UNC–Church Rock Mill Uranium Recovery Facility

Site Location and Facility Description

The former Church Rock Mill uranium recovery facility is located 17 miles northeast of Gallup in McKinley County, New Mexico (Figure 1). The mill is a licensed U.S. Nuclear Regulatory Commission (NRC) facility and U.S. Environmental Protection Agency (EPA) Superfund site. This privately owned facility is surrounded by the Navajo Nation Indian Reservation and Tribal Allotment. The site is currently under decommissioning and reclamation.

The site includes the former 25-acre ore processing mill and a 100-acre tailings disposal area, which comprises the South Cell, Central Cell, North Cell, and two burrow pits (Figure 2). These tailings cells and burrow pits were reclaimed between 1989 and 1995, and they each include a radon barrier as NRC directed. Two evaporation ponds have been constructed on top of the cells as part of the groundwater remediation for the site. An ephemeral drainage channel, Pipeline Arroyo, runs along the western edge of the tailings cells.

Facility Licensing and Operating History

United Nuclear Corporation (UNC) operated the Church Rock uranium milling facility from 1977 to 1982. The mill, designed to process 4,000 tons of ore daily, extracted uranium using conventional crushing, grinding, and acid-leach solvent extraction methods. Uranium ore from the Northeast Church Rock and the Old Church Rock mines was processed at the facility.

There are three shallow water-bearing recharge units beneath the site: Zone 1 and Zone 3 of the Upper Gallup Sandstone, and the Southwest Alluvium. These units received significant amounts of mine water that also discharged into Pipeline Arroyo before and during milling operations. In addition, these units were impacted by tailings seepage from the site.

Tailings Management and Disposal

Reclamation and groundwater remediation activities at the UNC Church Rock Mill site have been under the regulatory scrutiny of both NRC and EPA. Currently, groundwater remediation includes a pump-and-treat groundwater extraction system, and evaporation ponds for disposal of treated water. With the approval of EPA and NRC, the extraction systems for Zone 1 and Southwest Alluvium were shut down in 1999 and 2000, respectively, because both systems had reached the limits of their

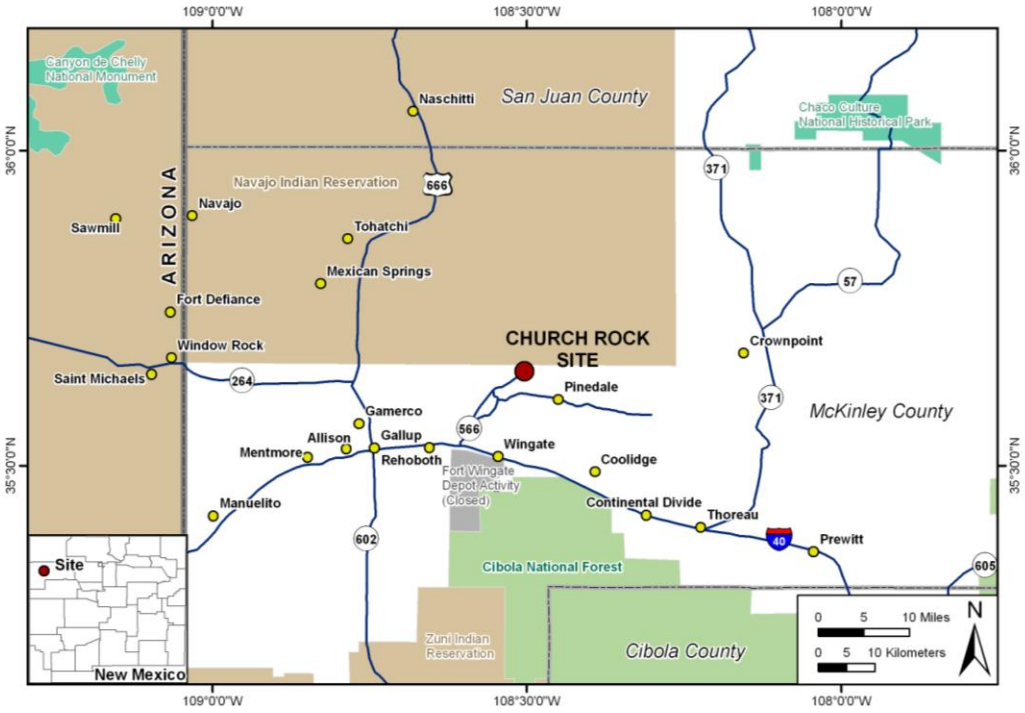

Figure 1. Church Rock Uranium Mill Site Location Map

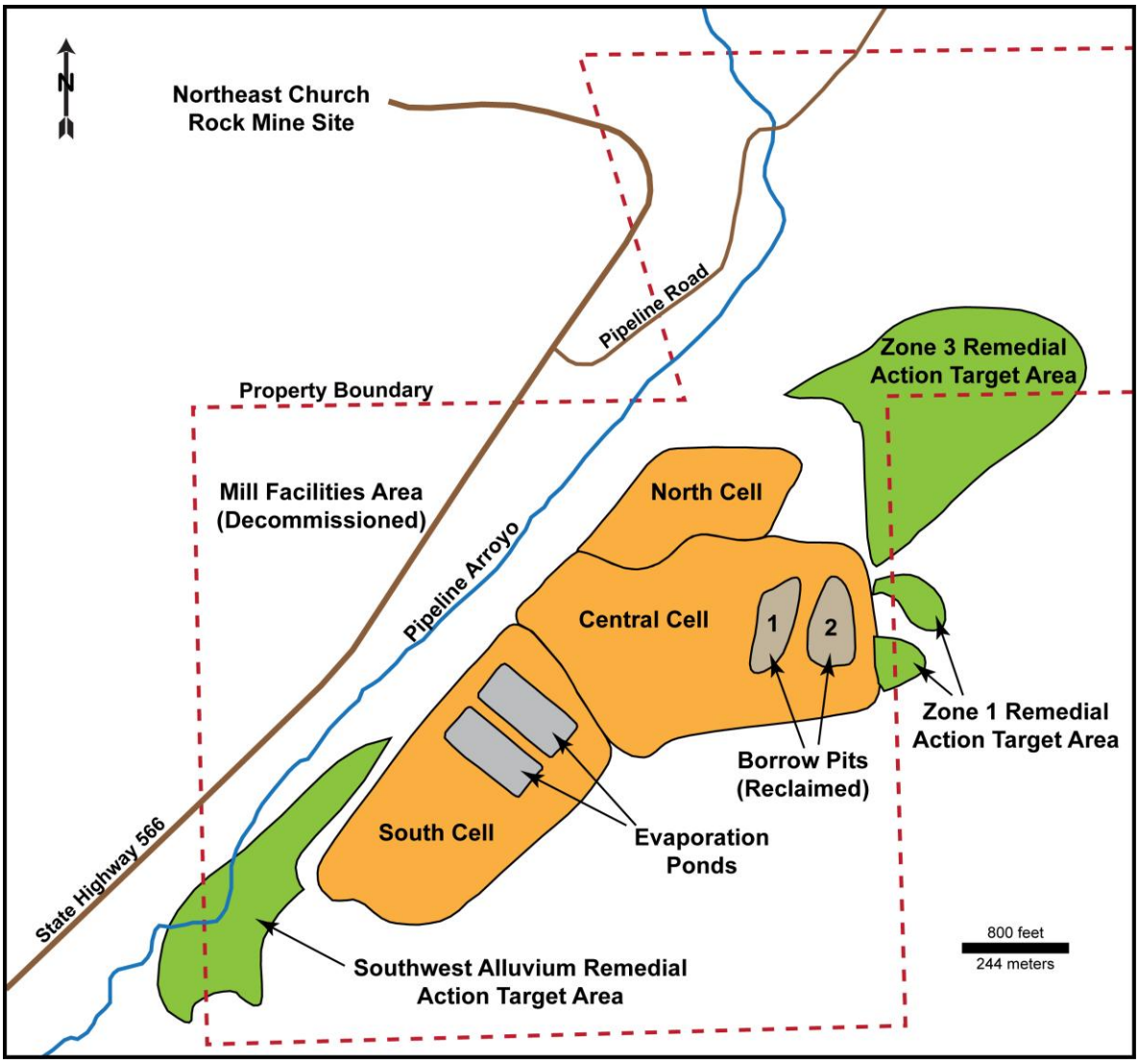

Figure 2. Church Rock Site Layout[1]

effectiveness. A small-scale pump-and-treat system is still operating in Zone 3 in an effort to control groundwater migration. EPA has directed UNC to evaluate remedial strategies to enhance cleanup efforts in Zone 3 by conducting several pilot tests and sitewide supplemental feasibility studies. NRC established semiannual groundwater monitoring program for all three remedial action target areas.

Additional Information

For more information about the former Church Rock Mill uranium recovery facility, visit the NRC uranium recovery website at http://www.nrc.gov/info-finder/materials/uranium/ or contact the NRC facility project manager, Yolande Norman, at (301) 415-7741 or yolande.norman@nrc.gov.

[1]Source: United Nuclear Corporation. "Annual Review Report—2009 Groundwater Corrective Action Church Rock Site, Church Rock, New Mexico." Gallup, New Mexico: United Nuclear Corporation. 2010.