



U.S. DEPARTMENT OF
ENERGY

Paducah Cleanup Progress



DDFO Presentation

**Reinhard Knerr, Site Lead and DDFO
Paducah Citizens Advisory Board
March 17, 2011**

Presentation Agenda

- 2019 Cleanup Vision
- Budget Development



LATA Environmental Services of Kentucky, LLC

U.S. Department of Energy Environmental Management Paducah Site Office *Cleanup Vision*

Barbara Mazurowski
Project Manager
LATA Environmental Services
of Kentucky

Environmental Management: A National Responsibility

Paducah 2019 Cleanup Vision

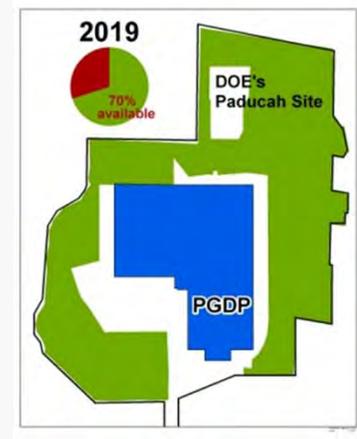
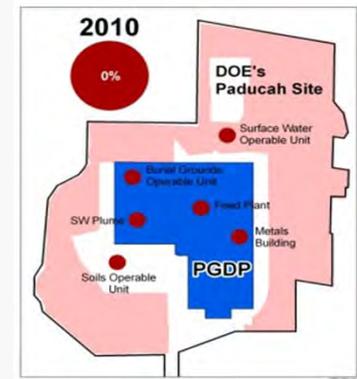
- ✓ We reduce risks and protect our workers, our communities and the environment through cleanup
- ✓ Our work is urgent and essential to the health and economic vitality of our communities and the nation and positions our Sites for future missions and use
- ✓ Our mission is not discretionary—it is a Federal obligation to address the cold war environmental legacy cleanup and honor our regulatory commitments
- ✓ We have demonstrated value for the American Taxpayer by delivering significant progress in the past several years in reducing risks and the overall liability—but our work is not done
- ✓ The Environmental Management portfolio is one of our nation's largest liabilities—we have a responsibility to relieve future generations of this environmental and financial liability
- ✓ Time is not on our side—costs and risks increase over time

Paducah Site 2019 Cleanup Vision

Building on ARRA momentum, the Paducah team will:

Paducah 2019 Cleanup Vision

- ✓ Reduce the cleanup cost to American Taxpayers by \$1.5 billion
- ✓ Complete cleanup of more than two-thirds of the site
 - By 2012, significantly reduce the Paducah Site skyline by razing two seven-story, Cold War-era uranium production facilities together spanning about 260,000 square feet
 - American Recovery and Investment-Act funded demolition work will eliminate the last of 21 large, inactive, contaminated facilities; reduce hazards; and eliminate risk to workers and plant neighbors
- ✓ Turn liabilities into assets
 - Experienced workers
 - Electrical grid
 - Uranium
 - Scrap metal
- ✓ Complete Paducah's high-environmental risk legacy cleanup mission; prepare for plant D&D
 - Treat and eliminate eight off-site groundwater contamination areas
 - Close eight unlined, historical disposal areas; excavate eight acres of waste
 - Remove contamination from two off-site creeks totaling six miles



Return on American Taxpayers' Investment at Paducah – Key Cleanup Accomplishments

Paducah 2019 Cleanup Vision

Cleanup Scope	Accomplishments To Date	By FY 2019
DUF ₆ conversion	Finished constructing DUF ₆ conversion plant; started hot functional testing including phased introduction of hydrogen process gas and phased heating of 1st DUF ₆ cylinder	Continue operating DUF ₆ conversion facility at full capacity; continue disposition of resultant uranium oxide and hydrofluoric acid
D&D of inactive facilities	Removed 19 of 21 inactive facilities totaling 250,000 ft ²	In 2012, complete demolition of an additional ~260,000 feet ² of high-hazard, contaminated nuclear-production facilities inactive for over 30 years
Removal of contaminated surface water and sediment	Disposed 40,000 yds ³ of PCB, radioactive and heavy metal contaminated sediments from effluent ditches; removed >33,000 tons of contaminated scrap metal	Complete remediation of two watersheds including removal of contaminated sediments from 6 miles of creeks accessible to the public
Removal of contaminated soil	Removed ~2,700 yds ³ of contaminated soils from historical site operations; investigated >180 potential soil contamination areas totaling >200 acres	Remove 100,000 yds ³ of contaminated soils; make property potentially available for release to the community for re-industrialization
Cleanup off-site groundwater contamination	Treated ~3 billion gallons of groundwater and captured 2,300 gal of TCE; improved TCE capture in NW plume to nearly 100 percent; used thermal treatment system to recover ~2,500 gallons TCE	Complete remediation of the eight sources of off-site groundwater contamination; implement remedy to address treatment of two off-site dissolved-phase plumes; install long-term monitoring system to ensure protection of public and environment
Legacy waste disposal	Characterized and disposed of >1.3 million ft ³ of contaminated legacy waste	Annually dispose of 26,500 ft ³ of newly generated non-project waste; complete Site Treatment Plan waste treatment five years ahead of schedule
Burial grounds remediation	Installed temporary soil covers on three on-site burial ground disposal areas	Complete remediation of eight unlined historical disposal areas, excavate eight acres of waste; complete evaluation to determine need for on-site CERCLA cell

Economic Benefits at Paducah

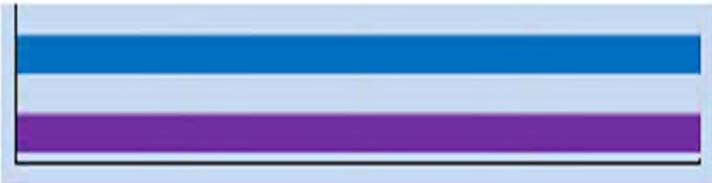
Paducah 2019 Cleanup Vision

- ✓ Received \$80M in Recovery Act funds
- ✓ 242 jobs created/saved with Recovery Act funds
- ✓ \$50M of Recovery Act funding paid to date
- ✓ \$79M in Recovery Act prime and subcontracts awarded to small business
- ✓ Approximately \$110M spent on small business Base prime and subcontracts in FY 2010

Report reflects jobs and small business reporting through the end of FY 2010

Recovery Act Performance Metrics at Paducah

Paducah 2019 Cleanup Vision

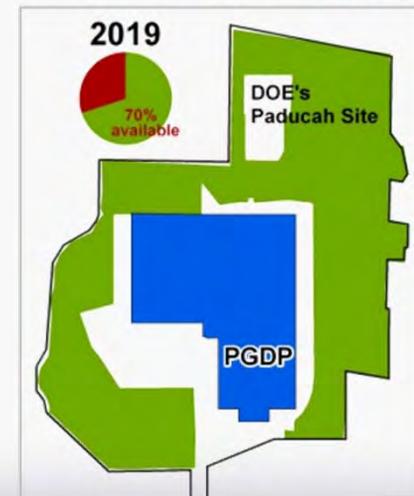
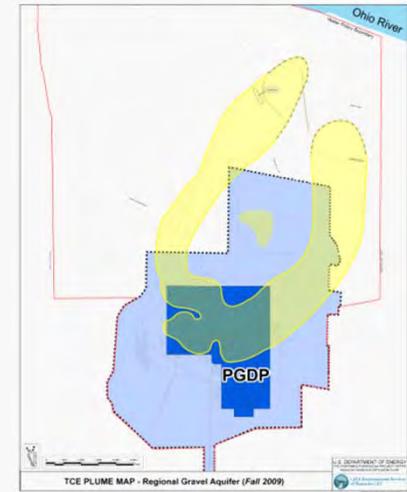
Measure	Actuals to Date	Targets to Date	Total Target	
Facility Square Footage Demolished Gross Square Feet	25,498	0	218,307	
Radioactive Facility Completions Number of Facilities	1	0	1	

Graphic reflects key performance metrics through December 2010

Paducah is a Sound Investment

- ✓ *Ensure protection of public and environment by completing remediation of:*
 - ✓ *Eight contaminated groundwater sources,*
 - ✓ *Two watersheds including 6 miles of publicly accessible creeks,*
 - ✓ *>200 acres of potentially contaminated soil areas,*
 - ✓ *Eight unlined historical disposal areas, and*
 - ✓ *Installing final treatment systems for two contaminated off-site groundwater plumes.*
- ✓ *Realize \$1.5B lifecycle cost savings*
- ✓ *Alignment with Kentucky and EPA to meet cleanup milestones that protect human health and the environment.*
- ✓ *70% footprint reduction prepares >2/3 of Site for potential reuse as early as 2019, utilizing workforce, land and infrastructure wisely*
- ✓ *Accelerated Environmental Remediation allows liabilities to be turned into assets by recovery of valuable metals from the burial grounds projects, providing immediate benefit to local communities with an emphasis on small business*

Paducah 2019 Cleanup Vision



FY 2012 Budget Request to Meet 12088 Requirements

Paducah 2015 Cleanup Vision

PBS	Regulatory Document	Regulatory Requirement	Milestone Date
PA-40	Federal Facility Agreement/Site Management Plan	• Southwest Plume D1 Remedial Design Report	October 18, 2012
PA-40	Federal Facility Agreement/Site Management Plan	• Southwest Plume D1 Remedial Action Work Plan	November 16, 2012
PA-40*	Federal Facility Agreement/Site Management Plan	• 1 Northeast Plume Explanation of Significant Difference	March 30, 2012
PA-40*	Federal Facility Agreement/Site Management Plan	• D1 Northeast Plume Remedial Action Work Plan	March 30, 2012
PA-40	Federal Facility Agreement/Site Management Plan	• D1 Soils Operable Unit Feasibility Study	April 26, 2012
PA-40	Federal Facility Agreement/Site Management Plan	• D1 Burial Grounds Operable Unit Record of Decision	December 16, 2012
PA-40	Federal Facility Agreement/Site Management Plan	• D1 Burial Grounds Remedial Design Work Plan	March 12, 2012
PA-40	Federal Facility Agreement/Site Management Plan	• D1 SWMU 13 Site Evaluation Report	December 7, 2011

* In FY11 SMP, not approved by EPA and KY yet.

Outyear Enforceable Milestones

PBS	Regulatory Document	Regulatory Requirement	Milestone Date
PA-40	Federal Facility Agreement/Site Management Plan	• Dissolved Phase Plumes D1 Remedial Action Completion Report	March 31, 2019
PA-40	Federal Facility Agreement/Site Management Plan	• D&D OU D1 Removal Action Completion Notification	September 30, 2017
PA-40	Federal Facility Agreement/Site Management Plan	• Surface Water D1 Remedial Action Completion Report	December 13, 2017
PA-40	Federal Facility Agreement/Site Management Plan	• Soils OU D1 Remedial Action Completion Report	March 22, 2016
PA-40	Federal Facility Agreement/Site Management Plan	• Burial Grounds OU D1 Remedial Action Completion Report	September 30, 2019

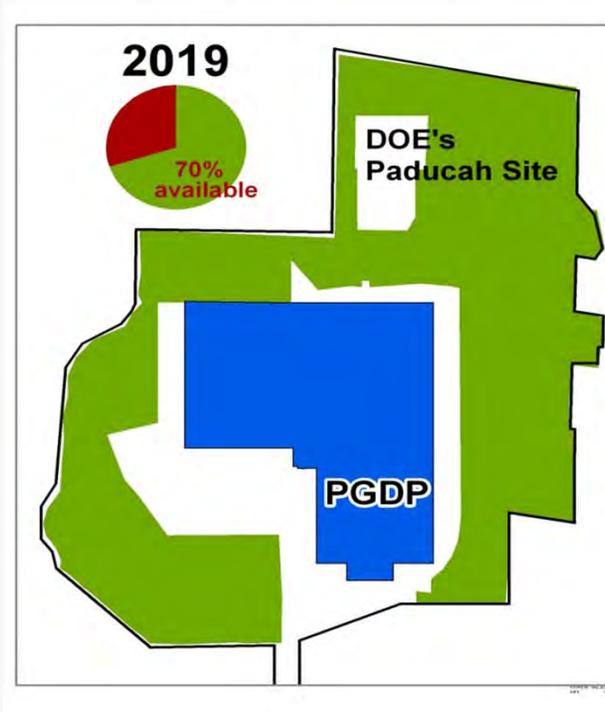
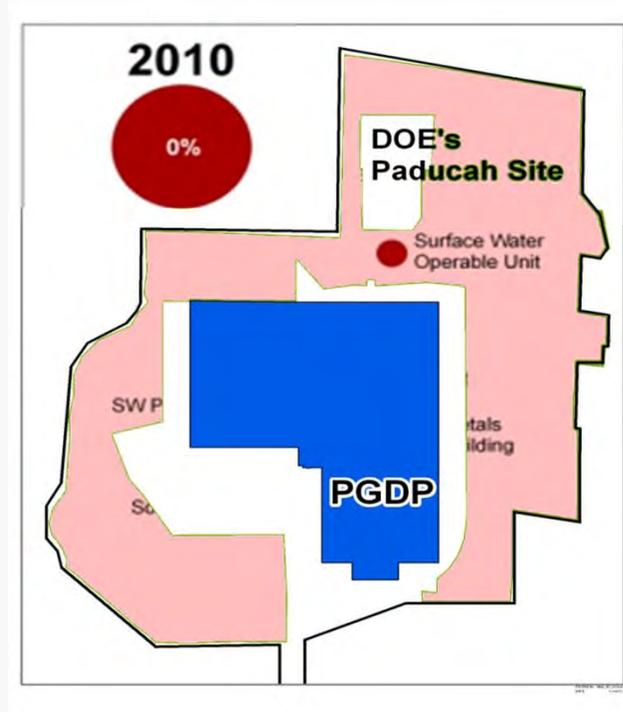
Paducah's Accomplishments by Year

Paducah 2019 Cleanup Vision

Cleanup Scope	Accomplished prior to 2011	2011	2012	2015	2019	Status (total)
DUF₆ conversion	Finished constructing DUF ₆ conversion plant; started hot functional testing including phased introduction of hydrogen process gas and phased heating of 1st DUF ₆ cylinder	Complete hot functional testing	Operate DUF ₆ conversion facility at full capacity; treat, package and dispose of 18,000 metric tons of depleted uranium and continue disposition of newly generated waste	Continue operating at full capacity	Continue operating at full capacity	Continue operating DUF ₆ conversion facility at full capacity; continue disposition of resultant uranium oxide and hydrofluoric acid
D&D of inactive facilities	Removed 19 of 21 inactive facilities totaling 250,000 ft ²	Remove 60,000 ft ² of inactive facilities	Complete D&D of two industrial facilities totaling ~260,000 feet ² ; dispose of all demolition waste, and complete site restoration activities			In 2012, complete demolition of an additional ~260,000 feet ² of high-hazard, contaminated nuclear-production facilities inactive for over 30 years
Removal of contaminated surface water and sediment	Disposed 40,000 yds ³ of PCB, radioactive and heavy metal contaminated sediments from effluent ditches; removed >33,000 tons of contaminated scrap metal				Complete remediation of 6 miles of creeks, including disposal of 183,000 ft ² of contaminated sediment	Complete remediation of two watersheds including removal of contaminated sediments from 6 miles of creeks accessible to the public
Removal of contaminated soil	Removed ~2,700 yds ³ of contaminated soils from historical site operations; investigated >180 potential soil contamination areas totaling >200 acres				Remove 100,000 yds ³ of contaminated soils	Remove 100,000 yds ³ of contaminated soils; make property potentially available for release to the community for reindustrialization
Cleanup off-site groundwater contamination	Treated ~3 billion gallons of groundwater and captured 2,300 gal of TCE; improved TCE capture in NW plume to nearly 100 percent; used thermal treatment system to recover 2,500 gallons of TCE	Complete NW plume pump and treat optimization	Treat one of eight TCE sources; complete construction of SW Plume pump and treat system, and initiate operations	Complete NE plume pump and treat optimization; treat three more TCE sources	Operate final dissolved-phase plume remedy; treat two more TCE sources	Complete remediation of the eight sources of off-site groundwater contamination; implement remedy to address treatment of two off-site dissolved-phase plumes; install long-term monitoring system to ensure protection of public and environment
Legacy waste disposal	Characterized and disposed of >1.3 million ft ³ of contaminated legacy waste	Complete Site Treatment Plan waste treatment				Annually dispose of 26,500 ft ³ of newly generated non-project waste; complete Site Treatment Plan waste treatment five years ahead of schedule
Burial grounds remediation	Installed temporary soil covers on three on-site burial ground disposal areas			Complete remediation of six acres of unlined historical disposal areas	Complete remediation of 60 acres of unlined disposal areas	Complete remediation of eight unlined historical disposal areas, excavate eight acres of waste; complete evaluation to determine need for on-site CERCLA cell

Protect the Public, Environment, and the Vital Missions of the Paducah Site

Maintaining the 2019 investment strategy for Paducah could result in up to 70% of EM's total liability at Paducah being made available for reuse/reindustrialization.



■ Potential for reuse ■ Excluded from reuse

*Does not include locations of proposed CERCLA cell

Paducah 2019 Cleanup Vision



Complete Cleanup



Clear the Decks



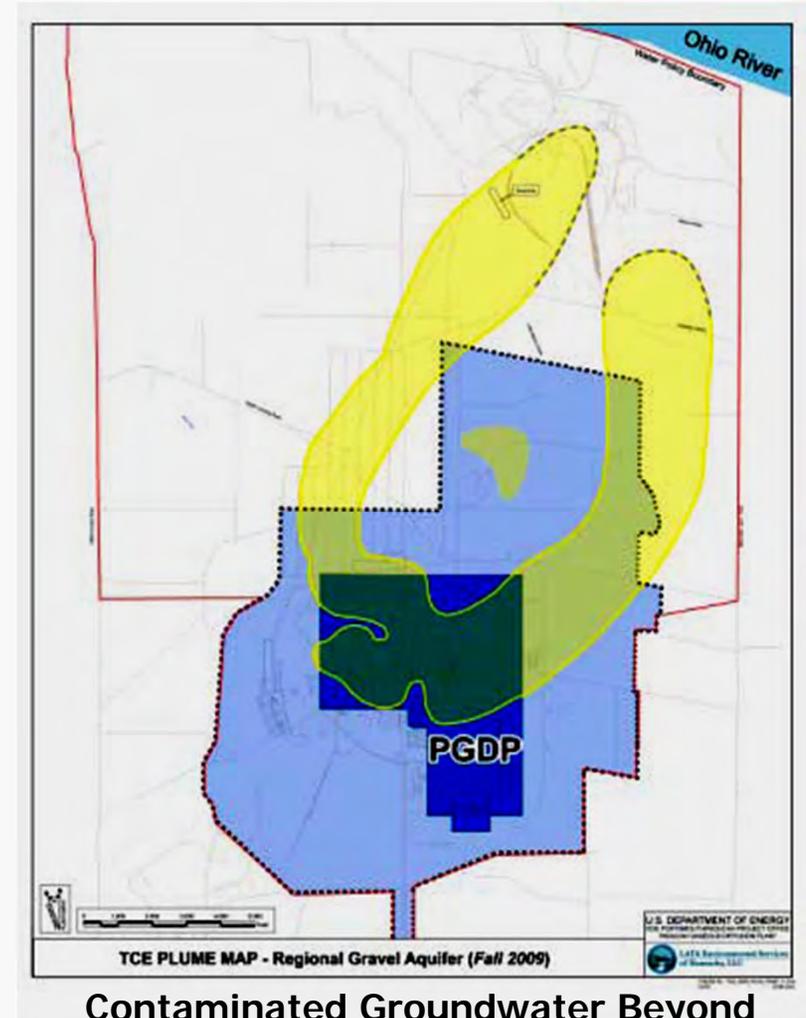
Make Land Available

Paducah Site 2019 Cleanup Vision

Core issue

Paducah Site is a Superfund site with multiple, complex cleanup issues.

- Environmental cleanup must move forward to address groundwater and soils contamination.
- Based on the President's directive for flat-line funding, Paducah will not meet its FY 2019 regulatory obligations and commitments.
- Paducah Site needs \$26 million more in both FY 2012 and in FY 2013 to meet our commitment, peaking at an added \$139 million in FY 2016.



Contaminated Groundwater Beyond DOE Boundary

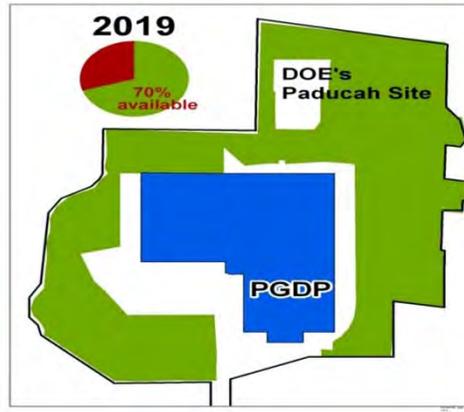
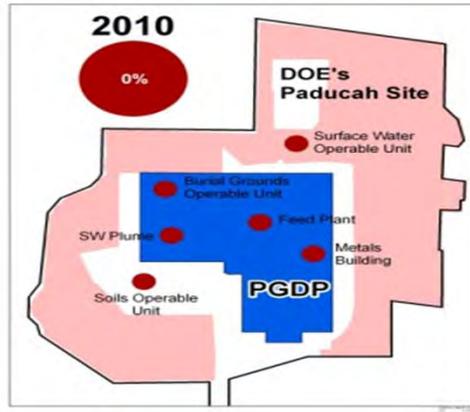
What's at stake?

President's directive for flat funding would result in a \$360 million shortfall in FY 2012-2016.

- Projected Paducah shortfalls: \$26 million in FY 2012 and \$26 million in FY 2013. The additional funding is needed to finish work by FY 2019 to meet regulatory cleanup commitments.
- Protects public by addressing DOE's two largest offsite groundwater plumes and their sources.
- Reuses assets such as uranium sales and recycled scrap metal to mitigate funding shortfall, achieve results and reduce taxpayer liability.
- Prepares Site for reindustrialization and makes infrastructure assets, such as electrical grid and water treatment plant, available.



Footprint Reduction



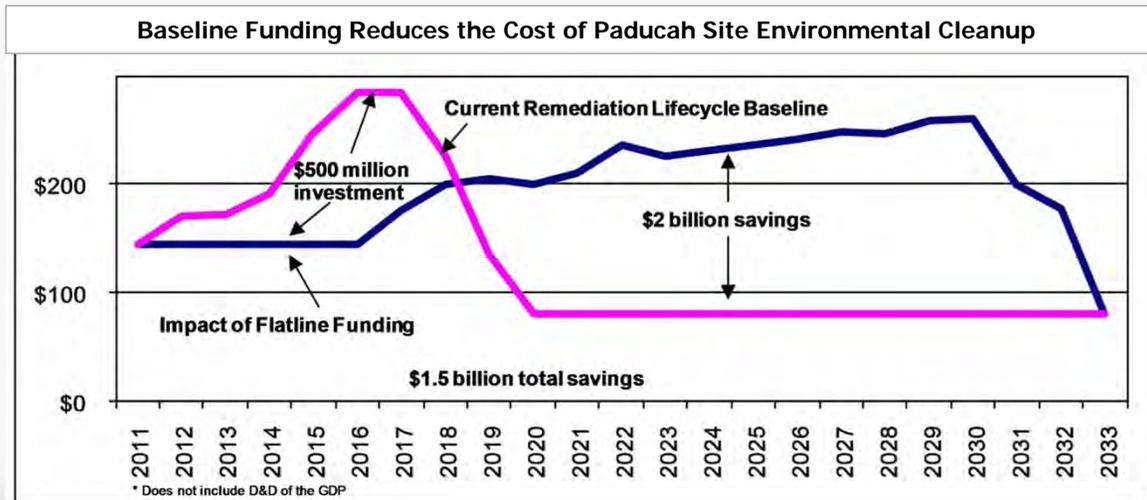
■ Potential for reuse ■ Excluded from reuse
 *Does not include locations of proposed CERCLA cell

Maintaining the 2019 investment strategy for Paducah could result in up to 70% of EM's total liability at Paducah being made available for reuse/redindustrialization

Return on Taxpayer Investment

Short-term Investment \$ 500 million
Taxpayer Savings: \$ 1.5 billion

- Avoids 13-year delay to complete clean-up
- Meets existing Regulatory Milestones
- Uses workforce, land and infrastructure wisely



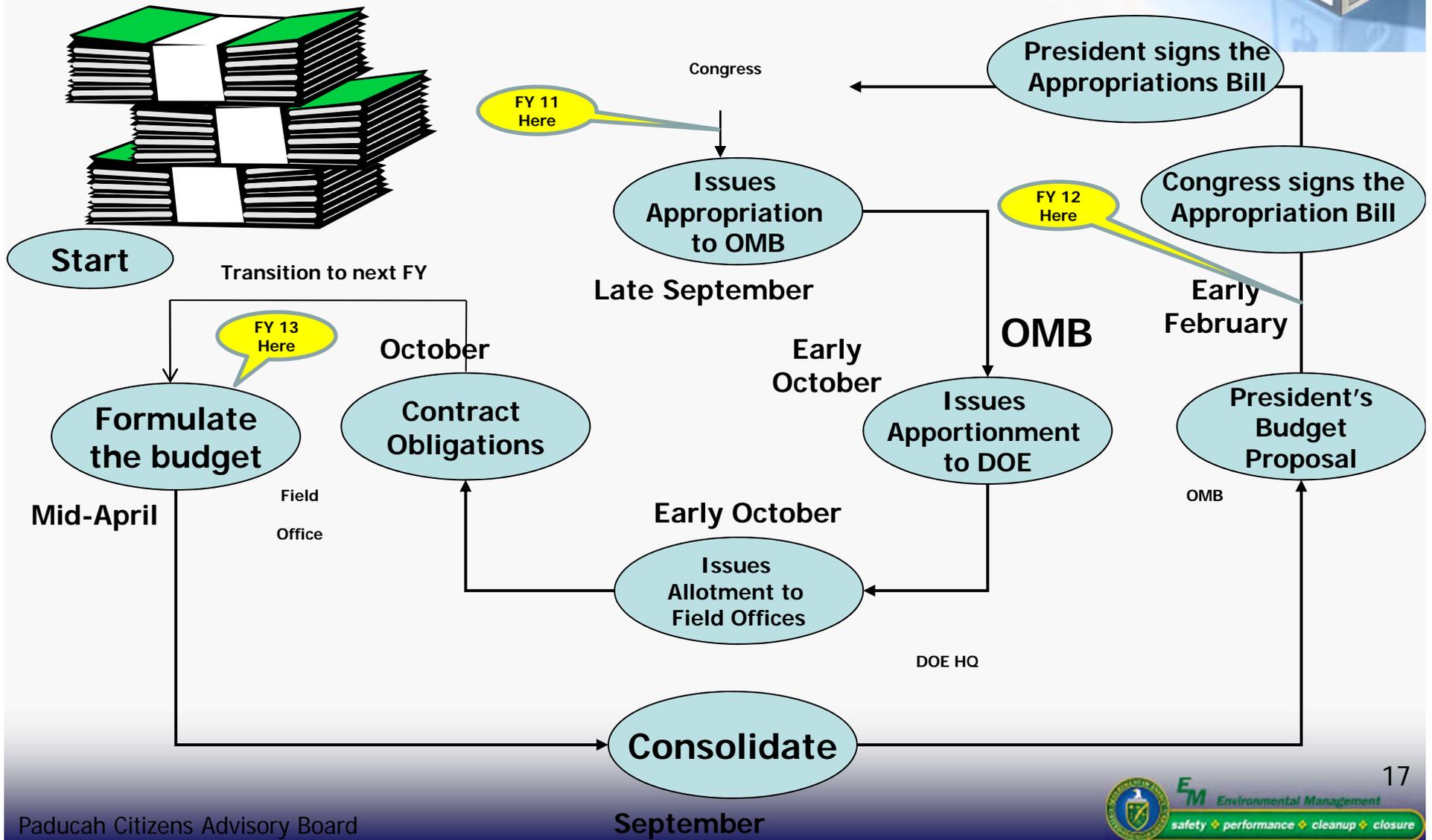
FY 2013

**DOE EM Budget Development
Paducah Gaseous Diffusion
Plant**

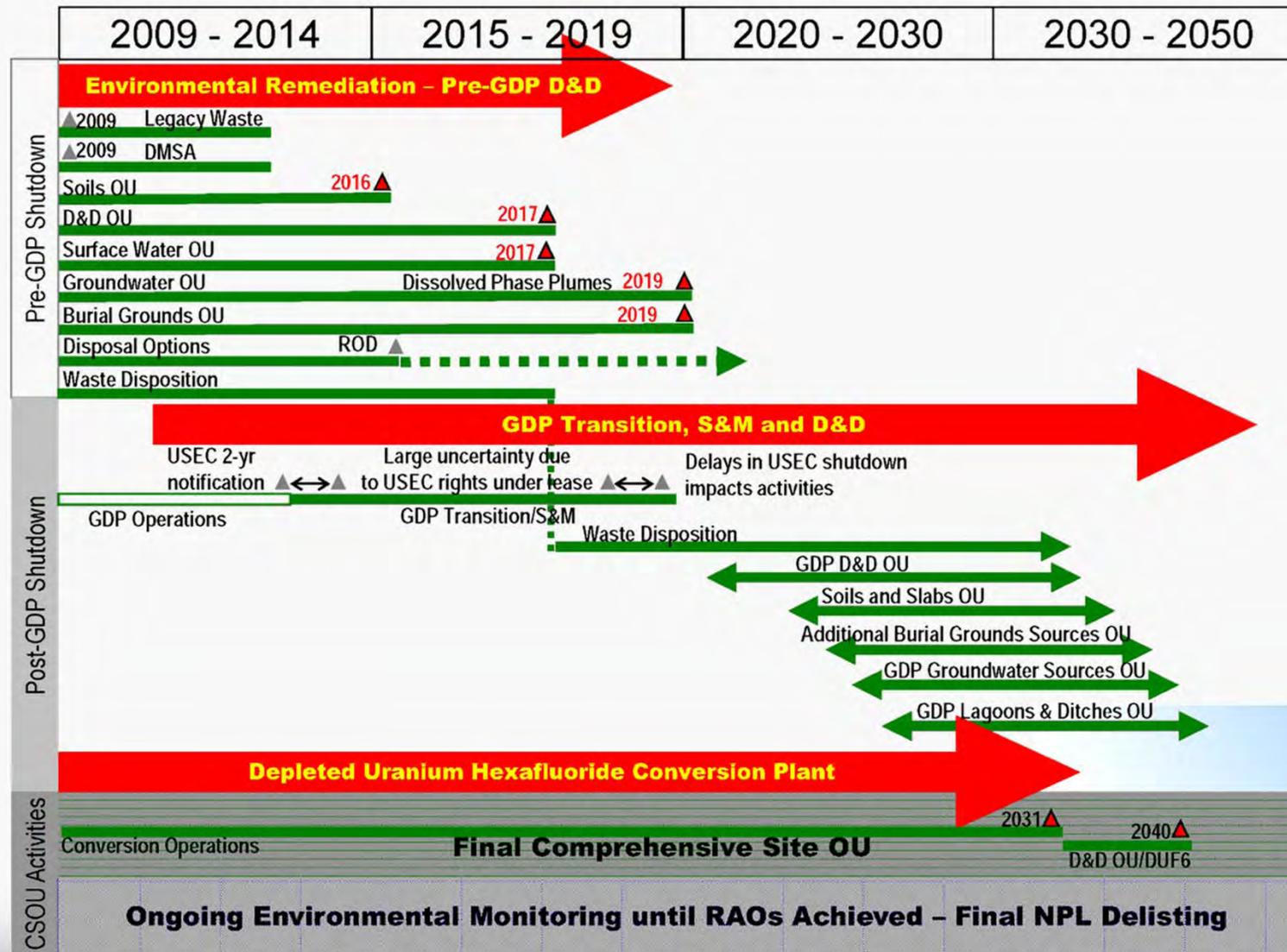
Reinhard Knerr



Fiscal Year Budget Process



Paducah Cleanup Schedule



Target Funding Levels¹

PBS	FY 10	FY 11	FY 12 ²	FY 13 ³	FY 14 ³	FY 15 ³	FY 16 ³
PA-0013 - Waste Management	13,218	7,746	7,115	6,983	7,877	8,181	8,303
PA-0040 - Cleanup and S&M	99,045	72,156	70,665	70,375	67,851	66,299	64,450
EM Cleanup - Project Level Subtotal	112,263	79,902	77,780	77,358	75,728	74,480	72,753
PA-0011 - Uranium Enrichment (PCBs)	248	2,476	1,369	1,392	1,415	1,439	1,466
PA-0020 - Safeguards and Security	8,190	8,496	9,435	8,909	9,124	9,342	9,566
PA-0102 - DOE Directs	1,536	1,531	1,534	904	901	476	486
PA-0103 - CAB and AIP	2,647	2,580	2,580	3,891	3,972	4,057	4,143
EM Cleanup Operations LOE Subtotal	12,621	15,083	14,918	15,096	15,412	15,314	15,661
PA-0011X - DUF6	47,243	50,015	51,071	52,546	53,860	55,206	56,586
Total Projected Funding	172,127	145,000	143,769	145,000	145,000	145,000	145,000

¹ FY 2012 – 2016 Budget Formulation Guidance

² President's request

³ Consistent with flat line funding based upon President's request

Summary Level Scope/Budget Breakdown

PADUCAH INTEGRATED PRIORITY LIST

1. IMMINENT THREATS		
FY 11 - \$0	FY 12 - \$0	FY 13 - \$0
• No activities at Paducah currently are identified in this category	• No activities at Paducah currently are identified in this category	• No activities at Paducah currently are identified in this category
2. BASE OPERATIONS		
FY 11 - \$115,093K	FY 12 - \$122,000K	FY 13 - \$120,076K
• Security	• Security	• Security
• UF ₆ Cylinder Maintenance	• UF ₆ Cylinder Maintenance	• UF ₆ Cylinder Maintenance
• DUF ₆ Conversion Facility	• DUF ₆ Conversion Facility	• DUF ₆ Conversion Facility
• Surveillance and Maintenance	• Surveillance and Maintenance	• Surveillance and Maintenance
• Waste Operation	• Waste Operation	• Waste Operation
• DOE Directs	• DOE Directs	• DOE Directs
• CAB and AIP	• CAB and AIP	• CAB and AIP
3. ENFORCEABLE COMMITMENTS		
FY 11 - \$29,152K	FY 12 - \$21,769K	FY 13 - \$24,924K - \$76,859K
3.1 Federal Facilities Agreement	3.1 Federal Facilities Agreement	3.1 Federal Facilities Agreement
• C-400 Action	• C-400 Action	• C-400 Action
• Burial Grounds	• Southwest Plume Sources	• C-340 D&D
• Surface Water Operable Unit (On-site)	• CERCLA Waste Disposal	• C-410 D&D
• C-410 D&D	• Burial Grounds	• C-410 D&D
• Inactive Facilities	• Groundwater Northeast Plume Optimization	• CERCLA Waste Disposal
• Southwest Plume Investigation	• Dissolved Phase Plumes	• Southwest Plume Sources
• Surface Soil Operable Unit	• Soils Remedial	• Groundwater Northeast Plume Optimization
	• Surface Water Remedial	• Burial Grounds
	• C-410 D&D	• Dissolved-Phase Plumes
	• C-340 D&D	• Surface Water Remedial
		• Soils Remedial
3.2 Site Treatment Plan	3.2 Site Treatment Plan	3.2 Site Treatment Plan
• TRU Waste		
3.3 TSCA FFCA Wastes	3.3 TSCA FFCA Wastes	3.3 TSCA FFCA Wastes
4 Remaining Work		
FY 11 - \$755K	FY 12 - \$0	FY 12 - \$0
• CERCLA Waste Disposal Evaluation		



Note: FY 12 Integrated Priority Lists aligns with the FY 12 President's request



DOE Portsmouth/Paducah Project Office