

## Paducah

### Overview

The Paducah Site will support the Department's Strategic Plan to position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities. The overall cleanup strategy at Paducah will take near-term actions to control or eliminate ongoing sources of contamination along with continued investigation of other potential sources.

Paducah will operate the uranium hexafluoride conversion facility. DOE anticipates the depleted uranium hexafluoride conversion operations will continue approximately thirty years.

To complete cleanup, Paducah will maintain a safe, secure, and compliant posture; support high priority groundwater remediation; deactivate and decommission excess facilities; disposition mixed and low-level waste; and reduce DOE's liabilities through involvement with local community stakeholders.

Direct maintenance and repair of the remediation related infrastructure at the Paducah Gaseous Diffusion Plant is estimated to be \$54,629,000 in FY 2016.

### Highlights of the FY 2016 Budget Request

This FY 2016 budget request supports activities to further stabilize the gaseous diffusion plant that is being returned to DOE from United States Enrichment Corporation in 2015 to an inactive status, including facility modifications, surveillance and maintenance, and actions to remove hazardous materials.

### FY 2015 and FY 2016 Key Milestones/Outlook

- (January 2015) Issue Burial Grounds Solid Waste Management Unit 4 Remedial Investigation Report Addendum to Regulators
- (January 2015) Issue Onsite Waste Disposal Facility Remedial Design Work Plan D1 to Regulators
- (February 2015) Issue Southwest Plume SWMUs 211A and 211B D1 Remedial Design Report
- (February 2015) Issue Southwest Plume C-720 Remedial Design Report D1 to Regulators
- (March 2015) Issue Southwest Plume SWMUs 211A and 211B D1 Remedial Action Work Plan
- (March 2015) Issue Southwest Plume C-720 Remedial Action Work Plan D1 to Regulators
- (June 2015) Issue Burial Grounds Solid Waste Management Unit 5 and 6 Remedial Action Work Plan to Environmental Protection Agency/Kentucky (D1)
- (August 2015) Issue Burial Grounds Solid Waste Management Unit 4 Feasibility Study Report D1 to Regulators
- (December 2015) Issue Waste Disposal Record of Decision
- (January 2016) Issue Burial Grounds Solid Waste Management Units 5 and 6 Remedial Design Report D1 to Regulators
- (February 2016) Issue Burial Grounds Solid Waste Management Unit 5 and 6 Remedial Action Work Plan D1 to Regulators
- (July 2016) Issue Burial Grounds Solid Waste Management Unit 4 Remedial Investigation Report Addendum to Regulators
- (July 2016) Issue Burial grounds Solid Waste Management Unit 4 Remedial Investigation Addendum D1 to Regulators
- (August 2016) Burial Grounds Solid Waste Management Units 5 and 6 Field Start.

### Regulatory Framework

In May 1994, the Paducah site was placed on the United States Environmental Protection Agency's National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The 1997 Federal Facility Agreement among the Department, the Commonwealth of Kentucky, and the United States Environmental Protection Agency-Region 4 established the framework for cleanup at Paducah, instituted enforceable milestones, and coordinated

site-specific cleanup requirements under the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act. The Department also achieved resolution of long-standing regulatory disputes through the Agreed Order with the Commonwealth of Kentucky.

The United States Environmental Protection Agency and the Kentucky Department for Environmental Protection are the principal regulatory agencies for Paducah's waste management operations, in compliance with provisions of the Resource Conservation and Recovery Act, Hazardous Waste Management Permits; the Toxic Substances Control Act regulations for polychlorinated biphenyl wastes; DOE Order 435.1-Radioactive Waste Management; the Commonwealth of Kentucky, surface water discharge regulations and the Commonwealth of Kentucky solid and hazardous waste regulations.

### **Contractual Framework**

Program planning and management at Paducah is conducted through the issuance and execution of contracts to large and small businesses. Paducah develops near-term and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on schedule. Current contracts at Paducah include:

- Babcock and Wilcox Conversion Services contract for treatment and disposition of depleted uranium hexafluoride, covering the period from 1/03/11 - 1/1/16. Competitive procurement for a replacement contract is ongoing.
- LATA Kentucky contract for decontamination and decommissioning of surplus buildings and legacy soil and groundwater remediation, covering the period 7/22/10 - 7/25/15. The contractor is a small business.
- Swift and Staley contract for site support services covering the period 3/16/10 - 3/15/15. The contractor is a small business. Competitive procurement for a replacement contract is ongoing.
- Fluor Federal for deactivation of the Gaseous Diffusion Plant covering a period from 7/22/14 – 7/22/17.

### **Strategic Management**

The overall environmental cleanup strategy at Paducah is based on taking near-term actions to control or eliminate ongoing sources of contamination along with continued investigation of other potential sources. DOE is currently working with the Kentucky Department for Environmental Protection and the United States Environmental Protection Agency, Region 4, to further define which projects can be sequenced, while optimizing resources and utilizing a risk-based approach, to ensure timely environmental cleanup. In addition, Paducah will operate a depleted uranium hexafluoride conversion facility. DOE anticipates the depleted uranium hexafluoride conversion operations to continue for approximately thirty years.

The factors that could have significant impact on individual projects and may impact the overall cleanup scope, schedule, and costs are identified below:

- DOE does not have a regulatory agreement on final cleanup levels, which remains a long-term, end-state issue.
- The final Comprehensive Environmental Response, Compensation and Liability Act action for the Paducah environmental remedial activities are ongoing. Until Records of Decision are agreed upon, a high degree of project uncertainty exists. For example, current planning assumptions include that no more than three burial grounds will require excavation, and that the other burial grounds will be capped and managed in situ.
- Future decontamination and decommissioning costs will be subject to several significant uncertainties including the timing and extent of final environmental contamination; regulatory frameworks (Resource Conservation and Recovery Act vs. Comprehensive Environmental Response, Compensation and Liability Act cleanup levels), disposal options; and stakeholder/regulator acceptance.

The FY 2016 Request is maintaining the new control point within the Uranium Enrichment Decontamination and Decommissioning Fund Appropriation established in the FY 2015 Congressional submission in order to better manage requirements for Pension and Community and Regulatory activities.

The funding table below provides a comparable display of the impacted activities and a comparable display will be continued throughout this budget chapter to aid in budget review.

**Paducah Project Office**

**Funding (\$K)**

	<b>FY 2014 Enacted</b>	<b>FY 2014 Current</b>	<b>FY 2015 Enacted</b>	<b>FY 2016 Request</b>	<b>FY 2016 vs FY 2015</b>
<b>Defense Environmental Cleanup</b>					
<b>Safeguards and Security</b>					
PA-0020 / Safeguards and Security	12,434	12,434	7,297	8,216	+919
<b>Non-Defense Environmental Cleanup</b>					
<b>Gaseous Diffusion Plants</b>					
<b>Paducah Gaseous Diffusion Plant</b>					
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	1,369	1,369	1,369	1,369	0
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	45,501	45,492	51,517	51,517	0
<b>Subtotal, Paducah Gaseous Diffusion Plant</b>	<b>46,870</b>	<b>46,861</b>	<b>52,886</b>	<b>52,886</b>	<b>0</b>
<b>Uranium Enrichment Decontamination and Decommissioning Fund</b>					
<b>Paducah</b>					
<b>Paducah Gaseous Diffusion Plant</b>					
PA-0040 / Nuclear Facility D&D-Paducah	262,057	260,495	207,215	168,652	-38,563
<b>Pension and Community and Regulatory Support</b>					
<b>Paducah Gaseous Diffusion Plant</b>					
PA-0102 / Paducah Contract/Post-Closure Liabilities/Administration	1,438	3,000	650	650	0
PA-0103 / Paducah Community and Regulatory Support	1,725	1,725	1,725	1,725	0
<b>Subtotal, Paducah Gaseous Diffusion Plant</b>	<b>3,163</b>	<b>4,725</b>	<b>2,375</b>	<b>2,375</b>	<b>0</b>
<b>Total, Uranium Enrichment Decontamination and Decommissioning Fund</b>	<b>265,220</b>	<b>265,220</b>	<b>209,590</b>	<b>171,027</b>	<b>-38,563</b>
<b>Environmental Management/ Paducah</b>	<b>173</b>				

FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
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Total, Paducah

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324,524	324,515	269,773	232,129	-37,644
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Paducah Project Office Explanation of Major Changes (\$K)

FY 2016 vs FY 2015
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**Defense Environmental Cleanup**

**Safeguards and Security**

**PA-0020 / Safeguards and Security**

- Increased funding supports improvements in cybersecurity. +919

**Uranium Enrichment Decontamination and Decommissioning Fund**

**Paducah**

**Paducah Gaseous Diffusion Plant**

**PA-0040 / Nuclear Facility D&D-Paducah**

- Decrease reflects placing the gaseous diffusion plant in a steady state maintenance mode. -38,563

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<b>Total, Paducah</b>	<b>-37,644</b>
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**Safeguards and Security (PBS: PA-0020)**

**Overview**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The safeguards and security program at the Paducah Gaseous Diffusion Plant provides security services to protect nuclear materials, sensitive uranium enrichment technology, equipment, and facilities. This program includes maintaining a security guard force to protect nuclear materials and classified technology/information and complying with cyber security requirements necessary to protect DOE information. The safeguards and security program also supports the Paducah remediation and cleanup programs.

Upon return of the Gaseous Diffusion Plant to DOE, DOE will become responsible for providing security operations necessary to protect the respective site’s national security interests and government property. Safeguard and security activities include protective forces, protection of restricted data associated with gaseous diffusion technology and legacy nuclear weapons components, special nuclear material, official use only information, unclassified controlled nuclear information, export controlled information, and high risk government property. This risk-based site security is in keeping with the evolving EM mission at Paducah.

**Safeguards and Security (PBS: PA-0020)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$7,297	\$8,216	+\$919
<ul style="list-style-type: none"> <li>• Provide Safeguards and Security services program at the Paducah site.</li> <li>• Provide site safeguards and security services for protection program management, emergency response, Physical Security, information protection, Protective Force, Personnel Security, Cyber Security and Nuclear Material Control and Accountability.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide protective force, physical security, information security, personnel security, and cyber security at the Paducah site, with priority on the physical protection of nuclear materials, classified information, and technology.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased funding supports improvements in cybersecurity.</li> </ul>

**NM Stabilization and Disposition (PBS: PA-0011)**

**Overview**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

This project scope includes management of legacy polychlorinated biphenyl remediation activities to maintain compliance with the Toxic Substances Control Act (40 CFR 761), the Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement of 1992, DOE Orders, and other applicable requirements. Polychlorinated biphenyls were used as coolant fluids and are a toxic environmental contaminant. The polychlorinated biphenyl collection and containment trough systems in the cascade buildings (C-310, C-315, C-331, C-333, C-335, and C-337) cover approximately 6,400,000 ft<sup>2</sup> and contain approximately 16,000 collection systems.

**NM Stabilization and Disposition-Paducah Uranium Facilities Management (PBS: PA-0011)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$1,369	\$1,369	0
<ul style="list-style-type: none"> <li>Continue to monitor activities related to polychlorinated biphenyls and to maintain cleanup, sampling, and decontamination of polychlorinated spills and leaks.</li> <li>Maintain polychlorinated biphenyl collection and containment trough systems in the cascade buildings.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to monitor activities related to polychlorinated biphenyls and to maintain cleanup, sampling, and decontamination of polychlorinated spills and leaks.</li> <li>Maintain polychlorinated biphenyl collection and containment trough systems in the cascade buildings.</li> </ul>	<ul style="list-style-type: none"> <li>No change.</li> </ul>

**NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PA-0011X)**

**Overview**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

This PBS scope includes operating a depleted uranium hexafluoride conversion facility at the Paducah Gaseous Diffusion Plant site. The facility converts depleted uranium hexafluoride into a more stable chemical form (depleted uranium oxide) suitable for beneficial reuse or disposition. The depleted uranium oxide and cylinders will initially be stored on-site and ultimately sent to a disposal facility if beneficial reuses are not realized. The hydrogen fluoride co-product is sold on the commercial market for unrestricted use. The proceeds from the sale of hydrogen fluoride are used to offset project operating costs.

This PBS also includes surveillance and maintenance of all depleted uranium hexafluoride cylinders during conversion of the existing stockpile, which will take approximately thirty years. Completion of these activities will contribute to reducing the footprint and total cleanup of the site.

**NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PA-0011X)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$51,517	\$51,517	0
<ul style="list-style-type: none"> <li>Continue steady state operations of the DUF6 conversion facility with emphasis on plant availability and achieving nominal conversion capacity.</li> <li>Package converted depleted uranium oxide for beneficial reuse or disposal and store on site.</li> <li>Conduct cylinder surveillance and maintenance, to keep existing material in a safe stable condition.</li> </ul>	<ul style="list-style-type: none"> <li>Continue steady state operations of the DUF6 conversion facility with emphasis on plant availability and achieving nominal conversion capacity.</li> <li>Package converted depleted uranium oxide for beneficial reuse or disposal and store on site.</li> <li>Conduct cylinder surveillance and maintenance, to keep existing material in a safe stable condition.</li> </ul>	<ul style="list-style-type: none"> <li>No change.</li> </ul>

**Nuclear Facility D&D (PBS: PA-0040)**

**Overview**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

The scope of this PBS includes environmental cleanup and risk reduction through focused response actions and surveillance and maintenance activities. The response actions involve treatment of on-site and off-site groundwater plumes and surface water, remediation of contaminated soils and burial grounds, and decontamination and decommissioning of inactive or excess facilities, including the gaseous diffusion plant returned in 2015. The scope also includes landfill operations and maintenance activities. Compliance requirements are subject to negotiations with the regulators.

This FY 2016 budget request supports activities to further stabilize the gaseous diffusion plant that is being returned to DOE from United States Enrichment Corporation in 2015 to an inactive status, including facility modifications, surveillance and maintenance, and actions to remove hazardous materials.

This PBS also includes the design and construction of a capital project; the potential On-Site Waste Disposal Facility for disposition of the wastes generated from the site-wide cleanup, including wastes generated from the decontamination, decommissioning, and demolition of the gaseous diffusion plant.

In addition, the FY 2016 request includes the design and construction of the Solid Waste Management Units 5 and 6 project. This project is being conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act process. It is anticipated that this process will result in the selection of the design and construction of "Kentucky Subtitle D" Cap over Solid Waste Management Units 5 and 6 of the Burial Ground Operable Unit at the Paducah Gaseous Diffusion Plant.

Completion of these activities are required for reducing the site footprint and completing cleanup of the site.

**Nuclear Facility D&D-Paducah (PBS: PA-0040)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$207,215	\$168,652	-\$38,563
<ul style="list-style-type: none"> <li>Complete transition of the Gaseous Diffusion Plant (in a cold and dark state) from the United States Enrichment Corporation to the Department of Energy.</li> <li>Continue C-400 Trichloroethylene Source Area Phase IIb Treatability Study Field Work.</li> </ul>	<ul style="list-style-type: none"> <li>Finalize Waste Disposal Record of Decision.</li> <li>Complete optimization of the Northeast Plume pump and treat, eliminating further offsite migration.</li> <li>Start capping of two historic unlined burial grounds.</li> </ul>	<ul style="list-style-type: none"> <li>Decrease reflects placing the gaseous diffusion plant in a steady state maintenance mode.</li> </ul>

- Continue optimization of the Northeast Plume pump and treat, eliminating further offsite migration.
- Complete soil cover and sub-surface remediation of two historic unlined burial grounds.
- Initiate design activities associated with the On-Site Waste Disposal Facility.
- Continue pump-and-treat operations and environmental surveillance, monitoring, and reporting.
- Conduct management and infrastructure surveillance and maintenance.
- Continue existing landfill operations and maintenance.
- Continue gaseous diffusion plant facility modifications, including switchyard reconfiguration, and maintain gaseous diffusion plant in inactive status.
- Initiate removal of uranium deposits within the entire cascade of the Gaseous Diffusion Plant to meet Nuclear Criticality Safety allowing long-term safe storage of the shutdown Gaseous Diffusion Plant.
- Index, scan and ship more than 7,000 cubic feet of DOE legacy records and 250,000 drawings to a federal records repository.
- Characterize, package, ship, treat and dispose of oils from over 300 capacitors and 67 transformers.
- Conduct a Freon treatability study on the over eight million pounds of R-114 Freon.
- Complete demolition of the C-410 Complex.
- Continue design activities associated with the first cell of the On-Site Waste Disposal Facility.
- Continue C-400 Trichloroethylene Source Area Phase IIb regulatory documents.
- Conduct management and infrastructure surveillance and maintenance.
- Continue existing landfill operations and maintenance.
- Continue pump-and-treat operations and environmental surveillance, monitoring, and reporting.
- Continue to perform surveillance and maintenance of gaseous diffusion plant.
- Continue gaseous diffusion plant facility modifications, including switchyard reconfiguration.
- Perform gaseous diffusion plant facility stabilization and system isolation activities.

**Paducah Contract/Post-Closure Liabilities/Administration (PBS: PA-0102)**

**Overview**

This PBS can be found within the Uranium Enrichment Decontamination and Decommissioning fund appropriation.

This PBS supports a contract liability to provide record searches performed for DOE and the Department of Justice investigations/studies, pending litigation expenses, severance and the administration of post retirement life and medical support.

**Paducah Contract/Post-Closure Liabilities/Administration (PBS: PA-0102)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$650	\$650	0
<ul style="list-style-type: none"> <li>Continue to provide support to DOE and Department of Justice for all investigations and litigation.</li> <li>Continue to provide payment into the Paducah pension and post retirement benefits program to remain in compliance with the Employee Retirement Income Security Act and other applicable laws, and DOE O 350.1 requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to provide support to DOE and Department of Justice for all investigations and litigation.</li> <li>Continue to provide payment into the Paducah pension and post retirement benefits program to remain in compliance with the Employee Retirement Income Security Act and other applicable laws, and DOE O 350.1 requirements.</li> </ul>	<ul style="list-style-type: none"> <li>No change.</li> </ul>

**Paducah Community and Regulatory Support (PBS: PA-0103)**

**Overview**

This PBS can be found within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This PBS scope supports: an Agreement-in-Principle grant to the Commonwealth of Kentucky to provide independent oversight of the environmental programs, including surface water, groundwater, air and other environmental monitoring; a Federal Facility Agreement grant with the Commonwealth of Kentucky to assure Federal Facility Agreement conditions and compliance schedules are met in accordance with state, federal, and local guidance, regulations and statutes; and the Kentucky Research Consortium for Energy and Environment grant to develop technical information for decision-making in the Paducah environmental cleanup. This PBS also includes support to the Paducah Citizens Advisory Board for assistance in all public participation activities.

**Paducah Community and Regulatory Support (PBS: PA-0103)**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
\$1,725	\$1,725	0
<ul style="list-style-type: none"> <li>Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act.</li> <li>Continue to ensure requirements are met regarding the grants.</li> </ul>	<ul style="list-style-type: none"> <li>Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act.</li> <li>Continue to ensure requirements are met regarding the grants.</li> </ul>	<ul style="list-style-type: none"> <li>No change.</li> </ul>

**Paducah  
Construction Summary (\$K)**

Total	Prior Years	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
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**15-U-407, On Site Waste Disposal Facility (PA-0040)**

Total Estimate Cost (TEC)	TBD	0	0	0	8,486	0	-8,486
Other Project Costs (OPC)	TBD	0	0	0	514	1,570	+1,056
<b>Total Project Cost (TPC) 15-U-407</b>	TBD	0	0	0	9,000	1,570	-7,430

**16-U-401, Solid Waste Management Unit 5 & 6 (PA-0040)**

Total Estimate Cost (TEC)	TBD	0	0	0	0	1,196	+1,196
Other Project Costs (OPC)	TBD	0	0	0	960	693	-267
<b>Total Project Cost (TPC) 16-U-401</b>	TBD	0	0	0	960	1,889	+929



**16-U-401**  
**Paducah Solid Waste Management Units 5&6 Remediation Project**  
**Paducah Gaseous Diffusion Plant, Paducah, Kentucky**  
**Project is for Design and Construction**

**1. Significant Changes and Summary**

**Significant Changes**

This Project Data Sheet is new and is a new start for the budget year.

**Summary**

This project currently is developing Critical Decision 0 and Critical Decision 1 per the requirements of DOE O 413.3B. It is anticipated the Critical Decision 0 will be approved in the fourth quarter of FY 2015. A rough order magnitude cost estimate has been developed for this project and is \$9,700,000 to \$20,700,000.

A Federal Project Director has been assigned to this project and has approved this Construction Project Data Sheet.

This project is contingent upon the selection to construct a cap over the Solid Waste Management Units 5&6 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act process. The Comprehensive Environmental Response, Compensation, and Liability Act process will result in a decision of no action, construction of a cap over these units, or excavation of these units. It is anticipated that the process will result in the selection of the design and construction of "Kentucky Subtitle D" Cap over Solid Waste Management Units 5 & 6 of the Burial Ground Operable Unit at the Paducah Gaseous Diffusion Plant. This should not be interpreted as presupposing the outcome of the Comprehensive Environmental Response, Compensation, and Liability Act process.

DOE has submitted a draft Comprehensive Environmental Response, Compensation, and Liability Act Proposed Remedial Action Plan to state (Kentucky Department for Environmental Protection) and federal (U.S. Environmental Protection Agency) regulatory agencies, which identifies a preferred alternative consisting of a Kentucky Subtitle D cap, groundwater monitoring, and land use controls.

**2. Critical Milestone History**

(fiscal quarter or date)

CD-0 <sup>a</sup>	Conceptual Design Complete	CD-1 <sup>b</sup>	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
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FY 2016	4QFY 2015	3QFY 2015	1QFY 2016	4QFY 2016	TBD	4QFY 2016	N/A	TBD
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**CD-0** – Approve Mission Need for a construction project with a conceptual scope and cost range

**Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable)

**CD-1** – Approve Design Scope and Project Cost and Schedule Ranges

**CD-2** – Approve Project Performance Baseline

**Final Design Complete** – Estimated/Actual date the project design will be/was complete(d)

**CD-3** – Approve Start of Construction

<sup>a</sup> Under development based on the approved Remedial Investigation/Feasibility Study

<sup>b</sup> Being developed in parallel with CERCLA process

**D&D Complete** –Completion of D&D work (see Section 9)

**CD-4** – Approve Start of Operations or Project Closeout

**PB** – Indicates the Performance Baseline

### 3. Project Cost History

	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2016	873	TBD	TBD	TBD	N/A	TBD	TBD

### 4. Project Scope and Justification

#### Scope

If capping of Solid Waste Management Units 5 & 6 is selected as the remedy, the scope of this project would include the design and construction of a Kentucky Subtitle D cap to manage wastes in-place while protecting groundwater, and preventing access and exposure to the buried waste. Solid Waste Management Units 5 and 6 are co-located units that are approximately 4.5 acres. The scope of this project will consist of the following activities:

- Conduct remedial design,
- Place grade fill to achieve adequate drainage,
- Install Kentucky Subtitle D cap,
- Install monitoring wells for long-term groundwater monitoring, and
- Implement Land Use Controls.

The components of landfill cover designed to meet the performance objectives for a Kentucky Subtitle D Contained Landfill under 401 Kentucky Administrative Regulations 48:080 typically include the following from bottom to top:

- Filter fabric or other approved material;
- 12-inch sand gas venting system;
- Filter fabric or other approved material;
- 18-inch clay layer;
- 12-inch drainage layer; and
- 36-inch vegetative soil layer.

#### Justification

This project is necessary to protect groundwater by eliminating, reducing, or controlling sources of groundwater contamination and prevent exposure to waste and contaminated soils that present an unacceptable risk from direct contact. The following alternatives are being evaluated:

- Alternative 1 – No Action
  - Alternative 2 – Limited Action
  - Alternative 3 – Soil Cover, Land Use Constraints, Monitoring
  - Alternative 4 – 18/6 Cover, Land Use Constraints, Monitoring
  - Alternative 5\* – Kentucky Subtitle D Cap, Land Use Constraints, Monitoring
  - Alternative 6 – Excavation and Disposal of Waste Materials and Affected Soil
- \*Preferred Alternative*

No TEC funding will be spent until the Record of Decision and subsequent Critical Decision 1 have been approved.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets.

## 5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
<b>Total Estimated Cost (TEC)</b>			
<b>Design</b>			
FY 2016	N/A	N/A	873
Total, Design	N/A	N/A	873
<b>Construction</b>			
FY 2016	N/A	N/A	323
Outyears	N/A	N/A	TBD
Total, Construction	N/A	N/A	TBD
<b>TEC</b>			
FY 2016	1,196	1,196	1,196
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
<b>Other Project Cost (OPC)</b>			
<b>OPC except D&amp;D</b>			
FY 2015	N/A	N/A	960
FY 2016	N/A	N/A	693
Outyears	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
<b>OPC</b>			
FY 2015	960	960	960
FY 2016	693	693	693
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
<b>Total Project Cost (TPC)</b>			
FY 2015	960	960	960
FY 2016	1,889	1,889	1,889
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	576	N/A	N/A
Contingency	297	N/A	N/A
Total Design	873	N/A	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Construction			
Capping & Site Work	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Design	0	N/A	N/A
Conceptual Planning	0	N/A	N/A
Contingency	TBD	N/A	N/A
Other OPC Costs	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Contingency, OPC	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

### 7. Schedule of Appropriation Requests

Request		Prior		FY 2016	Outyears	Total
		Years	FY 2015			
FY 2016	TEC	0	0	1,196	TBD	TBD
	OPC	0	960	693	TBD	TBD
	TPC	0	960	1,889	TBD	TBD

### 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	30+ years
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	N/A	N/A	N/A	N/A
Utilities	N/A	N/A	N/A	N/A
Maintenance and Repair	N/A	N/A	N/A	N/A

**Environmental Management/  
Paducah/16-U-401 Solid Waste  
Management Units 5&6 Remediation  
Project**

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Total	N/A	N/A	N/A	N/A
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### 9. D&D Information

The new area being constructed in this project is not replacing existing facilities.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the "one-for-one" requirement.

### 10. Acquisition Approach

The acquisition approach for the project will be through competitive bids and the use of consent packages, consistent with current Paducah prime contract requirements under Federal Acquisition Regulation 44. An Acquisition Plan for the design and construction of the project will be prepared prior to Critical Decision-2/3.

