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March 8, 2004
Hand-delivered

Mr. Steve Zappe
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, New Mexico 87505-6303

Charles Noble, Esq.
Office of General Counsel
1190 St. Francis Dr.
Santa Fe, New Mexico 87502

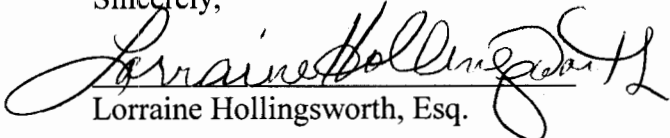
RE: State Initiated Permit Modification

Dear Mr. Zappe and Mr. Noble:

Enclosed please find a copy of the Permittees' Entry of Appearance, Permittees' Notice of Intent to Present Technical Testimony. We are also providing copies of Exhibits 41-84 in support of the Technical Testimony. We have provided both of you Exhibit 55, Draft Title 40 CFR Part 191 Subparts B and C Compliance Recertification Application 2004, Appendix DATA, Attachment F, Transuranic Waste Inventory Update Report on CD because of its size. We are providing the Hearing Officer with a printed version of Exhibit 55.

If you have any questions, please feel free to call either Pete Domenici, Jr. or myself.

Sincerely,


Lorraine Hollingsworth, Esq.

Encls.

040310.5



**STATE OF NEW MEXICO
BEFORE THE SECRETARY OF THE ENVIRONMENT**

**IN THE MATTER OF THE AGENCY
INITIATED MODIFICATION OF THE
HAZARDOUS WASTE FACILITY PERMIT
FOR THE WASTE ISOLATION PILOT PLANT
CARLSBAD, NEW MEXICO
EPA ID NO. NM4890139088**

No. HWB 04-01(M)

ENTRY OF APPEARANCE

The following persons hereby enter their appearance on behalf of the United States Department of Energy and Washington TRU Solutions, LLC (the "Permittees") in the matter referenced above.

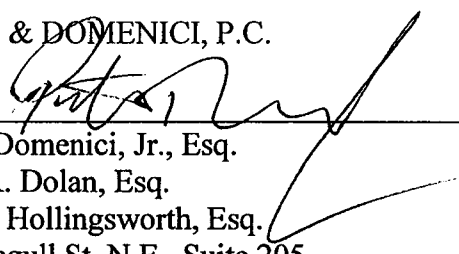
DOLAN & DOMENICI, P.C.
Pete V. Domenici, Jr., Esq.
Daniel R. Dolan, Esq.
Lorraine Hollingsworth, Esq.
6100 Seagull St, N.E., Suite 205
Albuquerque, New Mexico 87109
505-883-6250

WASHINGTON TRU SOLUTIONS, LLC
Gloria Johnson, Esq.
P.O. Box 2078
Carlsbad, New Mexico 88221

UNITED STATES DEPARTMENT OF ENERGY
Roger Corman, Esq.
Elizabeth Rose, Esq.
Carlsbad Field Office
P.O. Box 3090
Carlsbad, New Mexico, 88221

Respectfully submitted,

DOLAN & DOMENICI, P.C.



Pete V. Domenici, Jr., Esq.

Daniel R. Dolan, Esq.

Lorraine Hollingsworth, Esq.

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U.S. Department of Energy

P.O. Box 3090

Carlsbad, New Mexico, 88221

Elizabeth Rose, Esq.

Carlsbad Field Office

U.S. Department of Energy

P.O. Box 3090

Carlsbad, New Mexico, 88221

I hereby certify that a true copy of the
foregoing was sent to the hearing clerk
and the New Mexico Environment Department
on this 24 day of March, 2004.



Pete V. Domenici, Jr., Esq.

**STATE OF NEW MEXICO
BEFORE THE SECRETARY OF THE ENVIRONMENT**

**IN THE MATTER OF THE AGENCY
INITIATED MODIFICATION OF THE
HAZARDOUS WASTE FACILITY PERMIT
FOR THE WASTE ISOLATION PILOT PLANT
CARLSBAD, NEW MEXICO
EPA ID NO. NM4890139088**

No. HWB 04-01(M)

**PERMITTEES' NOTICE OF INTENT
TO PRESENT TECHNICAL TESTIMONY**

In accordance with Public Notice No. 03-12, and by and through undersigned counsel of record, the United States Department of Energy and Washington TRU Solutions, LLC (the "Permittees") submit this Notice of Intent to Present Technical Testimony in opposition to the proposed state-initiated permit modification to the Hazardous Waste Facility Permit for the Waste Isolation Pilot Plant, Carlsbad, New Mexico, EPA ID No. NM4890139088.

1. The name of the person filing the Notice of Intent:

This statement is being filed on behalf of the Permittees.

2. Permittees position on the revised draft permit:

The Permittees oppose the draft permit that incorporates the changes proposed by NMED in Public Notice No. 03-12 and accompanying Fact Sheet, dated November 26, 2003.

3. The name and qualifications of each witness who may testify:

The Permittees will call the following person to give technical testimony at the public hearing:

a. Mr. Robert F. Kehrman

The Permittees may call the following persons to give technical testimony at the public hearing:

- a. Mr. Joe P. Harvill
- b. Mr. Murthy Devarakonda
- c. Mr. I. Keith Gordon
- d. Mr. Roger Nelson
- e. Mr. W.T. (Sonny) Goldston
- f. Dr. J. Winston Porter

The Permittees may call the above witnesses either individually or a panel or panels. The qualifications of each witness are attached hereto as Exhibit A.

The Permittees may also call the following persons to testify to the facts or opinions contained in the comments filed by the particular person on or about January 30, 2004 or as discussed below. The testimony is intended to provide facts and technical testimony regarding the impact of the proposed modification on TRU waste disposal at various sites and upon various State programs.

- a. Monty Wilson, Chair of INEEL Citizen Advisory Board
- b. Ken Niles, Assistant Director, Oregon Department of Energy
- c. Jeanne Sulc, Vice Chair, Savannah River Advisory Board
- d. Kathleen Trevor, State of Idaho Department of Environmental Quality
- e. Constance Walker. Her testimony is summarized in the January 30, 2004

Comments filed by the Permittees and is provided as an exhibit to the Comments.

The Permittees may call witnesses identified by other parties and rebuttal witnesses as needed.

4. Estimated length of direct testimony:

Permittees estimate that that they will present 8-18 hours of direct testimony. Mr. Kehrman will testify for 8-12 hours and the other witnesses will be approximately one hour each. Permittees may submit all or portions of their direct testimony in writing.

5. List of exhibits, if any, that may be offered into evidence at the hearing:

The Exhibit List and copies of exhibits that may be offered into evidence at the hearing are being submitted with the Notice of Intent. An exhibit list is attached as Exhibit C. The exhibit list includes documents in the Modification Administrative Record (NMED 1-30), documents submitted by the Permittees on January 30, 2004, in conjunction with the Permittees Comments (Permittees 1-40), and exhibits being submitted in conjunction with the Notice of Intent (Permittees 41-84).

6. List of technical materials relied upon by each witness:

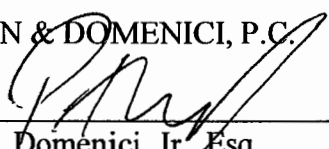
Technical materials relied on by each witness have been included as exhibits and are attached hereto.

7. Summary of direct technical testimony of witnesses:

A summary of the direct testimony of the witnesses is attached hereto as Exhibit B.

Respectfully submitted,

DOLAN & DOMENICI, P.C.



Pete V. Domenici, Jr., Esq.
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Carlsbad, New Mexico, 88221

Elizabeth Rose, Esq.
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, New Mexico, 88221

I hereby certify that a true copy of the
foregoing was sent to the hearing clerk
and the New Mexico Environment Department
on this 6th day of March, 2004.



Pete V. Domenici, Jr., Esq.

Robert F. Kehrman

Experience

2001–Present Washington Regulatory and Environmental Services
Carlsbad, NM

Senior Technical Advisor

- Provide input to strategic planning activities
- Monitor/assist in relationships with key regulatory agencies
- Champion reductions in the cost of compliance by working to consolidate requirements that are duplicative and eliminate those that are unnecessary

1999–2001 Waste Isolation Division Carlsbad, NM

Requirements Management Project Manager

- Accomplished numerous modifications to the hazardous waste permit resulting in significant cost savings.
- Implemented key permit communication tools to keep customers (waste generator sites) informed of permit status.
- Developed strategic plan for permit management.

1994–1999 Waste Isolation Division Carlsbad, NM

Technical Assistant

- Developed key regulatory compliance documents.
- Successfully defended hazardous waste permit application, resulting in granting permit to first-of-a-kind facility.
- Participated in significant technical communications efforts with regulatory agencies and the public with regard to permitting strategy for nuclear waste repository.

1984–1994 Waste Isolation Division Carlsbad, NM

Regulatory and Environmental Programs Manager

- Contributed to the development of the WIPP Disposal Decision Plan, a document that drove the conclusion of experimental activity and led the final permitting and opening of the WIPP.
- Prepared and submitted a first-of-a-kind no-migration petition to the EPA. This involved intense discussion with the regulatory agency to develop format and content.
- Developed and implemented WIPP Environmental Monitoring Program

1970–1984 Westinghouse Electric Corp. Various

Technical Positions as Staff Geophysicist

- Research and development activities in the mineral exploration areas
- Developed trapped miner location and rescue system
- Developed seismic risk model for use in siting nuclear facilities.

1968–1970 Pan American Petroleum Co. Tulsa, OK

Staff Geophysicist

- Oil exploration data processing and interpretation

Education

1963–1968 University of Missouri Rolla, MO
▪ B. S. / M. S. Degrees in Geology-Geophysics Option

Patents, Awards

Awarded Professional Degree (honorary) in Geophysics by University of Missouri at Rolla, December 2000
Holder of Patent 4271407 "Tunnel Roof Monitor Employing an Induction Coil Extensometer".

**Professional
Certifications,
Affiliations**

Registered Environmental Manager #REM 10385

Adjunct Professor—College of the Southwest, Carlsbad, NM

Developed and taught college level courses in Environmental Ethics, Human Ecology, and Environmental Mediation/Conflict Resolution for Environmental Managers

Contributed to the development of an Environmental Manager B.S. program as CSW.

Robert F. Kehman

Experience

2001–Present Washington Regulatory and Environmental Services
Carlsbad, NM

Senior Technical Advisor

- Provide input to strategic planning activities
- Monitor/assist in relationships with key regulatory agencies
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Contributed to the development of an Environmental Manager B.S. program as CSW.

JOE P. HARVILL
Washington TRU Solutions, LLC
Manager, Integration Management, National TRU Program Integration

EDUCATION: Bachelors, Radiation Protection/Nuclear Engineering, Texas A&M University, 1978
Graduate Studies, Nuclear Engineering (Health Physics), Texas A&M University, 1978-1980

CAPABILITY SUMMARY:

Mr. Harvill has been involved with the Waste Isolation Pilot Plant (WIPP) since 1984 and is currently employed with Washington TRU Solutions, LLC as the manager of the Integration Management section of the National TRU Program Integration. In this role, Mr. Harvill is responsible for developing integrated schedules and interrelationships to link National TRU Program activities and milestones for both the Carlsbad Field Office and the TRU waste sites using Primavera Project Planning for the Enterprise (P3e) software. While filling several past technical, regulatory, and management roles, he has developed a broad understanding of environment, safety, and health regulations, radiological control programs, transuranic waste characteristics, and U.S. Environmental Protection Agency, U.S. Department of Energy, and New Mexico state requirements. He has been actively involved in the development and review of safety analysis documents; supported the preparation of major National Environmental Policy Act documents; provided technical support and review of onsite and environmental radiation protection (health physics) programs; performed radiological analysis pertaining to source term development, shielding analysis, and offsite dose assessment; and supported the development of the National Transuranic Waste Program through the assessment of transuranic waste sources and characteristics, remote-handled transuranic waste assessment, waste acceptance criteria development, and the coordination of transuranic waste site interfaces. Mr. Harvill has excellent written and oral communication skills.

PROFESSIONAL EXPERIENCE:

Washington TRU Solutions, LLC, 2001 - Present

Manager, INEEL Laboratory Coordination, Central Characterization Project, National TRU Program

Support coordination of coring and sampling activities at the Argonne National Laboratory at the Idaho National Engineering and Environmental Laboratory (INEEL), and analysis activities provided through the Environmental Chemistry Laboratory and Analytical Laboratory at INEEL. Support interpretation and use of laboratory results. Support development and improvements in non-destructive assay and non-destructive examination techniques for radioactive wastes, specifically for hard to assay or examine waste forms and large sized containers or boxes. Provide interpretation and/or investigation of assay results to support Central Characterization Project activities.

Manager, Integration Management, National TRU Program Integration.

Develop integrated schedules and interrelationships to link National TRU Program activities and milestones for both the Carlsbad Field Office and the TRU waste sites using Primavera Project Planning for the Enterprise (P3e) software; perform technical analysis to support removal of TRU waste from the DOE Complex and environment for disposal in the Waste Isolation Pilot Plant; support the development and progress on the National Transuranic Waste Corporate Board; and support remote-handled transuranic program development during in the preparation and review of compliance documentation related to modifications to the WIPP Hazardous Waste Permit and the WIPP Compliance Certification Application.

Manager, Transuranic Waste Inventory and Baseline.

Develop National TRU Program infrastructure and perform technical analysis to support removal of TRU waste from the DOE Complex and environment, and the safe disposal of this waste in the Waste Isolation Pilot Plant; develop the National Transuranic Waste Management Plan; support the development and progress on the National Transuranic Waste Corporate Board; support remote-handled transuranic program development during in the preparation and review of compliance documentation related to modifications to the WIPP Hazardous Waste Permit and the WIPP Compliance Certification Application; support remote-handled waste data quality objectives and tolerable levels of error; develop consistent TRU data and source term information for support of the Compliance Recertification Application to be submitted to the EPA; prepare acceptable knowledge rationale and develop supporting documentation packages for remote-handled waste sites; coordinate TRU waste management activities at the designated Small Quantity Sites; and assist in the integration of TRU waste site activities with ongoing disposal activities at the WIPP.

Commodore Advanced Sciences, Inc. (CASI), 1992 - 2001

Manager, Environmental Programs Support, Carlsbad Area Office (CAO) Assurance Team, and National TRU Programs Support, CAO National TRU Waste Programs, 1994 - 2001.

Perform programmatic and technical reviews of WIPP programs to ensure continued compliance with applicable environment, safety, and health regulations, and EPA, DOE, and state of New Mexico requirements; provide technical support in the preparation and review of compliance documentation related to the WIPP Hazardous Waste Permit (the RCRA Part B) and the WIPP Compliance Certification Application (the documentation to support the EPA Certification of WIPP in accordance with 40 CFR 191/194); review and provide technical support to revisions to WIPP safety analysis documentation and WIPP facility design to support the disposal of remote handled TRU waste; provide technical leadership and analysis of TRU waste characteristics, and document these data in the Transuranic Waste Baseline Inventory Report; develop the TRU waste source term for use in long-term WIPP performance assessments; provide technical support and guidance as the CAO contractor lead in the preparation of DOE Order 435.1, *Radioactive Waste Management*, and the related Manual and Guidance to support this Order; support the development of the remote handled TRU waste disposal program at the generator sites and the WIPP; coordinate TRU waste management activities at the designated Small Quantity Sites; and assist in the integration of TRU waste site activities with ongoing disposal activities at the WIPP.

Environment, Health, and Safety Team Leader, WIPP Site Branch Support, 1992 - 1994.
Performed compliance oversight of applicable environment, safety, and health regulations, and EPA and DOE requirements; reviewed and supported revisions to safety analysis methodology and documentation; reviewed radiation protection programs to assure compliance with the DOE radiological control requirements; assisted with the RCRA permit application; supported revision of the WIPP Safety Analysis Report; and supported assessments of compliance with state permit requirements.

WASTREN, Incorporated, 1991 - 1992

Office Manager, Senior Engineer, 1991-1992.

Provided services to the DOE at the WIPP Site and at other DOE facilities in regard to radioactive waste characterization, management, and safety assessment; verified waste acceptance criteria compliance; ensured and documented compliance with environmental regulations and DOE orders; and assisted or prepared safety analysis documentation for the Hanford Low Level Waste Grout Facility, select TRU waste management facilities at Rocky Flats, and the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory.

Westinghouse Electric Corporation, Waste Isolation Pilot Plant, Waste Isolation Division, 1984 - 1991

Manager, Environmental Analysis and Compliance, 1991.

Ensured compliance with environmental regulations pertaining to hazardous material and waste management at the WIPP Site; and led a special task group to prepare an Addendum to the WIPP Final Safety Analysis Report documenting the ability to safely perform the newly developed Bin Scale portion of the WIPP Experimental Test Phase. This activity was performed in an extremely tight time frame and was completed on schedule in accordance with the Secretary of Energy's Decision Plan for opening the WIPP facility.

Manager, Environmental Analysis, 1988 - 1990.

In addition to the continuing responsibilities described below, prepared and modified the WIPP Final Safety Analysis Report; supported revision to the WIPP Waste Acceptance Criteria; participated as a generator site auditor for the Waste Acceptance Criteria Certification Committee; helped develop and support WIPP's initial National Emissions Standard for Hazardous Air Pollutants (40 CFR 61, Subpart H) submittal to the EPA; developed computerized dose assessment models to quickly screen potential off-site consequences; supported the development of the Supplement Environmental Impact Statement and subsequent resolution of public comments; and developed the specifications, equipment, procedures, and capabilities of the Low-Level Counting Laboratory.

Sr Radiological Engineer, Radiological & Environmental Programs, 1984 -1988.

Performed radiological analyses to support the design and planned operation of the WIPP; prepared sections of the Safety Analysis Report by assessing the radiological and hazardous materials impacts of routine operations and potential operational accidents; evaluated criticality concerns with TRU waste management at the facility during disposal activities; assessed facility shielding and design; assessed the risks of transporting contact and remote handled transuranic

wastes within the state of New Mexico; evaluated proposed actions that could significantly impact the Final Environmental Impact Statement and developed any necessary National Environmental Policy Act documentation in accordance with CEQ requirements; developed a consistent and supported set of TRU waste radionuclide source terms for use by project participants; supported the technical review, evaluation, and redesign of the WIPP radiological effluent monitoring and continuous air monitoring systems; acted as principal investigator to provide technical guidance and oversight for the WIPP preoperational Radiological Baseline Program and the Operational Environmental Monitoring Program; and developed the dosimetry design and equipment specifications for the WIPP occupational dosimetry program. The dosimetry program subsequently received DOE Laboratory Accreditation Program certification.

Also supported DOE efforts to establish long term WIPP programs to ensure continued compliance with DOE orders and other applicable regulations; provided on-site technical engineering computing system support for the Westinghouse computer systems (the CRAY-1S's, and other available engineering computing system services); and controlled the use, configuration, verification, and validation of the computer codes used for radiation analysis, such as AIRDOS-EPA, ORIGEN, RADTRAN-IIW, and SHIELDR.

Westinghouse Electric Corporation, Nuclear Technology Division, 1980 - 1984

Engineer, Radiation and Systems Analysis Group, 1980-1984.

Performed shielding design and reactor system analysis, source term generation and evaluation, radiation detection equipment design, reactor system evaluation, engineering computer system coordination, and radiation exposure management. Performed both preoperational and operational radiological evaluations of major nuclear plant maintenance outages (refueling, steam generator modification, etc.). Developed a database of component-related exposure rate information. In conjunction with an Electric Power Research Institute (EPRI) program, developed and successfully tested a portable gamma spectroscopy system (detection system and related shielding). The system is still used to monitor radionuclide deposition and buildup on internal coolant piping surfaces as reactor systems age and coolant chemistries are varied, and to evaluate the effectiveness of various decontamination technologies. Computer usage was intensive and involved the use of ORIGEN, ORIGEN-II, ANISN, DOT-IIIW, KAP-V, and other radiation transport or system design codes.

HONORS: George Westinghouse *Signature Award of Excellence*, 1985
 George Westinghouse *Signature Award of Excellence*, 1987

ISSUED DOCUMENTS AND PUBLICATIONS:

- X Portable Monitor for the Determination of Reactor Coolant Surface Radionuclide Activities, EPRI NP-2523, Project RP825-2, Interim Report, July 1982
- X Instructors' Guide for the ALARA Awareness Seminar, by D.E. Durkosh and Joe P. Harvill, August 1985
- X Preliminary Radiation Dose Assessment to WIPP Waste Handling Personnel, WTSD-TME-009, February 1985
- X Preliminary Radiological Analysis of the Transportation of Remote-handled Transuranic Waste Within the state of New Mexico, WTSD-TME-065, July 1985
- X Assessment of Allowable Transuranic Activity Levels for WIPP Wastes, DOE/WIPP-87-014, December 1987
- X Criticality Safety Analysis for Contact Handled Waste at the Waste Isolation Pilot Plant, DOE/WIPP-88-014, June 1988
- X Criticality Safety Analysis for Remote Handled Waste at the Waste Isolation Pilot Plant, DOE/WIPP-88-014, July 1988
- X Operational Environmental Monitoring Plan for the Waste Isolation Pilot Plant, DOE/WIPP-88-025, September 1988
- X Evaluation of the Station A Effluent Monitoring System in the Underground Exhaust Ventilation system at the Waste Isolation Pilot Plant, by M.A. Babb, J.P. Harvill, et al, DOE/WIPP 89-026, September 1990
- X Evaluation of the Station B Effluent Monitoring System in the Underground Exhaust Ventilation System at the Waste Isolation Pilot Plant, by M.A. Babb, J.P. Harvill, et al, DOE/WIPP 89-027, September 1990
- X Evaluation of the Station C Effluent Monitoring System in the Waste Handling Building Ventilation System at the Waste Isolation Pilot Plant, by M.A. Babb, J.P. Harvill, et al, DOE/WIPP 89-028, December 1989
- X Final Safety Analysis Report for the Waste Isolation Pilot Plant, by R.F. Kehrman, J.P. Harvill, et al, WP 02-9, May 1990
- X Final Safety Analysis Report Addendum for the Dry Bin-Scale Test Phase, by J.P. Harvill, et al, WP 02-9, Addendum, August 1991
- X Transuranic Waste Baseline Inventory Report, Revision 2, DOE/CAO-95-1121, Volumes 1, 2, and 3, December 1995
- X Transuranic Waste Baseline Inventory Report, Revision 3, DOE/CAO-95-1121, June 1996
- X Waste Isolation Pilot Plant Biennial Environmental Compliance Report, Chapter 13, DOE/WIPP 96-2171, October 1996
- X "The Challenge of Building a Transuranic Waste Inventory for the Waste Isolation Pilot Plant," Waste Management 97, March 1997, R. Stroud, J. Harvill, et al
- X "Transuranic Waste Inventory for the Waste Isolation Pilot Plant," 1998 Nondestructive Assay and Examination Conference, November 1998, E.K. Hunter and J. Harvill

Murthy Devarakonda

Education

Ph.D., Environmental Engineering (Department of Civil Engineering), University of Notre Dame, Notre Dame, Indiana; 1988

Bachelor of Technology, Chemical Engineering, Indian Institute of Technology, Madras, India; 1984

Professional Qualifications

Dr. Devarakonda is an environmental engineer with a background in nuclear and chemical engineering. His experience has been in the areas of radioactive waste management, development of transuranic (TRU) waste certification programs, industrial and hazardous waste treatment, mathematical modeling, and the study of unsteady-state biological systems, such as the Sequencing Batch Reactor. Dr. Devarakonda is a principal member of the team responsible for producing the safety analysis reports for packagings designed for the transportation of radioactive materials. These packagings include the Transuranic Package Transporter-II (TRUPACT-II), the HalfPACT, and the 72-B Cask, all of which have been certified by the U.S. Nuclear Regulatory Commission (NRC) as meeting Type B requirements under Title 10, Code of Federal Regulations (CFR), Section 71. In support of this effort, he has been an active participant in meetings and presentations with the NRC and other regulatory and oversight agencies and has been selected to various U.S. Department of Energy (DOE) task forces and expert panels. Dr. Devarakonda currently is a Program Manager for Washington TRU Solutions LLC (WTS), and supports the Waste Isolation Pilot Plant (WIPP) Program in various projects and provides technical support to the DOE in the resolution of complex technical issues in TRU waste certification, characterization, and transportation.

Dr. Devarakonda is an active member of various interface groups formed in the DOE TRU waste system to address issues related to TRU waste certification, transportation, treatment, storage, and disposal. His expertise has been in the areas of multi-criteria decision analysis and recommending and implementing the optimum alternative for waste management. Specifically, he was a member of the Efficiencies Working Group formed by the Rocky Flats Environmental Technology Site (RFETS) and the DOE-CBFO to study the alternatives available for the disposal of the residues at the RFETS. He was involved in the development and successful certification of the pipe component, designed to provide shielding and criticality control during transportation for the high-loaded residue waste forms. He was also invited to participate as a subject matter expert on a Pu-238 Decision Analysis Team organized by Sandia National Laboratories to resolve the complex issue of Pu-238 waste transportation and management.

Dr. Devarakonda was a member of the DOE Engineered Alternatives Task Force (EATF), established to evaluate the long-term performance of the WIPP and the effectiveness of various engineered alternatives. He served as the technical advisor to the director of the EATF, where his multi-disciplinary background was used in various phases of the EATF effort. He was also a member of the project team that developed the Systems Analysis Methodology to determine optimum solutions for the disposal of low-level radioactive wastes. A multi-attribute decision-

making tool was developed as part of this effort to compare various alternatives with respect to performance measures such as cost, schedule, risk, and regulatory impact. Based on his expertise and experience, Dr. Devarakonda was selected for the Program Advisory Committee for the Waste Management Symposium. He also served as a committee member of the Water Environment Federation (WEF), where his responsibilities included authoring a section of the annual literature review journal of the WEF in the areas of low-level, TRU, and high-level wastes. Dr. Devarakonda has also been nominated to the American National Standards Institute (ANSI) Committee 14-32, formed to study gas generation issues in packaging and transporting radioactive materials.

Other projects to which Dr. Devarakonda has contributed include a study of the biodegradation of an herbicide waste stream in a Sequencing Batch Reactor (SBR); a comparative study on the full-scale SBR at the wastewater treatment facility at Grundy Center, Iowa; development of a mathematical model for biological phosphorus removal; and the study of organism selection and population dynamics in mixed culture systems. Dr. Devarakonda has also written several technical reports, proposals, and papers for publication in scientific journals.

Honors and Awards

National Quality Award, IT Corporation; 1996 and 1989

Quarterly Quality Award, IT Corporation, Albuquerque Engineering Operations; 1996 and 1989

Technical Associate, IT Corporation; 1990

Professional Affiliations and Committees

Track Chair, International Conference on Environmental Management, 2003

Program Advisory Committee, Waste Management Symposium (2001 – present)

Panel Member and Invited Speaker, Packaging and Transportation Symposium 2000, Los Alamos National Laboratory, Santa Fe, New Mexico (November 2000)

Panel Member, Hydrogen Gas Generation Workshop, U.S. Department of Energy, Albuquerque, New Mexico (January 2000)

Committee Member, ANSI 14.32, Gas Generation in Packages Used for Storage or Transportation of Radioactive Materials (1999 - Present) (currently inactive)

Subject Matter Expert, Pu-238 Decision Analysis, Sandia National Laboratories (1998)

Member, TRUPACT-II Gas Generation Test Program (1992 - present)

Literature Review Committee Member, Water Environment Federation (1992 - 1997)

Member, RFETS Efficiencies Working Group (1992 - 1995)

Instructor, TRUPACT-II Users Schools (1990 - Present)

Experience and Background

2002 - ***Program Manager, Washington TRU Solutions LLC, Albuquerque, New Mexico***
Present

Provides technical leadership to National TRU Program Division and Transportation Project in support of DOE-CBFO initiatives to fill the WIPP pipeline.

- Acts as advisor to senior WTS management and DOE in developing a strategy for cleanup of the TRU waste complex in compliance with agreements and milestones. Specific strategic initiatives contributed to include the TRU Waste Accelerated Program, resolution of hydrogen gas generation issues for high-wattage waste, development of a packaging (TRUPACT-III) for the shipment of oversized boxes, and streamlining of waste characterization requirements.
- Developed both the strategy and the application for Revisions 19a and 19c of the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC), which were approved by the NRC on aggressive schedules. These amendments will allow the shipment of waste from the Los Alamos National Laboratory and Hanford Site to WIPP without the need for repackaging.
- Interfaces with DOE sites on a regular basis in resolving issues related to TRU waste transportation, certification, and disposal.

1999 - ***Program Manager, Energy and Nuclear Operations, IT Corporation,***
2002 ***Albuquerque, New Mexico.***

Program Manager for all DOE TRU waste projects for clients including WTS, the Battelle Columbus Laboratories Decommissioning Project (BCLDP), and the DOE TRU waste sites. Responsibilities included managing multi-million dollar contracts and tasks, interfacing with DOE sites and regulatory agencies as a technical expert, and providing technical support in the resolution of issues related to radioactive waste transportation and disposal. Specific project work included:

- Project Manager for the development of TRUPACT-II SAR amendments and Technical Lead for TRU Program interface with the TRU and Mixed Waste Focus Area in areas related to TRU waste transportation.
- Program Manager and Technical Lead for the initiative to expand the shippable inventory and develop a strategy for implementing required programs. Programs supported included the TRUPACT-III Initiative, Gas Getter Programs, bag breaching technology, and implementation of Revision 19 of the TRUPACT-II SAR.
- Project Manager for IT's support to the RH-TRU Waste Program. Responsibilities included participation in strategic initiatives, evaluation of RH-TRU waste transportation systems (including the use of commercial casks),

development of the RH-TRU payload for the 72-B Cask, and preparation of the 72-B Cask SAR, which has been approved by the NRC.

- Program Manager for IT's support to the Small Quantity Site (SQS)/Central Characterization Initiative, designed to develop a path forward for the shipment of TRU wastes from several sites to central characterization facilities at the WIPP.
- Project Manager for IT's support to Battelle Memorial Institute in establishing a contact-handled (CH)-TRU and RH-TRU certification program under the BCLDP. Served as lead in developing a certification strategy, evaluating waste transportation and disposal options, coordinating audits, and ensuring proper packaging of the wastes generated from the BCLDP.

1994-
1998 ***Technical Associate and Project Manager, IT Corporation, Albuquerque, New Mexico.***

Project Manager for support to WTS, BCLDP, and the DOE sites in the area of TRU waste management, including transportation, characterization, treatment, and disposal. Specific project work included:

- Provided support to WTS on transportation issues, including TRUPACT-II SAR amendments to facilitate the shipment of waste under less restrictive conditions. Co-authored the CH-TRU Waste Packaging Optimization Report, which led to the initiation of the HalfPACT program, a multi-million dollar initiative funded by DOE. The HalfPACT is expected to result in substantial cost savings to the TRU waste transportation program. Served as a member of the TRUPACT-II Gas Generation Test Program Interface Working Group.
- Project Manager for IT's support to the HalfPACT Program. Responsible for the development of the Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC) and the CH-TRU Waste Content Codes (CH-TRUCON) documents, which define all payload requirements for the TRUPACT-II and HalfPACT packagings.
- Task Manager for IT's support to the Idaho National Engineering and Environmental Laboratory (INEEL) in developing a sampling plan for TRU wastes that exceed analytical wattage limits. Implementation of this sampling plan is part of INEEL's strategy for meeting specific TRU waste shipment milestones.
- Project Manager for a task to develop transportation certification documents and a viable transportation system for the Lawrence Livermore National Laboratory (LLNL) for the shipment of CH-TRU wastes from LLNL. Work included a demonstration of the validity of the procedures by performing a mock loading/unloading exercise of the TRUPACT-II packaging.

- Contributed to the preparation of a comprehensive Environmental Impact Statement for the Nevada Test Site (NTS) in the evaluation of human health and safety impacts from the implementation of various alternatives for the site operations.
- Participated in the Environmental Impact Statement for INEEL high-level waste with respect to waste disposal options.

1992 - ***Section Manager, Transuranic and Mixed Waste Assessment Group,***
1994 ***IT Corporation, Albuquerque, New Mexico.***

As section manager of the Transuranic (TRU) and Mixed Waste Assessment Group, managed a group of seven engineers and other professionals supporting a wide range of projects in TRU and mixed low-level waste management.

- Supported WTS in developing an integrated program plan for the characterization of TRU waste at the DOE waste generator and storage sites.
- Served as a task manager for an integrated systems analysis methodology to be used for managing mixed low-level waste in the DOE system. Developed decision-making tools to facilitate comparison of alternatives with respect to performance measures such as cost, schedule, risk, and regulatory impact.
- Supported Westinghouse-Hanford in the preparation of the site-specific TRAMPAC and in conducting a study of the uncertainties associated with the WIPP Project and potential impacts on the design of the Waste Receiving and Processing (WRAP) facility at Hanford.
- Served as a consultant to TRU waste generator and storage sites to develop site-specific waste certification plans to ensure compliance with the TRUPACT-II transportation restrictions in the areas of containment and compatibility. Authored SAR sections evaluating transportation parameters for the TRUPACT-II package. Activities included identifying issues and concerns and providing technical expertise in evaluating solutions. Served as an instructor at the TRUPACT-II User Schools.

1991- ***Senior Engineer, IT Corporation, Albuquerque, New Mexico.***
1992 Served as a member of the Transuranic and Mixed Waste Assessment Group.

- Served as a member of the Independent Peer Review Panel established to coordinate and develop Revision 4 of the WIPP WAC document. Activities on this panel included providing input to sections of the WIPP WAC document and comment resolutions on draft revisions of the document.

- Served as a member of the RH-TRU Waste Task Force responsible for long-range planning for RH-TRU waste disposal strategies, treatment technology evaluations, and evaluation of transportation issues.
- 1989 – ***Project Engineer, IT Corporation, Albuquerque, New Mexico.*** Served as a member
 1991 of the Transuranic and Mixed Waste Assessment Group.
- Served as technical advisor to the director of the EATF in support of WIPP. Performed a technical review of all conceptual and mathematical models developed and participated in quality assurance committees.
 - Participated on an expert panel established as part of the EATF in support of WIPP. Contributions on this panel have been in the areas of geochemistry; microbial interactions with the waste in a repository; and gas generation due to radiolysis, corrosion, and biological activities.
 - Served on the project team dealing with performance assessment and evaluation of the WIPP with regard to possible interactions among the waste components and the projected fate of the mixed hazardous waste over prolonged time frames.
 - Coordinated the evaluation of transportation criteria for TRU wastes, including physical properties, chemical properties, and compatibility requirements. Responsibilities included designing and developing test plans for experiments, coordinating data reduction and interpretation, and developing analytical models for transport conditions.
 - Represented WTS in meetings with the New Mexico Environment Department, the Environmental Evaluation Group, and the NRC on issues related to TRU waste transportation and characterization.
 - Coauthored sections in the Quality Assurance Program Plan for the WIPP Experimental-Waste Characterization Program, dealing with the interpretation of flammability testing and restrictions in the WIPP No-Migration Determination.
- 1986 – ***Dissertation Research Funded by Monsanto Agriculture Company, St. Louis,***
 1988 ***Missouri.*** Research involved the successful development and optimization of the biological treatment of a mixed substrate herbicide waste stream and extension of bench-scale results to a full-scale facility. Concepts developed in this research work were extended to organism selection principles in unsteady state systems.
- 1985 – Teaching Assistant, University of Notre Dame, Notre Dame, Indiana.
 1986 Assisted in teaching courses in biological waste treatment and mathematical methods in engineering.

- 1985 ***Project Researcher, Wastewater Treatment Facility, Grundy Center, Iowa.*** Conducted a two-month study at the wastewater treatment facility. The aim of this study was to develop a comparison between two treatment systems with different operating strategies.

Publications and Presentations

Devarakonda, M., and J. Biedscheid, "Safe and Compliant Nuclear Waste Management – What Does it Really Mean?," presented at the 9th International Conference on Radioactive Waste Management and Environmental Remediation, Oxford, England, September 21 – 25, 2003.

Devarakonda, M., C. Morrison, and M. Brown, "Development of the TRU Waste Transportation Fleet – A Success Story," presented at the 2003 Waste Management Symposium, Tucson, Arizona, February 23-27, 2003.

Biedscheid, J., M. Devarakonda, J. Whitworth, R. Kehrman, W. Most, and C. Gist, "RH-TRU Waste Inventory Characterization by Acceptable Knowledge and Proposed WIPP RH-TRU Waste Characterization Objectives," presented at the 2002 Waste Management Symposium, Tucson, Arizona, February 24-28, 2002.

Eide, J., J. Biedscheid, M. Devarakonda, and S. Stahl, "Adequacy of a Small Quantity Site RH-TRU Waste Program in Meeting Proposed WIPP Characterization Objectives," presented at the 2002 Waste Management Symposium, Tucson, Arizona, February 24-28, 2002.

Stahl, S., S. Thompson, M. Devarakonda, S. Djordjevic, M. Adams, J. Cotton, and D. Speed, "Facilitating TRU Waste Transportation Certification Using the e-TRAMPAC Code," presented at the 2002 Waste Management Symposium, Tucson, Arizona, February 24-28, 2002.

Devarakonda, M., T. Shokes, S. Bell, C. Morrison, B. Day, J. Jackson, D. Lipinski, P. Gregory, W. Prather-Stroud, and M. Italiano, "Optimization of the Transuranic Waste Program—Keeping the Pipeline Full," presented at the 2002 Waste Management Symposium, Tucson, Arizona, February 24-28, 2002.

Devarakonda, M., and P. Gregory, "Path Forward to Ship All of the CH-TRU Waste to WIPP—Solution to the Flammable Gas Generation Issue," presented at the 2001 Waste Management Symposium, Tucson, Arizona, February 25-March 1, 2001.

Jensen, C., M. Devarakonda, and J. Biedscheid, "Methodology for Determination of Radioassay Properties for RH-TRU Waste," presented at the 2001 Waste Management Symposium, Tucson, Arizona, February 25-March 1, 2001.

Bennington, B., L. Porter, C. Kelley, J. Whitworth, J. Biedscheid, and M. Devarakonda, "Characterization Strategy for CH-TRU Waste Generated by Small Quantity Sites," presented at the 2001 Waste Management Symposium, Tucson, Arizona, February 25-March 1, 2001.

Eide, J.H., J. Griffin, M. Devarakonda, M. Whittaker, T. Burrington, and R. Britain, "Options for Shipment of RH-TRU Waste from Battelle Columbus Laboratories," presented at the 2001 Waste Management Symposium, Tucson, Arizona, February 25-March 1, 2001.

Liekhus, K.J., S.M. Djordjevic, M. Devarakonda, and M.J. Connolly, October 2000, "Determination of Drum Age Criteria and Prediction Factors Based on Packaging Configurations," INEEL/EXT-2000-01207, Idaho National Engineering Laboratory, Idaho Falls, Idaho.

Devarakonda, M., E. Yarasheski, S. Djordjevic, P. Gregory, and M. Connolly, February 2000, "Facilitating TRU Waste Transportation Certification Using the e-TRAMPAC Code," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Biedscheid, J., M. Devarakonda, and J.H. Eide, February 2000, "Case Study of Strategy for WIPP Certification of Remote-Handled Transuranic Wastes: Battelle Columbus Laboratories," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Gregory, P., E. Hess, M. Brown, and M. Devarakonda, March 1999, "Expanding the TRUPACT-II Payload Envelope," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Devarakonda, M.S., and J.A. Hickox, 1997, "Radioactive Wastes," *Water Environment Research*, Vol. 69, No. 4, p 720.

Bassi, J., M.S. Abashian, S. Chakraborti, S.M. Djordjevic, and M. Devarakonda, 1992, "A Decision Methodology for the Evaluation of Mixed Low-Level Waste Management Options for DOE Sites," *Proceedings of the 14th Annual U.S. DOE Low-Level Radioactive Waste Management Conference*, Phoenix, Arizona.

Bassi, J., S. Chakraborti, T. DeBiase, M. Devarakonda, and M.S. Abashian, 1992, "Development of a Methodology for Estimation of Initial Costs of DOE Mixed Low-Level Waste Management Options," *Proceedings of the 14th Annual U.S. DOE Low-Level Radioactive Waste Management Conference*, Phoenix, Arizona.

Johnson, J., M. Davis, P.E. Drez, and M. Devarakonda, 1991, "Pretest Characterization of WIPP Experimental Waste," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Drez, P.E., M. Devarakonda, and J. Cruse, 1991, "Summary and Status of TRU Waste Characterization," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Murthy, D.V.S., and P.E. Drez, 1990, "Transportation of Transuranic Waste to the Waste Isolation Pilot Plant—An Overview," presented at the Summer National AIChE Meeting, San Diego, California.

Djordjevic, S.M., P.E. Drez, D.V.S. Murthy, and C.J. Temus, 1990, "Aspiration Requirements for the Transportation of Retrievably Stored Waste," Proceedings of the Symposium on Waste Management, Tucson, Arizona.

Drez, P.E., D.V.S. Murthy, G.J. Quinn, and C.J. Temus, 1989, "Influence of Non-Radioactive Payload Parameters on Radioactive Shipping Packages," PATRAM Symposium, Washington, D.C.

Murthy, D.V.S., 1988, "Population Dynamics in Controlled Unsteady State Systems - An Application to the Degradation of Glyphosate in a Sequencing Batch Reactor," Dissertation, University of Notre Dame, Notre Dame, Indiana.

Murthy, D.V.S., R.L. Irvine, and L.E. Hallas, 1988, "Principles of Organism Selection for the Degradation of Glyphosate in a Sequencing Batch Reactor," Proceedings of the 43rd Annual Purdue Industrial Waste Conference, Purdue, Indiana.

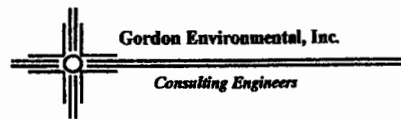
Murthy, D.V.S., R.L. Irvine, and L.E. Hallas, 1987, "Biodegradation of an Herbicide Waste Stream in a Sequencing Batch Reactor," presented at the Annual AIChE Meeting, New York, New York.

Irvine, R.L., D.V.S. Murthy, M.L. Arora, J.L. Copeman, and J.A. Heidman, 1987, "Analysis of the Full-Scale SBR Operation at Grundy Center, Iowa," *Journal of the Water Pollution Control Federation*, Vol. 59, p. 132.

Murthy, D.V.S., and R.L. Irvine, 1985, "Updated Model for Biological Phosphorus Removal," presented at the Annual AIChE Meeting, Chicago, Illinois.

I. KEITH GORDON, P.E.

Principal



Fields of Expertise

Environmental and Geotechnical Engineering;
Waste Facility Siting, Design, and Permitting;
Transfer Stations and Materials Recovery Facilities;
Regulatory Compliance and Litigation Support.

Registrations Professional Engineer: AR, AZ, CA, CO, IA, ID, IL, IN, KS, MI, MN, MO, MT, NC, NE, NM, NV, OH, OK, PA, TN, TX, UT, WI, WY

Certifications

Certified Hazardous Materials Manager (CHMM)
OSHA Supervisor's Health & Safety Training
NICET Geosynthetics
National Council of Engineering Examiners

Education

BS Civil Engineering (Geotechnical)
Northwestern University, 1977

Professional Summary

Mr. Gordon serves as Project Principal and President for Gordon Environmental, Inc. He has over 25 years of engineering experience in the planning, design and execution of complex environmental projects. Many of Mr. Gordon's projects are solid, hazardous and radioactive waste management facilities, including landfills, transfer stations, and materials recovery facilities (MRFs); as well as landfill gas control/recovery systems. Successful implementation of these projects routinely involves compliance with an array of regulatory requirements. Mr. Gordon has extensive project experience with USEPA RCRA Subtitle C (Hazardous) and Subtitle D (Solid) Waste Programs; Federal (CERCLA) and State Superfund remediations; and local siting/zoning approvals. He regularly provides expert witness testimony at public hearings and in legal proceedings. Mr. Gordon was appointed to the Technical Advisory Committee providing assistance to USEPA on national solid waste facility siting issues; and was retained as editor for EPA's *"Solid Waste Transfer Stations: A Manual for Decision Making"*.

Professional Affiliations

American Society of Civil Engineers (ASCE)
Solid Waste Association of North America (SWANA)
SWANA Certification Board
NM Society of Professional Engineers (NMSPE)
Institute of Hazardous Materials Management (IHMM)
National Society of Professional Engineers (NSPE)
National Solid Waste Mgmt. Assoc. (NSWMA) Bd. Of Gov.

Select Project Experience

New regulations resulted in the development of regional solid waste management strategies throughout NM. Mr. Gordon served as Project Manager and Engineer-of-Record for:

- Site confirmation and permitting for the six largest new regional landfills.
- The design and construction quality assurance for twelve new regional landfills.
- The closure of several landfills that could not be upgraded.
- The development of six new transfer station/MRFs, including the largest transfer station in the state.

The Camino Real Landfill is a full-service 3500 tons/day land disposal facility serving El Paso and south central New Mexico. Mr. Gordon supervised the redesign of the facility in order to comply with new state and federal landfill standards. Permits were issued following Mr. Gordon's testimony as principal engineer for the Applicant at public hearings. Subsequent tasks have involved permit renewal, certification of constructed liner segments, and the permitting and installation of a LFG collection and control system. In 1997, Mr. Gordon and the Camino Real Landfill were awarded SWANA's Gold Medal for Landfill Excellence.

DOE's Waste Isolation Pilot Plant (WIPP) in Carlsbad, NM disposes of containerized "mixed waste" in a salt tunnel 2150' below ground surface. Mixed waste is classified as containing both hazardous (RCRA Subtitle C) and radioactive waste. WIPP manages defense program legacy residuals that meet this description. Mr. Gordon is the senior review and lead technical expert for:

- NMED (RCRA) and USEPA permitting of the Panel Closure System design.
- Masterplanning and engineered isolation of mined salt.
- Proposed siting of the Urenco nuclear fuel processing facility.
- RCRA permitting for the new "RH" (remotely-handled) transuranic waste stream, so classified because of its higher surface radioactivity.

The Circuit Court had determined that DuPage County, IL was not authorized to operate two existing landfills on Forest Preserve property. Mr. Gordon was retained as principal consultant and expert witness to evaluate the economic and environmental impact on the County should the two facilities be closed immediately. The case was favorably resolved such that the facilities were allowed to continue operations.

Mr. Gordon is responsible for air quality compliance at eight regional landfills, including Title V, New Source Review, NSPS, etc. He has designed landfill gas (LFG) control recovery systems at over 25 sites in 12 states, and has directed several LFG-to-energy projects.

I. KEITH GORDON, P.E.

Principal

Mr. Gordon served as principle investigator and expert witness for potentially responsible parties (PRPs) in CERCLA litigation for the Oswald-Dorney Landfill in Allentown, Pennsylvania. He was responsible for waste allocation formulae, and assessing the impacts of MSW co-disposal with industrial waste. Mr. Gordon performed similar services for eight other sites in NJ, PA, OH, NY, TX, and WI.

Select Project Experience

He has managed several projects for Venezuela's oil and petrochemical industries. Examples include: secure hazardous waste disposal facility design with geosynthetic envelope; land application of refinery by-products; and gypsum waste management systems.

Dofia Ana County, New Mexico planned to implement a regional integrated waste management strategy. Mr. Gordon supervised the design, groundwater modeling, and liner CQA for the new Corralitos Regional Landfill. He was also responsible for the design, permitting, and public hearing for the 750 TPD South Central Solid Waste Transfer Station and Recycling Facility. Waste destined for the Corralitos Landfill will be routed through the new facility for materials recovery, waste screening, and processing. The largest transfer operation in NM won SWANA's bronze medal in 1998.

Lea County, New Mexico (Hobbs) was facing the closure of all MSW disposal sites in the County. Mr. Gordon directed the site characterization and design for the new greenfield regional landfill. The Lea County Landfill has a projected lifespan of over 75 years, and was developed from concept to opening, under budget, in less than two years. Mr. Gordon was responsible for design, permitting, CQA, and construction management of the \$2.6 million dollar infrastructure. GEI was then retained by the County to plan four new satellite transfer facilities.

Waste Control Specialist (WCS) operates a hazardous waste processing and disposal facility in Andrews County, Texas. Mr. Gordon has served as Project Manager for:

- License Application for Texas Low-Level Radioactive Waste Compact site.
- Proposal to the United States Enrichment Corporation to site the \$2 billion AVLIS nuclear enrichment plant.
- CQA for double composite (RCRA Subtitle C) liners and leachate collection system.
- Engineering support with regard to design, operations waste processing, regulatory compliance, etc.

Mr. Gordon routinely provides construction quality assurance for soil/geosynthetic liner systems for solid and hazardous waste disposal facilities. He has certified over 50 lined cells in 8 states comprising 750 acres.

Publications/Presentations

- As Project Director and Principal Author, Mr. Gordon was responsible for a two-volume publication (360 pages) commissioned by the University of Illinois, "Municipal Solid Waste Landfills".
- He is the Technical Editor for USEPA's "Solid Waste Transfer Stations: A Manual for Decision Making" (EPA 530-D-01-001) commissioned by the National Environmental Justice Advisory Council (NEJAC).
- Mr. Gordon served as Project Director and Principal Author for "Solid Waste Transfer in Illinois: A Citizen's Handbook for Planning, Siting, and Technology" (1998). This 60-page document was commissioned by the DuPage County Solid Waste Department as a public education document.
- As Project Manager, he supervised the preparation of the solid waste Transfer Station Design Guide for Waste Management of North America.
- Mr. Gordon is Editor-in-Chief of SWANA's Transfer Station Management Certification Course.
- Mr. Gordon is a senior trainer at SWANA's National and Regional Symposia.

Mr. Gordon has appeared as a guest lecturer and technical trainer for a variety of technical symposia, regulatory information programs, and community forums:

- Landfill Design & Operations & LFG Control/Recovery
 - Illinois Municipal League
 - NM Environment Dept.
 - Gas Research Institute
 - NSWMA
 - Michigan DNR
 - Illinois DENR
 - Illinois EPA
 - SWANA
 - Minnesota PCA
 - Iowa DENR
- Transfer Station and Material Recovery Facilities
 - NM Environment Dept.
 - Waste Equip/Recycl. Expo
 - US Conf. of Mayors
 - Iowa DNR
 - Chicago Dept. of Env.
 - IL Recycl. Assoc.
 - SWANA
 - USEPA
 - Eng. Soc. Detroit
 - CA Indian M.C.

Awards

- SWANA Gold Medal-Landfill Excellence 1986: Miller Road Landfill, Saginaw, MI.
- SWANA Gold Medal-Landfill Excellence 1997: Camino Real Landfill, Sunland Park, NM (El Paso).
- SWANA Bronze Medal-Transfer Station Excellence 1998: South Central Transfer/MRF, Las Cruces, NM.
- SWANA Silver Medal-Landfill Excellence 2000: Cerro Colorado Landfill, Albuquerque, NM.

Bio for Dr. J. Winston Porter

Dr. J. Winston Porter is a leading environmental and management consultant, whose recent experience includes solid waste management, hazardous waste site remediation, urban litter control, agricultural biotechnology, toxics release issues, and global climate change. He is president of the Waste Policy Center (WPC) in Leesburg, Virginia, near Washington, D.C. The WPC is an independent research and consulting organization which deals with environmental management and policy issues related to both governmental and business organizations.



In addition to his consulting activities, Dr. Porter is a frequent communicator on environmental matters through reports and speeches, as well as op-ed articles in numerous major newspapers, including the *New York Times* and the *Wall Street Journal*. He has spoken and written extensively on such topics as American and European waste management, agricultural biotechnology, federal facilities site remediation, radioactive waste management, urban rivers restoration, and improvements in the Superfund program.

From 1985 to 1989, Dr. Porter was the Assistant Administrator for Solid Waste and Emergency Response at the U.S. Environmental Protection Agency (EPA). In this position, he was the national program manager for the Superfund and RCRA (Resource Conservation and Recovery Act) programs.

Dr. Porter's responsibilities at EPA included administration of a budget of approximately \$2 billion per year, direction of major regulatory development and enforcement programs, responsibility for work at over 800 Superfund sites, testimony at over 50 Congressional hearings, and frequent interviews with many of the nation's leading media outlets.

Among his EPA accomplishments was the establishment of a national goal for recycling 25% of the country's municipal solid wastes, which was reached in 1995. Under his direction a joint EPA-state mechanism was developed to remediate federal facilities such as nuclear weapons sites. Statutory deadlines were also met for permitting over 500 waste management facilities and establishment of some 3,000 local emergency planning programs. He also directed the development of the national toxics release inventory and underground storage tank programs.

Earlier, Dr. Porter was with the Bechtel engineering and construction organization, where he managed the environmental department, and later directed the master plan for the \$20 billion Jubail Industrial City in Saudi Arabia. He also served as a vice-president of several Bechtel affiliates in the Middle East.

Dr. Porter received his B.S. in chemical engineering from the University of Texas at Austin and his Ph.D. in the same field from the University of California at Berkeley. He is a registered professional engineer in California, Texas, and Virginia. In 1999, he was named a "distinguished engineering graduate" by the University of Texas at Austin.

For further information please contact Dr. J. Winston Porter at the Waste Policy Center
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Education

B.S., Chemical Engineering, University of Texas (Austin) 1960
Ph.D., Chemical Engineering, University of California (Berkeley) 1965

Work History

1989-Present

As president of the Waste Policy Center, Dr. J. Winston Porter provides a range of consulting services to business and governmental organizations, primarily on environmental policy issues. His areas of current emphasis include hazardous waste treatment technologies, regulatory and business trends in solid and hazardous waste management, federal facilities environmental compliance and strategy, municipal solid waste management, global climate change issues, and genetically modified food products. He is also a frequent guest speaker and newspaper op-ed page contributor on environmental and related matters.

1985-1989

Assistant Administrator for Solid Waste and Emergency Response in the Environmental Protection Agency. Responsibilities involved management of the Superfund and RCRA (Resource Conservation and Recovery Act) programs, involving an annual budget of about two billion dollars.

In Superfund, a major ramp-up of the program was undertaken after the 1986 reauthorization, with work started at several hundred sites and emergency actions taken at about 150 locations per year. In addition, a large regulatory and guidance development program was directed. In the RCRA program, a major accomplishment was the permitting, by the statutory deadlines, of over 95% of the nation's 270 hazardous waste land disposal facilities and 250 hazardous waste incinerators. In addition, a major regulatory development program was undertaken, including such key items as land disposal restrictions for numerous hazardous waste streams, municipal landfill criteria, rules for burning of wastes in industrial boilers and furnaces, and corrective action requirements at RCRA facilities. A major initiative was also developed for municipal solid waste management, including the setting of a national goal of 25% recycling which was reached in 1995.

Superfund and RCRA activities were merged in the case of federal facility compliance and cleanup. Accomplishments included development of model language between EPA, the states, and DOD and DOE for interagency agreements (IAGs) to implement Superfund and RCRA cleanups. IAGs were executed, including the appropriate states, at several major DOD and DOE installations.

Significant progress was also made in implementing the Emergency Planning and Community Right-to-Know Act included in the 1986 Superfund reauthorization. In addition to meeting statutory deadlines for a dozen rulemakings, the preparedness staff assisted in setting up 56 State Emergency Response Committees and 3,800 Local Emergency Planning Committees.

A major new regulatory and site remediation program was developed for some two million underground storage tanks. Included were regulations to prevent leakage through use of corrosion protected tanks and leak detection systems. Also established was a cooperative agreement program with the states to fund cleanups through a \$500 million trust fund.

Management of the above programs necessitated extensive outreach to state and local agencies and the public, as well as interaction with Congress and other Federal agencies and the media. This included testimony at approximately 50 congressional hearings, over 100 speeches or presentations, and about 150 TV, radio, or newspaper interviews.

1976-1985

Principal in the management and engineering consulting firm of J.W. Porter & Associates, located in Leesburg, Virginia. Practice included consultation on regional planning activities, market surveys, various environmental control issues, water and energy supply analyses, and Middle Eastern business consulting.

Typical projects included market surveys for health care and agricultural operations, surveys of hazardous waste control situations, energy and environmental analyses of natural gas-fueled vehicles, evaluation of wastewater treatment applications, analysis of the cogeneration of electrical and heat energy for residential and commercial uses, and several personnel and business planning projects in the Middle East.

In addition to the above projects, a major effort included planning and management of environmental/permitting programs for major industrial projects. These activities involved interpretation of permit regulations, and management of critical path schedules relating the permitting program to other project activities.

1975-1976

Vice President and Manager of Services for Saudi Arabian Bechtel Co. (Sabco) in Al-Khobar, Saudi Arabia. Had responsibility for Sabco's finance and accounting, personnel, office/housing services, and contract administration activities. Major contribution was negotiation of new contract and personnel terms with Aramco.

1974-1975

Vice President of International Bechtel Inc. (IBI) and Program Manager for extensive master planning project for the Jubail Industrial Complex in Eastern Saudi Arabia. Located in Riyadh, Saudi Arabia, and directed teams in Riyadh, Beirut, and San Francisco in preparation of eleven-volume master plan report. The report provided a conceptual plan for an

extensive infrastructure program to support the Kingdom's major new industrial complex.

Included were power, water, waste disposal, transportation, communications, manpower training, and community facilities, as well as economic and environmental analyses. Later negotiated initial agreement with Saudi Royal Commission leading to project management role for Bechtel for a 20-year, 20 billion dollar implementation program.

1972-1974

Manager of Bechtel's Environmental Services Department in San Francisco. Developed and managed a staff of about 70 professionals engaged in project environmental impact analyses, municipal wastewater reclamation projects, industrial pollution control investigations, solid waste management, and laboratory and pilot plant studies.

1966-1972

Senior Engineer and later Supervisor in Bechtel's Scientific Development Operation. Directed numerous study and conceptual design activities for governmental and industrial clients in nuclear power/water desalination, wastewater renovation, industrial pollution control, and regional planning activities.

1965-1966

Chairman of the Chemistry Department of the University of Petroleum and Mineral in Dhahran, Saudi Arabia. Developed new chemistry department and initiated water desalination and solar energy research activities.

1961-1965

Doctoral candidate in chemical engineering at the University of California (Berkeley) and research assistant in Sea Water Conversion Field Station. Directed pilot plant activities related to sea water distillation by immiscible liquid heat transfer. Performed studies of brackish water demineralization by electrodialysis.

1960-1961

Design engineer for Standard Oil Co. of California in San Francisco. Participated in the design of utility systems for a Midwest fertilizer complex.

Honors and
Affiliations

Member of the American Institute of Chemical Engineers (formerly a Director of the Environmental Division), American Chemical Society, and Tau Beta Pi, engineering honor society. Numerous papers published in the areas of solid and hazardous waste management, saline water conversion, wastewater renovation, industrial pollution control, Middle Eastern personnel practices, and master planning in developing countries. Registered Professional Engineer in California, Texas, and Virginia. Selected as 40th Institute Lecturer (and first government official) for the AIChE Annual Meeting in 1988. Served as a Visiting Fellow at Yale University and on the Advisory Committee to the Chemical Engineering Department at the University of Texas (Austin). Recently named a "distinguished engineering graduate" of the University of Texas at Austin.

Name: ROGER A. NELSON, CCM

Title: Project Manager

Education: M.S., 1972, Physics, New Mexico Institute of Technology
B.S., 1971, Physics, New Mexico Institute of Technology
All Coursework and Qualifications Toward Ph.D. (ABD), 1982,
Nuclear Physics, Colorado School of Mines
Ph.D. (ABD), 1973, Atmospheric Physics/Chemical Engineering,
New Mexico Institute of Technology

Special Training: Project Manager (PM) Course, Jacobs, 1993
OSHA 29CFR 1910.120 Hazardous Waste Training

Certification: Certified Consulting Meteorologist, 1980

Affiliations: American Meteorological Society
Health Physics Society
American Institute of Physics
Colorado Air Pollution Control Commission, Nominated 1975
Health Physics Society, Elected to the Executive Council, St. Louis Chapter, 1988
International Atomic Energy Agency (IAEA), Appointed Advisor to Kazakstan Atomic Energy Agency, 1995
IAEA, Technical Consultant on Decommissioning Uranium & Mills, 1992; Current World Practice for Uranium Production Closeout, 1995

Mr. Nelson has 26 years experience in management and conduct of environmental programs for both public and private sector projects. He has directed the full range of environmental, safety and health measurement and management programs including emergency response, characterization, remedial action planning and regulatory compliance, risk assessment and management, feasibility studies, and remedial action construction. He has participated in, and managed, projects ranging from a few highly specialized discipline experts on a quick start emergency response to multi-year, multi-disciplinary broad-scoped projects with more than 100 dedicated staff. Mr. Nelson's areas of specialized technical knowledge include air dispersion modeling and monitoring, air pollution source control, chemical engineering, meteorology, industrial hygiene, health physics, nuclear physics, air and water chemistry with sampling and analysis, groundwater monitoring and modeling, hazardous and radioactive waste land disposal systems, civil engineering; analog and digital electronics, remote sensing, real-time systems and instrumentation, numerical analysis, and programming and statistics.

With Jacobs, Mr. Nelson is a Project Manager. His most recent experience centers on management of technical programs, while retaining currency in all of the evolving disciplines. He has hands-on experience in performing and

managing monitoring, modeling and analysis of hazardous substances and radioactivity transport in soil, groundwater and air, and has worked extensively with CAA, SDWA, NESHAP TSCA, CERCLA/SARA, RCRA, LLWPA, NWPA, and NEPA regulations. With an emphasis on community outreach in the majority of his past projects, he is also an accomplished public speaker. Mr. Nelson's project assignments and activities have included:

- Science and Technical advisor to the DOE's Carlsbad Area Office of Development and Research during the startup phase of disposal operations at the Waste Isolation Pilot Plant (WIPP) involving transuranic mixed waste (TRU) disposal in a geologic salt formation
 - development of real-time water level monitoring systems and correlation of pressures to nearby saltwater disposal injection practices of WIPP oil & gas neighbors
 - development of novel radiological methods for identifying natural contamination events (while retaining sensitivity for actinide detection)
 - development of other uses (than waste disposal) for the WIPP underground environment, such as particle astrophysics, non-proliferation transparency demonstration, and low dose radiation biology research.

Regulatory Compliance Manager for the Carlsbad Area Office Technical Assistance Contractor supporting DOE's application to open the WIPP. Activities have included:

- coordination and oversight of Sandia National Laboratories and the WIPP M&O in their development and submittal of the 40CFR194 Compliance Certification Application (CCA) to EPA
- counsel and advice to DOE for compliance strategies and repository performance assessment for both TRU and RCRA-related regulatory requirements
- development of the 1996 WIPP CCA in CD-ROM format with over 24,000 pages of compliance information all hypertext linked. This same HTML structure was used in presenting the entire application on the World Wide Web
- coordination of the response to over 1,000 questions and comments made by EPA and stakeholders on DOE's application, and made them available on the Internet
- Jacobs Project Manager for the DOE Uranium Mill Tailings Remedial Action (UMTRA) Project Technical Assistance Contract (TAC), responsible for managing up to 120 multi-contractor staff with \$15 million annual budget in providing a broad spectrum of technical support with a dedicated multi-disciplinary team. Efforts included:
 - direction and monitoring of regulatory planning, design, and remedial action at 24 inactive mill sites across the US regulated by the Nuclear Regulatory Commission (NRC)
 - management of cost, schedule, and resource control; surface and subsurface characterization

- development of transportation and disposal methods, regulatory interface and compliance strategies, design criteria, and requirements for development and publication of project documents such as remedial action plans, NEPA documents, and audit and surveillance reports of remedial action construction
- advice and counsel to DOE on NRC interaction, local public affairs efforts, multi-year funding strategy, and international relations with other uranium production countries
- authoring and implementation of the TAC's independent technical review (ITR) program, successfully using the ITR process to refine UMTRA's compliance strategies with NRC's site specific concurrence for 10 sites
- managing development of the TAC's investigation derived waste management plan and ensured compliance by field characterization crews
- development of UMTRA's first comprehensive ASER (for all sites) to meet Order 5400.1
- managing development of an audit/assessment data information tracking (AADIT) system to integrate findings, observations, and noteworthy practices from all TAC audits (quality assurance of construction and material quality, radiation protection, construction safety and environmental compliance) of remedial actions at the UMTRA sites
- co-development (with DOE) of UMTRA's safety advancement field effort (SAFE) program to help contractors improve safety and awareness at remote sites where DOE could not provide a continuous oversight presence
- brought international recognition to the Project through participation/hosting of official delegations to and/or from Germany, Australia, Canada and South Africa
- **Jacobs Project Manager for the Weldon Spring Site Remedial Action Project (WSSRAP), which involved complex ES&H issues (radioactive, RCRA, TSCA, mixed contaminants with known groundwater contamination endangering public drinking water supplies). Activities included:**
 - managed a 60-staff multi-disciplinary team performing comprehensive CERCLA remedial activities including extensive environmental monitoring, data validation, data management and reporting, groundwater modeling, risk assessment, RI/FS-EA/EIS preparation, remedial design and remedial action work, as well as mixed waste management
 - managed implementation of a full-service, integrated CERCLA community relations program
 - directed the RI/FS-EA to reach DOE's first-ever Record of Decision under SARA for operable unit No. 1, quarry bulk wastes
 - managed ES&H at WSSRAP for 35 staff performing health physics, industrial hygiene, construction safety, environmental engineering and waste management and minimization

- developed radiation worker safety training and oversaw internal and external dosimetry programs for both site personnel as well as all subcontractor workers performing remedial action
- wrote the site-wide QA program plan and directed staff in comprehensive monitoring programs for radioactive and hazardous materials in process residues, soils, surface and groundwater, biota and abandoned process buildings, vessels and piping
- managed worker exposure to particulate and asbestos with monitoring/reporting to maintain exposure below action levels
- authored and implemented the WSSRAP hazard communication plan and managed the MSDS system
- developed the site-wide respiratory protection program including fit testing and medical certification for both site and subcontractor workers
- managed use of PCM versus TEM for asbestos mineral identification
- implemented contractor job safety assessment (JSA) process and carried the proactive philosophy down to individual task-specific safety assessments. Conducted weekly "tailgate" safety training
- developed database system for tracking and reporting S&H data for hundreds of subcontractors employing thousands of workers who performed the remedial action and D&D
- authored, managed, and implemented many QAPjP under the site-wide QAPP umbrella for projects such as power line/PCB transformer removal, building decon and dismantlement, UST removal, pond excavation, soil characterization and process piping removal
- established site shipping officer role and managed s/c loading, manifesting, and transportation to off-site TSDs for PCB oil and transformer carcasses, and managed the hazardous material certification of destruction reporting process
- developed an innovative NESHAP compliance program that demonstrated compliance using an onsite and offsite monitoring program rather than the modeling program conventionally employed
- supervised development and implementation of radiological and chemical surveys to characterize and assess contamination at over 40 buildings and structures in the chemical plant area
- oversaw design and implementation of a complex groundwater monitoring system including installation of over 100 monitor wells, extensive geophysical logging, pump tests, multiple slug tests, dye tracer studies, and innovative vadose and saturated zone modeling to predict contaminant migration in a complex, Karst environmental setting
- Senior Health Physicist on the DOE UMTRA Project, responsible for:
 - developing and implementing the verification system used to confirm the remedial action contractor's cleanup success

- implementing and organizing the radiological measurements laboratory, managing the daily operations, and developing techniques to improve analysis quantity and quality
- establishing UMTRA radon measurement protocols for both tailings piles and vicinity properties
- modeling and analysis of radioactivity transport including statistical analysis of radioactivity and meteorology with emphasis on radon and its associated risks
- developing and implementing the UMTRA environmental health and safety plan for all project activities.

Prior to joining Jacobs, Mr. Nelson was the Technical Director under the senior vice president of PLT Engineering. He advised on all technical matters and served as Project Manager for high or new technology projects. His activities included:

- Managed air quality modeling and monitoring programs
- Directed all computer services
- Designed and installed a major multi-tasking real-time data monitoring and presentation system for an emergency preparedness program at a nuclear facility
- Managed the installation and operation of a three-station CAD/CAM system.

As Director of Environmental Services with Camp Dresser & McKee, Mr. Nelson directed the activities of 75 scientists and engineers in air quality, hydrogeology, and health physics. His assignments and activities included:

- Performed modeling and analysis of hazardous and radioactive material transport including laboratory and statistical analyses of environmental related activities, for both EIS/EA and permitting actions
- Directed multi-media radiological contaminant fate and transport modeling, radiological risk assessment, safety analyses for nuclear power plants, source speciation studies for industry, and socioeconomic and technical assessments of alternative air pollution control methods
- Managed air quality and meteorological monitoring programs throughout the U.S., including aerosol characterization and source speciation studies for industrial chemical manufacturers
- Provided testimony on environmental issues
- Developed analytical groundwater modeling algorithms for field use by the U.S. Geological Survey on portable/field personal computer platforms
- Performed radiological risk assessments for uranium mine and milling operations, including radiological particulate and real-time radon and daughter monitoring

- Performed safety analyses for nuclear power plants including real-time continuous release monitoring and emergency preparedness accident evaluations using NUREG 1.109, 1.110 and 1.111 methods
- Developed operations and maintenance manuals for meteorological and air quality monitoring programs including radiological data acquisition for uranium mining and milling as well as the nuclear power industry, and criteria pollutant monitoring for NAAQS compliance evaluation
- Developed fugitive emissions estimation methods for mining and construction industry practices. This effort culminated in publication of a manual issued by the American Mining Congress, "Fugitive Dust Emission Factors for the Mining Industry: A Guidance Manual"
- Performed economic, sociological, and technical assessments of alternate air pollution control methods for the Denver, Colorado metropolitan area.

As Air Quality Project Manager and Scientist with EG&G, Mr. Nelson managed and conducted a broad range of air quality and meteorological monitoring and modeling programs in the Rocky Mountain region for both private (mining and utility industries) and public sector clients. He developed new meteorological monitoring instrumentation and real-time mini-computer based data acquisition systems, conducted seismic blast vibration studies, and performed data analysis programming in a variety of machine-level and compiled languages.

As a Research Associate and Research Assistant at the Langmuir Laboratory of the New Mexico Institute of Mining and Technology, Mr. Nelson developed instrumentation for the study of electrified clouds and lightning. He worked extensively in both analog and digital forms of data telemetry and recording systems for ground-based monitoring networks, commercial and military aircraft platform instruments, and balloon-borne instrumentation.

Employment History:

Jacobs Engineering Group Inc. Project Manager Manager of Environmental Health and Safety Senior Health Physicist	Jun 1983 to date
PLT Engineering, Inc. Technical Director	Feb 1982 - Jun 1983
Camp Dresser & McKee, Inc. Director, Environmental Services	Feb 1976 - Jun 1982
EG&G Air Quality Project Manager and Scientist	Jan 1973 - Feb 1976
New Mexico Institute of Mining and Technology Research Associate/Assistant	Dec 1970 - Jan 1973

W. T. (Sonny) Goldston
BS Chemical Engineering
Master Business Administration

EXPERIENCE & ACCOMPLISHMENTS

Solid Waste Senior Technical Advisor

1997-03

Lead a team of engineering, SRTC, Environmental, and operations personnel to develop and implement a program to permit the Saltstone Facility for disposal of Low Curie Salt (a waste feed from the High Level Waste System) with the goal to empty HLW Tanks early so that they could be in a position to close. Also worked to permit Saltstone to process a legacy mixed LLW called Aqueous Purex Solvent resulting in successful disposition. Developed and implemented a program to dispose of LLW in trenches instead of more expensive vaults, saving over \$60 million. Not only was the technical work a challenge, the public and regulator endorsements were critical to success. Represented SRS on the DOE complex wide team to write DOE Order 435.1 "Radioactive Waste Management". Later lead the SRS team to implement DOE Order 435.1 successfully and on time. Lead a team of engineering, SRTC, equipment subcontractor, and operations personnel to develop and implement a program to resolve the "discovery" of high concentrations of flammable gases in TRU waste drums that were undergoing retrieval and vent/purge operations. This not only involved the development of a in situ drum sampling program, but also the safety analysis and documentation required for a Positive Discovery USQ and Justification for Continued Operation. As part of this effort, conducted all discussions and negotiations with DOE and DNFSB. The operations activities were resumed ahead of schedule and with complete DOE approvals in place. Selected to serve on Vice President level Division Safety Review Committee. Developed the Low Level Radioactive Waste response to DNFSB 94-2 including preparation of the Composite Analysis for E-Area and Saltstone. The CA evaluates the impact on a future member of the public of all sources of radioactive contamination from the General Separations Area that interact with the two SRS Low Level Waste Disposal facilities. Responsible to develop and implement the SW public involvement /communications program and present all technical issues to the Citizens Advisory Board. Issues presented range from the EPA proposed rule concerning TRU waste certification to the vitrified West Valley HLW proposed shipments to SRS for storage. Developed and presented strategy for disposal of ER generated CERCLA waste to DOE, EPA and DHEC. Developed and implemented plans for disposal of stored waste/equipment with no disposal path, including the HLW evaporator and DWPF glass samples. Disposal of much of the large equipment required EPD, HLW, and DOE to agree to approach DHEC on a proposal to allow lead to be disposed as LLW as opposed to RCRA.

Solid Waste Area Manager & SWER Chief Engineer

1996

Selected by Vice President to serve in the above Level 2 positions in the absence of the actual managers. Continued to move the entire Solid Waste Program forward aggressively, accomplishing Award Fee Incentives and Milestones for FY96. Successively managed the transition to the new BNFL partners. Acted as primary interface with the DOE as well during this period and demonstrated exceptional customer relation skills. Successfully worked all program issues including formation of a DOE & WSRC Steering Committee for strategic planning and budgeting. (In fact experience working for DOE for almost 14 years allows unique insight into DOE's programs and personnel. Relationships have remained strong with upper and mid-level DOE Management in SR, HQ and across the complex.)

Manager, Solid Waste Engineering (L3)
Westinghouse Savannah River Company

1995-1996

Responsible to implement engineering and technical support for the Solid Waste Management Department. The Engineering program spans all aspects of direct engineering support to field activities, environmental compliance, development/implementation of the Safety Analysis Reports, technology development, program/technical studies, DOE Order Compliance, Defense Board interaction, and criticality analyses for TRU, Mixed, Hazardous, Low-Level Radioactive and Sanitary Waste. For the first time TRU waste was successfully segregated through nondestructive assay from LLW, TRU buried waste retrieval has begun, offsite expertise is being utilized in preparing waste for CIF, radioactive TBP has been transferred to regulatory compliant tanks, and the entire program is working to detailed tactical plans. A Safety Analysis Report compliant with new DOE regulations was developed, DOE approved, and TSR's implemented (one of the first on site) as a direct result of demonstrated leadership.

Paramount to the Engineering program success has been the building of a team through strong leadership, communications, and employee development/enhancement . The team was not evident in late 1994. Building this team required strong leadership and teambuilding skills. I have demonstrated in this position and in the past that I have those skills. In addition my team and I have fostered career growth through motivation of the team to accomplish new objectives, aggressive career counseling, transfers of engineers to areas that provided career enhancement (not to mention the positive benefit to the organizations such as operations to receive a highly qualified and motivated employee), and aggressive, visible pursuit of employees' promotional opportunities. In this position I have Managed 70 exempt professionals. I have been a line manager for over 14 years with 7 more years as a matrix manager. As such I have had more than 14 years of Human Resource experience.

Manager, High Level Waste Safety and Standards
Westinghouse Savannah River Company

1993-1994

Responsible for the DWPF and HLW Tank Farm programs to develop and implement *Safety Analysis Reports, DOE Order Compliance and Defense Board interaction*. Also, this position encompassed the DWPF program to demonstrate compliance with the DOE HLW Repository program requirements for disposal of DWPF's waste form. *Successful teamwork and customer relations were demonstrated by the formation of a DOE-HQ, SR, Repository, and WSRC Steering Committee to resolve technical and regulatory issues in a timely fashion.* This program involved interaction not only with DOE, but also the NRC and foreign repository programs such as BNFL. The program for *DWPF Qualification Runs* was successfully accomplished and defended to the DOE Independent Technical Review Board as a prerequisite for startup, just as designed by my team.

Manager, DWPF Regulatory Programs
Westinghouse Savannah River Company

1992-1993

Responsible for the *DWPF's Environmental Compliance Program, Safety Analysis Report* development and implementation, *DOE Order Compliance*, and the interface with the *Defense Nuclear Facility Safety Board (DNFSB)*. In this position, my team developed the first SRS S/RID's and obtained DOE-HQ and DNFSB approval and praise. The *DWPF S/RID's* have become the model for SRS and the DOE complex.

**Manager, DWPF Waste Acceptance and Saltstone Technology
Westinghouse Savannah River Company**

1989-1992

Responsible for the DWPF program to demonstrate compliance with the DOE HLW Repository requirements and NRC repository license conditions. Also, responsible for the Saltstone Facility's technical programs including *successful management of the Saltstone Radioactive startup readiness determinations.*

**Chief, DWPF Operations and Technical Support
U. S. Department of Energy, Savannah River Plant**

1987-1989

Responsible for all operations and technical program considerations for DOE's management of the DWPF and Saltstone. *Provided briefings to the Secretary of Energy concerning DWPF.*

Director Process & Weapons Division

1987

Served in Acting capacity in the absence of the Director for ~10 months. Position included Management of the Tritium, Separations, and Waste Management facilities.

**Chief, Separations Program
U. S. Department of Energy, Savannah River Plant**

1983-1987

Responsible for DOE's program to reprocess nuclear fuel from Savannah River reactors and foreign research and test reactors. This included production of plutonium for defense and space applications and the recycle of enriched uranium. *Instrumental in the first shipment of spent fuel from Taiwan and implementation of programs to enhance plutonium processes including approval and construction of the "new" HB-Line. Also responsible for the Safeguards & Security program in Separations with a direct assignment in S&S for several months.*

**Naval Fuels Facility Project Engineer
U. S. Department of Energy, Savannah River Plant**

1981-1983

Served on Project team to design and construct a facility at Savannah River to produce highly enriched uranium fuel for naval propulsion.

**Plutonium-238 Program Manager
U. S. Department of Energy, Savannah River Plant**

1976-1981

Responsible for the production and shipment of Pu-238 heat sources for the U. S. deep space probes.

**Senior Process Engineer
Shakespeare Polymers**

1971-1975

Responsible for the technical program associated with chemical (nylon and polyester) production.

W. T. Goldston

References:

Sam Kelly, President, BNFL SRC
Joe Buggy, President, WSRC, (retired)
Jim Viebrock, Vice President, NAC Corp
Ken Cooper, Manager T&PC, WSRC
Mark Barlow, WSRC
Tom Lex, HLW Chief Engineer, WSRC
Lou Papouchado, SRTC, WSRG
John Plodinec, Mississippi State University
Elmer Wilhite, SRTC
Clay Jones, Program Manager, WSRC
Regan Voit, President, Chem-Nuclear Corp
Steve Cowen, Dp Assistant Secretary, Waste Operations, DOE-HQ, (retired)
Earnie Chaput, Deputy Manager, DOE-SR
Bob Morgan, Manager, retired, DOE-SR
Tom Hindman, DP Assistant Secretary Waste Management retired, DOE-HQ

(Phone numbers available on request)

Goldston's Accomplishments FY03

Played key role in SCDHEC approval of STP Cleanup Credits program that resulted in SCDHEC providing credits for non-regulated accomplishments that can offset regulated milestones. The agreement provides SCDHEC with the ability to incentivise SRS to accomplish cleanup goals that are important to South Carolina. (for example: credits can be earned if TRU inventory reduction is accelerated)

Selected by VP for Regulatory Integration to serve on SRS wide team.

Provided key presentations to SCDHEC to allow proceeding with our programs in TRU ship-to-WIPP, Legacy Aqueous PUREX, and Saltstone's Vault permit for Low Curie Salt.

Continued to press for and develop alternate approaches to ensure proper cost effective treatment/disposal of Aqueous PUREX resulting in approval to treat in ETF

Ensured the laboratory analytical test procedures and protocol were properly followed by offsite lab (GEL) for Low Curie Salt samples concerning Saltstone vault permit equivalency demonstration. This effort included trips to the lab to ensure proper procedures were followed.

Developed alternatives for disposition of TRU waste through innovative application of DOE Order requirements.

Played key role in the disposal of Cf-252 waste as LLW instead of continued management as TRU.

Established and managed Solid Wastes policy to manage Waste Incidental to Reprocessing as a result of the WIR lawsuit.

Obtained DOE agreement to manage PUREX solutions as LLW (vice WIR/HLW).

Obtained DOE agreement to dispose as LLW the PADUCAH Cask waste stream (includes depleted uranium, cobalt-60 slugs, curium/plutonium slugs, and thulium slugs)

Ensured that LLW disposals of equipment with lead shielding & counterweights were conducted within SCDHEC approval requirements (since played key role in SCHEC approval of this type of disposal)

Consulted and provided input to the Closure Business Unit on WIR white papers.

Continued open & trusting communications with the Citizens Advisory Board (CAB) to keep members informed of pertinent missions and planned activities including

CAB endorsement of Senator Domenici legislation to eliminate certain restrictive requirements from the WIPP permit to allow for increased acceleration (including soliciting supporting letters from CNTA and retirees)

CAB endorsement of paper pellets to replace coal in SRS boilers

CAB endorsement of disposal as LLW the PADUCAH Cask waste stream (includes depleted uranium, cobalt-60 slugs, curium/plutonium slugs, and thulium slugs)

CAB understanding of progress and challenges associated with treatment of aqueous and organic PUREX solutions.

Briefed CAB on TRU Ship-To-WIPP program including the technical uncertainties associated with non-drummed/high activity TRU.

Acted as technical resource and accompanied CAB to National TRU Ship-To-WIPP workshop in Carlsbad, NM, thus providing CAB member with first hand knowledge to support their recommendations to DOE.

Managed LLW Disposal Authorization/Performance Assessment (PA) Program

Obtained approval of funds from DOE to develop Saltstone's PA Revision to support the low curie salt program

Obtained DOE approval of several key Special Analyses that will allow disposal of several difficult waste streams including Naval Reactor Pad wastes, K&L Basin Spent Resins as Components-in-Grout, ETF Carbon Columns in the Slit Trenches, and M-Area Glass.

Managed the preparation of several improvements in the PA program that will either improve the technical basis of our LLW disposal program or increase the limits for disposal of some wastes including improvements in Kd's for uranium and plutonium, improved understanding of tritium release from concrete rubble, development of timing of dose methodology to manage disposal limits, improved Closure concepts, improved methodology to manage changes in disposal limits that will reduce the impact to operations through an interim measures assessment that provides appropriate limitations in the field, and reports of monitoring information to ensure operations are within limits.

SUMMARY OF PERMITTEES' TECHNICAL TESTIMONY

1.0 INTRODUCTION

This technical testimony is submitted by the United States Department of Energy (DOE) and Washington TRU Solutions, LLC (the "Permittees") in opposition to the agency-initiated modification to the Waste Isolation Pilot Plant ("WIPP") Hazardous Waste Facility Permit ("HWFP" or "Permit")(EPA No. NM4890139088). On November 26, 2003, the New Mexico Environment Department ("NMED") announced its intent to approve a modification to the WIPP HWFP that would limit waste eligible for disposal at WIPP to the inventory identified in the 1995 *Transuranic Waste Baseline Inventory Report (Revisions 2)* ("TWBIR") and would require a permit modification for waste not directly traceable in Revision 2 of the TWBIR. (Public Notice No. 03-12 and Fact Sheet). On January 30, 2004, the Permittees submitted comments opposing the proposed agency-initiated modification. The Permittees also requested that a public hearing be held. The Permittees' Technical Testimony, and their Comments, support a complete denial of the proposed permit modification.

The Permittees' Technical Testimony, beginning with Section 2.0, below, sets forth the facts or opinions to be offered by each technical witness that the Permittees expect to testify and explains the basis for such facts or opinions. The Permittees' Technical Testimony incorporates by reference the comments and exhibits submitted by the Permittees on January 30, 2004, and the exhibits identified by NMED on November 26, 2003 as the administrative record in support of the proposed modification. The Permittees' Technical Testimony also incorporates by reference the WIPP HWFP, subsequent modifications to the WIPP HWFP, and the administrative records for the initial WIPP HWFP and subsequent modifications.

A list of exhibits and the actual exhibits are being submitted as part of the Notice of Intent to Present Technical Testimony. Other than the exhibits identified as provisional, all of the Permittees exhibits, including those submitted in support of the Comments, and the documents identified by NMED as the administrative record in support of the proposed modification, support the testimony of Mr. Robert Kehrman. Some of the exhibits are more directly relevant to particular sections of the Technical Testimony and, to the extent possible, have been identified at the end of the sections. The exhibits do not include demonstrative exhibits that may be developed in support of the testimony.

1.1 WITNESSES:

The Permittees will call the following witness to testify at the hearing in this matter:

Mr. Robert Kehrman, Senior Technical Advisor for Washington Regulatory and Environmental Services, an affiliate of Washington TRU Solutions, will be the main technical witness for the Permittees. Mr. Kehrman was heavily involved in preparing the WIPP Permit Application which resulted in the issuance of the HWFP in October, 1999. Mr. Kehrman is familiar with the requirements of the HWFP, including the specific requirements of the HWFP Waste Analysis Plan and the requirements for compatibility determinations. He is familiar with the application of the permit conditions since issuance, including its application to non-TWBIR waste streams. Mr.

Kehrman is also familiar with the history and purpose of the various versions of the TWBIR identified by NMED in the November 26, 2003 Fact Sheet. He is also familiar with the impacts that the proposed modification will have on generator/storage sites and the WIPP facility. Mr. Kehrman will testify on facts and opinions, and the basis thereof, identified in Sections 2.0 through 8.0.

The Permittees may call the following witnesses to testify at the hearing in this matter:

Mr. Joe P. Harvill, Manager, Integration Management, National TRU Program Integration, may testify as to the development of the TWBIR during the permit application and hearing process. Mr. Harvill may testify on facts and opinions, and the basis thereof, identified in Section 4.1.

Dr. Murthy Devarakonda, Senior Advisor, Washington TRU Solutions, LLC, may testify as to the technical and scientific aspects of waste compatibility analysis. Mr. Devarakonda may testify on facts and opinions, and the basis thereof, identified in Section 3.2.1.

Mr. I. Keith Gordon, P.E., of Gordon Environmental, Inc., and Dr. J. Winston Porter, President of the Waste Policy Center, may testify concerning the requirements of 40 CFR §270.14(b)(2) and §264.13 and the application of those RCRA requirements at other hazardous waste facilities, both in New Mexico and other states. Mr. Gordon and Mr. Porter may testify on facts and opinions, and the basis thereof, identified in Section 6.0.

Mr. Roger Nelson, Project Manager, DOE Carlsbad Field Office, may testify as a rebuttal witness on waste classification issues if needed. Mr. Nelson may testify on facts and opinions, and the basis thereof, identified in Sections 8.0.

Mr. W.T. (Sonny) Goldston, Westinghouse Savannah River Company, Solid Waste Senior Technical Advisor at Savannah River, may also testify as a rebuttal witness on waste classification issues if needed and on the impacts of the proposed modification at the Savannah River site. Mr. Goldston may testify on facts and opinions, and the basis thereof, identified in Sections 7.0 and 8.0.

2.0 REGULATORY BACKGROUND

2.1 THE WIPP FACILITY AND STATUTORY AUTHORIZATION:

The WIPP facility is a mined geologic repository in a deep salt formation. The WIPP LWA, passed in 1992 and amended in 1996, authorized the disposal of transuranic ("TRU") waste at WIPP. (Waste Isolation Pilot Plant Land Withdrawal Act ("WIPP LWA"), Pub. L. No. 102-579, 106 Stat. 4777 (1992) and Pub. L. No. 104-201, 110 Stat. 2851-2854 (1996)). The mission of the facility is the permanent disposal of TRU waste generated by atomic energy defense activities.

The WIPP LWA defines TRU waste as waste containing more than 100 nanocuries of alpha-radiation emitting transuranic isotopes per gram of waste. The half-lives of the isotopes of these elements must be greater than 20 years. (WIPP LWA, §4). The TRU waste disposed of at WIPP includes both "mixed waste" and "non-mixed waste." TRU mixed waste contains both

radioactive materials and hazardous wastes. Hazardous wastes are defined and regulated pursuant to the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §6901 *et seq.* and the New Mexico Hazardous Waste Act ("HWA"), NMSA 1978 §74-4-1 *et seq.* TRU non-mixed waste does not contain hazardous waste.

The LWA also sets disposal limits for the repository. (WIPP LWA at §7) The LWA specifically prohibits the transportation to and disposal of high-level radioactive waste and spent nuclear fuel at WIPP. (*Id.* at §12).

2.2. DOE AND EPA REGULATORY AUTHORITY OVER WIPP:

The WIPP LWA grants DOE management authority over the facility and defines the regulatory authority of the United States Environmental Protection Agency ("EPA").

The Atomic Energy Act ("AEA"), 42 U.S.C. §2011 *et seq.*, as amended by the Department of Energy Organization Act, 42 U.S.C. §7701, 7151(a), grants DOE the responsibility and authority to manage radioactive materials and waste. The AEA defines the scope of DOE's authority to manage radioactive wastes that are not regulated by the Nuclear Regulatory Commission. According to DOE and EPA guidance documents pertaining to mixtures of radioactive and hazardous waste, some of which are attached hereto as exhibits, the AEA governs the radioactive portion of the waste mixture and RCRA governs the hazardous portions. NMED appears to have recognized this division of authority in other proceedings.

EPA has sole authority, through the certification and re-certification process, to determine if the WIPP facility complies with EPA's radioactive waste disposal standards set forth in 40 CFR Part 191, Subparts B and C, and Part 194. (WIPP LWA at §8). In 1998, EPA certified that WIPP will comply with 40 CFR 191, Parts B and C, as implemented by 40 CFR 194.

2.3. NMED REGULATORY AUTHORITY OVER WIPP:

NMED, pursuant to its authority to implement the Solid Waste Disposal Act, as amended by RCRA, 42 U.S.C. §6901 *et seq.*, has regulatory authority over the hazardous waste component of the TRU mixed-waste. (WIPP LWA at §9, stating that WIPP is required to comply with the Solid Waste Disposal Act).

The State of New Mexico has been authorized by EPA to implement a hazardous waste program in lieu of, but equivalent to, the federal program. NMSA §74-4-1 *et seq.*; 42 U.S.C. §6926; 50 Fed.Reg. 1515 (Jan. 11, 1985). NMED has the authority to regulate hazardous wastes and facilities for the treatment, storage and disposal of hazardous waste. Such facilities must receive a permit from NMED in order to operate in New Mexico. EPA has also authorized New Mexico to regulate the hazardous components of radioactive mixed wastes managed in the state in a manner consistent with the federal RCRA program. 55 Fed.Reg. 28397 (January 11, 1990). The definition of hazardous wastes specifically states that hazardous wastes do not include "source, special nuclear, or byproduct materials as defined by the Atomic Energy Act of 1954, as amended." 42 U.S.C. §6903(27). RCRA expressly provides that "[n]othing in this chapter shall be construed to apply to (or authorized any State, interstate, or local authority to regulate) any

activity or substance which is subject to...the Atomic Energy Act of 1954 except to the extent that such application (or regulation) is not inconsistent with the requirements of such Act.[.]” *Id.* at §6905(a).

As already stated, EPA has sole authority, under the WIPP LWA, to regulate the radioactive component of the TRU waste at WIPP. Based both on RCRA and the WIPP LWA, NMED does not have any regulatory authority over the radioactive component of the TRU-mixed waste at WIPP.

The HWA implemented RCRA in the State of New Mexico and required the Environmental Improvement Board to issue regulations consistent with RCRA. With a few exceptions, the New Mexico Hazardous Waste Management Regulations, 20.4.1.1 NMAC *et seq.*, adopt the RCRA regulations found at 40 C.F.R. parts 260 to 266, 268, 270, and 273. The RCRA regulations, as adopted by the State, set forth criteria for determining the solid wastes that are subject to regulation as hazardous wastes. 20.4.1.200 NMAC. (incorporating 40 CFR §261.1). The regulations also set forth criteria for the management and disposal of hazardous wastes. 20.4.1.500 NMAC (incorporating 40 CFR Part 264). Permit requirements and procedures are set forth in 20.4.1.900 NMAC (incorporating 40 CFR Part 270) and 20.4.1.901 NMAC.

Section 311 of the Energy and Water Development Appropriations Act, 2004, Pub. L. No. 108-137 (December 1, 2003) provides that, for the WIPP facility, the Waste Stream Profile Form ("WSPF") is to be used to satisfy the waste analysis requirements of RCRA and the HWA with regard to confirmation that the waste contains no ignitable, corrosive, or reactive waste and that the EPA hazardous waste numbers assigned to the waste are only those allowed by the HWFP.¹ Neither Section 311 nor any other recent legislation authorizes the addition of an inventory-related limitation to the permit conditions, as proposed by NMED.

2.4. NUCLEAR WASTE CLASSIFICATION:

As already stated, NMED's authority over WIPP is limited to the regulation of the hazardous waste component of the TRU mixed waste. NMED does not have authority under the AEA, RCRA, or the HWA to regulate the radioactive component of the waste and does not have any authority to make determinations concerning the radiological classification of the waste.

Because NMED only has the authority to regulate the hazardous component of the waste through the provisions of the HWFP, the Permittees believe, and will argue by means of a Motion in Limine, that testimony and evidence on radiological classification should be limited to 1) the results of radiological classification of TRU waste within the DOE complex, including the history of waste streams, the timing of TRU waste classification, the quantities of TRU waste, and arrangements and schedules for disposal of TRU waste at WIPP, and 2) evidence in the record that demonstrates that NMED is improperly attempting to regulate the radiological component of the TRU mixed waste to be sent to WIPP, which is beyond NMED's authority.

¹ As required by Section 311, Permittees submitted a proposed modification to NMED that would revise the HWFP in the manner Section 311 requires. (Request for Class 3 permit modification to the Hazardous Waste Facility Permit No. NM4890139088-TSDF, Implementing Section 311 of Pub. L. No. 108-137, January 9, 2004).

Evidence concerning the method for determining radiological classification of waste in the DOE complex and the outcome of waste classification determinations are beyond the authority of NMED, are beyond the jurisdiction of the Hearing Officer, are not relevant and should be excluded. The technical testimony and exhibits on classification, identified in Section 8.0 below, are provisional, depending on the Hearing Officer's ruling on the Motion in Limine.

EXHIBITS: Exhibits in support of Section 2.0 include, but are not limited to, the following²:

NMED Exhibit 18.

Permittee Exhibits 16, 35, 45, 84.

3.0 THE WIPP HWFP

In October, 1999, pursuant to the HWA and RCRA, NMED issued WIPP a treatment, storage and disposal facility permit that authorized WIPP to accept TRU-mixed waste for storage and disposal. The WIPP HWFP provides all the conditions necessary for compliance with RCRA and for the safe management, storage and disposal of TRU waste, including general waste information and waste analysis requirements.

The WIPP HWFP sets forth the technical requirements for receipt and management of hazardous waste, including facility closure and groundwater monitoring, as required by 20.4.1.500 NMAC (incorporating 40 Part CFR 264, Subparts A to G). (HWFP Modules I-VII). The Permit also includes requirements for the management of waste in containers and in the storage facility, as required by 20.4.1.500 (incorporating 40 CFR Part 264, Subpart I). (HWFP Module III). The WIPP facility is a miscellaneous unit under 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart X). The Permit contains provisions to ensure compliance with the environmental standards that apply to the facility. (HWFP Module IV). The modeling included in the permit application demonstrated that the only pathway of concern is via the air emissions from the repository during operations. (WIPP RCRA Permit Application, Revision 6, Appendix D9). The Permit sets forth waste analysis requirements and requirements for assuring that ignitable, corrosive, reactive or incompatible waste are prohibited from storage or disposal at WIPP. (HWFP Modules I and II, HWFP Attachment B Waste Analysis Plan).

The General Facility Conditions of the HWFP establish the parameters for the acceptance of TRU waste at WIPP. The Permittees may only receive TRU waste from generator sites that comply with the applicable requirements of WIPP's Waste Analysis Plan ("WAP"). (HWFP Module II, Condition II.B.1). The HWFP sets forth a waste analysis process that requires the Permittees to collect specific information about the chemical and physical properties of the waste in order to manage the waste in compliance with 40 CFR 264. (Table 1). TRU mixed waste that does not meet the waste analysis requirements shall not be managed, stored or disposed of at the WIPP facility. (WIPP HWFP Module II, Condition II.C.1). The Permittees cannot accept TRU mixed waste that fails to meet the waste acceptance criteria of the HWFP ("TSDF-WAC"), including the criteria that all waste must be compatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, and other wastes. (*Id.*

² Exhibit numbers refer to the Exhibit Numbers listed in Exhibit C to the Notice of Intent.

at Conditions II.C.3 and II.C.3.d). The only TRU mixed waste containers that may be accepted are those that contain hazardous wastes identified in the Hazardous Waste Permit Application, Part A, which is incorporated into the HWFP as Attachment O. (*Id.* at Condition II.C.4).

TABLE 1

WASTE INFORMATION	40 CFR 264 GENERAL	40 CFR 264 SUBPART I	40 CFR 264 SUBPART X
Hazardous waste numbers	Used to determine authorized waste	Not applicable	Not applicable
Compatibility	Only compatible waste can be managed	Only compatible waste can be managed	Only compatible waste can be managed
Absence of Liquids	Secondary containment based on 1 percent liquids	Secondary containment based on 1 percent liquids	Less than 1 percent liquids assumed in model
Absence of ignitable, corrosive, reactive waste	No provision to handle such waste	No provision to handle such waste	Reactive or corrosive waste not included in model
VOC type and concentration	Not applicable	Not applicable	Air pathway emission standards apply
Physical form	Not applicable	Not applicable	Material parameter weight assumptions made in model

3.1 WASTE ANALYSIS REQUIREMENTS:

In order to safely manage and dispose of hazardous waste, the facility is required to obtain information about the chemical and physical properties of the waste. 20.4.1.500 NMAC (incorporating 40 CFR §264.13). Enough information must be gathered in order to manage the waste in compliance with the requirements of 40 CFR 264. Waste characteristics must be considered in assessing compliance with environmental performance standards. *Id.* at §264.601. Part A of the permit application includes a list of hazardous waste expected to be managed at the facility and a description of how the waste is to be managed. 20.4.1.900 (incorporating 40 CFR §270.13). The permit application is required to contain information about the chemical and physical properties of the waste and enough information to manage the waste in compliance with 40 CFR 264. *Id.* at §270.14(b)(2).

In issuing the WIPP HWFP, NMED determined that WIPP's permit application satisfied the requirements for general waste information in 40 CFR §270.14(b)(2) and general waste analysis information in 40 CFR §264.13. NMED found that the general information listed in Tables C-1 (Waste Identifiers Cross-Correlation Table) and C-2 (TRU Mixed Waste Characterization Information) of Chapter C of the permit application did not satisfy 40 CFR 270.14(b)(2). Rather than relying on the information provided in the permit application, NMED concluded that both §270.14(b)(2) and §264.13 could be satisfied by implementing the WIPP WAP process and conducting audits at the generator/storage sites. NMED's conclusion was adopted by the Hearing Officer and incorporated in the HWFP issued by the Secretary. The WAP states that

"[t]his waste analysis plan (WAP) has been prepared for management, storage, or disposal activities to be conducted at the Waste Isolation Pilot Plant (WIPP) facility to meet requirements set forth in 20 NMAC 20.4.1.500 (incorporating 40 CFR §264.13)...Before the Permittees manage, store, or dispose of transuranic (TRU) mixed waste from a generator/storage site, the Permittees shall require that site to implement the applicable requirements of this WAP." (Permit Attachment B at B-1).

The purpose of the WAP is to determine if waste can be safely managed and disposed of at WIPP. The acceptability of TRU waste for disposal is determined by the waste acceptance

criteria and the specific waste analysis requirements of the WAP. If TRU waste meets the waste acceptance criteria and the requirements of the WAP, it may be accepted for disposal. The Permit specifically states that any TRU waste that does not meet either the waste acceptance criteria or the WAP requirements may not be accepted at WIPP.

The waste analysis information must demonstrate waste compatibility, the absence of prohibited items, the absence of ignitable, corrosive or reactive waste as determined by the assignment of hazardous waste numbers, and the general physical form of the waste.

The Permittees did not propose to manage nor did they address the requirements for management of ignitable, corrosive and reactive waste and therefore such wastes may not be managed or disposed of at WIPP. (WIPP HWFP Attachment B-1c; B4-3b). The Permittees did not propose to manage nor did they address the requirements for management of incompatible waste and therefore any waste deemed incompatible may not be managed or disposed of at WIPP. (*Id.* at Attachment B-1c; B-4b(1)(ii); B4-2b). A miscellaneous unit such as WIPP must use modeling to demonstrate how the waste will perform in the repository. The modeling for WIPP showed that TRU waste with the expected physical and chemical processes will not cause the release of hazardous constituents throughout operations and for 30 years after closure. To meet the repository performance requirements, VOCs are monitored, material parameter weights are estimated and certain items, such as excess liquids, are prohibited. (*Id.* at Attachment B-1c; B4-2b). The general physical form of the waste (paper, metal, glass, rubber, etc.) is determined by the physical description of the waste and material parameter weights are estimated from the waste stream description. (*Id.* at Attachment B-3b; B-3d, B4-2b).

The WIPP HWFP also provides for extensive NMED oversight of the waste analysis process. Each waste stream must be accompanied by a WSPF, which must be approved by the Permittees and submitted to NMED. (*Id.* at Condition II.C.2; Attachment B-4b(1)). All generator/storage sites must submit waste container information electronically via the WIPP Waste Information System ("WWIS") and NMED has access to the WWIS to determine compliance with the WAP. (*Id.*) The Permittees are required to submit copies of each generator/storage site's quality assurance project plan, which incorporates all the applicable WAP requirements, to NMED for examination. (*Id.*) The Audit and Surveillance Program requires the Permittees to demonstrate to NMED that the waste requirements of the WAP have been implemented by the generator/storage sites. (*Id.*) A final audit report must be submitted to the Department for review and approval. (*Id.*)

3.2 COMPATIBILITY DETERMINATIONS:

Compatibility of waste was addressed in the permit application and the method used was incorporated by reference into the HWFP, as discussed below in 3.2.1.

3.2.1. COMPATIBILITY ANALYSIS IN THE PERMIT APPLICATION PROCESS:

During the permit application process, a chemical compatibility analysis was carried out with all defense generated, contact-handled and remote-handled TRU-mixed waste streams reported in the TWBIR. The chemical compatibility analysis was based on the EPA guidance document, *A Method for Determining the Compatibility of Hazardous Wastes* (Hatayama, et al., 1980), and

included as Appendix C1 to the permit application. All of the hazardous constituents listed in Part A of the permit application were analyzed for compatibility. All of the EPA hazardous waste codes listed in Part A are compatible.

A process for analysis and approval of all waste streams, irrespective of whether they are included in the TWBIR, was established in the HWFP when it was issued. The HWFP provides a mechanism to determine the compatibility of all waste streams. All waste streams, whether "directly traceable" to the TWBIR or not, are required to meet the waste acceptance criteria and the characterization requirements of the WAP before being accepted for disposal. Any waste that complies with the TSDF-WAC and meets the conditions of the WAP is, by definition, compatible with the waste already in the repository, with packaging materials, with backfill and with repository seal materials.

The following sections of the HWFP require compatibility determinations: II.C.3.D. Chemical Incompatibility; II.G. General Requirements For Handling Ignitable, Corrosive, Reactive, or Incompatible Wastes; III.D. Compatibility of Waste With Containers; B-1c Waste Prohibited at The WIPP Facility; B-4b(1)(II) Examination of The Waste Stream Profile Form and Container Data Checks; Table B-6 Summary of Parameters, Characterization Methods, and Rationale for CH Transuranic Mixed Waste (Stored Waste); B4-2b Required TRU Mixed Waste Stream Information; B6 Checklist Items 9, 12, 141, 144.

3.2.2. COMPATIBILITY ANALYSIS UNDER THE HWFP:

One of the justifications set forth by NMED for the proposed permit modification is the contention that waste streams which were not listed in the TWBIR Revision 2 have not been "evaluated for compatibility with TRU mixed waste or for other characteristics that may make disposal at WIPP a danger to public health or the environment." In the HWFP, as issued by NMED, the acceptance of waste is not dependant on the waste being directly traceable to waste streams in the TWBIR. Instead, as shown above, acceptance for disposal is determined by the waste acceptance criteria and the requirements of the WAP. The TSDF-WAC and the WAP identify the characteristics, including compatibility, that must be evaluated for safe management and disposal.

The HWFP requires that each container be verified as compatible for disposal. Part A of the Permit Application, incorporated into the Permit as Attachment O, identifies those hazardous wastes which may be accepted for disposal at WIPP. Each listed waste is identified by a hazardous waste number. Only containers of TRU mixed waste that are properly identified by a hazardous waste number may be accepted for disposal. The hazardous waste numbers identify wastes that are compatible for disposal at WIPP. Required information in the WWIS includes, in part, the waste stream profile number, TRUCON content code, and the hazardous waste number. The information is input into the WWIS for every container. Compatibility is ensured by limit checks for every container using the approved TRUCON codes and the hazardous waste numbers contained in Part A, which is incorporated into the HWFP.

All generator/storage sites are required to include procedures for determining compatibility in their standard operating procedures. The implementation of the procedures for determining

compatibility are reviewed during the audit process and documented in the final audit report. The procedures for determining compatibility at RFETS are included herein as an exhibit.

Any new hazardous waste codes that are discovered in the course of characterization activities must be added to the HWFP through a permit modification request. Additional hazardous waste codes have been requested three times, and have been approved by NMED, resulting in the addition of hazardous waste codes to the Permit. For each additional hazardous waste code, it was necessary to evaluate the waste with regard to compatibility. The chemical properties of each additional compound were examined and each compound was evaluated against Appendix C1 of the permit application to determine compatibility. NMED, by approving the three permit modification requests, has shown that it believes that the compatibility methodology is appropriate for determining compatibility.

According to the EPA guidance document (Hatayama), chemicals known or expected to be present in hazardous waste are classified under 41 different Reactivity Group Numbers based on molecular functional groups (such as halogenated organics) or chemical reactivities (such as oxidizing agents). If a new hazardous waste number that is not in the Appendix C1 analysis is identified by a generator site, one of two actions is taken. If the reactivity groups associated with the hazardous waste number is included in Appendix C1, then incompatibility can be evaluated by examining the results in Appendix C1. If the reaction group is not included, then a reanalysis may be conducted by re-running the database with any new reaction group.

In summary, meeting the requirements of the WAP ensures compatibility, independent of whether the waste stream was identified in the TWBIR.

EXHIBITS: Exhibits in support of Section 3.0 include, but are not limited to, the following:

NMED Exhibits 11-15

Permittee Exhibits 17, 18, 35, 38-40, 41, 46, 69, 70-75.

4.0 THE TRU WASTE BASELINE INVENTORY REPORT (TWBIR)

4.1 HISTORY AND PURPOSE OF THE TWBIR:

4.1.1. DEVELOPMENT OF WASTE STREAMS:

The Federal Facilities Compliance Act ("FFCA"), Public Law 102-386, signed October 6, 1992, states that Federal agencies are subject to all substantive and procedural requirements of Federal, State, and local solid and hazardous waste laws in the same manner as any private party. The FFCA required DOE to submit two inventory reports within 180 days of October 6, 1992: 1) a national inventory of all its mixed wastes regardless of the time they were generated on a state-by-state basis; and 2) a national inventory of its mixed waste treatment capacities and technologies. The FFCA defines mixed waste as waste that contains both hazardous waste and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1953 (42 U.S.C. 2011 *et seq.*).

To meet its FFCAct commitment, DOE issued the Mixed Waste Inventory Report ("MWIR") in April, 1993. The MWIR provided the most detailed, nation-wide compilation of information on DOE mixed waste streams and treatment systems. The MWIR database was used as the initial source of mixed waste information for the WIPP TWBIR.

The FFCAct also required DOE to prepare site treatment plans. In general, the treatment systems were limited to those that employed technologies capable of providing treatment to Land Disposal Restriction standards (i.e., technologies that destroy, remove, immobilize, or deactivate hazardous constituents or characteristics). As a result, waste streams were segregated into treatability groups. The treatability groups addressed the radiological, bulk physical/chemical matrix, and regulated contaminant characteristics. The regulated contaminant characteristics treatability group considers the regulatory status of the waste, the assigned hazardous waste numbers, concentration range of PCBs, and presence of asbestos. The delineation of waste into treatability groups served the purpose of DOE's inventory requirements for mixed waste across the DOE complex.

Additionally, in response to the FFCAct, DOE delineated the waste inventory into waste matrix codes ("WMCs"). DOE categorized mixed waste streams into a series of five-digit alpha-numeric codes that represent different physical/chemical matrices. The sites assigned WMCs to all mixed waste and some non-mixed wastes streams. The Final Waste Form ("FWF") of a waste stream consists of a series of WMCs that are grouped together, which for WIPP Performance Assessment purposes, have similar physical and chemical properties. The FWF assignment applies to both the stored and future generation of waste. By their very nature, WMCs were designed to capture all of the known and envisioned waste in the DOE complex.

4.1.2 DEVELOPMENT OF THE TWBIR:

The TWBIR was developed by DOE to serve a number of purposes. It established a methodology for grouping wastes of similar physical and chemical properties, from across the DOE TRU waste system, into a series of "waste profiles" that could then be used as the basis for waste form discussions with regulatory agencies. (TWBIR, Rev. 2, at ES-1). The TWBIR also defined the anticipated inventory for the WIPP and calculated the disposal inventory in terms of waste material parameters.

A major purpose of the TWBIR was also to support the performance assessment ("PA") and the Compliance Certification Application ("CCA") to satisfy the EPA's radioactive waste disposal regulations in 40 CFR Part 191, Subparts B and C. The TWBIR is updated, as required, to support performance assessment needs, as in the case of WIPP's Compliance Recertification Application that is to be submitted to the EPA Office of Radiation and Indoor Air in March, 2004.

Revisions 0 and 1 of the TWBIR provided data for the performance assessment. *Id.* The TWBIR was the data call for the repository modeling. The TWBIR identified the characteristics of the final waste forms and the waste material parameters that were used in the WIPP PA modeling. (TWBIR Rev. 2, Table 1-1 and Table 1-2). Because the TRU waste inventory identified as of Revision 2 was not enough to fill the WIPP facility, the final waste forms were scaled to a full

facility and provided bounding estimates for material parameters used for modeling the miscellaneous unit, as required by 40 CFR Part 264, Subpart X.

Only the final waste forms identified in the TWBIR are important for the WIPP permitting activities. While all of the material parameters were considered in the modeling, only corrodible metals, cellulose, rubber, plastic and water are important components affecting the repository performance. The values for these materials were determined based on the TWBIR information or on limits imposed by the waste acceptance criteria (i.e., <1 percent liquids). The assumptions that were developed regarding the material parameter components of the final waste forms became the limits imposed on the repository. The waste at the generator/storage sites is characterized to assure it meets all waste acceptance criteria including those that are derived from these limits.

4.1.3. THE TRU WASTE INVENTORY IDENTIFIED IN THE TWBIR:

Revision 2 of the TWBIR, in addition to providing data for the PA, also provided information to meet the WIPP LWA requirement (which was withdrawn when the LWA was amended) for identifying the "total DOE TRU waste inventory."

Read in context, it is clear that the term "total DOE TRU waste inventory" meant all of the TRU waste that had been identified by the generator sites as of 1995, regardless of whether or not it was eligible for disposal at WIPP. To meet the LWA requirement, the DOE collected and reported information on all of the transuranic waste that had, at that time, been identified as TRU waste, whether or not it met the conditions for disposal at WIPP. The information was reported in the TWBIR and included TRU waste that had been identified for disposal at WIPP and "non-defense, commercial, PCB contaminated, and buried (pre-1970) TRU wastes."

The TWBIR contains general descriptions of the TRU waste stored at the DOE generator/storage sites. Although the TWBIR defined the "anticipated disposal inventory of TRU waste destined for WIPP," it was not intended to be an enumeration of waste streams to be included in the HWFP. Nor was it intended as a listing of all the waste streams eligible for disposal at WIPP because eligibility is a function of the WAC and the HWFP and not the TWBIR. Generators identified projected inventory, which is defined as "TRU inventory that has not been generated but is currently estimated to be generated at some time in the future." (TWBIR, Rev. 2, at 1-5). Projected inventory could only be based on current plans at each of the sites and could not include TRU inventory that would be generated by work that had not yet been identified.

Additionally, the TWBIR specifically identifies wastes from environmental restoration and decontamination and decommissioning of the sites as future waste that is not included in the inventory. (*Id.*). The TWBIR also includes a category identified as "unknown waste streams" that are not documented as part of the WIPP inventory, but are listed in the 'Possible Future Waste' in Section 5.4. The TWBIR explains that "[t]hese wastes have not been characterized adequately to determine the Final Waste Form and/or other significant parameters. If these wastes are characterized they will be included in the WIPP inventory." (*Id.* at 5-8). Chapter 5 identifies a number of possible future wastes, including pre-1970 buried waste whose final disposition was at that time undecided, classified waste that would have to be declassified prior to shipment to WIPP, plutonium residues at sites other than Rocky Flats Environmental Technology Site

("RFETS"), Hanford tank waste, unknown waste streams, waste from the light water reactor burnup program, and RFETS particulate waste streams.

The TWBIR, Rev. 2, defined "stored inventory" as that part of the DOE TRU inventory that was in retrievable storage and included waste that was in storage as of December 31, 1994, unless a different date was indicated on the waste stream profile. The stored inventory was waste that was placed in storage in buildings and berms after 1970. The stored inventory did not include disposed waste (any TRU waste that was buried prior to 1970), unless the waste had already been identified for retrieval and disposal.

The "projected inventory" was defined as waste that had not been generated at the time of the TWBIR but that would be generated at some time in the future. The projected inventory was an estimate based on 1) on-going missions; 2) anticipated changes in on-going missions, 3) anticipated new missions; 4) anticipated changes in program plans. Anticipated environmental restoration projects and decontamination and decommissioning activities were not included in the projected inventory. The stored inventory combined with the projected inventory comprised the anticipated inventory planned for disposal at the WIPP as of 1995.

The TWBIR identified eleven (11) final waste forms. The TWBIR also included categories for "excluded waste streams" and "unknown waste streams" that will not be accepted at WIPP unless additional characterization or processing occurs to meet the WIPP waste acceptance criteria. The additional wastes are listed in the TWBIR as the 1995 estimate of "Possible Future Wastes."

The TWBIR was not meant to be the final word on the DOE TRU inventory. The TWBIR is a snapshot-in-time of the DOE TRU inventory and has always been presented as a living document that represents the best available TRU waste inventory information in support of the WIPP Project. Revision 2 specifically stated that "[t]he TWBIR represents the best available TRU inventory information in support of the WIPP Project. It is anticipated that the TWBIR will be updated periodically. This update cycle will be modified based on the availability of additional waste information and the data needs for the WIPP Project as determined by DOE." (TWBIR Rev. 2, at 1-24). The TWBIR was never intended to be a listing of RCRA regulated waste streams that would be disposed at WIPP since other relevant information is needed about the TWBIR waste streams prior to disposal, such as the absence of TSDF-WAC prohibited items.

4.2. USE OF THE TWBIR IN THE WIPP HWFP PERMITTING PROCESS:

NMED recognized, during the original permit application process and hearing proceeding, that the WAP process, not the TWBIR information, was the mechanism by which waste is to be determined compatible and acceptable for disposal at WIPP.

The TWBIR was provided to NMED during the permit application process to provide general information on the waste to be received at WIPP. The TWBIR provided NMED with general information about the waste that would be disposed of at WIPP but was not sufficient or necessary to satisfy 40 CFR §264.13(a) or §270.14(b)(2). The Permittees provided NMED with a draft version of Revision 0 of the TWBIR in 1994 and solicited comments from the Department. As part of the permit application, NMED specifically asked the Permittees to submit information to satisfy 40 CFR §270.14(b)(2). The Permittees submitted only general waste information from

the TWBIR in the application, which stated that the TWBIR was based on the best available information and would be updated in the future. The application specifically stated that, regardless of the information in the TWBIR, all waste would have to be characterized in accordance with the WAP process and the characterization information would have to be included on the WSPF before the waste could be accepted for disposal. The application also stated that changes were being made to the TWBIR that did not affect the permit application. NMED was aware of the inherent limitations of the TWBIR information and understood that it was the WAP, and not the TWBIR, that would determine if waste was acceptable for disposal at WIPP. NMED specifically requested the TWBIR (in the form of CCA Appendix BIR) to be submitted to the permit administrative record to support NMED's review of the miscellaneous unit performance assessment.

NMED recognized, and the Hearing Officer affirmed, that the TWBIR information could not satisfy 40 CFR §270.14(b)(2) and, therefore, the HWFP conditions, the WAP process, and the TSDF-WAC in the HWFP, are the mechanisms by which all prospective waste is determined acceptable for WIPP disposal.

4.3 REPRESENTATIONS MADE BY THE PERMITTEES TO NMED ABOUT THE TWBIR:

NMED recognized, during the original permit application process and hearing proceeding, that the TWBIR was a "living document" that would be updated over time. Throughout the permit application process, the Permittees were consistent in the representations made to NMED about the TWBIR. The Permittees did not make representations that the TWBIR "reflected the total DOE TRU waste inventory" that would ever exist or be identified for disposal at WIPP. Rather, as discussed above, the TWBIR reflected the "total TRU waste inventory" that had been identified as of Revision 2 and the Permittees consistently represented that the inventory information would be updated as additional data was received and as needed.

4.4. USE OF TWBIR INFORMATION IN VOC SAMPLING AND ANALYSIS:

The quantity of waste in each final waste form in the TWBIR was also used to weight VOC sampling and analysis data presented in the permit application. (Permit Application Appendix D13). The information was used to identify the target analytes for repository monitoring and included the most prevalent VOCs, which were those that contributed to 99 percent of the toxicity. The weighting factors are no longer important because confirmatory repository monitoring is being conducted in accordance with the HWFP. This monitoring validates the assumptions made in the modeling.

4.5. ACCEPTANCE OF WASTE STREAMS SINCE APPROVAL OF THE HWFP:

A comparison of waste streams that have been accepted for disposal at WIPP with the information in Revision 2 of the TWBIR shows that a significant portion of the waste already in the repository was not identified in the TWBIR. A total of 60 waste streams have been approved for disposal and, of those 60, eight waste streams were not enumerated in the 1995 TWBIR. As of December, 2003, the eight waste streams account for more than 12,000 drum equivalents of waste in the repository. As required in the HWFP, the WSPFs for the additional waste streams

were submitted to WIPP for review and approval before shipping and were provided to NMED. The information is also included in the WWIS, which is directly assessable by NMED.

A comparison of the information contained in a WSPF, and the accompanying AK documentation, with the waste stream information included in the TWBIR, demonstrates that the WSPF and AK record provide more extensive information than was included in the TWBIR. The information in the WSPF and the supporting AK record, is specifically tailored to meet the requirements of the waste acceptance criteria and the WAP. The information in the TWBIR was prepared to meet a number of different purposes, including providing general waste information. However, the TWBIR information is not sufficient and was never intended to meet the specificity of the HWFP waste characterization requirements or the RCRA regulations.

Historical documents show that DOE provided NMED with information concerning the continued uncertainty about the TRU waste inventory. DOE also provided NMED with information on possible future waste streams, including those from Hanford and INEEL.

EXHIBITS: Exhibits in support of Section 4.0 include, but are not limited to, the following:

NMED Exhibits 2-4, 6-9, 16, 18.

Permittee Exhibits 1, 2-14, 42-45, 47, 49, 50, 55, 58-60, 79

5.0 THE STATE-INITIATED PERMIT MODIFICATION

5.1 THE PROPOSED MODIFICATION EXCEEDS NMED'S AUTHORITY:

Based on the information contained in the Fact Sheet, under the heading "Events Contemporaneous With or After Permit Issuance," it is apparent that NMED is seeking, by means of the agency initiated modification, to regulate waste based on its radiological classification, which is beyond NMED's RCRA authority granted by EPA. As an authorized state under EPA's 40 CFR Part 271 RCRA program, NMED can only "apply the RCRA regulations to the hazardous component of mixed waste, regardless of the classification of the radioactive component as low-level, high-level, transuranic, or other". (State Authorization Manual, Volume II, Appendix N, U.S. EPA OSWER Directive 9540.00-9A-1, October 1980). EPA has the sole authority, through the certification and re-certification process established by the WIPP LWA, to determine if the WIPP facility complies with EPA's radioactive waste disposal standards in 40 CFR Part 191, Subparts B and C.

The State of New Mexico's stated purpose in proposing the permit modification is to regulate the radiological portion of the waste that may be disposed of at WIPP. The State of New Mexico specifically stated that the purpose of the state-initiated permit modification was to "amend WIPP's state permit to specifically forbid any reclassified high-level waste from coming to WIPP." (NMED Permit Modification Administrative Record, Doc. 27); *see also*, "The Green Gazette, Permittees' Exhibit 15). The focus of the information listed in the Fact Sheet, under the heading of "Events Contemporaneous With or After Permit Issuance," is the radiological classification of the waste, not the hazardous waste component of the waste. The stated purpose of the permit modification violates the AEA, the LWA, the State of New Mexico's authorization under RCRA, exceeds the waiver of sovereign immunity contained in RCRA, and violates the

Supremacy Clause of the United States Constitution. The evidence shows that NMED had information, both prior to the issuance of the original permit, and subsequently but prior to the proposed state-initiated permit modification, that waste streams outside the TWBIR Revision 2, were anticipated and planned for, and were actually being shipped to the facility. The TWBIR argument is a pretense for the actual goal, which is to regulate the radiological component of the TRU waste, which is outside NMED's authority.

5.2. NMED HAS NOT MET THE REQUIREMENTS FOR AN AGENCY-INITIATED PERMIT MODIFICATION:

The RCRA regulations provide two methods whereby a permit may be modified. The Permittees may request permit modifications for a variety of reasons. The procedural requirements for permittee-initiated permit modification requests are codified in 40 CFR §270.42.

In certain limited situations, NMED may initiate a permit modification. The HWFP may only be modified upon a showing that there is cause for the modification as set forth in either the HWA or 40 CFR §270.41. The HWA, §74-4-4.2.D, lists specific circumstances that allow the Secretary to modify a permit for cause, none of which apply to NMED's proposed modification. Like the HWA, §270.41 allows NMED to modify the permit on its own initiative only if the Department can prove that one or more of the causes for modification listed in the section exist. "If cause does not exist under this section, the Director *shall not* modify or revoke and reissue the permit, except on request of the permittee." §270.41 (emphasis added). NMED has based its permit modification on the claim that it has received "new information" that justifies the proposed modification under §270.41(a)(2). In order to modify the permit, NMED must show that the information being relied upon was not available at the time of permit issuance and that the information would have justified the application of different permit conditions at the time the permit was issued.

The "for cause" requirement for agency-initiated permit modification should be strictly construed. EPA specifically rejected the argument that an agency had broad authority to modify a permit for "good cause." EPA determined that such broad authority was too vague and unlimited agency authority could "provide a means of circumventing the limitations on opportunities for modifying permits during their terms" intended by the rule. 45 Fed.Reg. 33290, 33317.

The issuance of a permit and compliance with its terms, is considered to be, for purposes of enforcement, compliance with Subtitle C of RCRA. 40 CFR §270.4. In this case, NMED, without legitimate cause, is attempting to change the basis on which waste can be accepted. Such an approach is not consistent with the "for cause" requirements of §270.41 or with the permit protection recognized in §270.4.

5.2.1. NO "NEW INFORMATION" HAS BEEN IDENTIFIED:

The fact that DOE intends to dispose of waste at WIPP that was not included in the TWBIR is not new information and this information was available at the time the HWFP was issued. At the time the Permit was issued, there were numerous references to the fact that, in all likelihood, additional waste not listed in the TWBIR would be identified as TRU waste to be disposed of at

WIPP. The TWBIR stated that the inventory was based on the best available information and specifically stated that the baseline inventory would be updated as additional waste information was identified. (TWBIR, Rev. 2 at 1-24). As discussed in Section 4.1.3, above, there were, at the time the TWBIR was developed, numerous waste streams that either had not been or could not be identified as TRU waste for disposal at WIPP. The language of the TWBIR, and the representations made to NMED about the information included, demonstrate that DOE expected that additional waste streams, other than those specifically identified in the TWBIR, would be identified for disposal at WIPP.

The HWFP describes waste authorized in the terms of the major types of operations that generate TRU mixed waste, including production of nuclear products, plutonium recovery, research and development, and decontamination and decommissioning and not specific waste streams originating from these processes. Waste from the decontamination and decommissioning activities "are expected to be the largest category by volume of TRU mixed waste to be generated in the future." (Permit Attachment B at B-1). These processes are on-going at the generator/storage sites, as reflected by the identification of both "retrievably stored" waste and "newly generated" waste in the HWFP. The HWFP, as issued by NMED, states that

"some TRU mixed waste is retrievably stored at the DOE generator/sites. Additional TRU mixed waste will be generated and packaged into containers at these generator sites in the future. TRU mixed waste will be retrieved from storage areas at a DOE generator/storage site. Retrievably stored waste is defined as mixed waste generated after 1970 and before NMED notifies the Permittees, by approval of the final audit report, that the characterization requirements of the WAP at a generator/storage site have been implemented. Newly generated waste is defined as TRU mixed waste generated after NMED approves the final audit report for a generator site...Retrievably stored TRU mixed waste will be characterized on an ongoing basis, as the waste is retrieved. Newly generated waste is typically characterized as it is generated, although some characterization occurs post-generation." (*Id.*)

Neither the identification of "retrievably stored waste" nor "newly generated waste" is dependant on the waste stream being identified in the TWBIR Rev. 2.

At the time the HWFP was issued, NMED had access to information demonstrating that the Permittees were not limiting the waste that was acceptable for disposal to the waste streams identified in the TWBIR. The various versions of the TWBIR were provided to the Department, as stated in the Fact Sheet. In addition, during the permit application process, the Permittees explained, on a number of occasions, that the TWBIR only provided general information about the TRU waste that might be accepted at WIPP and that it represented the best information available at the time and would be revised in the future as more information became available. The Permittees also consistently took the position that the WAP, not the TWBIR, would be used to determine waste acceptability.

With regard to Revision 2 of the TWBIR, the Permit Application made it clear that the inventory contained general information about the type of wastes that would be disposed of at WIPP. During the permit application process, the Permittees made it clear, as shown in the HWFP, that there were additional wastes that were not included in the inventory that could be considered for

disposal in the future. Historical documents show that DOE provided NMED with information concerning the continued uncertainty about the TRU waste inventory. DOE also provided NMED with information on possible future waste streams, including those from Hanford and INEEL. The evidence shows that NMED had information, both prior to the issuance of the original permit, and subsequently but prior to the proposed state-initiated permit modification, that waste streams outside the TWBIR Revision 2 were anticipated and planned for, and were actually being shipped to the facility.

5.2.2. A DIFFERENT PERMIT CONDITION WOULD NOT HAVE BEEN JUSTIFIED:

Even if NMED can show that the information relied on was not available at the time the permit was issued, it must also show that, if the information had been available, it "would have justified the application of different permit conditions at the time of issuance." 40 CFR §270.41(a)(2).

The acceptability of waste for disposal at WIPP is dependant upon a demonstration that the waste meets the conditions of the HWFP, the waste acceptance criteria and the requirements of the WAP. All waste, regardless of whether or not it was identified in the TWBIR, must meet the requirements of the TSDF-WAC and the WAP. Although the TWBIR was provided to NMED during the permit application process, the final HWFP did not make acceptance of waste for disposal at WIPP contingent upon the waste being "directly traceable to the waste streams" in the TWBIR. The reason that such a condition was not imposed is because the TSDF-WAC and the WAP provide all of the information needed to safely store, manage, and dispose of the waste, as required by 20.4.1.900 NMAC (incorporating 40 CFR §270.13). The purpose of the waste acceptance criteria and the WAP is to ensure that the waste accepted for disposal at WIPP meets the performance standards of the repository. (HWFP Module II at II.A). The performance standards for the repository are based upon an analysis of all the relevant characteristics, including incompatibility, that needed to be considered for safe disposal of the waste. The relevant parameters are identified in the TSDF-WAC and the analysis required to ensure that the parameters are met is incorporated into the WAP. Therefore, any waste that meets the WAP is, by definition, compatible with the waste already in the repository, packaging materials, and backfill and repository seal materials. (*Id.* at II.C.4).

NMED states that the permit modification is needed because the potential additional waste streams have not been "evaluated by the state for compatibility with TRU mixed waste or for other characteristics that may make disposal at WIPP a danger to public health or the environment." NMED has not identified the "other characteristics" that may be harmful to public health and the environment that would require additional evaluation. The evaluation of compatibility and any characteristics that could be harmful is the responsibility of the Permittees. The HWFP already requires that waste be evaluated for compatibility and for other specific characteristics that ensure the safe performance of the repository. Because the HWFP requires all waste to be evaluated for compatibility and provides specific methods for evaluating whether a particular waste stream is suitable for disposal at WIPP, the imposition of the additional conditions proposed by NMED would not have been justified at the time of permit issuance.

NMED also proposes to add additional permit conditions that would require additional waste streams, which have already been accepted for disposal, be approved by NMED through a permit modification process. NMED proposes to add a table to the permit "that would clearly identify

those waste streams that are not directly traceable to the TWBIR Revision 2 that have been approved for acceptance at WIPP, in the event of future permit modifications allowing disposal of these waste. These approvals will be based upon completion and approval of a waste stream profile form (WSPF) by the Permittees, NMED review of the WSPF, and modification of the permit to list the approved WSPF." This proposed modification to the permit includes significant changes to the current permit. The modification would add a list of "approved WSPFs," which the current HWFP does not include. Because all waste streams must be properly characterized, as reflected by the information provided on the WSPF and in support of the WSPF, the Permit does not include either approved waste streams or approved WSPFs. Each WSPF is reviewed prior to acceptance of the waste to ensure that the waste meets all the applicable HWFP conditions. The waste streams that are "directly traceable" to the TWBIR Revision 2 are not listed as "approved" waste streams and there is no basis for including such a list for additional waste streams.

The proposed modification would also require the Permittees to submit a permit modification request for additional waste streams prior to making a determination as to whether such waste streams are acceptable for disposal. As discussed above, a number of waste streams that were not identified in the TWBIR have already been accepted for disposal without the necessity of submitting a permit modification. The waste streams were characterized and accepted for disposal pursuant to the HWFP. NMED has not explained why the same method cannot be used for other waste streams that may not be directly traceable to the TWBIR. The permit provides a mechanism, through the audit and surveillance process, for NMED to review the waste streams that have been approved by the Permittees for disposal. (HWFP Module II at II.C.2). The purpose of the audit process is to allow NMED a mechanism for ensuring that the requirements and conditions of the permit, including the WAP, are met. If NMED determines that the permit conditions are not being met, it has the authority to take appropriate action, including preventing the disposal of wastes that do not meet the permit requirements. The proposed permit modification requiring the approval of additional waste streams would not have been justified at the time of permit issuance.

EXHIBITS: Exhibits in support of Section 5.0 include, but are not limited to, the following:

NMED Exhibits 1, 17, 19-27, 30.

Permittee Exhibits 12, 15, 36, 37, 48, 51-54, 62-68, 79-83. See also documents listed in Section 3.0 above.

6.0 IMPLEMENTATION OF RCRA AT OTHER TSDF-FACILITIES.

6.1. STATE AUTHORIZATION UNDER RCRA:

The state regulation of the radiological component of mixed TRU waste is pre-empted by federal law. The AEA grants DOE and the Nuclear Regulatory Commission exclusive responsibility for regulating source, special nuclear, and byproduct material. 42 U.S.C. §2201(b)(i)(3). Pursuant to RCRA, the states may be authorized to implement a hazardous waste regulatory program in lieu of the federal program. The states are bound by the parameters of state authorization under RCRA. New Mexico, under its state authorization, may only regulate hazardous wastes as defined by RCRA, which specifically states that "source, special nuclear, or byproduct material,"

as defined by the AEA, is not hazardous waste. 42 U.S.C. §6903(27). RCRA also states that "[n]othing in this chapter shall be construed to apply to (or authorized any State, interstate, or local authority to regulate) any activity which is subject to...the [AEA] except to the extent that such application (or regulation) is not inconsistent with the requirements of the [AEA]." 42 U.S.C. §6905(a). EPA has the sole authority, through the certification and recertification process established by the WIPP LWA, to determine if the WIPP facility complies with EPA's radioactive waste disposal standards in 40 CFR Part 191, Subparts B and C. While NMED has the authority to regulate the hazardous waste component of the waste, it may not regulate the radioactive component.

6.2. RCRA REGULATORY REQUIREMENTS:

Pursuant to 40 CFR §270.14 (b)(2), a RCRA permit application is required to contain information about the chemical and physical properties of the waste and enough information to manage the waste in compliance with 40 CFR 264. In order to safely manage and dispose of hazardous waste, 40 CFR §264.13 requires a TSDF to obtain enough information about the chemical and physical properties of the waste accepted for disposal to safely manage, store and dispose of the waste.

The interface between the application requirements of §270.14(b)(2) and the permit requirements of §264.13 results in the inclusion of a waste analysis plan as part of the hazardous waste facility permit. While the application is required to include a general discussion of the waste that is expected to be accepted for disposal, it is the WAP that provides the specific parameters upon which waste acceptance is based. TSDF permits are not based on waste streams and do not include specific inventory lists or specific inventory limits. Instead, waste acceptance is based on a demonstration that the waste meets the specific requirements of the WAP.

A review of hazardous waste permits issued by NMED and by other states confirms that the permits are not inventory based. Instead, permits are based on a list of hazardous wastes that are approved for the facility in Part A of the permit application. These accepted hazardous wastes are denoted in Part A as specific hazardous waste numbers that are acceptable for management and disposal. In addition, permits may contain lists of prohibited wastes that are unacceptable for management and disposal. Neither Part A nor the permits include inventory lists of waste streams. To ensure that the waste sent for management and disposal are acceptable, the permits contain waste analysis plans, as required by §264.13.

EXHIBITS: Exhibits in support of Section 6.0 include, but are not limited to, the following:

Permittees Exhibits 19-34, 51-54, 61-65, 76, 82.

7.0 ADVERSE IMPACTS OF THE PROPOSED PERMIT MODIFICATION ON THE DOE GENERATOR/STORAGE SITES AND ON THE WIPP FACILITY

The proposed modification will cause adverse and significant impacts to the DOE's clean up of contaminated sites around the country, including the Los Alamos National Laboratory in New Mexico. Since the issuance of the HWFP in 1999, the sites have relied on the applicable permit conditions to plan and manage the cleanup of numerous waste streams consisting of tens of thousands of cubic meters of TRU waste.

The DOE generator sites that ship TRU waste to WIPP must comply with the waste acceptance criteria and the WAP. The sites have implemented plans and programs to characterize the waste and meet the applicable WAP requirements, as required in the HWFP. (*See e.g.*, Permit Attachment B at B-27). The sites currently rely on the waste acceptance criteria and the WAP to characterize new waste streams. Under the current HWFP, WSPFs are reviewed by WIPP to determine if the new or additional waste streams are acceptable for disposal and may accept the waste streams as long as the conditions of the WAP are met. In many cases, the waste is ready, or nearly ready, for shipment at the time the WSPF is being reviewed. If a permit modification must be submitted for waste streams that are not "directly traceable" to the TWBIR, Revision 2, it is likely that the shipment of the wastes will be unduly delayed, creating an adverse impact for the particular site waiting for a decision on whether its waste may be shipped to WIPP. Given the history of the permit modifications that have been submitted to date, it is possible that the delay could be significant.

Many of the sites are under state mandated clean-up requirements, which include legally enforceable milestones, some of which are dependant on shipping TRU waste to WIPP. Historical documents demonstrate that NMED has been aware, for a number of years, of potential impacts resulting from regulatory delays in shipping, such as those that would be caused by the implementation of the proposed permit modification. An additional uncertainty is added because it is not clear whether the required modifications would be Class 1, 2 or 3. *See* 40 CFR §270.42. The classification of the modification introduces uncertainty as to the length of time a permit modification would take to be reviewed and either approved or denied. This is particularly true in the case of Class 3 modifications because §270.42 does not set forth specific timeframes within which the agency must act following the submission of a Class 3 modification. The history of Class 3 modifications to the WIPP HWFP demonstrates that such modifications are often pending before NMED for many months and, in some cases, for years, before a final decision is made.

In addition, the proposed modification does not adequately define a standard for determining if a particular waste stream is "directly traceable" to the TWBIR, Revision 2. There is a possibility that WIPP could accept a particular waste stream as being directly traceable to the TWBIR, only to have NMED later reject the determination. If WIPP is required to submit a permit modification request for every waste stream that is possibly not "directly traceable," there will be a major impact on both the generator/storage sites and the WIPP operations.

As discussed above, certain types of TRU waste, particularly those resulting from decontamination and decommissioning, were not included in the TWBIR 2 because those waste streams had not yet been generated. Many of the sites have wastes that have already been identified as TRU wastes that may not be directly traceable to the TWBIR Revision 2. For example, Savannah River has TRU waste that has been generated since 1995 and that may not be directly traceable to the TWBIR Revision 2 because it had not been identified at that time. Savannah River also has significant on-going defense missions that will generate TRU waste that may not be directly traceable to the TWBIR since it was not identified in 1995. If the proposed modification becomes final and these TRU wastes become subject to a permit modification requirement prior to shipment to WIPP, operations critical to national security at Savannah River will be significantly impacted.

EXHIBITS: Exhibits in support of Section 7.0 include, but are not limited to, the following:

Permittee Exhibits 58-60, 77.

8.0 NUCLEAR WASTE CLASSIFICATION

As discussed above in Section 2.3, the following technical testimony is provisional, depending on the Hearing Officer's ruling on the Permittees' Motion in Limine.

The nuclear waste within the DOE complex may be classified as either high level waste ("HLW"), TRU waste or low level waste ("LLW"). The AEA sets forth the basic framework governing the production, use and ownership of radioactive materials, as well as the liability for and disposal of such materials. Following the passage of the AEA, Congress passed a number of other laws setting forth radioactive waste management procedures and the authority of the relevant agencies over radioactive waste.

The Nuclear Waste Policy Act ("NWPA"), passed in 1982, defines HLW, mandates the method for disposal of HLW and spent nuclear fuel, and sets forth deadlines for progress. The definitions of HLW focus on the source of the material or waste, not on the risk to human health and the environment. HLW is waste that comes from the reprocessing of spent nuclear fuel and "other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation." The Agreement for Consultation and Cooperation ("C&C Agreement") between DOE and New Mexico defines HLW as "defense waste, in form of the solidified product of the first-cycle solvent extraction or similar process by means of which uranium and plutonium are recovered from irradiated reactor fuel." Pursuant to the WIPP LWA and the C&C Agreement, HLW may not be transported to WIPP for management or disposal. Therefore, the Permittees cannot accept HLW for management or disposal at the WIPP facility.

As stated in Section 2.1, above, TRU waste is defined as special nuclear or byproduct materials containing more than 100 nanocuries of alpha-radiation emitting transuranic isotopes with half-lives of greater than 20 years per gram of waste. (WIPP LWA, §2). TRU waste is further divided into contact handled ("CH") and remote handled ("RH") waste. At the current time, only CH TRU waste may be disposed of at WIPP. A permit modification allowing the disposal of RH TRU waste has been pending before NMED since May, 2002.

Pursuant to the LWA and the EPA certification, all waste accepted for disposal at WIPP must first be determined to be TRU waste. TRU waste does not come from the first cycle of reprocessing of nuclear fuel, which by definition is HLW. Final TRU waste determinations are made at the time of packaging by the measurement of radionuclides. If necessary, DOE may, and does, request that the NRC review waste classification determinations.

The EPA has reviewed and approved the WIPP waste acceptance criteria for TRU waste. If the waste meets the waste acceptance criteria, including the EPA waste acceptance criteria, TSDF-WAC, and transportation and safety criteria, it is acceptable for disposal at WIPP. EPA audits the nuclear characterization determinations made by the generator/storage sites. The waste that has been received, and is currently being received at WIPP, is post-reprocessing waste and is clearly TRU waste.

TRU waste is generated as the result of a number of processes. If necessary, the Permittees may present technical testimony regarding the method by which waste is classified as TRU waste at the generator/storage sites. The Permittees may also, if necessary, present technical testimony as to the processes at Hanford, Savannah River and INEEL that have produced waste that may be disposed of at WIPP, if classified as TRU waste and characterized in compliance with the HWFP. Finally, the Permittees may present technical testimony in response to direct testimony on classification issues, as needed.

At Savannah River ("SRS"), TRU waste is generated as a result of preparing product streams in facilities that process plutonium. Liquid (plutonium nitrate) streams are chemically processed in facilities to separate, purify, and stabilize plutonium, resulting in a plutonium oxide or metal form that is packaged for storage. The job control waste (protective clothing, etc.) and equipment used in these processes may become contaminated with TRU isotopes (primarily plutonium). When waste materials or equipment is removed from the facilities, they are packaged and characterized to determine the concentration of various radionuclides that may be present. If it is determined that the waste as packaged contains transuranics in concentrations greater than 100 nanocuries per gram, the waste is classified as TRU waste. If the waste as packaged contains transuranics in concentrations less than 100 nanocuries per gram, the waste is classified as low-level waste and disposed of in the SRS low-level waste facility on site, or, in some cases, shipped to off-site LLW facilities. In addition, as a result of analytical laboratory sampling of the materials in the process facilities, some small amounts of TRU waste are generated from SRS analytical laboratories. This analytical lab waste is classified as TRU waste or LLW as described above. Waste packages from these facilities that are classified as TRU waste are then characterized in accordance with the WIPP WAP for disposal at WIPP.

EXHIBITS: Exhibits in support of Section 8.0 include, but are not limited to, the following:

Permittee Exhibits 56, 57, 78.

NOI EXHIBIT C: EXHIBIT LIST

Exhibit	Date	Description
<u>Documents put into the Modification Administrative Record by NMED on 11/26/03</u>		
NMED #1	09/26/88	DOE Order 5820.2A - Radioactive Waste Management, http://soil-physics.nmsu.edu/sp/classes/gl/regtox/download/doe5820.2a.pdf
NMED #2	10/30/92	Public Law 102-579 - Waste Isolation Pilot Plant Land Withdrawal Act
NMED #3	06/30/94	Transmittal letter for WIPP Transuranic Waste Baseline Inventory Report (George Dials to Robert Neill)
NMED #4	03/13/95	Transmittal letter for WIPP Transuranic Waste Baseline Inventory Report, Rev. 1 (M. Matthews to M. Weidler)
NMED #5	05/26/95	Transmittal letter for RCRA permit application, Revision 5 (George Dials to Mark Weidler)
NMED #6	12/28/95	Transmittal letter for Transuranic Waste Baseline Inventory Report, Revision 2 (Don Watkins to "Attached List")
NMED #7	12/28/95	Transmittal letter for Transuranic Waste Baseline Inventory Report, Revision 2 (Don Watkins to Mark Weidler)
NMED #8	12/28/95	Transuranic Waste Baseline Inventory Report, Revision 2 (three volumes)
NMED #9	03/19/96	Page change for Transuranic Waste Baseline Inventory Report, Revision 2 (Don Watkins to Mark Weidler)
NMED #10	04/12/96	Transmittal letter for RCRA permit application, Revision 6 (George Dials to Mark Weidler)
NMED #11	04/12/96	RCRA permit application - Chapter C, Waste Analysis Plan
NMED #12	04/12/96	RCRA permit application - Appendix C1, Chemical Compatibility Analysis of Waste Forms and Container Materials
NMED #13	04/12/96	RCRA permit application - Appendix C2, Data Accumulated From Headspace-Gas Analyses
NMED #14	04/12/96	RCRA permit application - Appendix D9, Exposure Assessment for Protection of the Atmosphere
NMED #15	04/12/96	RCRA permit application - Appendix D13, VOC Screening Methodology
NMED #16	07/09/96	Transmittal letter for Transuranic Waste Baseline Inventory Report, Revision 3 (George Dials to Mark Weidler)
NMED #17	07/09/96	DOE Order 435.1-1 - Radioactive Waste Management Manual http://soil-physics.nmsu.edu/sp/classes/gl/regtox/download/doe-m-435.1-1Manual.pdf
NMED #18	09/09/99	Report of the Hearing Officer, Recommended Decision and Proposed Final Order on WIPP Hazardous Waste Facility Permit
NMED #19	02/28/02	Complaint for Declaratory and injunctive Relief, NRDC vs. DOE
NMED #20	10/11/02	Idaho High Level Waste and Facilities Disposition Environmental Impact Statement (DOE/EIS-0287), http://tis.eh.doe.gov/nepa/eis/eis0287/0287TOC.html
NMED #21	05/22/03	Draft Meeting Summary, Hanford Advisory Board Tank Waste Committee
NMED #22	07/02/03	Memorandum Decision, NRDC vs. DOE
NMED #23	08/01/03	Letter submitting legislative proposal, High-Level Radioactive Waste (S. Abraham to Speaker D. Hastert)
NMED #24	08/12/03	Draft Meeting Summary, Hanford Advisory Board Tank Waste Committee
NMED #25	09/05/03	Hanford Advisory Board Advice Letter Re: TRU Waste in the Tanks (Todd Martin to Roy Schepens), http://www.hanford.gov/boards/hab/advice/Advice149TRU.pdf
NMED #26	10/25/03	Editorial in Albuquerque Journal: DOE Isn't Changing WIPP Disposal Level (Jessie Roberson)
NMED #27	10/28/03	Press Release: Governor Bill Richardson Acts to Prevent High-Level Waste at WIPP
NMED #28	11/26/03	NMED Letter to Mailing List regarding public notice (John Kieling to Concerned Citizen)

Exhibit	Date	Description
NMED #29	11/26/03	Public Notice No. 03-12, Notice of Public Comment Period and Public Hearing
NMED #30	11/26/03	Fact Sheet, Notice of Intent to Approve an Agency-Initiated Modification to the WIPP permit
<u>Documents comprising exhibits to WIPP's 1/30/04 comments and hearing request</u>		
PERMITTEES #1	9/10/99	Report of the Hearing Officer In the Matter of the Final Permit Issued to the U.S. Department of Energy and Westinghouse Electric Company Waste Isolation Division for a Hazardous Waste Act Permit for the Waste Isolation Pilot Plant, USEPA No. NM4890139088
PERMITTEES #2	June 1994	Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report, Revision 0, Book 1 of 2, CAO-94-1005
PERMITTEES #3	June 1994	Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report, Revision 0, Book 2 of 2, CAO-94-1005
PERMITTEES #4	Feb. 1995	Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report, Revision 1, Volume 1, CAO-94-1005
PERMITTEES #5	Feb. 1995	Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report, Revision 1, Volume 2, CAO-94-1005
PERMITTEES #6	Feb. 1995	Waste Isolation Pilot Plant Transuranic Waste Baseline Inventory Report, Revision 1, Volume 3, CAO-94-1005
PERMITTEES #7	June 1996	Transuranic Waste Baseline Inventory Report, Revision 3, DOE/CAO-95-1121
PERMITTEES #8	11/2/95	Letter from B. Hoditschek of NMED to G. Dials of WIPP transmitting NMED comments on Revision 5 of the WIPP Part B RCRA Permit Application (Chapters A, B, and C), and requesting additional information
PERMITTEES #9	12/20/95	Letter from M. McFadden of WIPP to B. Garcia of NMED providing responses to NMED's 11/2/95 comments on Revision 5 of the WIPP Part B RCRA Permit Application
PERMITTEES #10	3/14/96	Letter from B. Garcia of NMED to G. Dials and J. Epstein of WIPP transmitting a Notice of Deficiency (NOD) regarding Revision 5.2 of WIPP's Part B RCRA Permit Application
PERMITTEES #11	4/12/96	WIPP's responses to NMED's 3/14/96 NOD, hand delivered to B. Garcia of NMED on 4/12/96
PERMITTEES #12	3/19/99	Verbal hearing testimony of NMED's technical expert Constance Marie Walker during WIPP's 1999 RCRA Permit hearing, transcript pages 2717 - 2719
PERMITTEES #13	6/25/99	Summary of May 15, 1998 Draft Permit Public Comments and Responses to Comments by NMED, Module II.C, NMED response to Comment N-46, as reviewed by "CMW"
PERMITTEES #14	3/23/99	NMED's Direct Testimony Regarding Regulatory Process and Imposed Conditions
PERMITTEES #15	Jan. 2004	NMED Green Gazette Newsletter, Volume I, Issue 1, Winter 2004
PERMITTEES #16	1/9/04	Request for Class 3 Permit Modification to the Hazardous Waste Facility Permit, Permit Number NM4890139088-TSDF, Implementing Section 311 of Public Law 108-137, transmittal letter from I. Triay and S. Warren of WIPP to S. Zappe of NMED
PERMITTEES #17	6/27/02	WIPP Class 2 Permit Modification Request, Waste Characterization Updates and Other Process Improvements, Add U134 as a New Hazardous Waste Number, transmittal letter from I. Triay and J. Lee of WIPP to S. Zappe of NMED
PERMITTEES #18	11/25/02	Letter from G. Lewis of NMED to I. Triay of WIPP approving 6/27/02 Class 2 PMR to add U134 as a new hazardous waste number
PERMITTEES #19	Dec. 2001	Rinchem Company, Inc., Albuquerque, NM - Final RCRA Operating Permit
PERMITTEES #20	12/2/97	Rinchem Company, Inc., Albuquerque, NM - NMED request for supplementary information regarding Rinchem's Waste Analysis Plan in the Permit Application
PERMITTEES #21	4/24/96	Rinchem Company, Inc., Albuquerque, NM - NMED Notice of Deficiency regarding February 1995 Permit Application
PERMITTEES #22	2/7/95	Rinchem Company, Inc., Albuquerque, NM - RCRA Permit Application
PERMITTEES #23	Sept. 2003	Safety-Kleen, Albuquerque, NM - Final RCRA Operating Permit
PERMITTEES #24	11/15/02	Safety-Kleen, Albuquerque, NM - NMED NOD regarding 7/27/01 Permit Application

Exhibit	Date	Description
PERMITTEES #25	3/9/03	Safety-Kleen, Albuquerque, NM - responses to NMED's 11/15/02 NOD
PERMITTEES #26	1/27/01	Safety-Kleen, Albuquerque, NM - RCRA Permit Application
PERMITTEES #27	Sept 2003	Safety-Kleen, Farmington, NM - Final RCRA Operating Permit
PERMITTEES #28	11/15/02	Safety-Kleen, Farmington, NM - NMED NOD regarding the 10/4/00 Permit Application
PERMITTEES #29	3/9/03	Safety-Kleen, Farmington, NM - response to NMED's 11/15/02 NOD
PERMITTEES #30	10/4/00	Safety-Kleen, Farmington, NM - RCRA Permit Application
PERMITTEES #31	Mach 2002	Gandy Marley, Inc. Triassic Park Waste Disposal Facility, Chavez County, NM, RCRA Operating Permit
PERMITTEES #32	6/11/99	Fax from P. Corser of Montgomery Watson to G. Starkebaum of TechLaw, re: Preliminary Draft of Gandy Marley, Inc. Response to Request for Supplemental Information - May 1999
PERMITTEES #33	6/10/99	Letter from J. Bearzi of NMED to L. Gandy of Triassic Park, re: Draft Responses to Request for Supplemental Information
PERMITTEES #34	5/5/00	Letter from S. Kruse of NMED to R. Davis of State Fire Marshal's Office, re: Proposed Hazardous Waste Landfill
PERMITTEES #35	March 1988	"Hazardous Waste Storage and Disposal in Geologic Repositories - Permit Guidance Under the Resource Conservation and Recovery Act, OSWER Directive 9523.00-1", U.S. EPA
PERMITTEES #36	10/17/01	Verbal hearing testimony of NMED's technical expert Constance Marie Walker during Triassic Park's RCRA Permit hearing, transcript pages 857-859
PERMITTEES #36	10/17/01	Verbal hearing testimony of NMED's technical expert Constance Marie Walker during Triassic Park's RCRA Permit hearing, transcript pages 857-859
PERMITTEES #37	10/19/01	Hearing Officer's Report, In the Matter of the Draft Final Permit for the Triassic Disposal Facility U.S. EPA No. NM0001022484, pages 97 - 98
PERMITTEES #38	4/12/96	WIPP RCRA Permit Application, Revision 6 - Table of Contents and Cross-Reference Table
PERMITTEES #39	4/12/96	WIPP RCRA Permit Application, Revision 6 - Chapter A (incl. Part A Permit Application Form Revision 7)
PERMITTEES #40	4/12/96	WIPP RCRA Permit Application, Revision 6 - Chapter B
Documents comprising exhibits to WIPP's NOI		
PERMITTEES #41	misc.	Waste Stream Profile Forms for RLMSSC.001, RF101.29, RF101.35, RF029.01, RF129.05, LA-OS-00-01, RF101.01, and RF101.30; and WWIS Waste Container Data Report
PERMITTEES #42	5/18/94	Letter from G. Dials of WIPP to B. Garcia of NMED transmitting a draft version of TWBIR, Revision 0 to the NMED for their review and comment (this exhibit includes a copy of the draft TWBIR)
PERMITTEES #43	9/22/94	Internal DOE memo from J. Mewhinney to L. Fitch explaining the purpose of the TWBIR and explaining its limitations for purposes of satisfying the RCRA regulations
PERMITTEES #44	2/26/99	Testimony of Earl Kent Hunter about his professional expertise and qualifications and regarding the information contained in the permit application and the WAP process. In the Matter of the Final Draft Permit Issued to the US DOE and WID for the WIPP, HRM 98-04(P), transcript pages 424 - 426 and pages 692 - 693
PERMITTEES #45	6/25/99	New Mexico Environment Department's Proposed Findings of Fact and Conclusions of Law, submitted June 25, 1999, Pleading Log #194
PERMITTEES #46	April 1980	A Method for Determining the Compatibility of Hazardous Wastes, U.S. EPA, H.K. Hatayama, et al, EPA-600/2-80-076
PERMITTEES #47	Feb 2004	Paper titled "Comparison of WIPP-Approved Waste Streams to the TWBIR, Rev. 2 Waste Streams", LANL report No. LA-UR-04-0435
PERMITTEES #48	6/27/02	Class 3 Permit Modification Request, Waste Analysis Plan for Remote-Handled Waste, pg. A-49, additional sources of RH

Exhibit	Date	Description
		TRU waste, INTEC/INEEL
PERMITTEES #49	8/6/02	Letter from F. Marcinowski of EPA to I. Triay of WIPP, with cc to S. Zappe of NMED, regarding EPA's expectations of the information to be included in the Compliance Recertification Application, including TWBIR information
PERMITTEES #50	Aug 2002	Transuranic Waste Performance Management Plan, U.S. Department of Energy, Section 2.1.1 and Appendix A (Letter of Intent signed by NMED Secretary)
PERMITTEES #51	7/30/87	State Program Advisory #2 - RCRA Authorization to Regulate Mixed Waste, U.S. EPA, OSWER Direction 9441.1987(102), memorandum from B. Weddle of Permits and State Programs Division to RCRA branch chiefs of Regions I - X
PERMITTEES #52	Oct 1990	State Authorization Manual, Volume II, Appendix N Mixed Waste Authorization Guidance, U.S. EPA, OSWER Directive 9540.009A-1
PERMITTEES #53	Dec 1991	Guidance on Delegation of Authorization Decisions, U.S. EPA
PERMITTEES #54	4/3/98	State Program Advisory #18 - Model/Outline for the Development of the Program Description, U.S. EPA
PERMITTEES #55	2/20/04	DRAFT Title 40 CFR Part 191 Subparts B and C Compliance Recertification Application 2004, Appendix DATA, Attachment F, Transuranic Waste Inventory Update Report
PERMITTEES #56	1997	Radioactive Waste Classification in the United States: History and Current Predicaments, M. Lowenthal, LLNL, UCRL-CR-128127 (PROVISIONAL EXHIBIT - to be used for testimony regarding classification, see Paragraph 2.4 of the Permittees' NOI)
PERMITTEES #57	June 1998	Waste-Acceptance Criteria and Risk-Based Thinking for Radioactive-Waste Classification, M. Lowenthal, Center for Nuclear and Toxic Waste Management, University of California, Berkeley (PROVISIONAL EXHIBIT - to be used for testimony regarding classification, see Paragraph 2.4 of the Permittees' NOI)
PERMITTEES #58	12/18/97	The National TRU Waste Management Plan, Rev. 1, DOE/NTP-96-1204
PERMITTEES #59	1/4/01	The National TRU Waste Management Plan, Rev. 2, DOE/NTP-96-1204
PERMITTEES #60	7/17/02	The National TRU Waste Management Plan, Rev. 3 - Corporate Board Annual Report, DOE/NTP-96-1204
PERMITTEES #61	May 1984	Permit Applicants' Guidance Manual for Hazardous Waste Land Treatment, Storage, and Disposal Facilities, Final Draft, pgs. 5-63 to 5-69, U.S. EPA, EPA 530-SW-84-004
PERMITTEES #62	7/3/86	Federal Register Notice: State Authorization To Regulate the Hazardous Components of Radioactive Mixed Wastes Under the Resource Conservation and Recovery Act, U.S. EPA, 51 FR 24504, http://www.epa.gov/swerfrr/documents/fedreg.htm
PERMITTEES #63	9/28/88	Federal Register Notice: Clarification of Interim Status Qualification Requirements for the Hazardous Components of Radioactive Mixed Waste, U.S. EPA, 53 FR 37045, http://www.epa.gov/swerfrr/pdf/npl032095.pdf
PERMITTEES #64	6/1/87	Memorandum from J. Winston Porter, Assistant Administrator, U.S. EPA Office of Solid Waste and Emergency Response to J. Scherer, Regional Administrators re: Determination on Issues Pertinent to Mixed Waste Regulation in Colorado, http://yosemite.epa.gov/OSW/rcra.nsf/Documents/DA4CF5733E1B2970852565DA006F039D
PERMITTEES #65	5/1/87	Federal Register Notice: Radioactive Waste, Byproduct Material, U.S. DOE, 52 FR 15937
PERMITTEES #66	May 1991	Long-Lived Legacy: Managing High-Level and Transuranic Waste at the DOE Nuclear Weapons Complex, Background Paper, Congress of the United States, Office of Technology Assessment, OTA-BP-O-83, (see pgs. 36 - 42, and pgs. 58 - 65) http://www.www.princeton.edu/cgi-bin/byteserv.prl/~ota/disk1/1991/9126/9126.PDF , (PROVISIONAL EXHIBIT - to be used for testimony regarding classification, see Paragraph 2.4 of the Permittees' NOI)
PERMITTEES #67	10/18/01	Testimony of Constance Marie Walker about her professional expertise and qualifications, In the Matter of the Draft Final Permit for the Triassic Park Waste Disposal Facility, No. HRM 01-02(P), transcript pages 835 - 836
PERMITTEES #68	3/19/99	Testimony of Constance Marie Walker about her professional expertise and qualifications, In the Matter of the Final Draft Permit Issued to the US DOE and WID for the WIPP, HRM 98-04(P), transcript pages 2699 - 2703

Exhibit	Date	Description
PERMITTEES #69	11/8/99	Rocky Flats Environmental Technology Site Procedures: 4-G83-WEM-WP-1209, Revision 3, WEMS Waste Package Verification and Certification; 4-H80-776-ASRF-007, Revision 2, Visual Examination for Confirmation of RTR; 4-I19-NDT-00569, Revision 3, Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569; and, 4-W30-NDT-00664, Revision 2, Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 664
PERMITTEES #70	9/11/03	WIPP HWFP, Module II General Facility Conditions
PERMITTEES #71	9/11/03	WIPP HWFP, Attachment B, B1, B3, B4, B6
PERMITTEES #72	2000	RFETS Audit A-00-12, September 18-22 and November 1-2, 2000, B6 Checklist
PERMITTEES #73	2000	RFETS Audit A-00-08, December 13, 1999 and January 18, 2000, B6 Checklist
PERMITTEES #74	3/9/00	Letter from G. Lewis of NMED to I. Triay and J. Epstein of WIPP approving RFETS Final Audit Report, Audit A-00-08
PERMITTEES #75	2/7/01	Letter from G. Lewis of NMED to I. Triay and H. Herrera of WIPP approving RFETS Final Audit Report, Audit A-00-12
PERMITTEES #76	Misc.	Misc. documents on other RCRA TSDFs around the nation
PERMITTEES #77	8/7/02	Savannah River Site Environmental Management Program Performance Management Plan, Revision 6, WSRC-RP-2002-00245 US DOE, http://sro.srs.gov/srs_pmp.htm , includes 5/8/02 signed Letter of Intent between South Carolina, U.S. EPA, and U.S. DOE
PERMITTEES #78	7/1/81	State of New Mexico, ex rel. Jeff Bingaman, Attorney General of the State of New Mexico v. The United States Department Of Energy, et al., U.S. District Court for the District of New Mexico, Civil Action No. 81-0363 JB, Stipulated Agreement, Appendix A, Agreement for Consultation and Cooperation, as amended (PROVISIONAL EXHIBIT: to be used for testimony regarding classification; see Paragraph 2.4 of the Permittees' NOI)
PERMITTEES #79	3/5/04	TSDF-WAC/WAP/TWBIR/WSPF Information Table
PERMITTEES #80	1/23/98	Federal Register Notice: Record of Decision for the Department of Energy's Waste Isolation Pilot Plant Disposal Phase; Notice of Record of Decision for the Department of Energy's Waste Management Program: Treatment and Storage of Transuranic Waste, U.S. DOE, 63 FR 3624 et seq.
PERMITTEES #81	1997	NMED's comment's on the draft SEIS leading up to #80 directly above
PERMITTEES #82	7/11/90	Federal Register Notice: Final Rule on New Mexico program revision application, U.S. EPA, 55 FR 2839 et seq.
PERMITTEES #83		Misc. newspaper articles
PERMITTEES #84	1996	LWA Amendments, 1996