1. INTRODUCTION

1.1 SUMMARY

The Portsmouth Gaseous Diffusion Plant (PORTS) is located on a 5.8-square-mile site in a rural area of Pike County, Ohio (see Figure 1.1). U.S. Department of Energy (DOE) activities at PORTS include decontamination and decommissioning (D&D) of the process buildings and associated facilities formerly used for the gaseous diffusion process of uranium enrichment, environmental restoration, waste management, and uranium operations. Fluor-BWXT Portsmouth LLC (FBP) is the DOE contractor that manages D&D of PORTS, which includes the three gaseous diffusion process buildings and other associated facilities. The Depleted Uranium Hexafluoride (DUF_6) Conversion Facility at PORTS began full scale operations in 2011 to manage the inventory of DUF_6, which was a product of the gaseous diffusion process. Mid-America Conversion Services, LLC (MCS) managed the DUF_6 Conversion Facility in 2018.

1.2 BACKGROUND INFORMATION

PORTS, which produced enriched uranium via the gaseous diffusion process from 1954 through 2001, is owned by DOE. In 1993, DOE leased the uranium production facilities at the site to United States Enrichment Corporation (USEC), which was established by the Energy Policy Act of 1992. USEC produced enriched uranium in the gaseous diffusion process facilities through 2001.

DOE is responsible for D&D of the gaseous diffusion process buildings and associated facilities, environmental restoration, waste management, and uranium operations. DOE contractors FBP, Portsmouth Mission Alliance, LLC (PMA), and MCS managed DOE programs at PORTS in 2018.

Figure 1.1 The Portsmouth Gaseous Diffusion Plant.
(looking from the north-northeast towards the south-southwest)

FBP managed the following activities:

- D&D of the former gaseous diffusion process building and associated facilities;
- environmental restoration of contaminated areas;
- monitoring and reporting on environmental compliance;
- disposition of D&D waste and legacy radioactive waste;
- security forces;
- uranium management; and
- operation of the site's waste storage facilities.

PMA managed the following facility support services:

- computer and telecommunications services;
- security;
- training;
- records management;
- fleet management;
- non-nuclear facility preventive and corrective maintenance;
- grounds and road maintenance;
- snow removal; and
- janitorial services.

In 2018, MCS managed the DUF_6 Conversion Facility including surveillance and maintenance of DUF_6 cylinders, and environmental compliance and monitoring activities associated with operation of the facility. DUF_6, which is a product of the uranium enrichment process, is stored in cylinders on site. The DUF_6 Conversion Facility converts DUF_6 into uranium oxide and aqueous hydrogen fluoride. The uranium oxide is made available for beneficial reuse, storage, or disposal, and the aqueous hydrogen fluoride is sold for reuse.

USEC, Inc. (the parent company of USEC) became Centrus Energy Corp. (Centrus) in 2014 after a financial restructuring. A Centrus affiliate, American Centrifuge Operating, LLC (ACO), continues to lease facilities at PORTS that were intended for the development of gaseous centrifuge uranium enrichment technology. ACO currently has a U.S. Nuclear Regulatory Commission (NRC) materials license for a demonstration facility on the leased premises. In 2016, the American Centrifuge Lead Cascade Facility (Lead Cascade) was shut down and all Lead Cascade decommissioning activities completed. In 2018, a final status radiological survey demonstrated that the Lead Cascade areas met regulatory radiological criteria for unrestricted use and the more restrictive Lead Cascade License Application limits. At the end of 2018, the ACO NRC materials license remained active and no NRC-regulated materials were present at the Lead Cascade.

This report is intended to fulfill the requirements of DOE Order 231.1B, *Environment, Safety and Health Reporting*. This DOE Order requires development of an annual site environmental report that includes information on regulatory compliance, environmental programs, radiological and non-radiological monitoring programs, groundwater programs, and quality assurance. The Annual Site Environmental Report also provides the means by which DOE demonstrates compliance with the radiation protection requirements of DOE Order 458.1 *Radiation Protection of the Public and the Environment*.

This report is not intended to present all of the monitoring data at PORTS. Additional data collected for other site purposes, such as D&D, environmental restoration, and waste management, are presented in other documents that have been prepared in accordance with applicable legal agreements and regulations.

These data are presented in other reports, such as the *2018 Groundwater Monitoring Report* (DOE 2019), which are available at the PORTS Environmental Information Center.

1.3 DESCRIPTION OF SITE LOCALE

PORTS is located in a rural area of Pike County, Ohio, on a 5.8-square-mile site. The site is 2 miles east of the Scioto River in a small valley running parallel to and approximately 120 feet above the Scioto River floodplain. Figure 1.2 depicts the plant site within the State of Ohio and its immediate environs.

Pike County has approximately 28,067 residents (U.S. Census Bureau 2019). Scattered rural development is typical; however, the county contains a number of small villages such as Piketon and Beaver that lie within a few miles of the plant. The county's largest community, Waverly, is about 10 miles north of the plant and has a population of about 4,270 residents (U.S. Census Bureau 2019). The nearest residential center in this area is Piketon, which is 1 to 4 miles north of the plant and has a population of about 2,157 (U.S. Census Bureau 2019). A number of residences are located adjacent to the plant boundary.

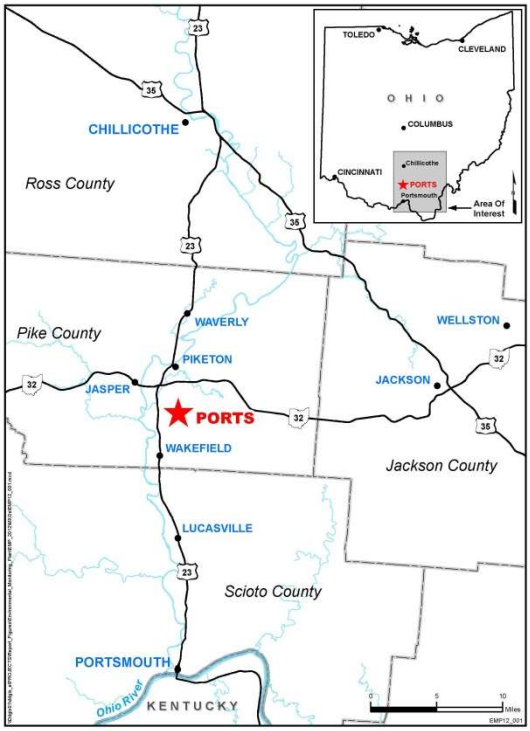

Figure 1.2. Location of PORTS.

Additional cities within 50 miles of the plant are Portsmouth (population 20,340), 22 miles south; Chillicothe (population 21,698), 27 miles north; and Jackson (population 6,242), 18 miles east (U.S. Census Bureau 2019). The total population within 50 miles of the plant is approximately 662,000 persons, which includes people on the outskirts of Cincinnati and Columbus, Ohio; Ashland, Kentucky; and Huntington, West Virginia.

1.4 DESCRIPTION OF SITE OPERATIONS

DOE, through its managing contractors, is responsible for D&D of the gaseous diffusion uranium enrichment buildings and associated facilities, environmental restoration, and waste management associated with DOE activities. DOE is also responsible for uranium management, which includes the DUF_6 Conversion Facility.

D&D includes the gaseous diffusion process buildings and associated facilities subject to *The April 13, 2010 Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012 Modification thereto* (D&D DFF&O) [Ohio Environmental Protection Agency (Ohio EPA) 2012]. D&D activities can consist of deactivation of equipment; removal and cleaning of process residues from equipment, structures, and piping; and dismantlement, demolition, and removal of equipment, structures, piping, and concrete foundations. The D&D Program is also responsible for conducting an evaluation of alternatives for disposition of waste generated by D&D.

The goal of the Environmental Restoration Program is to verify that releases from past operations at PORTS are thoroughly investigated and that, if applicable, remedial actions are taken to protect human health and the environment. Environmental restoration is the investigation and remediation of

environmental contamination associated with the past operation of the gaseous diffusion uranium enrichment facilities. Remedial investigations and remedial actions define the nature and extent of environmental contamination, evaluate the potential risk to public health and the environment, remediate areas of environmental contamination, and monitor/evaluate ongoing remedial actions.

Waste management includes managing wastes generated by DOE activities at PORTS, including wastes generated by D&D, environmental restoration, the DUF_6 Conversion Facility, and other DOE site activities. Wastes must be identified and stored in accordance with all environmental regulations. The responsible DOE contractor also arranges the transportation and disposal of wastes. The goal of the Waste Management Program is to manage waste from the time it is generated to its ultimate treatment, recycling, or disposal in accordance with all applicable regulations.

DOE is also responsible for uranium management, which includes management of uranium product, coordination of the DUF_6 program, and warehousing of other uranium materials such as normal uranium hexafluoride, uranium oxides, and uranium metal.