U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Richland Office

Congressional Nuclear Cleanup Caucus

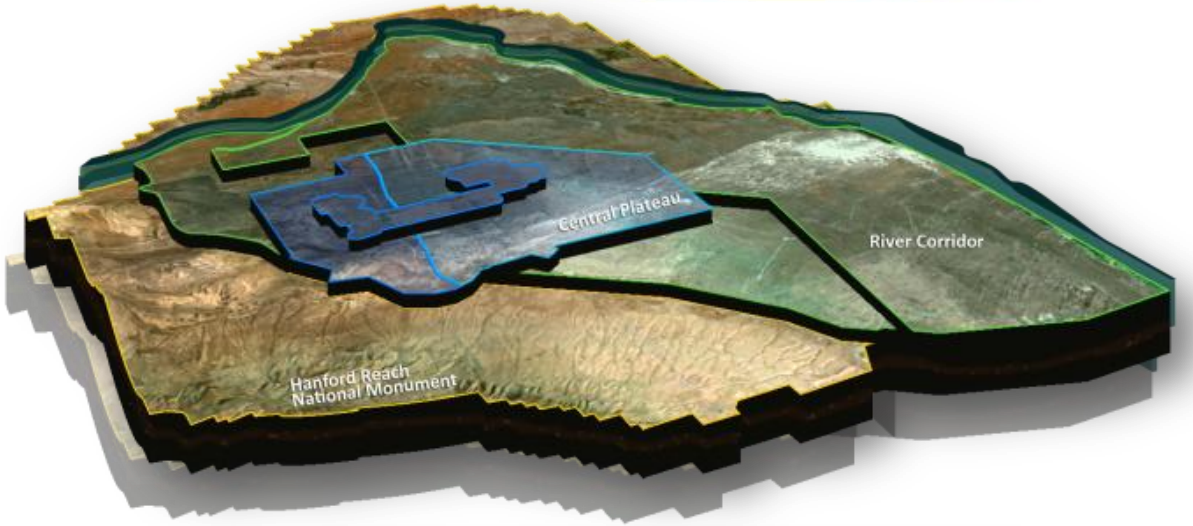
Matt McCormick
Manager

May 21, 2013

Richland Cleanup Overview

- Richland Operations Office 2014 budget is $993 million
- Three prime contractors reported $572 million of subcontracting in fiscal year 2012
- 4,500 total DOE Richland Federal and contractor employees
- Significant progress is being made

Hanford Cleanup Overview



Richland Operations Office

- River Corridor
- Central Plateau

Richland Cleanup Work

- Treat contaminated groundwater
- Decontaminate and demolish facilities
- Move buried waste and contaminated soil away from Columbia River
- Isolate contamination on Central Plateau

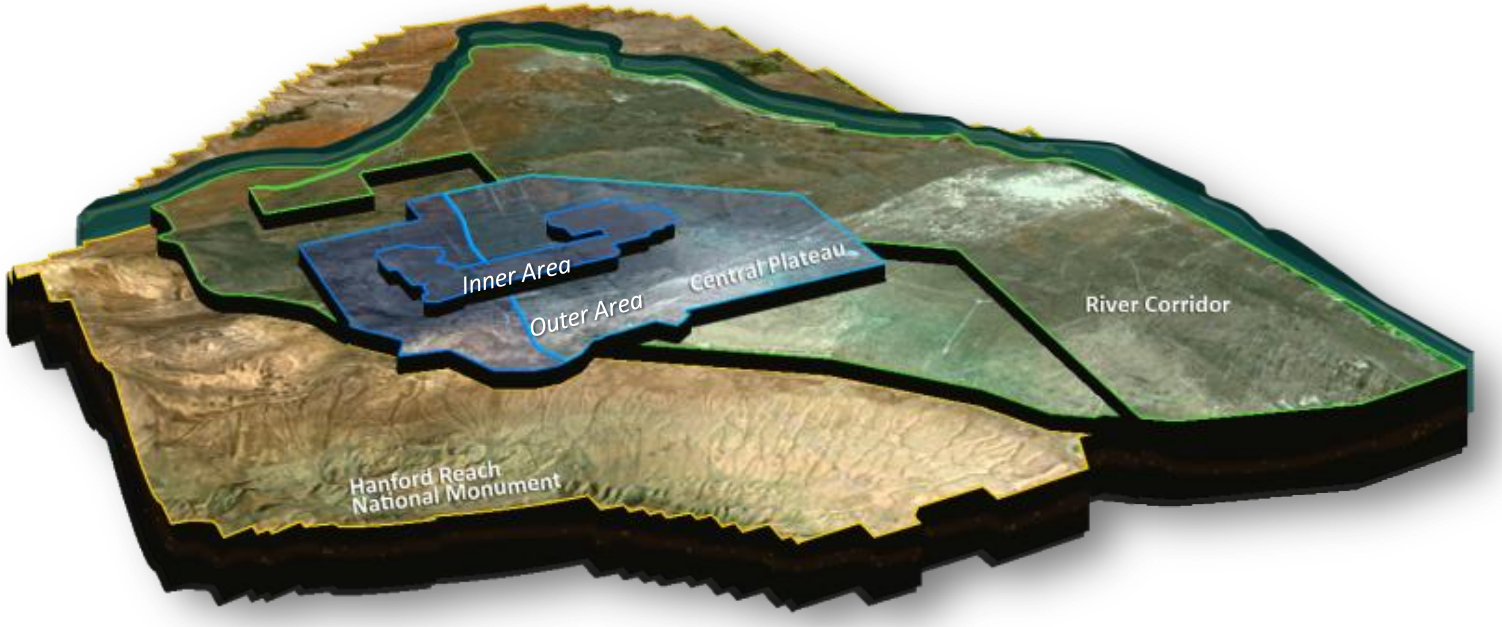
Digging into D Area

Shrinking the Cleanup Footprint

Footprint reduction goals:

- 49 percent in 2011
- 70 percent in 2012
  - 73 percent complete to date

Shrink, to the extent practical, from 586 square miles to about 75 square miles by 2015



Progress Last Year

- 76 buildings demolished, 148 waste sites remediated
- 2.3 million tons of contaminated soil and debris from cleanup placed in engineered landfill
- 2.1 billion gallons of groundwater treated, removing more than 2 tons of chemical and radioactive contaminants

Demolishing water structures near K East Reactor

Disposing of cleanup debris in engineered landfill

Progress

Completed massive excavation of chromium-contaminated soil near Columbia River – 731 of 1,012 River Corridor waste sites remediated to date

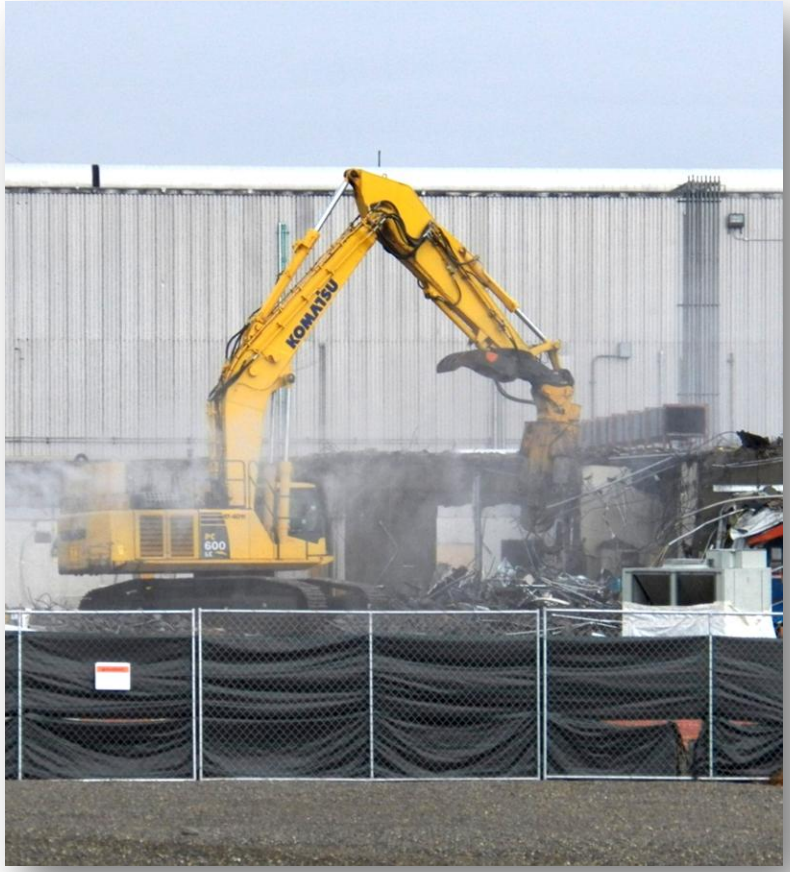
Progress

Demolished fuel development facility (308 Building) – 385 of 522 excess River Corridor facilities demolished to date

Progress

Completed cocooning of largest Hanford reactor (N Reactor) - 7 of 9 nuclear reactors placed in interim safe storage/preserved

Progress



Demolished plutonium vaults – 55 of 81 Plutonium Finishing Plant facilities demolished to date

Removed 183 of 238 glove boxes to date from highest-hazard plutonium facility at Hanford

Safety Progress

- Nearing completion on improvements to beryllium protection program
- Improving asbestos controls and procedures
- 16th site-wide safety standard added
- Conducted site-wide safety survey and making improvements

Challenges

- Changing environmental conditions
- Maintaining our "A Game" in safety
  - Continuous improvement

High levels of contamination discovered under building in Hanford's 300 Area

Workers discovered a coffee can time capsule from 1955 while demolishing a building

Fiscal Year 2014 Budget Request

PBS	PBS Title	FY 2012 Appropriation	FY 2014 President's Budget
RL-0011	NM Stabilization and Disposition - PFP	$99,195	$142,890
RL-0012	SNF Stabilization and Disposition	$111,952	$98,518
RL-0013	Solid Waste Stabilization and Disposition – 200 Area	$143,482	$130,322
RL-0030	Soil and Water Remediation - Groundwater/Vadose Zone	$190,705	$141,720
Subtotal	**Central Plateau Remediation**	**$545,334**	**$513,450**
RL-0041	Nuclear Facility D&D - River Corridor Closure Project	$329,048	$327,642
RL-0040	Nuclear Facility D&D - Remainder of Hanford	$56,121	$65,992
Subtotal	**River Corridor and Other Cleanup Operations**	**$385,169**	**$393,634**
RL-0100	Richland Community and Regulatory Support	$19,540	$14,701
RL-0020	Safeguards and Security	$69,078	$69,078
RL-0042	Nuclear Facility D&D - Fast Flux Test Facility Project	$2,703	$2,545
Total - RL	**Richland Field Office Funding Summary**	**$1,021,824**	**$993,408**

Hanford: A Risk Perspective

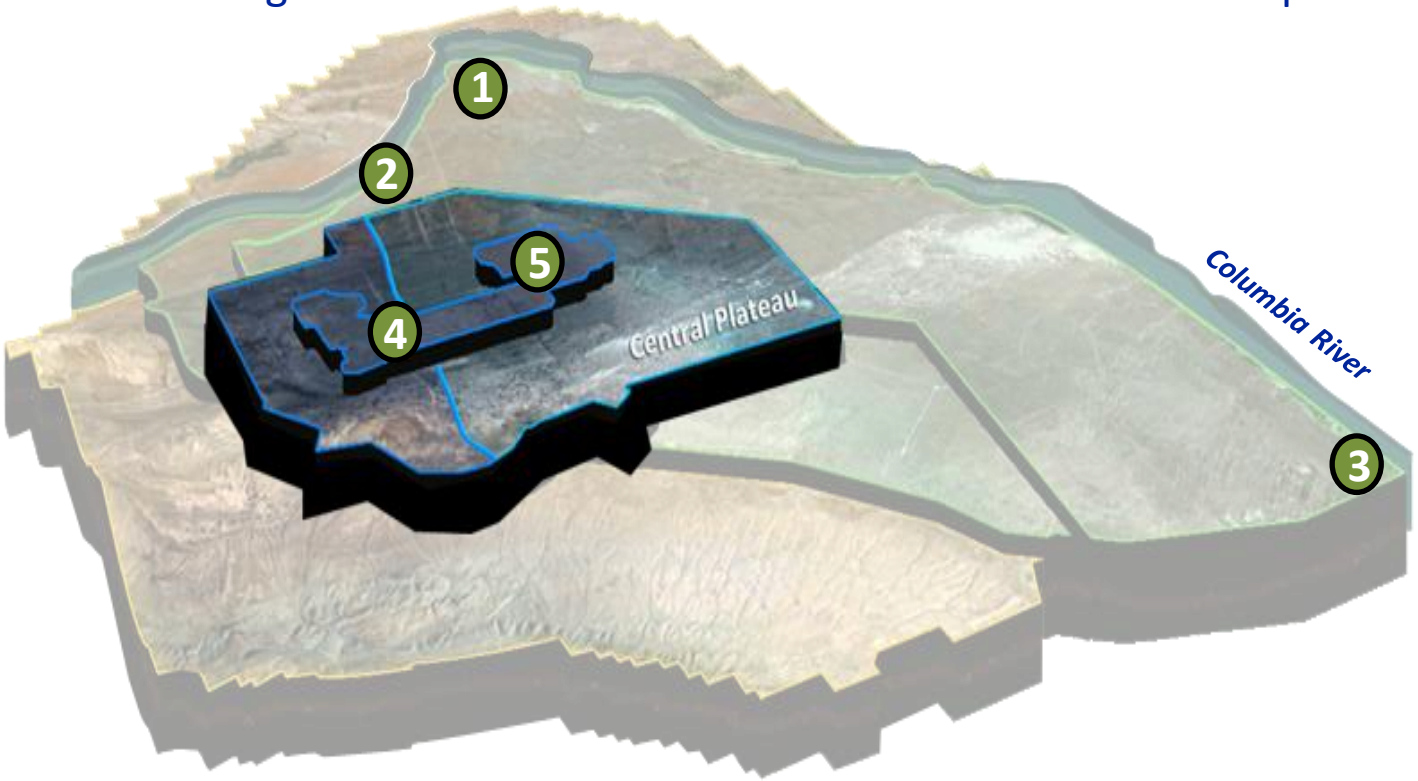
Environmental Risk

River Corridor

1. Chromium in soil and groundwater
2. Sludge in K West Basin
3. 324 Building

Central Plateau

4. Carbon tetrachloride, technetium 99, uranium
5. Contamination in Deep Vadose Zone

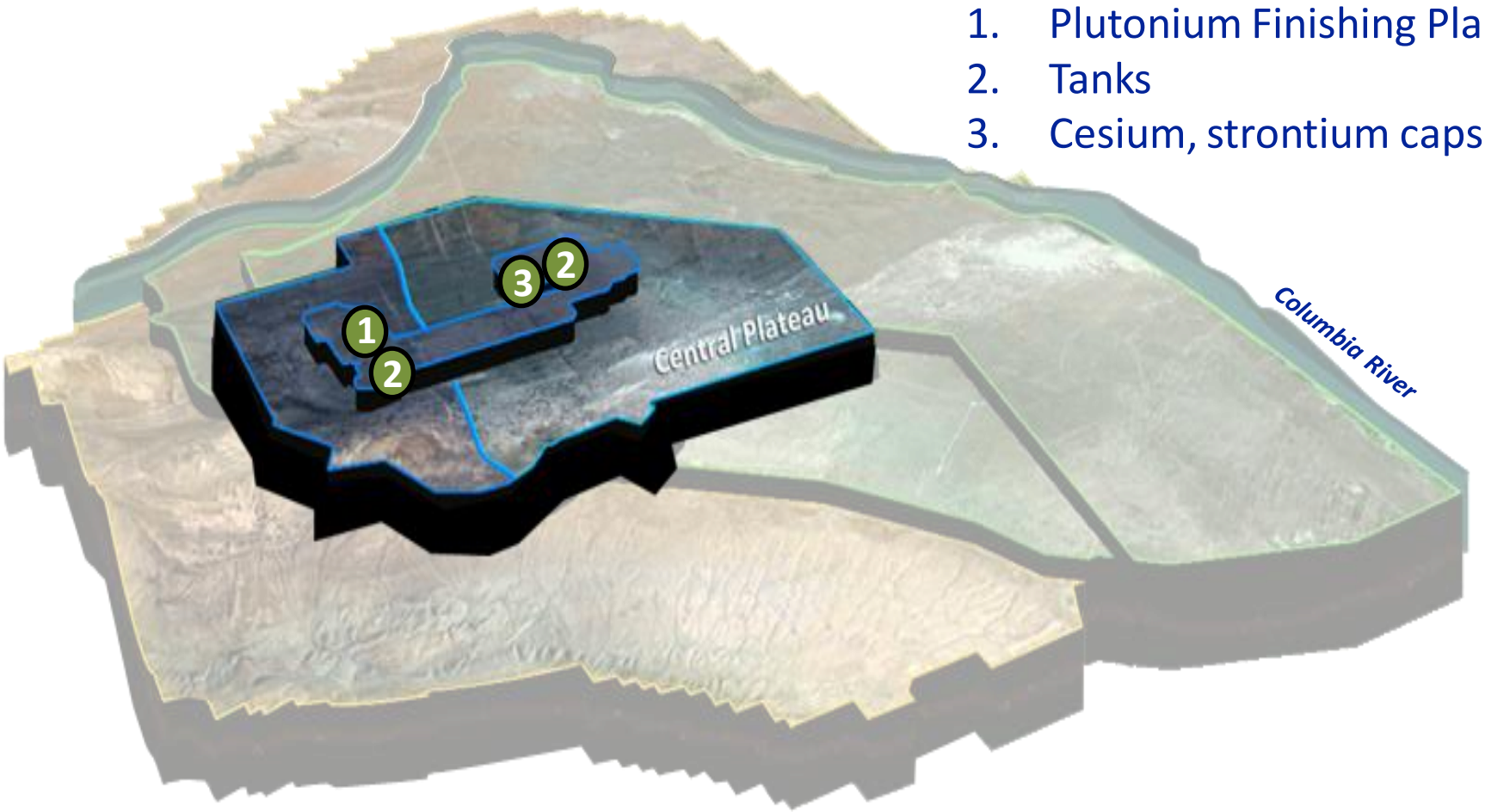


Hanford: A Risk Perspective

Nuclear Safety Risk

Central Plateau

1. Plutonium Finishing Plant
2. Tanks
3. Cesium, strontium capsules



Washington Closure Hanford

Richland Office

Congressional Nuclear Cleanup Caucus

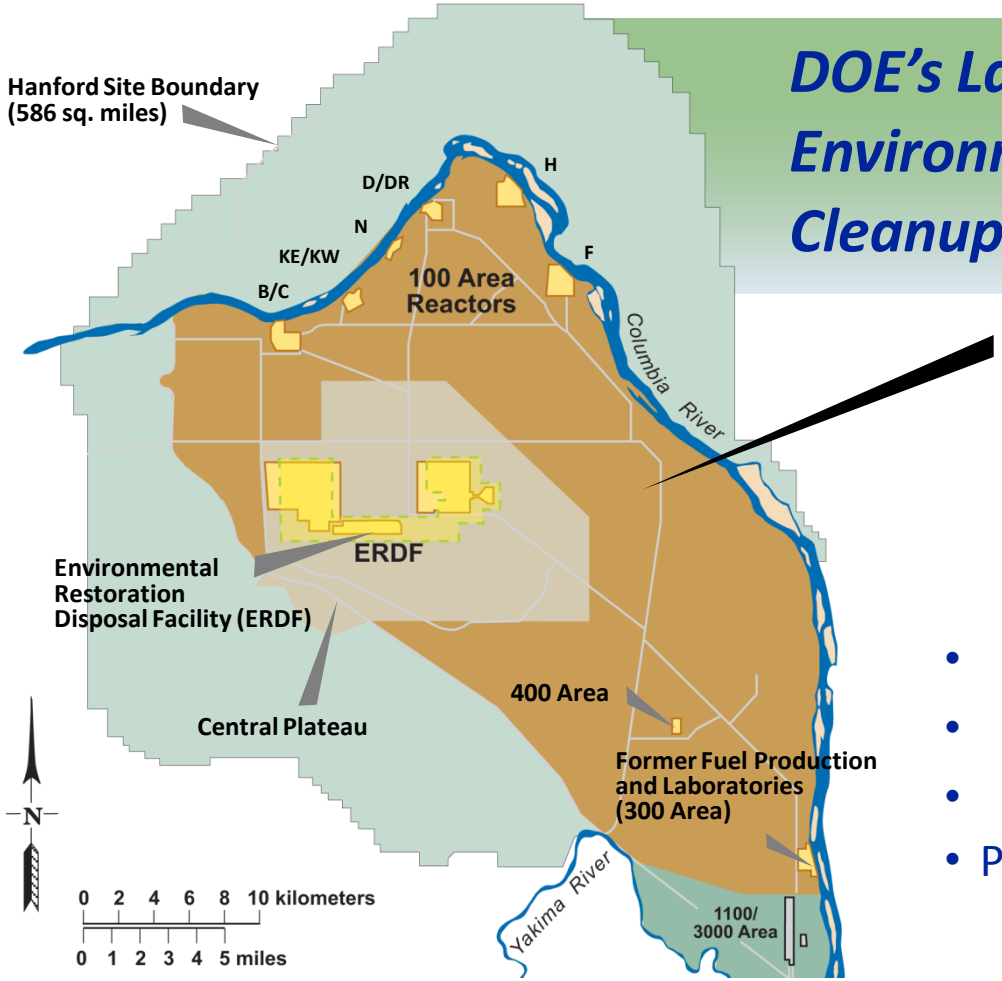
Carol Johnson

President and Project Manager

Washington Closure Hanford

May 21, 2013

Our work scope



DOE's Largest Environmental Management Cleanup Closure Project

River Corridor
(220 square miles
and 46 linear miles along
the Hanford portion of
the Columbia River)

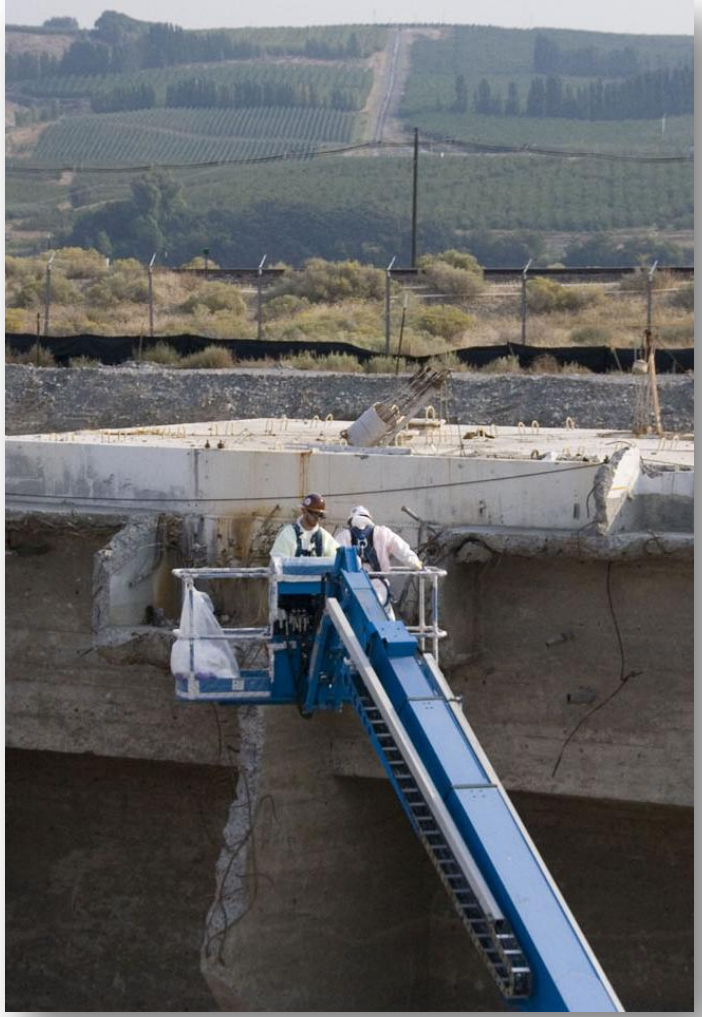
- $2.4B contract
- Cost-plus incentive fee contract
- 990 employees
- Parent companies:
  - URS-led, Bechtel and CH2M Hill

Our Safety Conscious Work Environment

- Excellent safety record continues
  - A top performer in DOE-EM
  - Positive feedback from safety culture survey
- Awarded DOE Voluntary Protection Program Star Status and DOE Star of Excellence
- Focused on safety and disciplined operations as we near completion

Workers remove a pipeline from 100-D reactor area along the Columbia River

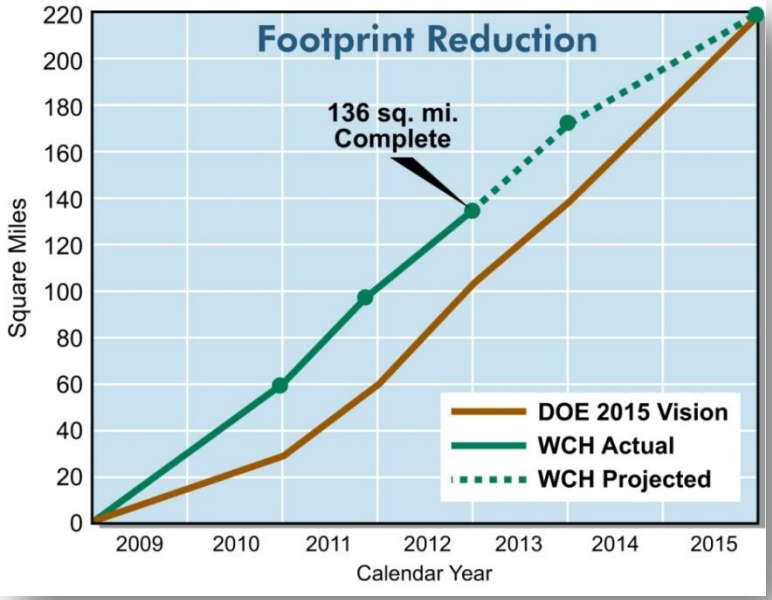
Our project remains ahead of schedule and under budget

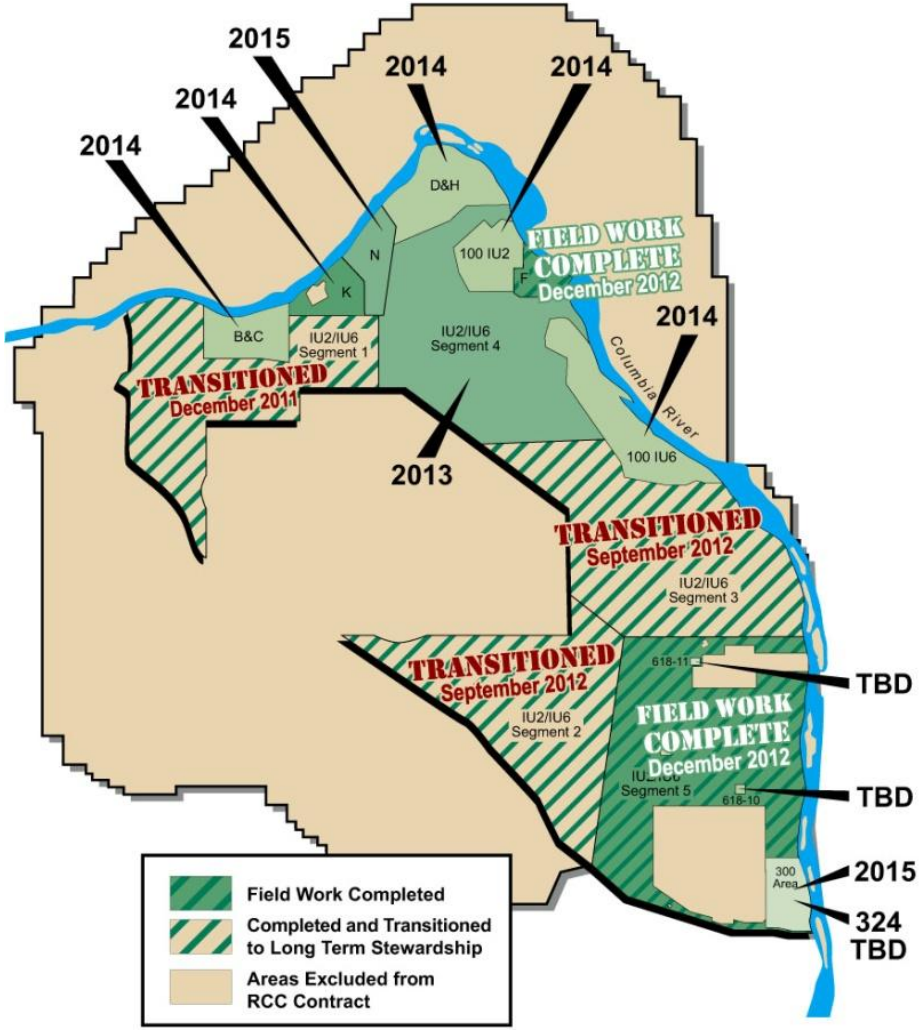


The 1,200-ton 340 Vault stored highly contaminated radioactive lab waste before being transferred to the central plateau

- The closure contract is 87% complete
- Cost efficient: $315M reinvested
- Completed 40 of 40 regulatory agreement milestones on or ahead of schedule
- Closure process in progress
- Washington Closure approaching $1B in small business awards

On Track to Meet DOE's 2015 Vision





Contract Project Status

- 278 of 316 facilities demolished
- 354 of 586 wastes sites remediated
- 8.7 million tons of 10 million tons waste debris disposed of

Our cleanup momentum continues

For nearly 60 years, the 300 Area was the center of Hanford's radiological research and fuel fabrication.

300 Area cleanup progress

- Removing source term contaminants protects groundwater and the river
- As of March 2013:
  - Demolished 139 of 167 facilities
  - Cleaned up 60 of 116 waste sites

Our cleanup momentum continues

100-N cleanup progress

- Waste site cleanup and building demolition reduces risks to the river and groundwater from hazardous chemicals and radioactivity
- As of March 2013:
  - Demolished 109 of 114 facilities
  - Cleaned up 29 of 114 waste sites

- Cocooning N Reactor met a TPA milestone in September 2012
- Reactor infrastructure covered one square mile

Cleanup Challenges Ahead

324 Building

- Engineering design work begins in fourth quarter of FY14
- Discovered 8,900 R/hr below building
- Hazard Category 2 – Requires annual surveillance and maintenance

Soil samples directly below 324 B-cell, retrieved in June 2011, were highly contaminated

Cleanup Challenges Ahead

- 618-10 and 618-11 burial grounds
- Vigilant for unknown risks and hazards

D and DR reactors

CH2MHILL
Plateau Remediation Company

CH2M HILL Plateau Remediation Company

Richland Office

Congressional Nuclear Cleanup Caucus

John Fulton

President and Chief Executive Officer

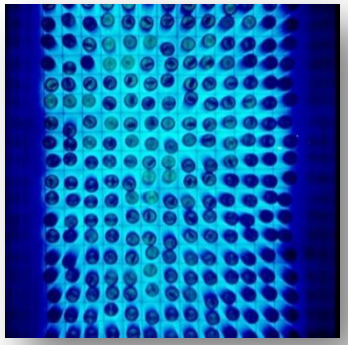
May 21, 2013

CH2MHILL
Plateau Remediation Company

Project Overview

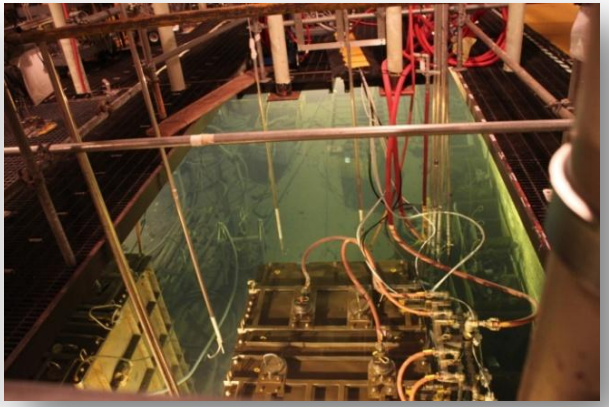
Some of the most challenging hazards in the nation:

- Chemical, radiological and nuclear hazard risks to workers and the environment
  - Asbestos, beryllium, nitric acid
- Highly contaminated equipment in difficult configurations
- More than 100kg of plutonium and americium holdup in CHPRC-managed facilities
- 53 million curies of cesium and strontium (1/3 of site's total radioactivity)



Radioactive cesium and strontium capsules

Hexavalent chromium contamination



Radioactive sludge

Leftover plutonium processing equipment

CH2MHILL
Plateau Remediation Company

Overall Performance

Reducing risks through project delivery

- Exceeding subcontract small business goals
  - 49% awarded to small businesses
- Meeting regulatory milestones
  - 120 milestones met contract-to-date
- Environmental Management System
  - Certified ISO 14001 ("gold" standard)
  - Educating our community in zero waste
    - Zero waste picnic (more than 4,000 participants)
    - Sponsored game night recycling program

Groundwater remediation

Sludge Treatment Project

Plutonium Finishing Plant

CH2MHILL
Plateau Remediation Company

Work Scope

Plutonium Finishing Plant glove box removal

Groundwater contamination sampling

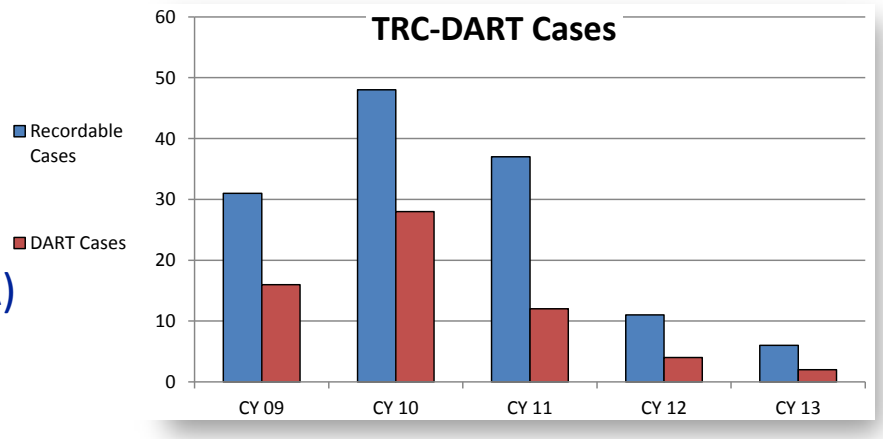
Lowering sludge project equipment into basin

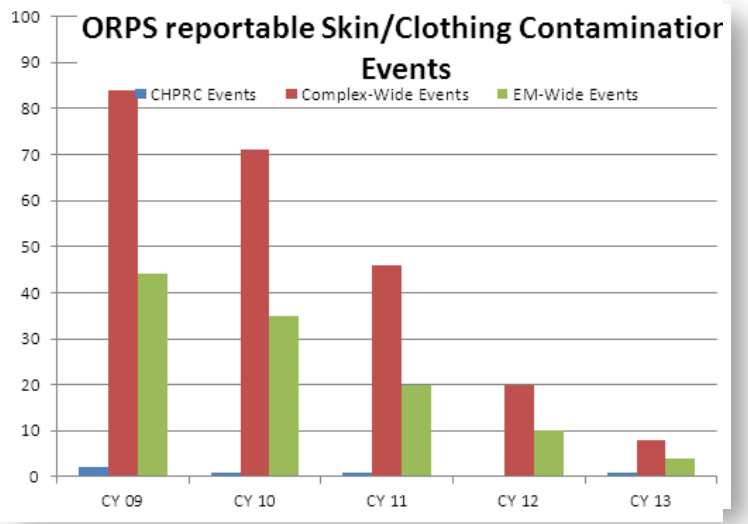
- Safe and compliant operations
- Plutonium Finishing Plant
- Sludge Treatment Project
- Groundwater Remediation
- Facility and waste site remediation
- Managing legacy waste
- Coordinating regulatory decision documents for Hanford cleanup, including the River Corridor

CH2MHILL
Plateau Remediation Company

Performing Work Safely

- Surpassing DOE safety goals while performing highest hazard work
- Excellent radiological and nuclear safety performance
  - Met 2012 personnel radiation exposure as low as reasonably achievable (ALARA) goals
  - CHPRC has had zero federal reportable (ORPS) intakes of radioactive material contract-to-date
- Continually improving safety performance
  - Strong safety culture during change
  - Continuing to foster a healthy Voluntary Protection Program
  - Encouraging workers to use questioning attitudes
  - Developing field work supervisors – leadership program





CH2MHILL
Plateau Remediation Company

Performing Work Safely

Partnering with DOE and our workforce to identify and mitigate risks:

- Established new organization dedicated to consistent work planning and procedures
  - Extensive work team involvement, engineering controls and hazard analysis
- Conducting mockups, field walk downs and pre-job meetings

10-ton glove box removal mockup supported safe operations

CH2MHILL
Plateau Remediation Company

Plutonium Finishing Plant

Demolishing more than 80 facilities - a significant radiological and nuclear hazard risk

Reducing risk to the public and environment:

- 55 facilities demolished
- 78% of glove boxes removed (183 of 232 in contract)
- 56% of pencil tank units removed (110 of 196)
- 42% of chemical/transfer lines removed (3,442 ft.)
- 72% of asbestos insulation removed (17,345 ft.)

Crew donning personal protective equipment prior to entering Plutonium Reclamation Facility

CH2MHILL
Plateau Remediation Company

Sludge Treatment Project

Removing 30 cubic meters of highly radioactive sludge stored 400 yards from the Columbia River

Significant progress has been made toward solving complex problems:

- Highly contaminated and unique material
- First-of-a-kind retrieval
  - Retrieved first stream of highly radioactive material
  - Preparing preliminary system design for next phase

Full-scale replica used to develop and test new technologies for sludge removal

CH2MHILL
Plateau Remediation Company

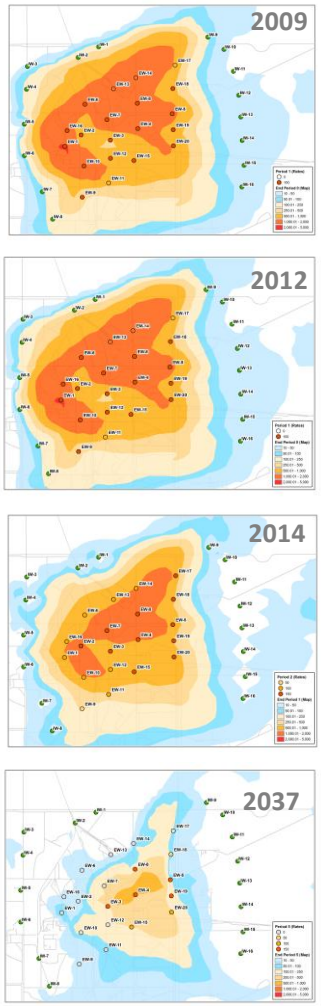
Groundwater Remediation

Treating 60 sq. mi. of contaminated groundwater plumes to protect the Columbia River

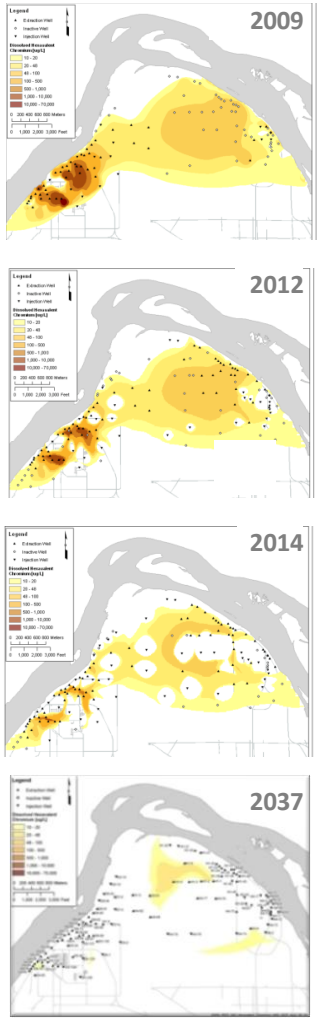
Progress in reducing risk to human and environmental health:

- Hanford has treated 7 billion gallons of contaminated groundwater, removing 30 tons of contaminants, to date
- Constructed newest pump-and-treat system (total of six)
- New wells needed to reach migrating plumes
- Several contaminants require targeted treatments
- Optimizing / expanding current systems
- Deep Vadose Zone technologies ready for deployment

Carbon tetrachloride plume – center of site



Chromium plume – River Corridor



CH2MHILL
Plateau Remediation Company

Waste Encapsulation and Storage Facility

Safely managing highly radioactive Cesium/Strontium capsules in the center of the Hanford Site

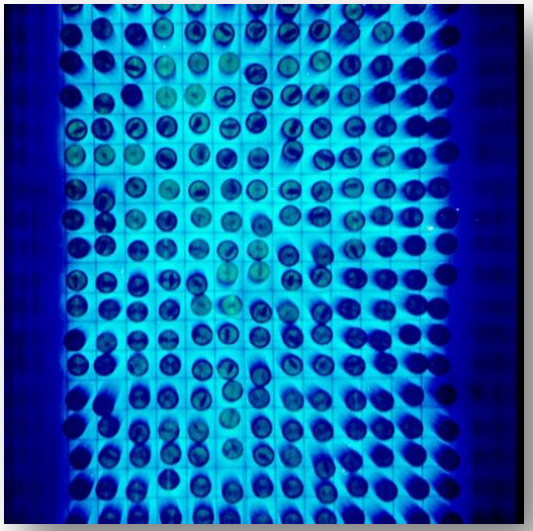
Managing pool cell storage of 1,936 capsules (53 million curies)

- Completed safe redistributed and realigned Cesium/Strontium capsules to reduce heat load and potential concrete degradation

Path Forward:

- Important to eliminate risk by relocating capsules to dry storage
- Upgrade facility ventilation required to support removal of capsules for long-term disposition

Redistribution of highly radioactive capsules to distribute heat generated by their radioactive contents



CH2MHILL
Plateau Remediation Company

Efficiencies and Technology

Identifying and executing project efficiencies

- $20 million efficiency challenge for FY 2013
- Implementing new subcontracting strategy for the next five years of the contract ($35-40 million savings)
- Utilizing a new groundwater treatment resin at pump and treat systems (more than $5 million savings)

Construction of the 200 West Pump and Treat Facility

CH2MHILL
Plateau Remediation Company

Path Forward

Reducing the risk along the river and across the site

- Maintain focus on working safely and compliantly
- Demolishing the Plutonium Finishing Plant on schedule and within budget
- Moving highly radioactive sludge away from the Columbia River
- Treating contaminated groundwater plumes to protect to the Columbia River

Working to safely demolish the Plutonium Finishing Plant

Mission Support Alliance

Richland Office

Congressional Nuclear Cleanup Caucus

Frank Armijo

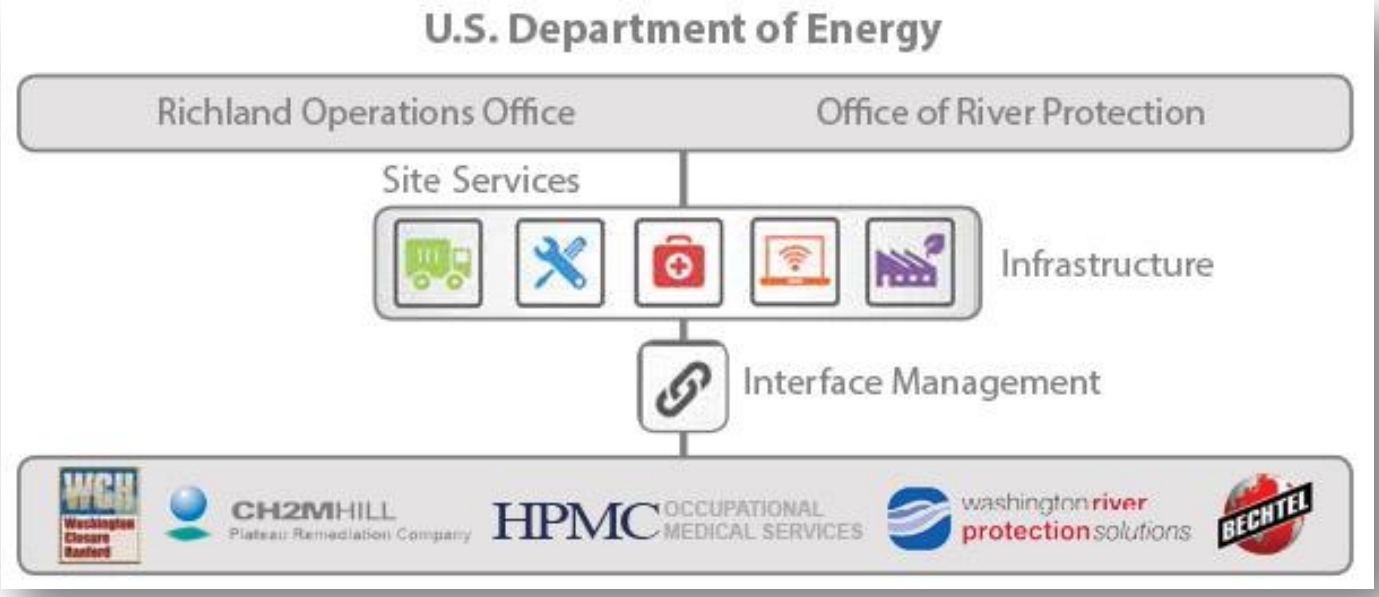
President and General Manager

Mission Support Alliance

May 21, 2013

Mission Support Contract Scope

- Providing critical infrastructure services to ***Richland Operations Office*** and ***Office of River Protection*** and 5 other prime contractors
- Maintaining and consolidating site infrastructure and site-wide systems
- Ensuring infrastructure has the capacity and reliability to support the cleanup mission
- Supporting small business goals
  - Over $370M in small business subcontracting goals to date, 61% over plan



Role of Infrastructure

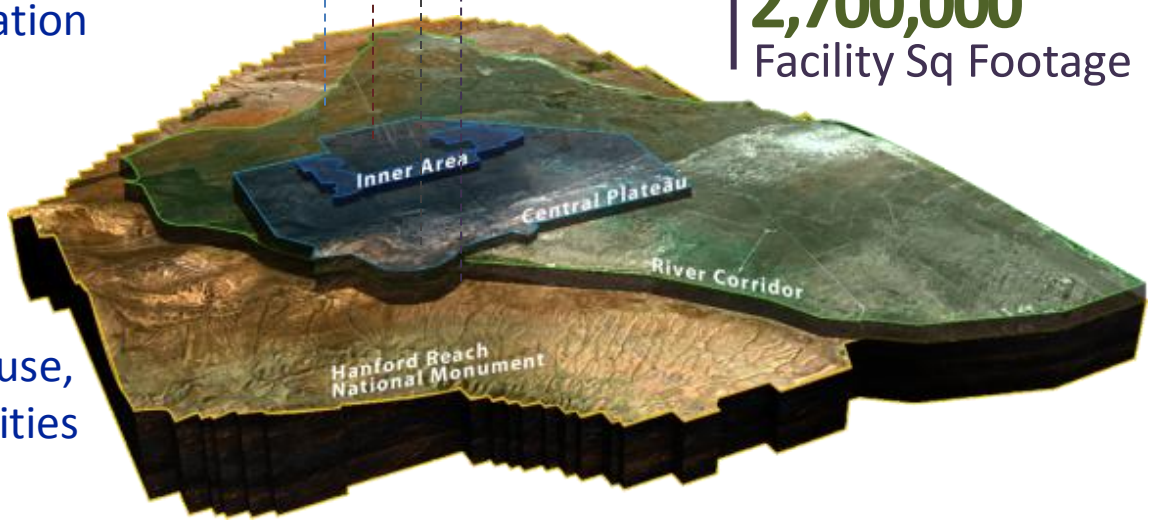
- Services
  - Special Nuclear Material and government property protection
  - Fire and medical emergencies
  - Hazardous material and radiological emergencies
- Physical Systems
  - Roads, water, power, information technology
  - Fire and security
  - Seismic monitoring
- Structures and Facilities
  - Laboratory, training, warehouse, maintenance and repair facilities
  - Telecommunications and meteorological towers
- Site-wide operations and maintenance and administrative services

323,900,000
Gallons of Water

207,582
MW Hours of Power

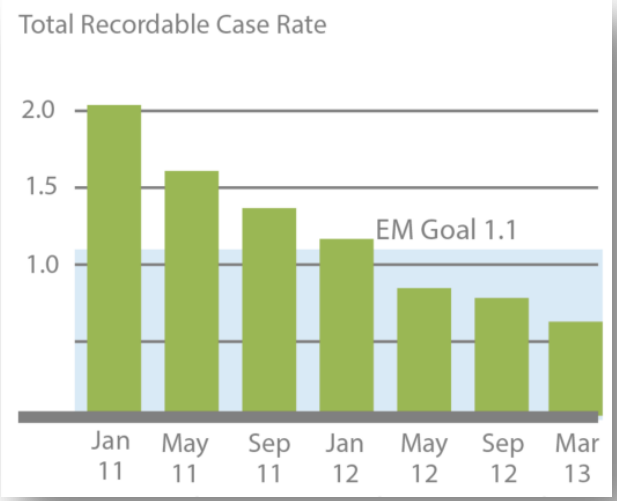
397 Miles
of Roadways

2,700,000
Facility Sq Footage



Site-wide Safety Integrator

- Integrator of key DOE safety initiatives
  - Added 16th site-wide safety initiative, with 14 implemented through standardized training across the site
  - Administration of beryllium corrective action plan
  - Support resolution of site-wide asbestos concerns
  - Support deployment of EM complex-wide Safety Conscious Work Environment training
- Emergency services and protective forces
  - 2012 emergency services and response
    - 1,129 emergency incidents onsite
    - 24 fires onsite
    - 96 mutual aid calls
- MSA safety performance
  - Averaging much better than the EM Safety goal
  - MSA has VPP Star and "Superior Star" status



Safety performance

ORP Infrastructure Support

- Prioritizing Office of River Protection (ORP) infrastructure requirements and schedules
  - Tank Farms water system support for 242-A Evaporator campaigns
  - Central Plateau raw water system improvements
  - 200 West Area substation and distribution system upgrades
  - Road improvements to support 200 East Area Tank Farms
  - Waste Treatment Plant (WTP) switchgear building transition

Central Plateau raw water improvements

ORP Infrastructure Support

- Services
  - Emergency management and response
  - Radiological dosimetry and records
  - Radiological instrumentation
  - Vegetation and pest control
- Supporting ORP with specialized services beyond “city manager” type services
  - Crane and excavation support to Tank Farms
  - Waste oil shipments
  - IT integration for “One System” Group
  - Facility Radio Fire Alarm Reporting

Testing Waste Treatment Plant electrical supply to switchgear building

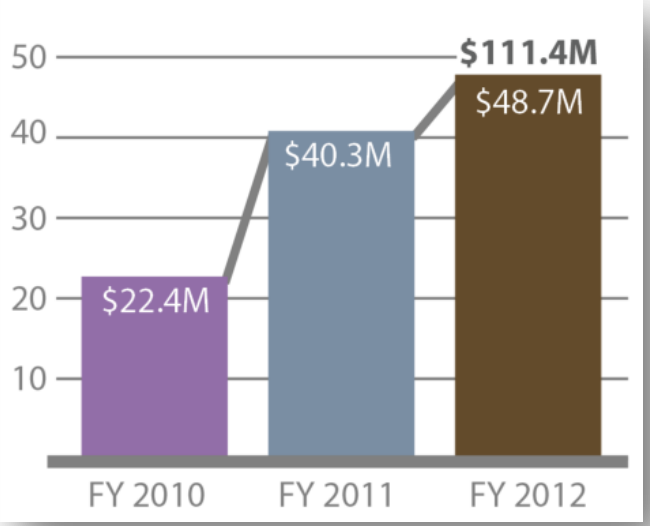
Enabling Efficiencies

- Meeting 100% of Service Level Agreements and all deliverables on-time
- Warehouse consolidation and improvements
  - Reduced Hanford warehouse footprint from 235,000 to 190,000 square feet
  - Space and lease consolidation saves $500,000 per year
  - 53% improvement on over 200,000 shipments per year
- Waste sampling improvements
  - Increased daily beryllium samples by over 500%
  - Reduced beryllium wipe analysis rates from $175 to $84

1163 Warehouse operations

Enabling Efficiencies

- Public Safety Resource Protection and Radiological Protection new scope
  - Successful transition from Pacific Northwest National Lab.
  - 100% deliverables completed on or ahead of schedule
  - $6.5M in lifecycle savings
- Leading the DOE Complex in information technology efficiencies
  - Thin Client = 80% reduction in energy consumption per workstation
  - Voice Over Internet Protocol = replacing legacy equipment with added security
- Over $100M cost savings over the past 3 years

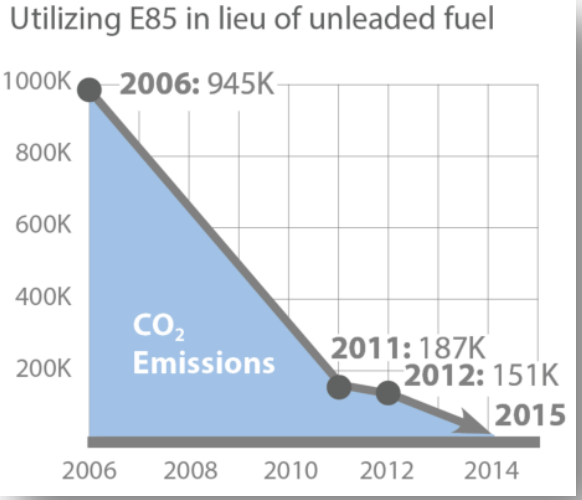


Cost savings – 2 years cumulative

Environmental Stewardship

- Delivering on DOE sustainability goals and public interest
  - Realized 53% of overall EM-wide fleet management reduction goal
    - EM goal of 500 vehicles; MSA reduced 266
    - Utilizing alternative fuel, hybrid and electric vehicles
  - "Go Green" use of electronic vs. paper records
    - TPA Administrative Records down from 300,000 to 20,000 pages
  - Site recycle program realized 12,000 metric tons of waste not going to landfills
  - 2012 Sustainability Awards
    - Federal Electronic Challenge Gold Level Award – green IT and electronics stewardship
    - Bronze Greenbuy Award – environmental friendly acquisitions
    - "Best in Class" Sustainability Award – data center and infrastructure consolidation
    - Four "Honorable Mention" Sustainability Awards – Voice over Internet protocol (VoIP), Thin Client, fleet management, solar-powered lighting

New electric charging station



Reducing CO^2 emissions

Challenges Ahead

- Hanford needs dependable infrastructure for cleanup work and worker safety
- Addressing maintenance and upgrades needed on infrastructure
  - 200% increase in water line breaks over FY11
  - 15 unplanned electrical outages in FY12
  - 13 unplanned electrical outages already in FY13
  - 2,500 high voltage wooden power poles need replacement
- Comprehensive system condition assessments identified major vulnerabilities
  - Single failure vulnerabilities
  - Lack of spare parts
  - Legacy systems no longer supported by manufacturers

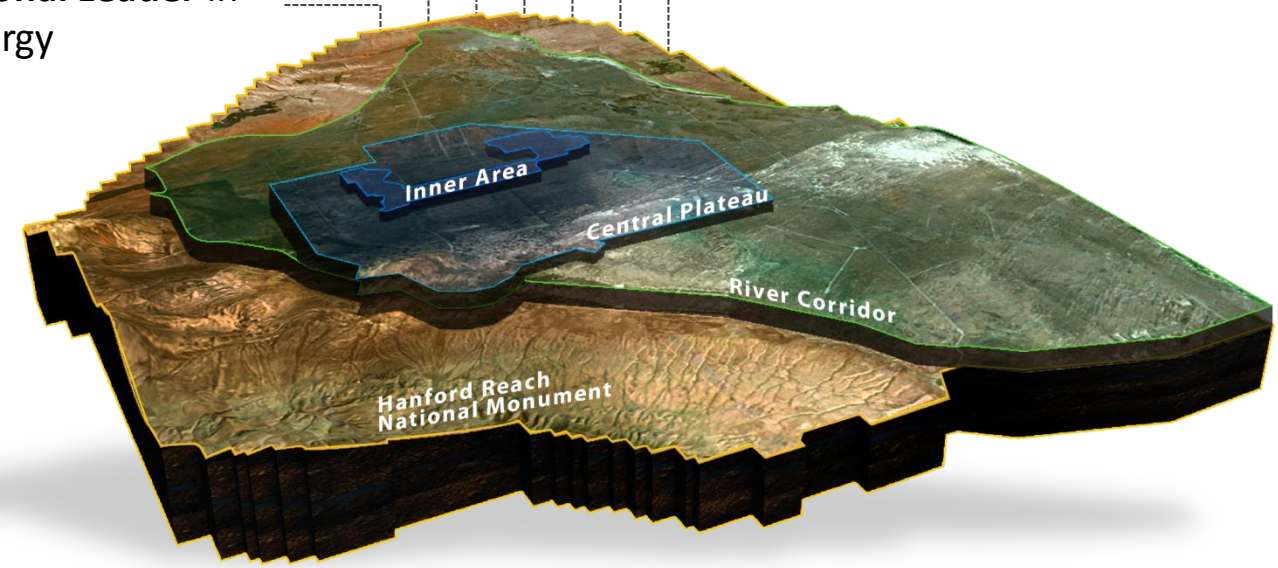
Damaged power pole in 300 Area

Pole fire damage near T Tank Farm

Partnering on DOE Mission Goals

Ensure infrastructure has reliability and capacity to support cleanup

- **Support Waste Complex** Operations (Tanks and WPT)
- **Right-Size** the Infrastructure
- **Lead** Site-Wide Integration
- Be a **National Leader** in Clean Energy
- Excel in the **Safe and Secure** Performance of Work
- **Drive Innovations** and Cost Savings
- **Implement Commercial** Service Delivery Model



Richland Summary

- We are reducing risks and protecting our workers, communities, and the environment through cleanup
- Our work is urgent and essential to the health of our communities and the nation
- Our mission is not discretionary – it is a Federal obligation to address the Cold War legacy and honor our regulatory commitments
- We have demonstrated value for the American taxpayer by delivering significant progress – but our work is not done
- Time is not on our side – costs and risks increase over time