CP2-ES-0101/FR2A

Environmental Management System for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky

FOUR RIVERS NUCLEAR PARTNERSHIP, LLC

This document is approved for public release per review by:

David Hayden — FRNP Classification Support

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Environmental Management System for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky

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Office of Environmental Management

Prepared by
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,
managing the
Deactivation and Remediation Project
at the
Paducah Gaseous Diffusion Plant
under Contract DE-EM0004895

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APPROVALS

Environmental Management System
for the Deactivation and Remediation Project,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

CP2-ES-0101/FR2A

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REVISION LOG

REVISION NUMBER	DATE	DESCRIPTION OF CHANGES	PAGES AFFECTED
FRev. 0	10/20/2017	Bluesheet for Four Rivers Nuclear Partnership, LLC (FRNP)	All
FRev. 1	1/17/2018	Revised to issue under FRNP	All
FRev. 2	3/27/2018	Removed referenced procedure CP3-OP-0303 from Table 7.	25
FRev. 2A	05/03/2018	Update titles for FRNP Organizational Changes; updated FRNP Environmental Policy Statement; updated references in Section 4.3.2.1	vii, 4, 6, 8-10, 13, 14, 19, 20, 21

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CONTENTS

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FIGURE

TABLES

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ACRONYMS

CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
DOE	U.S. Department of Energy
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
ESH&Q	Environmental, Safety, Health, and Quality
FRNP	Four Rivers Nuclear Partnership, LLC
FY	fiscal year
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
KPDES	Kentucky Pollutant Discharge Elimination System
LCB	Life Cycle Baseline
NEPA	National Environmental Policy Act
PAF	Position Assignment Form
PGDP	Paducah Gaseous Diffusion Plant
PPPO	Portsmouth/Paducah Project Office
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
TRU	transuranic
TSCA	Toxic Substances Control Act

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DEFINITIONS

Continual Improvement—The process of enhancing the Environmental Management System (EMS) to achieve improvements in overall environmental performance in line with the environmental policy.

Effluent Monitoring—The collection and analysis of samples or measurements of liquid and gaseous effluents for the purpose of characterizing and quantifying contaminants, assessing radiation exposure of members of the public, providing means to control effluents at or near the point of discharge, and demonstrating compliance with applicable standards and permit requirements.

Environment—Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, and humans and their interrelation.

Environmental Aspect—Element of an organization's activities, products, or services that can interact with the environment.

Environmental Hazard—A potential incident or failure associated with an environmental aspect that would result in a negative environmental impact or noncompliance.

Environmental Impact—Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

Environmental Management System—The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.

Environmental Monitoring—The collection and analysis of samples or direct measurements of environmental media. Environmental monitoring consists of two major activities: (1) effluent monitoring and (2) environmental surveillance.

Environmental Objective—Overall environmental goal arising from the environmental policy that an organization sets itself to achieve and that is quantified where practicable.

Environmental Performance—Measurable results of the EMS related to an organization's control of its environmental aspects, based on its environmental policy, objectives, and goals.

Environmental Policy—Statement by the organization of its intentions and principles in relation to its overall environmental performance that provides a framework for action and for the setting of the environmental objectives and goals.

Environmental Records—Environmental records are defined as follows:

(1) Records that constitute or document evidence of compliance with environmental laws, regulations, permits, and other environmental requirements, including, but not limited to, consent orders and agreements with state or federal agencies, standards and company requirements.

(2) Records that constitute or document the basis for decisions regarding (a) resolution of environmental compliance issues, (b) development of technical interpretations, (c) development of company

environmental requirements, (d) permitting and closure decisions, (e) regulatory impact analyses, and (f) risk assessments, including documentation of routine communications with environmental regulatory agencies, DOE, and any external organization.

(3) Records that constitute supporting environmental data developed during environmental monitoring and measurement, preparation of permits, closure plans, and other environmental compliance plans and/or commitments, including, but not limited to, negotiated settlement agreements and consent decrees.

(4) Enforcement orders. Supporting data includes, but is not limited to, modeling data, analytical data, calibration data, controlled documents, and reports.

(5) Records that constitute or document implementation of the EMS that (a) address planning, implementation, or assessment of environmental activities; including, but not limited to, procedures, company requirements documents, company program description documents, audits and assessment reports, and corrective action documents; and (b) document personnel training and qualification.

Environmental Surveillance—The collection and analysis of samples or direct measurements of air, water, soil, foodstuff, biota, and other media from the DOE site and their environs for the purpose of determining compliance with applicable standards and permit requirements, assessing radiation exposures of members of the public, and assessing the effects, if any, on the local environs.

Line Management—Any management level within the line organization, including contractor management, that is responsible and accountable for directing and conducting work.

Procedures—In the context of the International Organization for Standardization (ISO) 14001 Standard, procedures are the written, unwritten, formal, and/or informal descriptions of how certain activities are conducted. These can include policies, plans, processes, and other types of instructions. Processes described in this document satisfy ISO 14001 requirements to establish EMS-related procedures.

EXECUTIVE SUMMARY

The Four Rivers Nuclear Partnership, LLC, Paducah Deactivation and Remediation Project Environmental Management System (EMS) is a systematic and structured approach for addressing the environmental consequences of activities, products, and services developed to meet the requirements of U.S. Department of Energy (DOE) Acquisition Regulation 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution*, and DOE Order 436.1, *Departmental Sustainability*. Under this order, DOE sites must use EMS as a platform for Site Sustainability Plan implementation and programs with objectives and measurable targets that contribute to DOE meeting its sustainability goals.

Sites must maintain their EMS as being certified to or conforming to International Organization for Standardization (ISO) 14001:2004 in accordance with the accredited registrar provisions of the International Standard or the self-declaration instructions found in ISO 14001:2004(E) International Standard, *Environmental Management Systems: Requirements with Guidance for Use* and *Instructions for Self-Declaration of Conformance with ISO 14001:2004(E)*, Office of the Federal Environmental Executive, January 15, 2008. This includes a continual cycle of planning, implementing, reviewing, and improving our operations to positively address and manage environmental resources with a proactive versus reactive mindset. The EMS considers all personnel whose work activities could impact the environment. It enables more effective use of natural resources, provides better protection of the environment, and achieves environmental sustainability. The EMS helps to ensure consistency and rigor in existing environmental activities and drives continual improvement in environmental performance.

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1. INTRODUCTION

The Paducah Gaseous Diffusion Plant (PGDP) is located on a federal site in western Kentucky, approximately 10 miles west of Paducah, Kentucky, and 3.5 miles south of the Ohio River. The plant is situated on approximately 3,423 acres divided as follows:

- 644 acres within a fenced limited security area
- Approximately 822 acres of uninhabited area surrounding the plant area
- 1,986 acres licensed to the Kentucky Department of Fish and Wildlife as part of the West Kentucky Wildlife Management Area

Additionally, approximately 133 acres of off-site easements are present, primarily associated with incoming raw water lines and pumps from the Ohio River, emergency notification sirens, and environmental sampling stations. Bordering the Paducah Site to the northeast, between the plant and the Ohio River, is the Tennessee Valley Authority Reservation where the Shawnee Fossil Plant is located.

PGDP is a government-owned plant that was constructed in the early 1950s and operated by the U.S. Department of Energy (DOE) and its predecessor agencies for manufacturing enriched uranium for the fabrication of fuel assemblies to support commercial and military nuclear reactors and weapons development activities. PGDP includes Hazard Category 2 Nuclear Facilities primarily based on the uranium inventory; however, other radioactive materials, such as transuranics (TRUs), are present and contribute to the hazard categorization of the facilities. On October 21, 2014, the lease between DOE and the United States Enrichment Corporation ended, and the PGDP facilities transferred back to DOE.

The uranium enrichment program utilizing the gaseous diffusion process produced hazardous, nonhazardous, and radioactive by-products. These activities resulted in contamination of equipment, facilities, soil, and groundwater with radioactive and hazardous constituents and the generation of wastes, including those regulated under the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), and the Atomic Energy Act. These wastes include construction debris; sanitary waste; hazardous waste; radioactive low-level waste; mixed low-level waste; TRU waste; and mixed TRU waste. Many of these wastes were stockpiled or disposed on-site, which resulted in the site being placed on the National Priorities List in 1994.

The Paducah Site has three major prime contractors and one support services contractor that support DOE with ongoing activities. The contractors and each respective summary level of scope are described below.

(1) The Infrastructure Contractor is responsible for site infrastructure, such as roads and grounds, janitorial services, and security/classification, including Site Officially Designated Security Authority for DOE interest.

(2) The Depleted Uranium Hexafluoride (DUF_6) Contractor is responsible for the operation of the DUF_6 Conversion Plant and management of DOE UF_6 cylinders.

(3) The Deactivation and Remediation Contractor [Four Rivers Nuclear Partnership, LLC, (FRNP)] is responsible for assisting in transfers/assignment of the structures, property, or buildings from the current tenants to FRNP or other site contractors; completing stabilization and deactivation activities; performing surveillance and maintenance of these facilities; performing deactivation, decontamination, and demolition; and specified environmental remediation activities at PGDP.

(4) The Environmental Technical Services small business contractor provides environmental technical and administrative support services directly to DOE.

FRNP is responsible for ensuring compliance with all applicable laws, regulations, and other requirements as defined in the Contract. Under the Contract, FRNP potentially can generate radioactive, hazardous, mixed, and industrial wastes and release effluents to the air, water, and soil in the course of conducting business. The Environmental Management System (EMS) is the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy. The EMS programs and processes identified in this Program Description are founded in FRNP's Environmental Policy and the proper identification and understanding of the work activities, their environmental aspects, and environmental impacts.

The EMS is designed to integrate environmental protection, environmental compliance, pollution prevention, and continual improvement into work planning and execution throughout all work areas as a function of the Integrated Safety Management System (ISMS). This EMS program is founded in the five core elements of the International Organization for Standardization (ISO) Environmental Management System Standard (ISO 14001), which patterns the five core functions of the company ISMS. The five core elements of an EMS are these:

- Policy
- Planning
- Implementation and Operation
- Checking and Corrective Action
- Management Review

This EMS is designed to meet the requirements of DOE Acquisition Regulation 970.5223-1, *Integration of Environment, Safety and Health into Work Planning and Execution*; DOE Order 436.1, *Departmental Sustainability*; Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance;* and Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. The EMS is further designed to accomplish DOE sustainability goals and requirements and to follow the requirements of the *Energy Policy Act of 2005* and the *Energy Independence and Security Act of 2007*. Through implementation of the integrated ISMS/EMS, effective protection to workers, the surrounding communities, and the environment can be achieved while meeting operating objectives to comply with legal and other requirements.

2. PURPOSE

The purpose of this document is to describe FRNP's EMS and to document the processes and systems developed to implement and deliver the environmental policy. The document describes the following:

- The roles and responsibilities for identifying environmental requirements and developing procedures, policies, and other controls for their implementation;

- The roles and responsibilities for implementing environmental requirements and protecting the environment during the course of performing work;

- The primary work planning processes used to identify work scope and activities; analyze environmental hazards, impacts, and compliance risks; and establish environmental controls;

- The process to identify applicable environmental requirements and to flow down these requirements to work processes through procedures and work control documents;

- The programs and processes used to evaluate compliance, environmental protection performance, and the EMS and to provide feedback to ensure continual improvement; and

- The programs in training, communication, emergency preparedness, document control, records management, environmental monitoring, assessments and trending, corrective action, and management review that make up the EMS.

The EMS is designed to describe the environmental policy and document the integration of environmental protection and compliance, waste minimization and pollution prevention, and site sustainability into the company ISMS and culture and to ensure proper integration of environmental considerations into work planning and performance consistent with 48 *CFR* § 970.5223-1, *Integration of Environmental, Safety, and Health into Work Planning and Execution*; DOE Order 450.2, *Integrated Safety Management*; and DOE Policy 450.4A, *Integrated Safety Management Policy*. The functions, processes, and responsibilities described in this EMS provide the details of the environmental protection functional area of the company ISMS described in CP2-HS-1000, *Integrated Safety Management System Description*. As such, individuals reading this EMS also should read CP2-HS-1000 to fully comprehend the integrated ISMS and EMS management systems. Under FRNP's programs, the term "safety" embodies protection of worker and public health and the natural environment.

3. SCOPE AND APPLICABILITY

The environmental requirements described in this plan are applicable to all activities performed by FRNP or its subcontractors. All persons entering FRNP project sites, including employees, subcontractors, and vendors, are subject to the requirements of this Program Description. By integrating EMS principles into ISMS practices and other site work control and planning processes, successful implementation of EMS principles will be accomplished through adherence to procedures and processes for which they are responsible.

4. EMS REQUIREMENTS

4.1 GENERAL REQUIREMENTS

> *The organization shall establish, document, implement, maintain, and continually improve an EMS in accordance with the requirements of this International Standard and determine how it will fulfill these requirements.* [DOE O 436.1 Attachment 1, paragraph 2] [ANSI ISO 14001:2004, 4.1]

This EMS is based on the standard elements identified in ISO 14001:2004 and integrates ISO 14001 elements into the core functions of the ISMS. The EMS is institutionalized and maintained within the company document hierarchy that stems from the contracts between FRNP and DOE (Contract No. DE-EM0004895). These documents include, but are not limited to, program description documents and administrative procedures. FRNP implementation of the elements of an EMS, as defined by ISO 14001:2004, is evaluated by internal self-assessments and independent assessment programs to validate that the EMS remains in conformance with ISO 14001:2004. The FRNP EMS also is audited by a qualified party outside the control or scope of the EMS at least every three years. The FRNP Environmental, Safety, Health, and Quality (ESH&Q) Deputy Director is accountable for EMS implementation and declares conformance of the EMS to the ISO 14001:2004 standard each year. The FRNP management signer of the Site EMS Policy Statement reviews the status of the EMS and reaffirms his/her commitment to the policy of protection of the environment, pollution prevention, sustainability, and continuous improvement during the fourth quarter of the fiscal year (FY).

The following sections of this document provide the ISO 14001:2004 standard requirements (italicized text at the beginning of each required section), briefly describe the company EMS program elements, and identify the specific documents that provide more detailed descriptions.

4.2 ENVIRONMENTAL POLICY

> *Top management shall define the organization's environmental policy and ensure that, within the defined scope of its environmental management system, it:*
>
> *a. is appropriate to the nature, scale and environmental impacts of its activities, products and services;*
>
> *b. includes a commitment to continual improvement and prevention of pollution;*
>
> *c. includes a commitment to comply with applicable legal requirement, and with other requirements to which the organization subscribes which relate to its environmental aspects;*
>
> *d. provides the framework for setting and reviewing environmental objectives and targets;*
>
> *e. is documented, implemented and maintained;*

f. is communicated to all persons working for or on behalf of the organization, and;

g. is available to the public. [ANSI ISO 14001:2004, 4.2]

FRNP is committed to achieving the highest standards of environmental quality in the performance of their work and to providing a safe and healthy workplace for employees and contractors. Daily operations and activities must be performed in compliance with applicable federal and state laws, regulations, permits, contractually applicable DOE Orders, and other requirements.

FRNP maintains an environmental policy (Figure 1) that is consistent with the DOE Portsmouth/Paducah Project Office (PPPO) environmental policy to bring to the forefront the company values listed above. This policy is implemented through the programs described in this document, through environmental remediation and pollution prevention programs, and by applying the principles of ISMS to integrate environmental protection, environmental regulatory compliance, pollution prevention, sustainability, investment recovery, and continual improvement in the daily planning and performance of FRNP work.

The environmental policy (Figure 1) is communicated to employees through company-wide communications, EMS awareness training, General Employee Training, publications, and company bulletin boards and is available via links on the FRNP intranet sites. The environmental policy is available to the public at https://fourriversnuclearpartnership.com/.

The procedures and processes for implementing the commitments in the Environmental Policy are described in this document and in referenced documents. Conformance with the EMS is evaluated through the compliance monitoring and EMS assessment programs described in this document.

4.3 PLANNING

The FRNP Contract is based on a focused DOE business strategy to simplify facility transfer while maintaining safety, compliance, operability, and cost effectiveness. Life Cycle Baseline (LCB) and Annual Baseline plans define the scope of work to be performed consistent with budgetary, regulatory, risk prioritization, and other considerations. Budgets for each scope of work in the work breakdown structure include the necessary safety and environmental protection resources required to execute the work within a safe envelope. Contract milestones and baselines are developed and agreed to by FRNP and DOE, with input from regulators and stakeholders.

The FRNP budget and financial management system, which manages the life cycle and annual baseline plans, includes these business management functions:

- Project work breakdown structure
- Scope definition
- Performance milestones
- Organizational breakdown structure
- Planning assumptions
- Cost estimate
- Budget
- Risk-based prioritization
- Critical path schedule logic

FOUR RIVERS NUCLEAR PARTNERSHIP, LLC

Environmental Policy

It is the policy of Four Rivers Nuclear Partnership, LLC (FRNP) to conduct the Deactivation and Remediation of the Paducah Gaseous Diffusion Plant (PGDP) in a safe, compliant and cost-effective manner that protects human health and the environment. We achieve this by integrating environmental requirements and pollution prevention into our work planning and execution, and taking actions to minimize the environmental impacts of our operations. We establish and communicate environmental responsibilities, provide environmental training to our workforce, and implement controls to mitigate environmental hazards. These activities are conducted in accordance with our Environmental Management System (CP2-ES-0101). Through employee involvement and our management's commitment to environmental excellence, we will:

- Identify and comply with all applicable environmental laws and regulations.
- Use practicable means to minimize or eliminate the generation of new wastes without a path for disposition.
- Protect the natural, biological and cultural resources associated with the PGDP and surrounding DOE-owned property.
- Conserve natural resources by reusing and recycling materials, purchasing recycled materials, and using recyclable materials.
- Establish documented environmental objectives and targets and update them as necessary to reflect FRNP's needs, missions, and goals.
- Involve our stakeholders when weighing an environmental course of action.
- Monitor our impact on the environment and measure our performance, and communicate the results to our employees, subcontractors, and stakeholders.
- Continuously improve our environmental management system through self-assessment and corrective action process.
- Communicate this policy to all employees and subcontractors and make it available to the public and our stakeholders.

This policy applies to all persons working on behalf of FRNP at the PGDP. Every employee and subcontractor has ownership of this policy and is responsible to report environmental concerns to management. Managers shall promote environmental stewardship, take prompt action to address concerns and issues and have zero tolerance for noncompliance.

W. E. Kirby

Bill Kirby, President and Program Manager

May 2018

Figure 1. FRNP Environmental Policy

- Project schedule
- Charge code structure
- Cost accounting
- Funds management
- Baseline change control

These functions are integrated in the project LCB and are maintained under configuration management via a joint FRNP/DOE baseline change control process. The LCB provides the basis for establishing performance objectives.

After the project baseline is developed, the Directors divide the work into activity teams that plan, schedule, and execute the work. Activity scopes of work are defined to ensure that activity interactions will not result in conditions that violate the safety envelope. Directors establish priorities, allocate resources, and schedule the work to be completed based on the agreed upon project baseline.

The work control system described in CP2-SM-1000, *Activity Level Work Planning and Control Program*, provides processes to convert the activity-level scope of work into a working-level document that is easy for the workforce to understand and use. For specific scopes and when the project tasks for performing the work have been defined clearly, the activity team identifies the environmental, safety, and health-related hazards associated with the performance of tasks in accordance with procedure CP3-HS-2004, *Job Hazard Analysis*. The Work Planning and Control Group is responsible for developing and maintaining the work control processes, which support all five ISMS core functions.

Following are examples of work control process elements:

- Operating procedures
- Training
- Work packages
- Work group coordination
- Review of lessons learned
- Pre-job and post-job briefings
- Work monitoring and oversight
- Daily oversight and management of subcontractors
- Employee involvement
- Readiness reviews

Workers are encouraged to provide feedback and suggestions for improvement to enhance safety, efficiency, and environmental protection. Worker involvement, feedback, and suggestions will be sought through participation (during official time) in the following ways:

- Job planning walkdowns
- Pre/post-job briefings
- Development and review of activity hazard assessments and procedures
- Safety and toolbox meetings
- Accident/incident investigations
- Safety task assignments

The effectiveness of the safety and compliance programs is objectively measured, using metrics that provide data on the effectiveness of the critical elements of the programs. These metrics are trended and the trends evaluated to identify areas that need improvement and to maximize the use of available resources in the prevention of environmental incidents.

FRNP subcontractors comply with the FRNP safety and compliance programs, which meet 10 *CFR* 851, *Worker Safety and Health Program*, while performing work on DOE owned or leased facilities. This is assured by contractually communicating requirements to subcontractors within FRNP Procurement Documents. Requirements are communicated to subcontractors in Procurement Attachment J-1, Environmental, Health, and Safety Requirements for On-Site Work. Subcontractors are required to submit their Environmental Plan to FRNP for review and approval. Subcontractors function within the FRNP ISMS structure and all other federal and state standards applicable per their scope of work.

4.3.1 Environmental Aspects

> *The organization shall establish, implement, and maintain a procedure(s):*
>
> *a. to identify the environmental aspects of its activities, products, and services within the defined scope of the environmental management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products, services, and;*
>
> *b. to determine those aspects that have or can have significant impact(s) on the environment (i.e., significant environmental aspects).*
>
> *The organization shall document this information and keep it up-to-date.*
>
> *The organization shall ensure that the significant environmental aspects are taken into account in establishing, implementing and maintaining its environmental management system.* [ANSI ISO 14001:2004, 4.3.1]

FRNP has evaluated its activities, products, and services (hereafter referred to as activities) to identify the environmental aspects of its work activities that have the potential to impact the environment and/or the public, or result in a noncompliance with regulatory requirements. Significant environmental aspects then are determined by the ESH&Q Deputy Director and the supporting EMS team evaluating the relevance and significance of environmental aspects.

The Regulatory Compliance Manager maintains the listing of FRNP work activities listed in Appendix A. FRNP work activities listed in Appendix A are reviewed and updated as needed to reflect changes in site operations and activities. The update includes reviews by personnel familiar with the activity and the integration of new work activities identified during the previous year. Significant work activities are considered when establishing facility-level objectives to address performance measures and program execution guidance.

Environmental aspects considered as significant are identified in Appendix A. The significant environmental aspects are reviewed each year by the EMS team and revised, as needed. The information in Appendix A is communicated to affected personnel through training developed for those personnel whose actions could result in a significant or any environmental impact (see Section 4.4.2, Competence Training and Awareness) and is institutionalized through the work control processes described herein.

Table 1 identifies the primary documents related to environmental hazard identification and mitigation and the evaluation of FRNP work activities and environmental aspects.

Table 1. Environmental Hazard Identification and Mitigation Documents

Reference No.	Reference Title
CP3-HS-2004	*Job Hazard Analysis*
CP2-SM-1000	*Activity Level Work Planning and Control Program*
CP2-RA-0014	*Environmental Compliance and Protection Program Description*
CP3-EN-0203	*Design Change Process*
CP3-EN-0207	*Facility Change Process*
CP3-OP-3003	*Standards and Requirements Management*

4.3.2 Legal and Other Requirements

The organization shall establish, implement and maintain a procedure(s):

a. to identify and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its environmental aspects, and;

b. to determine how these requirements apply to its environmental aspects.

The organization shall ensure that these applicable legal requirements and other requirements to which the organization subscribes are taken into account in establishing, implementing and maintaining its environmental management system. [ANSI ISO 14001:2004, 4.3.2]

FRNP activities are subject to contract requirements, laws, regulations, and other requirements. Legal requirements, DOE Directives, and other requirements are summarized in the Contract. The Contract also specifies program requirements and expectations, consensus standards, and other requirements (such as consent orders) that apply to the company. A summary of legal and other requirements is provided in Table 2.

4.3.2.1 Maintaining legal and other requirements

CP3-OP-3003, *Standards and Requirements Management,* describes the process for identifying requirements and communicating them to the appropriate level and function through program descriptions, procedures, and other documents.

The Regulatory Compliance Manager is responsible for identifying the applicable sections of environmental requirements from the legal requirements codified in federal, state, and local regulations; DOE directives; consensus standards; company agreements; the Contract; and other requirement basis documents for all company organizations. Proposed and newly promulgated regulations are also identified by the ESH&Q organization, distributed for review to the affected department(s), and tracked until applicability is determined. Applicable requirements are evaluated with line management for operational impact and training needs and subsequently are identified in program descriptions.

Table 2. Legal and Other Requirements Summary

References
• PGDP Deactivation, Section J, Attachment J-4, Requirement Sources and Implementing Documents (List A) and List of Applicable DOE Directives (List B) • Kentucky Pollutant Discharge Elimination System (KPDES) Permits (KY0004049) • Hazardous Waste Facility Permit, Kentucky Division of Waste Management (KY8-890-008-982) • PGDP Federal Facility Agreement, Kentucky Department for Environmental Protection, U.S. Environmental Protection Agency (EPA), and DOE • Site Treatment Plan Agreed Order, Natural Resources and Environmental Protection Cabinet (now the Kentucky Energy and Environment Cabinet) and DOE • Clean Air Act Title V Permit, Kentucky Division for Air Quality (V-14-012) • TSCA Compliance Agreement, May 30, 2017, Toxic Substances Control Act, as modified • Ohio River Water Withdrawal Permit • Waste Treatment Registration • Toxic Release Inventories

Program description documents and many other requirement basis documents are accessible on the company computer network. Site area and project requirements (e.g., permits) are maintained with ESH&Q organization. Environmental checklists, which specify project requirements, are maintained by ESH&Q and the individual activity team.

Requirement documents and instructions to implement the requirements are developed at one of the following three levels: program, project, or activity-specific. FRNP interprets applicable requirements and prepares company-wide program description documents that identify environmental requirements and provide instructions for activities that have broad applicability and require consistent application across the site.

ESH&Q identifies applicable requirements during the course of reviewing work packages. ESH&Q also assists projects in the identification and interpretation of specific requirements from environmental permits and regulatory agreements, or other specific requirement-basis documents.

4.3.3 Objectives, Targets, and Programs

> *The organization shall establish, implement, and maintain documented environmental objectives and targets at relevant functions and levels within the organization.*
>
> *The objectives and targets shall be measurable, where practicable, and consistent with the environmental policy, including the commitments to prevention of pollution, to compliance with applicable legal requirements and with other requirements to which the organization subscribes, and to continual improvement.*
>
> *When establishing and reviewing its objectives and targets, an organization shall take into account the legal requirements and other requirements to which the organization subscribes, and its significant environmental aspects. It shall also*

> *consider its technological options, its financial, operational and business requirements, and the views of interested parties.*
>
> *The organization shall establish, implement and maintain a program(s) for achieving its objectives and targets. Programs shall include:*
>
> *a. designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization; and*
>
> *b. the means and time frame by which they are to be achieved.* [ANSI ISO 14001:2004, 4.3.3]

FRNP establishes environmental objectives and targets based on the environmental policy; legal and other requirements; consideration of the significant environmental aspects; DOE's Sustainability Goals; the PGDP Site Sustainability Goals identified in the Site Sustainability Plan; DOE's goals for FRNP operations; and the views of its stakeholders. DOE's sustainability goals are addressed in and reported annually in the DOE Sustainability Dashboard, and generally support reduction of impacts from the identified significant environmental aspects. The EMS team reviews the list of environmental objectives and targets to ensure coverage for the significant environmental aspects and recommends potential additional objectives and target, as appropriate, to senior management for approval. As such, this process provides consideration of site planning processes, including the establishment of the relevant company plans and visions, such as in the detailed work plans and through company improvement initiatives. By considering these key planning processes in their entirety and including senior management in the process, relevant environmental objectives and targets are established and approved by senior management.

The status of objectives and targets are tracked and documented annually in the DOE Sustainability Dashboard. When appropriate, objectives and/or targets are added/modified to adjust to circumstances, such as a modification in strategic direction, operations, or funding. As part of its management review function, senior management reviews the status of environmental objectives and targets and guides any modifications and direction for future objectives and targets.

DOE and FRNP also develop performance metrics to identify specific program goals and targets, which are tied to the detailed work plans. FRNP is held accountable for work scope through performance metrics based on measurable milestones or actions that fall into the following category:

- EMS metrics allow DOE to plan for reporting FY progress, performance, and successes on the EMS. These EMS performance metrics are rolled up by DOE and used in the EMS Scorecard developed and published annually by the Federal Environmental Executive. The metrics include environmental aspects, sustainable practices, objectives and targets, environmental training, operational controls, contracts and agreements, evaluation of compliance with regulatory requirements, and management review. An important part of the EMS metrics is the EMS relationship to sustainable practices, as required by DOE Order 436.1.

In addition, through the FRNP work control processes, FRNP maintains a process for ensuring that environmental considerations are given to new and modified work activities. This occurs as part of the Environment Compliance process. Specific programs and procedures that relate to work activities with the potential to significantly impact the environment are identified in Environmental Aspects. Examples of documents used for achieving the EMS and Environmental Sustainability objectives and targets are listed in Table 3.

Table 3. Environmental Management Programs

Reference No.	Reference Title
CP2-RA-0014	*Environmental Compliance and Protection Program Description*
CP3-OP-0002	*Developing and Maintaining Performance Documents*
CP2-OP-1100	*Conduct of Operations Program*
CP3-HS-2004	*Job Hazard Analysis*
CP2-ES-0005	*Pollution Prevention/Waste Minimization Plan for the U.S. Department of Energy Paducah Site*
CP2-ES-0101	*Environmental Management System Description*
CP2-ES-0103	*Environmental Radiation Protection Program*
CP2-WM-0001	*FRNP Waste Management Plan*
PAD-REG-1005	*Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Site, McCracken County, Kentucky*
PAD-REG-1006	*Best Management Practices Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
PAD-PROJ-0018	*Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
CP3-ES-0009	*Use of NetDMR for Electronic Submittal under Kentucky Pollutant Discharge Elimination Permit*
CP2-ES-0061	*Site-Specific Health and Safety Plan for the Environmental Monitoring Project*

4.4 IMPLEMENTATION AND OPERATION

The following sections identify elements of the EMS that describe its implementation and proper operation. These elements include the company organization, structure of the EMS, key responsibilities as they apply to the EMS, training of personnel commensurate with their responsibilities in implementing the EMS, development and implementation of controls, FRNP communication of relevant information to the workforce and the public, document control system, and emergency response processes. Additional details of the FRNP structure and responsibility, training, and processes to develop and implement controls and perform work at activity levels are described in the documents referenced in each of the following sections.

4.4.1 Resources, Roles, Responsibility, and Authority

> *Management shall ensure the availability of resources essential to establish, implement, maintain, and improve the environmental management system. Resources include human resources and specialized skills, organizational infrastructure, technology, and financial resources.*
>
> *Roles, responsibilities and authorities shall be defined, documented and communicated in order to facilitate effective environmental management.*
>
> *The organization's top management shall appoint a specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for:*

a. *ensuring that an environmental management system is established, implemented and maintained in accordance with the requirements of ISO 14001;*

b. *reporting to top management on the performance of the environmental management system for review including recommendations for improvement.* [ANSI ISO 14001:2004, 4.4.1]

4.4.1.1 Structure

FRNP's organizational structure is shown in the company organizational chart located on the FRNP intranet website. To implement and complete the Contract, FRNP has established an organizational structure around major program groups which include Engineering; Planning and Optimization; ESH&Q; Waste, Materials, and Environmental Services; Stabilization and Deactivation; and Business Services. ISMS and the EMS are woven throughout the FRNP management structure.

The ESH&Q group is responsible for coordinating the actions required to develop, maintain, and continuously improve the EMS. Line management and support organizations are responsible for implementing environmental requirements and environmental protection practices during the course of conducting business.

The company uses a balanced-matrix approach whereby programs and facilities plan, through the detailed work planning process, their needs for personnel with specific expertise (e.g., environmental, regulatory, safety, project management). Functional organizations such as ESH&Q and Business Services then assign qualified personnel to support the programs and facilities.

More specific roles and responsibilities are outlined below.

4.4.1.2 Responsibilities

Responsibilities for environmental performance begin at the highest level of the company, the Program Manager, and progress down the management chain to the individual employee. Key elements in defining responsibilities are the identification of management roles, responsibilities, and authorities. These elements are communicated to managers as part of their work performance expectations. They are used as tools to support deployment of programs, evaluate employee performance, and help align positions to the organizational alignment and strategic direction of the site.

Roles and responsibilities are communicated to employees using the following means:

- Program descriptions,
- EMS awareness training,
- General Employee Training,
- Position Assignment Form (PAF) (i.e., job/function-specific training), and
- This EMS description document.

In addition, work is performed in accordance with established, formalized procedures and work control instructions, which contain descriptions of the position-specific roles, responsibilities, and authorities for the tasks being performed.

Leadership and overall responsibility for establishing and maintaining the EMS is assigned to the ESH&Q Deputy Director, who may delegate the establishment and maintenance of the EMS to a

designated EMS management representative for FRNP. The EMS management representative is given project and fiscal responsibility for implementation of the EMS. The management representative reports routinely to appropriate levels of company management on the EMS program performance.
The following outlines environmental functions with the key functional organizations and positions that have responsibility for elements of the EMS.

Senior Management

Senior management is responsible for the following:

- Establishing and maintaining the Environmental Policy;
- Performing periodic management reviews of the EMS;
- Ensuring the establishment of environmental objectives and targets;
- Championing environmental excellence;
- Promoting the continuous improvement of the EMS and company environmental performance;
- Promoting the concept of protection to the environment, not merely compliance;
- Ensuring accountability for environmental performance and implementation of the environmental policy; and
- Appointing an EMS management representative.

ESH&Q

ESH&Q is the primary environmental organization responsible for identifying and disseminating environmental requirements to line management for implementation, based on a defined scope of work. ESH&Q is responsible for the following:

- Establishing and maintaining the EMS;
- Tracking, evaluating, and commenting on proposed environmental regulations; interpreting existing and new regulations; determining applicability of environmental requirements; and developing and maintaining the company environmental program requirements documents;
- Developing company-wide environmental policy, guidance, procedures, and other implementing instructions;
- Providing qualified technical resources to support implementation of environmental requirements by programs and facilities and ensure their consistent application across the company;
- Coordinating activities to maintain the EMS;
- Preparing, reviewing, obtaining, and modifying environmental permits and reports;
- Identifying and interpreting facility-specific requirements from regulations and permits;

- Identifying environmental training requirements to the site training personnel;
- Providing subject matter expertise to develop training to ensure that environmental protection training meets facility and employee needs and to conduct training as appropriate;
- Developing and making processes available to line management to help identify environmental hazards and mitigation requirements, necessary permits, and instructions during work planning;
- Reviewing and ensuring National Environmental Policy Act (NEPA) and National Historic Preservation Act documentation is prepared or is covered by an appropriate existing document;
- Overseeing environmental monitoring at PGDP;
- Serving as the company contact for and negotiator with DOE and the regulatory agencies concerning environmental permits and compliance issues;
- Ensuring Pollution Prevention Leadership Goals are integrated into EMS;
- Facilitating management involvement; and
- Coordinating the management review process.

Line Management

The responsibilities of line management are as follows:

- Implementing the environmental policy and EMS as they apply to the facility and work activities by complying with work packages, procedures, job hazards analysis, design documents, etc.; and ensuring all employees under their supervision are trained adequately and qualified;
- Promoting the concept of protection to the environment, not merely compliance;
- Identifying environmental hazards during work planning and assisting in developing solutions that avoid or mitigate those hazards;
- Implementing approved controls;
- Conducting work in an environmentally responsible and compliant manner;
- Identifying noncompliant conditions, reporting them to Regulatory Compliance, and taking prompt actions to resolve them;
- Taking immediate action to mitigate impacts of any noncompliant conditions, and stopping work in accordance with company policy, if a threat to human health or the environment exists; and
- Ensuring that employees under their direction are adequately trained and qualified.

All Employees

Everyone working on the Deactivation and Remediation Project has the following responsibilities:

- Understanding and implementing the FRNP Environmental Policy as it applies to his/her work;
- Reporting environmental concerns and observations to management;
- Participating in the prevention of pollution;
- Participating actively in work planning efforts, as appropriate; and
- Performing work in accordance with established work procedures and processes.

Training Coordinator(s)

Following are the responsibilities of training coordinators:

- Coordinating development, revision, and approval of Individual Training Plans;

- Documenting training plans, identifying training deficiencies, recording and tracking training requirement completion, scheduling classes, identifying qualifications, and performing other training documentation functions as required; and

- Maintaining required training record items that are created by the various training activities in accordance with CP2-TR-0100, *Training Program*.

4.4.2 Competence Training and Awareness

> *The organization shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant environmental impact(s) identified by the organization is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records.*
>
> *The organization shall identify training needs associated with its environmental aspects and its environmental management system. It shall provide training or take other action to meet these needs, and shall retain associated records.*
>
> *The organization shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of:*
>
> *a. the importance of conformity with the environmental policy and procedures and with the requirements of the environmental management system*
>
> *b. the significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance*
>
> *c. their roles and responsibilities in achieving conformity with the requirements of the environmental management system*
>
> *d. the potential consequences of departure from specified procedures.* [ANSI ISO 14001:2004, 4.4.2]

The FRNP Training Program implements the applicable DOE O 426.2 requirements as described in CP2-TR-0102, *Training Implementation Matrix*, and meets the requirements of Quality Assurance Program and Implementation Plan.

The FRNP Training Program uses a graded approach to ensure employees and subcontractors are trained and qualified commensurate with their responsibilities. Training and qualification requirements for individual positions are developed on the basis of hazards involved, complexity of the operation, and the risk associated with operation of the facility. Training is specified for employees on their PAF. Training includes project-specific, facility-specific, job-specific, and professional-qualification training. This required training is documented and tracked in the FRNP learning management system.

Training programs consist of a combination of settings and methods based on the learning objectives for the needed skills and knowledge. Training methods include lectures, seminars, computer-based training, structured self-study activities, on-the-job training, and required reading. Training settings include classroom instruction, on-the-job training, and/or computer-based training. Use of different training programs, methods, and settings are further examples of the graded approach.

4.4.2.1 EMS Awareness Training

All company personnel receive EMS Awareness Training initially; continuing training is included in GET and CAT. The EMS awareness training makes employees aware of the importance of the environmental policy and the EMS in performing work. This training addresses the following topics:

- Why we need an EMS for FRNP
- The EMS for FRNP
- The Environmental Policy and how it applies to each FRNP employee
- FRNP Significant Environmental Aspects
- EMS Targets and Objectives

GET and CAT provide refreshers to remind personnel of the importance of the environmental policy and the EMS in performing work.

4.4.2.2 Significant Impact Employee Training

Employees who perform activities that have the potential to impact the environment significantly receive job-specific training to ensure they are competent to perform their assigned duties. CP2-TR-0100, *Training Program*, ensures personnel maintain appropriate education, training or experience, and associated records are retained. The job titles(s) of personnel, who, through their actions potentially could cause a significant impact to the environment, are identified on the PAF, which details the training requirements for each position.

4.4.3 Communication

> *With regard to its environmental aspects and environmental management system, the organization shall establish, implement and maintain procedures for:*
>
> *a. internal communication between the various levels and functions of the organization;*
>
> *b. receiving, documenting and responding to relevant communication from external interested parties.*

> *The organization shall decide whether to communicate externally about its significant environmental aspects, and shall document its decision. If the decision is to communicate, the organization shall establish and implement a method(s) for this external communication.* [ANSI ISO 14001:2004, 4.4.3]

FRNP is committed to communicating environmental information to its employees and the public, recognizing input from them, providing clear and concise information for daily communications at the working level, and fully disclosing environmental issues to the applicable regulatory agencies. The company has established and maintains programs and other formal mechanisms for internal and external communications regarding its environmental aspects, EMS, community outreach initiatives, and environmental program activities.

4.4.3.1 Internal communication

Internal communications are conducted through sitewide programs and site area-specific and program- or project-specific methods.

FRNP uses a number of tools to communicate environmental information to all FRNP employees that span all levels and functions. These include the following:

- E-mail messages to all employees issued by FRNP management;
- Interoffice memorandums, policies, and guidance from company senior management;
- Posters, brochures, booklets, presentations, displays, and other visual communications issued through Public Affairs;
- FRNP intranet;
- FRNP site newsletter; and
- Daily Safety Sheets.

Major communications to all employees are reviewed and approved by FRNP management before issuance.

ESH&Q uses a variety of communication tools and activities to convey information to FRNP employees and subcontractors related to environmental aspects, environmental compliance, environmental protection, pollution prevention, and the EMS, including these:

- E-mail messages, and
- Development of EMS awareness training with the training department.

At the site-area, program, and activity levels, environmental information is communicated routinely during the following forums:

- Pre-job walkdowns and work control documents;
- Plan-of-the day meetings, employee safety team meetings, staff meetings, and similar routine interfaces;
- Communications from safety and compliance personnel with the site area, program, or activity; and
- Interactions of the ESH&Q personnel with the site-area management and workforce.

Employees may report environmental issues or concerns through their management chain, through the Employee Concerns Program, or by entering concerns and issues into the problem reporting system.

These programs are described in CP1-HR-0131, *Employee Concerns*, and CP3-QA-3001, *Issues Management*.

Employees also may provide suggestions for improvement in environmental areas or other process and program improvements.

4.4.3.2 External communication

The company implements comprehensive communication programs to reach key stakeholder groups (for example, the public, news media, regulatory agencies, and other government agencies). Each of these programs may include communications concerning the environmental aspects of FRNP work activities. Based on the completeness of these programs, no additional processes are needed to communicate the significant environmental aspects of FRNP work activities to external parties.

Waste, Materials, and Environmental Services and ESH&Q personnel manage external communications with stakeholders, the public, and the media, including conducting public meetings, press conferences, and issuing news releases. Communications are prepared and approved based on established guidance in management directives and company procedures. Waste, Materials, and Environmental Services and ESH&Q personnel are responsible for communications with environmental regulatory agencies. Waste, Materials, and Environmental Services and ESH&Q personnel communicate with these agencies using established protocols developed with DOE-PPPO. Records of written communications are maintained according to the FRNP records management process.

FRNP also provides information to interested parties through the Freedom of Information Act process. Requests for information are received from DOE-PPPO and are processed according to written procedures included in CP3-RD-0010, *Records Management Process*. Each request is documented, including the requestor and the action taken.

ESH&Q maintains a process of self-disclosure to enhance open communication of environmental issues with environmental regulatory agencies regarding FRNP activities. This reporting process facilitates timely identification of environmentally noncompliant conditions and encourages open discussion. As required, environmental regulatory issued self-disclosure reports are transmitted to applicable environmental regulatory agencies.

An Annual Site Environmental Report is prepared in accordance with DOE Order 231.1B, *Environment, Safety, and Health Reporting*, and DOE Order 458.1, *Radiation Protection of the Public and Environment*. This report provides a quantitative assessment of the impact on the environment from the activities at PGDP.

In addition to external communication processes used to respond to and document inquiries, FRNP maintains programs that openly provide information to interested parties and consider input concerning its work activities and their environmental aspects.

The public is notified and involved in NEPA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), Clean Air Act (CAA), and RCRA environmental permitting and clean-up decisions, through public comment processes. The processes involve preparing and distributing newsletters and fact sheets, scheduling and holding meetings and public hearings, and documenting meeting results. Notices of upcoming meetings and events are distributed to target audiences via an extensive mailing list of federal, state, and local government officials and members of the general public. Documents such as decision documents, public Administrative Record files, area news clippings, and public meeting summaries are available for review in the DOE Paducah Environmental Information Center located at 115 Memorial Drive, Barkley Centre, Paducah, Kentucky. The Environmental Information Center is provided to allow public access to all documents used to make decisions on remedial actions being taken at PGDP.

4.4.4 Documentation

The environmental management system documentation shall include:

a. *the environmental policy, objectives and targets,*

b. *description of the scope of the environmental management system,*

c. *description of the main elements of the environmental management system and their interaction, and reference to related documents,*

d. *documents, including records, required by this International Standard, and*

e. *documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects.* [ANSI ISO 14001:2004, 4.4.4]

This document describes the core elements of the FRNP EMS and their interaction and relationship to each other. Each section has been prepared to address the corresponding element of ISO 14001:2004 Standard and the environmental policy.

Related documents that implement the EMS core elements are identified in the tables and text within each section of this document. Related documents for work activities that have the potential to impact the environment significantly, (e.g., operational controls and monitoring procedures) are identified for each significant work activity.

4.4.5 Control of Documents

Documents required by the environmental management system and by this International Standard shall be controlled. Records are a special type of document and shall be controlled in accordance with the requirements given in ISO 14001, Section 4.5.4.

The organization shall establish, implement and maintain a procedure(s) to:

a. *approve documents for adequacy prior to issue,*

b. *review and update as necessary and re-approve documents,*

c. *ensure that changes and the current revision status of documents are identified,*

d. *ensure that relevant versions of applicable documents are available at points of use,*

e. *ensure that documents remain legible and readily identifiable,*

f. *ensure that documents of external origin determined by the organization to be necessary for the planning and operation of the environmental management system are identified and distribution controlled, and*

g. *prevent the unintended use of obsol ete documents and apply suitable identification to them if they are retained for any purpose.* [ANSI ISO 14001:2004, 4.4.5]

The Records and Document Administration prevents the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose. The FRNP Document Control program meets the requirements of CP2-QA-1000, *Quality Assurance Program Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*.

Records and Document Administration provide for developing, processing, managing, and distributing controlled documents. They are responsible for ensuring that the most current versions of documents are available and that they are legible, dated, and readily identifiable. All environmental documents are prepared, reviewed, revised, and issued in accordance with company standards and procedures. The current revision of a controlled document must be used when work is performed per the document. Company-wide documents are maintained by the Records and Document Administration.

The primary implementing procedures and other documents related to document control are referenced in Table 4.

Table 4. Document Control

Reference No.	Reference Title
CP3-OP-0002	*Developing and Maintaining Performance Documents*
CP3-OP-0025	*Document Control Process*
CP3-RD-0010	*Records Management Process*

4.4.6 Operational Control

The organization shall identify and plan those operations that are associated with the identified significant environmental aspects consistent with its environmental policy, objectives and targets, in order to ensure that they are carried out under specified conditions, by:

a. Establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the environmental policy and the objectives and targets, and

b. stipulating the operating criteria in the procedure(s), and

c. establishing, implementing, and maintaining procedures related to the identifiable significant environmental aspects of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors. [ANSI ISO 14001:2004, 4.4.6]

FRNP operations are completed in accordance with the conduct of operations process. Conduct of operations is implemented using thorough and clear procedures based on identified requirements. The process requires that procedures be followed, that adequate training is provided, and that roles and responsibilities are clearly defined. Operational controls include controls during planning to incorporate safety and compliance concerns and procedural controls used during implementation. The conduct of operations process provides for employee involvement and communication of environmental information in work planning and operational control. This process also includes conduct of maintenance to ensure that facility systems remain functional and perform as intended and when needed. This process also includes deactivation, decontamination, and decommissioning activities. The principles of conduct of operations, conduct of maintenance, and the ISMS provide the foundation for the company safety culture and integrate environmental protection and compliance, pollution prevention, site sustainability, and continual improvement into work control processes. The FRNP operational control program (including inspection, acceptance testing, and configuration control) meets the requirements of the Quality Assurance Plan (QAP).

The operational control of subcontracted activities, products, or services is provided through procurement documents. Subcontractors develop their work planning documents, which are approved by FRNP.

4.4.6.1 Operational control for significant work activities

The company has evaluated its current work activities, using the company's environmental policy, to identify activities that could result in a significant impact to the environment (hereafter referred to as significant work activities). Significant work activities are identified in Appendix A. Operational controls for these work activities are institutionalized through training and the work control process. New work activities are evaluated against the same criteria to determine if they have the potential to impact the environment significantly.

During the evaluation process of work activities, each work activity is assigned appropriate environmental aspects. The activity is screened to determine if any of the identified environmental aspects could result in a significant impact. Environmental aspects that are considered significant then are evaluated to identify the specific hazards of the significant aspect. This information is recorded and forms the basis for planning programs, procedures, and design input to control and monitor the significant environmental aspects of the work activity.

Each work activity with the potential to impact the environment significantly is planned to control the specific hazards, if controls are not already in place. These can include procedures or other controlled documents, control equipment, engineering design documents used during planning, and other controls. Performance documents to address specific hazards generally are integrated into operating procedures.

Significant work activities may be specific to a location (e.g., a specific building), may occur at more than one location, or may be considered sitewide activities. For each significant work activity, the following information is provided in Environmental Aspects, as appropriate:

- Work activity name
- Location (building number or sitewide)
- Activity/impact description
- Environmental aspect(s)
- Significant environmental aspect(s)
- Specific hazard(s)
- Operational controls (procedures, equipment, and comments, including maintenance and procurement quality procedures, where needed)

The primary implementing procedures and other documents related to operational control are referenced in Table 5.

Table 5. Operational Control

Reference No.	Reference Title
CP3-CP-0001	*Requisition for Purchase*
CP3-HS-2004	*Job Hazard Analysis*
CP2-OP-1100	*Conduct of Operations Program*
CP2-SM-1000	*Activity Level Work Planning and Control Program*

4.4.7 Emergency Preparedness and Response

> *The organization shall establish, implement and maintain a procedure(s) to identify the potential emergency situations and potential accidents that can have an impact(s) on the environment and how it will respond to them.*
>
> *The organization shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts.*
>
> *The organization shall periodically review and, where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations.*
>
> *The organization shall also periodically test such procedures where practicable.* [ANSI ISO 14001:2004, 4.4.7]

FRNP provides emergency management operations to protect DOE facilities and assets. This includes emergency preparedness; development of emergency management programs; and all related planning, exercises, training, qualification, drills, evaluation, reporting, file maintenance, and linkage with other programs in the complex and industry.

FRNP implements emergency preparedness and demonstrates a responsible Emergency Management program for the protection of DOE facilities at the PGDP site. The graded approach is used across the range of all facilities and emergencies that can occur. The Emergency Preparedness Program is based on hazards surveys and planning, which are periodically updated. Emergency Action Plans (EAPs) have been developed for facilities based upon current and projected activities in the facility. EAPs provide personnel with specific directions to follow in the event of an emergency.

Primary implementing procedures and other documents related to the emergency preparedness plan are referenced in Table 6.

Table 6. Emergency Preparedness and Response

Reference No.	Reference Title
CP3-EP-1000	*Personnel Accountability*
CP2-EP-1000	*Paducah Site Emergency Management Program*
CP3-EP-1007	*Oil and Hazardous Material Spills and Releases*
CP3-EP-1002	*Bomb Threat Emergency*
CP3-EP-1004	*Maintenance of Emergency Facilities and Equipment*
CP3-EP-1009	*Severe Weather Emergencies*
CP3-EP-1012	*Off-Site Emergency Response Assistance*
CP3-EP-1018	*Off-Site Shipping Incident Technical Assistance*
CP3-EP-1017	*Emergency Response Drills and Exercises*
CP4-FP-2036	*Emergency Response Practice*
CP3-EP-1026	*Computer Generation of NARAC Plume Models for Emergency Response*

4.5 CHECKING

The following sections describe the FRNP processes to check or monitor performance, track and correct deficiencies, take preventive actions, and manage records. Additional details of the company processes for feedback and improvement are described in the documents referenced in each of the following sections.

4.5.1 Monitoring and Measurement

> *The organization shall establish, implement and maintain a procedure(s) to monitor and measure, on a regular basis, the key characteristics of its operations that can have a significant environmental impact. The procedures shall include the documenting of information to monitor performance, applicable operational controls and conformity with the organization's environmental objectives and targets.*
>
> *The organization shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained and shall retain associated records.* [ANSI ISO 14001:2004, 4.5.1]

Company monitoring and measurement activities include programs and processes to do the following:

- Monitor conformance with operational controls;
- Evaluate performance of operations through environmental monitoring;
- Evaluate program performance and compliance;
- Track conformance with environmental objectives and targets;

- Assess compliance with environmental laws, regulations, and other requirements (such as permits and company requirements); and

- Ensure the integrity of data through quality and calibration programs.

Programs and processes monitor and measure performance of FRNP work activities and include processes that address FRNP work activities that have the potential to significantly impact the environment. General information concerning these programs and processes is discussed below.

4.5.1.1 Monitoring of operational controls

Monitoring and measurement of conformance with operational controls involve inspections, the monitoring of process operations, effluent monitoring, and similar activities that measure potential impact to the environment.

FRNP implements a comprehensive monitoring program to measure emissions and effluents, ambient air, surface and groundwater, soils, and biota. The environmental monitoring programs include environmental data collection for routine compliance monitoring and environmental surveillance of FRNP activities. General categories of environmental monitoring performed include the following:

- Compliance monitoring programs—liquid effluent, air, surface runoff, and groundwater to comply with the CERCLA, RCRA, CWA, CAA, permits, negotiated agreements with the Commonwealth of Kentucky, and DOE Order 436.1;

- Environmental surveillance programs—air, surface water runoff, soil, biota, and direct radiation to comply with DOE Order 458.1; and

- Operational monitoring—process air emissions monitoring and process liquid effluent monitoring.

Monitoring results are summarized in the Paducah Annual Site Environmental Report, KPDES monitoring reports, solid waste landfill compliance reports, hazardous waste facility permit groundwater reports, and Title V air permit reports. Air emissions for FRNP are reported in the Annual Radionuclide National Emission Standards for Hazardous Air Pollutants Report and the Paducah Annual Site Environmental Report.

General implementing procedures and other documents related to monitoring operational controls are referenced in Table 7.

Table 7. Monitoring Operational Controls

Reference No.	Reference Title
FPDP-RPT-0091	*Paducah Site Annual Site Environmental Report for Calendar Year 2016*
CP2-ES-0006	*Environmental Monitoring Plan Fiscal Year 2018, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
CP2-ES-0063	*Environmental Monitoring Data Management Implementation Plan at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*
CP2-OP-1100	*Conduct of Operations Program*
CP3-OP-1118	*Facility Management*
CP2-WM-0001	*Waste Management Plan*
CP3-WM-0001	*Waste Management Planning and Execution*

FRNP calibrates and maintains physical monitoring and measurement systems. All company environmental monitoring and measurement equipment is maintained and calibrated in accordance with manufacturer or regulatory specifications. The primary implementing procedures and other documents related to calibration are referenced in Table 8.

Table 8. Calibration

Reference No.	Reference Title
CP3-SM-0017	*Measurement and Test Equipment*

4.5.1.2 Performance Measurement

The results of monitoring and measurement of significant work activities are assessed to identify conditions that could impact conformance with environmental objectives and targets and to identify areas for improvement. Although the assessment will be performed by others, the organization responsible for the activity is responsible to have each significant work activity assessed. The results of these assessments are documented, and corrective action taken as described in Section 4.5.3. The primary implementing procedures related to performing assessments are referenced in Table 9. The FRNP performance measurement program meets the requirements of the QAP.

Table 9. Performance Measurement

Reference No.	Reference Title
CP3-QA-1004	*Independent Assessment Program*
CP3-QA-1003	*Management and Self-Assessments*
CP3-QA-2002	*Surveillance*

4.5.2 Evaluation of Compliance

> *Consistent with its commitment to compliance, the organization shall establish, implement and maintain a procedure(s) for periodically evaluating compliance with applicable legal requirements.*
>
> *The organization shall keep records of the results of the periodic evaluations.* [ANSI ISO 14001:2004, 4.5.2.1]
>
> *The organization shall evaluate compliance with other requirements to which it subscribes. The organization may wish to combine this evaluation with the evaluation of legal compliance referred to in [ISO 14001] 4.5.2.1 or to establish a separate procedure(s).*
>
> *The organization shall keep records of the results of the periodic evaluations.* [ANSI ISO 14001:2004, 4.5.2.2]

The organizations identified in Section 4.3.2, as being responsible for effective implementation of legal or other requirements, perform periodic assessments to evaluate compliance with the listed requirements. These assessments are documented and corrective action is taken, as described in Section 4.5.3. The primary procedures used to evaluate compliance are listed in Table 10.

Table 10. Evaluating Compliance

Reference No.	Reference Title
CP3-QA-1004	*Independent Assessment Program*
CP3-QA-1003	*Management and Self-Assessments*
CP3-QA-2002	*Surveillance*
CP3-QA-2003	*Quality Inspection*

4.5.3 Nonconformity, Corrective Action, and Preventive Action

The organization shall establish, implement and maintain a procedure(s) for dealing with actual and potential nonconformity(ies) and for taking corrective action and preventive action. The procedure(s) shall define requirements for:

a. identifying and correcting nonconformity(ies) and taking action(s) to mitigate their environmental impacts,

b. investigating nonconformity(ies), determining their cause(s) and taking actions in order to avoid their recurrence,

c. evaluating the need for action(s) to prevent nonconformity(ies) and implementing appropriate actions designed to avoid their occurrence,

d. recording the results of corrective action(s) and preventive action(s) taken, and

e. reviewing the effectiveness of corrective action(s) and preventive action(s) taken.

Actions taken shall be appropriate to the magnitude of the problems and the environmental impacts encountered.

The organization shall ensure that any necessary changes are made to the environmental management system documentation. [ANSI ISO 14001:2004, 4.5.3]

The FRNP issues management program is an integrated company process that enables management to understand and prioritize the correction of issues based on risk significance. These issues may be area specific, sitewide, or programmatic in nature and may be identified by external assessments or by internal independent, management, or self-assessments. The program's purpose is to ensure that problems (issues) adverse to the environment, safety, health, operations, or quality are documented and resolved in an effective and timely manner. Items, services, and processes that do not meet established requirements are controlled and corrected according to the importance of the problem and the work affected. The program also ensures adequate corrective actions are implemented to prevent recurrence of undesirable events or conditions through appropriate causal analysis, corrective action, verification, and follow-up. The FRNP issues management program meets the requirements of the QAP.

Trending and lessons learned are the two primary methods used by FRNP to prevent problems from occurring. Issues are binned based on the type of problem and its cause. Periodically, the number of problems in each bin is reviewed and action is initiated if a particular type of problem is identified as recurring. During the development of a work control document, the DOE lessons learned database is checked to determine if problems that have occurred at Paducah or other DOE facilities need to be considered to prevent the problem from occurring. New issues placed into the

DOE lessons learned database are evaluated and action taken, when appropriate, to minimize the potential of the issue occurring at Paducah.

The primary implementing procedures and other documents related to issues management program are referenced in Table 11.

Table 11. Issues Management

Reference No.	Reference Title
CP3-QA-2005	*Nonconformance Control*
CP3-QA-3005	*Occurrence Reporting*
CP3-QA-3004	*Evaluation and Reporting of Potential PAAA/WSH Noncompliances*
CP3-QA-3002	*Operating Experience/Lessons Learned*
CP3-QA-3001	*Issues Management*
CP3-QA-3007	*Issue Investigation and Causal Analysis*

4.5.4 Control of Records

> *The organization shall establish and maintain records as necessary to demonstrate conformity to the requirements of its environmental management system and of this International Standard (ISO 14001), and the results achieved.*
>
> *The organization shall establish, implement and maintain a procedure(s) for the identification, storage, protection, retrieval, retention and disposal of records.*
>
> *Records shall be and remain legible, identifiable and traceable.* [ANSI ISO 14001:2004, 4.5.4]

Records that document environmental compliance and protection activities have unique environmental quality characteristics. These characteristics are embodied in the company definition of an environmental record as criteria. Based on these criteria, all company environmental records are considered to have a quality element and must be managed appropriately to ensure they are legible, readily retrievable, and protected against damage, deterioration, and loss. CP3-RD-0010, *Records Management Process*, provides instructions for the management of records. The records management program is established to assist organizations in maintaining federal records to preserve information vital for decision-making, litigation support, environmental management, historical knowledge, and research. FRNP provides copies of documents to the Infrastructure Contractor, who is responsible for control of records at Paducah. The FRNP records management program meets the requirements of the QAP.

The primary implementing procedures and other documents related to records management are referenced in Table 12.

Table 12. Document Control

Reference No.	Reference Title
CP3-OP-0002	*Developing and Maintaining Performance Documents*
CP3-RD-0010	*Records Management Process*

4.5.5 Internal Audit

The organization shall ensure that internal audits of the environmental management system are conducted at planned intervals to:

a. determine whether the environmental management system:

1. conforms to planned arrangements for environmental management including the requirements of ISO 14001; and

2. has been properly implemented and is maintained

b. provide information on the results of audits to management

Audit programs shall be planned, established, implemented and maintained by the organization, taking into consideration the environmental importance of the operation(s) concerned and the results of previous audits.

Audit procedure(s) shall be established, implemented and maintained that address:

a. the responsibilities and requirements for planning and conducting audits, reporting the results and retaining associated records,

b. the determination of audit criteria, scope, frequency and methods

Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process. [ANSI ISO 14001:2004, 4.5.5]

The FRNP Contractor Performance Assurance Program organization is responsible for performing internal assessments, and FRNP process/program owners are responsible for assessing implementation of their processes and programs through the assessment program. The assessment program establishes the processes and responsibilities for planning, conducting, and reporting the results of internal assessments. The program also requires that independent assessments be performed by assessors who are independent but knowledgeable of the activity being evaluated. Established qualification requirements are documented in CP3-QA-1008, *Assessor Qualification, Training, and Certification*. The FRNP assessment program meets the requirements of the QAP.

The evaluation of compliance with the EMS elements of ISO 14001:2004 is integrated into many of these assessments such that all elements of the program are evaluated triennially. The EMS management, as appropriate, supports these ongoing assessment efforts and provides technical input regarding EMS criteria and assessment objectives.

The primary implementing procedures related to independent assessments are referenced in Table 13.

Table 13. Independent Assessments

Reference No.	Reference Title
CP3-QA-1004	*Independent Assessment Program*
CP3-QA-1003	*Management and Self-Assessments*
CP3-QA-2002	*Surveillance*
CP3-QA-2003	*Quality Inspection*

4.6 MANAGEMENT REVIEW

Top management shall review the organization's environmental management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and the need for changes to the environmental management system, including the environmental policy and environmental objectives and targets. Records of the management reviews shall be retained.

Input to management reviews shall include:

a. results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organization subscribes,

b. communication(s) from external interested parties, including complaints,

c. the environmental performance of the organization,

d. the extent to which objectives and targets have been met,

e. status of corrective and preventive actions,

f. follow-up actions from previous management reviews,

g. changing circumstances, including developments in legal and other requirements related to its environmental aspects, and

h. recommendations for improvement.

The outputs from management reviews shall include any decisions and actions related to possible changes to environmental policy, objectives, targets and other elements of the environmental management system, consistent with the commitment to continual improvement. [ANSI ISO 14001:2004, 4.6]

The FRNP Program Manager annually reviews the adequacy and effectiveness of the FRNP EMS. Input for the review includes items such as these:

- Results of internal assessment and evaluations of compliance with legal requirements;
- Communication from external interested parties, including complaints;
- The environmental performance of the organization;
- The extent to which objectives and targets have been met;
- Status of corrective and preventive actions;
- Follow-up actions from previous management reviews;

- Changing circumstances, including developments in legal and other requirements related to its environmental aspects; and

- Recommendations for improvement.

The result of the review is documented. Any issues to correct identified deficiencies or improve the effectiveness of the program are managed in accordance with Section 4.5.3. The primary implementing procedures related to management review are referenced in Table 14.

Table 14. Management Review

Reference No.	Reference Title
CP3-QA-1004	*Independent Assessment Program*
CP3-QA-1003	*Management and Self-Assessments*

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APPENDIX

ENVIRONMENTAL ASPECTS OF FRNP WORK ACTIVITIES

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A.1. PURPOSE

Integrated Safety Management (ISM) requires that facility managers and employees define their work scope; identify environmental, safety, and health hazards associated with their work activities; and develop and implement appropriate controls to mitigate those hazards. The International Organization for standardization (ISO) 14001 standard for environmental management systems (EMS) requires the application of similar concepts to "identify the environmental aspects of its activities, products or services (hereafter work activities) that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment," and to "ensure that the aspects related to these significant impacts are considered in setting its environmental objectives."

A.2. FRNP ENVIRONMENTAL ASPECTS

The environmental aspects of FRNP work activities, the elements of the activities, products, or services that can interact with the environment are identified in List A1 of this appendix. These specific aspects should be considered in the work planning process so that appropriate mitigation can be identified.

A.3. FRNP WORK ACTIVITIES

Existing FRNP work activities were evaluated to identify their environmental aspects. Two categories of work activities resulted from this evaluation:

(1) General FRNP work activities employed throughout the Paducah Gaseous Diffusion Plant that have environmental aspects, and

(2) Work activities determined to have the potential to significantly impact the environment.

New work activities are characteristically identified through evaluation of work plans and work requests. During evaluation of work activities, the environmental aspects of the work—whether they are for regulatory compliance or to protect the environment or cultural resources—are identified and controls are developed.

A.3.1 GENERAL FRNP WORK ACTIVITIES AT PADUCAH GASEOUS DIFFUSION PLANT

Work activities that are broad in scope and are applicable across general FRNP operations were identified. These general FRNP work activities and the environmental aspects that apply to them are identified in List A1 of this appendix.

A.3.2 WORK ACTIVITIES AT PADUCAH GASEOUS DIFFUSION PLANT WITH THE POTENTIAL TO SIGNIFICANTLY IMPACT THE ENVIRONMENT

Specific FRNP work activities are evaluated to assess their potential to impact the environment significantly if adequate controls were not implemented or should there be a breakdown in controls.

In addition, activities that have significant compliance concerns and stakeholder interest were noted. The FRNP major work activities that have the potential to impact the environment or have significant compliance concerns—and the environmental aspects that apply to them are summarized in List A1 of this appendix.

ATTACHMENT

LIST A1-ENVIRONMENTAL ASPECTS OF GENERAL FRNP PADUCAH GASEOUS DIFFUSION PLANT WORK ACTIVITIES

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Work Activity Crosswalk to Environmental Aspects	Potential Regulatory Compliance Issue	**Air Pollutants**	**Greenhouse Gases**	Asbestos Emissions	**Discharge to Wastewater Systems or Groundwater**	Spilled Materials Affects Stormwater	Equipment Runoff Affects Stormwater	PCB Contamination	Structural Fires - Wild Fires	Chemical Use and Storage	Consumables/Paper Use	**Water Use**	**Energy Use**	Petroleum Use	**Reg/Haz/Rad Mat/Waste Handling/Transportation**	**Reg/Haz/Mixed Waste Generation and Mgt**	**Industrial Waste Generation and Mgt**	Managing Surplus Property and Materials	Storage of Reg/Haz/Rad Materials or Waste	Use, Reuse, and Recycling of Resources	Cultural/Historical Resource Disturbance	Biota/Habitat (Wetlands/ Endangered Species
Constructing or modifying stationary air emission sources	X	**X**	**X**			X							**X**									
Constructing or modifying tanks		**X**								X					**X**	**X**	**X**		X		X	
Decontaminating equipment contaminated with PCBs, radionuclides, hazardous substances	X	**X**				X		X							**X**	**X**						
Discontinuing use of, or closing, relocating, or removing tanks		**X**			**X**	X				X			**X**		**X**	**X**	**X**	X	X	X		
Maintaining equipment contaminated with PCBs, radionuclides, hazardous substances		**X**				X		X			X		**X**		**X**	**X**						
Maintaining, servicing, or repairing HVAC equipment	X	**X**	**X**							X	X		**X**							X		
Maintaining, servicing, or repairing motor vehicle air conditioners	X	**X**	**X**							X	X									X		
Operating and repairing tanks (petroleum, volatile organic compound, hazardous materials, etc.)		**X**	**X**		**X**					X			**X**		**X**	**X**	**X**		X			
Operating stationary facilities and equipment that emit air pollutants	X	**X**	**X**								X		**X**									
Operating stationary facilities and equipment that emit radionuclides	X	**X**	**X**								X		**X**									
Operating portable or mobile equipment that store petroleum			**X**		**X**					X					**X**	**X**			X			X
Operation of mobile emergency generators and pumps		**X**	**X**										**X**									

List A1. Environmental Aspects of General FPDP Paducah Gaseous Diffusion Plant Work Activities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Work Activity Crosswalk to Environmental Aspects	Potential Regulatory Compliance Issue	**Air Pollutants**	**Greenhouse Gases**	Asbestos Emissions	**Discharge to Wastewater Systems or Groundwater**	Spilled Materials Affects Stormwater	Equipment Runoff Affects Stormwater	PCB Contamination	Structural Fires - Wild Fires	Chemical Use and Storage	Consumables/Paper Use	**Water Use**	**Energy Use**	Petroleum Use	**Reg/Haz/Rad Mat/Waste Handling/Transportation**	**Reg/Haz/Mixed Waste Generation and Mgt**	**Industrial Waste Generation and Mgt**	Managing Surplus Property and Materials	Storage of Reg/Haz/Rad Materials or Waste	Use, Reuse, and Recycling of Resources	Cultural/Historical Resource Disturbance	Biota/Habitat (Wetlands/ Endangered Species
Relocating portable air emissions sources or bringing portable or stationary air emissions sources onto the site		**X**	**X**										**X**									
Starting up, shutting down, or performing scheduled maintenance on stationary air emissions sources		**X**	**X**										**X**									
Use heavy equipment (fork trucks, cranes, loaders, trucks, etc.)		**X**	**X**		**X**		X	X						X				X		X		
Maintenance of heavy equipment	X	**X**	**X**		**X**		X							X		**X**	**X**			X		
Vehicle and cart operations		**X**	**X**																			
Constructing or modifying facilities that store petroleum	X		**X**		**X**					X					**X**	**X**			X			
Constructing or modifying facilities, equipment, or processes		**X**	**X**	X								**X**	**X**		**X**	**X**				X	X	X
Constructing or modifying facilities, equipment, or processes at permitted or interim status RCRA facilities	X	**X**	**X**		**X**							**X**	**X**				**X**				X	
Deactivating, decontaminating, dismantling, or closing facilities (including trailers), equipment, and processes	X	**X**		X	**X**			X		X		**X**	**X**		**X**	**X**	**X**	X	X	X	X	
Deactivation, Decontamination, and Demolition Removal of Inactive Facilities		**X**	**X**	X	**X**			X		X	X	**X**	**X**		**X**	**X**	**X**	X		X	X	X
Discontinuing use of or closing facilities, equipment, or processes			**X**		**X**			X					**X**		**X**	**X**	**X**	X			X	
Emergency response to spills and fires	X	**X**	**X**		**X**			X		X	X	**X**			**X**	**X**	**X**					

List A1. Environmental Aspects of General FPDP Paducah Gaseous Diffusion Plant Work Activities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Work Activity Crosswalk to Environmental Aspects	Potential Regulatory Compliance Issue	**Air Pollutants**	**Greenhouse Gases**	Asbestos Emissions	**Discharge to Wastewater Systems or Groundwater**	Spilled Materials Affects Stormwater	Equipment Runoff Affects Stormwater	PCB Contamination	Structural Fires - Wild Fires	Chemical Use and Storage	Consumables/Paper Use	**Water Use**	**Energy Use**	Petroleum Use	**Reg/Haz/Rad Mat/Waste Handling/Transportation**	**Reg/Haz/Mixed Waste Generation and Mgt**	**Industrial Waste Generation and Mgt**	Managing Surplus Property and Materials	Storage of Reg/Haz/Rad Materials or Waste	Use, Reuse, and Recycling of Resources	Cultural/Historical Resource Disturbance	Biota/Habitat (Wetlands/ Endangered Species
Maintaining and repairing facilities, processes, and equipment					**X**			X				**X**	**X**		**X**	**X**					X	
Making modifications to facilities, equipment, or processes as part of routine maintenance		**X**	**X**	X								**X**	**X**	X						X	X	
Metal cutting or welding		**X**	**X**									**X**	**X**	X	**X**	**X**	**X**			X		
Modifying drinking water systems	X				**X**					X		**X**	**X**		**X**	**X**	**X**			X		
Operating facilities, equipment, or processes			**X**								X	**X**	**X**		**X**	**X**						
Performing activities that may break up, dislodge, or block access to regulated asbestos-containing material	X	**X**		X								**X**	**X**	X	**X**	**X**	**X**					
Preparing buildings or facilities for transfer to surplus, or placed into standby (inactive) status				X	**X**			X		X		**X**			**X**	**X**	**X**	X	X	X		
Removing asbestos-containing material		**X**		X							X	**X**	**X**	X	**X**	**X**	**X**					X
Transfer R114 to ISO or rail																						
Employee restroom and lunchroom breaks											X	**X**	**X**	X			**X**			X		
Performing routine administrative/office activities											X	**X**	**X**				**X**			X		
Tours and Inspections			**X**										**X**	X			**X**					
Environmental Remediation		**X**	**X**	X	**X**			X		X	X	**X**	**X**		**X**	**X**	**X**			X	X	X
Operation of Groundwater Treatment Facilities		**X**	**X**		**X**			X		X	X	**X**	**X**		**X**	**X**	**X**		X	X		X
Closing and abandoning groundwater wells		**X**	**X**							X		**X**	**X**									

List A1. Environmental Aspects of General FPDP Paducah Gaseous Diffusion Plant Work Activities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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Collecting samples for analysis		**X**						X			X				**X**	**X**	**X**					
Conducting open burning		**X**	**X**										**X**									
Constructing or modifying groundwater wells		**X**	**X**		**X**							**X**	**X**				**X**				X	
Delivery of water																						
Leasing, renting, or transacting real property																		X				
Packaging and Temporarily Storing Samples Collected to Obtain Environmental Data											X				**X**	**X**						
Procuring goods and services										X	X	**X**	**X**							X		
Protecting groundwater wells					**X**					X		**X**										
Pumping groundwater wells																						
Pumping Ohio River water to C-611												**X**								X		
Purchasing chemical products/chemicals/hazardous agents										X	X									X		
Purchasing diesel fuel		**X**	**X**								X		**X**		**X**	**X**						
Purchasing refrigerants, appliances containing refrigerants, system components that operate using refrigerants, or refrigerant recovery or recycling equipment		**X**	**X**							X	X		**X**									
Purge/maintain groundwater wells	X				**X**							**X**	**X**		**X**	**X**	**X**		X	X		
Storing and maintaining samples	X				**X**							**X**	**X**		**X**	**X**						
Transfer gas cylinder contents to new cylinders		**X**	**X**										**X**		**X**	**X**		X	X			

List A1. Environmental Aspects of General FPDP Paducah Gaseous Diffusion Plant Work Activities

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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Transferring samples to a laboratory															**X**	**X**						
Treating water for drinking	X	**X**			**X**					X	X	**X**	**X**									
Using, storing and dispositioning chemical products/hazardous agents		**X**	**X**		**X**					X	X		**X**		**X**	**X**	**X**	X	X	X		
Warehouse/shipping and receiving		**X**	**X**							X	X		**X**					X				
Cleaning up spills and releases		**X**			**X**			X		X		**X**	**X**		**X**	**X**	**X**					
Cleaning up spills and releases of PCBs	X	**X**			**X**			X		X	X	**X**	**X**	X	**X**	**X**						
Excavation of soil and sediment		**X**	**X**		**X**		X	X				**X**	**X**	X	**X**	**X**	**X**		X	X	X	X
Excavation of soil and sediment in SWMU	X	**X**	**X**				X	X					**X**	X	**X**	**X**	**X**			X	X	X
General earth-moving activities		**X**	**X**		**X**	X	X						**X**	X						X	X	X
Impacts/alters stream channels	X				**X**	X	X						**X**								X	X
Mowing/weedeating/brush removal		**X**	**X**		**X**	X	X						**X**	X			**X**			X	X	X
Performing activities with the potential for fugitive dust or fugitive emissions		**X**	**X**									**X**										
Releases, leaks, spills or unusual operating conditions from tanks		**X**			**X**					X					**X**	**X**	**X**		X			
Working in RCRA solid waste management units. areas of contamination, or Radiological Contamination Areas					**X**	X	X	X		X												X
Cylinder transfer		**X**	**X**		**X**	X				X		**X**	**X**		**X**	**X**		X	X			
Transfer UF_6 cylinder contents to new cylinders		**X**	**X**			X							**X**		**X**	**X**		X	X			
Characterization of potentially asbestos containing material	X			X		X						**X**			**X**	**X**	**X**					

List A1. Environmental Aspects of General FPDP Paducah Gaseous Diffusion Plant Work Activities

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Constructing or modifying wastewater systems	X	**X**	**X**		**X**	X	X	X		X		**X**	**X**	X	**X**	**X**	**X**		X	X	X	
Discharging wastewaters	X				**X**					X			**X**	X		**X**				X		
Disposing of samples		**X**						X							**X**	**X**	**X**					
Dispositioning excess materials							X			X								X		X		
Distributing, excessing, or disposing of appliances containing refrigerants		**X**	**X**								X							X		X		
Generating waste	X							X							**X**	**X**	**X**		X	X		
Land disposal of Solid Wastes—Operating C-746-U Landfill		**X**	**X**	X	**X**			X			X	**X**	**X**			**X**	**X**				X	
Monitoring wastewaters discharges	X				**X**	X	X						**X**	X	**X**	**X**	**X**					
Operating solid waste management facilities and accumulation areas	X	**X**		X	**X**			X			X				**X**	**X**	**X**		X	X		
Operation of wastewater and groundwater treatment plants	X	**X**	**X**		**X**					X		**X**	**X**		**X**	**X**	**X**		X	X		X
Planning to generate waste																				X		
Storage/disposal of asbestos containing materials	X			X		X	X				X	**X**			**X**	**X**	**X**		X			
Transportation/shipment of wastes for treatment/disposal	X	**X**	**X**			X	X	X			X		**X**	X	**X**	**X**	**X**	X	X			
Waste storage, management, disposal	X	**X**	**X**	X	**X**			X			X	**X**	**X**		**X**	**X**	**X**		X	X		X

Significant Environmental Aspect

Significant Work Activity