

RCRA Corrective Action Statement of Basis and Public Comment Period

What does the facility do?

The Portsmouth Gaseous Diffusion Plant (PORTS) is a government-owned, contractor-operated federal facility that was formerly used to enrich uranium using the gaseous diffusion process. PORTS is located on approximately 3,700 acres of federal land in a rural area of Pike County, approximately 20 miles north of Portsmouth, Ohio.

PORTS operated from 1954 until 2001, using the gaseous diffusion process to enrich uranium for the U.S. Department of Energy (DOE) and predecessor agencies. In May 2001, the production facilities were placed into a cold standby mode. During cold standby, the process buildings were maintained with a restart capability as a strategic hedge against a disruption in the nation's enriched uranium supply. DOE terminated the cold standby program in September 2005 and replaced it with a cold shutdown program, so the facilities could no longer restart. At the time of cold shutdown, DOE intended to dismantle the production facilities in the future.

In the early 2000s, DOE began to transition PORTS to Decontamination and Decommissioning (D&D). D&D activities address deactivation, decontamination, demolition, and disposal of approximately 415 facilities currently identified on the PORTS site. These facilities include the three massive gaseous diffusion process buildings that housed the process equipment and span an area the size of 158 football fields. Other structures include support facilities such as electrical switchyards, cooling towers, cleaning and decontamination facilities, water and wastewater treatment plants, maintenance and laboratory facilities, and storage and office buildings.

What is the statement of basis?

The statement of basis describes the process Ohio EPA uses under the Resource Conservation and Recovery Act (RCRA) to select measures for containing or cleaning up a hazardous waste management facility. Community members and interested parties will have the opportunity to review and comment on the document during the public comment period which will be announced through a public notice. Ohio EPA will address any comments received then the director will issue a decision document.

What is the history of corrective action at the facility?

In August 1989, DOE entered a consent decree with the State of Ohio to conduct investigation, analysis, and completion of corrective measures for contamination at PORTS operations in soil, ground water, surface water, and sediment that exceed safe levels. Environmental investigations and cleanup actions began in 1989. Initial RCRA facility investigations (RFIs) were completed for each quadrant at PORTS in 1996. These investigations resulted in reports, cleanup alternative studies, the completion of interim measures, approved decision documents, and the performance of several corrective measures.

By the early 2000s, Ohio EPA and DOE agreed to defer investigation of the nature and extent of contamination at the deferred units (DUs) until the start of D&D for the enrichment facilities. Shortly thereafter, DOE began to transition PORTS

Facility Name: Portsmouth Gaseous Diffusion Plant

U.S. EPA I.D.: OH7890008983

Location:

3930 US Route 23

Piketon, Ohio 45661

Activity:

RCRA corrective action statement of basis
for proposed remedies.

Comment Period:

Jan. 6, 2023 – Mar. 17, 2023

Public Meeting:

February 15, 2023, 6 p.m.

Pike County Career Tech Center

175 Beaver Creek Rd., Piketon, OH 45661

Submit Comments to:

Submit written comments by email to

Publiccomment@epa.ohio.gov with PORTS
Statement of Basis for the subject line.



Portsmouth Gaseous Diffusion Plant

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to D&D. With the transition, DOE began working on the DURCRA facility investigation/corrective measures study (RFI/CMS) work plan, approved by Ohio EPA in 2015. The work plan included a sampling and analysis plan to guide the investigation for each DU.

The statement of basis presents the results of the DURFI/CMS and the X-705 vapor intrusion (VI) RFI/CMS. DOE prepared the DURFI/CMS report and the X-705 VI RFI/CMS report in accordance with the 1989 consent decree.

The DURFI/CMS was conducted to characterize the nature and extent of contamination at the DUs. Once the nature and extent of contamination were fully determined, DOE developed corrective measure (or cleanup) alternatives as part of the CMS. The CMS includes the reasons, approach, and justification for the recommended corrective measures at the DUs.

Most of the associated field work and data evaluation effort was conducted from 2015 to 2019. Investigation for VI began in 2019 and continued through early 2022. The DURFI/CMS evaluates environmental sampling data collected at the DUs during the DURFI and appropriate historical data collected at several DUs from 2006 to 2015. The DURFI provided data on soil, ground water, surface water, sediment, and VI contaminants, which were used to assess cleanup alternatives in the CMS. The DURFI/CMS report and X-705 VI RFI/CMS report, approved by Ohio EPA in 2022, present the results of the investigations and a detailed evaluation of corrective measure alternatives for the DUs.

The DUCMS evaluated the following alternatives to address contaminated soil and sediment at the DUs/additional units.

- No action
- Institutional controls
- Industrial land use
- Property access signage to prevent recreational exposure
- Vapor barrier/vapor mitigation for future construction
- Ground water use restriction
- Excavation and on-site disposal

The VI portion of the RFI focused on the potential for VOC migration from contaminated soil or ground water beneath DU buildings into those buildings. Buildings were selected for assessment based on their proximity to soil and ground water concentrations above VI screening levels (VISLs). The investigation was conducted in several phases.

Buildings that were identified as a worst-case (i.e., X-700 Chemical Cleaning Facility, X-705 Decontamination Building, and X-720 Maintenance Building) were investigated first. VI investigation was conducted in an iterative manner, and additional buildings (i.e., X-330 Process Building, X-333 Process Building, X-326 Process Building, and X-626-1 RCW Pump House) were investigated based on sample results.

The VI investigation demonstrated that soil contamination near DU buildings presented a potential vapor intrusion concern. Ground water did not typically present a vapor intrusion concern due the hydrogeological conditions at PORTS except for the X-705 Decontamination Building where ground water in the sump directly influences indoor air quality.

Three buildings were found to require a corrective measure for VI: the X-700 Chemical Cleaning Facility; the X-705 Decontamination Building; and the X-720 Maintenance Building. Recommended VI corrective measures for the X-700 Chemical Cleaning Facility include:

- Opening building doors and/or windows
- Sealing sources of vapor in the floor
- Installation of air purifying units (APUs)

Recommended VI corrective measures for the X-705 Decontamination Building include:

- Adjusting the heating, ventilation, and air-conditioning (HVAC) system
- Opening building doors and/or windows
- Sealing sources of vapor in the floor
- Basement tunnel sump ventilation
- Installation of APUs with active ventilation
- Redesign of basement tunnel sump operation

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For the X-720 Maintenance Building, the following VI corrective measures are recommended:

- Opening building doors
- Sealing sources of vapor in the floor

For the ground water portion of the DU RFI/CMS, the Quadrant II Groundwater Investigative (7-Unit) Area was investigated. This area already has an interim remedial measure (IRM) in place that includes routine monitoring of ground water contamination. Approved by Ohio EPA in 2006, the IRM is a pump and treat system where water in basement sumps in both the X-700 Chemical Cleaning Facility and the X-705 Decontamination Building is removed from the ground by pumping and transferred to another PORTS facility where it is treated until preliminary remedial goals (PRGs) are met.

The DU RFI/CMS determined that concentrations of contaminants of concern (COCs) in ground water at the 7-Unit Plume Area exceed PRGs. Therefore, DOE performed a detailed analysis of corrective measure alternatives for this area. These alternatives are:

- No Action
- Institutional Controls
- In situ Treatment – Enhanced Anaerobic Bioremediation
- Ex situ Treatment – Pump and Treat (Current Approach)
- Ex situ Treatment – Pump and Treat (Additional Recovery Wells)

Two additional units were included in the DU RFI/CMS to document modifications to corrective measures that were presented in previous Ohio EPA decision documents. The X-701B Holding Pond and Retention Basins had corrective measures outlined in Ohio EPA's 2003 decision document, consisting of institutional controls, selective removal of soil, and capping for the soils.

For ground water, the corrective measures included ground water clean-up using a chemical oxidant. The subsequent injection of the chemical oxidant into several surface wells yielded results showing that this action was ineffective. The review of these results also showed that the surface capping of the former pond and nearby basins would have little impact on the ground water plume. Therefore, the holding pond and nearby basins were not capped.

In 2009, DOE excavated soil in the western portion of the X-701B ground water plume area, mixed oxidant materials into the contaminated soil, and placed that soil back into the excavation. This additional IRM was completed in 2011. This modification to the corrective measures for the X-701B Holding Pond and Retention Basins is included in this statement of basis as the recommended final corrective measure.

The second additional unit, the X-740 Waste Oil Handling Facility had corrective measures outlined in Ohio EPA's 1999 decision document for Quadrant III. This called for phytoremediation of the ground water plume near the former X-740 Waste Oil Handling Facility. This included planting 760 poplar trees on top of the plume to decrease VOC concentrations in ground water, but this action proved unsuccessful.

In 2008, DOE completed three rounds of oxidant injections with Ohio EPA approval. This action was also unsuccessful in producing a long-term decrease in VOC concentrations in ground water. Finally, in 2010, DOE conducted a small-scale study at the former facility to investigate the possibility of using enhanced anaerobic bioremediation to clean up the nearby ground water plume. The study included the injection of emulsified oil into area soils to treat the ground water plume. Ohio EPA considered the study to be a success and agreed upon this action. This remedy, along with the continued ground water monitoring, is the preferred corrective measure for ground water at this DU.

What would the statement of basis allow the facility to do?

This statement of basis proposes selection of media and unit-specific corrective measures for soil and sediment, vapor intrusion, and ground water.

For soil and sediment, Alternative 2 - Institutional Controls, is required sitewide. This consists of activity and use limitations (AULs) recorded in an environmental covenant for the PORTS property.

Alternative 2A, Industrial Land Use, would be applied sitewide and restricts future use of PORTS property to industrial land use only.

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Alternative 2B, Property Access Signage to Prevent Recreational Exposure, is recommended for four surface water DUs: Big Run Creek, X-230J7 East Holding Pond, Oil Separation Basin/East Drainage Ditch, Little Beaver Creek, and North Drainage Ditch/X-230L North Holding Pond.

Alternative 2C, Vapor Barrier for Future Construction, is recommended for properties where soil concentrations, sub-slab vapor concentrations, and/or indoor breathing zone concentrations exceed PRGs. This includes 12 DUs.

Alternative 2D, Ground Water Use Restriction, prohibits the use of ground water at PORTS for human consumption. Four DUs are recommended to use Alternative 2D based on soil COCs having concentrations greater than the PRG at or below the ground water table. These four DUs include the Chemical and Petroleum Containment Basins, the X-330 Process Building, the X-760 Pilot Investigation Building and Neutralization Pit, and the Northeast Drainage Ditch. Alternative 3, Excavation and On-Site Disposal, is recommended for 20 DUs. This alternative involves the excavation of an estimated 2.65 million cubic yards of contaminated soil for use in the OSWDF.

Requiring corrective measures for vapor intrusion, opening building door and/or windows and sealing sources of vapor in the floor are recommended for all three buildings.

For the X-700 Chemical Cleaning Facility, Installation of APUs is recommended in addition to the two corrective measures previously mentioned.

For the X-705 Decontamination Building, recommended corrective measures include adjusting the HVAC system, basement tunnel sump ventilation, installation of APUs with active ventilation, and redesign of basement tunnel sump operation, in addition to the other two corrective measures.

For ground water, the statement of basis recommends Alternative 5, Ex Situ Treatment (Pump and Treat – Additional Recovery Wells) for the Quadrant II Investigative (7-Unit) Area. As part of this alternative, pumping of the basement sumps in the X-700 Chemical Cleaning Facility and the X-705 Decontamination Building will continue at the current level. Two additional recovery wells will be installed in the Gallia sand and gravel layer to further reduce the area of the ground water plume. This alternative will be used in combination with institutional controls to limit the use of ground water, require industrial land use for the PORTS property, and require installation of a vapor barrier for future building construction.

Ground water monitoring will continue at PORTS in accordance with the integrated ground water monitoring plan (IGWMP) to monitor for leaching of contaminants from soil and plume movement.

What is the regulatory basis to support this statement of basis?

The regulatory basis is part of the corrective action obligations under OAC-3745-54-101. Accordingly, Ohio EPA is issuing a draft action indicating the director's intention with respect to the issuance of a final decision document to PORTS for the implementation of the remedies summarized.

Who can I contact for more information?

For additional information, please contact the Division of Environmental Response and Revitalization at (614) 644-2924.

What is the history of the hazardous waste program?

RCRA, an amendment to the Solid Waste Disposal Act, was passed in 1976. The main reason for the amendment was to address the growing volume of municipal and industrial solid waste generated across the United States. A few goals established by RCRA include: to protect human health and the environment from potential hazards of waste disposal; to reduce the amount of waste generated; and to ensure that waste produced are managed in an environmentally sound manner.

When RCRA was written, U.S. Congress' intent was for the states to assume primary responsibility for implementing the hazardous waste regulations with oversight from the U.S. EPA. U.S. EPA must approve each state as an authorized state. To become an authorized state, each must demonstrate that the state program is at least equivalent to and consistent with federal laws, provides adequate enforcement authority and provides availability of information similar to the federal program. The State of Ohio has been an authorized state by U.S. EPA since 1989 - most of their hazardous waste program.

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How can I become more involved?

The comment period is from Jan. 6, 2023 through Mar. 17, 2023. Copies of the statement of basis and other pertinent documents are available for review by the public at the following locations:

U.S. Department of Energy
Environmental Information
Center
OSU Endeavor Center, Room 207
1862 Shyville Road
Piketon, OH 45661

Ohio EPA
Division of Environmental
Response and Revitalization
50 West Town Street, Suite 700
Columbus, Ohio 43216-1049

Ohio EPA
Southeast District Office
2195 East Front Street
Logan, OH 43138

Documents can also be downloaded and accessed using the Portsmouth Environmental Information Center Online Repository at <https://eic.ports.pppo.gov/>.

The statement of basis is available for review online through Ohio EPA's website at <https://epa.ohio.gov/divisions-and-offices/environmental-response-revitalization/announcements/january-2023> or through Ohio EPA's eDocument portal at <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=2155432>.

Written comments are to be submitted by email to Ohio EPA at Publiccomment@epa.ohio.gov or mailed to Ohio EPA, Division of Environmental Response and Revitalization, Attn: DOE Ports Coordinator, 50 W. Town Street, P.O. Box 1049, Columbus, OH 43216-1049. When submitting written comments, please indicate the comments concern the PORTS Statement of Basis. After the close of the public comment period, Ohio EPA will review all comments received, summarize the comments and responses in a response to comments document, and issue a RCRA Corrective Action decision document based on the statement of basis and public comments received.

A public meeting will be held at the Pike County Career Tech Center on February 15, 2023 beginning at 6 p.m. Representatives from PORTS and Ohio EPA will attend to provide information about the site and solicit comments. An announcement with information about the public availability session will also be posted on Ohio EPA's website (epa.ohio.gov/divisions-and-offices/environmental-response-revitalization).

The final decision document will include a notification to those who submitted written comments during the official comment period. Ohio EPA will also prepare and send to all responders a document answering significant comments. Within 30 days of a final decision, any person who submitted written comments may petition the Environmental Review Appeals Commission (erac.ohio.gov) to review the decision.