



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Idaho Cleanup Project Progress to Date Citizens Advisory Board

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February 23, 2017

Idaho Cleanup Project Scope

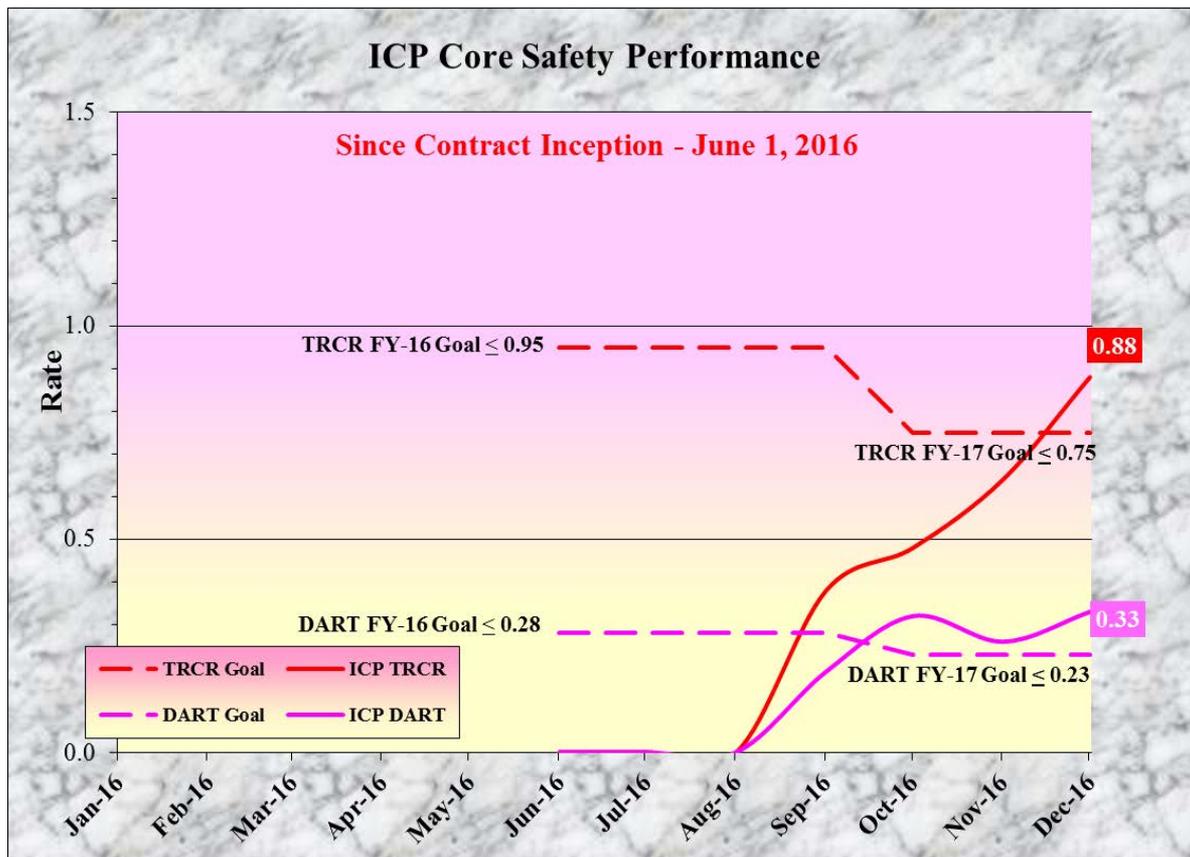
- Transuranic Waste Disposition
- Advanced Mixed Waste Treatment Project (AMWTP)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA) Remediation
 - Waste Area Group (WAG) 1 – Test Area North (TAN)
 - Waste Area Group (WAG) 2 – Test Reactor Area (TRA) - **Complete**
 - Waste Area Group (WAG) 3 – Idaho Nuclear Technology and Engineering Center (INTEC)
 - Waste Area Group (WAG) 4 – Central Facilities Area (CFA) - **Complete**
 - Waste Area Group (WAG) 5 – Power Burst Facility (PBF)/Auxiliary Reactor Area (ARA) - **Complete**
 - Waste Area Group (WAG) 6 – Experimental Breeder Reactor No. I (EBR-I) - **Complete**
 - Waste Area Group (WAG) 7 – Radioactive Waste Management Complex (RWMC)
 - Waste Area Group (WAG) 9 – Argonne National Laboratory – West (ANL-W) - **Complete**
 - Waste Area Group (WAG) 10 – Site-wide Miscellaneous Sites/Snake River Plain Aquifer
- Idaho CERCLA Disposal Facility

Idaho Cleanup Project Scope (cont.)

- Sodium Bearing Waste Treatment
- INTEC Liquid Waste Treatment Facility (Tank Farm Closure)
- Calcine Disposition
- Spent Nuclear Fuel Management
- Decontamination and Decommissioning: Materials and Fuels Complex

Safety Performance – July-August 2016

(Information and Data through January 1, 2017)



November 2016

Three First Aid Cases and Two Recordable Injuries

- Worker lifting a chair injured back
- Worker scratched eye cutting wire

Two ORPS Reportable Occurrences:

- AMWTP – PISA – Negative USQ, waste box assay confirmation not performed
- RWMC – Positive USQ, error in calculating material at risk & associated exposure

December 2016

Five First Aid Cases and Three Recordable Injuries

- Worker slipped on icy path, fractured ankle (DART)
- Worker opened an access door, cutting forehead
- A worker slipped on icy stairs, bruised hip and ribs (DART)

Five ORPS Reportable Occurrences:

- IWTU – Failure of HEPA bank inlet damper seals
- INTEC – Lapse in LO/TO qualification
- INTEC - Expired fall protection equipment used after inadequate inspection
- AMWTP – worker slips on ice, fractures ankle
- IWTU – Positive USQ, differential pressure rating less than assumed in DSA

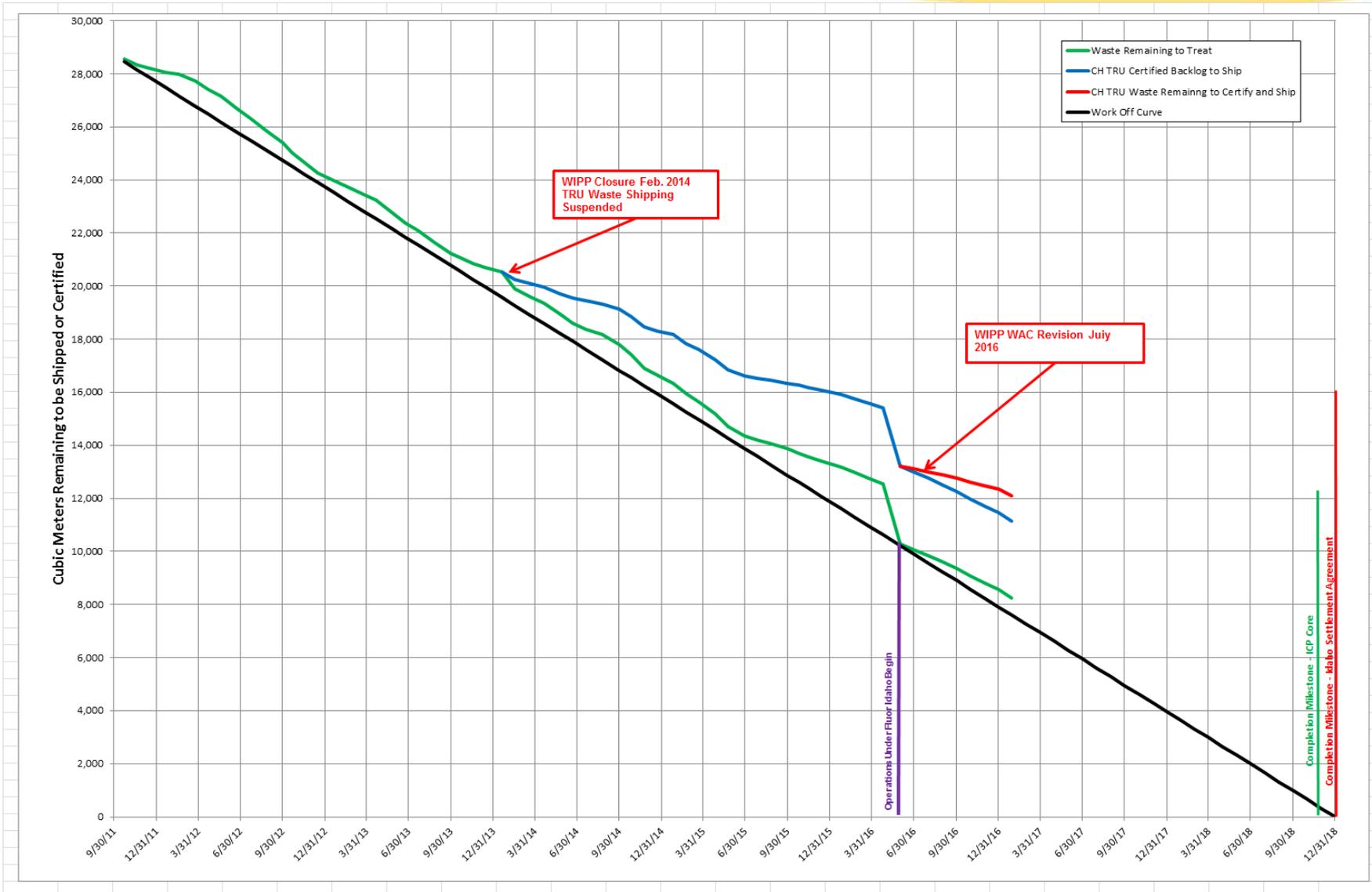
Context: Stored Waste Disposition

- What is the Waste: TRU and MLLW, principally from Rocky Flats, Argonne National Laboratory, Mound, and other smaller generators stored in retrievable configurations at the Transuranic Storage Area and at the Radioactive Scrap and Waste Facility.
- Potential Risks: Waste contains long lived transuranic isotopes which pose a risk to the workers and the environment. Retrieval of the waste and shipment for disposal in a deep geologic repository (i.e. WIPP) ensures that humans and the environment are protected from the waste for the thousands of years that it remains harmful.
- Settlement Agreement: Requires removal of estimated 65,000 cubic meters of stored transuranic waste from the State of Idaho by December 31, 2018.
- How treated/disposed: Repackaged, treated to remove prohibited conditions, characterized and certified to meet waste acceptance criteria for WIPP or MLLW disposal facilities as appropriate.

Context (continued)

- Current Budget: (Annually)
 - AMWTP (Contact-handled TRU waste retrieval, characterization, treatment, certification)
 - ARP Support to AMWTP (Processing sludge waste, large items)
 - RH-TRU (Processing remote-handled transuranic waste)
 - ICP MLLW (Processing low-level waste for offsite disposal)
 - RWMC Infrastructure
 - Total ~ \$185.5M

Idaho Settlement Agreement Work-off Status



Waste Programs Overview

- Idaho TRU Certified Backlog:
 - 20,136 Containers
 - 820 CH-TRU shipments
 - 90 RH-TRU shipments
 - CH-TRU treated, awaiting certification: 957 cubic meters (about 259 shipments).
- MLLW Key Activities/Actions:
 - Between the June 1 contract transition and Sept. 25, 2016, Fluor has shipped 233 m³ of legacy waste for off-site treatment and disposal.
- MLLW Upcoming Activities:
 - Continue shipment of legacy salt, soil, and debris waste.

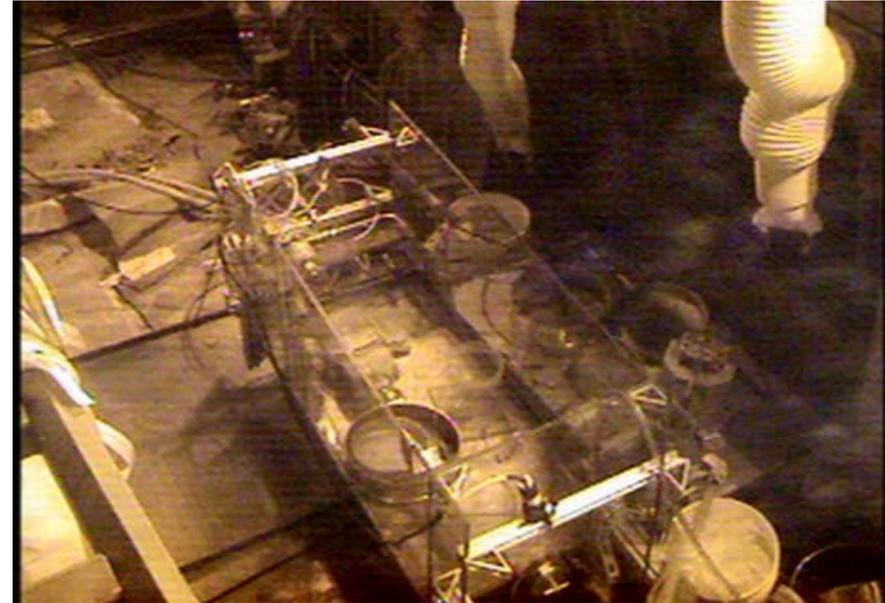
	Previously Certified Containers	Shipments
CH-TRU Waste		
Product Drums	3,849*	256
Direct Ship	1,967*	105
SWB's	8	2
SRP Drums	10,052	335
Buried Waste	4,260	122
CH-TRU Total	20,136	820
RH-TRU Waste		
Drums	161	90
* Includes containers in pre-sub certified status that require Flammable Gas Analysis prior to certification.		

Note: numbers in red will be updated before the CAB meeting.

Remote-Handled Transuranic Waste Disposition

Key Activities/Actions:

- Remote-handled transuranic waste shipments are on hold until WIPP determines path forward.
- Activity Status
 - Continue with repackaging ISA waste.
 - Continue processing waste stream approvals for ISA waste.
 - Continue preparations for Navy waste stream.
- Remaining EM RH-TRU waste to meet Idaho Settlement Agreement:
 - Approximately 25 cubic meters.
 - Six waste streams are submitted and pending CBFO approval.
 - Seven waste stream packages are in development for submittal for review.
 - Waste stream approval by EPA and CBFO is required prior to certification and transport for disposal.



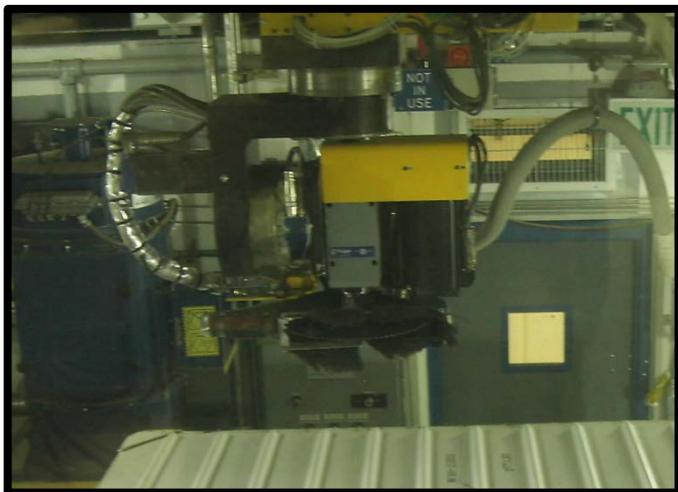
Argon Repackaging Station inside the Hot-Cell

Advanced Mixed Waste Treatment Project



Above: CO₂ Test of New Brokk 400 prior to Operations

Below: Box Opening Gantry Robot



Key Activities/Actions:

- Contact-handled transuranic waste shipments are on hold until WIPP resumes operations.
- 820 Shipments of CH TRU have been certified for shipment to WIPP* under Rev 7 of the WIPP Waste Acceptance Criteria (WAC). Additional work will be required to meet WIPP WAC Rev 8.
- Shipment of 256 m³ of Legacy LLW/MLLW off-site in support of ISA milestone in FY2017.

**Includes containers that require Flammable Gas Analysis for DOT Transport prior to transportation certification.*

Upcoming Activities:

- Complete AMWTF Infrastructure Improvements during the 2nd Quarter of 2017.
- Continue work on chemical compatibility requirements with WIPP for WIPP WAC Rev 8.
- Develop additional treatment capacity for difficult wastes (e.g. Oversized Boxes) during the 2nd and 3rd Quarters of 2017.



New Brokk 400 Operating in the SBL

Completed Scope:

- Replaced 2 of 3 Brokk 330s with new Brokk 400s. Upgraded hydraulic lines to all three Brokks.
- Replaced drum movement robot control hardware and software.
- Replaced/upgraded conveyor systems in both box lines.
- Installed new camera in south box line.
- Replaced VFDs in facility ventilation system.
- Replaced a plant process air compressor.
- Procured long lead bearings and other components for the shredder.

Remaining Work:

- Replace Box Opening Gantry Robot; expected to complete by the end of February, 2017.

Production Improvements:

- Q1 of FY2016: Box Lines processed ~ 300 m³ while operating on a 24/7 basis with three Brokk 330s.
- Q1 of FY2017: the South Box Line alone processed ~195 m³ while operating on a 12/7 basis with a single Brokk 400 manipulator.
- These improvements are due to increased Brokk capacity and reduced maintenance outages.

Advanced Mixed Waste Treatment Project



The eastern end of south box face with all drums retrieved.



The center of the south box face with all drums retrieved.

Key Activities Retrieval and Cargo Operations:

- FY 16 – Completed drum retrieval, and emptied all cargo containers.
- Continued retrieving waste from Pad 1 Cell 1, the final cell with waste containers.
- Approximately 20 boxes left to retrieve – about 62 cubic meters.

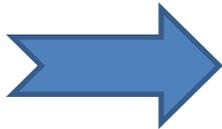
Upcoming Activities:

- Complete retrieval the 2nd quarter FY 2017 (six months ahead of schedule).
- Complete soil removal the 3rd quarter FY 2017.

Dashboard Legend



Ahead of schedule, under budget, better than expected.

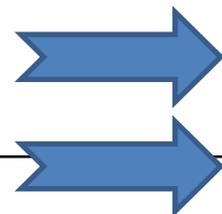


On schedule, on budget, performance as expected.



Behind schedule, over budget, performance less than expected.

Dashboard Summary – Stored Waste Disposal

Key Questions	Dashboard Indicator	Comments
Schedule Performance		WIPP closure and changes to acceptance criteria put ID behind schedule in shipping and certification. Fluor Idaho performing to current contract requirements.
Cost performance		Delays in shipping and certification will increase life-cycle costs. Fluor Idaho performing to current contract requirements.
Impact on employment/economic development		Work is ongoing at AMWTP and INTEC.
Affect on agreements		Closure of WIPP has precluded shipment of 2,000 cubic meter rolling average, places 2018 milestone at risk.
Impact on safety and environment		Waste disposition operations were performed safely and compliantly during the reporting period. Concern over recent weather-related injuries.
Impact on cleanup DOE-wide		No impact on complex wide cleanup.

- WAG 1: Test Area North (TAN)
 - TAN Groundwater Remediation
- WAG 3: Idaho Nuclear Technology and Engineering Center (INTEC)
 - Complete the work associated with the OU 3-14 Record of Decision
 - Operate the Idaho CERCLA Disposal Facility (ICDF) to compliantly disposition CERCLA waste
- WAG 7: Radioactive Waste Management Complex (RWMC)
 - **Exhume 5.69 acres of buried waste (Completed 4.48 acres as of Jan. 31, 2017)**
 - Complete the work associated with the OU 7-13/14 Record of Decision
- WAG 10: Site Wide
 - Maintain site wide institutional controls, and operations and maintenance program
 - Maintain groundwater monitoring program
 - Maintain the New Site Identification Process for future CERCLA sites

Key Activities/Actions:

- WAG 1
 - Continued In Situ Bioremediation (ISB) injections into new injection/monitoring well at Test Area North (completed fifth injection on Jan. 5, 2017).
 - Results of the “Snapshot” sampling event (July) indicates that the trichloroethylene (TCE) plume expansion is generally consistent with the original groundwater model, but there appears to be slightly more expansion to the southwest than originally anticipated.
 - A new distal zone monitoring well will be drilled next field season to better monitor the southwest boundary of the plume.

- WAG 3
 - Fluor is preparing to complete the scope of work associated with installing a low-permeability pavement over the western two-thirds of the tank farm to reduce infiltration. This work scope will complete Phase II, Part A of the Operable Unit 3-14 remedy.



Containers of ISB amendment at TAN ISB Facility



TAN Injection Well – TAN-2272

CERCLA Remediation – WAGS 1, 3 and 10 (cont.).

- WAG 10

- Continue implementation of the New Site Identification (NSI) Field Sampling Plan (FSP) to evaluate perchloroethylene (PCE) contamination of well MIDDLE-2051.
 - Video-logging of two Westbay wells was completed (December).
 - Sampling results of MIDDLE-2050A (Sept. 16) indicated PCE contamination above MCL in well tubing. This well was installed at the same time (2005) as MD-2051.
 - Other FSP activities this quarter include evaluation of equipment used in well sampling activities and the usage of chemicals by sampling organizations that may contain PCE.

- Ongoing Activities:

- WAG 1 - Continue ISB injections into new wells - Anticipate four FY17 injections.
- WAG 3 - Continue perched water monitoring and recharge controls at INTEC.
- WAG 10 –
 - Continue monitoring and institutional controls.
 - Continue New Site evaluation/remediation.

Idaho CERCLA Disposal Facility (ICDF)

Key Activities/Actions:

- FY 2017 (Oct. 2016 thru Jan. 2017)
 - Received 6,820 gallons of liquid for disposal to evaporation ponds.
 - Received a total of 977 cubic meters of solid waste for landfill disposal
 - AMWTP Cargo Containers
 - AMWTP Soil Sacks
 - MFC-767 debris

Ongoing Activities:

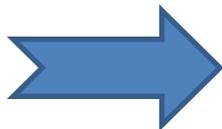
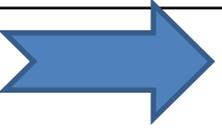
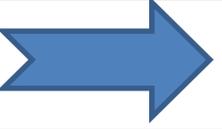
- Continue receipt and disposal of aqueous wastes in Evaporation Ponds.
- Dispose CERCLA solid waste
 - AMWTP cargo containers and soil.
 - NRF D&D debris.
 - MFC D&D debris.
- Continue operation and maintenance of ICDF complex processes and facilities.



ICDF receipt of AMWTP cargo containers – November 2016



ICDF receipt of AMWTP soil sacks - December 2016

Key Questions	Dashboard Indicator	Comments
Schedule Performance		Activities slightly ahead of schedule.
Cost Performance		Cost performance just slightly under budget.
Impact on employment/economic development		Project will continue at a similar level of effort for several years.
Affect on agreements		Project continues to meet regulatory milestones.
Impact on safety and environment		No ongoing safety issues; Safety goals are being met.
Impact on cleanup DOE-wide		No impact on DOE-wide cleanup.

Context: Buried Waste Exhumation

- What is the Waste: TRU waste, principally from Rocky Flats, buried in pits and trenches at the Subsurface Disposal Area at RWMC prior to 1970.
- Potential Risks: Potential contamination of the Snake River Plain Aquifer to above drinking water standards (volatile organic compounds primary contaminants of concern).
- Settlement Agreement: Part of FFA/CO CERCLA remediation of the buried waste under OU 7-13/14 ROD.
- How treated/disposed: Packaged to meet acceptance criteria for disposal at WIPP.
- Current Budget: Current Fiscal Year Budget for buried waste exhumation is \$21.6M.

CERCLA Remediation - WAG 7 Objectives

- Complete remediation work in accordance with the Record of Decision (ROD) for OU 7-13/14
- Conduct Targeted Waste Retrieval at the Accelerated Retrieval Projects (ARP) and disposition waste:
 - ARP I, II, III, IV, V, VI and VII - **completed**
 - ARP VIII: 1.2 acres out of 1.72 acres have been exhumed as of 1/31/17.
 - ARP IX:
 - Design and foundation construction – **completed**
 - Retrieval Enclosure construction – **in progress**
- ARP I & VI D&D - **completed**
- Complete in situ grouting of 21 locations - **completed**
- Subsurface solvent vapor extraction (OCVZ)
- Environmental monitoring and institutional controls

Key Activities/Actions:

- Continued ARP VIII waste exhumation. 1.03 acres have been exhumed as of Jan. 31, 2017.
- ARP IX design and foundation construction complete. North Wind, Inc. began construction of the enclosure, July 2016. Construction is scheduled to be completed during Fiscal Year 2017.
- Since 1996, 247,000 pounds of TVOC removed using vapor extraction as of Dec. 31, 2016.

Non-CERCLA Activities:

- Continued ARP V repackaging of AMWTP sludge waste. 2,769 drums and 60 boxes have been repackaged as of 1/31/17.
- Started up AMWTP debris repackaging process in ARP VII on March 9, 2016. 42 boxes have been processed and repackaged as of 1/31/2017.

Ongoing Activities:

- Continue to exhume targeted buried waste in ARP VIII.
- Continue AMWTP sludge repackaging in ARP V.
- Continue AMWTP debris repackaging in ARP VII
- Complete ARP IX facility construction.
- Continue organic vapor extraction.

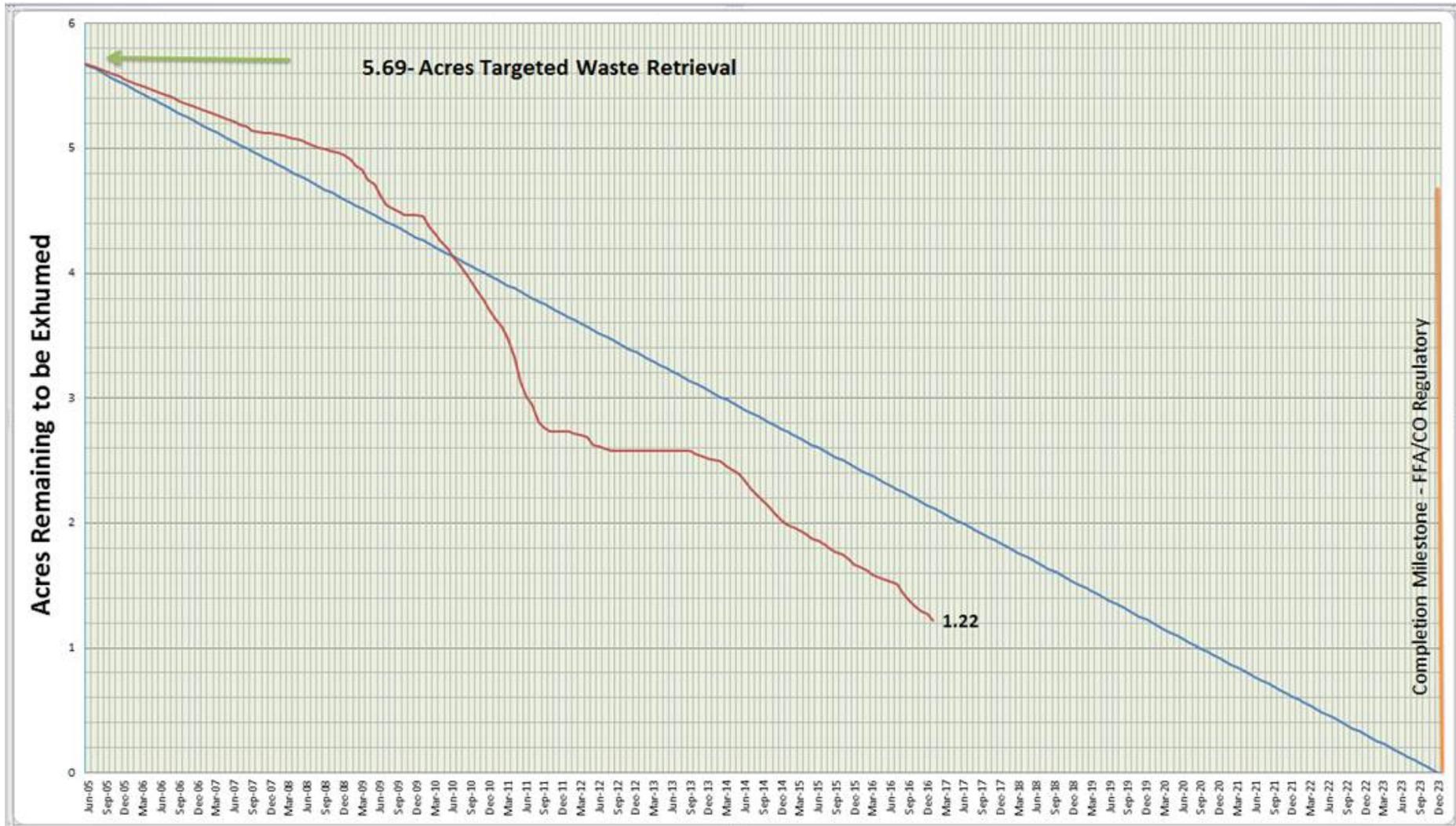


ARP IX Retrieval Enclosure with outer fabric installed – south view

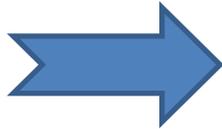
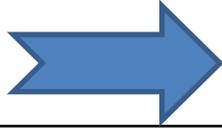


ARP IX Retrieval Enclosure – near completion of inner liner installation.

Buried Waste Exhumation Work-off Chart



WAG 7 Dashboard

Key Questions	Dashboard Indicator	Comments
Schedule Performance		As of Jan. 31, 2017, 4.31 acres (75.7%) of the required total of 5.69 acres have been exhumed. Project is about two years ahead of regulatory requirements.
Cost Performance		Cost performance under budget.
Impact on employment/economic development		Project is expected to continue with same level of employment for several years.
Affect on agreements		Project is ahead of pace to meet regulatory milestones.
Impact on safety and environment		No ongoing safety-related issues; safety goals being met.
Impact on cleanup DOE-wide		Crew performing buried waste exhumation and sludge/debris repackaging in ARP V/VII

CERCLA Progress

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2017
WAG 3 (INTEC)	Interim INTEC Tank Farm Cover Phase <ul style="list-style-type: none"> Phase A (western 2/3) Phase B (eastern 1/3) 	<ul style="list-style-type: none"> FFA/CO Regulatory FFA/CO Regulatory 	<ul style="list-style-type: none"> Submit RA Report by November 30, 2017 (on track) Submit RA Report by Nov. 30 of first field season after tank farm closure (on track) 	<ul style="list-style-type: none"> N/A N/A
WAG 3 (INTEC)	Final Tank Farm Evapo-transpiration cover	FFA/CO Regulatory	After INTEC Closure	N/A

CERCLA Progress (continued)

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2017
WAG 7 (RWMC)	Exhume .35 acres of targeted buried waste	DOE Fiscal Year Work Plan goal	9/30/17	FY 2017 goal
WAG 7 (RWMC)	Complete ARP IX construction	Contract commitment	2017	N/A – Pursuing acceleration
WAG 7 (RWMC)	Complete 90% Design for final Subsurface Disposal Area (SDA)	FFA/CO Regulatory	9/30/2020	N/A
WAG 7 (RWMC)	Complete Buried waste exhumation (5.69 acres)	FFA/CO Regulatory	12/31/2023	N/A
WAG 7 (RWMC)	Completed SDA final Cover construction	FFA/CO Regulatory	12/31/2028	N/A

Type of Waste: The term “spent nuclear fuel” means fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. (Nuclear Waste Policy Act, 1982) Within DOE, spent nuclear fuel (SNF) is managed as a material of interest and value until it might be declared a waste prior to final disposition.

Hazard to Public, Environment: Low. While SNF typically is highly radioactive, it is appropriately stored, managed and protected. The high radiation levels require some sort of shielding: cask, water, concrete, etc.

How Treated: SNF is managed through safe, secure, compliant storage, which includes surveillance and maintenance of storage facilities. It will be repackaged prior to transfer to a final repository.

Context: Spent Nuclear Fuel (cont.)

How Disposed: DOE intends to dispose of SNF in a geologic repository.

Current Year Budget: FY17 PBS 12:

- Defense-funded SNF program: \$16.9 million
- Non-defense funded SNF program: \$8 million

Total program: \$24.9 million

Key Activities/Actions:

- Completed 2 planned EBR-II spent fuel transfers out of Idaho Nuclear Technology and Engineering Center (INTEC) to the Materials and Fuels Complex for FY 17.
- Completed 4 Advanced Test Reactor (ATR) receipts into INTEC within the CPP-666 basin for FY 17.

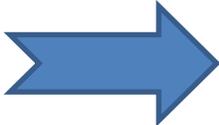
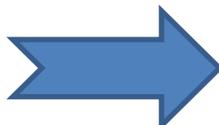
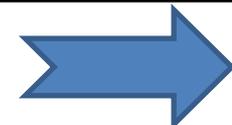
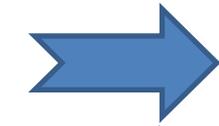
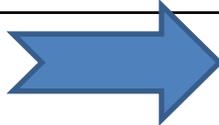
Upcoming Activities:

- Continue EBR-II spent fuel transfers out of wet storage.
- Continue ATR spent fuel receipts into wet storage.
- Plan for ATR spent fuel transfers out of wet storage.
- Continue to prepare Three Mile Island's Nuclear Regulatory Commission license renewal application.

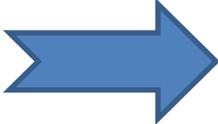


Spent Resin Cask Shipment

Dashboard Summary – Spent Nuclear Fuel Disposition Project

Key Questions	Dashboard Indicator	Comments
Percent of project completed		As of 01/30/17, the Fluor project is eight months into a sixty month project (~13%). Progress is satisfactory.
Percent of budget expended		As of 01/30/17, the Fluor project is eight months into a sixty-month project (~13%). Progress is satisfactory.
Affect on agreements		The project has met its planned scope commensurate with existing agreements.
Impact on safety and environment		INTEC projects routinely report among the lowest recordable incidents and contribute to the overall positive performance towards ICP safety goals.
Impact on cleanup DOE-wide		The project has met its goals.

ICP Dashboard Summary

Key Questions	Dashboard Indicator	Comments
Amount of project completed		Reflects IWTU, TRU waste delays. Fluor Idaho performing to contract.
Amount of budget expended		IWTU, TRU waste issues causing life cycle costs to rise. Fluor Idaho performing to contract.
Impact on employment/economic development		Employment largely stable.
Affect on agreements		IWTU delay, WIPP closure impacting milestones.
Impact on safety and environment		Concern over weather-related injuries.
Impact on cleanup DOE-wide		No outstanding impacts.