mudpit		X		X	Precluded by WIPP NEPA review and management, plus review, permitting, and oversight by NMED GWPRB (see Section 2.3.1).
001ai WQSP-1 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).
001aj WQSP-2 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).
001ak WQSP-3 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).
001al WQSP-4 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).
001am WQSP-5 mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
001an WQSP-6/6a mudpit				X	Review of historical information indicates low potential for presence or release of hazardous constituents (see Sections 2.3.2 and 2.2.10).
001aq mudpit between H-14&H-4		X		X	Permitted by NMOCD and BLM, and previously regulated under 40 CFR 261.4. Drilling activities apparently aborted. No evidence of solid waste (see Section 2.5.2).
Salt and Top Soil Storage Piles					
002a SPDV Salt Pile				X	Record review, visual inspection documentation, and applicable sampling data indicate low potential for presence or release of hazardous constituents (see Section 3.1 and Appendix B).
002b Salt Storage Pile				X	Record review, visual inspection documentation, and applicable sampling data indicate low potential for presence or release of hazardous constituents (see Section 3.2 and Appendix B).
002c Top Soil Storage Pile				X	Contents do not include solid wastes. Request removal from list of SWMUs (see Section 3.3).
002d SPDV Top Soil Pile				X	Contents do not include solid wastes. Request removal from list of SWMUs (see Section 3.3).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
Landfill Sites					
003a Brinderson Landfill		X		X	Precluded by other regulatory authority (adherence to BLM land use permit NM-067-LUP-219). See Final Voluntary RA/CA Report.
003b Construction Landfill		X		X	Precluded by other regulatory authority (adherence to BLM land use permit NM-067-LUP-219). See Final Voluntary RA/CA Report.
Material Storage Areas					
004a Portacamp, west side				X	Soil sampling indicates no potential for release of hazardous constituents above action levels or site background (see Final Voluntary RA/CA Report).
004b Reclaimables Storage Yard				X	Precluded by waste management protocols and routine inspection. Managed by Westinghouse Management Charter MP 5.16 (see Section 5.2).
004c Grout Storage Yard				X	Precluded by waste management protocols and routine inspection. No evidence of storage of hazardous materials or wastes. Managed by Westinghouse Management Charter MP 5.16 (see Section 5.3).
Concrete Batch Plants					
005a Concrete Batch Plant, WHB	X			X	Inaccessible. Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 6.1).
005b SHS Concrete Batch Plant				X	Closed/reclaimed. Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 6.2).
005c H-1 Concrete Batch Plant				X	Not listed as an Area of Concern by the RFA. Presence of hazardous constituents is improbable, and release/exposure potential is low (see Section 6.3).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
Holding Ponds					
006a Salt Shaft Holding Pond	X			X	Inaccessible. Record review and sampling data indicate low potential for presence or release of hazardous constituents (see Section 7.1 and Appendix C).
006b Waste Shaft Holding Pond	X			X	Inaccessible. Record review and sampling data indicate low potential for presence or release of hazardous constituents (see Section 7.2 and Appendix C).
Evaporation Ponds					
007a Evaporation Pond	X			X	Inaccessible. Not listed as Area of Concern by RFA. Record review indicates low potential for presence or release of hazardous constituents (see Section 8.1 and RFA Section 4.7).
007b Evaporation Pond				X	Closed/reclaimed. Not listed as Area of Concern by RFA. Record review and sampling data indicate low potential for release of hazardous constituents (see Section 8.2 and RFA Section 4.7).
007c Evaporation Pond				X	Not listed as Area of Concern by RFA. Record review indicates low potential for presence or release of hazardous constituents (see Section 8.3 and RFA Section 4.7).
Satellite Accumulation Areas (SAA) and Hazardous Materials Areas					
008a SAA, Bldg. 455		X		X	Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Inspected weekly according to established procedures (see Section 9.1).
008b SAA, Bldg. 454		X		X	Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Inspected weekly according to established procedures (see Section 9.1).
008c SAA, Bldg. 993		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
008d SAA, Bldg. W083		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).
008e SAA, Bldg. 473		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).
008f SAA, Bldg. 486		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).
008g SAA, Safety Bldg.		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).
008h Inactive Hazardous Waste Storage Area		X		X	Unit closed. Managed in accordance with 40 CFR 262.34. Hazardous waste was managed in a hazardous waste trailer with spill containment devices (see Section 9.3).
008i SAA, AIS		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1).
008j SAA, Bldg. 482		X		X	Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Inspected weekly according to established procedures (see Section 9.1).
008k petroleum product/used oil, Bldg. 454		X		X	Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Inspected weekly according to established procedures (see Section 9.2).
008L Hazardous Waste Staging Area, Bldg. 474B		X		X	Precluded by routine inspection. Managed per requirements of 40 CFR 262, 265, 268, and 270 (see Section 9.3).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
008m Maintenance Tool Crib SAA, Bldg. 454		X		X	Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Inspected weekly according to established procedures (see Section 9.1).
008n Future Hazardous Waste Staging Area, Bldg. 474A				X	This unit was not constructed and should be deleted from the list of SWMUs.
008o SAA, Bldg. 474E		X		X	Unit closed/inactivated. Precluded by management protocols per requirements of 40 CFR 262.34, 265, and 270. Unit was inspected weekly according to established procedures (see Section 9.1 and 9.4).
008p SAA, Analytical Lab, Bldg. 451		X		X	New unit managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 9.1).
008q SAA, RH Bay, Bldg. 411		X		X	New unit managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 9.1).
Underground SAAs					
009a SAA, S1300/W30		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009b SAA, E300 Shop		X		X	Not identified as an Area of Concern by the RFA. Managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 10.0).
009c SAA, S1300/W170 Intersection		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009d Materials Storage West, S1300/W170		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
009e Sat/Haz Materials Storage, E140/S700		X		X	Not identified as an Area of Concern by the RFA. Managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 10.0).
009f SAA, S1600/W30		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009g SAA, S1300/E140		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009h SAA Storage, N780		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009i SPDV Room 1, old Maintenance Shop		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009j SAA, west end N1420		X		X	Not identified as an Area of Concern by the RFA. Unit closed/inactivated. Unit was inspected weekly according to established procedures (see Section 10.0).
009k S1000 Tool Crib		X		X	New unit managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 10.0).
009L E200/S400 Borehole Construction SAA		X		X	New unit managed in accordance with 40 CFR 262.34. Inspected weekly according to established procedures (see Section 10.0).
Shaft Sumps					
010a Salt Handling Shaft Sump				X	Not listed as an Area of Concern by the RFA. Management protocols and regular sampling indicate that sump contents are nonhazardous and release potential is low (see Section 11.0)

Table 1
SWMU Summary Matrix

SWMU Number and Description	Inaccessible SWMU	Subject to other regulatory authority	Candidate for inclusion in the WIPP RCRA Part B Permit	Candidate for exclusion from the WIPP RCRA Part B Permit	Comments/rationale
010b Waste Handling Shaft Sump		X		X	Not listed as an Area of Concern by the RFA. RCRA Part B permitted facility managed in accordance with 40 CFR 262.34, 265, 268, 270 (see Section 11.0).
010c Exhaust Shaft Sump		X		X	Not listed as an Area of Concern by the RFA. RCRA Part B permitted facility managed in accordance with 40 CFR 262.34, 265, 268, 270 (see Section 11.0).
010d Air Intake Shaft Sump				X	Not listed as an Area of Concern by the RFA. Management protocols and regular sampling indicate that sump contents are nonhazardous and release potential is low (see Section 11.0).
Sewage Treatment Facility					
011 Sewage Treatment Facility		X		X	Not listed as an Area of Concern by the RFA. Permitted and operated under NM Groundwater Control Commission Regulations 20 NMAC 6.2, permit #DP.831 (see Section 12.0).
Waste Bins					
012a Surface Bins		X		X	Not listed as an Area of Concern by the RFA. Managed in accordance with NM Solid Waste Management Regulations 20 NMAC 9.1 (see Section 13.0).
012b Underground Bins		X		X	Not listed as an area of concern by the RFA. Managed in accordance with NM Solid Waste Management Regulations 20 NMAC 9.1 (see Section 13.0).

1.0 INTRODUCTION

The U.S. Department of Energy (DOE), Carlsbad Area Office has completed an assessment of Solid Waste Management Units (SWMU) at the Waste Isolation Pilot Plant (WIPP), and has prepared this *Final SWMU Assessment Report* for submittal to the U.S. Environmental Protection Agency (EPA) Region VI Hazardous Waste Management Division and the New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau. This has been prepared in response to a letter from NMED to DOE, dated April 23, 1996, that requested supplemental information about SWMUs described in the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) for WIPP, *(NMED/DOE/AIP 94/1)*. The NMED requested this information for assistance in the development of a "Statement of Basis" to justify the inclusion or exclusion of SWMUs in the Hazardous and Solid Waste Amendments (HSWA) permit module of the RCRA Part B Permit for the WIPP facility. An initial response to NMED's April 23, 1996, letter was contained in *Data Summary Report No. 4, Solid Waste Management Units Identified in the Waste Isolation Pilot Plant RCRA Facility Assessment*, submitted by DOE to NMED and EPA on May 29, 1996. Additional supplemental information regarding SWMU sites at the WIPP has been compiled since *Data Summary Report No. 4* was submitted, however. Therefore, this *Final SWMU Assessment Report* has been prepared as a final response to NMED's April 23, 1996, letter and supersedes *Data Summary Report No. 4*. This report also incorporates findings of the Voluntary Release Assessment/Corrective Action (RA/CA) program conducted by DOE and has been prepared as a supplement to the *Final Voluntary Release Assessment/Corrective Action Report (DOE/WIPP 96-2209)* dated November 12, 1996.

In addition to responding to NMED's April 23, 1996 letter, this *Final SWMU Assessment Report* provides additional information requested in the RFA. The report focuses on summarizing the potential for releases from SWMUs described in the RFA that were not specifically evaluated as part of the WIPP Voluntary RA/CA program. This *Final SWMU Assessment Report* also provides recommendations for inclusion or exclusion of these SWMU from the HSWA module of the RCRA Part B Permit for the WIPP facility.

The NMED letter of April 23, 1996, requested the following information: (1) a map or maps depicting all of the SWMU sites described in the RFA; (2) the identity of SWMUs that are currently inaccessible (i.e., covered by pavement or permanent structures that may impact future investigation or remediation efforts); (3) the identity of any SWMU sites that may be regulated under dual regulatory authority; and (4) supplemental information that may be useful in determining which SWMUs will be identified for corrective action in the HSWA permit module of the RCRA Part B permit.

The RFA identified the following SWMU groups at the WIPP site:

SWMU Group	Group Name	Number of Sites
001	Mudpits/drillpads	~~45~~ 40
002	Salt & topsoil storage areas	4
003	Landfills	2
004	Storage yards	3
005	Concrete batch plants	3
006	Holding ponds	2
007	Evaporation ponds	3
008	Surface satellite accumulation areas (SAA)	17
009	Underground SAAs	~~11~~ 12
010	Shaft sumps	4
011	Sewage treatment facility	1
012	Nonhazardous waste collection bins	2
		93

Information for each SWMU group is provided in the succeeding sections of this report. Each section identifies SWMUs that are subject to dual regulatory authority or are inaccessible, and provides additional information regarding historical SWMU contents and usage to assist NMED and EPA in identifying requirements for the HSWA permit module.

Also included in this document are five illustrations of the various SWMU sites described in the RFA. The location of SWMU mudpits within the WIPP Site Boundary is provided in Figure 1. The location of SWMUs where sampling was performed or corrective actions proposed under the Voluntary RA/CA program is provided in Figure 2. Figure 3 illustrates the location of material storage and stockpile area SWMUs described in the RFA. The historical location of holding ponds, evaporation ponds, and surface SAAs described in the RFA is provided in Figure 4. The location of underground SAAs and shaft sumps described in the RFA is illustrated in Figure 5. Figures 4 and 5 do not include locations for SAAs that have been closed or inactivated by DOE since the RFA was completed.

This report includes only information that is specific to the SWMU groups listed in the RFA, and does not include discussions of the geology, hydrogeology, contaminant migration pathways applicable to the WIPP site. This report also does not specifically present background concentrations and applicable action levels (e.g., action levels proposed in 40 CFR 264.514 FR Vol. 55, No. 145, VI(D). p. 30813, the Subpart S rule) for potential SWMU constituents. The

reader is referred to the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)* for such information.

Figure 1
Location of SWMU Mudpits within the WIPP Site Boundary

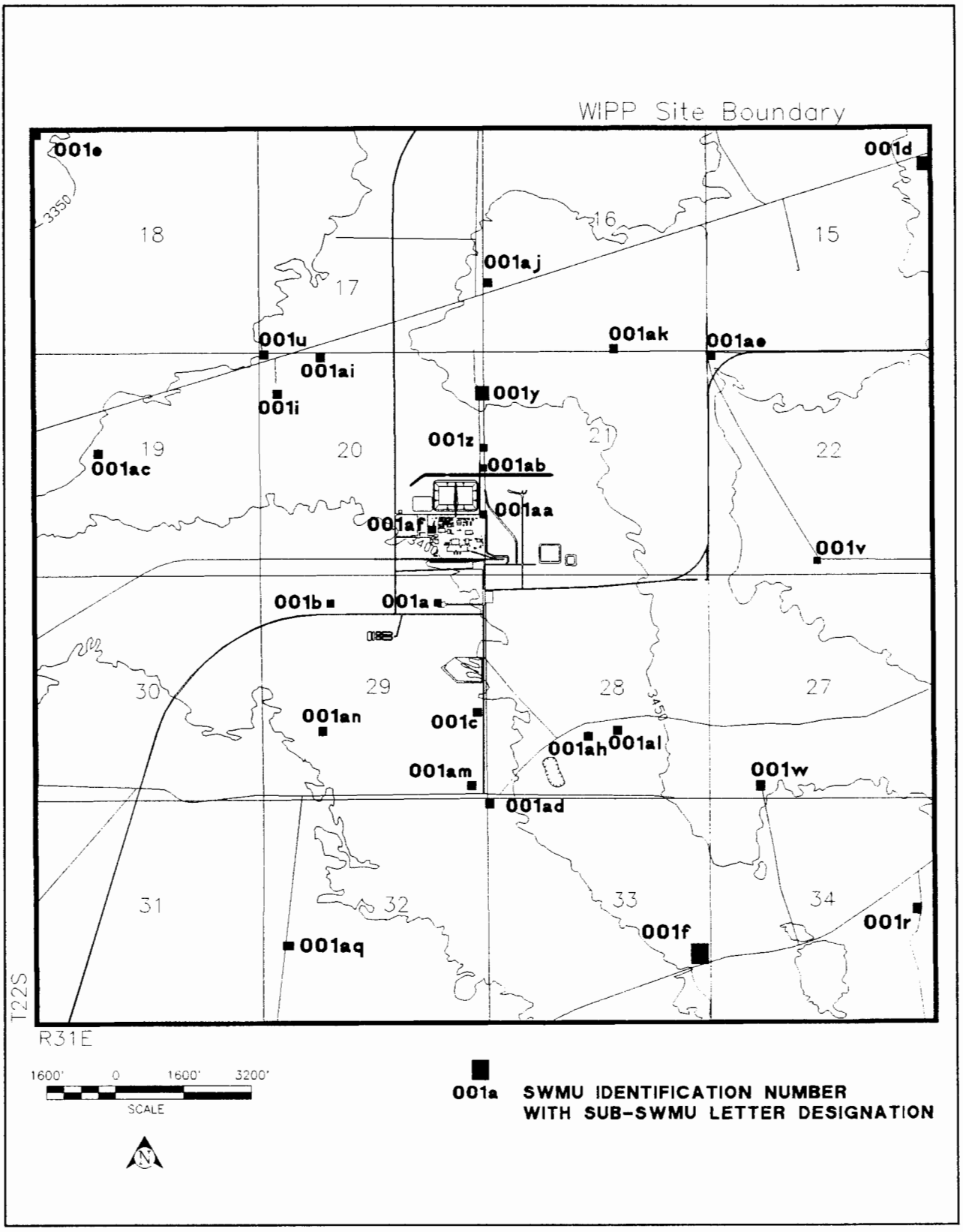


Figure 2
Location of SWMUs Where Voluntary Release Assessments Have Been Completed as Described in the Final Voluntary Release Assessment/Corrective Action Report

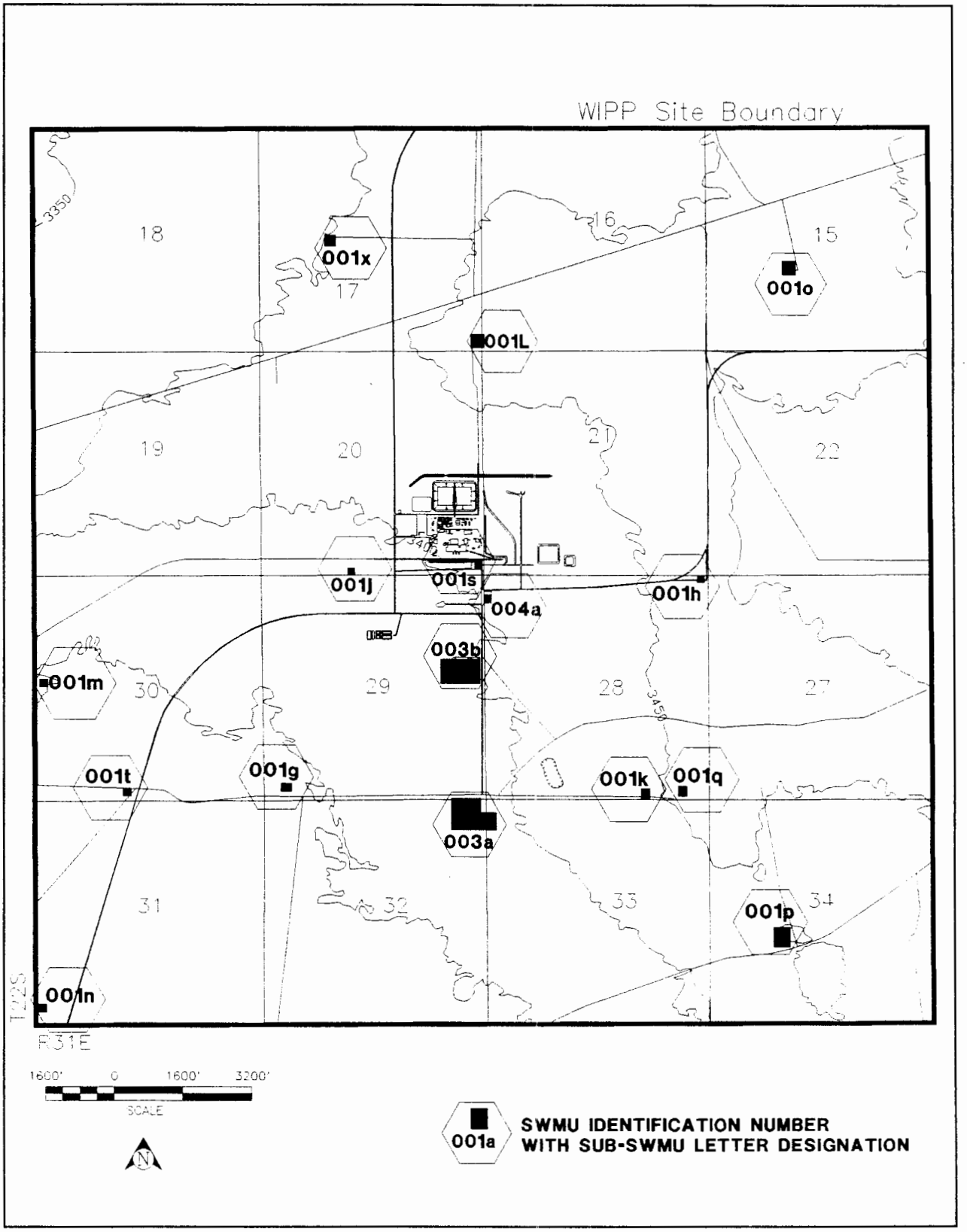


Figure 3
Location of Material Storage and Stockpile Area SWMUs
within the WIPP Site Boundary

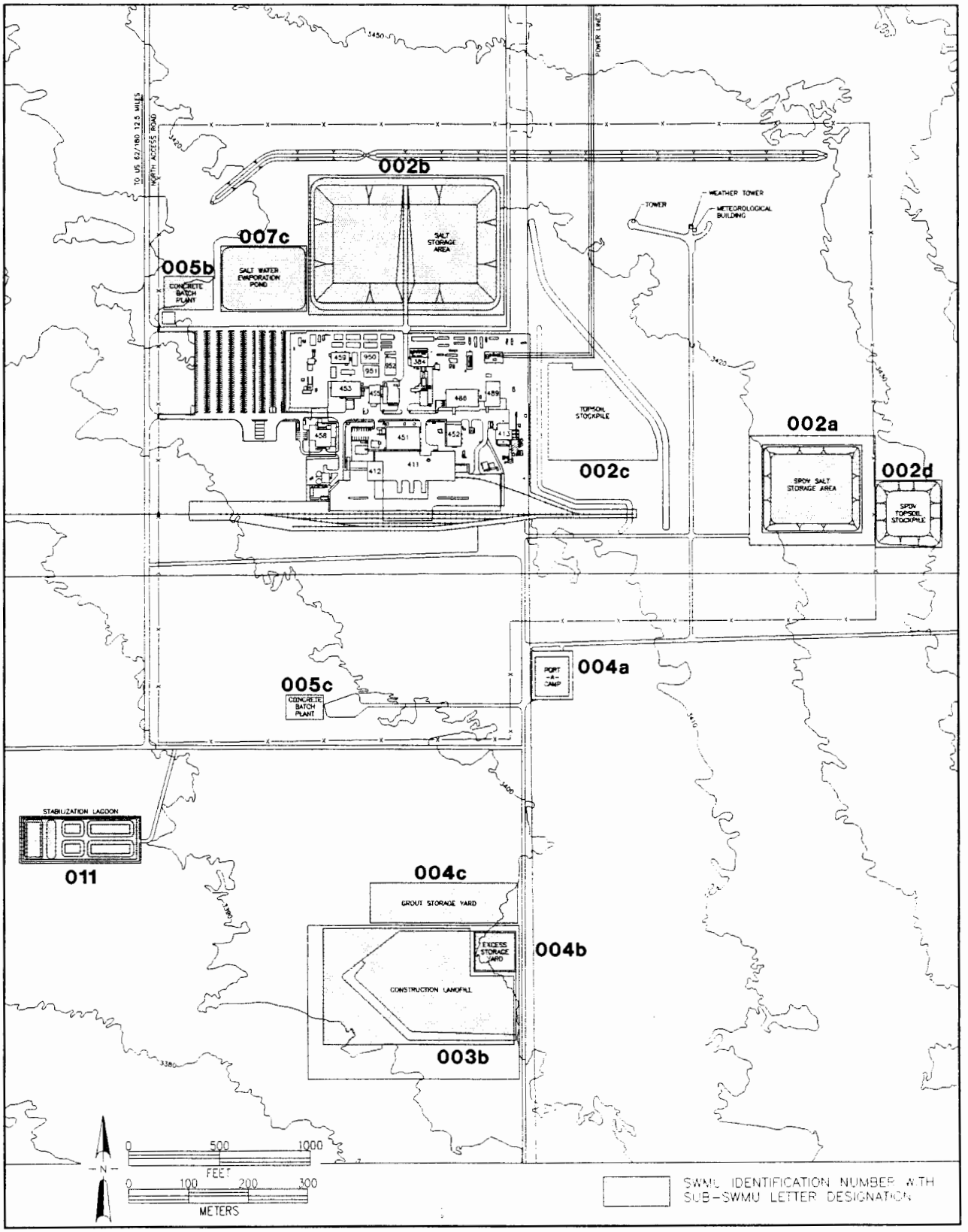


Figure 4
WIPP Surface Facilities, Evaporation Pond, Holding Pond, and SAA SWMUs

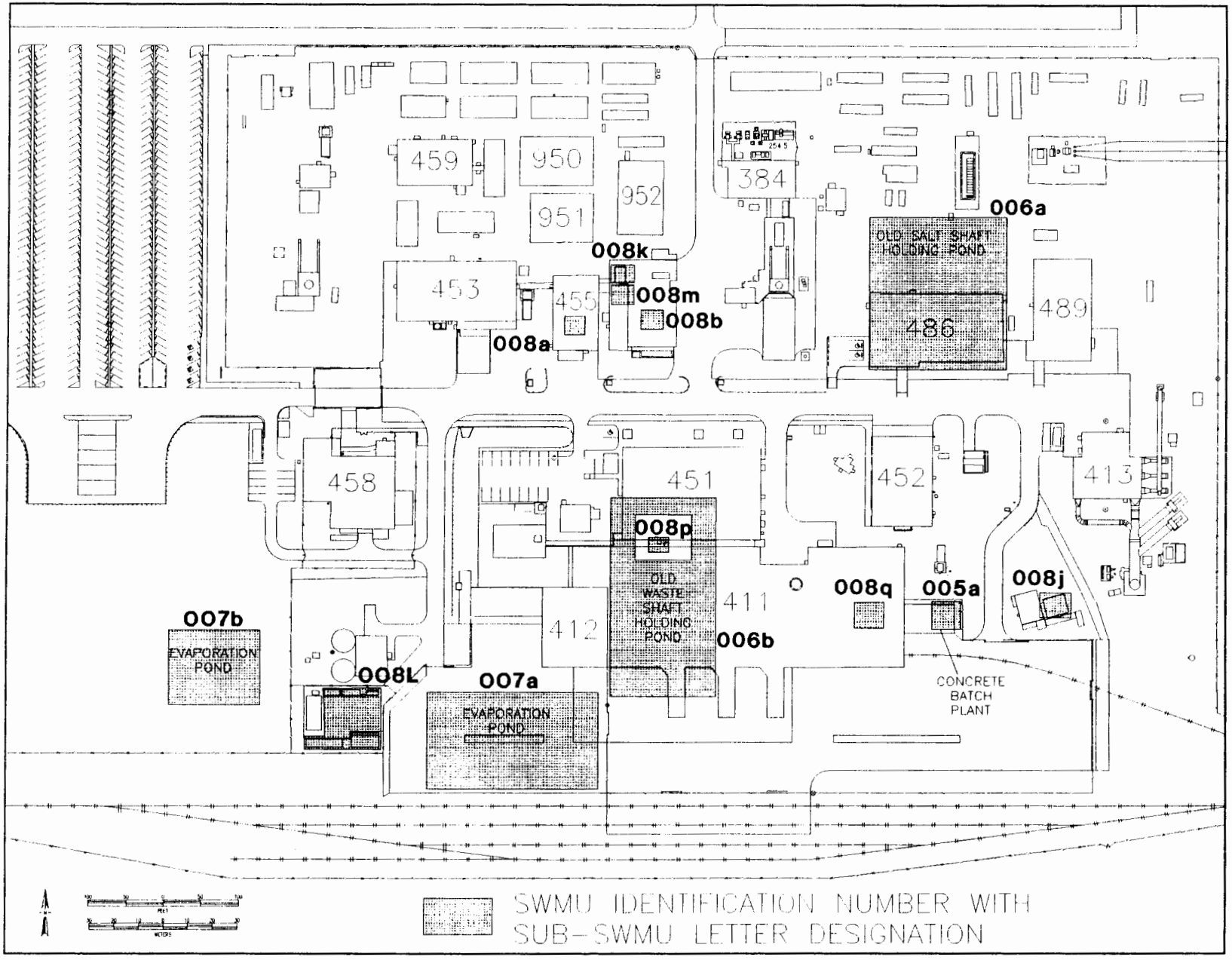
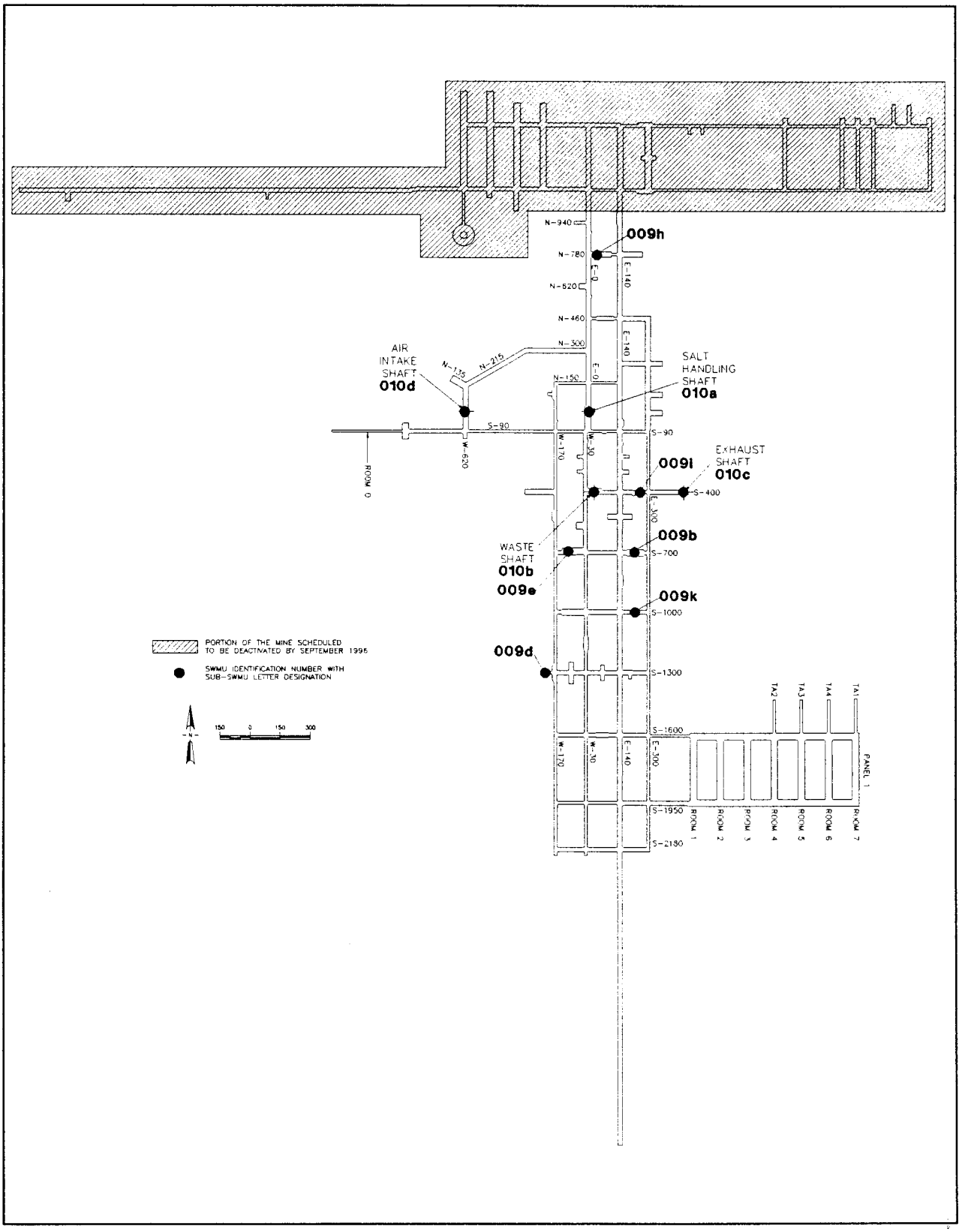


Figure 5
WIPP Underground Facilities and SAA and Shaft Sump SWMUs



2.0 SWMU GROUP 001: MUDPITS

SWMU Group 001, encompassing SWMUs 001a through 001z and SWMUs 001aa through 001aq, consists of mudpits and drill pads remaining from drilling activities within the WIPP Site Boundary (Figure 1) that occurred prior to and during establishment of the WIPP facility. The 45 mudpit/drill pad SWMUs identified at WIPP can be divided into the following subgroups: 40

- Mudpit SWMUs identified as Areas of Concern in the RFA or for which a RCRA Facility Investigation (RFI) was suggested. These SWMUs were subsequently assessed during the DOE Voluntary RA/CA program.

- Mudpit SWMUs not specifically identified as Areas of Concern, but for which additional information was requested in the RFA. Some of these SWMUs were also assessed during the DOE Voluntary RA/CA program.

- Recently identified mudpit SWMUs that were included in Chapter J of the RCRA Part B Permit Application.

- Mudpit SWMUs not identified as Areas of Concern in the RFA. Assessment of these SWMUs indicated a very low potential to release hazardous constituents.

- Mudpit SWMUs subject to dual regulatory authority.

Information and recommendations regarding each of these classes of mudpit/drillpad SWMUs are presented in the subsections below.

2.1 Mudpit SWMUs Assessed in the Voluntary RA/CA Program

Section 5.1 of the RFA identified the following mudpit SWMUs as Areas of Concern:

H-14/P-1 Mudpit	SWMU 001g	
P-6 Mudpit	SWMU 001m	
P-15 Mudpit	SWMU 001n	
IMC 374 Mudpit	SWMU 001t	
Badger Unit	SWMU 001o	(dual regulatory authority)
Cotton Baby	SWMU 001p	(dual regulatory authority)
DOE -1 Mudpit	SWMU 001q	

The RFA suggested the performance of a RFI at these sites due to the potential use of diesel fuel in drilling fluids, and/or to the potential for migration of SWMU constituents to a possible shallow groundwater zone (approximately 200 feet below ground surface) in the Dewey Lake Formation. Therefore, the DOE

sampled or proposed corrective actions for these sites during the Voluntary RA/CA program. In addition to the mudpits of concern listed above, DOE included the following mudpit SWMUs in the Voluntary RA/CA program:

H-15/P-2 Mudpit	SWMU 001h
P-3 Mudpit	SWMU 001j
P-4 Mudpit	SWMU 001k
WIPP-12/P-5 Mudpit	SWMU 001L
ERDA-9 Mudpit	SWMU 001s
WIPP-13 Mudpit	SWMU 001x

These sites were added to the Voluntary RA/CA sampling program because the RFA implied that drilling fluids may have included diesel fuel, and/or that materials appeared present at these SWMUs that may be deleterious to the environment (e.g., discolored soils, exposed mudpit liners). The mudpit SWMUs addressed in the Voluntary RA/CA program are discussed in detail in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*.

The analytical results from the mudpit SWMUs sampled during the Voluntary RA/CA program indicated no potential for release of hazardous constituents above applicable risk-based action levels proposed in 40 CFR 264.514 FR Vol. 55, No. 145, VI(D), p. 30813 (the Subpart S rule). Based on these data and on other information compiled regarding drilling activities, a request for "No Further Action" has been submitted for 10 of the above mudpits in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*. For the remaining three mudpits (i.e., SWMUs 001o, 001p, and 001q), the DOE proposed capping-in-place as a voluntary corrective action, even though hazardous constituent concentrations for these SWMUs were below proposed Subpart S levels.

2.2 Mudpit SWMUs Requiring Additional Information

In Section 5.1 of the RFA, the NMED requested additional information for a number of mudpit SWMUs. This request was based on limited available information regarding drilling additives at each site at the time of the RFA. Additional information has specifically been requested on the following mudpit SWMUs:

H-3 Mudpit	SWMU 001c
H-11/P-9 Mudpit	SWMU 001f
H-15/P-2 Mudpit	SWMU 001h
D-123 Mudpit	SWMU 001r
IMC-457 Mudpit	SWMU 001w
DSP 207 Mudpit	SWMU 001ac
IMC 375 Mudpit	SWMU 001ad
IMC 377 Mudpit	SWMU 001ae
H-16 Mudpit	SWMU 001af

It is important to note that although these sites were identified for additional study by NMED, none of these sites were similarly selected by the EPA as Areas of Concern or as sites requiring assessment under the RFI process. Supplemental information is presented in the subsections below for each of these sites. Following this information, Section 2.2.10 presents the DOE recommendations regarding these mudpit SWMUs.

2.2.1 H-3 Mudpit (SWMU 001c)

Four boreholes are located on the H-3 well pad. The first two wells, H-3a and H-3b, were drilled in 1976 by the Pennsylvania Drilling Company for the U.S. Geological Survey (USGS) and Sandia National Laboratories (SNL) as part of the initial WIPP hydrogeologic characterization. The H-3a borehole was a shallow well drilled to characterize the Dewey Lake Formation. The H-3b borehole was drilled to a total depth of 894 feet to evaluate the upper Salado Formation. The drilling summaries contained in the *Interim Data Report on the Geohydrology of the Proposed Waste Isolation Pilot Plant Site, Southeast New Mexico (Mercer and Orr, 1979)*, and *Hydrologic Data Report #8 (SAND89-7056, 1989)* document that air mist, saturated brine mud (attapulgite), and Portland and Poz-Mix cement were used to complete and plug the H-3a and H-3b boreholes.

The H-3c and H-3d wells were drilled in 1987 to monitor and test transmissivity in the Culebra 49er and Dewey Lake Formations. *Hydrologic Data Report #8 (SAND89-7056, 1989)* documents that Pennsylvania Drilling Company used air mist and brine mud (attapulgite) for circulation media during drilling. Iodine-131, a tracer with a half-life of eight years, was injected into the H-3d well.

2.2.2 H-11/P-9 Mudpit (SWMU 001f)

The RFA identified SWMU 001f as a location potentially requiring further assessment under the RFI process. The NMED based this determination on the proximity of SWMU 001f to the WIPP site boundary and the relatively shallow depth to groundwater encountered in the H-11 and P-9 boreholes. Perched groundwater has been identified at this site at a depth of approximately 220 feet below the ground surface. In Section 4.1.6 of the RFA, the NMED expressed concern that a groundwater pathway could exist from SWMU 001f to off-site water wells if hazardous wastes or hazardous constituents were released from this site.

Drilling records contained in the *Basic Data Report for Drill Holes at the H-11 Complex (Mercer, 1990a)* document that only air mist, saturated brine, meta-trifluorobenzoic acid tracer, and Portland and Poz-Mix cement were used in the drilling of the H-11 borehole. Similarly, drilling records from Boyles Brothers

Drilling Company document that air foam and salt mud were the only drilling additives used in the drilling of the P-9 borehole.

2.2.3 H-15/P-2 Mudpit (SWMU 001h)

Section 5.1 of the RFA requested additional information regarding SWMU 001h because this site had been omitted from the RCRA Part B Permit Application. Therefore, DOE sampled this SWMU during the Voluntary RA/CA program. The history, physical characteristics, and analytical data for SWMU 001h are presented in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*. The analytical results indicated no potential for release of hazardous constituents above applicable risk-based action levels proposed in the Subpart S rule (see Section 2.2.10).

2.2.4 D-123 Mudpit (SWMU 001r)

The RFA documents that no drilling or operating records were available for Duval Mining Company potash exploration well D-123. The visual site inspection conducted for the RFA indicated that the D-123 well pad is covered with dune sand and a livestock watering tank. No liners or stained soil were evident, and the only evidence of drilling activity was of angular fragments of red-brown and tan sandstone.

The RFA documents that the WIPP/NMED Oversight Bureau conducted discussions with local potash firms that indicate that potassium chloride/sodium chloride (KCl/NaCl) drilling mud solutions are standard industry practice. The RFA also indicates that the D-123 well pad was relatively clean and well-reclaimed, but considered the list of drilling constituents listed in RFA Table 4.2 as potentially present in the D-123 mudpit. These constituents included KCl/NaCl-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 a plastic liner. Similar constituents were assumed to be present in the mudpits evaluated during the Voluntary RA/CA program, but analytical data demonstrated that there was no release of hazardous constituents at these sites above applicable action levels (see Section 2.2.10).

2.2.5 IMC-457 Mudpit (SWMU 001w)

No substantive records were located on IMC-457. The IMC-457 borehole was drilled by Boyles Brothers Drilling Company in November 1976. The DOE contacted International Minerals Corporation (IMC) to obtain copies of drilling records for the IMC-457 site. The only record that could be located for IMC-457 was a "Notice of Intent to Drill" dated June 21, 1976. This notice stated that saturated potassium chloride brine was used as a drilling additive and that the

hole was cemented, presumably using Portland cement. The hole was closed and abandoned (cemented to total depth) on November 22, 1976.

The RFA describes the IMC-457 mudpit area as a zone of positive relief that is correlated with discolored soils (from grading) and youthful/atypical vegetation. The RFA went on to state that although KCl/NaCl drilling mud solutions are standard industry practice for potash test holes, the suite of potential mudpit contents listed in Table 4.2 of the RFA was assumed present for migration and exposure assessments. Similar constituents were assumed to be present in the mudpits evaluated during the Voluntary RA/CA program, but analytical data demonstrated that there was no release of hazardous constituents at these sites above applicable action levels (see Section 2.2.10).

2.2.6 D-207 Mudpit (SWMU 001ac)

The D-207 (SWMU 001ac) potash exploration well was drilled by Duval Sulphur and Potash Company in May 1958. A "Notice of Intent to Drill" submitted to the USGS describes drilling additives used to complete the D-207 well as sodium and potassium chloride brine and drilling mud. Cement was used to plug the well. The DOE contacted New Mexico Potash Corporation to obtain additional information about the D-207 borehole, because New Mexico Potash Corporation acquired Duval's interest in these wells. However, the DOE was unable to obtain any additional information about this location.

2.2.7 IMC-375 (SWMU 001ad)

Limited records were located by DOE pertaining to IMC-375. The IMC-375 borehole was drilled by Boyles Brothers Drilling Company in April 1965. This borehole was drilled within two weeks of IMC-374, another borehole drilled by Boyles Brothers Drilling Company. Sampling data and additional information regarding IMC-374 are presented in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*.

The DOE contacted IMC to obtain additional drilling records for the IMC-375 site. The only record that could be located for IMC-375 was a "Notice of Intent to Drill" dated April 8, 1965. This notice stated that saturated potassium chloride brine, drill mud, and air-mist were used as drilling additives. The notice also states that the hole was cemented, presumably using Portland cement. The hole was closed and abandoned (cemented to total depth) on May 13, 1965.

2.2.8 IMC-377 (SWMU 001ae)

As with the 375 borehole, limited records were located for the IMC-377 well site. The IMC-377 borehole was drilled by Boyles Brothers Drilling Company in June 1965, approximately one month after the IMC-374 borehole described in *Final*

Voluntary RA/CA Report (DOE/WIPP 96-2209) was drilled. The DOE contacted IMC to obtain additional drilling records for the IMC-377 site. The only record that could be located for IMC-377 was a "Subsequent Report of Abandonment" dated July 20, 1965. This report documented that saturated potassium chloride brine and drilling mud were used as drilling additives. The report also notes that the hole was cemented, presumably using Portland cement. The hole was closed and abandoned (cemented to total depth) on July 16, 1965.

2.2.9 H-16 Mudpit (SWMU 001af)

The H-16 mudpit area was apparently omitted from the WIPP RCRA Part B permit application, Revision 3, and was only mentioned in Chapter 5.0 of the RFA. At that time, the NMED requested additional information about this location. The DOE reviewed the *Basic Data Report for Drill Hole H-16 (Mercer, 1990b)* to obtain information about the type of drilling additives used to drill the H-16 borehole.

Pennsylvania Drilling Company records document that fresh water, saturated brine, bentonite gel, Portland and Poz-Mix cement, and CW-7 chemical wash were used in the drilling of the H-16 borehole. CW-7 chemical wash is a biodegradable soap used to clean and rinse the borehole before it is cemented.

2.2.10 Recommendations for Mudpit SWMUs for which Additional Information was Requested in the RFA

Although the RFA presumed that all constituents listed in RFA Table 4.2 (i.e., KCl/NaCl-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 a plastic liner) were used in the drilling of the wells described in the preceding subsections, drillers' reports and/or other available records generally do not support this presumption. Although small quantities (trace amounts) of pipe grease and gear lubricants used in normal drilling operations were potentially discharged into drilling mudpits, there is no evidence that diesel fuel or other materials that could release hazardous constituents were used in quantity at these sites.

The RFA generally identifies the release potential to sandy surface soils as high at WIPP mudpit SWMUs; however, drill report data and other historical information indicates that no hazardous wastes or hazardous constituents were used to complete any of the above boreholes. A release of hazardous constituents above applicable risk based action levels at any of these sites is, therefore, highly improbable. This premise is supported by analytical data collected at the 10 mudpit SWMUs sampled during the Voluntary RA/CA program. Voluntary RA/CA data demonstrate that samples collected from SWMU mudpits drilled by the same drilling contractors, using similar drilling

additives, during the same time period, did not contain any hazardous wastes or hazardous constituents above applicable Subpart S action levels. This finding is especially important considering that the sites sampled during the Voluntary RA/CA program were the locations that both the EPA and NMED identified as sites with the greatest potential to contain either hazardous wastes or hazardous constituents.

Based on documentation contained in the drilling summary reports and data collected during the Voluntary RA/CA program, the potential for release of hazardous wastes or hazardous constituents from these sites is extremely low. Therefore, DOE requests that a "No Further Action" determination be provided for SWMUs 001c, 001f, 001h, 001r, 001w, 001ac, 001ad, 001ae, and 001af.

2.3 Recently Identified Mudpit SWMUs Described In Chapter J of the WIPP RCRA Part B Permit Application

Seven new SWMU sites were identified in Chapter J of the WIPP RCRA Part B Permit Application, Revision 6. Discussions regarding the potential for the release of hazardous constituents in the application were limited because most of these drill sites were being constructed when the WIPP RCRA Part B Permit Application was submitted. Following is a list of the new SWMUs:

H-19 Hydropad	SWMU 001ah	(dual regulatory authority)
WQSP-1 Mudpit	SWMU 001ai	
WQSP-2 Mudpit	SWMU 001aj	
WQSP-3 Mudpit	SWMU 001ak	
WQSP-4 Mudpit	SWMU 001al	
WQSP-5 Mudpit	SWMU 001am	
WQSP-6/6a Mudpit	SWMU 001an	

2.3.1 H-19 Hydropad (SWMU 001ah)

The H-19 well pad area was constructed for a tracer test program conducted by SNL to support performance assessment studies at the WIPP. The H-19 project consists of several boreholes set on a large hydropad. Tracer chemicals were injected into the H-19b borehole while adjacent boreholes were being pumped. The transportation of tracer chemicals in the Culebra Formation was monitored to determine the transmissivity within this water bearing zone.

During the National Environmental Policy Act (NEPA) review of the tracer test program, the DOE submitted several lists of proposed drilling additives and tracer chemicals to the NMED Ground Water Protection and Remediation Bureau (GWPRB) to determine if a discharge permit would be required for the SNL tracer testing program. The GWPRB approved the submitted list of tracer chemicals and determined that a discharge plan would not be required for the

drilling additives and tracer chemicals utilized during the SNL tracer test program. A list of tracer chemicals and drilling additives used at the H-19 hydropad is provided as Appendix A.

Because the DOE was actively involved with evaluating the potential impacts of drilling activities during the Voluntary RA/CA program, precautions were taken to ensure that additional Subpart S liability was not created by the SNL tracer test program. These precautions included the collection of drilling and tracer test circulation waters in a synthetically-lined evaporation pond. Additionally, all drill cuttings were collected in lined ponds. Once drill cuttings were completely dried, all drill cuttings were excavated and disposed of at an off-site disposal facility. Thus, based on the level of regulatory review and the implementation of management plans during the H-19 tracer test program, the DOE requests that a "No Further Action" determination be issued for the H-19 hydropad.

2.3.2 WQSP Well Sites (SWMUs 001ai-001an)

The Water Quality Sampling Program (WQSP) wells were drilled in 1995 and 1996 to replace older water level surveillance wells at the site. Although the WQSP wells are not intended to function as RCRA monitoring wells, each of the WQSP wells was designed to meet RCRA monitoring well criteria. Special consideration was placed on the selection of drilling additives and the use of inert casing and pump materials to assure that water quality was not affected by drilling operations.

Drilling logs and NEPA documentation developed for the WQSP well drilling program indicate that drilling additives used to complete the WQSP wells were limited to saturated brine water and bentonite mud. This information demonstrates that no hazardous constituents were used to develop any of the WQSP wells, and each of these wells is capable of functioning as a RCRA monitoring well. Based on this information, the DOE requests that a formal "No Further Action" determination be issued for the seven WQSP well locations (SWMUs 001ai-001an).

2.4 Mudpit SWMUs Identified in the RFA as Having a Very Low Potential to Release Hazardous Constituents

The DOE reviewed the RFA, available drilling records, and the series of Hydrologic Data Reports published by SNL to determine if drilling additives used to complete any of the following boreholes may have contained hazardous wastes or hazardous constituents. These sites were not identified as Areas of Concern in Section 5.1 of the RFA, or in the list of SWMUs requiring RFI site investigations in the draft HSWA permit module. These borehole/mudpit sites include the following:

H-1 Mudpit	SWMU 001a
H-2 Mudpit	SWMU 001b
H-5/P-21 Mudpit	SWMU 001d
H-6/P-13 Mudpit	SWMU 001e
H-18 Mudpit	SWMU 001i
IMC-376 Mudpit	SWMU 001u
IMC-456 Mudpit	SWMU 001v
WIPP-18 Mudpit	SWMU 001y
WIPP-19 Mudpit	SWMU 001z
WIPP-21 Mudpit	SWMU 001aa
WIPP-22 Mudpit	SWMU 001ab

Based on review of drilling records, hydrologic reports, and the RFA, the DOE assessed that drilling additives used at these sites were limited to fresh and brine-saturated water, air foam (sodium/phosphate-based material), bentonite drilling mud, attapulgite drilling gel (salt/bentonite gel), paper drilling additive (cellulose), meta-trifluorobenzoic acid tracer, Iodine-131 (a tracer with an eight year half-life), and Portland and Poz-Mix cement. Additionally, trace amounts of pipe grease and gear lubricants used in normal drilling operations were potentially discharged into drilling mudpits.

The RFA generally identifies the release potential to sandy surface soils as high at WIPP mudpit SWMUs; however, drill report data and other historical information indicates that no hazardous wastes or hazardous constituents were used to complete any of the above boreholes. A release of hazardous constituents above applicable risk based action levels at any of these sites is, therefore, highly improbable. This premise is supported by analytical data collected at the 10 mudpit SWMUs sampled during the Voluntary RA/CA program. Voluntary RA/CA data demonstrate that samples collected from SWMU mudpits drilled by the same drilling contractors, using similar drilling additives, during the same time period did not contain any hazardous wastes or hazardous constituents above applicable Subpart S action levels. This information is especially important considering that the sites sampled during the Voluntary RA/CA program were the locations that both the EPA and NMED identified as sites with the greatest potential to contain either hazardous wastes or hazardous constituents.

Based on the drilling documentation reviewed and data collected during the Voluntary RA/CA program, the potential for release of hazardous wastes or hazardous constituents from these sites is extremely low. Additionally, the NMED and EPA documented in RFA Table 5.1 that none of these sites were considered "Areas of Concern," or sites requiring further RFI assessment. Therefore, DOE requests that a "No Further Action" determination be provided for SWMUs 001a, 001b, 001d, 001e, 001i, 001u, 001v, 001y, 001z, 001aa, and 001ab.

2.5 Mudpit SWMUs Subject to Dual Regulatory Authority

The following list of mudpit SWMUs are sites that are or have been regulated under dual regulatory authority or authority other than RCRA:

Badger Unit Drill Pad	SWMU 001o	(dual regulatory authority)
Cotton Baby Drill Pad	SWMU 001p	(dual regulatory authority)
Abandoned well pad between H-14 and H-4	SWMU 001aq	(dual regulatory authority)

2.5.1 Badger Unit and Cotton Baby Drill Pad Sites

The 001o and 001p SWMU sites resulted from the drilling of oil and gas exploration wells. These locations were drilled under permit authority issued by the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM). These sites are specifically exempted from RCRA regulation by the "Oil and Gas" exemption contained in 40 CFR Part 261.4(b)(5). Site abandonment and plugging requirements for the Badger Unit and Cotton Baby well sites are established in Section D, Rule 201, of the NMOCD regulations. Additionally, during the early 1970's when both the Badger Unit and Cotton Baby exploration wells were drilled, the BLM established general closure and reclamation requirements in the "Application for Permit to Drill" (APD) review process.

Although SWMUs 001o and 001p are subject to other regulatory authority, DOE included these sites in the Voluntary RA/CA program. Data collected by both NMED and DOE during the RFA indicated that no sources or releases of hazardous constituents existed at SWMUs 001o and 001p that are above applicable action level criteria proposed in the Subpart S rule. Nevertheless, DOE proposed corrective actions under the Voluntary RA/CA program to assure no migration of hazardous constituents occur from these sites. The proposed corrective action involves capping-in-place with a 6-to-18 inch caliche cap, covering the cap with 6 inches of topsoil, and revegetating the sites in accordance with the *WIPP Land Management Plan (DOE/WIPP-93-004)*. The proposed corrective action for SWMUs 001o and 001p is described in detail in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*.

2.5.2 Abandoned Well Pad Located Between the H-14 and H-4 Well Sites (SWMU 001aq)

Another location that is under dual regulatory authority is the abandoned well pad described in Section 4.1.30 of the RFA. SWMU 001aq is described as an abandoned well pad located between the H-14 and H-4 well sites. This well pad and associated well cellar were constructed for an oil exploration well. The

exploration well was never drilled, however, and the DOE believes that the well pad was constructed in the wrong location before the oil company realized the error. The DOE requests, therefore, that this SWMU location be deleted from the list of SWMUs at the WIPP. This location does not meet the regulatory definition of a SWMU because there is no evidence that solid wastes were generated or managed at this site. Although the site should not be managed as a SWMU, the DOE proposes to reclaim this well pad in accordance with reclamation commitments contained in the *WIPP Land Management Plan (DOE/WIPP-93-004)*.

3.0 SWMU GROUP 002: SALT AND TOP SOIL STORAGE AREAS

SWMU Group 002 includes salt and top soil storage areas as follows:

SPVD Salt Storage Pile	SWMU 002a
Salt Storage Pile	SWMU 002b
Top Soil Storage Area	SWMU 002c
Top Soil Storage Area, SPVD Soil	SWMU 002d

Section 5.2 of the RFA listed these sites as Areas of Concern, but also noted that it is unlikely that any construction materials or trace hazardous constituents present at the sites pose a threat to the environment. Additional information and recommendations concerning these SWMUs are presented below.

3.1 SPDV Salt Pile (SWMU 002a)

The Site Preliminary Design Validation (SPDV) Salt Pile is composed of mined rock from the excavation of the Waste and Salt Handling Shafts at the WIPP facility as well as salt excavated during the mining of the main and experimental drifts in the repository horizon. The pile contains up to 340,000 tons of claystone, anhydrite, and salt. Inspections have documented plastic liners protruding from portions of the salt pile. This liner material resulted from the excavation of the evaporation ponds used during the mining.

Samples were collected from the SPDV Salt Pile during an investigation performed for DOE (Daniel B. Stevens & Associates, 1996). Analytical data for these samples are summarized in Appendix B. No volatile or semivolatile organic compounds were detected in the SPDV samples, and although low concentrations of total petroleum hydrocarbons and metals were detected in some samples, these concentrations were below applicable Subpart S and/or NMED regulatory guidelines. Therefore, the DOE investigation concluded that no remedial measures were required at the SPDV Salt Pile according to NMED guidelines.

The low release potential of the SPDV Salt Pile is supported by assessments of the evaporation pond constituents that were excavated and placed in the salt pile. As described in Table 4.8 of the RFA, no release of hazardous waste or hazardous constituents occurred at the evaporation ponds. This assessment was further supported by sampling of the Salt Shaft Holding Pond conducted by the WIPP/NMED Oversight Bureau, which indicated no releases of hazardous constituents (see Section 7.0 of this report). The results of sampling in the Salt Shaft Holding Pond are provided in Appendix C.

Lastly, the DOE notes that no stained rock or soil occurs on the surface or within the berms surrounding the SPDV Salt Pile. A DOE inspection of open cavities eroded into the pile revealed only construction debris (i.e., waste concrete, concrete slabs, scrap steel, and rebar). Based on this information the DOE requests that a formal "No Further Action" determination be granted for SWMU 002a.

3.2 Salt Storage Pile (SWMU 002b)

The main active salt pile immediately to the north of the WIPP facility (SWMU 002b) is composed primarily of salt excavated during mining of the repository horizon. A review of aerial photos and excavation history suggests that the southwest quadrant of SWMU-002b was the first section to receive salt fill in 1984. From 1984 through 1986, the western two-thirds of the unit received excavated salt from the repository horizon. Aerial photographs suggest that the eastern one-third of the unit began to receive fill by July 1988. A slurry and rock mixture also appears on this eastern section in the 1988 aerial photo, which was produced during the boring of the Air Intake Shaft (AIS).

The RFA documents that very small quantities of solid wastes such as wood, several batteries from miners' lights, gloves, and fabric liner material were contained in the main Salt Storage Pile. Other mining wastes that are contained in the salt pile include decomposing roof bolts, steel rebar, and ground control fencing materials. A DOE inspection of the pile revealed no stained rock or fill on the surface or within the berms surrounding the site. Based on this information the DOE requests that a formal "No Further Action" determination be granted for SWMU 002b.

3.3 Top Soil Storage Area SWMUs 002c and 002d

The two top soil storage areas were constructed during the two construction phases at the WIPP. The first, the SPDV storage unit (SWMU 002d), was created during the clearing of an area to support the mining of the Salt Shaft and initial underground drifts. The main top soil storage area (SWMU 002c) resulted from the clearing of ground to support the construction of WIPP surface facilities and the waste, exhaust, and air intake shafts.

Although the top soil storage areas were listed as Areas of Concern in Table 5.1 of the RFA, neither area contains material that meets the regulatory definition of a solid waste. Both areas are composed of reusable top soil material set aside for reclamation and closure of the WIPP. The SPDV top soil area is composed of virgin materials, whereas the RFA documents that the main top soil storage area contains some mining debris such as concrete and roof bolts. These materials meet the definition of clean fill material under the New Mexico Solid Waste Management Regulations (Title 20 of the New Mexico Administrative Code

[NMAC], Part 9.1) and have no potential to release hazardous constituents. Once top soil materials are utilized for reclamation and closure activities, any debris will be moved to the construction landfill area for burial.

Because their contents do not meet the definition of a solid waste, the top soil storage areas are not SWMUs. Based on this information, the DOE requests that the Main Top Soil Storage Area and the SPDV Top Soil Storage Area be deleted from the list of SWMUs at the WIPP.

4.0 SWMU GROUP 003: LANDFILLS

SWMU Group 003 includes the following landfill sites:

Brinderson Landfill	SWMU 003a	(dual regulatory authority)
Construction Landfill	SWMU 003b	(dual regulatory authority)

SWMU 003a and SWMU 003b were designed, permitted, operated, and closed under land use permits issued by the BLM. As such, these units are subject to dual regulatory authority. On this basis, the DOE has submitted a formal request for No Further Action for the Brinderson Landfill and the closed portion of the Construction Landfill. DOE's request and supporting information are discussed in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*. Records indicate only the disposal of materials in these landfills that were expressly allowed under the BLM land use permits and WIPP Procedure WP06-108, *Construction Landfill Operation*. Thus, these SWMUs do not pose a threat to human health and the environment, and a determination of No Further Action is warranted.

5.0 SWMU GROUP 004: STORAGE YARDS

SWMU Group 004 includes the following storage yard sites:

Portacamp Storage Yard	SWMU 004a
Reclaimables Storage Yard (Excess Storage Area)	SWMU 004b
Grout Storage Area	SWMU 004c

Section 5.4 of the RFA listed these sites as Areas of Concern. Additional information and recommendations concerning these SWMUs are presented below.

5.1 Portacamp Storage Yard (SWMU 004a)

Section 5.4 of the RFA listed SWMU 004a as an Area of Concern due to evidence of past release (e.g., discolored soil). Therefore, DOE included this site in the Voluntary RA/CA program. Soil samples collected at SWMU 004a indicated no releases of hazardous constituents above applicable Subpart S action levels, and metals concentrations were equivalent to background soil conditions at the WIPP site. This sampling program and other information concerning SWMU 004a are discussed in detail in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)*. Based on the data compiled during the Voluntary RA/CA program, DOE has requested a determination of "No Further Action" at SWMU 004a.

5.2 Reclaimables Storage Yard (SWMU 004b)

The Reclaimables Storage Yard, also called the WIPP Reusable Yard, is an area identified for the storage and management of materials to be excessed under the government reusable materials program. By definition these materials are not solid wastes. Other materials stored in the WIPP Reusable Yard include batteries and scrap metals that are accumulated prior to being shipped to off-site recycling facilities. Batteries are stored on spill containment devices prior to off-site shipment. A new battery storage building has recently been constructed at the WIPP Reusable Yard to store batteries indoors on spill containment devices. Scrap metals are stored in large roll-off boxes to facilitate transportation to recycling facilities.

The RFA identifies some housekeeping concerns at the WIPP Reusable Yard. This area has been reorganized and is now managed under WIPP Management Policy MP 5.16, Rev. 2, *Landlord Program*. The current management protocol includes documented monthly inspections to ensure that safety conditions and housekeeping practices conform to WIPP requirements. No spills or releases of

hazardous constituents have been documented at this site, and the DOE requests that a "No Further Action" determination be issued for SWMU 004b.

5.3 Grout Storage Area (SWMU 004c)

The Grout Storage Area currently covers approximately five acres and is used for the storage of materials to support mining operations, including grout materials, grouting equipment, steel cable, water tanks, saline drilling muds, cements, ventilation bulkheads, and ground control materials (e.g., pieces of concrete, rock bolts, rock bolt plates, steel rebar, etc.). Materials are added and removed on a continual basis to support ongoing underground operations. The stored grout is cementatious and alkaline in nature. Soils in the area show no evidence of discoloration that would indicate past releases. A DOE review of Material Safety Data Sheets indicates the stored material to be nonhazardous. Because no hazardous wastes or hazardous materials have been stored in this area, and no release has occurred, the DOE requests that a "No Further Action" determination be issued for SWMU 004c.

6.0 SWMU GROUP 005: CONCRETE BATCH PLANTS

SWMU Group 005 includes the following concrete batch plant sites:

WHB Concrete Batch Plant	SWMU 005a	(inaccessible)
SHS Concrete Batch Plant	SWMU 005b	(closed/reclaimed)
H-1 Concrete Batch Plant	SWMU 005c	

These three locations have been used as temporary operating areas for concrete batch plants from 1984 through 1989. Table 4.6 of the RFA describes the waste generated at the three concrete batch plants as small amounts of spilled concrete and, possibly, trace amounts of motor oil, grease, and hydraulic fluid from the machinery. Although trace amounts of substances listed above were presumably released during normal operations, most releases consisted of nonhazardous mixtures of water, concrete, sand, and gravel. Based on these considerations, the RFA stated that exposure potential for these sites was extremely low to nonexistent, and assessed that SWMU Group 005 was not of concern.

6.1 Waste Handling Building Concrete Batch Plant (SWMU 005a)

SWMU 005a was operational from early 1984 to December 1984. This location is now covered by the Waste Handling Building and adjacent asphalt pavement, and is inaccessible. In comparison to SWMU 005a, drilling locations discussed in the *Final Voluntary RA/CA Report (DOE/WIPP 96-2209)* are likely to have experienced similar minor spillage of oil and lubricants. Voluntary RA/CA sampling at these locations indicated no release of hazardous constituents above proposed Subpart S action levels. Furthermore, the probability of a release of hazardous constituents from SWMU 005a is extremely remote, particularly because the area is covered by pavement and WIPP facility buildings. Hence, the DOE requests that a "No Further Action" determination be issued for the SWMU 005a.

6.2 Salt Handling Shaft Concrete Batch Plant (SWMU 005b)

The RFA documents that no oily or stained soil occurs at the surface of SWMU 005b. This area is adjacent to the Main Salt Pile Evaporation Pond. The site has been completely reclaimed and is covered with thick vegetation. All concrete debris from this site was moved to the WIPP Construction Landfill before reclamation planting was completed in the late 1980's. No release of hazardous constituents is likely to have occurred at this location, and the DOE requests, therefore, that a "No Further Action" determination be issued for the SWMU 005b.

6.3 Concrete Batch Plant at the H-1 Drill Pad (SWMU 005c)

SWMU 005c is located adjacent to the H-1 drill pad. The RFA documents that some spilled concrete and construction material, such as gravel and caliche, still cover the general area around SWMU 005c. The RFA also states that no oily or stained soil occurs on the surface of SWMU 005c. There is a very low probability that a release of hazardous constituents has occurred at this location, and the DOE requests that a "No Further Action" determination be issued for the SWMU 005b.

7.0 SWMU GROUP 006: SALT AND WASTE SHAFT HOLDING PONDS

SWMU Group 006 includes the following holding ponds located on the surface at the WIPP facility:

Salt Shaft Holding Pond	SWMU 006a	(inaccessible)
Waste Shaft Holding Pond	SWMU 006b	(inaccessible)

Although Section 5.0 of the RFA designated the SWMU 006 sites as Areas of Concern, it also concluded that the migration and exposure potential associated with these units is low. This is because most of the contents have been removed and these units are presently covered by buildings and paved areas of the WIPP facility. Thus, pathways involving infiltration to groundwater and volatilization or suspension in the atmosphere do not exist at this time. SWMUs 006a and 006b are also inaccessible for further investigation or corrective action. Additional information and recommendations concerning each of the SWMU 006 sites are presented below.

7.1 Salt Shaft Holding Pond (SWMU 006a)

The DOE estimates that as much as 2.4 million gallons of drilling fluid were used for constructing the salt shaft. The earliest aerial photos from November 1982 show the Salt Shaft Holding Pond as a bermed oval measuring approximately 210 by 100 feet. The holding pond had a capacity of approximately 1.6 million gallons.

The waste description in Table 4.7 from the RFA describes drilling fluid in the holding ponds as brine and bentonite, with traces of grease and hydraulic fluid. The WIPP/NMED Oversight Bureau sampled a section of the former Salt Shaft Holding Pond in 1993 during an expansion of the WIPP Engineering Building. The analytical results for these samples indicate that no hazardous constituents are present in the area of the former Salt Shaft Holding Pond above applicable Subpart S action levels. The analytical results from the 1993 sampling event are provided in Appendix C. Based on these results, and on the fact that the unit is inaccessible, the DOE requests that a "No Further Action" determination be issued for SWMU 006a.

7.2 Waste Shaft Holding Pond (SWMU 006b)

The RFA documents that the Waste Handling Shaft Holding Pond was a bermed rectangular pit measuring approximately 280 by 150 feet. Aerial photo review verifies the unit as active until at least mid-1984. Drill cuttings excavated from the dried holding pond may have been moved to either SWMU 003a (Brinderson Landfill) or SWMU 003b (Construction Landfill).

The waste description in Table 4.7 of the RFA describes drilling fluid in the holding ponds as brine and bentonite, with traces of grease and hydraulic fluid generated by the drilling of the Waste Shaft pilot hole. Although no sampling was conducted on the Waste Shaft Holding Pond, the potential list of constituents in the Waste Shaft Holding Pond should be identical to those contained in the Salt Shaft Holding Pond. Sampling from the Salt Shaft Holding Pond (Appendix C) indicates no potential for releases of hazardous constituents to the environment above applicable action levels. Based on process knowledge and sampling results from the Salt Shaft Holding Pond, as well as on the fact that the unit is inaccessible, the DOE requests that a "No Further Action" determination be issued for the Waste Shaft Holding Pond (SWMU 006b).

8.0 SWMU GROUP 007: EVAPORATION PONDS

SWMU Group 007 includes the following sites located on the surface at the WIPP facility:

Evaporation Pond	SWMU 007a	(inaccessible)
Evaporation Pond	SWMU 007b	(closed/reclaimed)
Evaporation Pond	SWMU 007c	

Section 5.7 of the RFA states that "there are no Areas of Concern for the evaporation pond SWMU Group." The RFA also notes that releases of hazardous constituents have not occurred at these sites and that exposure potential is extremely low to nonexistent.

The SWMU 007a evaporation pond was used from 1983 to 1984 and is presently covered by the Waste Handling Building and adjacent paved area. As such, SWMU 007a is inaccessible. SWMU 007b was sampled as part of the RFA. The former location of SWMU 007b, now completely graded, lies within an area that now receives stormwater and domestic water resulting from fire flow performance testing. The metals iron, barium, and aluminum were found above background levels in the RFA sampling; however, concentrations were well below proposed Subpart S action levels. No semivolatile compounds or aliphatic hydrocarbons were present.

The RFA spot sampling at SWMU 007b indicates no releases of hazardous constituents above applicable action levels. In addition, the DOE notes that the SWMU 007c evaporation pond received only saturated brine and run-off from the adjacent salt storage area. Based on this information, the DOE requests that all three evaporation ponds (SWMUs 007a, 007b, and 007c) be granted a "No Further Action" determination.

9.0 SWMU GROUP 008: SURFACE SATELLITE ACCUMULATION AREAS

SWMU Group 008 includes the following satellite accumulation areas (SAA) located on the surface at the WIPP facility:

SAA, Bldg. 455	SWMU 008a	(dual reg. auth.)
SAA, Bldg. 454	SWMU 008b	(dual reg. auth.)
SAA, Bldg. 993	SWMU 008c	(closed/inactivated)
SAA, Bldg. W083	SWMU 008d	(closed/inactivated)
SAA, Bldg. 473	SWMU 008e	(closed/inactivated)
SAA, Bldg. 486	SWMU 008f	(closed/inactivated)
SAA, Bldg. 452	SWMU 008g	(closed/inactivated)
SAA, Bldg. 474	SWMU 008h	(closed/inactivated)
SAA, AIS Shaft	SWMU 008i	(closed/inactivated)
SAA, Bldg. 482	SWMU 008j	(dual reg. auth.)
Petroleum Storage Bldg. 454	SWMU 008k	(dual reg. auth.)
Haz. Waste Staging Bldg. 474	SWMU 008L	(dual reg. auth.)
SAA, Maintenance Tool Crib	SWMU 008m	(dual reg. auth.)
Future Haz. Waste Storage BLDG. 474	SWMU 008n	(not constructed)
SAA, Bldg. 474-E	SWMU 008o	(closed/inactivated)
SAA, Analytical Laboratory Bldg. 451	SWMU 008p	(new, dual reg. auth.)
RH Bay, Bldg. 411	SWMU 008q	(new, dual reg. auth.)

Section 5.8 of the RFA stated that for most of these areas, management is efficient and conditions are well documented by inspection and sampling activities. Additional information and recommendations regarding these areas are provided in Section 9.1 below. At a few group 008 units, however, the RFA identified specific Areas of Concern. These SWMUs included Petroleum Storage Building 454 (SWMU 008k), the current and future Hazardous Waste Storage areas (SWMUs 008L and 008n), and the SAA at Building 474-E (SWMU 008o). These SWMUs are discussed in Sections 9.2 through 9.4.

9.1 Satellite Accumulation Areas 008a through 008j, 008m, 008o, 008p, and 008q

SAAs are an integral part of daily site-generated waste management operations and are managed in accordance with 40 CFR 262.34 and the applicable sections of 40 CFR 265 and 270. The DOE has established operating procedures for the management and inspection of SAA locations by the SAA area custodians. SAAs that manage hazardous materials and wastes are operated and inspected according to the *Site-Generated, Non-Radioactive Hazardous Waste Management Plan (WP 02-RC.01 Rev. 0)*. SAAs that are not designated for management of hazardous materials or wastes are inspected

according to WIPP Procedure WP 06-HM3109 Rev. 1, *Nonradioactive Satellite Waste Accumulation Area Inspection*. SAA inspections are performed weekly by Westinghouse Hazardous Waste Operations (HWO) and Environmental Compliance and Support (EC&S) personnel. Inspection procedures include checks for proper hazardous material storage, secondary containment, safety, storage and use records, spills/leaks, and the presence of appropriate spill and release control materials. All SAA containers are placed on, or locked inside of, appropriate spill containment devices.

Since the RFA was issued, the DOE has closed or inactivated 8 of the original 14 surface SAAs described in the RFA, and another SWMU anticipated by the RFA (SWMU 008n) has not been constructed. In addition, DOE has added two new surface SAA locations. Thus, a total of 8 surface SAAs are active at this time. Because SAA containers are managed in accordance with the requirements of 40 CFR 262.34, the DOE requests that all SAA locations be deleted from the list of SWMUs at the WIPP. This request is supported by a lack of any evidence of release from these units noted during routine DOE inspections or by NMED inspection during the RFA. At a minimum, DOE requests that a "No Further Action" determination be granted for the surface SAA locations.

9.2 Petroleum Storage Building 454 (SWMU 008k)

The petroleum storage area located at the Tool Crib (Building 454) is a small oil and lubricant distribution area used by Maintenance Operations. The area contains approximately 10-15, 55-gallon drums of oil and lubricant products. All drums and spill containment devices are located on top of a covered concrete pad. No hazardous materials are stored or utilized in this area.

Drums that are in use are placed on drum racks equipped with spill pans. Unopened drums are stored on spill containment devices. Used oil drums are also stored on spill containment devices until the drums are full, at which time the drums are transferred to the Portacamp area prior to being sent off-site for recycling in accordance with 40 CFR 279. Spill reporting logs document that no large spills of oils or lubricants (greater than 10 gallons) have occurred at this area. Small spills of lubricants are absorbed, removed, and disposed of at an off-site disposal facility.

Because no release of hazardous constituents has occurred at this location, and because appropriate containment and documentation practices are followed at this unit, the DOE requests that a formal "No Further Action" determination be issued for SWMU 008k. This request for a "No Further Action" determination is supported by information contained in Section 4.8.11 of the RFA, which noted the containment practices at this unit and assessed the exposure potential as low.

9.3 Hazardous Waste Management Areas (SWMUs 008h, 008L, 008n)

Similar to the other SAA locations, the WIPP Site Generated Hazardous Waste and Material Storage Area (Bldg. 474) is regulated by the requirements of 40 CFR 262.34. Three hazardous waste management areas were identified in the RFA: 1) SWMU 008h, Inactive Hazardous Waste Storage Area; 2) SWMU 008L, the Hazardous Waste Staging Area; and 3) SWMU 008n, identified as a Future Hazardous Waste Staging Area.

SWMU 008h was a temporary hazardous waste storage trailer that was closed when the current hazardous waste staging area (SWMU 008L) was constructed. The SWMU 008h trailer was equipped with standard spill containment devices, and all wastes were stored in U.S. Department of Transportation approved drums. Routine operating logs and SAA inspection records document no release of hazardous constituents from the 008h site, and the DOE requests that this location be deleted from the list of WIPP SWMUs. Similarly, SWMU 008n has not been constructed and should be deleted from the list of SWMUs at the WIPP.

SWMU 008L is the active 90-day hazardous waste management area. This area includes three locked waste management buildings equipped with spill containment and ventilation systems. All waste streams are segregated according to chemical compatibility. The entire Building 474 area is fenced, locked, and regularly patrolled by security personnel. Operating records document that there has not been a release of hazardous constituents in the hazardous waste management area.

Hazardous wastes are managed in the 90-day accumulation area prior to being shipped off-site to a treatment, storage, and disposal facility in accordance with 40 CFR 262.34 and the applicable sections of 40 CFR 265, 268, and 270. All waste management activities are controlled by WIPP waste management, emergency response, and inspection procedures. Operation of the hazardous waste and hazardous materials management area is an integral part of day-to-day facility operations. Because no release of hazardous constituents has occurred at this location, and the facility is managed in accordance with the requirements of 40 CFR 262, 265, 268, and 270, the DOE requests that a "No Further Action" determination be issued for SWMU 008L.

9.4 Satellite Accumulation Area at Building 474-E (SWMU 008o)

The SAA at Building 474-E was located on the south side of the Building 474 complex and was used to store hazardous materials awaiting use or reuse. The RFA noted a potential exposure pathway to WIPP site employees through release of hazardous vapors to a nearby ventilated water storage tank that could

potentially be used for drinking water. DOE notes that because SWMU 008o has been closed, however, the potential source of vapors no longer exists, and this exposure pathway is no longer credible. Therefore, the DOE formally requests a "No Further Action" determination for SWMU 008o.

10.0 SWMU GROUP 009: UNDERGROUND SATELLITE ACCUMULATION AREAS

SWMU Group 009 includes the following SAAs located in the WIPP underground:

SAA, S1300/W30	SWMU 009a	(closed/inactivated)
SAA, E300 Shop	SWMU 009b	(dual reg. auth.)
SAA, S1300/W170	SWMU 009c	(closed/inactivated)
SAA, Material Storage Area S1300/170	SWMU 009d	(closed/inactivated)
SAA, S700/E140	SWMU 009e	(dual reg. auth.)
SAA, S1600/W30	SWMU 009f	(closed/inactivated)
SAA, S1300/E140	SWMU 009g	(closed/inactivated)
SAA, N780	SWMU 009h	(closed/inactivated)
SAA, SPDV Room	SWMU 009i	(closed/inactivated)
SAA, W. End N1420	SWMU 009j	(closed/inactivated)
SAA, S1000 Tool Crib	SWMU 009k	(new, dual reg. auth.)
SAA, E200/S400	SWMU 009L	(new, dual reg. auth.)

Although the RFA identifies the underground SAAs as SWMUs, RFA Table 4.10 states that no releases of hazardous constituents have occurred at these sites. Section 5.9 of the RFA further concludes that exposure potential at these sites is extremely low to nonexistent and there are no Areas of Concern for the units of this group.

The underground SAAs are an integral part of daily site-generated waste management operations and are managed in accordance with 40 CFR 262.34 and the applicable sections of 40 CFR 265 and 270. The DOE has established operating procedures for the management and inspection of SAA locations by the SAA area custodians. SAAs that manage hazardous materials and wastes are operated and inspected according to the *Site-Generated, Non-Radioactive Hazardous Waste Management Plan (WP 02-RC.01 Rev. 0)*. SAAs that are not designated for management of hazardous materials or wastes are inspected according to WIPP Procedure WP 06-HM3109 Rev. 1, *Nonradioactive Satellite Waste Accumulation Area Inspection*. SAA inspections are performed weekly by Westinghouse HWO and EC&S personnel. Inspection procedures include checks for proper hazardous material storage, secondary containment, safety, storage and use records, spills/leaks, and the presence of appropriate spill and release control materials. All SAA containers are placed on, or locked inside of, appropriate spill containment devices.

Since the RFA was issued, the DOE has closed 8 of the original 10 underground SAAs described in the RFA, and has added two new underground SAA locations. Thus, a total of four underground SAAs are active at this time.

Because SAA containers are managed in accordance with the requirements of 40 CFR 262.34, the DOE requests that all SAA locations be deleted from the list of SWMUs at the WIPP. This request is supported by a lack of any evidence of release from these units noted during routine DOE inspections or by NMED inspection during the RFA. At a minimum, DOE requests that a "No Further Action" determination be granted for the underground SAA locations.

11.0 SWMU GROUP 010: UNDERGROUND SHAFT SUMPS

SWMU Group 010 includes the following shaft areas located in the WIPP underground:

Salt Handling Shaft Sump	SWMU 010a	
Waste Handling Shaft Sump	SWMU 010b	(dual regulatory authority)
Exhaust Shaft Sump	SWMU 010c	(dual regulatory authority)
Air Intake Shaft Sump	SWMU 010d	

DOE notes that although these four SWMU sites were identified in the RFA, only the Salt Handling Shaft and Waste Handling Shaft SWMU sites are contained within man-made sumps. The Exhaust Shaft and AIS do not contain man-made sumps. These two SWMU sites are located at or slightly below facility level, 2150 feet below ground surface.

The RFA documents that visual inspections of the Salt Handling Shaft, Waste Handling Shaft, Exhaust Shaft, and the Air Intake Shaft sumps by NMED revealed clean, well-managed areas. Inspections, cleaning, and sampling of the shafts and sumps are regularly performed by DOE according to established procedures. The sumps are unlined and are thus composed primarily of rock (salt). Waste reportedly accumulated during the construction phase (cement grout, chemical grout, grease, etc.) is not apparent. Based on these observations, Section 5.10 of the RFA states that "all the units display low release and exposure potential, and no Areas of Concern are expressed for this SWMU group."

Each of the shaft sumps is sampled under existing DOE sampling plans during routine maintenance operations. For SWMUs 010a, 010c, and 010d, these characterization data have demonstrated that sump contents are consistently below RCRA criteria for hazardous wastes. Because these sumps are routinely monitored and demonstrate no hazardous constituents of concern, and because the RFA found no Areas of Concern for these sites, the DOE requests that a "No Further Action" determination be granted for SWMUs 010a, 010c, and 010d.

For SWMU 010b (Waste Handling Shaft Sump), increased volumes of brine, some of which contained elevated levels of lead, were measured during routine sampling in June 1995. Follow-up sampling was completed to confirm previous sample results, and a corrective action plan was immediately implemented. On September 1, 1995, WIPP personnel met with the NMED Hazardous and Radioactive Materials Bureau to discuss the potential source of the lead-containing brine and ongoing corrective actions.

The source of increased brine flow in the Waste Handling Shaft Sump is water entering the mine through condensation and seepage in the Exhaust Shaft. This then flows into the Waste Shaft Sump. The source of the lead appears to be chain-link mesh used for support in the Exhaust Shaft. The ongoing corrective action involves collection of brine from the Exhaust Shaft in a catchment basin, which is then managed in accordance with appropriate New Mexico Solid Waste and Water Quality Control Commission 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 hazardous waste disposal requirements of 40 CFR 262. Follow-up sampling data from routine monitoring programs demonstrate that lead constituents remain in solution and do not precipitate into the salt muck contained in the Waste Handling Shaft. Lead concentrations in muck excavated from the Waste Handling Shaft are consistently below the toxicity characteristic regulatory levels specified in 40 CFR 261. The DOE requests that the NMED grant a "No Further Action" determination for the Waste Handling Shaft Sump (SWMU 010b) because corrective action has been implemented in accordance with the requirements of 40 CFR 262. Representative analytical data from Waste Handling Shaft Sump brine waters and muck samples are provided in Appendix D.

12.0 SWMU GROUP 011: SEWAGE TREATMENT FACILITY

The WIPP Sewage Treatment Facility (SWMU 011) was designed and permitted as a synthetically-lined, zero discharge evaporation facility. As such, SWMU 011 is subject to dual regulatory authority. On January 16, 1992, the NMED GWPRB issued Discharge Plan DP-831 for the WIPP Sewage Facility. Conditions of DP-831 include quarterly monitoring, inspection, and spill notification. These requirements are documented in established WIPP Sewage Facility operating procedures and sewage system sampling procedures. Additionally, the DOE completes biannual oversight monitoring of the sewage facility. All monitoring and oversight data demonstrate that hazardous constituents have not been discharged into the sewage facility. Because SWMU 011 is operated and regularly sampled under an approved discharge plan, Section 5.11 of the RFA stated that there were no Areas of Concern for the facility. Therefore, the DOE requests that a "No Further Action" determination be issued for SWMU Group 011. Closure requirements for the WIPP Sewage Facility will be completed in accordance with the closure plan requirements contained in Part 107(a)(11) of the New Mexico Ground Water Control Commission Regulations (20 NMAC 6.2).

13.0 SWMU GROUP 012: NONHAZARDOUS SURFACE AND UNDERGROUND TRASH BINS

SWMU Group 012 includes the following trash bin sites:

Surface Bins	SWMU 012a	(dual regulatory authority)
Underground Bins	SWMU 012b	(dual regulatory authority)

Both the surface and underground trash bins are regulated under the requirements of the New Mexico Solid Waste Management Regulations (20 NMAC 9.1). All trash is collected by on-site maintenance personnel and transferred to large dumpsters prior to disposal at the Carlsbad and Hobbs Municipal Landfills. Segregation of nonhazardous and hazardous waste streams is completed by a combination of employee training and waste management procedures. Waste management operations and dumpsters are inspected regularly to ensure that nonhazardous and hazardous wastes are managed appropriately. Sections 4.12 and 5.12 of the RFA assessed that release and exposure potential from SWMU group 012 was extremely low to nonexistent, and identified no Areas of Concern. Therefore, the DOE requests that a "No Further Action" determination be issued for SWMU Group 012.

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Appendix A

Tracer Chemicals and Drilling Additives Used at the H-19 Hydropad

TO: Dan Robertson (Westinghouse
FROM: Wayne Stensrud WAS
DATE: May 21, 1996
SUBJECT: Chemicals Used During the H-19 and H-11 Tracer Tests

Provided below is a list of the tracers and chemicals used during the H-19 and H-11 Tracer Test. If you have any questions concerning the following list please feel free to contact me at ph. 885-2754.

2,4 DiChloro Benzoic Acid (DCBA)
2,3 DCBA
2,5 DCBA
3,5 DCBA
2,4 DiFluoro Benzoic Acid (DFBA)
2,5 DFBA
3,5 DFBA
2,3,4 DFBA
3,4 DFBA
2,6 DFBA
2,3,4 TriFluoro Benzoic Acid (TFBA)
2,3,4,5 TFBA
2,3,6 TFBA
2,4,6 TriChloro Benzoic (TCBA)
P-TriFluoro Benzoic Acid (P-TFMBA)
o-TFMBA
PFBA (PentaFluoro Benzoic Acid)
Meta-Toluic Acid
Sodium Iodide (NaI)
Sodium Flouride (NaF)
Sodium Chloride (NaCl)
Methanol (MEOH)
Ethanol (ETOH)
Hydro Chloric Acid (HCL)
Potassium Hydroxide (KOH)
Sodium Hydroxide (Sodium Hydroxide)

cc:

Rick Beauheim, SNL Dept 6115
Lucy Meigs, SNL 6115
Perry Jones, SNL Dept 6743

Appendix B

Analytical Data Collected During the Characterization of the Site Preliminary Design Validation Salt Pile

Summary of Analytical Results for Soil Samples
Volatile Organic Compounds by EPA Method 8240
Page 1 of 2

Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @ 16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
Volatile Organic Compounds (µg/kg)												
Acetone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Acrolein	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Acrylonitrile	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Butanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Carbon disulfide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chloroethyl vinyl ether	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Note: No analytes were detected above reporting limits

Summary of Analytical Results for Soil Samples
Volatile Organic Compounds by EPA Method 8240
Page 2 of 2

Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @ 16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
cis-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Styrene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl acetate	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Vinyl chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total xylenes	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Note: No analytes were detected above reporting limits

Summary of Analytical Results for Soil Samples
Semivolatile Organic Compounds by EPA Method 8270
Page 1 of 3

Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @ 16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
Semivolatile Organic Compounds (µg/kg)												
Acenaphthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Acenaphthylene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Azobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzidine	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<330	<330
Benzoic acid	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
Benzo(a)anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(b)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(k)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(g,h,i)perylene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzyl alcohol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroethoxy)methane	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroethyl)ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroisopropyl)ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Bromophenyl phenyl ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Butyl benzyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Chloroaniline	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Chloronaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Chloro-3-methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Chlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330

Note: No analytes were detected above reporting limits

Summary of Analytical Results for Soil Samples
Semivolatile Organic Compounds by EPA Method 8270
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Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @ 16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
4-Chlorophenyl phenyl ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Chrysene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dibenz(a,h)anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dibenzofuran	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Di-n-butyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,2-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,3-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,4-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
3,3-Dichlorobenzidine	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
2,4-Dichlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Diethyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,4-Dimethylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dimethyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methyl-4,6-dinitrophenol	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
2,4-Dinitrophenol	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
2,4-Dinitrotoluene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,6-Dinitrotoluene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Di-n-octyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluorene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorobutadiene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorocyclopentadiene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330

Note: No analytes were detected above reporting limits

Summary of Analytical Results for Soil Samples
Semivolatile Organic Compounds by EPA Method 8270
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Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @ 16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
Hexachloroethane	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Indeno(1,2,3-cd)pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Isophorone	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methylnaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Naphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Nitroaniline	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
3-Nitroaniline	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
4-Nitroaniline	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
Nitrobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Nitrophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Nitrophenol	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
n-Nitrosodimethylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
n-Nitrosodiphenylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
n-Nitroso-di-n-propylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pentachlorophenol	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
Phenanthrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Phenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,2,4-Trichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,4,5-Trichlorophenol	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
2,4,6-Trichlorophenol	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850	<850

Note: No analytes were detected above reporting limits

Summary of Analytical Results for Soil Samples
Total Petroleum Hydrocarbons by EPA Method 418.1

Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
TPH (mg/kg)	<10	**21**	**35**	<10	**22**	**28**	<10	<10	**43**	**13**	<10	<10

Bold values highlight concentrations above reporting limits

TPH = Total petroleum hydrocarbons

Summary of Analytical Results for Soil Samples
TCLP Metals

Analyte	Sample No. (Sample Date)											
	SB-1 @ 20' (09/05/95)	SB-2 @ 5' (09/05/95)	SB-3 @ 10' (09/05/95)	SB-4 @ 20' (09/06/95)	SB-5 @ 16' (09/06/95)	SB-5 @ 17' (09/06/95)	SB-6 @16'-17' (09/06/95)	SB-7 @ 10' (09/06/95)	SB-8 @ 10' (09/06/95)	SB-9 @ 15' (09/06/95)	SB-10 @ 5.0' (09/07/95)	SB-10 @ 10.0' (09/07/95)
TCLP Metals (mg/kg)												
Arsenic	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	**3.3**	<0.1	**0.4**	**0.4**	<0.1	<0.1	**0.3**	**0.2**	<0.1	<0.1	**0.3**	**1.0**
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.01**
Lead	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010
Selenium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Bold values highlight concentrations above reporting limits

TCLP = Toxic characteristic leaching procedure

Appendix C

Analytical Data Collected from the Salt Shaft Holding Pond

STATE OF NEW MEXICO DEPARTMENT OF HEALTH
SCIENTIFIC LABORATORY DIVISION
P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

September 27, 1993

Request
ID No. 060020

ANALYTICAL REPORT
SLD Accession No. OR-93-2190

Distribution
(_) User 55802
(■) Submitter 536
(※) SLD Files

To: Paul Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88220

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993**

soil

DEMOGRAPHIC DATA

COLLECTION		*LOCATION*
On: 1-Sep-93	*By:* San . . .	Trench Swmu 006a Shsevpond L1
At: 9:38 hrs.	*In/Near:* Carlsbad	

ANALYTICAL RESULTS: Aliphatic Hydrocarbon (>10 Carbons) Screen (751)

Parameter	Value	Note	MDL	Units
See Laboratory Remarks for Additional Information				

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed[ ]; Intact: No[ ], Yes[ ] & Broken By: _____ Date: _____

Laboratory Remarks: Waste Isolation Pilot Plant

Hydrocarbons found at concentrations less than 10 ppm were not reported.

HYDROCARBON FUEL SCREEN ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Soil Lab Sample ID: OR-93-2190
Sample wt/vol: 17.3 (g/mL) g SLD Batch No: 292
Level: (low/med) Low Date Received: 09/02/93
% Moisture: not dec. _____ dec. _____ Date Extracted: 09/10/93
Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 09/13/93
GPC Cleanup: (Y/N) No pH: _____ Dilution Factor: 1
Extraction Solvent: [illegible]

CONCENTRATION UNITS:
(mg/L or mg/Kg): mg/kg

RECEIVED
OCT 25 1993
NM ED WIPP Site

(Continued on page 2.)

This sample was analyzed for hydrocarbons in the C5 to C30 molecular weight range using Gas Chromatography with a Flame Ionization Detector (FID). Since the FID is a nonspecific detector, all compound identifications should be considered as tentative. An attempt has been made below to assign the hydrocarbons found in the sample to an appropriate fuel fraction when the gas chromatograhic fingerprint patter of the sample closely matches a fuel standard. When the hydrocarbons in the sample do not closely match any known specific fuel, the results wil be reported as a hydrocarbon range.

TENTATIVELY IDENTIFIED FUEL FRACTIONS

The following fuel fractions were tentatively identified by FID

FUEL FRACTION	CARBON RANGE	EST. CONC.	% of All H-C's
GASOLINE	C5-C12	ND	0.0
JP-4	C5-C15	ND	0.0
STODDARD SOLVENT	C9-C12	ND	0.0
KEROSENE/JET-A	C9-C19	ND	0.0
DIESEL FUEL	C10-C23	ND	0.0
LUBRICATING OIL	C19-C29	ND	0.0
UNKNOWN PATTERN	.	ND	0.0

SURROGATE RECOVERY:
1-Chlorotetradecane: 73.4% RECOVERY

SPIKE RECOVERY FOR BATCH:
Diesel Fuel at 108 mg/kg 101.2% RECOVERY

Analyst: _____ **Reviewed By:** _____

Nancy DeWitt
Analyst, Organic Chemistry

Richard F. Meyerhein 09/27/93
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-257

SLD No. 1 ORGS 2190 D

Date Received: 9-2-93

Request ID No. 060020-D

2 User Code #: 5 5 8 0 2

3 Request ID No.:

4 Priority Code #: 3 (If "1" or "2", call ED-SLD Coordinator)

5 Facility Name: Waste Isolation Pilot Plant

6 County: Eddy

7 City: Carlsbad

8 State: N M

9 Sample Location: T R E N C H S W M U 0 0 6 a S H S E V P O N D L 1

10 Collected By: Paul Sanchez (First / Last) On: 93/9/1 (Date: YY/MM/DD) At: 0 9 3 8 hrs. (Time: 24 hr. clock 3:00 pm = 1500 hrs.)

11 Codes: 0 5 3 6 (Submitter) - (WSS #) (Organization)

12 Latitude (DDMMSS) . Longitude (DDDMMSS) . 2 Digit ID (if needed)

13 Report To: Paul Sanchez/Pat McCasland (Name)

14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy

City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose:
- [x] Grab
- [ ] Composite _____ (Composite Time Period)
- [ ] Compliance
- [x] NMED Monitoring
- [ ] Confirmation
- [ ] Special
- [ ] Flow Proportioned
- [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: _____ , Conductivity: _____ umhos/cm @ Temperature: 74 °F, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [ ] -Stream
- [ ] -Lake
- [ ] -Drain
- [ ] -Pool
- [ ] -WWTP
- [ ] -Entry Point to Distribution
- [ ] -Well; Depth: _____
- [ ] -Spring
- [ ] -Distribution
- [x] -Other: soil under old mudpit

18 Field Remarks: Hydrocarbon Fuel Screen

19 Sample Type:
- [ ] - Water
- [ ] - Wastewater { [ ] - Unchlorinated [ ] - Chlorinated
- [x] - Soil, [ ] - Food, [ ] - Other _____

This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
_____ - glass jug(s) (volume = _____ ml ea.)
_____ - _____ (volume = _____)

20 Preservation:
- [ ] - NP No Preservation; Sample stored at room temperature
- [ ] - P-Ice Sample stored in an ice bath (Not Frozen)
- [ ] - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
- [ ] - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
- [ ] - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
- [ ] - Other CS_2 Extracting Agent

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

- [ ] - (753) Aliphatic Headspace (Qualitative Screen)
- [ ] - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
- [ ] - (765) Mass Spectrometer Purgeables (EPA 624)
- [ ] - (766) SDWA Total Trihalomethanes (EPA 501.1)
- [ ] - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
- [ ] - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
- [ ] - (790) Composite Sample for Analysis No. _____

Semivolatile Screens:

- [ ] - (755) Base/Neutral Extractables (EPA 625)
- [ ] - (756) Base/Neutral/Acid Extractables (EPA 8270)
- [ ] - (772) Carbamate Pesticides (EPA 531.1)
- [ ] - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
- [ ] - (759) Herbicides, Triazine (EPA 507)
- [x] - (751) Hydrocarbon Fuel Screen (EPA M-8015)
- [ ] - (760) Organochlorine Pesticides (EPA 505)
- [ ] - (761) Organophosphate Pesticides (EPA 507)
- [ ] - (767) Polychlorinated Biphenyls (PCB's) in Oil
- [ ] - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
- [ ] - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Other Specific Compounds or Classes:

- [ ] - ( ) _____
- [ ] - ( ) _____

Remarks:

SLD 8912-OR Revised 2/93

Please RETAIN A COPY of your completed form

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-257

SLD No. 1

Date Received:

2 User Code #: 5 5 8 0 2

3 Request ID No.:

Request ID No. 060020-D

4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant

6 County: Eddy

7 City: Carlsbad

8 State: N M

9 Sample Location: TRENCH SWMU 0069a SHSE UPOND L1

10 Collected By: Paul Sanchez (First / Last) On: 93/9/81 (Date: YY/MM/DD) At: 0938 hrs. (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 0536 (Submitter) / WSS # / Organization

12 Latitude (DDMMSS) / Longitude (DDDMMSS) / 2 Digit ID (if needed)

13 Report To: Paul Sanchez/Pat McCasland

14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy
City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose: ☐ Compliance ■ NMED Monitoring ☐ Confirmation ☐ Special
■ Grab ☐ Composite _____ (Composite Time Period)
☐ Flow Proportioned ☐ Equal Aliquot ☐ Sample Split w/Permittee ☐ Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos/cm @ Temperature: 74 °F, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
☐ -Stream ☐ -Lake ☐ -Drain ☐ -Pool ☐ -WWTP
☐ -Entry Point to Distribution ☐ -Well; Depth: _____ ☐ -Spring ☐ -Distribution ■ -Other: old mudpit soil under

18 Field Remarks: Hydrocarbon Fuel Screen

19 Sample Type: ☐ - Water ☐ - Wastewater { ☐ - Unchlorinated ☐ - Chlorinated
■ - Soil, ☐ - Food, ☐ - Other _____
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
_____ - glass jug(s) (volume = _____ ml ea.)
_____ - _____ (volume = _____)

20 Preservation:
☐ - NP No Preservation; Sample stored at room temperature
☐ - P-Ice Sample stored in an ice bath (Not Frozen)
☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
☐ - Other CS_2 Extracting Agent

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
☐ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. _____

Other Specific Compounds or Classes:

☐ - ( ) _____
☐ - ( ) _____

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
■ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Remarks:

Please RETAIN A COPY of your completed form

STATE OF NEW MEXICO
DEPARTMENT OF HEALTH
SCIENTIFIC LABORATORY DIVISION
P.O. Box 4700
Albuquerque, NM 87196-4700
700 Camino de Salud, NE
[505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

September 27, 1993

Request ID No. 060021

ANALYTICAL REPORT
SLD Accession No. OR-93-2191

Distribution
(__) User 55802
(■) Submitter 536
(※) SLD Files

To: Paul Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88220

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993**

DEMOGRAPHIC DATA

COLLECTION
On: 1-Sep-93 *By:* San . . .
At: 10:02 hrs. *In/Near:* Carlsbad

LOCATION
Trench Swmu 006a Shsevpond L2

ANALYTICAL RESULTS: Aliphatic Hydrocarbon (>10 Carbons) Screen (751)

Parameter	Value	Note	MDL	Units
See Laboratory Remarks for Additional Information				

Notations & Comments:
MDL = Minimal Detectable Level.
A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.
Evidentiary Seals: Not Sealed[x]; Intact: No[ ], Yes[ ] & Broken By: _____ Date: _____

Laboratory Remarks: Waste Isolation Pilot Plant

Hydrocarbons found at concentrations less than 10 ppm were not reported.

HYDROCARBON FUEL SCREEN ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Soil Lab Sample ID: OR-93-2191
Sample wt/vol: 13.3 (g/mL) g SLD Batch No: 292
Level: (low/med) Low Date Received: 09/02/93
% Moisture: not dec. _____ dec. _____ Date Extracted: 09/10/93
Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 09/13/93
GPC Cleanup: (Y/N) No pH: _____ Dilution Factor: 1
Extraction Solvent: [illegible]

CONCENTRATION UNITS:
(mg/L or mg/Kg): mg/kg

RECEIVED
OCT 25 1993
NM ED WIPP Site

(Continued on page 2.)

This sample was analyzed for hydrocarbons in the C5 to C30 molecular weight range using Gas Chromatography with a Flame Ionization Detector (FID). Since the FID is a nonspecific detector, all compound identifications should be considered as tentative. An attempt has been made below to assign the hydrocarbons found in the sample to an appropriate fuel fraction when the gas chromatograhic fingerprint patter of the sample closely matches a fuel standard. When the hydrocarbons in the sample do not closely match any known specific fuel, the results wil be reported as a hydrocarbon range.

TENTATIVELY IDENTIFIED FUEL FRACTIONS

The following fuel fractions were tentatively identified by FID

FUEL FRACTION	CARBON RANGE	EST. CONC.	% of All H-C's
GASOLINE	C5-C12	ND	0.0
JP-4	C5-C15	ND	0.0
STODDARD SOLVENT	C9-C12	ND	0.0
KEROSENE/JET-A	C9-C19	ND	0.0
DIESEL FUEL	C10-C23	ND	0.0
LUBRICATING OIL	C19-C29	ND	0.0
UNKNOWN PATTERN	.	ND	0.0

SURROGATE RECOVERY:
1-Chlorotetradecane: 58.1% RECOVERY

SPIKE RECOVERY FOR BATCH:
Diesel Fuel at 108 mg/kg 101.2% RECOVERY

Analyst: _____ **Reviewed By:** _____

Nancy DeWitt
Analyst, Organic Chemistry

Richard F. Meyerhein 09/27/93
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. ORG3 2191 D

Date Received: 9-2-93

Request ID No. 060021-D

2 User Code #: 5 5 8 0 2	3 Request ID No.:	4 Priority Code #: 3	
5 Facility Name: Waste Isolation Pilot Plant	6 County: Eddy	7 City: Carlsbad	8 State: N M

9 Sample Location: TRENCH SWMU 006a SHSEV POND L2

10 Collected By: Paul Sanchez (First / Last) On: 93/9/1 (Date: YY/MM/DD) At: 1010 hr (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 0536 (Submitter) ____ (WSS #) ____ (Organization)

12 Latitude (DDMMSS) ____ Longitude (DDDMMSS) ____ 2 Digit if needed

13 Report To: Paul Sanchez/Pat McCasland

14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy
City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose: ■ Grab ☐ Composite ____ (Composite Time Per)
☐ Compliance ☐ Flow Proportioned
■ NMED Monitoring ☐ Equal Aliquot
☐ Confirmation ☐ Sample Split w/Permittee
☐ Special ☐ Chain of Custody

16 Field Data: pH: ____, Conductivity: ____ umhos/cm @ Temperature: 74 °F, Chlorine Residual: ____ mg/l, Flow: ____

17 Sample Source:
☐ Stream ☐ Entry Point to Distribution
☐ Lake ☐ Well; Depth: ____
☐ Drain ☐ Spring
☐ Pool ☐ Distribution
☐ WWTP ■ Other: mudpit

18 Field Remarks: Hydrocarbon Fuel Screen

19 Sample Type: ☐ Water ☐ Unchlorinated ☐ Chlorinated ☐ Wastewater ■ Soil, ☐ Food, ☐ Other ____
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
____ - glass jug(s) (volume = ____ ml ea.)
____ - ____ (volume = ____)

20 Preservation:
☐ NP No Preservation; Sample stored at room temperature
☐ P-Ice Sample stored in an ice bath (Not Frozen)
☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine resid
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
■ Other CS_2

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
☐ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. ____

Other Specific Compounds or Classes:

☐ - ( ) ____
☐ - ( ) ____

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
■ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Remarks:

Please RETAIN A COPY of your completed form

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. 1

Date Received:

2 User Code #: 5 5 8 0 2	3 Request ID No.:	Request ID No. 060021-D	4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant	6 County: Eddy	7 City: Carlsbad	8 State: NM

9 Sample Location: TRENCH SWMU 006a SHSE UP ON 02

10 Collected By: Paul Sanchez (First / Last) On: 93/9/1 (Date: YY/MM/DD) At: 1012 hr (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 05 36 (Submitter) - (WSS #) (Organization)

12 Latitude (DDMMSS) ° ' "
Longitude (DDDMMSS) ° ' " 2 Digit IC (if needed)

13 Report To: Paul Sanchez/Pat McCasland (Name)
14 Phone #: 505-887-8947
Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy
City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose: ☐ Compliance ● NMED Monitoring ☐ Confirmation ☐ Special
☐ Grab ☐ Composite _____ (Composite Time Per) ☐ Flow Proportioned ☐ Equal Aliquot ☐ Sample Split w/Permittee ☐ Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos/cm @ Temperature: 74 °F, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
☐ -Stream ☐ -Entry Point to Distribution
☐ -Lake ☐ -Well; Depth: _____
☐ -Drain ☐ -Spring
☐ -Pool ☐ -Distribution
☐ -WWTP ■ -Other: mudpit

18 Field Remarks: Hydrocarbon Fuel Screen

19 Sample Type: ☐ - Water ☐ - Wastewater { ☐ - Unchlorinated ☐ - Chlorinated
■ - Soil, ☐ - Food, ☐ - Other _____
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
_____ - glass jug(s) (volume = _____ ml ea.)
_____ - _____ (volume = _____)

20 Preservation:
☐ - NP No Preservation; Sample stored at room temperature
☐ - P-Ice Sample stored in an ice bath (Not Frozen)
☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residu
☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
■ - Other CS2

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
☐ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. _____

Other Specific Compounds or Classes:

☐ - ( ) _____
☐ - ( ) _____

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
■ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Remarks:

Please RETAIN A COPY of your completed form

STATE OF NEW MEXICO DEPARTMENT OF HEALTH
SCIENTIFIC LABORATORY DIVISION
P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

October 20, 1993

Request ID No. 060022

ANALYTICAL REPORT
SLD Accession No. OR-93-2188

Distribution
( ) User 55802
(■) Submitter 536
(※) SLD Files

To: Paul Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88221

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993**

DEMOGRAPHIC DATA

COLLECTION
On: 1-Sep-93 *By:* San . . .
At: 9:42 hrs. *In/Near:* Carlsbad

LOCATION
Trench Swmu 006a Shsevpond L1

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen (754)

Parameter	Value	Note	MDL	Units
EPA 601/2 Volatiles (60)	0.00	N	180.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified; T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed [X]; Intact: No [ ], Yes [ ] & Broken By: _____ Date: _____

Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Soil Lab Sample ID: OR-93-2188
Sample wt/vol: 15.42 (g/mL) g SLD Batch No: 291
Level: (low/med) Low Date Received: 09/02/93
% Moisture: not dec. 12.1 dec. N/A Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A Date Analyzed: 09/10/93
GPC Cleanup: (Y/N) No pH: Dilution Factor: 200
CONCENTRATION UNITS:
(ug/L or ug/Kg): ug/Kg

(Continued on page 2.)

This sample was analyzed for the following compounds using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	Q	PQL
67-64-1	Acetone		U	900.0
71-43-2	Benzene		U	180.0
108-86-1	Bromobenzene		U	180.0
74-97-5	Bromochloromethane		U	180.0
75-27-4	Bromodichloromethane		U	180.0
75-25-2	Bromoform		U	180.0
78-93-3	2-Butanone (MEK)		U	900.0
104-51-8	n-Butylbenzene		U	180.0
135-98-8	sec-Butylbenzene		U	180.0
98-06-6	tert-Butylbenzene		U	180.0
1634-04-4	tert-Butyl methyl ether (MTBE)		U	900.0
56-23-5	Carbon tetrachloride		U	180.0
108-90-7	Chlorobenzene		U	180.0
67-66-3	Chloroform		U	180.0
95-49-8	2-Chlorotoluene		U	180.0
106-43-4	4-Chlorotoluene		U	180.0
96-12-8	1,2-Dibromo-3-chloropropane		U	180.0
124-48-1	Dibromochloromethane		U	180.0
106-93-4	1,2-Dibromoethane		U	180.0
74-95-3	Dibromomethane		U	180.0
95-50-1	1,2-Dichlorobenzene		U	180.0
541-73-1	1,3-Dichlorobenzene		U	180.0
106-46-7	1,4-Dichlorobenzene		U	180.0
75-71-8	Dichlorodifluoromethane		U	180.0
75-34-3	1,1-Dichloroethane		U	180.0
107-06-2	1,2-Dichloroethane		U	180.0
75-35-4	1,1-Dichloroethene		U	180.0
156-59-4	cis-1,2-Dichloroethene		U	180.0
156-60-5	trans-1,2-Dichloroethene		U	180.0
78-87-5	1,2-Dichloropropane		U	180.0
142-28-9	1,3-Dichloropropane		U	180.0
590-20-7	2,2-Dichloropropane		U	180.0
563-58-6	1,1-Dichloropropene		U	180.0
1006-01-5	cis-1,3-Dichloropropene		U	180.0
1006-02-6	trans-1,3-Dichloropropene		U	180.0
100-41-4	Ethylbenzene		U	180.0
87-68-3	Hexachlorobutadiene		U	180.0
98-82-8	Isopropylbenzene		U	180.0
99-87-6	4-Isopropyltoluene		U	180.0

(Continued on page 3.)

75-09-2	Methylene chloride		U	180.0
90-12-0	1-Methylnaphthalene		U	180.0
91-57-6	2-Methylnaphthalene		U	180.0
91-20-3	Naphthalene		U	180.0
103-65-1	n-Propylbenzene		U	180.0
100-42-5	Styrene		U	180.0
630-20-6	1,1,1,2-Tetrachloroethane		U	180.0
79-34-5	1,1,2,2-Tetrachloroethane		U	180.0
127-18-4	Tetrachloroethene		U	180.0
109-99-9	Tetrahydrofuran (THF)		U	900.0
108-88-3	Toluene		U	180.0
87-61-5	1,2,3-Trichlorobenzene		U	180.0
120-82-1	1,2,4-Trichlorobenzene		U	180.0
71-55-6	1,1,1-Trichloroethane		U	180.0
79-00-5	1,1,2-Trichloroethane		U	180.0
79-01-6	Trichloroethene		U	180.0
75-69-4	Trichlorofluoromethane		U	180.0
96-18-4	1,2,3-Trichloropropane		U	180.0
95-63-6	1,2,4-Trimethylbenzene		U	180.0
108-67-8	1,3,5-Trimethylbenzene		U	180.0
75-01-4	Vinyl chloride		U	180.0
95-47-6	o-Xylene		U	180.0
N/A	p- & m-Xylene		U	180.0

* CONC = CONCENTRAION DETERMINED
  PQL = Practical Quantitation Limit (Approximately 10 times MDL)
* Q = Qualifier Definitions:

B - Indicates compound was detected in the Lab Blank as well as in the sample.
D - Indicates value taken from a secondary (diluted) sample analysis.
E - Indicates compound concentration exceeded the range of the standard curve.
J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
N - Indicates that more than one peak was used for quantitation.
U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

(Continued on page 4.)

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED	CONCENTRATION (PPB)
vinyl chloride	3400.0
1,1-dichloroethene	230.0
1,2-dichlorobenzene	1300.0

SURROGATE RECOVERIES:

SURROGATE	CONCENTRATION		% RECOVERY
Bromofluorobenzene	4500.0	ppb	129.0
2-Bromo-1-chloropropane	4500.0	ppb	87.3
m-Chlorotoluene	4500.0	ppb	78.8

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
vinyl chloride	50.0 ppb	41.6
chloroethane	52.4 ppb	49.3
methylene chloride	25.5 ppb	67.4
1,2-dichloroethane	25.5 ppb	78.1
dibromochloromethane	25.4 ppb	78.3
bromoform	24.8 ppb	79.5
1,1,2,2-tetrachloroethane	25.3 ppb	70.8

Analyst: Patrick R. Hoermann
Patrick R. Hoermann
Analyst, Organic Chemistry

Reviewed By: RFM
Richard F. Meyerhein 09/21/93
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

1 SLD No. ORGS 2188 D

Date Received: 9-2-93

2 User Code #: 5,5,8,0,2

3 Request ID No.: Request ID No. 060022-D

4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant

6 County: Eddy

7 City: Carlsbad

8 State: NM

9 Sample Location: T,R,E,N,C,H, ,S,W,M,U, ,0,0,6,a, ,S,H,S,E,V,P,O,N,D, ,L,I,

10 Collected By: Paul Sanchez (First / Last) On: 93/8/31 (Date: YY/MM/DD) At: 0914 hr (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 0,5,3,6 Submitter; WSS #; Organization

12 Latitude (DDMMSS) ° ' "
Longitude (DDDMMSS) ° ' " (2 Digit if needed)

13 Report To: Paul Sanchez/Pat McCasland

14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy

City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose: ☐ Compliance ■ NMED Monitoring ☐ Confirmation ☐ Special
■ Grab ☐ Composite ____ (Composite Time Period) ☐ Flow Proportioned ☐ Equal Aliquot ☐ Sample Split w/Permittee ☐ Chain of Custody

16 Field Data: pH: ____, Conductivity: ____ umhos/cm @ Temperature: 14 °C, Chlorine Residual: ____ mg/l, Flow: ____

17 Sample Source:
☐ -Stream ☐ -Entry Point to Distribution
☐ -Lake ☐ -Well; Depth: ____
☐ -Drain ☐ -Spring
☐ -Pool ☐ -Distribution
☐ -WWTP ■ -Other: mudpit - old

18 Field Remarks: VOC'S

19 Sample Type: ☐ - Water ☐ - Wastewater { ☐ - Unchlorinated ☐ - Chlorinated
■ - Soil, ☐ - Food, ☐ - Other ____
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
____ - glass jug(s) (volume = ____ ml ea.)
____ - ____ (volume = ____)

20 Preservation:
☐ - NP No Preservation; Sample stored at room temperature
☐ - P-Ice Sample stored in an ice bath (Not Frozen)
☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine resi
☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
■ - Other MeOH - preserved at SLD 8-27-9

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
■ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. ____

Other Specific Compounds or Classes:

☐ - ( ) ____
☐ - ( ) ____

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
☐ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Remarks:

SLD 8912-OR Revised 2/93

Please RETAIN A COPY of your completed for

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. 1 _____

Date Received: _____

2 User Code #: 5 5 8 0 2 | 3 Request ID No.: | Request ID No. 060022-D | 4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant | 6 County: Eddy | 7 City: Carlsbad | 8 Sta NM

9 Sample Location: TRENCH SWMU 006a SHSEV POND L1

10 Collected By: Paul Sanchez (First / Last) On: 93/8/31 (Date: YY/MM/DD) At: 0942 hr (Time: 24 hr. clock 3:00 pm = 1500 hrs.)

11 Codes: 0536 (Submitter) | WSS # | Organization

12 Latitude (DDMMSS) ° ' "
Longitude (DDDMMSS) ° ' " 2 Digit I

13 Report To: Name: Paul Sanchez/Pat McCasland | 14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy
City, State Zip: Carlsbad, NM 88220

15 Sampling Information:
Sample Purpose: ☐ Compliance ■ NMED Monitoring ☐ Confirmation ☐ Special
■ Grab ☐ Composite _____ (Compos time Per)
☐ Flow Proportioned ☐ Equal Aliquot ☐ Sample Split w/Permittee ☐ Chain of Custody

16 Field Data: pH: _____ , Conductivity: _____ umhos/cm @ Temperature: 74 °F Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
☐ -Stream ☐ -Lake ☐ -Drain ☐ -Pool ☐ -WWTP
☐ -Entry Point to Distribution ☐ -Well; Depth: _____ ☐ -Spring ☐ -Distribution ■ -Other: mud pit - old

18 Field Remarks: VOC'S

19 Sample Type: ☐ - Water ☐ - Wastewater { ☐ - Unchlorinated ☐ - Chlorinated
■ - Soil, ☐ - Food, ☐ - Other _____
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
_____ - glass jug(s) (volume = _____ ml ea.)
_____ - _____ (volume = _____)

20 Preservation:
☐ - NP No Preservation; Sample stored at room temperature
☐ - P-Ice Sample stored in an ice bath (Not Frozen)
☐ - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine resid
☐ - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
■ - Other MeOH - preserved at SLD 8-27-93

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
■ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. _____

Other Specific Compounds or Classes:

☐ - ( ) _____
☐ - ( ) _____

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
☐ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Remarks:

Please RETAIN A COPY of your completed form

STATE OF NEW MEXICO DEPARTMENT OF HEALTH
SCIENTIFIC LABORATORY DIVISION
P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

October 20, 1993

Request ID No. 060023

ANALYTICAL REPORT
SLD Accession No. OR-93-2189

Distribution
(_) User 55802
(■) Submitter 536
(※) SLD Files

To: Paul Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88221

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993** Soil

DEMOGRAPHIC DATA

COLLECTION		*LOCATION*
On: 1-Sep-93	*By:* San . . .	Trench Swmu 006a Shsevpond L2 w/map
At: 10:04 hrs.	*In/Near:* Carlsbad	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable [EPA-601/2] Screen (754)

Parameter	Value	Note	MDL	Units
EPA 601/2 Volatiles (60)	0.00	N	180.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified; T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed [✓]; Intact: No [ ], Yes [ ] & Broken By: _____ Date: _____

Laboratory Remarks:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Soil Lab Sample ID: OR-93-2189
Sample wt/vol: 13.44 (g/mL) g SLD Batch No: 291
Level: (low/med) Low Date Received: 09/02/93
% Moisture: not dec. 9.3 dec. N/A Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A Date Analyzed: 09/10/93
GPC Cleanup: (Y/N) No pH: _____ Dilution Factor: 200
CONCENTRATION UNITS:
(ug/L or ug/Kg): ug/Kg

(Continued on page 2.)

This sample was analyzed for the following compounds using EPA Methods 601 & 602

CAS NO.	COMPOUND	CONC.	Q	PQL
67-64-1	Acetone		U	900.0
71-43-2	Benzene		U	180.0
108-86-1	Bromobenzene		U	180.0
74-97-5	Bromochloromethane		U	180.0
75-27-4	Bromodichloromethane		U	180.0
75-25-2	Bromoform		U	180.0
78-93-3	2-Butanone (MEK)		U	900.0
104-51-8	n-Butylbenzene		U	180.0
135-98-8	sec-Butylbenzene		U	180.0
98-06-6	tert-Butylbenzene		U	180.0
1634-04-4	tert-Butyl methyl ether (MTBE)		U	900.0
56-23-5	Carbon tetrachloride		U	180.0
108-90-7	Chlorobenzene		U	180.0
67-66-3	Chloroform		U	180.0
95-49-8	2-Chlorotoluene		U	180.0
106-43-4	4-Chlorotoluene		U	180.0
96-12-8	1,2-Dibromo-3-chloropropane		U	180.0
124-48-1	Dibromochloromethane		U	180.0
106-93-4	1,2-Dibromoethane		U	180.0
74-95-3	Dibromomethane		U	180.0
95-50-1	1,2-Dichlorobenzene		U	180.0
541-73-1	1,3-Dichlorobenzene		U	180.0
106-46-7	1,4-Dichlorobenzene		U	180.0
75-71-8	Dichlorodifluoromethane		U	180.0
75-34-3	1,1-Dichloroethane		U	180.0
107-06-2	1,2-Dichloroethane		U	180.0
75-35-4	1,1-Dichloroethene		U	180.0
156-59-4	cis-1,2-Dichloroethene		U	180.0
156-60-5	trans-1,2-Dichloroethene		U	180.0
78-87-5	1,2-Dichloropropane		U	180.0
142-28-9	1,3-Dichloropropane		U	180.0
590-20-7	2,2-Dichloropropane		U	180.0
563-58-6	1,1-Dichloropropene		U	180.0
1006-01-5	cis-1,3-Dichloropropene		U	180.0
1006-02-6	trans-1,3-Dichloropropene		U	180.0
100-41-4	Ethylbenzene		U	180.0
87-68-3	Hexachlorobutadiene		U	180.0
98-82-8	Isopropylbenzene		U	180.0
99-87-6	4-Isopropyltoluene		U	180.0

(Continued on page 3.)

75-09-2	Methylene chloride		U	180.0
90-12-0	1-Methylnaphthalene		U	180.0
91-57-6	2-Methylnaphthalene		U	180.0
91-20-3	Naphthalene		U	180.0
103-65-1	n-Propylbenzene		U	180.0
100-42-5	Styrene		U	180.0
630-20-6	1,1,1,2-Tetrachloroethane		U	180.0
79-34-5	1,1,2,2-Tetrachloroethane		U	180.0
127-18-4	Tetrachloroethene		U	180.0
109-99-9	Tetrahydrofuran (THF)		U	900.0
108-88-3	Toluene		U	180.0
87-61-5	1,2,3-Trichlorobenzene		U	180.0
120-82-1	1,2,4-Trichlorobenzene		U	180.0
71-55-6	1,1,1-Trichloroethane		U	180.0
79-00-5	1,1,2-Trichloroethane		U	180.0
79-01-6	Trichloroethene		U	180.0
75-69-4	Trichlorofluoromethane		U	180.0
96-18-4	1,2,3-Trichloropropane		U	180.0
95-63-6	1,2,4-Trimethylbenzene		U	180.0
108-67-8	1,3,5-Trimethylbenzene		U	180.0
75-01-4	Vinyl chloride		U	180.0
95-47-6	o-Xylene		U	180.0
N/A	p- & m-Xylene		U	180.0

* CONC = CONCENTRAION DETERMINED
  PQL = Practical Quantitation Limit (Approximately 10 times MDL)
* Q = Qualifier Definitions:
B - Indicates compound was detected in the Lab Blank as well as in the sample.
D - Indicates value taken from a secondary (diluted) sample analysis.
E - Indicates compound concentration exceeded the range of the standard curve.
J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
N - Indicates that more than one peak was used for quantitation.
U - Indicates compound was analyzed for, but not detected above the concentration listed (Quantitation Limit).

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

(Continued on page 4.)

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED	CONCENTRATION (PPB)
vinyl chloride	3400.0
1,1-dichloroethene	230.0
1,2-dichlorobenzene	1300.0

SURROGATE RECOVERIES:

SURROGATE	CONCENTRATION		% RECOVERY
Bromofluorobenzene	4500.0	ppb	112.0
2-Bromo-1-chloropropane	4500.0	ppb	103.0
m-Chlorotoluene	4500.0	ppb	92.9

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
vinyl chloride	50.0 ppb	41.6
chloroethane	52.4 ppb	49.3
methylene chloride	25.5 ppb	67.4
1,2-dichloroethane	25.5 ppb	78.1
dibromochloromethane	25.4 ppb	78.3
bromoform	24.8 ppb	79.5
1,1,2,2-tetrachloroethane	25.3 ppb	70.8

Analyst: Patrick R. Hoermann
Patrick R. Hoermann
Analyst, Organic Chemistry

Reviewed By:
Richard F. Meyerhein 09/21/93
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. OR93 2189 D

Request ID No. 060023-D

Date Received: 9-2-93

2 User Code #: 5 5 8 0 2

3 Request ID No.:

4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant

6 County: Eddy

7 City: Carlsbad

8 Sta: NM

9 Sample Location: TRENCH SWMU 0069 SHSEV POND L2

10 Collected By: Paul Sanchez (First / Last) On: 93/09/01 (Date: YY/MM/DD) At: 1010 (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 0536 (Submitter) - (WSS #) (Organization)

12 Latitude (DDMMSS) Longitude (DDDMMSS) 2 Digit (if neces

13 Report To: Paul Sanchez/Pat McCasland

14 Phone #: 505-887-8947

Address: NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy

City, State Zip: Carlsbad, NM 88220

15 Sample Purpose:
- [ ] Compliance
- [x] NMED Monitoring
- [ ] Confirmation
- [ ] Special

Sampling Information:
- [x] Grab
- [ ] Composite (Comp Time P
- [ ] Flow Proportioned
- [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos/cm @ Temperature: 74 °F. Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [ ] -Stream
- [ ] -Lake
- [ ] -Drain
- [ ] -Pool
- [ ] -WWTP
- [ ] -Entry Point to Distribution
- [ ] -Well; Depth: _____
- [ ] -Spring
- [ ] -Distribution
- [x] -Other: mudpthold

18 Field Remarks:

19 Sample Type:
- [ ] - Water
- [ ] - Wastewater
- [ ] - Unchlorinated
- [ ] - Chlorinated
- [x] - Soil, [ ] - Food, [ ] - Other _____

This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
_____ - glass jug(s) (volume = _____ ml ea.)
_____ - _____ (volume = _____)

20 Preservation:
- [ ] - NP No Preservation; Sample stored at room temperature
- [ ] - P-Ice Sample stored in an ice bath (Not Frozen)
- [ ] - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine res
- [ ] - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
- [ ] - P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
- [x] - Other MeOH - preserved at SLD 8-27-

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

- [ ] - (753) Aliphatic Headspace (Qualitative Screen)
- [x] - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
- [ ] - (765) Mass Spectrometer Purgeables (EPA 624)
- [ ] - (766) SDWA Total Trihalomethanes (EPA 501.1)
- [ ] - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
- [ ] - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
- [ ] - (790) Composite Sample for Analysis No. _____

Other Specific Compounds or Classes:

- [ ] - ( ) _____
- [ ] - ( ) _____

Semivolatile Screens:

- [ ] - (755) Base/Neutral Extractables (EPA 625)
- [ ] - (756) Base/Neutral/Acid Extractables (EPA 8270
- [ ] - (772) Carbamate Pesticides (EPA 531.1)
- [ ] - (758) Herbicides, Chlorophenoxy Acid (EPA 515.
- [ ] - (759) Herbicides, Triazine (EPA 507)
- [ ] - (751) Hydrocarbon Fuel Screen (EPA M-8015)
- [ ] - (760) Organochlorine Pesticides (EPA 505)
- [ ] - (761) Organophosphate Pesticides (EPA 507)
- [ ] - (767) Polychlorinated Biphenyls (PCB's) In Oil
- [ ] - (762) SDWA Synthetic Org. Cmpds. (SLD 758/7
- [ ] - (782) Total Petroleum Hydrocarbons (EPA 418.1

Remarks:

Please RETAIN A COPY of your completed f

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. 1

Date Received:

Request ID No. 060023-D

2 User Code #: 5 5 8 0 2

3 Request ID No.:

4 Priority Code #: 3

5 Facility Name: Waste Isolation Pilot Plant

6 County: Eddy

7 City: Carlsbad

8 Sta

9 Sample Location: TRENCH SWMU 0069 SHSEVPON0 L2

10 Collected By: Paul Sanchez (First / Last) On: 93/9/1 Date: (YY/MM/DD) At: 1004 hr Time: 24 hr. clock 3:00 pm = 1500 hrs.

11 Codes: 0 5 3 6 Submitter; WSS #; Organization

12 Latitude (DDMMSS); Longitude (DDDMMSS); 2 Digit If needed

13 Report To: Name Paul Sanchez/Pat McCasland

14 Phone #: 505-887-8947

Address NMED/HRMB/WIPP Oversight
PO Box 3090/WIPP Site/Jal Hwy
City, State Zip Carlsbad, NM 88220

15 Sample Purpose: ☐ Compliance ■ NMED Monitoring ☐ Confirmation ☐ Special

Sampling Information: ■ Grab ☐ Composite ☐ Flow Proportioned ☐ Equal Aliquot ☐ Sample Split w/Permittee ☐ Chain of Custody

16 Field Data: pH: ______, Conductivity: ______ umhos/cm @ Temperature: 74 °F Chlorine Residual: ______ mg/l, Flow: ______

17 Sample Source:
☐ Stream ☐ Lake ☐ Drain ☐ Pool ☐ WWTP
☐ Entry Point to Distribution ☐ Well; Depth: ______ ☐ Spring ☐ Distribution ■ Other: mud pond

18 Field Remarks:

19 Sample Type: ☐ Water ☐ Wastewater {☐ Unchlorinated ☐ Chlorinated
■ Soil, ☐ Food, ☐ Other
This form accompanies a single sample consisting of:
3 - septum vial(s) (volume = 40 ml ea.)
___ - glass jug(s) (volume = ___ ml ea.)
___ - ___ (volume = ___)

20 Preservation:
☐ NP No Preservation; Sample stored at room temperature
☐ P-Ice Sample stored in an ice bath (Not Frozen)
☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residu
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ P-$HgCl_2$ Sample Preserved with 20 mg/l Mercuric Chloride
■ Other MeOH - preserved at SLD 8-27-93

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required, and note below whenever highly contaminated samples are suspected.

Volatile Screens:

☐ - (753) Aliphatic Headspace (Qualitative Screen)
■ - (754) Aromatic & Halogenated Purgeables (EPA 601/2)
☐ - (765) Mass Spectrometer Purgeables (EPA 624)
☐ - (766) SDWA Total Trihalomethanes (EPA 501.1)
☐ - (774) SDWA VOC's I [21 REGULATED +] (EPA 502.2)
☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)
☐ - (790) Composite Sample for Analysis No. ______

Semivolatile Screens:

☐ - (755) Base/Neutral Extractables (EPA 625)
☐ - (756) Base/Neutral/Acid Extractables (EPA 8270)
☐ - (772) Carbamate Pesticides (EPA 531.1)
☐ - (758) Herbicides, Chlorophenoxy Acid (EPA 515.1)
☐ - (759) Herbicides, Triazine (EPA 507)
☐ - (751) Hydrocarbon Fuel Screen (EPA M-8015)
☐ - (760) Organochlorine Pesticides (EPA 505)
☐ - (761) Organophosphate Pesticides (EPA 507)
☐ - (767) Polychlorinated Biphenyls (PCB's) in Oil
☐ - (762) SDWA Synthetic Org. Cmpds. (SLD 758/760)
☐ - (782) Total Petroleum Hydrocarbons (EPA 418.1)

Other Specific Compounds or Classes:

☐ - ( ) ______
☐ - ( ) ______

Remarks:

SLD 8912-OR Revised 2/93

Please RETAIN A COPY of your completed form

STATE OF NEW MEXICO DEPARTMENT OF HEALTH

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
AIR & HEAVY METALS SECTION [505]-841-2553

February 14, 1994

Request ID No. 060024

ANALYTICAL REPORT
SLD Accession No. IC-93-0776

Distribution
( ) User 55802
(X) Submitter 536
(x) SLD Files

To: P. Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88221

From: Air & Heavy Metals Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993**

User:
ED Har. & Rad. Materials Bur.
ED DOE Project, H&R Materials
P.O. Box 26110
Santa Fe, NM 87502

RECEIVED
FEB 2 2 1994
NM ED WIPP Site

DEMOGRAPHIC DATA

COLLECTION		*LOCATION*
On: 1-Sep-93	*By:* San . . .	Trench Swmu 006a Shsevpond L1
At: 9:44 hrs.	*In/Near:* Carlsbad	

ANALYTICAL RESULTS in uG/Gram

Analysis	Value	Analysis	Value	Analysis	Value
Aluminum	>9999.99	Copper	< 5.00	Silver	< 5.00
Barium	37.00	Iron	9160.00	Strontium	6.70
Beryllium	< 5.00	Lead	< 5.00	Tin	< 5.00
Boron	< 5.00	Magnesium	1450.00	Vanadium	14.00
Cadmium	< 5.00	Manganese	41.00	Zinc	17.00
Calcium	270.00	Molybdenum	< 5.00	Arsenic	1.3000 1/c
Chromium	9.30	Nickel	5.50	Chromium	> 9.9999 1/c
Cobalt	< 2.50	Silicon	280.00	Lead	4.8300 1/c

Laboratory Remarks: Digested. % Solids = 84.8
Aluminum = 11,940.0 ug/g
Chromium = 10.0 ug/g

lc P. 1/4/94

Reviewed By: Jim F. Ashby 02/14/94
Supervisor, Air & Heavy Metals Section

AIR & HEAVY METALS ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Air & Heavy Metals Section - Telephone: (505) 841-2553

SLD No. [1]
Date Received:

[2] User Code #: 515802
[3] Request ID No.: Request ID No. 060024-B
[4] Priority Code #: 3

[5] Facility Name: Waste Isolation Pilot Plant
[6] County: Eddy
[7] City: Carlsbad 26 miles East
[8] State: NM

[9] Sample Location: TRENCH SWMU 0062 SHSEVPOND 1-1

[10] Collected By: Paul Sanchez (First / Last) On: 93/9/1 Date: (YY/MM/DD) At: 0944 hrs Time: 24 hr. clock 3:00 pm = 1500 hrs.

[11] Codes: 5136 Submitter; WSS #; Organization

[12] Latitude (DDMMSS); Longitude (DDDMMSS); 2 Digit ID (if needed)

[13] Report To: Name: Paul Sanchez
[14] Phone #: 887-3947
Address: PO Box 3090
WIPP Site
City, State Zip: Carlsbad New Mexico 88220

[15] Sample Purpose:
- ☐ Compliance
- ☐ Check
- ☒ Monitoring
- ☐ Special

Sampling Information:
- ☒ Grab
- ☐ Composite (Composite Time Period)
- ☐ Flow Proportioned
- ☐ Equal Aliquot
- ☐ Sample Split w/Permittee
- ☐ Chain of Custody

[16] Field Data: pH: ____ , Conductivity: ____ umhos @ ____ °C, Temperature: 74 °F, Chlorine Residual: ____ mg/l, Flow: ____

[17] Sample Source:
- ☐ Stream
- ☐ Lake
- ☐ Drain
- ☐ Pool
- ☐ WWTP
- ☐ Well; Depth: ____
- ☐ Spring
- ☐ Distribution
- ☐ Point-of-Entry
- ☒ Other: mud pit

[18] Field Notes/ Sample #:

[19] Sample Type: ☐ Water, ☒ Soil, ☐ Food, ☐ Wastewater, ☐ Other ____

This form accompanies a single sample consisting of:
- ____ 1 liter cubitainers (1 quart)
- ____ 4 liter cubitainers (1 gallon)
- 1 - 8 OZ Bag

[20] Preservation:
- ☐ WNF Water Not Preserved; Filtered
- ☐ WNN Water Not Preserved; Not Filtered
- ☐ WPF Water Preserved with Nitric Acid (HNO3); Filtered
- ☐ WPN Water Preserved with Nitric Acid; Not Filtered
- ☐ WNL Water Not Preserved in Field; Please Add HNO3 at Lab
- ☐ ICE Water Iced
- ☐ Other

[21] Analyses Requested: Please check the appropriate box(es) below to indicate the type of analyses required.

- ☒ (704) ICAP Scan
- ☐ (720) SDWA Group I Only
- ☐ (721) SDWA Group I + other parameter(s) marked below

☐ Aluminum	☒ Lead	☐ Vanadium
☒ Arsenic	☐ Manganese	☐ Zinc
☐ Barium	☐ Mercury	☐
☐ Cadmium	☐ Molybdenum	☐
☒ Chromium	☐ Nickel	☐
☐ Cobalt	☐ Selenium	☐
☐ Copper	☐ Silver	☐
☐ Iron	☐ Uranium	☐

Remarks: Lead - use Furnace
chromium - Use Furnace
Arsenic

SLD 8912-HM Form New 12/89 This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

STATE OF NEW MEXICO DEPARTMENT OF HEALTH

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700 **700 Camino de Salud, NE**
Albuquerque, NM 87196-4700 **[505]-841-2500**
AIR & HEAVY METALS SECTION [505]-841-2553

February 14, 1994

Request ID No. 060025

ANALYTICAL REPORT
SLD Accession No. IC-93-0777

Distribution
( ) User 55802
(X) Submitter 536
(X) SLD Files

To: P. Sanchez
ED - DOE Project; Carlsbad
NM - Envir. Dept.; WIPP
P.O. Box 3090
Carlsbad, NM 88221

From: Air & Heavy Metals Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A soil sample submitted to this laboratory on September 2, 1993**

User:
ED Har. & Rad. Materials Bur.
ED DOE Project, H&R Materials
P.O. Box 26110
Santa Fe, NM 87502

RECEIVED
FEB 2 2 1994
NM ED WIPP Site

DEMOGRAPHIC DATA

COLLECTION		*LOCATION*
On: 1-Sep-93	*By:* San . . .	Trench Swmu 006a Shsevpond L2
At: 10:08 hrs.	*In/Near:* Carlsbad	

ANALYTICAL RESULTS in uG/Gram

Analysis	Value	Analysis	Value	Analysis	Value
Aluminum	>9999.99	Copper	< 5.00	Silver	< 5.00
Barium	31.00	Iron	7420.00	Strontium	8.00
Beryllium	< 5.00	Lead	< 5.00	Tin	< 5.00
Boron	< 5.00	Magnesium	1320.00	Vanadium	9.10
Cadmium	< 5.00	Manganese	41.70	Zinc	15.00
Calcium	410.00	Molybdenum	< 5.00	Arsenic	1.2000%
Chromium	8.40	Nickel	6.30	Chromium	9.8000%
Cobalt	< 2.50	Silicon	350.00	Lead	3.5400%

Laboratory Remarks: Digested. % Solids = 89.1
Aluminum = 10,690.0 ug/g

ICP. 1/4/94

Reviewed By:
Jim F. Ashby 02/14/94
Supervisor, Air & Heavy Metals Section

AIR & HEAVY METALS ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Air & Heavy Metals Section - Telephone: (505) 841-2553

1 SLD No.
Date Received:

2 User Code #: 1515181012
3 Request ID No.: Request ID No. 060025-B
4 Priority Code #: 3 (If "1" or "2", call EID-SLD Coordinator)

5 Facility Name: Waste Isolation Pilot Plant
6 County: Eddy
7 City: Carlsbad 26 miles East
8 State: NM

9 Sample Location: TRENCH SWMU 006a SHSEVPOND L2

10 Collected By: Paul (First) SANCHEZ (Last) On: 93/9/1 Date: (YY/MM/DD) At: 1008 hrs Time: 24 hr. clock 3:00 pm = 1500 hrs.

11 Codes: 5316 Submitter; WSS #; Organization

12 Latitude (DDMMSS) 2 Digit ID (if needed)
Longitude (DDDMMSS)

13 Report To: Name Paul Sanchez
14 Phone #: 887-9947
Address PO Box 3090
WIPP Site
City, State Zip Carlsbad New Mexico 88220

15 Sample Purpose:
- ☐ Compliance
- ☐ Check
- ■ Monitoring
- ☐ Special

Sampling Information:
- ■ Grab
- ☐ Composite ____ Composite Time Period
- ☐ Flow Proportioned
- ☐ Equal Aliquot
- ☐ Sample Split w/Permittee
- ☐ Chain of Custody

16 Field Data: pH: ____, Conductivity: ____ umhos @ ____ °C, Temperature: 74 °F, Chlorine Residual: ____ mg/l, Flow: ____

17 Sample Source:
- ☐ Stream
- ☐ Lake
- ☐ Drain
- ☐ Pool
- ☐ WWTP
- ☐ Well; Depth: ____
- ☐ Spring
- ☐ Distribution
- ☐ Point-of-Entry
- ■ Other: Evaporation Pond

18 Field Notes/ Sample #:

19 Sample Type: ☐ Water, ■ Soil, ☐ Food, ☐ Wastewater, ☐ Other ____

This form accompanies a single sample consisting of:
____ - 1 liter cubitainers (1 quart)
____ - 4 liter cubitainers (1 gallon)
1 - 8 oz plastic bag

20 Preservation:
- ☐ WNF Water Not Preserved; Filtered
- ☐ WNN Water Not Preserved; Not Filtered
- ☐ WPF Water Preserved with Nitric Acid (HNO3); Filtered
- ☐ WPN Water Preserved with Nitric Acid; Not Filtered
- ☐ WNL Water Not Preserved in Field; Please Add HNO3 at Lab
- ☐ ICE Water Iced
- ☐ Other ____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analyses required.

- ■ (704) ICAP Scan
- ☐ (720) SDWA Group I Only
- ☐ (721) SDWA Group I + other parameter(s) marked below

☐ Aluminum	■ Lead	☐ Vanadium
■ Arsenic	☐ Manganese	☐ Zinc
☐ Barium	☐ Mercury	☐ ____
☐ Cadmium	☐ Molybdenum	☐ ____
■ Chromium	☐ Nickel	☐ ____
☐ Cobalt	☐ Selenium	☐ ____
☐ Copper	☐ Silver	☐ ____
☐ Iron	☐ Uranium	☐ ____

Remarks: Lead, Chromium, Arsenic } use Furnace

SLD 8912-HM Form New 12/89 This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

New Mexico Environment Department
DOE/WIPP Oversight
TEST PIT/AUGERED BORING LOG AND DATA SHEET

Project No. ________	**Location.** Eng Building Location #1	**Boring No.** (covering) Trench	**Sheet** 1 **of** 1

Feature. Trench
Date (Time) Logged. 9-1-93
Area Designation. trench - Engineers bldg
Method. Hand Dug / Existing Trench
Logged By. PZS
Monitoring. ________

Depth and Soil Clasification	Graphic Log	Sample Taken	Description of Materials Visual Observations	OVA
			Sand+Gravel: Dark grey brown, poorly sorted, dense med to coarse sand and 3/8" pea gravel, moist, moist porous, Artificial compacted fill - Grey gravel	
1.0			Sand + Gravel: Light grey brown, poorly sorted, dense, med to coarse sand and 3/8" to 3/4" Gravel, moist, porous, Sharp layered contact top and bottom,	
2.0			Artificial compacted fill - 40% Gravel Sand + Gravel - Tan brown, poorly sorted dense silty, fine to coarse sand, occasional angular gravels 1-2" in diameter, moist, porous; Recompacted Sand + caliche/sand fill	
3.0			Sand: Dark Red Brown, Fine to med, moist to wet, loose porous, no odor looks clean, except at Transition with overlying Fill there are inclusions of Fill in Sand	PP Horse
4.0		Amphibles VOCs Heavy metals	Natural Undisturbed Dune Sand	
5.0				

Remarks: Sample Location #1

Augered Boring ~ **(ID) Continued** SAMPLE Location #2

Sheet 1 **of** 1

Depth and Soil Clasification	Graphic Log	Sample Taken	Description of Materials Visual Observations	OVA
			Sand + Gravel: Dark Grey Brown, poorly sorted dense, med to coarse Sand, 1" and 1/4"-3/4" ~~pea~~ gravel, moist; porous, Artificial compacted Fill - 70% Gravel	
1.0				
2.0				
3.0			10 mil Fibrous Holding Pond Plastic Liner (see Photo) sloping contact, fill above / transition zone SAND: Dark Red Brown, Fine to med, moist, v. dense, porous no odor - looks clean	
4.0			Natural undisturbed Dune Sand probably at southern limit of Former Holding Pond, with remnant of holding pond Fill forming steep contact.	
5.0				

Remarks:

BRUCE KING
GOVERNOR

State of New Mexico

ENVIRONMENT DEPARTMENT

Hazardous and Radioactive Materials Bureau
DOE Oversight and Monitoring
WIPP Project Site
PO Box 3090
Carlsbad, New Mexico 88221
1-505-887-8947

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

Jim Mewhinney, Program Manager, (NMED/WPSO POC) 8-24-93
U.S. Department of Energy
Environmental, Safety and Health
Waste Isolation Pilot Plant
P.O. Box 3090
Carlsbad, New Mexico 88221

Subject: Plan to sample trench adjacent to Engineering Building in former location of the Salt Shaft Holding Pond.

As agreed in the site protocol, NMED/WIPP staff are notifying DOE of our plans to sample a trench that will be cutting the former location of the salt shaft holding pond. Due to the short time frame in which we learned of this trench, we are not able to give DOE a full two weeks notice. In conjunction with the Final Grade engineering drawings I will be retrieving from Engineering, I hope to verify the closure of this SWMU. I will again require a camera for the sampling event. Staff are preparing a short sampling and analysis plan (SAP), as a guide to the sampling event. The attached table identifies the targeted analytes. I've taken the liberty of giving Warren Bodily an advanced notice of our plans. Please call myself or Pat McCasland at 887-8947 if there are any questions.

Respectfully,

Paul E. Sanchez , GEO III
NMED/WIPP DOE Oversight

cc w/o enclosure:
J. Parker, NMED, HRMB
S. Warren, WPSO, ASI
R. Mayer, EPA Region 6

Proposed Sampling 8-30-93

Soil Sample Analyses	Sample Sets	Sample Set Contents	Field-Extracted Vials
Aromatic Halogenated Purgeables	2	Set Contains 3 40-ml Vials	2-methyl alcohol 1-empty vial
Aliphatic Hydrocarbons	2	Set Contains 3 40-ml Vials	2-carbon disulfide 1- empty vial

New Mexico Environment Department

DOE/WIPP Oversight

Record of Photographs

Film Type: Polaroid
Photographer: P. Sanchez

Project Code: 550040

Photo	Date	Time	Weather	Location	Description
1	9-1-93	9:00AM	Sunny	Trench	Sample Location # 1 close-up
2	"	9:01 AM	"	"	Sample Location #1 Trench Depth
3	"	9:08AM	"	"	Sample Location # 1 ~~set~~ Fill/Native transition
4	"	9:15 AM	"	"	Sample Location #2 Trench Depth
5	"	9 16 AM	"	"	Sample Location # 1 Trench View East
6	"	9:17 AM	"	"	Sample Location # 2 Plastic Liner
7	"	9:36 AM	"	"	General Trench- View West
8	"	9:34 AM	"	"	General Trench- View of ~~West~~ END
9	"	9 32 AM	"	"	General Trench X section

6-93

course

s

with

ile

es

Fine-grained

sand

Triassic

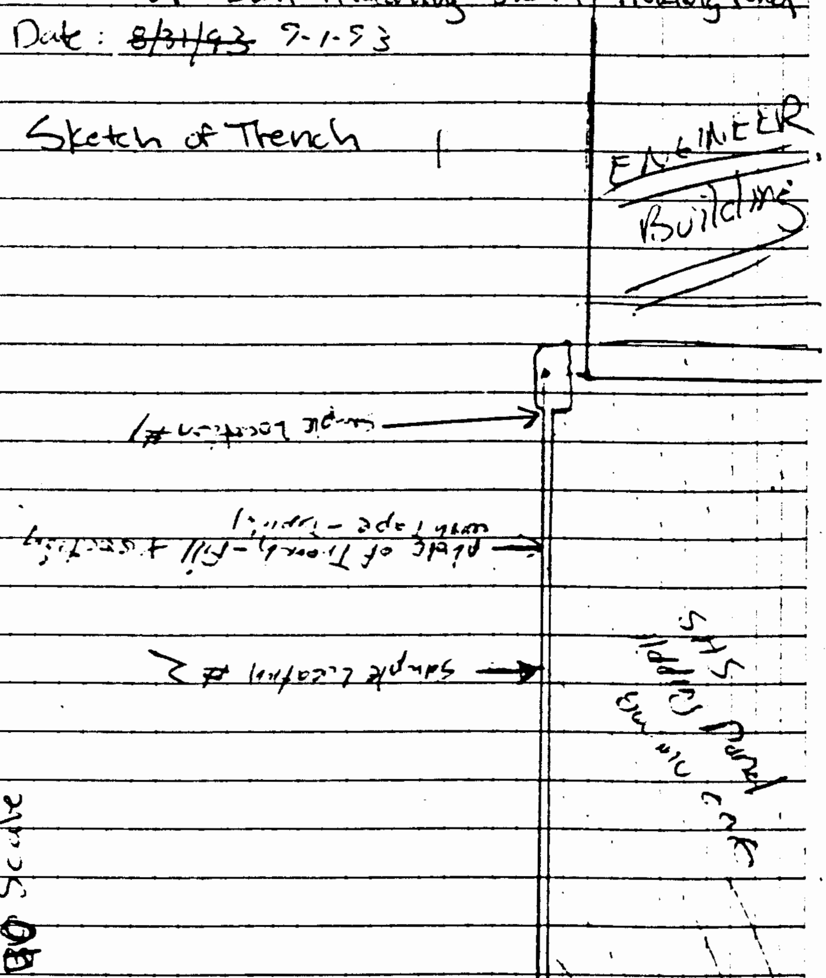
Triassic

Trench Sampling

* cuts across southern Tip of Salt Handling Shaft Holding Pond

Date: ~~8/31/93~~ 9-1-93

Sketch of Trench



P. Macdonald, S. Jones, ... collected

Samples a day after

Heavy Rains Puddled in

Trench – Samples collected in native sand, Fill located

Fill / Native

Appendix D

Representative Analytical Data from Waste Handling Shaft Sump Brine Water and Muck Samples

Halliburton NUS
CORPORATION

NUS LABORATORY
5350 Campbells Run Road
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March 06, 1996
Report No.: 00029730
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-067
NUS SAMPLE NO: P0335814
P.O. NO.: 500101 Brine
WSS Lead Water / Barrel No. 96-031 — 96-035

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	1490	pH	1	7.3

COMMENTS:

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March 06, 1996
Report No.: 00029730
Section A Page 2

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-067 TCLP
NUS SAMPLE NO: P0335815
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Jeanne

WSS Brine Water Barrel Nos. 96-031 — 96-035

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction		
		Final Leachate pH		7.5
2	AAGL	Silver, Leachable (Ag)	100	< 1 mg/L
4	ABAL	Barium, Leachable (Ba)	100	5.6 mg/L
5	ACDL	Cadmium, Leachable (Cd)	100	< 0.5 mg/L
6	ACRL	Chromium, Leachable (Cr)	100	< 2 mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004 mg/L
8	APBL	Lead, Leachable (Pb)	100	6 mg/L
10	AASA	Arsenic, Total (As)		
		Arsenic, Leachable (As)	100	< 0.3 mg/L
11	ASEA	Selenium, Total (Se)		
		Selenium, Leachable (Se)	200	< 0.8 mg/L

COMMENTS:

1 This sample was less than 0.5% solid, thus the sample was filtered, not extracted.

3 Elevated detection limits are reported for arsenic, silver, cadmium, chromium, mercury and selenium due to sample matrix interference.

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March 06, 1996
Report No.: 00029730

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-068
NUS SAMPLE NO: P0335816
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	1490	pH	1	7.6	

COMMENTS:

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March 06, 1996
Report No.: 00029730

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-068 TCLP
NUS SAMPLE NO: P0335817
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Jeane

WSS Brine Water Barrel Nos. 96-036 — 96-03

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	S903	TCLP Bottle Extraction			
		Begin Date/Time		02/22(1300)	
		End Date/Time		02/23(0700)	
		Extraction Fluid		2	
		Final Leachate pH		7.4	
2	AAGL	Silver, Leachable (Ag)	10	< 0.1	mg/L
3	AASL	Arsenic, Leachable (As)	10	< 1	mg/L
4	ABAL	Barium, Leachable (Ba)	10	1.6	mg/L
5	ACDL	Cadmium, Leachable (Cd)	10	< 0.05	mg/L
6	ACRL	Chromium, Leachable (Cr)	10	< 0.2	mg/L
7	AMGL	Mercury, Leachable (Hg)	4	< 0.0004	mg/L
8	APBL	Lead, Leachable (Pb)	10	0.7	mg/L
9	ASEL	Selenium, Leachable (Se)	10	< 1	mg/L

COMMENTS:

2 Elevated detection limits are reported for silver, arsenic, cadmium, chromium, mercury and selenium due to sample matrix interference.

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March 06, 1996
Report No.: 00029730

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-069
NUS SAMPLE NO: P0335818
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	1490	pH	1	7.1

COMMENTS:

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March 06, 1996
Report No.: 00029730

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-069 TCLP
NUS SAMPLE NO: P0335819
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

Borehole water from WSS Barrel No. 96-040

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction		
		Final Leachate pH		7.1
2	AAGL	Silver, Leachable (Ag)	100	< 1 mg/L
4	ABAL	Barium, Leachable (Ba)	100	3.5 mg/L
5	ACDL	Cadmium, Leachable (Cd)	100	< 0.5 mg/L
6	ACRL	Chromium, Leachable (Cr)	100	< 2 mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004 mg/L
8	APBL	Lead, Leachable (Pb)	100	14 mg/L
10	AASA	Arsenic, Total (As)		
		Arsenic, Leachable (As)	100	< 0.3 mg/L
11	ASEA	Selenium, Total (Se)		
		Selenium, Leachable (Se)	200	< 0.8 mg/L

COMMENTS:

1 This sample was less than 0.5% solid, thus the sample was filtered, not extracted.

2 Elevated detection limits are reported for silver, arsenic, cadmium, chromium, mercury and selenium due to sample matrix interference.

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Report No.: 00029730

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-070
NUS SAMPLE NO: P0335820
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Jeanne

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	1490	pH	1	7.1	

COMMENTS:

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March 06, 1996
Report No.: 00029730
Section A Page 8

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-070 TCLP
NUS SAMPLE NO: P0335821
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

WSS Brine Water Barrel No. 96-029, 96-030

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction Final Leachate pH		7.1
2	AAGL	Silver, Leachable (Ag)	100	< 1 mg/L
4	ABAL	Barium, Leachable (Ba)	100	6.4 mg/L
5	ACDL	Cadmium, Leachable (Cd)	100	< 0.5 mg/L
6	ACRL	Chromium, Leachable (Cr)	100	< 2 mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004 mg/L
8	APBL	Lead, Leachable (Pb)	100	11 mg/L
10	AASA	Arsenic, Total (As)	100	< 0.3 mg/L
11	ASEA	Selenium, Total (Se)	200	< 0.8 mg/L

COMMENTS:

1 This sample was less than 0.5% solid, thus the sample was filtered, not extracted.

2 Elevated detection limits are reported for silver, arsenic, cadmium, chromium, mercury and selenium due to sample matrix interference.

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March 06, 1996
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LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-071
NUS SAMPLE NO: P0335822
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	1490	pH	1	7.4	

COMMENTS:

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March 06, 1996
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LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-071 TCLP
NUS SAMPLE NO: P0335823
P.O. NO.: 500101

DATE SAMPLED: 20-FEB-96
DATE RECEIVED: 21-FEB-96
APPROVED BY: Simanic, Joanne

WSS Brine Water 96-043, 96-044

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction Final Leachate pH		7.4
2	AAGL	Silver, Leachable (Ag)	100	< 1 mg/L
4	ABAL	Barium, Leachable (Ba)	100	8.6 mg/L
5	ACDL	Cadmium, Leachable (Cd)	100	< 0.5 mg/L
6	ACRL	Chromium, Leachable (Cr)	100	< 2 mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004 mg/L
8	APBL	Lead, Leachable (Pb)	100	8 mg/L
10	AASA	Arsenic, Total (As)	100	< 0.3 mg/L
11	ASEA	Selenium, Total (Se)	200	< 0.8 mg/L

COMMENTS:

1 This sample was less than 0.5% solid, thus the sample was filtered, not extracted.

2 Elevated detection limits are reported for silver, arsenic, cadmium, chromium, mercury and selenium due to sample matrix interference.

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March 05, 1996
Report No.: 00029705

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-073 TCLP
NUS SAMPLE NO: P0335971
P.O. NO.: 500101

DATE SAMPLED: 21-FEB-96
DATE RECEIVED: 26-FEB-96
APPROVED BY: Simanic, Joanne

W35 muck pile N of site

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	S903	TCLP Bottle Extraction			
		Begin Date/Time		02/27(1315)	
		End Date/Time		02/28(0700)	
		Extraction Fluid		1	
		Final Leachate pH		6.7	
2	AAGL	Silver, Leachable (Ag)	2	< 0.02	mg/L
3	AASL	Arsenic, Leachable (As)	2	0.5	mg/L
4	ABAL	Barium, Leachable (Ba)	2	0.45	mg/L
5	ACDL	Cadmium, Leachable (Cd)	2	0.018	mg/L
6	ACRL	Chromium, Leachable (Cr)	2	< 0.04	mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004	mg/L
8	APBL	Lead, Leachable (Pb)	2	0.12	mg/L
9	ASEL	Selenium, Leachable (Se)	2	< 0.2	mg/L

COMMENTS:

2 Elevated detection limits are reported on silver, chromium, mercury and selenium due to sample matrix interference.

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March 05, 1996
Report No.: 00029705

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
SAMPLE ID: WST-96-074 TCLP
NUS SAMPLE NO: P0335972

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS

COMMENTS:

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March 05, 1996
Report No.: 00029705

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-075 TCLP
NUS SAMPLE NO: P0335973
P.O. NO.: 500101

DATE SAMPLED: 21-FEB-96
DATE RECEIVED: 26-FEB-96
APPROVED BY: Simanic, Joanne

WSS Munk Rq. Site (Sanitary file).

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction		
		Begin Date/Time		02/27(1315)
		End Date/Time		02/28(0700)
		Extraction Fluid		1
		Final Leachate pH		6.8
2	OTCLP	SEMIVOLATILES - TCLP		
		1,4-dichlorobenzene [p-dichlorobenzene]	10	< 0.1 mg/L
		2,4,5-trichlorophenol	10	< 0.5 mg/L
		2,4,6-trichlorophenol	10	< 0.1 mg/L
		2,4-dinitrotoluene	10	< 0.1 mg/L
		2-methylphenol [o-cresol]	10	< 0.1 mg/L
		3/4-methylphenol (m-cresol/p-cresol)	10	< 0.1 mg/L
		hexachlorobenzene	10	< 0.1 mg/L
		hexachlorobutadiene	10	< 0.1 mg/L
		hexachloroethane	10	< 0.1 mg/L
		nitrobenzene	10	< 0.1 mg/L
		pentachlorophenol	10	< 0.5 mg/L
		pyridine	10	< 0.1 mg/L
8	S904	Zero Headspace Extraction [ZHE]		
		Begin Date/Time		02/27(1240)
		End Date/Time		02/28(0700)
9	OVZHE	VOLATILES - TCLP/ZHE		
		1,1-dichloroethene [1,1-dichloroethylene]	10	< 0.05 mg/L
		1,2-dichloroethane	10	< 0.05 mg/L
		2-butanone [methylethyl ketone] [MEK]	10	< 0.5 mg/L
		benzene	10	< 0.05 mg/L
		carbon tetrachloride	10	< 0.05 mg/L
		chlorobenzene	10	< 0.05 mg/L
		chloroform	10	< 0.05 mg/L
		tetrachloroethene [tetrachloroethylene]	10	< 0.05 mg/L
		trichloroethene [trichloroethylene]	10	< 0.05 mg/L
		vinyl chloride	10	< 0.1 mg/L

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March 05, 1996
Report No.: 00029705

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-077 TCLP
NUS SAMPLE NO: P0335975
P.O. NO.: 500101

DATE SAMPLED: 22-FEB-96
DATE RECEIVED: 26-FEB-96
APPROVED BY: Simanic, Joanne

WSS Onsite Muck

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
1	S903	TCLP Bottle Extraction			
		Begin Date/Time		02/27(1315)	
		End Date/Time		02/28(0700)	
		Extraction Fluid		1	
		Final Leachate pH		7.8	
2	OTCLP	SEMIVOLATILES - TCLP			
		1,4-dichlorobenzene [p-dichlorobenzene]	10	< 0.1	mg/L
		2,4,5-trichlorophenol	10	< 0.5	mg/L
		2,4,6-trichlorophenol	10	< 0.1	mg/L
		2,4-dinitrotoluene	10	< 0.1	mg/L
		2-methylphenol [o-cresol]	10	< 0.1	mg/L
		3/4-methylphenol (m-cresol/p-cresol)	10	< 0.1	mg/L
		hexachlorobenzene	10	< 0.1	mg/L
		hexachlorobutadiene	10	< 0.1	mg/L
		hexachloroethane	10	< 0.1	mg/L
		nitrobenzene	10	< 0.1	mg/L
		pentachlorophenol	10	< 0.5	mg/L
		pyridine	10	< 0.1	mg/L

COMMENTS:

Halliburton NUS CORPORATION

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March 05, 1996
Report No.: 00029705
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LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-078 TCLP
NUS SAMPLE NO: P0335976
P.O. NO.: 500101

DATE SAMPLED: 22-FEB-96
DATE RECEIVED: 26-FEB-96
APPROVED BY: Simanic, Jeanne

WSS Insitu muck

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	S903	TCLP Bottle Extraction		
		Begin Date/Time		02/27(1315)
		End Date/Time		02/28(0700)
		Extraction Fluid		1
		Final Leachate pH		7.7
2	AAGL	Silver, Leachable (Ag)	2	< 0.02 mg/L
3	AASL	Arsenic, Leachable (As)	2	0.4 mg/L
4	ABAL	Barium, Leachable (Ba)	2	0.41 mg/L
5	ACDL	Cadmium, Leachable (Cd)	2	< 0.01 mg/L
6	ACRL	Chromium, Leachable (Cr)	2	< 0.04 mg/L
7	AHGL	Mercury, Leachable (Hg)	4	< 0.0004 mg/L
8	APBL	Lead, Leachable (Pb)	2	< 0.1 mg/L
9	ASEL	Selenium, Leachable (Se)	2	< 0.2 mg/L

COMMENTS:

2 Elevated detection limits are reported on silver, cadmium, chromium, mercury, lead and selenium due to sample matrix interference.

Halliburton NUS CORPORATION

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Pittsburgh, Pennsylvania 15205

TEL. (412) 747-2500
FAX. (412) 747-2554

March 05, 1996
Report No.: 00029705

LABORATORY ANALYSIS REPORT

CLIENT NAME: WESTINGHOUSE ELECTRIC CORPORATIO
ADDRESS: P.O. BOX 2078
CARLSBAD, NM 88221-2078
ATTENTION: MS. PATTY LOUGHMILLER

NUS CLIENT NO: 1783 0001
WORK ORDER NO: 55830
VENDOR NO: 01830727

SAMPLE ID: WST-96-079
NUS SAMPLE NO: P0335977
P.O. NO.: 500101

DATE SAMPLED: 22-FEB-96
DATE RECEIVED: 26-FEB-96
APPROVED BY: Simanic, Joanne

WSS Onsite Muck

LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT UNITS
1	OVTCS	TCL - VOLATILES		
		1,1,1-trichloroethane	1	< 5 ug/L
		1,1,2,2-tetrachloroethane	1	< 5 ug/L
		1,1,2-trichloroethane	1	< 5 ug/L
		1,1-dichloroethane	1	< 5 ug/L
		1,1-dichloroethene [1,1-dichloroethylene]	1	< 5 ug/L
		1,2-dichloroethane	1	< 5 ug/L
		1,2-dichloroethene (total)	1	< 5 ug/L
		1,2-dichloropropane	1	< 5 ug/L
		2-butanone [methylethyl ketone] [MEK]	1	< 50 ug/L
		2-hexanone	1	< 50 ug/L
		4-methyl-2-pentanone [methyl isobutyl ketone] [MIBK]	1	< 50 ug/L
		acetone	1	54 ug/L
		benzene	1	< 5 ug/L
		bromodichloromethane [dichlorobromomethane]	1	< 5 ug/L
		bromomethane [methyl bromide]	1	< 10 ug/L
		carbon disulfide	1	< 5 ug/L
		carbon tetrachloride	1	< 5 ug/L
		chlorobenzene	1	< 5 ug/L
		chloroethane	1	< 10 ug/L
		chloroform	1	< 5 ug/L
		chloromethane [methyl chloride]	1	< 10 ug/L
		cis-1,3-dichloropropene	1	< 5 ug/L
		dibromochloromethane	1	< 5 ug/L
		dichloromethane [methylene chloride]	1	< 5 ug/L
		ethylbenzene	1	7 ug/L
		methylbenzene [toluene]	1	15 ug/L
		styrene	1	< 5 ug/L
		tetrachloroethene [tetrachloroethylene]	1	< 5 ug/L
		trans-1,3-dichloropropene	1	< 5 ug/L
		tribromomethane [bromoform]	1	< 5 ug/L
		trichloroethene [trichloroethylene]	1	< 5 ug/L
		vinyl chloride	1	< 10 ug/L

Halliburton NUS CORPORATION

NUS LABORATORY
5350 Campbells Run Road
Pittsburgh, Pennsylvania 15205

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LN	TEST CODE	DETERMINATION	DILUTION FACTOR	RESULT	UNITS
		xylenes (total)	1	35	ug/L

COMMENTS: