Proposed Plan for the Process Buildings and Complex Facilities Decontamination and Decommissioning Evaluation Project

This document has been approved for public release:

Sam Eldrige (signature on file)	10-7-2014	*Sam Eldridge* (signature on file)	10-7-2014
Classification & Information Officer	Date	Export Controlled Information Officer	Date

U.S. Department of Energy, Piketon, Ohio

Portsmouth Gaseous Diffusion Plant, Piketon, Ohio — *October 2014*

Aerial photo of the Portsmouth Gaseous Diffusion Plant, showing the approximate 1,000-acre industrialized area within Perimeter Road

DOE has evaluated alternatives for demolishing the buildings at PORTS and is requesting comments from the public before January 10, 2015 on the alternatives described in this Proposed Plan.

INTRODUCTION

The U.S. Department of Energy (DOE) invites public comments on this ***Proposed Plan***[1] for the ***decontamination and decommissioning (D&D)*** of the majority of the buildings at the Portsmouth Gaseous Diffusion Plant (PORTS), located in Pike County, 20 miles north of Portsmouth, Ohio, and 4 miles south of the village of Piketon in Pike County.

DOE has completed its evaluation of a D&D alternative required by a legal agreement between DOE and the Ohio Environmental Protection Agency (Ohio EPA) called the ***Director's Final Findings and Orders (DFF&O)***.

Pursuant to Section I of the DFF&O, the DFF&O was issued to DOE pursuant to the authority vested in the Director of Ohio EPA under *Ohio Revised Code* Sections 3704.03, 3734.13, 3734.20, 6111.03, and 3745.01 and DOE entered into the DFF&O pursuant to Section 104 of

[1]The first use of technical and administrative terms in this Proposed Plan is shown in ***bold italics*** in the text. Explanations of these terms are provided in the boxes.

PUBLIC COMMENT PERIOD

NOVEMBER 12, 2014 TO JANUARY 10, 2015

HOW YOU CAN PARTICIPATE

Read this Proposed Plan and review related documents in the Administrative Record.

Comment on this Proposed Plan by mail, email, phone, or fax to:

Ms. Kristi Wiehle
Department of Energy
P.O. Box 370
Piketon, Ohio 45661
Email: PBcomments@fbports.com
Hotline: 888-603-7722
Fax: 740-897-2526

Attend the Public Meeting on November 17, 2014 at 6:00 p.m. at Waverly High School, 3 Tiger Dr., Waverly, Ohio.

See page 16 for more information about public involvement and contact information.

Inside this Plan:

the ***Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)***, 42 *United States Code* §9604, Executive Order 12580, and the Atomic Energy Act of 1954, as amended, 42 *United States Code* §2011, *et seq*. DOE is proposing this action in accordance with the DFF&O and pursuant to DOE's CERCLA authority under Executive Order 12580.

DOE completed the investigation and evaluation of a D&D alternative through a comprehensive ***Remedial Investigation (RI)*** and ***Feasibility Study (FS)*** process. The Proposed Plan is a document that DOE is required to issue to fulfill the requirements of the DFF&O, CERCLA 117(a), and the ***National Contingency Plan***, 300.430(f)(2). This Proposed Plan summarizes the evaluation and presents the preferred alternative that has been identified by DOE and concurred with by Ohio EPA.

The majority of the PORTS buildings and structures, including the three major process buildings (the X-326, X-330, and X-333 Process Buildings), have served their purpose and are no longer needed. Some of the buildings are contaminated with various radiological and chemical constituents. The Process Buildings RI/FS report titled, *Remedial Investigation and Feasibility Study Report for the Process Buildings and Complex Facilities Decontamination and Decommissioning Evaluation Project at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio,* concludes that without surveillance and maintenance, the buildings and structures at PORTS would naturally degrade and eventually would pose an unacceptable future risk to human health, safety, and the environment; therefore, an action is needed.

Proposed Plan – A document to summarize the preferred cleanup strategy, the rationale for the preference, and alternatives presented in the detailed analysis of the FS. The Proposed Plan solicits public review and comment on all alternatives under consideration.

Decontamination and Decommissioning (D&D) – The recognized steps to safely shut down, prepare, and dismantle a contaminated facility for subsequent disposal.

Director's Final Findings and Orders (DFF&O) – The agreement between Ohio EPA and DOE that was signed in 2010 and which covers the decisions for both D&D of the gaseous diffusion plant buildings and disposal of the D&D wastes.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) – The federal law that establishes, among other requirements, a program for parties (including federal agencies) for identifying, investigating, and, if determined necessary, remediating sites contaminated with a hazardous substance, pollutant, or contaminant. CERCLA required the development of the National Contingency Plan.

Remedial Investigation (RI) – A CERCLA environmental study that identifies the nature and extent of contamination. Also provides an assessment of the potential risks associated with the contaminants.

Feasibility Study (FS) – A CERCLA engineering study that provides a full evaluation of cleanup alternatives.

National Contingency Plan – The National Oil and Hazardous Substances Pollution Contingency Plan is the federal government's blueprint for responding to spills or releases of oil and hazardous substances.

Administrative Record File – Documents, including correspondence, public comments, and technical reports that were considered during development, evaluation, and selection of a remedial action.

Agency Involvement in this Proposed Plan

Two government agencies are involved in the D&D project decisions at PORTS. DOE is responsible for carrying out the selected D&D project alternative. DOE, with Ohio EPA's concurrence, presents the preferred alternative in this Proposed Plan.

OhioEPA

The Ohio Environmental Protection Agency is participating in the RI/FS and remedial action processes at PORTS. For additional information concerning the state's role in the cleanup process at PORTS or regarding the specifics of this Proposed Plan, please contact:

Ms. Maria Galanti
Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, OH 43138
Email: maria.galanti@epa.ohio.gov
Phone: 740-385-8501
Fax: 740-385-6490

This Proposed Plan identifies the preferred alternative for controlled demolition of the gaseous diffusion plant buildings at PORTS. The information considered in evaluating alternatives and developing the preferred alternative is contained in the ***Administrative Record File*** for the Process Buildings and Complex Facilities D&D Evaluation Project. DOE invites anyone to review the RI/FS report and other documents referenced in this Proposed Plan for more information. The Community Participation section at the end of this document provides instructions for accessing and reviewing these documents. Questions about the projects can be directed to DOE or the Ohio EPA contacts listed.

Overview of the PORTS Cleanup Decisions

The D&D decision described in this Proposed Plan is one of five major decisions shown in Table 1 that will determine the future condition of PORTS. These five decisions are being made following two different legal

agreements between DOE and Ohio EPA. The DFF&O is the legal agreement governing facility D&D and waste disposal. Decisions made under the DFF&O follow the decision-making process created under CERCLA. The ***1989 Ohio Consent Decree*** along with the ***1997 Administrative Consent Order*** are the legal agreements governing soil and groundwater cleanup, among other things.

The 1997 Administrative Consent Order gave day-to-day oversight of contaminated soil and groundwater cleanup actions to Ohio EPA. Decisions made under the Ohio Consent Decree follow the decision-making process created by the ***Resource Conservation and Recovery Act of 1976 (RCRA), as amended***.

Decision	Final Decision Document	Anticipated Decision Date
1. D&D of 46 Support Buildings and Structures - DFF&O	Action Memorandum	Completed March 2012
2. Site-wide Waste Disposition Decision - DFF&O	Record of Decision	2015
3. Process Buildings & Complex Facilities D&D Decision - DFF&O	Record of Decision	2015
4. Ohio Consent Decree - Contaminated Soil Remedy Decision	Soil Remediation Decision Document	2016-2017
5. Ohio Consent Decree - Groundwater Remedy Decision	Groundwater Remediation Decision Document	To be determined

Note: The decision described in this Proposed Plan is highlighted in tan.

Table 1. Five Major Cleanup Decisions at PORTS

Summary of the Preferred Alternative

Two remedial alternatives were developed for consideration. This Proposed Plan describes the required no-action alternative (Alternative 1) and a D&D alternative (Alternative 2).

The preferred alternative is Alternative 2, controlled demolition of the process buildings and complex facilities listed in Appendix A. Wastes would be disposed as specified in the Site-wide Waste Disposition Evaluation Project ***Record of Decision (ROD)***.

Alternative 2 is recommended as it is reliable over the long term because the buildings are demolished in a controlled manner while meeting regulatory requirements. Removing the buildings is best for protecting public health and welfare from actual or threatened releases of contaminants, considering the required evaluation criteria.

Community Participation

Community acceptance is one of the evaluation criteria that DOE and Ohio EPA are committed to evaluating during the process of selecting a D&D remedy for PORTS. This interaction with the community is important to the CERCLA decision-making process and to making sound environmental decisions.

The public is encouraged to read this Proposed Plan and comment on both alternatives presented, not just the preferred alternative, to provide input to

1989 Ohio Consent Decree (Ohio Consent Decree) – A legal agreement between Ohio EPA and DOE requiring contaminated soil, sediment, surface water, and groundwater cleanup at PORTS in accordance with RCRA. Signed by DOE and Ohio EPA in August 1989, the Ohio Consent Decree requires DOE to complete site investigations and implement corrective actions as needed.

1997 Administrative Consent Order – A legal agreement between the United States Environmental Protection Agency (U.S. EPA), Ohio EPA, and DOE that requires investigation and remediation of solid and hazardous waste units in accordance with RCRA and CERCLA.

Resource Conservation and Recovery Act of 1976 (RCRA), as amended – A federal law that provides a comprehensive framework for hazardous waste management, waste unit closure, and environmental corrective action at operating industrial facilities. The cleanup of soil and groundwater continues at PORTS under RCRA via the 1989 Ohio Consent Decree and the 1989 U.S. EPA Consent Order (amended in 1994 and 1997).

Record of Decision (ROD) – A public record documenting the final remedy selection. The ROD is a legally binding document.

the selection of the remedy. Public input can be through written comments by postal mail, fax, or email during the 60-day public comment period, or by verbal comment at a formal public meeting on this project.

The actual selection of the alternative to be implemented will only be made after comments received during the public comment period have been reviewed and analyzed. DOE and Ohio EPA will consider all public comments on this Proposed Plan before DOE prepares the ROD. Depending on comments received, the selected final remedy could be different from the preferred alternative. All written and verbal comments received during the public comment period will be summarized and responded to in the ***Responsiveness Summary*** section of the ROD.

Responsiveness Summary – A part of the ROD that summarizes and provides responses to public comments received on the Proposed Plan during the public comment period.

Environmental Risks – The threat, either from carcinogens (as measured by ***excess lifetime cancer risk [ELCR]*** to humans) or from other contaminants that are toxic to humans (as measured by ***hazard index [HI]***) or to ecological receptors (e.g., plants or animals) that affect their ability to live, thrive, and/or reproduce.

Excess Lifetime Cancer Risk (ELCR) – ELCR considers the cumulative probability of humans developing cancer as a result of a lifetime of exposure to a particular level of a contaminant above the normal cancer rates from the natural environment. Cumulative means adding the carcinogenic risk from all contaminants and ways a person can be exposed.

Hazard Index (HI) – The ratio of the level of exposure to an acceptable level of exposure for contaminants that may cause adverse health effects to humans. A cumulative HI greater than 1 indicates that there may be a concern for adverse health effects. The HI is used to assess contaminants that may cause health effects other than cancer. For potentially cancer-causing (carcinogenic) contaminants, the ELCR is used. Some contaminants (e.g., uranium, arsenic) can have both carcinogenic and noncarcinogenic effects.

Remedial Action Objectives – A general description of what the cleanup will accomplish and how contaminant risks are addressed.

Proposed Plan Organization

This Proposed Plan provides information to assist public involvement in the remedy selection process, including: (1) background information on the DOE reservation and the gaseous diffusion plant; (2) description of the characteristics of the area including the contaminants to be managed; (3) the scope of the D&D decision; (4) a summary of ***environmental risks*** that might exist at PORTS in the future if a D&D decision is not made; (5) identification of ***remedial action objectives*** for the D&D decision; (6) a summary of the alternative remedies considered; (7) an evaluation of the alternatives; and (8) the rationale for preferring Alternative 2. More information about the buildings being considered for D&D is provided in Appendix B.

At the end of the Proposed Plan, points of contact and instructions for public comments are provided. A prepaid comment form is also included as the back cover of the plan.

PORTS BACKGROUND

PORTS functioned like a self-contained city for almost 50 years and served an important role in United States history. In 2005, the gaseous diffusion process was permanently shut down. Buildings, soil, and groundwater contaminated by uranium enrichment operations must be cleaned up, and the waste resulting from this cleanup must be safely managed.

PORTS, which began operations in 1954, is located on a federal reservation in south-central Ohio. It occupies 3,777 acres in a rural area of Pike County (shown with a red border on Figure 1). From 1954 until 2001, the PORTS gaseous diffusion process enriched uranium for DOE and its predecessor organization (Atomic Energy Commission), the Naval Nuclear Propulsion Program, and commercial customers.

The gaseous diffusion plant and federal reservation are owned by DOE. The plant consists of many buildings, structures, and infrastructure with the three main process buildings (X-333, X-330, and X-326) housing the gaseous diffusion process equipment. The various support facilities include those needed for feed and transfer operations, maintenance, steam generation, chemical cleaning, decontamination, process heat removal, water supply, water storage, water distribution, electrical power distribution, and administration.

Most of the buildings are within an approximate 1,000-acre industrialized area that lies within the Perimeter Road. (Perimeter Road is shown on Figure 1.) The remaining property outside of Perimeter Road is used for a variety of purposes, including a water treatment plant, sediment ponds, closed landfills, cylinder storage yards, open fields, and forested buffer areas.

In the early 1980s, DOE built a separate Gas Centrifuge Enrichment Plant at the Portsmouth plant. DOE leased that plant to the United States Enrichment Corporation for use by the advanced centrifuge technology program (American Centrifuge Plant [ACP]). This facility is currently not part of the gaseous diffusion plant D&D program and functions independently from this D&D project. The ACP operations area is shown in purple in Figure 1.

DOE's Depleted Uranium Hexafluoride (DUF_6) Conversion Project at PORTS converts DUF_6 into a more stable chemical form suitable for beneficial reuse or disposal. The DUF_6 was generated during the operation of the gaseous diffusion process and is now stored in thousands of cylinders at PORTS. This facility is currently not part of the gaseous diffusion plant D&D program and will continue to function independently from the D&D project. The DUF_6 operations area is shown in orange on Figure 1.

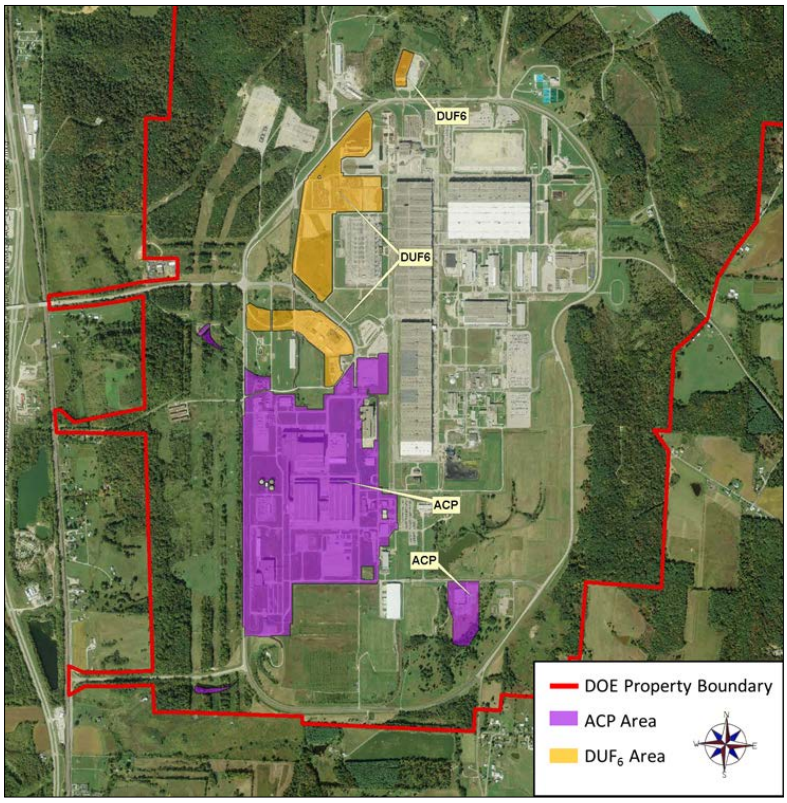

Figure 1. Operations at the DOE Portsmouth Site

The volume of waste expected to be generated from D&D of the DOE gaseous diffusion plant's process buildings and complex facilities within the scope of the decision is estimated to be approximately 1.3 million cubic yards. Most of the waste (i.e., approximately 83 percent or 1.0 million cubic yards) expected to be generated during this project would originate from the three process buildings: X-326, X-330, and X-333. This includes the structure of each facility, most of the process and industrial equipment, slabs, and other underground features. It is also estimated that 53,000 cubic yards of residual soil would be removed or impacted while excavating, transporting, and disposing of building foundations or utilities.

The primary anticipated waste from D&D of the process buildings and support facilities in this decision includes:

- Concrete waste – 30 percent
- Process gas equipment waste – 20 percent
- Asbestos – less than 1 percent
- Other waste – 46 percent
- Residual Soil – 4 percent.

(Note that the above percentages total to greater than 100 percent due to rounding of the numbers.)

PORTS CHARACTERISTICS

PORTS straddles a broad, gently sloping, sediment-filled, ancient river valley (the pre-historic Portsmouth River channel) situated approximately 130 feet above the Scioto River floodplain, which lies to the west. The old river valley runs north to south through the industrialized area of PORTS and is bounded on the east and west by ridges and low-lying hills.

PORTS is equipped with significant infrastructure systems and their associated rights-of-way, such as a water distribution system, an electrical supply and distribution system including transmission lines bringing power to the plant, a high pressure fire water system, a wastewater collection system, and natural gas service pipeline. Some plant utilities such as steam, power, and water must be maintained to support D&D and other plant tenants.

The gaseous diffusion buildings, structures, and systems contain hazardous materials, wood, steel, concrete, and process gas equipment. Some of the buildings are contaminated either as a result of activities that occurred in the buildings (e.g., radioactive contamination) or from the materials historically used in constructing the buildings (e.g., asbestos, lead). The main environmental risks at PORTS include those from degreasing solvents, such as trichloroethene; heavy metals, specifically nickel, mercury, arsenic, and chromium; polychlorinated biphenyls (PCBs), including from electrical transformer oils; radioactive elements, particularly uranium and technetium-99; and asbestos in building materials. Some operations and maintenance activities at PORTS involved hazardous conditions and the potential for exposure of personnel and the environment to radioactive and chemical hazards. Radioactive or hazardous materials were spilled or released to the environment from production-related facilities and supporting work activities. Contamination has generally been restricted to the buildings, underlying soil, and groundwater plumes and is generally confined to the DOE property.

SCOPE AND ROLE OF THE RESPONSE ACTION

The ***response action*** described in this Proposed Plan provides a remedy that determines the disposition of the buildings at PORTS. The remedy accomplishes the following:

- Protection of the human and environmental ***receptors*** in the short and long term,
- Cost-effectiveness, implementability, and accommodation of new technologies that emerge during the conduct of remedial activities, as appropriate, and
- Identification of ***mitigation measures*** for impacts to sensitive environmental and cultural resources consistent with regulatory requirements.

Response Action – An action taken to cleanup a release of contamination or to prevent a future release. Response action is a broad term that can apply to either a CERCLA remedial or removal action.

Receptors – Current or future human and ecological individuals or ecological populations that may be exposed to contamination released to the environment.

Mitigation Measures – Regulatory-based measures to avoid, minimize, rectify, or reduce impacts that a response action may have on sensitive resources.

SUMMARY OF SITE ENVIRONMENTAL RISKS

An evaluation of current and/or future environmental risk if no action is taken shows that there would be unacceptable environmental risks to humans and ecological species from contaminant releases from abandoned buildings.

DOE conducted a streamlined risk assessment and determined that action is necessary to protect human health, welfare, and the environment. A risk assessment is a scientific process used to estimate the environmental risk that could exist if no response action is taken. Environmental risk for this effort was characterized considering exposure of humans and ecological receptors (e.g., plants and animals) to current and potential future contamination released from buildings if no response action is taken.

Human Health Risk. The risk assessment evaluated the environmental risk from the required no-action alternative. Under the no-action alternative, the equipment, buildings, and structures would naturally decay over time, the waste would stay where it falls, and contaminants from the structures and equipment eventually would be released into the environment.

Contaminants released under the no-action alternative would pose an unacceptable environmental risk to humans such as future trespassers, future industrial workers, or future residents at PORTS by:

- Breathing in dust/soil/sediment,
- Skin contact with dust/soil/sediment,
- Accidentally swallowing small quantities of dust/soil/sediment,
- Drinking contaminated groundwater (residents or industrial workers), or
- Radiation exposure from contamination in dust/soil/sediment.

Ecological Risk. An evaluation of environmental risks to plants and animals shows unacceptable impacts may occur if no action is taken. Plant and animal exposure to contamination may increase over time as contaminants are released from buildings, and as the ecological habitat within the boundaries of the process area naturally restores itself.

It is DOE's judgment that the preferred alternative identified in this Proposed Plan is necessary to protect human health or welfare or the environment from actual or threatened releases of contamination into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives provide general descriptions of what the remedy will accomplish. The objectives for the alternative under consideration are as follows:

- **Objective 1:** Protect human health for workers and the public to a cumulative excess lifetime cancer risk level of 1×10^{-5} (1 in 100,000), a cumulative hazard index of 1, as well as from physical hazards.
- **Objective 2:** Provide protection of plants and animals.
- **Objective 3:** Protect surface water and groundwater from further degradation resulting from migration of contaminants.

SUMMARY OF THE REMEDIAL ALTERNATIVES

DOE has developed two alternatives: no action (Alternative 1) and demolish the buildings (Alternative 2). A building reuse alternative was not developed due to the age and condition of the buildings. If a reuse potential for a building or structure is identified, it could be reused by modifying this D&D decision in the future.

A range of remedial technologies and process options was initially considered for the demolition of the PORTS buildings. These technologies and process options were evaluated based on their effectiveness, implementability, and cost. This screening process resulted in the identification of one demolition alternative that would be implementable and effective.

In order to adequately evaluate this demolition alternative, the DFF&O requires development of a no-action alternative to serve as a baseline by which to compare the action alternative. Therefore, two alternatives, no action (Alternative 1) and a D&D alternative (Alternative 2) were developed to answer the question: "What is the best way to handle the buildings with no future use at PORTS?"

A renovation and reuse alternative was not evaluated because of the nature of the buildings and structures, their current state of deterioration, and the lack of any identified future need or use beyond their current use. Many of the buildings were built for a specialized purpose (e.g., monitoring stations, storage tanks, pump stations), and remodeling for other uses is not practical. Many of the PORTS buildings were built in the 1950s and 1960s, making them 50 to 60 years old with few (if any) upgrades over the years. A majority of the buildings under this decision were used for managing nuclear materials and are known to contain radiological contamination and/or other chemical contamination. Some, such as the process buildings, are so large that any decontamination and remodeling efforts would be very expensive. If a reasonable proposal for reuse of a building identified for D&D under this remedial decision is received, the remedial decision could be modified to support such reuse.

Alternative 1 – No Action

Under this alternative, no action would be taken to demolish the buildings. This alternative was kept for comparison in accordance with regulatory requirements. The no-action alternative represents a situation where no legal restrictions, access controls, or active remedial measures would be applied to the buildings and structures at PORTS. The buildings would not be demolished but instead would be left in their current state. No monitoring or

maintenance of the buildings and structures would occur, and the buildings would eventually deteriorate. Items would not be recycled and/or reused, and no waste would be disposed. Also, no administrative or physical controls would be put in place to prevent access to radioactive or hazardous waste constituents.

In order to select the no-action alternative as the preferred alternative, the alternative must not pose unacceptable environmental risk to human health and the environment. As presented previously in the Summary of Site Environmental Risks section, the threat to human health and the environment caused by taking no action is unacceptable.

Alternative 2 – Remove Structures, Treat as Necessary, and Package Waste for Final Disposition

This alternative includes the controlled removal and preparation for final disposition of stored waste, materials, hazards, process gas equipment, and process piping. It also includes demolition of the buildings or structures; and demolition of underground man-made features, if required; treatment as needed to meet transportation or disposal requirements; and packaging of the generated waste for final disposal. Characterization would be conducted in accordance with ***applicable or relevant and appropriate requirements (ARARs)*** and the receiving facility's waste acceptance criteria. Recycling and/or reuse of building or structure materials, as appropriate, is also part of this alternative. Transportation and disposal of the waste are part of the Site-wide Waste Disposition Evaluation Project decision.

Applicable or Relevant and Appropriate Requirements (ARARs) – The substantive standards, criteria, or limitations established under federal or state laws that on-Site activities must meet during a CERCLA cleanup. ARARs are defined on a site-by-site basis to address and control the specific hazards of that site and based on the actions to be taken. Under certain circumstances, specific ARARs can be waived.

Key components of this D&D alternative include the following:

- Before and during demolition, physical barriers, surveillance, maintenance, and monitoring activities would continue. Dust and water would be controlled during the activities.
- Additional building characterization would be performed, as needed, to support remedial design, develop worker safety protocols, and help plan for waste disposal.
- The area would be prepared for demolition activities (including bringing trailers, equipment, and support facilities to the demolition area).
- Utilities and specialty systems would be shut down and disconnected when no longer needed. New utilities may be installed to make sure current tenants and D&D workers have access to water and power.
- Waste requiring additional handling to meet transportation or disposal requirements would be removed, treated, and packaged, as needed, for disposal.
- The process gas equipment would be removed from the three process buildings (X-333, X-330, and X-326). If required to meet transportation or disposal facility requirements, the process gas equipment and piping would be disassembled or size reduced, and (as needed) uranium material deposits would be removed and treated at PORTS.
- As appropriate, barrier material would be removed from the converters.
- Above-grade structures would be demolished in a controlled manner using heavy equipment.
- Piping would be disconnected and slabs and underground structures would be removed using heavy equipment. Such structures found to be free of contamination might be left behind.
- Waste would be packaged or loaded into trucks or railcars, depending on the disposal location selected.

- Equipment or recyclable materials would be considered for recycling and/or reuse and would be recycled and/or reused as deemed appropriate by DOE. The material may be treated or decontaminated prior to recycle and/or reuse, if needed.

- Demolition areas would be restored to control erosion. If needed, clean backfill could be used to achieve the necessary drainage.

- Wastes would be disposed as specified in the Site-wide Waste Disposition Evaluation Project ROD. Under the current schedule, the Waste Disposition ROD is planned to be issued and finalized before the Process Buildings ROD. If that waste disposal decision is to build a disposal cell at PORTS, waste generated from the D&D of process buildings and other buildings covered by the Process Buildings ROD that meets the waste acceptance criteria would be disposed in the new disposal cell. Otherwise, all the waste generated from the D&D of process buildings and other buildings covered by the Process Buildings ROD will be sent off the Site for disposal in accordance with approved Milestones and the DFF&O. If the ROD for waste disposition is not issued and finalized before the Process Buildings ROD, the Process Buildings ROD will require any waste generated from the D&D of process buildings and other buildings covered by the Process Buildings ROD to be disposed off of the Site, in accordance with approved Milestones and the DFF&O, pending issuance and finalization of the Waste Disposition ROD.

Legal Requirements of Paragraph 12 of the DFF&O. The approach for final disposition of waste generated under this Process Buildings and Complex Facilities D&D Evaluation Project is being evaluated, proposed, and selected through the Site-wide Waste Disposition Evaluation Project RI/FS, Proposed Plan, and ROD. The supporting data, information, and detailed analyses of waste disposition alternatives (i.e., on-Site versus off-Site disposal) are presented in the Site-wide Waste Disposition Evaluation Project RI/FS and Proposed Plan and are incorporated herein by reference.

The Site-wide Waste Disposition Evaluation Project ROD has not been finalized before this Process Buildings and Complex Facilities D&D Evaluation Project Proposed Plan is being issued for public review. Therefore, the Process Buildings Proposed Plan includes the requirement that all waste generated be disposed of off Site according to approved Milestones and pursuant to the requirements of paragraph 12.a.i through v. of the DFF&O until the Site-wide Waste Disposition Evaluation Project ROD is finalized. Upon finalization of the Site-wide Waste Disposition Evaluation Project ROD, the waste generated under the Process Buildings Project will be disposed of in accordance with the decision in that Waste Disposition ROD. If the decision in the Site-wide Waste Disposition Evaluation Project ROD selects an On-Site Disposal Cell (OSDC), this means that the waste generated pursuant to the Process Buildings and Complex Facilities D&D Evaluation Project ROD will be disposed of in the OSDC upon it becoming operational so long as the waste meets the Ohio EPA-approved waste acceptance criteria and all Milestones for removal and disposal of staged wastes are also met.

Achieving Remedial Action Objectives. All three remedial action objectives would be met by carefully demolishing the buildings and preparing the waste for final disposal. Long-term protection of human health, plants, and animals (Objectives 1 and 2) is achieved through the removal of the buildings. Careful demolition of the buildings would prevent future migration of contamination from the structures, thereby protecting underlying groundwater and nearby surface water (Objective 3). These remedial action objectives would be considered achieved when the buildings and structures listed in Appendix A have been demolished, and all man-made features have been disposed as specified in the DFF&O and Site-wide Waste Disposition Evaluation Project ROD. Note: if a reasonable proposal for reuse of a building identified for D&D under this remedial decision is received, Appendix A could be modified to remove said facility from Appendix A to support such reuse.

Key Applicable or Relevant and Appropriate Requirements for Alternative 2. The D&D projects conducted at PORTS must comply with standards, called ARARs. Key ARARs that are specific to Alternative 2 include those that specify concentrations or impose activity restrictions around sensitive resources present. ARARs associated with wetlands, aquatic resources, and cultural resources would be triggered for this alternative. Several wetland areas might be affected if D&D is chosen as the preferred alternative. A mitigation strategy would be developed to lessen impacts to wetlands during D&D activities. Potential impacts to nearby streams from surface or storm water runoff would be controlled through engineering controls and best management practices during buildings/structures and infrastructure removal to minimize or prevent the release of contaminants to storm water.

The variety of wastes generated under this D&D alternative would trigger characterization; management; staging; and treatment, storage, and disposal requirements for RCRA solid and hazardous waste, radiological waste, asbestos-containing material, and Toxic Substances Control Act of 1976 waste (wastes with PCBs). All wastes generated during remediation activities would be appropriately characterized and managed in accordance with ARARs.

The ***National Historic Preservation Act of 1966 (NHPA)*** requires that a proposed federal action be assessed for impacts to historic properties. A number of buildings proposed for demolition in Alternative 2 are historic properties.

National Historic Preservation Act of 1966 (NHPA) – NHPA was enacted by Congress in 1966 and requires that federal decision makers (like DOE) consider impacts to historic properties during project planning.

In 1996 and 1997, a large-scale architectural survey of PORTS was performed. During this survey, 196 PORTS buildings and structures at 160 different locations were evaluated for potential historic significance. Archaeological surveys were conducted of PORTS beginning in 1996 and 1997 with additional surveys conducted in 2009 through 2012. The overall studies identified archaeological sites within the DOE property boundary. Sites identified include farmsteads, cemeteries, PORTS-related structural remnants, and historic-era and prehistoric artifact scatters or dumps. No known archeological resources are located near the process buildings or any of the facilities covered by this decision. The land there was disturbed extensively during construction of the buildings, so there is no potential impact to archaeological resources from these actions.

EVALUATION OF THE ALTERNATIVES

An evaluation of the alternatives shows that demolishing the buildings, when combined with one of the waste disposal alternatives in the Waste Disposition Proposed Plan, is a safe and effective means to control the contamination present and to prevent or minimize future threats to the public or the environment.

The two alternatives were evaluated using the criteria defined within the DFF&O and the National Contingency Plan. The RI/FS report, found in the Process Buildings Administrative Record File, contains the complete evaluation conducted by DOE.

Out of the nine cleanup evaluation criteria, the first two evaluation criteria, (1) ***overall protection of human health and the environment*** and (2) ***compliance with ARARs*** or satisfying requirements for a waiver, are considered ***threshold criteria*** that must be attained by the selected remedial action. The next five criteria are: (3) ***long-term effectiveness and permanence***; (4) ***reduction of toxicity, mobility, or volume through treatment***; (5) ***short-term effectiveness***; (6) ***implementability***; and (7) ***cost***.

All five of these ***balancing criteria*** are weighed to achieve the best overall solution. The final two criteria to be considered, called ***modifying criteria***, are (8) ***state acceptance*** and (9) ***community acceptance***. The state has concurred with this Proposed Plan and agrees with the preferred remedy. Community acceptance will be evaluated on the basis of public comments received on the Proposed Plan. Those comments will be addressed in the Responsiveness Summary contained in the ROD.

Threshold Criteria – Criteria that must be satisfied.

Overall Protection of Human Health and the Environment – This criterion determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with ARARs – Compliance with ARARs evaluates whether the alternative meets substantive requirements of federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether the requirements for a waiver are met.

Overall Protection of Human Health and the Environment

Alternative 1, no action, is not considered to be protective. Under the no-action alternative, the buildings and infrastructure would continue to deteriorate and waste from the buildings would not be recycled or disposed. This waste and the associated contaminants could be a future environmental risk to human health and the environment. This environmental risk could be from exposure to radionuclides and other contaminants in the building waste or equipment or exposure to soil and groundwater contamination after a release. Alternative 2 (remove structures, treat as necessary, and package waste) is protective when combined with either of the waste disposal actions that may be selected in the Site-wide Waste Disposition Evaluation Project. The potential for contaminant releases during demolition, treatment, and packaging would be controlled by compliance with ARARs and PORTS-specific work plans. The waste generated from the demolition activities would be placed in a disposal facility engineered for containment located either on the PORTS property or off the PORTS property or recycled and/or reused. Long-term

protection would be provided by removing contaminated buildings, infrastructure, and associated equipment; treating and packaging waste; and appropriately disposing of the waste under the Site-wide Waste Disposition Evaluation Project decision.

Compliance with Applicable or Relevant and Appropriate Requirements

No ARARs are directly associated with the no-action alternative. Alternative 2, which removes buildings and associated infrastructure and prepares waste for final disposal, would meet all ARARs. No waivers are anticipated to be needed. Several wetland areas have the potential to be impacted because they are within the area affected by the action. Mitigation measures would be taken to offset wetlands impacted during D&D (see Short-term Effectiveness).

There are numerous mitigation measures related to compliance with the NHPA that are either being implemented by DOE or are proposed for future implementation to address impacts to historic properties (including buildings and archaeological sites). Actions already in process by DOE, as well as some that are being considered for future implementation are presented in this Proposed Plan, and outlined below.

DOE is currently developing a Historic Context Report that will describe the entire PORTS area and its facilities and will also include detailed information on select facilities. This report will document the history of the operations and facilities at PORTS from 1952 through the end of the Cold War for preservation purposes. The historic context effort has two goals: to place the role of PORTS in the context of the larger United States nuclear weapons complex and to place individual architectural resources at PORTS in context as to how they were related to the plant's mission.

DOE is also developing the PORTS Virtual Museum, which provides multimedia documentation of PORTS, its history, operations, oral histories, and its cleanup program, and will include links to published NHPA reports.

The following measures are planned or are under consideration to further address impacts to historic buildings:

- Collection and evaluation of items recovered from selected PORTS facilities for future preservation.
- Public outreach to local school districts and other organizations using traveling displays and other historic information.
- Development of a Geographic Information System "atlas" to support understanding of operations and infrastructure at PORTS.
- DOE is also in the process of developing a Comprehensive Summary Report that summarizes all NHPA-related surveys conducted at PORTS (pre-historic, historic-era, and DOE-era). This report will serve as a mitigation measure for both the Waste Disposition decision and the Process Buildings decision.
- Collection of panoramic photographs at regular intervals during and after demolition to be archived with historical panoramic photos.

DOE is also evaluating the feasibility of additional mitigation measures to be implemented in the future. Additional mitigation measures might include the creation of an Interpretive Center that would provide a centralized location

Balancing Criteria – Criteria used to compare and contrast the alternatives.

Long-term Effectiveness and Permanence – This criterion considers the ability of an alternative to maintain protection of human health and the environment.

Reduction of Toxicity, Mobility, or Volume through Treatment – This criterion evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness – This criterion considers the length of time needed to implement an alternative and the risks the alternative poses to workers, members of the public, and the environment during implementation.

Implementability – Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost – Costs include estimated capital and annual operations and maintenance costs, as well as present worth cost. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

Modifying Criteria – Criteria considered in evaluation.

State Acceptance – Considers whether the State agrees with the lead agency's analysis and recommendations, as described in the RI/FS and Proposed Plan.

Community Acceptance – Considers whether the local community agrees with the lead agency's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

containing information on the history of the plant and the region, including aspects of the prehistory, and provide a location where items salvaged from the gaseous diffusion plant and historic artifacts could be displayed. DOE is also considering placing an historic marker from either the State of Ohio or another source, on a well-travelled local road that provides historical information. DOE is interested in the public's opinion on these ongoing and potential mitigation measures.

A mitigation measure is also being considered to address NHPA requirements for the Waste Disposition decision. There is one site identified within the footprint of the potential On-Site Disposal Cell (OSDC) support area that has been identified as eligible for the National Register of Historic Places. DOE is considering the implementation of a data recovery effort (Phase III) on the site eligible for the National Register of Historic Places. For more information, please refer to the Waste Disposition Proposed Plan.

Long-Term Effectiveness and Permanence

The no-action alternative cannot achieve the remedial action objectives. An unacceptable long-term environmental risk would remain from contamination in the buildings and infrastructure and from building materials such as transite siding, which contains asbestos. Alternative 2 does offer long-term effectiveness and permanence. Contaminated buildings, infrastructure, and equipment would be demolished in a controlled manner and be appropriately disposed or recycled and/or reused. The areas would be restored after demolition to promote surface water runoff. No environmental risk would remain. There would be no need for long-term maintenance or monitoring.

Reduction of Toxicity, Mobility, or Volume through Treatment

The no-action alternative does not reduce toxicity, mobility, or volume through treatment because no such activities are performed. Alternative 2 has some reduction of toxicity, mobility, or volume through treatment of waste streams, such as grouting removed deposits from the process equipment to meet either disposal facility or transportation requirements.

Short-Term Effectiveness

The no-action alternative would present no specific short-term threats or benefits to the community or workers. For Alternative 2, consideration is given to potential environmental impacts or physical hazards to the public from rainwater runoff, windborne movement of contaminants, or an increase in local traffic during demolition operations. These threats to the public would be controlled through engineering methods and modified work practices. Monitoring would be used to confirm these controls are successful. Radiological exposure or physical hazards to workers would be reduced by characterizing the facilities prior to demolition; following approved work procedures, health and safety plans, and regulatory requirements that would determine and control how the work is done; use of personal protective equipment; and workplace monitoring.

Short-term environmental impacts would be the least for the no-action alternative and minimal for the action alternative. Environmental impacts during the implementation of Alternative 2 could result from a spill during equipment or waste handling. The potential of a spill is low, and spill control plans and procedures would minimize or eliminate negative impacts. Rainwater would also be controlled to prevent the spread of contamination.

Several wetland areas have the potential to be impacted. Controls would be used to minimize impacts to nearby wetlands and surface streams, such as the use of runoff controls to minimize sedimentation during rainfall events. To not harm the overall environment of the area, potentially impacted wetlands would be mitigated or replaced through restoring, creating or enhancing wetlands elsewhere at PORTS. Potential impacts to wetlands are presented in the Process Buildings RI/FS. Ohio EPA and DOE have agreed that mitigation efforts would be focused on the PORTS property. The amount of mitigation will be determined based on Ohio EPA rules and regulations and specified in the ROD. Wetland mitigation projects would be designed in cooperation with Ohio EPA after the ROD is issued and would be implemented as early as possible during the D&D project.

The duration of Alternative 2 would be based on potential funding and, for the evaluation in the RI/FS, the alternative is assumed to take 10 to 12 years to complete, based on the funding assumptions used by DOE in early 2012. However, recent funding information suggests the time to D&D the gaseous diffusion plant could be quite a bit

longer, thereby increasing the costs of the action. D&D and associated waste disposal would be performed in accordance with approved schedules and Milestones.

Implementability

Alternative 1, no action, is not administratively feasible because stopping all surveillance and maintenance activities on the buildings would not comply with DOE Orders and other requirements.

Alternative 2 is technically and administratively feasible. The technologies are currently available for demolishing the structures, and they have been proven at several other radiologically-contaminated DOE sites. However, numerous challenges are still associated with demolishing so many large buildings. Characterization, deposit removal, size or void reduction requirements, packaging, recycle and/or reuse, site restoration, and deactivation of utilities all have significant planning needs. Removal of the process gas equipment, disassembling the equipment, and removing uranium deposits or recyclable materials such as nickel would be labor intensive. However, these activities have been performed at PORTS during gaseous diffusion operations and have been performed in Oak Ridge during the demolition of that gaseous diffusion plant. There are no administrative issues that would make Alternative 2 difficult to implement.

Cost

Cost estimates in the RI/FS provide a basis for comparison among alternatives. The estimates are accurate from +50 percent (real cost could be 50 percent higher than the estimate) to -30 percent (real cost could be 30 percent lower than the estimate) because of inherent uncertainties in the available information used to develop them. To provide a fair basis of comparison for the alternatives, cost estimates are presented as ***net present value (NPV)*** costs. Alternative 1 has no costs because maintenance of the buildings would cease, and there would be no money spent on removing buildings. While actual transportation and disposal costs are not part of the D&D estimate, the cost of Alternative 2 is affected by the waste disposal decision. Demolition, treatment, and waste packaging in Alternative 2 have an estimated NPV cost of $1.6 billion if waste disposal uses waste disposal facilities both on the PORTS property and off of PORTS property. If all waste must be prepared to leave PORTS, the costs increase to a NPV of $2.0 billion as discussed below.

Net Present Value (NPV) – NPV costs reflect the quantity of money that would need to be placed in a bank today at a set interest rate, termed the discount rate, to pay for the remedial action over the life of the project. The NPV approach for cleanup decision-making and comparison of alternatives is recommended by U.S. EPA in its cost estimating guidance for Superfund sites (EPA 540-R-00-002, *A Guide to Developing and Documenting Cost Estimates during the Feasibility Study*, July 2000).

Table 2 illustrates the similarities and differences the waste disposal assumption has on Alternative 2. The times required to complete the different waste disposal alternatives have the greatest impact because the D&D schedule must match the shipping and disposal schedule. Slowing D&D to match the 18-year off-Site waste disposal schedule increases the cost of D&D. The schedule to dispose of all waste off the Site is longer because it costs more to ship and dispose of the waste and only a set amount of money is assumed to be available each year to fund the disposal. The waste disposal assumption also drives some differences in the costs of handling the process gas equipment. More disassembly is assumed to be needed to prepare the equipment for a cross-country haul.

D&D Alternative 2 – On- and Off-Site Disposal Assumption	D&D Alternative 2 – Off-Site Disposal Assumption
About 118,000 cubic yards of waste disposed off the Site. Assumed to include X-326 converters, compressors, and coolers. Roughly 1.2 million cubic yards disposed at PORTS or recycled.	All waste (1.3 million cubic yards) disposed off the Site or recycled
Assumed 12 years* to implement	Assumed 18 years* to implement
Address subsidence reduction of X-330/X-333 process gas compressors with filler	All process gas equipment is segmented, no filler needed
Demolition of structures with heavy equipment	Demolition of structures with heavy equipment (same)
Bulk of waste is loaded into dump trucks	Bulk of waste is loaded into rail cars
Cost (net present value) = $1.6 billion	Cost (net present value) = $2.0 billion

*Durations based on the funding assumptions available to DOE in fiscal year 2012. Current funding projections may extend the durations; however, even at current funding levels, the extended durations would not impact the outcome of the analysis of alternatives.

Table 2. Comparison of D&D Alternative 2 Considering Alternate Waste Disposal Assumptions

Other Factors Considered

In addition to the nine DFF&O evaluation criteria, DOE analyzed the alternative to: (1) consider what types of resources would be permanently used in implementing the remedy, and (2) assure incorporation of ***National Environmental Policy Act of 1969 (NEPA)*** values in the alternative analysis and selection process.

The off-Site disposal volumes shown in Table 2 for Alternative 2, assuming both on- and off-Site disposal, estimate how much waste would not meet the requirements for on-Site disposal. These volumes are approximated based on current information. Actual quantities disposed on the Site or off the Site would depend upon when a potential OSDC would be constructed and available to receive waste, and on the final requirements developed for wastes placed in such an OSDC.

Irreversible and Irretrievable Commitment of Resources. A commitment of resources is irreversible if its use in the response action limits future opportunities to use it again, even if it continues to exist. The resource is committed for the long term to the project. An irretrievable commitment refers to the use of resources that keeps them from ever being used by future generations because the resource is destroyed and cannot be replaced. There are short-term irreversible and irretrievable commitments of resources associated with any construction (or demolition) activity (e.g., gasoline, diesel fuel, and other petroleum products would be used in the heavy equipment and other vehicles necessary to support Alternative 2). There would be no short-term commitments of resources for Alternative 1. There are no permanent commitments of land or environmental resources from implementing Alternatives 1 and 2.

National Environmental Policy Act Values. For cleanup decisions, it is a DOE policy to integrate NEPA values into the decision-making process. Impacts to sensitive resources such as wetlands, floodplains, and cultural resources are NEPA values that are directly addressed as ARARs and are discussed as part of the ARAR discussion. For the action alternative, impacts to sensitive resources have been avoided or minimized as much as possible. For wetlands and cultural resources where impacts were not able to be avoided, DOE is developing mitigation measures.

National Environmental Policy Act of 1969 (NEPA) – A federal law that requires federal agencies to consider the environmental and societal impacts associated with significant federally-funded activities. DOE has issued a Secretarial Policy Statement on NEPA that states DOE hereafter will rely on the CERCLA process for review of actions to be taken under CERCLA and will address and incorporate NEPA values in CERCLA documents to the extent practicable.

Other NEPA values considered include impacts on the human environment such as socioeconomics and land use. The no-action alternative would result in additional releases of contamination to the environment that would result in unacceptable environmental risks to future users of the plant and the environment. Alternative 2, on the other hand, has the potential for a beneficial impact through reducing environmental risks, as well as supporting potential reuse opportunity for the area if demolition were completed.

Since construction and operation began in the 1950s, PORTS has been a major employer in Pike, Scioto, Jackson, and Ross Counties (Figure 2). The closure of the plant raises concerns among residents of this region, which has long been one of the most economically challenged parts of Ohio. According to the Ohio Department of Job and Family

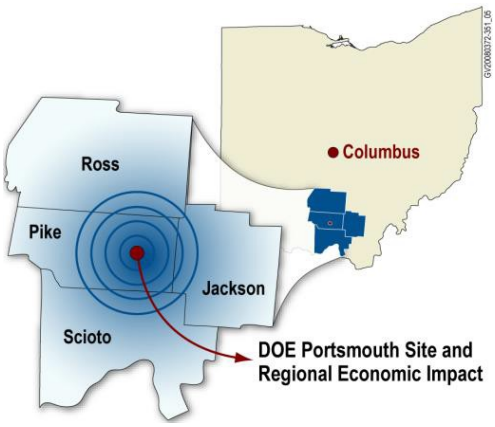

Figure 2. The Four Counties Surrounding PORTS

Services, in July 2013, the unemployment rate in Pike County was 12.1 percent, Scioto County unemployment was 11.1 percent, Jackson County unemployment was 9.1 percent, and Ross County unemployment was 8.1 percent compared to the state average of 7.3 percent.

In 2010, DOE provided a grant to Ohio University to engage the community on the future of PORTS. A full report on this effort – called the PORTSfuture Project – can be found at www.portsfuture.com. This study confirmed that jobs and economic issues are the biggest concerns to people in the region, as summarized by the following:

- 83 percent of a 998-person survey listed jobs/economy/business development as the most important issue to this community.
- Considering the role of jobs and the economy, more than 75 percent of 747 survey respondents indicated that PORTS is very important to the future of the community.
- After extensive work to create community-driven future use scenarios for PORTS, 95 percent of the votes were cast for some type of job-creating future use of the plant and area.

Alternative 1 would not provide for a future opportunity to reuse the land while Alternative 2 would remove the buildings from PORTS, allowing future industrial uses that may create jobs in the future.

There is the potential for minor traffic impacts if the increase in worker commuter traffic is combined with increases in waste truck and rail traffic that would be needed under either alternative for the Site-wide Waste Disposition Evaluation Project.

PREFERRED ALTERNATIVE

There are two important factors to consider in selecting the preferred alternative:

- How the preferred alternative meets the remedial action objectives, and
- The reason for recommending the preferred alternative over the other alternative based on the nine-criteria evaluation.

Based on all considerations and the information currently available, Alternative 2 is the preferred alternative to handle the process buildings and complex facilities at PORTS. The preferred alternative meets the remedial action objectives by removing the buildings, meets the threshold criteria, and it provides the best balance of all criteria. DOE has determined that the preferred alternative satisfies the legal requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; and (4) use permanent solutions and resource recovery technologies to the maximum extent practicable. D&D of the buildings (Alternative 2) would remove a future environmental risk to humans and the environment from the buildings at PORTS. It complies with all ARARs and, although expensive,

ELEMENTS OF THE PREFERRED ALTERNATIVE

- Institutional controls prior to, and during, D&D
- Mobilization and site preparation
- Characterization
- Removal of stored waste, materials, and equipment, and hazard abatement
- Deactivation or redistribution of utilities and systems
- Removal of gaseous diffusion process gas equipment from process buildings
- Demolition of above-grade buildings and structures (including slabs) and underground features, infrastructure (if required), and residual soil
- Equipment or recyclable materials considered for and, as deemed appropriate by DOE, recycled and/or reused
- Generated waste treated (if required) and packaged for final disposition
- Site restoration and demobilization

is the most effective way to handle the threat. It is therefore considered cost-effective. The fifth CERCLA §121(b) criterion, to satisfy the preference for treatment as a principal element of the remedy, is met when waste treatment is used as part of the D&D process to meet the requirements of a disposal facility.

The preferred alternative can change in response to public comments on this Proposed Plan or if new information is provided to the agencies.

COMMUNITY PARTICIPATION

Public input is a key element in the decision-making process. The public is encouraged to provide comments on the alternatives presented, including the preferred alternative. The ***Portsmouth Site Specific Advisory Board (SSAB)***, which is comprised of local residents, community leaders, labor leaders and PORTS employees from Pike, Scioto, Ross and Jackson counties, is chartered by DOE to foster community input into the decision process. The SSAB is focused on making recommendations to decision-makers on preferred cleanup levels, waste disposal strategies, and future land uses for PORTS. Site leadership also talks frequently with county-elected commissioners to understand their positions on the same topics. DOE also works closely with Tribal Nations, the Ohio Historic Preservation Office, the Advisory Council on Historic Preservation, and individuals interested in historic preservation to seek and consider their input on matters pertaining to historic properties. Development of the Process Buildings RI/FS and this Proposed Plan considered the evolving deliberations of these groups.

Portsmouth Site Specific Advisory Board (SSAB) – A stakeholder board made up of community members selected to represent a diversity of viewpoints and provide DOE with advice, information, and recommendations on issues affecting the DOE Environmental Management Program. Among those issues are cleanup standards and environmental restoration, waste management and disposal, and cleanup science and technology activities. The SSAB's website can be viewed at www.ports-ssab.org.

Surveys, reports, and special studies regarding cultural resources can be found on the DOE Portsmouth/Paducah Project Office (PPPO) website, www.pppo.energy.gov/nhpa. Information provided to the SSAB can be found on the SSAB's website www.ports-ssab.org. Information provided to Tribal Nations and members of the public interested in historic preservation can be found on the Fluor-B&W Portsmouth (FBP) website www.fbportsmouth.com.

Additional details on the remedial alternative can be found in the RI/FS report for the Process Buildings and Complex Facilities D&D Evaluation Project. This report and other documents on the PORTS cleanup and background are available in the Process Buildings Administrative Record File in the DOE Environmental Information Center (EIC), 1862 Shyville Road, Room 207, Piketon, Ohio 45661. You may contact the EIC at 740-289-8898 or by email: portseic@wems-llc.com. The Process Buildings and Complex Facilities D&D Evaluation Project RI/FS report is also available at the PPPO website www.pppo.energy.gov and the FBP website www.fbportsmouth.com.

The public comment period for this Proposed Plan extends from November 12, 2014 to January 10, 2015. Comments on the preferred alternative, other alternatives, or any element of this Proposed Plan will be accepted through January 10, 2015. (To ensure your comments are properly received and addressed, please include the words "Process Buildings" in your submittal.) The contact information for DOE and Ohio EPA persons who will receive comments on this Proposed Plan and who can supply additional information is as follows:

Ms. Kristi Wiehle
Department of Energy
P.O. Box 370
Piketon, OH 45661
Hotline: 888-603-7722
Email: PBComments@fbports.com
Fax: 740-897-2526

-OR-

Ms. Maria Galanti
Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, OH 43138
Phone: 740-385-8501
Email: maria.galanti@epa.ohio.gov
Fax: 740-385-6490

A prepaid comment form is also provided with this Proposed Plan as the back page of the document.

A public meeting will be held on November 17, 2014, at 6:00 p.m., at Waverly High School, 3 Tiger Drive, Waverly, Ohio, to present the Proposed Plan. Verbal or written comments will be accepted at the meeting.

The actual selection of the alternative to be implemented will be made after all comments received during the public comment period have been reviewed and addressed. DOE will consider all public comments on this Proposed Plan in preparing the ROD. Based on comments received, the selected final remedial action for D&D presented in the ROD could be different from the preferred alternative. All written and verbal comments received during the public comment period will be summarized and responded to in the Responsiveness Summary section of the ROD.

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APPENDIX A: LIST OF BUILDINGS

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LIST OF BUILDINGS

Facilities Included within the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS

Facility ID	Facility Name
Buildings and Structures	
X-104A	Indoor Firing Range Building
X-104B[1]	Protective Forces Office Trailer
X-104C[1]	Protective Forces Shower/Locker Trailer
X-108A	South Portal and Shelter-Drive Gate
X-108B	North Portal and Shelter
X-108E	Construction Entrance Portal
X-108J	West Security Portal
X-108K	North Security Portal
X-108L	East Security Portal
X-111A	SNM Monitoring Portal
X-111B	SNM Monitoring Portal
X-114A	Outdoor Firing Range
X-120H	Weather Station
X-202	Roads
X-204-1	Railroad and Railroad Overpass (excluding DUF_6 utilized track)
X-206A	North Main Parking Lot
X-206B	South Main Parking Lot
X-206E	Construction Parking Lot
X-206H	Pike Avenue Parking Lot
X-206J	South Office Parking Lot
X-208[1]	Security Fence
X-208A[1]	Boundary Fence
X-208B[1]	SNM Security Fence
X-210[1]	Sidewalks
X-215A[1]	Electrical Distribution to Process Buildings
X-215B[1]	Electrical Distribution to Other Areas
X-215C[1]	Exterior Lighting
X-215D	Electrical Power Tunnels
X-220A	Instrumentation Tunnels
X-220B1[2]	Process Instrumentation Lines
X-220B2[2]	Carrier Communication Systems
X-220B3[2]	Water Supply Telemetering Lines
X-220C[2]	Superior American Alarm System
X-220D1[2]	General Telephone System
X-220D2[2]	Process Telephone System
X-220D3[2]	Emergency Telephone System
X-220E1[2]	Evacuation PA System
X-220E2[2]	Process PA System
X-220E3[2]	Power Public Address System
X-220F[2]	Plant Radio System
X-220G[2]	Pneumatic Dispatch System
X-220H[2]	McCalloh Alarm System
X-220J[2]	Radiation Alarm System
X-220K[2]	Cascade Automatic Data Processing System
X-220L[2]	Classified Computer System
X-220N[2]	Security Alarm and Surveillance System
X-220P[2]	MSR System
X-220R[2]	Public Warning Siren System
X-220S[2]	Power Operations SCADA System
X-230[1]	Water Supply Line
X-230A[1]	Sanitary and Fire Water Distribution System
X-230A3[3]	Ambient Air Monitoring Station
X-230A6[3]	Ambient Air Monitoring Station
X-230A8[3]	Ambient Air Monitoring Station
X-230A9[3]	Ambient Air Monitoring Station

Facilities Included within the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS (Continued)

Facility ID	Facility Name
Buildings and Structures (continued)	
X-230A10	Ambient Air Monitoring Station
X-230A12[3]	Ambient Air Monitoring Station
X-230A15[3]	Ambient Air Monitoring Station
X-230A23[3]	Ambient Air Monitoring Station
X-230A24[3]	Ambient Air Monitoring Station
X-230A28[3]	Ambient Air Monitoring Station
X-230A29	Ambient Air Monitoring Station
X-230A36	Ambient Air Monitoring Station
X-230A37[3]	Ambient Air Monitoring Station
X-230A40	Ambient Air Monitoring Station
X-230A41[3]	Ambient Air Monitoring Station
X-230B[1]	Sanitary Sewers
X-230C[1]	Storm Sewers
X-230D[1]	Softened Water Distribution System
X-230E[1]	Plant Water System (make up)
X-230F[1]	Raw Water Supply Line
X-230G[1]	RCW System
X-230H[1]	Fire Water Distribution System
X-230J-1	Monitoring Station
X-230J2	South Environmental Sample Station
X-230J3	West Environmental Sampling Building for Intermittent Containment Basin
X-230J4	Environmental Air Sampling Station
X-230J5	West Holding Pond Oil Separation Station
X-230J6	Northeast Holding Pond Monitoring Facility and Secondary Oil Collection Building
X-230J7	East Monitor Facility (East Holding Pond Oil Separation Building)
X-230M	Clean Test Site
X-232A[1]	Nitrogen Distribution System
X-232B[1]	Dry Air Distribution System
X-232C1	Tie Line X-342 to X-330
X-232C2	Tie Line X-330 to X-326
X-232C3	Tie Line X-330 to X-333
X-232C4	Tie Line X-326 to X-770
X-232C5	Tie Line X-343 to X-333
X-232D[1]	Steam and Condensate System
X-232E[1]	Freon Distribution System
X-232F[1]	Fluorine Distribution System
X-232G[1]	Support for Distribution Lines
X-235	South Groundwater Collection System
X-237	Little Beaver Groundwater Collection System
X-240A[1]	RCW System (Cathodic Protection System)
X-300	Plant Control Facility
X-300A	Process Monitoring Building
X-300B	Plant Control Facility Carport
X-300C	Emergency Communications Antenna
X-326	Process Building and Instrumentation Tunnel
X-330	Process Building and Instrumentation Tunnel
X-333	Process Building and Instrumentation Tunnel
X-342A	Feed Vaporization Building
X-342B	Fluorine Storage Building
X-344A	UF_6 Sampling Facility
X-344H	Security Portal
X-345	SNM Storage Building
X-501	Substation
X-501A	Substation
X-502	Substation
X-515[1]	330 kV Tie Line Between X-530 and X-533
X-530G	GCEP Oil Pumping Station

Facilities Included within the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS (Continued)

Facility ID	Facility Name
Buildings and Structures (continued)	
X-530T1[1]	Office Trailer
X-533H	Personnel Monitoring Station
X-533 T1[1]	Trailer
X-533 T2[1]	Trailer
X-533 T3[1]	Trailer
X-533 T4[1]	Trailer
X-540	Telephone Building
X-600A	Coal Yard (structures)
X-600D[1]	Utilities Maintenance Field Office
X-605[3]	Sanitary Water Control House
X-605A[3]	Well Field
X-608[3]	Raw Water Pump House
X-608A[3]	Well Field
X-608B[3]	Well Field
X-611A	Old Lime Sludge Lagoon (structures)
X-611B	Lagoon (structures)
X-611B1	Lagoon Supernatent Pumping Station
X-611B2	Lagoon Supernatent Pumping Station
X-611B3	Lagoon Supernatant Pumping Station
X-614D	South Sewage Lift Station
X-614P	North East Sewage Lift Station
X-614Q[1]	Sewage Booster Pump Station
X-617	South Holding Pond pH Control Facility
X-622	South Groundwater Treatment Facility
X-623	North Groundwater Treatment Building
X-624	Little Beaver Groundwater Treatment Facility
X-625	Groundwater Passive Treatment Facility
X-627	Groundwater Pump & Treatment Facility
X-633 T1[1]	Trailer
X-633 T2[1]	Trailer
X-633 T3[1]	Trailer
X-640-1A	Substation (required for Fire Services)
X-640-2A	Elevated Water Tank Auxiliary Building
X-670[1]	Dry Air Plant
X-670A[1]	Cooling Tower
X-675[1]	Plant Nitrogen Station
X-680[1]	Blowdown Sample and Treatment Building
X-690	Steam Plant
X-700	Converter Shop & Cleaning Building
X-700A	Air Conditioning Equipment Building
X-700B[1]	Sandblast Facility and Observation Booth
X-701E	Neutralization Building
X-701F	Effluent Monitoring Facility
X-705	Decontamination Building
X-705D	Heat Booster Pump Building
X-705E	Oxide Conversion Area
X-710	Technical Service Building
X-710A	Technical Service Gas Manifold Shed
X-710B	Explosion Test Facility
X-720	Maintenance & Stores Building
X-720B	Radio Base Station
X-720C	Paint & Storage Building
X-720 T01[1]	Office Trailer
X-721	Radiation Instrument Calibration
X-741	Oil Drum Storage Facility
X-742	Gas Cylinder Storage Facility

Facilities Included within the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS (Continued)

Facility ID	Facility Name
Buildings and Structures (continued)	
X-744K	Warehouse-K
X-744N	Warehouse N Non-UEA
X-744P	Warehouse P Non-UEA
X-744Q	Warehouse Q Non-UEA
X-744V	Surplus and Salvage Clean Storage Area
X-744Y	Waste Storage Area
X-744Y T1[1]	Trailer
X-744Y T2[1]	Trailer
X-744Y T3[1]	Trailer
X-744Y T4[1]	Trailer
X-744Y T5[1]	Trailer
X-744Y T6[1]	Trailer
X-744Y T8[1]	Trailer
X-744Y T9[1]	Trailer
X-745B	Toll Enrichment Gas Yard
X-745D	Cylinder Storage Yard
X-745F	North Process Gas Stockpile Yard
X-745G-2	Cylinder Storage Yard
X-747	Clean Scrap Yard
X-747B	Material Storage Yard Pads and Equipment
X-747C	Material Storage Yard Pads and Equipment
X-747D	Material Storage Yard Pads and Equipment
X-747E	Material Storage Yard Pad
X-747H1	Loading Pad
X-747J	Decontamination Storage Yard
X-748	Truck Scale
X-751	GCEP Mobile Equipment Garage
X-760 T1[1]	Trailer
X-760 T2[1]	Trailer
X-1000	Administration Building
X-1000T1[1]	Training Trailer
X-1007	Fire Station
X-1107BV	Interplant Vehicle Portal
X-2230T1[1]	Recirculating Heating Water System (East of Valve Pit “A” and “B”)
X-2232E[1]	Gas Pipeline
X-6619	Sewage Treatment Plant
XT-800	GCEP Construction Office Pad
XT-847	Warehouse
B	Pad in Field East of X-109A (near X-740)
C[1]	Old Switch Yard West of X-109A Pad (near X-740)
E[1]	X-700 “0000” Compressor Base Foundation
H	Old Firing Range Shed
I[1]	Peter Kiewit Powder Magazine
J	X-1000 Pavilion
Slabs and Below-grade Structures Remaining from Previous Actions	
X-100	Administration Building (slab and below-grade structures)
X-105	Electronic Maintenance Building (front apron/concrete pad and driveway)
X-106B	Old Fire Training Building (slab and below-grade water tank)
X-120	Old Weather Station (footers)
X-230J1	East Environmental Sampling Building (slab)
X-230J8	Environmental Storage Building (slab)
X-342C	Waste HF Neutralization Pit (below-grade structures)
X-344C	Hydrogen Fluoride Storage Building (foundations and piers)
X-344D	HF Neutralization Pit (below grade)
X-344E	Gas Ventilation Stack (below grade)
X-344F	Safety Building (below-grade structures)

Facilities Included within the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS (Continued)

Facility ID	Facility Name
Slabs and Below-grade Structures Remaining from Previous Actions (continued)	
X-530A	High Voltage Switchyard (grounding systems and underground cables)
X-530B	Switch House (slab and below-grade structures)
X-530C	Test and Repair Building (below-grade structures)
X-530D	Oil House (below-grade structures)
X-530E	Valve House (slab and below-grade structures)
X-530F	Valve House (slab and below-grade structures)
X-600	Steam Plant (slab and below-grade structures)
X-611	Water Treatment Plant (slab and below-grade structures)
X-611C	Filter Building (slab and below-grade structures)
X-611E	Clear Well & Chlorine Building (slab and below-grade structures)
X-612	Elevated Storage Tank (below-grade structures)
X-614A	Sewage Pumping Station (slab and below-grade structures)
X-614B	Sewage Pumping Station (slab and below-grade structures)
X-615	Old Sewage Treatment Plant (foundations and piers)
X-616	Liquid Effluent Control Facility (foundations and piers)
X-626-1	Recirculating Water Pump House (slab and below-grade structures)
X-626-2	Cooling Tower (below-grade structures)
X-630-1	Recirculating Water Pump House (slab and below-grade structures)
X-630-2A	Cooling Tower (below-grade structures)
X-630-2B	Cooling Tower (below-grade structures)
X-630-3	Acid Handling Station (saddles and basin)
X-640-1	Fire Water Pump House (slab and below-grade structures)
X-640-2	Elevated Storage Tank (below-grade structures)
X-701A	Lime House (below-grade structures)
X-701D	Water De-ionization Facility (below-grade structures)
X-720A	Maintenance and Stores Gas Manifold Shed (below-grade structures)
X-746	Material Receiving and Inspection (portions of above- and below-grade structures)
X-747A	Material Storage Yard (below-grade structures)
X-747G	Precious Metal Scrap Yard (below-grade structures)
X-747H	NW Contaminated Scrap Yard (below-grade structures)
X-750	Mobile Equipment Maintenance Shop (slab and below-grade structures)

Notes:
[1]Buildings/structures and infrastructure too extensive, small, or readily movable, e.g., trailers, to be shown in Figure A.1
[2]Nonstructural support systems not shown in Figure A.1
[3]Buildings/structures and infrastructure located off map or near boundary and not shown in Figure A.1

GCEP = Gas Centrifuge Enrichment Plant
ID = identification
MSR = maintenance service request
PA = public address
RCW = recirculating cooling water
SCADA = Supervisory Control and Data Acquisition
SNM = special nuclear material
UEA = uranium enrichment area

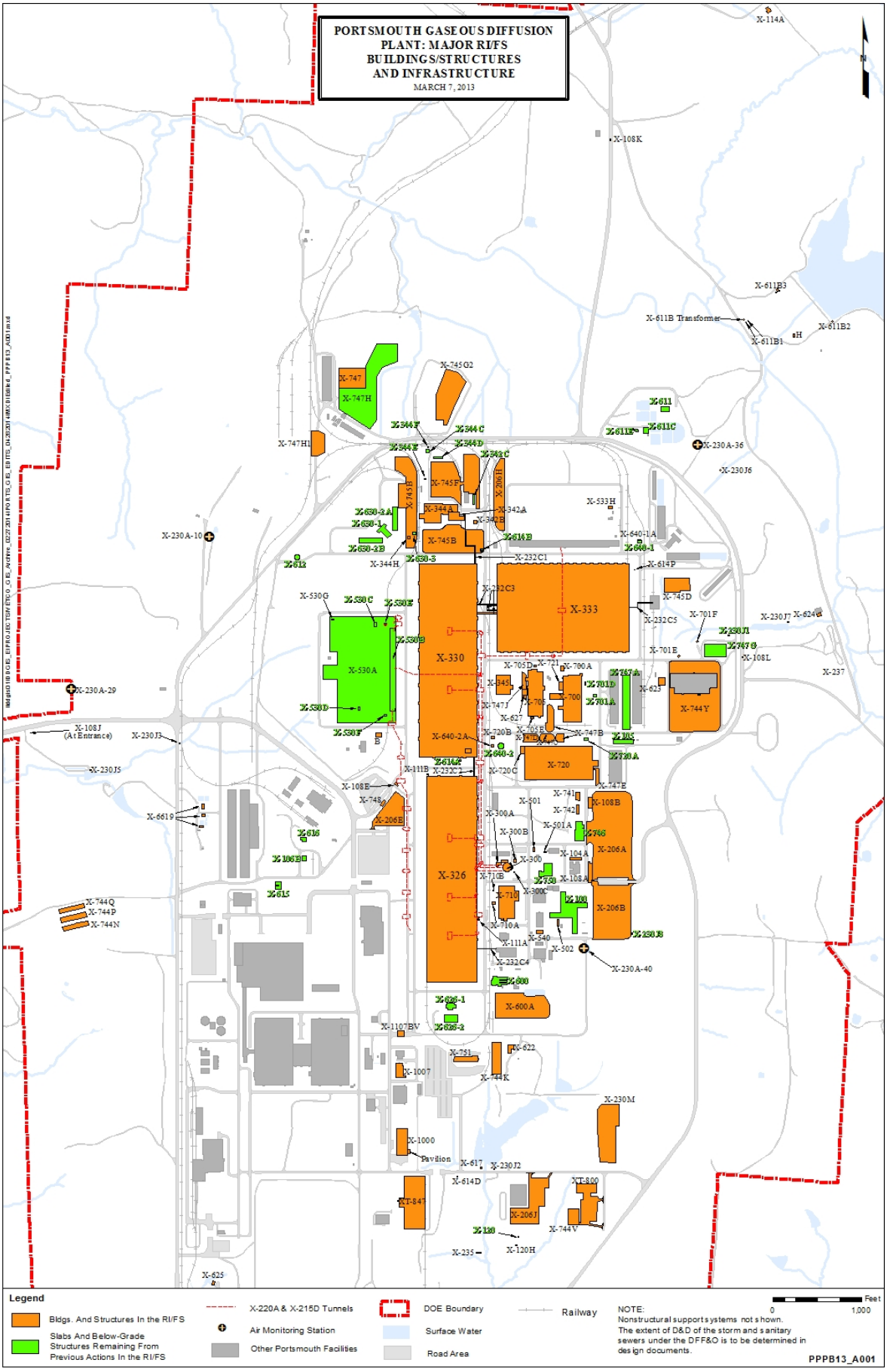

Figure A.1. Locations of the Facilities Included in the Scope of the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS

APPENDIX B: GASEOUS DIFFUSION PROCESS AND BUILDINGS DESCRIPTION

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GASEOUS DIFFUSION PROCESS AND BUILDINGS DESCRIPTION

Description of Process Buildings

Each kilogram of mined uranium contains approximately 993 grams (99.3 percent) of the uranium-238 isotope and approximately 7 grams (0.7 percent) of the uranium-235 isotope. During the uranium enrichment process at the Portsmouth Gaseous Diffusion Plant (PORTS), uranium-235 moved through the barriers more easily, increasing in concentration as it moved through the process. About half of the gas diffused through the barrier and was fed to the next higher stage, while the remaining undiffused portion was recycled to the next lower stage. The uranium enrichment process was initiated in the X-333 Process Building and continued in series to the X-330 Process Building and the X-326 Process Building. The "products" from the enrichment operations, highly enriched uranium (greater than 20 percent uranium-235) and low-enriched uranium (less than or equal to 20 percent uranium-235 but typically less than 5 percent), were withdrawn from the X-326 and X-333 Process Buildings.

The basic separation equipment for gaseous diffusion is a "stage" (Figure B.1) consisting generically of the following:

- A converter that contains porous separation media (referred to as the barrier material or barrier tubes)
- A compressor driven by an electric motor (to move uranium hexafluoride [UF_6] gas through the converter)
- Interconnecting piping and a control valve to contain and control the gas flows
- A cooler, either internal or external to the converter, to cool the process gas (the cooler in Figure B.1 is internal to the converter and therefore not shown).

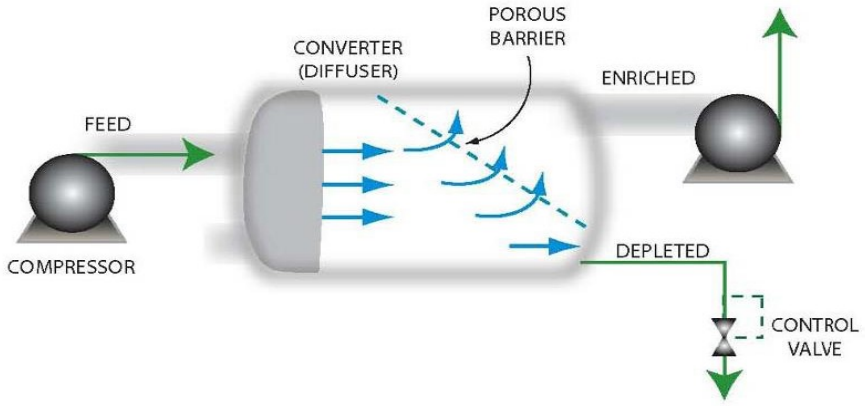

Figure B.1. PORTS Gaseous Diffusion Stage Schematic

In each of the process buildings, the process gas equipment is on the second (cell) floor. Controls, power transformers, utilities, and auxiliary systems are located on the first (operating) floor. The cascade cooling systems, lube and hydraulic oil systems, and building ventilation systems are noteworthy because of their size. To illustrate this, when the cascade was operating, over 4 million pounds of Freon (R-114) coolant circulated between stage coolers and cell condensers. Approximately 250,000 gallons of lubricating oil circulated between holding tanks and the compressor bearings. Ventilating air systems, including hundreds of supply fans, recirculating exhaust fans, and roof exhaust fans, were needed to maintain building temperature control.

Process gas equipment, including converters and compressors in the PORTS process buildings, contained solid deposits of uranium compounds at the time of plant shutdown in 2001. A project was completed to reduce the size of the uranium holdup deposits in the equipment, but some deposits remain. The primary radiological constituents (an unstable form of an element that radioactively decays) within the process buildings are uranium isotopes (uranium-234, uranium-235, and uranium-238) and technetium-99. While much of the introduced technetium-99

was removed from the process gas equipment during plant upgrades in the late 1970s and early 1980s, some amount remains. Much of the remaining residual mass of technetium-99 is anticipated to be concentrated within the purge equipment in the X-326 Process Building.

Exterior surface uranium contamination exists in all three PORTS process buildings. Both fixed and removable contamination can be found on the operating and cell floors. Surface technetium-99 contamination can be found primarily in the southern portion of the upper floor in the X-326 Process Building. Fixed contamination refers to that radioactive contamination that is not easily removed by wiping or brushing, while removable contamination is that radioactive contamination that can be removed easily.

Polychlorinated biphenyls (PCBs) are anticipated in X-326, X-330, and X-333 transformers, electrical switchgears, storage tanks, capacitors, and potentially wiring once PCB oils have been drained from these systems. The ventilation ducts and PCB oil-collection systems are known to contain oil and radionuclide contamination. PCB-impregnated gaskets can also be found in other buildings along with PCBs in transformers and fluorescent light fixture ballasts. Asbestos-containing materials are present in building exterior transite siding. Large amounts of transite are also in cell housing siding inside the process buildings. Asbestos is also found in thermal insulation and floor tile.

GASEOUS DIFFUSION PLANT HIGHLIGHTS

- Three of the largest industrial buildings ever constructed
- Process gas equipment system composed of 14,700 discrete components
- Over 172 miles of process gas piping weighing over 100,000 tons
- Potential generation of approximately 1.3 million cubic yards of wastes requiring safe and permanent disposal

Description of Feed, Transfer, and Sampling Facilities

Five buildings make up the feed, transfer, and sampling facilities group of buildings. UF_6 gas was fed to the process buildings in aboveground piping (tie lines) from feed plants. Steam heat was used to vaporize the UF_6 in autoclaves. UF_6 was removed from the cascade with compression/liquefaction systems that raised the gas pressure and then lowered temperature to the liquefaction point. There are four withdrawal systems serving the process buildings. Three were for feed or product assay withdrawals; one was for tails (depleted) assay withdrawal. The product withdrawn from the cascade was subsequently transferred into cylinders at the X-344A UF_6 Sampling Facility.

Known or potential radiological contaminants associated with these and subsequent facilities include uranium and low levels of technetium-99, neptunium-237, and plutonium-239. Known or potential chemical contaminants include asbestos in transite siding, thermal insulation, and floor tile; surfaces covered with lead-based paint; PCBs in ventilation system gaskets, transformers, substations, and fluorescent light fixture ballasts; and mercury in light bulbs and switches.

Description of Primary Laboratory, Maintenance, and Equipment Cleaning Facilities

Facilities were provided to maintain contaminated and noncontaminated process and auxiliary equipment; disassemble and decontaminate process gas equipment; clean and decontaminate small parts; clean UF_6 cylinders; recover uranium; test and inspect equipment; provide technical, production, and development support; and house spare parts and expendables. The 14 buildings and structures in this group were part of the X-700, X-705, X-710, and X-720 complexes.

Description of Support Facilities

In addition to the above process buildings and complex facilities, hundreds of support buildings and structures and utility systems are located throughout PORTS. These include administrative facilities; water treatment, storage, and distribution facilities; sewage collection and treatment facilities; electrical distribution systems and facilities; miscellaneous utilities; infrastructure; storage and warehouse facilities and yards; and environmental monitoring and treatment facilities.

Comment Form

DOE is interested in your comments on the D&D alternative being considered in the RI/FS and Proposed Plan for the Process Buildings and Complex Facilities D&D Evaluation Project at PORTS. The preferred alternative for the buildings at PORTS is controlled demolition of the buildings, treatment as needed, and preparation for disposal. Please use the space provided below to write your comments, then fold, tape (**no staples**), and mail this form. We must receive your comments on or before the close of the public comment period on January 10, 2015. If you have questions about the comment period, please contact the hot line at 888-603-7722. Additional information or related cleanup documents are available to the public at the DOE Environmental Information Center located at: 1862 Shyville Road, Room 207, Piketon, OH 45661.

Providing Information Below is Optional

Name: _____

Address: _____

City: _____

Phone: _____

PORTS D&D Project Mailing List

Please add my name to the PORTS Mailing List to receive additional information on the cleanup progress at the PORTS D&D Project.

Yes ____ No ____

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