

Portsmouth



An aerial view of the Portsmouth Gaseous Diffusion Plant.

Portsmouth

Overview

In August 1952, the Atomic Energy Commission (AEC), a precursor agency to DOE, selected a tract of land in the Ohio Valley along the Scioto River in Pike County, Ohio, for the site of the Portsmouth Gaseous Diffusion Plant, the third of three gaseous diffusion enrichment plants in the United States. In 1956, construction of the plant was completed, and the plant began enriching uranium for nuclear weapons. In the 1960s, Portsmouth's mission changed to focus on producing fuel for commercial nuclear power plants and other national security applications.

An extensive environmental cleanup program began at the 3,777-acre site in 1989, with D&D activities initiated in 2011. The DOE near-term focus is the D&D of 415 facilities including the three former uranium enrichment process buildings (X-326, X-333, and X-330) each measuring approximately 33 acres. The site also continues to maintain utility operations, monitor air and water emissions, and operate several groundwater treatment facilities to address legacy groundwater contamination caused by former plant operations.

The Portsmouth site is also home to one of DOE's two DUF6 conversion plants. DUF6 was a by-product from the uranium enrichment operations at the three enrichment plants in Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky. DOE has a total inventory of approximately 67,000 steel cylinders at the Portsmouth and Paducah sites. At Portsmouth, the

DUF6 conversion facility began operation in 2010.

Cleanup accomplishments include:

- **Initiated preliminary demolition activities at the X-326 Building, one of the three former uranium enrichment process buildings.**
- **Began deactivation activities at the X-333 Building, the second of the three former uranium enrichment process buildings.**
- **Initiated construction for the first three cells and associated infrastructure for the OSWDF.**
- **Processed 2,487 cylinders at the DUF6 conversion plant through November 2019.**

Cleanup Highlights 2020-2030

Over the next decade, DOE will make significant progress in addressing the three former uranium enrichment process buildings at the site, with demolition of two to be completed in that timeframe.

Preparations are underway for the start of demolition of the X-326 Building, the first of three process buildings, including removal of obstructions around the building perimeter, Limited Area reconfiguration, and expansion of the site water treatment capability. Over the next decade, DOE will complete demolition of the X-326 process building and the X-333 process building, and complete deactivation of the X-330 process building.

In early 2021, DOE expects to begin utilizing the OSWDF for demolition debris

from the X-326 Process Building. To support this effort, excavation of one of the groundwater plumes will be completed to provide fill for a portion of the X-326 demolition debris. Construction of the first three cells of the OSWDF are scheduled for completion by 2022 and will be utilized for all of the demolition debris from the X-326 Process Building. Construction of the next three cells of the OSWDF as well as the remaining infrastructure will also be initiated and utilized for disposition of debris from X-333 Process Building demolition scheduled to begin in the 2025 timeframe.

Based on cell capacity need for X-330 process building demolition and Balance of Plant facilities, four to six additional OSWDF cell liners will be constructed (10-12 total) with the seventh scheduled to be completed in 2029. Additionally, over the next decade, three landfills will be relocated, and an additional plume will be excavated to provide fill materials for the demolition debris from the remainder of the X-326 and all of the debris from X-333 demolition.

At the Portsmouth DUF6 conversion facility, approximately 9,500 cylinders will be converted and approximately 18 million gallons of hydrogen fluoride (HF) will be shipped off-site for commercial use by 2030.

Remaining Cleanup Scope Post-2030

Beyond 2030, the last three liners of the OSWDF will be constructed to support demolition of the X-330 Process Building and remaining approximately 400 balance of plant facilities. Final soil restoration will be completed with the excavation of the remaining two plumes and two landfills. Cleanup activities at Portsmouth are anticipated to be completed in 2038. Additionally, DOE expects to complete disposition of the entire inventory of DUF6 located at Portsmouth by 2038.



The On Site Waste Disposal Facility (OSWDF) is currently under construction. The OSWDF is specifically engineered and built to safely accept contaminated debris from the gaseous diffusion buildings at Portsmouth.



As part of demolition preparations at Portsmouth, crews are constructing a waste water treatment facility to handle runoff from rain as well as dust suppression activities associated with tearing down the massive uranium enrichment process buildings and smaller support facilities. When operational, it can treat up to 400 gallons a minute, removing contaminants and releasing water safely into the local streams and tributaries.