

# Waste Management Update

#### **Mark Senderling**

Director, Office of Disposition Planning & Policy EM Headquarters WIPP Recovery Manager Office of Environmental Management

April 20, 2016



- WIPP Recovery
- Greater-Than-Class C Low-Level Waste Final Environmental Impact Statement
- Low-Level Waste Update



### **WIPP Recovery**

#### WIPP Recovery—Overview

- Progress to Date
- Status of Accident Investigation Board (AIB) corrective actions
- Critical Decision-1 approval for new permanent ventilation system
- New Integrated Performance Measurement Baseline
- Looking ahead in 2016
  - Documented Safety Analysis
  - Interim Ventilation System
  - Cold operations
  - Management self assessment
  - CBFO and contractor operational readiness reviews
  - TRU Waste Generator Impacts
  - Supplemental Environmental Projects



# **Embedded WIPP Video**

#### WIPP Recovery—Progress to Date

- Initial Closure of Panel 6 and Panel 7, Room 7 completed in May 2015--all suspect nitrate salt containers isolated
- Ground control and catch up bolting
- Electrical restoration
- Zone recovery

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- Pathway from the waste hoist to the opening of Panel 7 has been rolled back
- No additional personal protection equipment for radiological safety
- Panel 7 is and will remain posted as an airborne contamination area.





# **Radiological Rollback**



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# MANAGEMENT WIPP Recovery—Progress to Date (cont'd)

- Re-establishing safety management programs
- AIB corrective actions
- Revised Documented Safety Analysis, and submitted to DOE/CBFO







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# WIPP Recovery—Progress To Date, Ventilation

#### **Current Status**

- Ventilation in Filtration Mode
  - 60,000 cfm of filtered air
- Note: WIPP's standard (unfiltered) operational airflow is 425,000 cfm



#### **Recovery Actions**

- Interim Ventilation System (IVS)

   HEPA skid and fan unit to add
   54,000 cfm of airflow—required
   for resumption of operations
- <u>Supplemental Ventilation</u>
   <u>System</u> An underground fan and reconfiguration of airflow circuits, 70,000 cfm airflow not required for resumption of operations
- <u>Permanent Ventilation System</u> Design and construct a new ventilation system capable of providing 500,000+cfm

# MANAGEMENT WIPP Recovery—Progress to Date (cont'd)

### **Interim Ventilation System (IVS)**

- Required for resumption of operations.
- Scheduled to be operational in the May timeframe.
- IVS will:
  - Provide adequate air flow at the waste face-for resumption of waste emplacement
  - Increase airflow for ground control and maintenance operations
- Construction status;
  - Ductwork completed
  - Instrument calibrations and component testing underway
  - Readiness activities scheduled for early May



# MANAGEMENTAL WIPP Recovery—Progress to Date (cont'd)

### **Supplemental Ventilation System**

- Required for mining after waste operations resume.
- Scheduled to be operational in the early 2017.



#### OFFICE OF ENVIRONMENTAL WIPP Recovery—Status of Accident Investigation Board Corrective Actions

- Based on the Accident Investigation Board Report and subsequent evaluations, DOE has implemented Corrective Actions that will prevent incidents from occurring throughout the lifecycle of WIPP
- Five organizations have implemented changes
  - o EM-HQ
  - EM-LA and NA-LA
  - o LANS
  - CBFO
  - NWP



• Over 70% of corrective actions resulting from the fire and radiological release events have been completed and over 60% validated/closed out by DOE (Not all corrective actions are "prestart", i.e., required for resumption of operations).

#### **WIPP Recovery—Critical Decision-1 Approval for Permanent Ventilation System**

- Critical Decision (CD)-1, Approve Alternative Selection and Cost Range, approved December 23, 2015.
  - 24 alternatives analyzed
  - New safety-significant confinement ventilation system and new exhaust shaft were selected alternative
- The cost range as of reaching CD-1 is \$270-\$398 million.
- These estimates are rough order of magnitude estimates that will be refined as the design effort matures.
- CBFO is working the formal design phase of the project, which is expected to take about eighteen months.



**Current Ventilation System** 

#### WIPP Recovery—New Integrated Performance Measurement Baseline (PMB)

- New integrated PMB approved by Carlsbad Field Office in January 2016
  - Integrated PMB integrates recovery activities with base activities including capital asset projects
  - Identifies critical path activities
  - Identifies resumption of waste emplacement in December 2016

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### WIPP Recovery—Looking Ahead in 2016. Documented Safety Analysis

- Developed in accordance with new DOE Standard 3009-2014
- Approximately 120 Safety Management Program procedures created or revised
- First high-quality draft was submitted to CBFO in December 2015.
- The DSA overview training has been completed.
- Implementation/training on-going; ramp-up after DSA approval.



Waste Isolation Pilot Plant Documented Safety Analysis

Prepared by Nuclear Waste Partnership LLC Carlsbad, NM U.S. Department of Energy Contract DE-EM0001971 Prepared for:

U.S. Department of Energy Carlsbad Field Office Carlsbad, NM

DECEMBER 2015

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# WIPP Recovery—Looking Ahead in 2016. DSA

#### **Startup of Interim Ventilation System**

• Empirical measurements will be used to validate modeling and ensure IVS will provide adequate airflow for initial operations.



# WIPP Recovery—Looking Ahead in 2016 Cold Operations

#### **Testing Systems and Procedures**

- Following approval of the DSA, CBFO will begin Cold Operations
- WIPP crews will process and download empty containers utilizing the new DSA Rev. 5 controls.
- Regular drilling to test safety management programs



### WIPP Recovery—Looking Ahead in 2016 Management Assessments



An internal review conducted by the NWP's line management organization for the purpose of confirming readiness.

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### WIPP Recovery—Looking Ahead in 2016 Operational Readiness Reviews

Separate contractor and CBFO performance-based examination of facilities, equipment, personnel and procedures to ensure WIPP will be operated safely within its approved safety envelope.



## WIPP Recovery—TRU Waste Generator Impacts

- CBFO National TRU Program is developing an enhanced chemical compatibility determination process.
  - New requirements may have impacts on existing and future TRU processing/packaging.
  - This process is being discussed with Field Managers with TRU waste, e.g., via TRU Corporate Board.
- Initial focus of WIPP will be on emplacement of waste currently located in Waste Handling Building.
- Technical and programmatic factors for waste shipment priorities
  - What waste meets new chemical compatibility requirements
  - WIPP transportation/waste acceptance capabilities
  - Generator site compliance commitments
  - Storage capacities
- Above-ground storage capability is being planned.



# WIPP Recovery—TRU Waste Generator Impacts (cont'd)

#### New and Enhanced Federal Oversight

- Increased compliance oversight at Carlsbad Field Office and EM/HQ
- Clearer roles and responsibilities

#### New Technical and Program Reviews

- Generator Site Technical Reviews
- Program reviews to ensure generator site programs at adequate (Facility Qualification Evaluations)

#### Enhanced Technical Documentation Requirements

 Detailed chemical compatibility analyses of all TRU waste streams



# WIPP Recovery—Supplemental Environmental Projects

- Two settlement agreements signed to resolve State of New Mexico Environment Department claims against DOE
- These SEPs represent estimated total value of \$74 million
  - \$34 million for New Mexico road repair projects
  - \$4 million for offsite emergency operations center near WIPP
  - \$1 million to fund enhanced training and capabilities for local emergency responders, including funding for training and exercises with local mine rescue teams
  - Up to \$12 million to improve DOE-owned transportation routes at LANL used to ship transuranic waste to WIPP

# WIPP Recovery—Supplemental Environmental Projects (cont'd)



CBFO's Mike McCoy discusses features of the new EOC



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# WIPP Recovery—Supplemental Environmental Projects (cont'd)

- SEPs (cont'd):
  - \$10 million to replace aging potable water lines
  - \$7.5 million to design and install engineering structures in canyons in and around LANL to slow storm water flow
  - \$2.5 million to fund increased sampling and monitoring capabilities for storm water runoff in and around LANL
  - \$3 million for agreements to conduct external triennial compliance reviews

#### WIPP Recovery—Summary

- Key Remaining Tasks:
  - DSA Approval and Implementation
  - Startup of Interim Ventilation System
  - Cold Operations
  - Management Self Assessment
  - Contractor Operational Readiness Review
  - DOE Operational Readiness Review
- DOE is committed to the reopening of WIPP.
- Resumptions of operations will occur only when it is safe to do so.



# GTCC LLW Final Environmental Impact Statement (FEIS)

### **Relevant Legislative Drivers**

- Currently there is no disposal pathway for GTCC LLRW or GTCC-like waste.
- Congressional Mandate
  - Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law #99-240)
    - Deems the Federal Government responsible for the disposal of LLRW with concentrations of radionuclides that exceed the limits established by the Nuclear Regulatory Commission (NRC) for Class C radioactive waste (e.g. GTCC LLRW). DOE was the agency that was later assigned that responsibility.
    - Requires disposal of GTCC LLRW at a facility licensed by NRC.
  - Energy Policy Act of 2005 (Public Law #109-58)
    - Requires DOE to submit a Report to Congress on the GTCC EIS disposal alternatives and await action by Congress before issuing a Record of Decision selecting a GTCC disposal alternative.

# OF OVERVIEW: GTCC LLRW Waste & GTCC-Like

#### Waste

#### • GTCC LLRW:

- A formal, defined waste classification in federal law and regulations
- Generated from Nuclear Regulatory Commission (NRC) or Agreement State licensed activities
- The most hazardous class of LLRW as defined by the NRC in 10 CFR 61
  - …"waste that is not generally acceptable for near-surface disposal... for which form and disposal methods must be different, and in general more stringent, than those specified for Class C waste"
- Must be disposed of in a geologic repository, as defined by NRC, unless proposals for disposal in a site licensed pursuant to 10 CFR 61 are approved by the Commission
- o 8,800 cubic meters

#### • GTCC-Like Waste:

- Not a formal waste classification by rule or DOE order; rather, a descriptive category created for purposes of the EIS
- DOE owned or generated LLRW or transuranic (TRU) waste with characteristics similar to GTCC LLRW and with no identified disposal path
- Primarily non-defense TRU waste from clean up activities at the West Valley Demonstration Project in New York
- o 2,800 cubic meters

#### **Overview: GTCC Disposal Alternatives** ENVIRONMENTAL AGEMENT **Evaluated**

1. No Action: Continue current storage/management practices

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- 2. Geologic Repository: At Waste Isolation Pilot Plant (WIPP)
- 3. Intermediate-Depth Boreholes: At Hanford, Idaho National Laboratory (INL), Los Alamos National Laboratory (LANL), Nevada National Security Site (NNSS), WIPP Vicinity, and generic commercial location in Region IV (west)
- 4. Enhanced Near-Surface Trenches: At Hanford, INL, LANL, NNSS, Savannah River Site (SRS), WIPP Vicinity, and generic commercial location in Regions II and IV (southeast and west)
- 5. Above-Grade Vaults: At Hanford, INL, LANL, NNSS, SRS, WIPP Vicinity, and generic commercial location in Regions I-IV (northeast, southeast, midwest, and west)





# Factors Considered During the Development of the Preferred Alternative

- Public comments provided on the Draft GTCC EIS: Over 4,000 public comments were submitted on the Draft GTCC EIS. DOE addresses those comments in the Comment Response Document section of the Final GTCC EIS.
- Disposal site: Potential human health impacts (including those from transportation and cumulative impacts), cultural resources and tribal concerns, laws, regulations, and other requirements
- Waste type: Radionuclide inventory/characteristics, waste form stability, physical characteristics, and availability for disposal
- Disposal method: Inadvertent human intrusion, construction and operational experience, post-closure care, and cost

### **Preferred Alternative**

- The Final GTCC EIS includes a preferred alternative: WIPP geologic repository and/or land disposal at generic commercial facilities.
  - These land disposal conceptual designs at generic commercial facilities could be altered or enhanced, as necessary, to provide optimal application at a given location.
  - There is presently no preference among the three land disposal technologies (e.g. intermediate-depth borehole, enhanced nearsurface trench, and above-grade vault) at the generic commercial facilities.

### Remaining Steps for Fulfilling Statutory Responsibility



In accordance with Section 631 of the Energy Policy Act of 2005, the Report to Congress will:

- Propose actions to ensure safe disposal of such identified radioactive wastes
- Describe alternatives
- Identify the Federal and non-Federal options for disposal
- Describe projected costs
- Identify options for ensuring that the beneficiaries of the activities resulting from the generation of GTCC waste bear all reasonable costs
- Identify statutory authority required for disposal of GTCC waste

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# To view the Final GTCC EIS electronically go to: <u>http://www.gtcceis.anl.gov/</u>

To request hard copies of the Final GTCC EIS: <u>http://www.gtcceis.anl.gov/documents/order/in</u> <u>dex.cfm</u>



## **Low-Level Waste Update**

#### **Low-Level Waste Highlights**

- DOE sites continue to use combination of on-site and off-site disposal paths
- Nationwide contracts for treatment and disposal provide cost-effective vehicles
- DOE closely monitoring potential changes in commercial market
- Nevada National Security Site (NNSS) continues to serve important role in DOE waste management system
- New onsite disposal facilities under evaluation/in planning for three former gaseous diffusion sites to address large D&D and remediation volumes
- Planning for shipment of three vessels from West Valley before end of year
- Reached 50% completion mark in relocation of uranium mill tailings from Moab, CO to Crescent Junction, UT disposal cell
- Hanford retrieving vertical pipe units from 618-10 Burial Ground

### Complex-Wide LLW/MLLW Disposal Rates by Disposal Location







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#### **Event Locations Underground**

