

M Area Settling Basin Closure

Administrative and Manufacturing areas of the Savannah River Site (SRS), also called the A/M Areas, received soil and groundwater contamination as a result of waste disposal practices once considered state of the art. The primary source of contamination was wastewater disposed in the M Area Settling Basin.

The basin, used from 1958 to 1985, was an 8-million-gallon earthen basin that received fluids from the M Area manufacturing facilities. Waste entered the M Area Settling Basin through an underground process sewer line from a manufacturing facility approximately 2,500 feet north of the basin. The basin periodically overflowed to a natural seepage area and a shallow depression, known as Lost Lake, a Carolina Bay, via a drainage ditch. This combined area is the M Area Hazardous Waste Management Facility (HWMF).

Liquid effluents containing heavy metals and chlorinated solvents were discharged to the unlined basin during its operating period. Most of the metals (aluminum, nickel, depleted uranium and lead) were captured in the basin's sediments. Elevated concentrations of these heavy metals were found only within the shallow soil beneath the bottom of the basin during closure activities, indicating that the basin worked as it was intended. About 2 million pounds of trichloroethylene and tetrachloroethylene, chlorinated degreasing solvents similar to those used in the dry cleaning industry, were released to the basin. Most of the solvents seeped into the subsurface, contaminating the soil and groundwater; the remainder evaporated as intended.

Background

After the discovery of groundwater contamination under the settling basin, SRS submitted a closure plan for the M Area Settling Basin and vicinity. The plan involved several steps to permanently treat and immobilize the hazardous constituents in the wastewater and sludge. First, about 6 million gallons of water were pumped from the basin and treated. A temporary waste water treatment facility was built next to the basin. Next, a layer of sludge containing heavy metals was removed, dewatered and stabilized with cement and kiln dust. The stabilized material was replaced into the dewatered basin and compacted.

The former basin was then backfilled with contaminated soil excavated from the process sewer line removal, from the overflow ditch and seepage area, and from Lost Lake. This removed the residual soil contamination from these areas and allowed the area to return to its natural conditions.

Once the material had been backfilled and compacted, the basin was closed with a layered cap. First, a layer of dense clay was compacted over the stabilized material. The clay was covered with a synthetic liner, topped with a gravel/sand drainage layer, then topsoil and grass, all designed to stop infiltration of rainwater and promote runoff.

The M Area Settling Basin was certified closed in 1991 under the Resource Conservation and Recovery Act (RCRA) requirements, at an approximate cost of \$5.8 million. The surrounding area is returning to a natural habitat. Monitoring of the closed basin will continue for at least 30 years.