

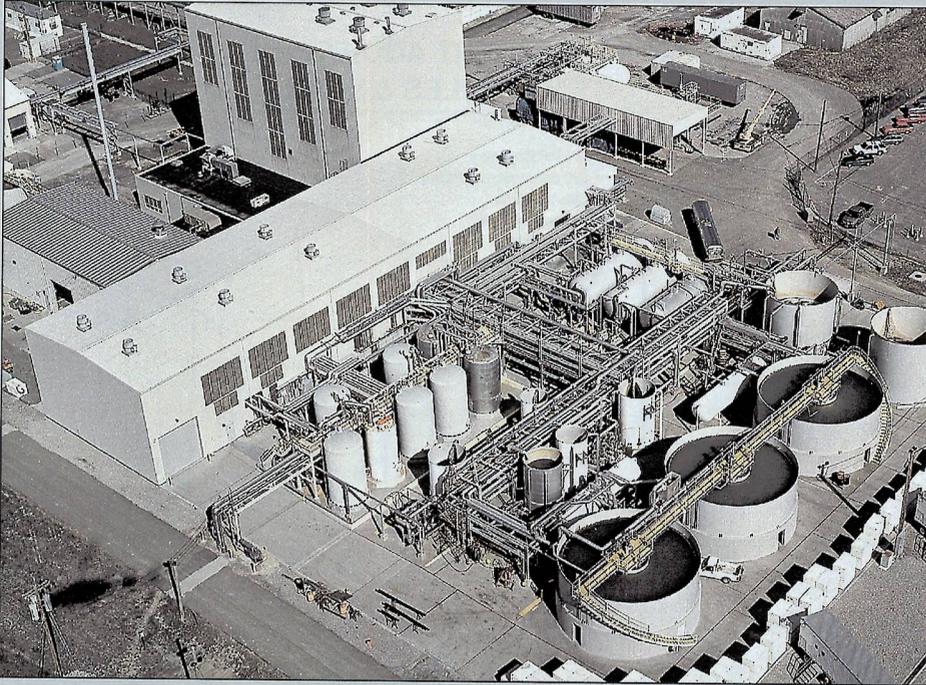


# Fernald · FACT SHEET

Environmental Management Project

March 2001

## Aquifer Restoration/Wastewater Project



*The Advanced Wastewater Treatment Facility uses an ion-exchange resin system to extract uranium from contaminated water (7317-214).*

### Description

The U.S. Department of Energy's (DOE) Fernald Environmental Management Project is located over the Great Miami Aquifer, one of the largest sources of drinking water in the nation. Following years of uranium metal production, a small portion of the aquifer became contaminated with uranium from the site. The levels of uranium in the groundwater are above the health-protective concentration limit of 30 parts per billion (ppb) as required by the U.S. Environmental Protection Agency (EPA). Therefore, the DOE will restore the contaminated portion, bringing the uranium concentration level to, or below, the allowable limit.

### Cleanup Plan

DOE's commitment to restore the aquifer is defined in the Record of Decision (ROD) for Operable Unit 5, one of the five areas at Fernald designated by EPA for remediation. The ROD calls for restoring the aquifer within 27 years by pumping the contaminated water to the surface and treating it for uranium, a process known as "pump-and-treat" technology. In 1993, the first extraction wells were installed at the leading edge of the off-property South Plume as part of the South Plume Removal Action. The primary intent of this well system was to prevent further migration of

the off-property portion of the groundwater uranium plume. The groundwater uranium concentration in the area of these wells has already been reduced from more than 300 ppb to less than 150 ppb.

DOE is undertaking a program that will shorten the 27-year aquifer remediation to 10 years. The effort to reduce the length of the remediation includes the use of re-injection technology, wherein some of the treated groundwater is injected back into the aquifer. This helps flush uranium contamination to pumping wells. Although simple in concept, in order to work, the chemistry of the injected water must be in balance with that of the aquifer. Evaluation of this



*The location of two additional extraction wells installed in 1999 in the South Field was based on refined total uranium plume interpretations in the area and groundwater modeling results (7207-D83).*

technology is being sponsored by DOE's Office of Science and Technology Subsurface Contaminants Focus Area. Five re-injection wells were installed in 1998 and after a successful year-long demonstration, it appears that re-injection will be a viable enhancement for remediation of the aquifer.

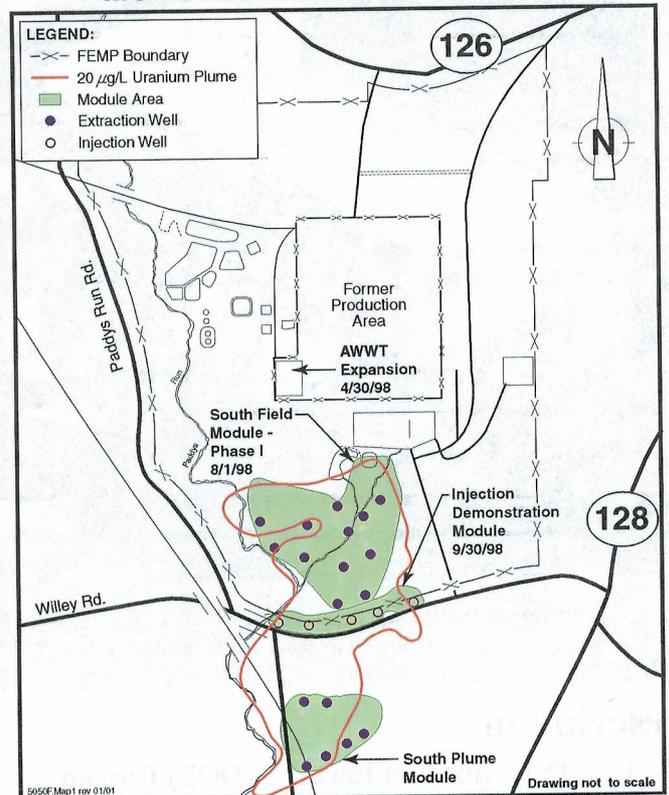
## Cleanup Operations

The Advanced Wastewater Treatment (AWWT) Facility began operating in 1995, with a design capacity of 1,100 gallons per minute (gpm). In 1998, an 1,800 gpm expansion for groundwater raised the total capacity to 2,900 gpm. Also in 1998, a new 10-well extraction system began operating in the South Field area and two more wells were added to the South Plume system. In 1999, two additional extraction wells were added in the South Field bringing the overall total to 18. Most of the treated groundwater processed through the AWWT expansion is being re-injected back into the aquifer, with the remainder discharged into the

Great Miami River. The combined well extraction systems pump over a billion gallons from the aquifer each year.

To meet treated effluent discharge requirements, an extensive system for moving, holding, treating and discharging water has been developed at Fernald. Several treatment facilities are now removing uranium from controlled surface water, run-off from the more highly contaminated areas, remediation wastewater and groundwater.

## CURRENT AQUIFER RESTORATION MODULES & WELL LOCATIONS



*Since pumping began in 1993, over 2,200 pounds of uranium have been removed from the Great Miami Aquifer (Graphic 5050F, Map 1 rev 1/01).*

## For more information . . .

**Visit** the Public Environmental Information Center at 10995 Hamilton-Cleves Highway (Delta Building);  
**Attend** a Cleanup Progress Briefing (second Tuesday of every month at 6:30 p.m. on site);  
**Contact** Rob Janke, DOE-Fernald project manager at 513-648-3124 or at [robjanke@fernald.gov](mailto:robjanke@fernald.gov); or  
**View** the Fernald Web site (<http://www.fernald.gov>).