



U.S. DEPARTMENT OF  
**ENERGY**

*Presentation to the SRS  
Citizens Advisory Board*

**SRS Performance Measures Update**

**June 14, 2011**

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**EM** *Environmental Management*  
safety ❖ performance ❖ cleanup ❖ closure

## *Purpose*

- Provide an update of EM Performance Measures through May FY 2011
- Provide a status to the S&LM Committee suggestion to:  
  
*“Create graphical analysis and lifecycle projections for key performance measures”*

# *EM Site Cleanup – Major Areas*

## **Liquid Waste**

- Disposition Radioactive Liquid Waste

  - Produce Canisters

  - Process Salt Solution

- Close Tanks

  - Old Style

  - Newer Style

## **Nuclear Materials**

- HEU (Highly Enriched Uranium)

  - Blend Down to LEU & Ship to TVA

- UNF (Used Nuclear Fuel)

  - Blend Down to LEU & Ship to TVA

- Plutonium Disposition

  - Plutonium Dissolved in H-Area

  - Other Disposition Paths (WIPP, MOX, Other)

## **Solid Waste**

- Disposition Radioactive Solid Waste

  - Transuranic (TRU) Waste Shipped

  - Mixed Low-Level & Low-Level Waste Dispositioned

## **Soil & Ground Water**

- Complete Remediation of Waste Sites

## **Facilities**

- Facilities Decommissioned / Demolished (D&D'd)

## **Footprint Reduction (ARRA Target)**

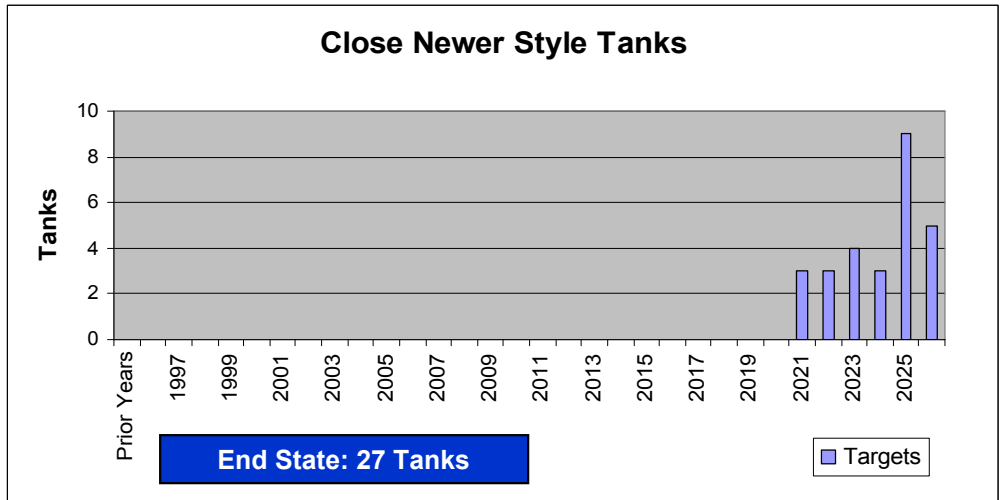
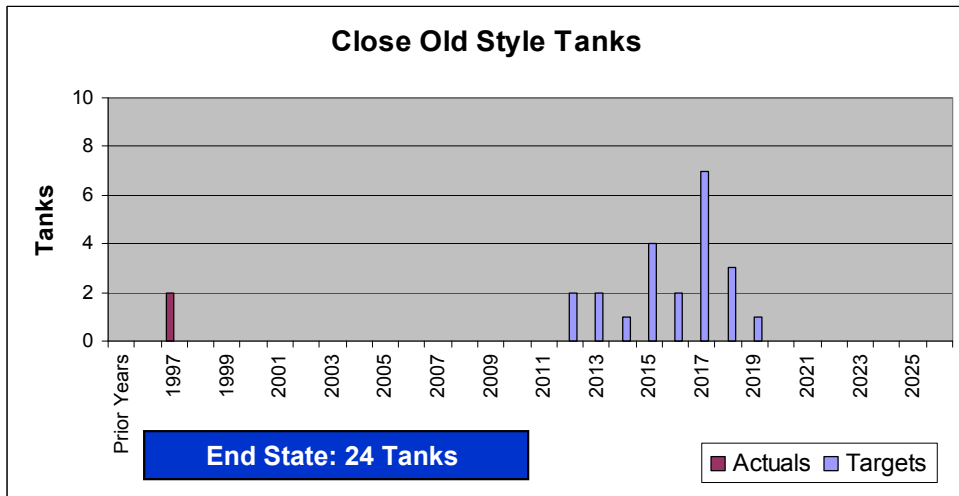
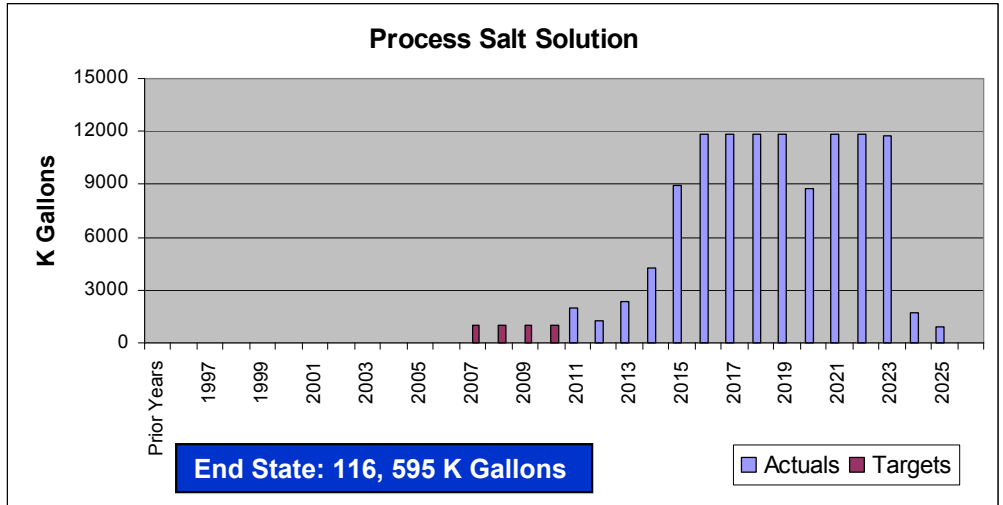
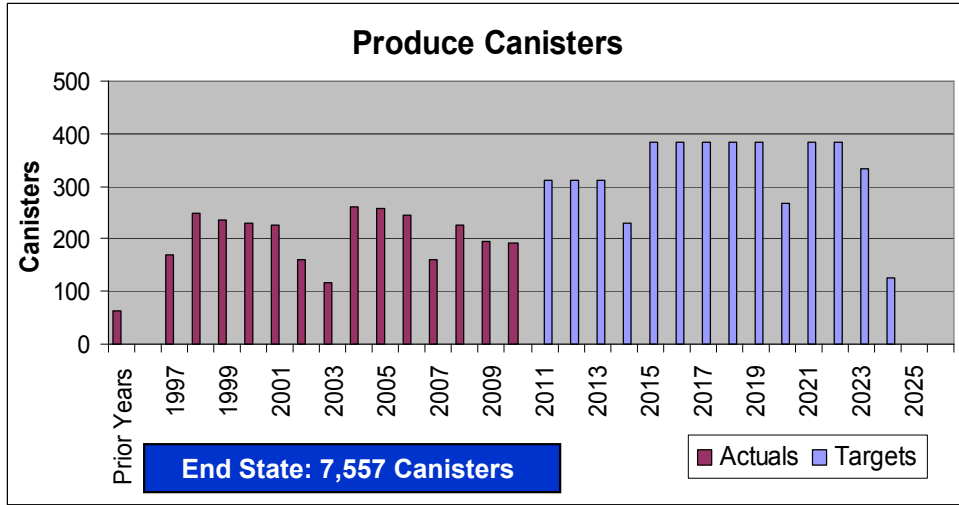
# Progress towards to EM Mission Achievement – Through May FY 2011

<b>EM Site Cleanup- Major Areas</b>	<b>% of End State Completed</b>			End State Quantity	Unit of Measure	Year of Completion
	<b>FY 09</b>	<b>FY10</b>	<b>FY11 YTD</b>			
<b>Liquid Waste</b>						
Disposition Radioactive Liquid Waste						
Produce Canisters	39%	40%	<b>41%</b>	7,557	Canisters	2024 / 2028
Process Salt Solution	2%	4%	<b>4%</b>	116,595	k Gallons	2025
Close Tanks						
Old Style	8%	8%	<b>8%</b>	24	Tanks	2018 / 2022
Newer Style	0%	0%	<b>0%</b>	27	Tanks	2026
<b>Nuclear Materials</b>						
HEU (Highly Enriched Uranium)						
Blend Down to LEU & Ship to TVA	89%	96%	<b>98%</b>	333	Trailers	2011
UNF (Used Nuclear Fuel)						
Blend Down to LEU & Ship to TVA	0%	0%	<b>0%</b>	180	Trailers	TBD
Plutonium Disposition						
Plutonium Dissolved in H-Area	1%	86%	<b>100%</b>	100	Containers	2011
Other Disposition Paths (WIPP, MOX, Other)	0%	0%	<b>0%</b>	~ 6,000	Containers	TBD
<b>Solid Waste</b>						
Disposition Radioactive Solid Waste						
Transuranic (TRU) Waste Shipped	39%	43%	<b>47%</b>	15,658	Cubic Meters	2038
Mixed Low-Level & Low-Level Waste Dispositioned*	77%	83%	<b>90%</b>	137,579	Cubic Meters	2038
<b>Soil &amp; Ground Water</b>						
Complete Remediation of Waste Sites	71%	72%	<b>73%</b>	515	Release Sites	2038
<b>Facilities</b>						
Facilities Decommissioned / Demolished (D&D'd)	24%	24%	<b>25%</b>	1054	Major Facilities	2032
<b>Footprint Reduction (ARRA Target)</b>	0%	48%	<b>67%</b>	234	Square Miles	2012

\* Includes both Legacy and Newly Generated Waste; Legacy is 100% Complete

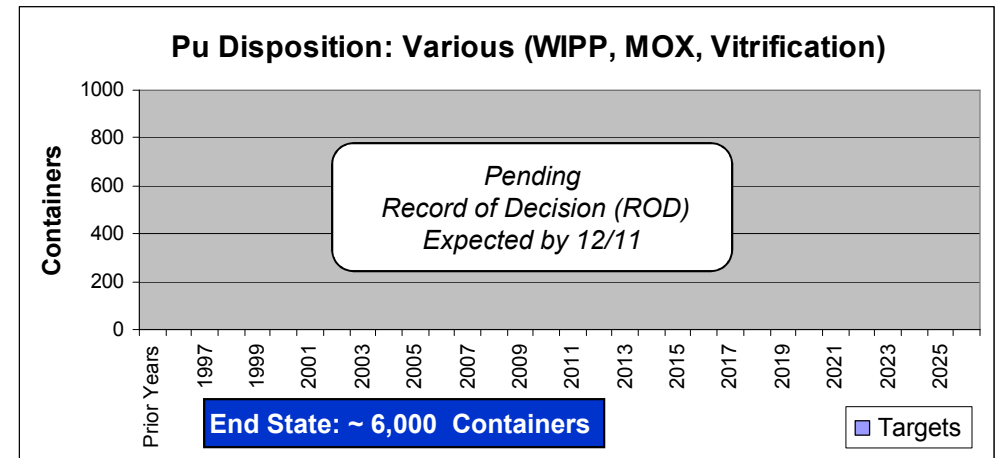
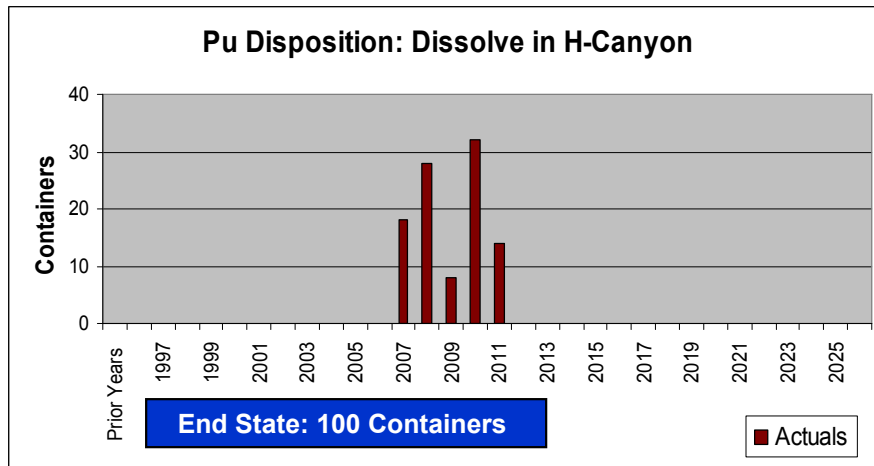
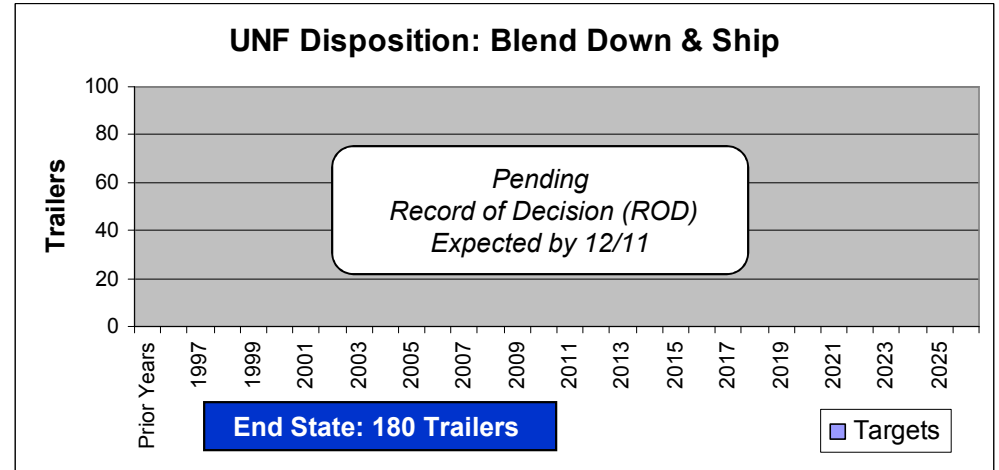
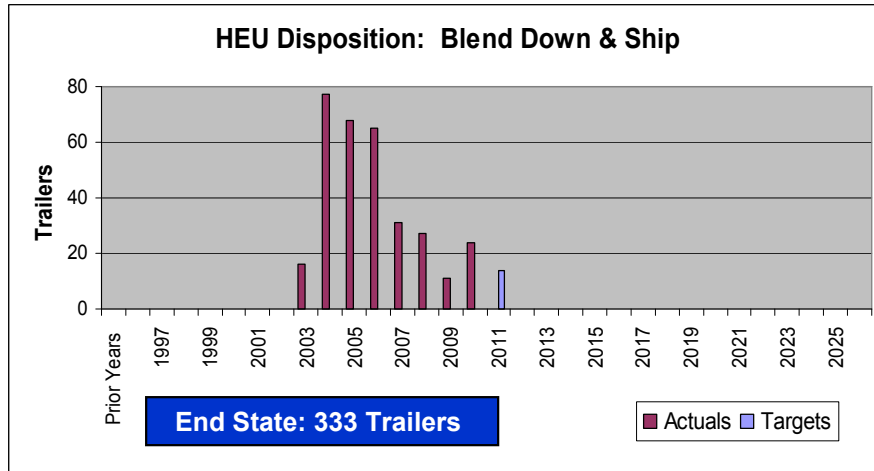
# Graphical Analysis & Lifecycle Projections

## Liquid Waste



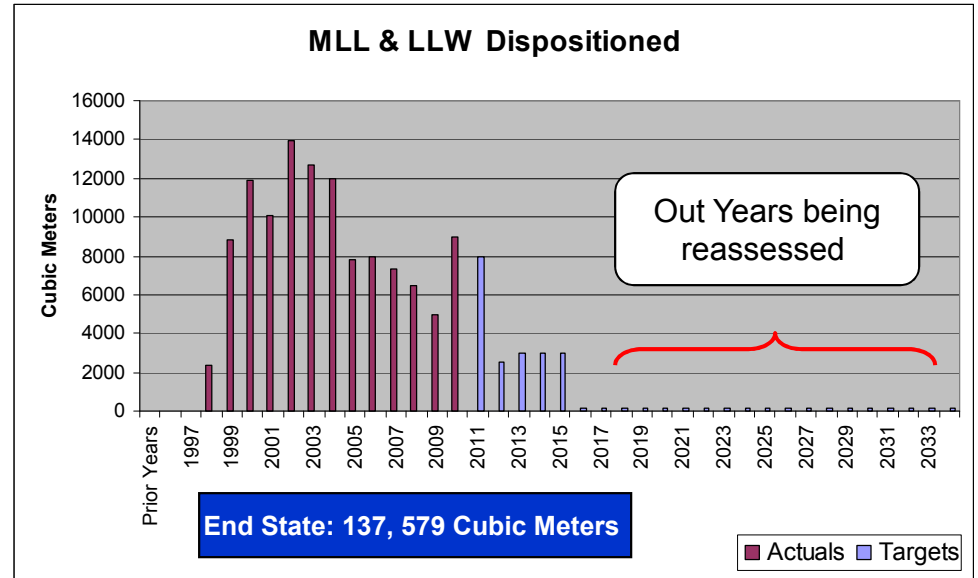
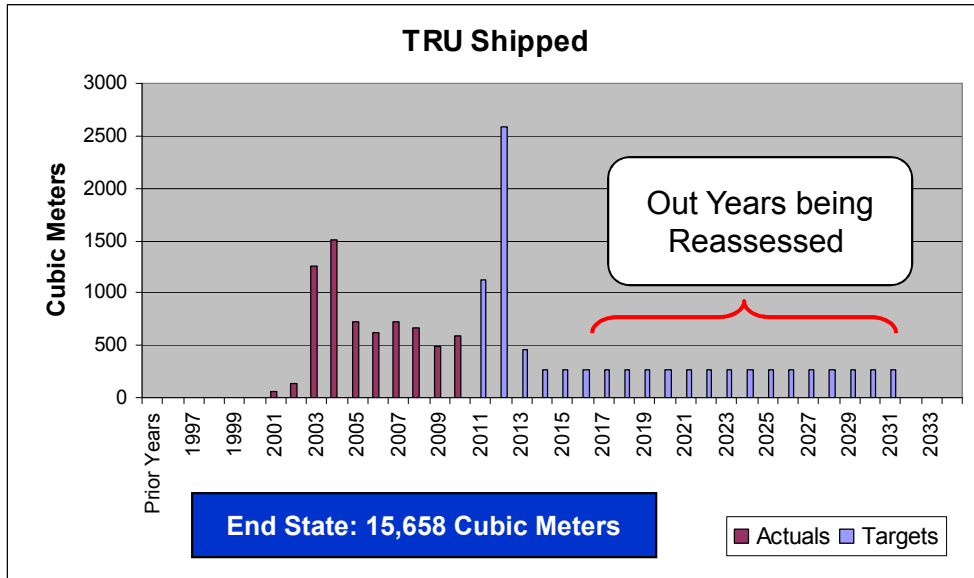
**Note: Targets Based on Liquid Waste System Plan Rev 16**

## Nuclear Materials

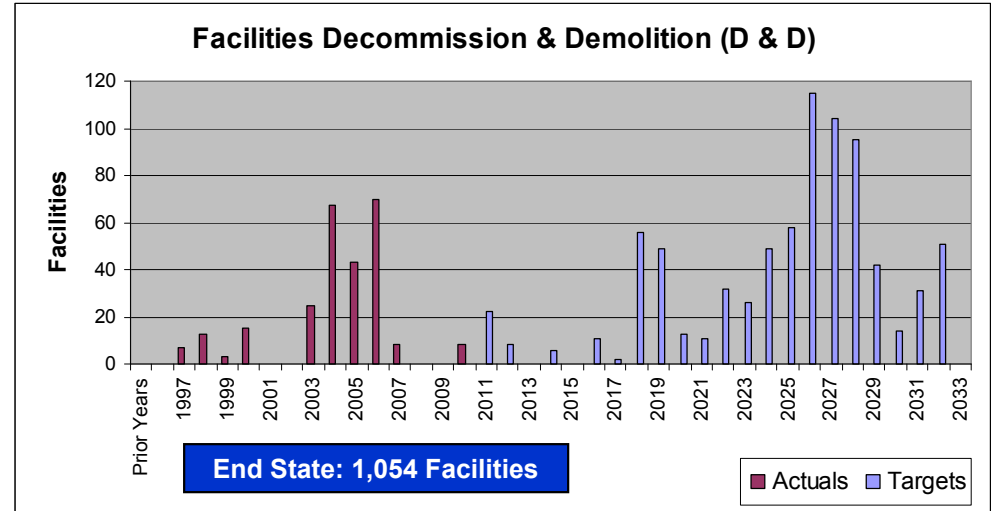
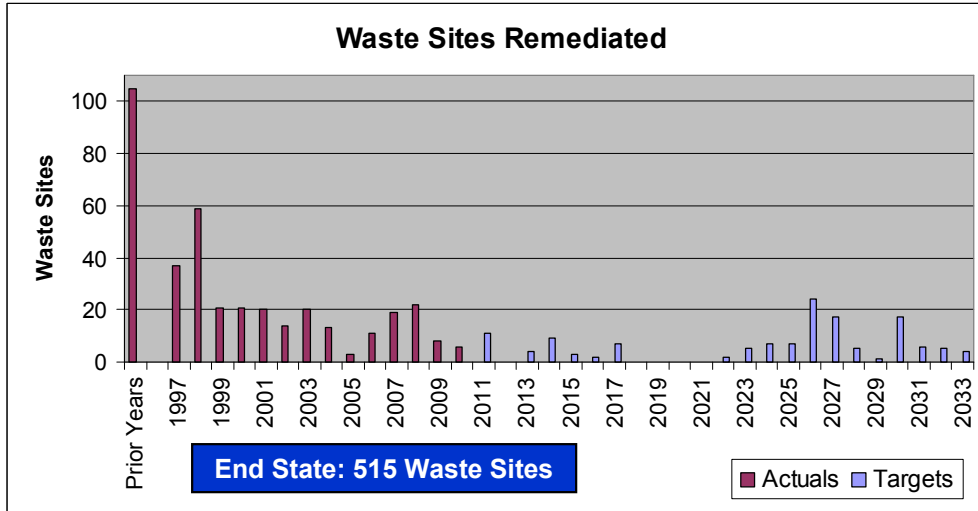


**Note:** 86 Kg of Pu has been authorized to be processed to WIPP in the interim

## Solid Waste



## Area Completion





# EM Performance Measures – thru May FY 2011

<u>Liquid Waste</u>	Unit of Measure	Cum Actuals thru FY 2010
<i>Measure</i>		
<b>DWPF Canisters Poured &amp; Tested</b>		
Canisters Produced <sup>1, 2</sup>	Canisters	2,986
<b>Old-style Tank Preparation and Closure</b>		
Bulk Waste Removal Complete	Tanks	9
Heel Removal Campaign Complete	Tanks	6
Annuli Prepared for Closure <sup>3</sup>	Tanks	2
Tanks Isolated	Tanks	2
Operationally Closed	Tanks	2
<b>SPF Salt Solution Processed</b>		
Salt Solution Processed	k Gallons	3,981
<b>Radioactivity</b>		
Curies Stabilized in Canisters <sup>4</sup>	k Curies	31,444

FY 2011 Analysis	
Actuals FYTD	Accel. Annual Target
5/31/11	
149	311
1	1
0	0
0	2
0	2
0	0
835	800
5,811	12,130

End State Analysis				
Cum Act thru 2011 (FYTD)	End State	% Complete	Forecast to Complete	Regulatory Commitment to Complete
3,135	7,557	41%	2024	2028
10	24	42%	2017	2020
6	24	25%	2018	
2	16	13%	2017	
2	24	8%	2018	
2	24	8%	2018	2022
4,816	116,595	4%	2025	
37,255	385,000	10%	2024	2028

**Liquid Waste Notes:**

1. GWSB # 3 Contingency Capacity - TBD
2. Canister Storage Space Available: 1486
3. 16 of 24 Tanks Require Annuli Preparation
4. Estimate based on Sludge Batch Sampling

On / Ahead of Schedule  
 Behind Schedule

**End State Basis**  
 End State Quantities based on Rev 16 System Plan

**Commitment to Complete**  
 Based on FFA and Site Treatment Plan

# EM Performance Measures – thru May FY 2011

<u>Nuclear Materials</u>	Unit of Measure	Cum Actuals thru FY 2010
Measure		
<b>Enriched Uranium Disposition</b>		
HEU (Highly Enriched Uranium)		
Blend Down to LEU & Ship to TVA	Trailers	319
UNF (Used Nuclear Fuel) <sup>3</sup>		
Blend Down to LEU & Ship to TVA	Trailers	0
<b>Plutonium</b>		
Plutonium Disposition		
Plutonium Dissolved in H-Area <sup>1</sup>	Containers <sup>4</sup>	86
Other Disposition Paths <sup>2</sup>	Containers <sup>4</sup>	0
Total Plutonium Disposition		86
<b>Note:</b> LEU = HEU blended with NU		



FY 2011 Analysis	
Actuals FY2011	Annual Target
5/31/11	
9	14
0	2
14	14
0	0
14	14

End State Analysis			
Cum Act thru 2011 (FYTD)	End State	% Complete	Target Year to Complete
328	333	98%	2011
0	180	0%	TBD
100	100	100%	2011
0	TBD	0%	TBD
100	~6,000	TBD	

### Nuclear Materials Notes:

- Quantities Since 2008, End State Quantity is Pre- Decisional (Includes LAP & EU/Pu Containers)
- DOE-SR is in the process of evaluating other Plutonium disposition paths including:
  - Shipping to WIPP
  - Vitrification
  - MOX
  - Additional H- Area Processing
- Dependent on receiving approval of the Amended ROD and SA

4. DOE Standard 3013 Containers

-  On / Ahead of Schedule
-  Behind Schedule

**End State Basis**  
Pu and UNF Disposition Paths are pending Record of Decision (ROD) expected 12/11

### Definitions

- LEU Low Enriched Uranium
- HEU Highly Enriched Uranium
- NU Natural Uranium
- FRR Foreign Research Reactor
- DRR Domestic Foreign Reactor
- UNF Used Nuclear Fuel (from FRR's & DRR's)

# EM Performance Measures – thru May FY 2011

<u>Solid Waste</u>	Unit of Measure	Cum Actuals thru FY 2010	FY 2011 Analysis		End State Analysis			
			Actuals FY2011	Annual Target	Cum Act thru 2011 (FYTD)	End State	% Complete	Target Year to Complete
<i>Measure</i>								
<b>TRU, MLLW &amp; LLW</b>								
RH-TRU Waste Shipped for Disposal		17	5	6	22	68		
CH-TRU Waste Shipped for Disposal		6,749	664	1,122	7,413	15,590		
Total Transuranic Waste Shipped	Cubic Meters	6,766	669	1,128	7,435	15,658	47%	2038
LL & MLL Waste Disposed <sup>1</sup>	Cubic Meters	114,558	8,870	7,938	123,428	137,579	90%	2038
Maintain Newly Generated Low Level Waste Below Target Level	Cubic Meters	Met	Met	< 400	Met	< 400	NA	

## Solid Waste Notes:

- LL = Low Level  
MLL = Mixed Low Level
- Legacy MLL & LL Waste disposition complete; Newly Generated LL Waste disposition is ongoing with a target of not exceeding accumulation on site of 400 cubic meters at any time

- On / Ahead of Schedule
- Behind Schedule

**End State Basis**  
Solid Waste End State Quantities and Target Year to Complete are based on 2008 Certified Life Cycle Plan

# EM Performance Measures – thru May FY 2011



<u>Area Completion</u>	Unit of Measure	Cum Actuals thru FY 2010
<i>Measure</i>		
<b>Remediations &amp; Facilities D&amp;D'd</b>		
Remediations Completed	Release Sites	373
Facilities -Decommission & Demolition		
Industrial Facilities- Major <sup>1</sup>		240
Nuclear Facilities		11
Radioactive Facilites		<u>7</u>
Total Facilities D&D'd	Major Facilities	258
<b>Operational Footprint Reduction (75%)</b>		
Site Remediated/ Footprint Reduction	Square Miles	113

FY 2011 Analysis	
Actuals FY2011	Annual Target
5/31/11	
4	7
3	6
0	0
<u>0</u>	<u>16</u>
3	22
44	104

End State Analysis			
Cum Act thru 2011 (FYTD)	End State	% Complete	Target Year to Complete
377	515	73%	2038
243	815		
11	199		
<u>7</u>	<u>40</u>		
261	1054	25%	2032
157	234	67%	2012

**Notes**

1. Excludes smaller ancillary buildings

-  On / Ahead of Schedule
-  Behind Schedule

**End State Basis**  
 Area Completion End State Quantities and Target Year to Complete are based on 2008 Certified Life Cycle Plan

# EM Performance Measures – thru May FY 2011

<u>Recovery Act (2009 - 2012)</u>	Unit of Measure	Cum Actuals thru FY 2010	FY 2011 Analysis		End State Analysis				
<i>Measure</i>			Actuals FY2011	Annual Target	Cum Act thru 2011 (FYTD)	End State	% Complete	Target Year to Complete	
<b>Funding Spent</b>					5/31/11				
SRNS		726,664	335,317	503,633	1,061,981	1,415,400	75%	2013	
SRR		<u>90,900</u>	68,321	108,952	<u>159,221</u>	<u>200,000</u>	80%	2011	
Total	\$ (000)	817,564	403,638	612,585	1,221,202	1,615,400	76%	2013	
<b>Solid Waste Disposition</b>									
RH-TRU Waste Shipped for Disposal		17	5	6	22	39	57%		
CH-TRU Waste Shipped for Disposal		<u>865</u>	664	1,122	1,529	4,961	31%		
Total Transuranic Waste Shipped	Cubic Meters	882	669	1,128	1,551	5,000	31%	2013	
PAD 1 - % TRU Waste Removed	%	82%	18%	18%	100%	100%	100%	2011	
PAD 1 - % TRU Waste Disposed	%	0%	22%	0%	22%	90%	22%	2013	
Mixed Low Level Waste Disposed <sup>1</sup>		393	120	352	513	755	68%		
Low Level Waste Disposed <sup>1</sup>		<u>10,993</u>	8,750	7,586	19,743	17,231	115%		
Total MLLW / LLW	Cubic Meters	11,386	8,870	7,938	20,256	17,986	113%	2011	
Maintain Newly Generated Low Level Waste Below Target Level	Cubic Meters	Met	Met	< 400	Met	< 400	NA		
<b>Nuclear Material Disposition</b>									
Depleted Uranium Oxide Shipped	Drums	6,214	5,108	9,392	11,322	15,603	73%	2011	

**Recovery Act Notes:**

- On / Ahead of Schedule
- Behind Schedule

**ARRA End State Basis**  
 Recovery Act End State Quantities and Target Year to Complete are based on ARRA Certified Baseline

# EM Performance Measures – thru May FY 2011


<u>Recovery Act (2009 - 2012)</u>	Unit of Measure	Cum Actuals thru FY 2010
Measure		
<b>Soil &amp; Water Remediation</b>		
Characterized for Remediation	Waste Sites	16
Remediation Systems Installed	Systems	7
Remediations Completed	Release Sites	7
Ground Water Plumes Remediated	# of Plumes	3
<b>Facility Decommission &amp; Demolition</b>		
Industrial Facilities- Major		4
Industrial Facilities- Ancillary		4
Total Industrial Facilities		8
Radioactive Facilites		0
Total Facilities D&D'd	Facilities	8
Reactors Decommissioned	# Completed	0
<b>Operational Footprint Reduction (75%)</b>		
Site Remediated/ Footprint Reduction	Square Miles	113


FY 2011 Analysis	
Actuals FY2011	Annual Target
5/31/11	
1	7
4	5
4	7
2	4
0	6
0	0
0	6
7	16
7	22
0	1
44	104

End State Analysis			
Cum Act thru 2011 (FYTD)	End State	% Complete	Target Year to Complete
17	23	74%	2011
11	12	92%	2011
11	14	79%	2011
5	7	71%	2011
4	10	40%	2011
4	4	100%	2011
8	14	57%	2011
7	16	44%	2011
15	30	50%	2012
0	3	0%	2012
	See Note 1		
157	234	67%	2012

## Recovery Act Notes:

1. HWCTR to be decommissioned in 2011  
P & R to be decommissioned in 2012

 On / Ahead of Schedule

 Behind Schedule

## ARRA End State Basis

Recovery Act End State Quantities and Target Year to Complete are based on ARRA Certified Baseline

## *Summary and Path Forward*

- DOE-SR will continue to develop Lifecycle graphs for the key operational areas of EM operations
- Suggestions from the CAB for any additional improvements are welcomed

## Acronyms

<b>ARRA</b>	American Recovery & Reinvestment Act
<b>DRR</b>	Domestic Research Reactor
<b>D&amp;D</b>	Decommission & Demolition
<b>FFA</b>	Federal Facility Agreement
<b>FRR</b>	Foreign Research Reactor
<b>LEU</b>	Low Enriched Uranium
<b>HEU</b>	Highly Enriched Uranium
<b>LLW</b>	Low Level Waste
<b>MLLW</b>	Mixed Low level Waste
<b>NU</b>	Natural Uranium
<b>Pu</b>	Plutonium
<b>SCDHEC</b>	South Carolina Dept of Health & Environmental Control
<b>UNF</b>	Used Nuclear Fuel
<b>SRNS</b>	Savannah River Nuclear Solutions
<b>SRR</b>	Savannah River Remediation
<b>SWPF</b>	Salt Waste Processing Facility
<b>TRU</b>	Transuranic Waste
<b>TVA</b>	Tennessee Valley Authority