Hanford Site Operations Overview

The Hanford Site is an industrial municipality roughly the size of Los Angeles, CA or Houston, TX. With a full-time population of 9,400 people, Hanford requires the same utilities, infrastructure and services of any municipality. Hanford has the responsibility to assist its neighboring communities when requested. Also, like other communities, Hanford has historically and culturally sensitive areas that must be preserved and protected. Unlike most communities, Hanford also has special nuclear material that must be protected, a legacy of its operational past.

Water System

The water system at the Hanford Site consists of a complex assortment of pumping, distribution, treatment, and storage facilities. These facilities utilize a variety of raw water sources to meet demand. The Water System includes the buildings, pumps, valve houses, reservoirs and distribution piping that deliver water from the Columbia River to the 200 areas and in small part to some of the 100 areas. Several wells and one spring supply raw water to a variety of low-use and remote facilities. The City of Richland Water Department supplies water to the 300 Area.

Sewer System

The Central Plateau sewer system currently comprises a collection of independent subsurface soil absorption septic systems. These systems consist of collection systems and septic tanks with gravity fed or pressurized drain fields, equalization basin holding tanks, and an evaporative sewage lagoon treatment system in the 200 West Area. The lagoon system, which began operations in 2012, was sized to process all current and future planned loads onsite, including both the 200 West and 200 East Areas. Using the lagoon system, the Central Plateau is in transition from de-centralized waste processing to a more centralized approach. As drain fields have failed or reached the end of their useful life, they have at times been converted from a septic tank and drain field into a holding tank on a routine pumping schedule. Waste is then trucked to and discharged into the lagoon for treatment.

The major components of the Water system are:
- 181B River Pump House
- 182B Reservoir (25 million gallons)
- 182B Raw Water Pump House
- 181D River Pump House
- 182D Reservoir (25 million gallons)
- 182D Raw Water Pump House
- 282E Reservoir (3 million gallons)
- 282W Reservoir (3 million gallons)
- 283W Potable Water Treatment Facility
- Over 25 miles of export pipe ranging in size from 42 inches down to 18 inches in diameter and over 50 miles of in-ground distribution lines

The major components of the sewer system associated with the Central Plateau (200 West, 200 East, and 600 Areas) are:
- 200 West Area Evaporative Sewage Lagoon (and Biosolids Handling Facility)
- 21 septic systems (permitted)
- 16 septic systems (unpermitted, constructed before July 1, 1984)
- 10 equalization basin holding tanks (permitted)

Overview

Part of the legacy of Hanford’s past is its infrastructure systems, many of which are 50 to 75 years old. They consist of:
- Water System
- Sewer System
- Electrical System
- Roads
- Infrastructure Projects
- Information Technology
- Emergency Services
- Security Services
- Land Management
- Other Site Operations Services
Electrical System

The majority of Hanford’s electrical power is purchased from the Bonneville Power Administration (BPA) and routed through a system designed to provide redundant supply to all critical loads onsite. Four substations and 200-plus miles of high voltage electrical transmission and distribution lines supply 20 megawatts of power across the site. The vast majority of site electrical utility lines, transformers, controls, and high voltage equipment is built, operated, and maintained by the site Mission Support Contractor. Power for facilities along the southern border of the site, including the 300 Area, are supplied by the City of Richland.

Site transmission and distribution system equipment include:
- 4 substations
- 774 distribution transformers
- 81 high voltage switching devices
- 550 meters
- 66 data loggers
- 5,886 wood poles

These assets deliver power through 53 miles of 230kV transmission lines and 167 miles of 13.8kV distribution lines to customers who consume over 58 million in power annually. BPA delivers 100 megawatts of power annually. BPA delivers 100 megawatts of power annually. BPA delivers 100 megawatts of power annually.

Roads

Site roads are defined as roads that provide access to and between designated areas on the Hanford Site. The Hanford Site road system consists of 377-lane miles of asphalt-paved road. Most of the Hanford Site roads were constructed in the 1940s as part of the Manhattan Project and don’t meet current design criteria. Since 1981, DOE has implemented several road construction projects to bring roadways up to standard. There are roughly 200 miles of road and 1 million square yards of paved surfaces onsite. These paved surfaces range in age from one year to 45 years.

Primary Roads:
- 350 lane miles (including non-paved roads)
- Stevens Drive beginning at the 1100 Area
- George Washington Way Extension at the 300 Area
- Route 10 from State Highway 240
- Route 11A from State Highway 240
- State Highway 240 Spur to 200 West Area
- State Highway 240 at the Yakima Barricade

Portions of site roads that are four-lane:
- Stevens Drive and Route 45 to the Wye Barricade (12 miles)
- Route 25 from the Wye Barricade to Route 11A (6.5 miles)
- Route 11A from Route 25/2N to Route 6 (13 miles)

The balance of the site roads (125 miles) are two-lane.

Information Management

The portfolio of Information Resources Management (IRM)/Information Technology (IT) services includes buy is not limited to the following areas:
- Operation and Maintenance of telecommunications infrastructure and systems, including associated hardware and software
- End user computing, network, telecommunications, radio engineering, and technical support services, including external services
- Service provider interfaces
- Enterprise application software development, modernization, enhancements, and associated security testing
- Technical support for cyber security, including intrusions detection, incident response, and responses resulting from penetration testing, firewall management, and administration of cyber tools
- Records, content management, and collaboration support services
- Strategic and tactical advisory support on emerging technologies and services

IT services:
- 5,600 Full client workstations
- 2,300 Zero clients with hosted desktops
- 1,160 Backbone/distribution/access devices
- 13,000 VoIP-enabled lines
- 12 Enterprise Storage Systems
- 850 plus Servers (94% virtual)

IT service requests last year:
- 9,000 moves, additions, and changes
- 43,000 help desk support tickets
- 1,500 software system change requests

Content and Records Management:
- 7.4 million electronic records
- 21,500 boxes in records holding area
- 87,300 boxes at Federal Record Center
- 2,700 active site forms

IRM activity last year:
- 816,904 electronic records captured
- 252,715 paper records scanned
- 4,649 boxes of records shipped or received
- 212,815 pages reviewed for public release
- 814 new or revised forms
- 37,127 record inquiry calls/emails

Emergency Services

Emergency Services at the Hanford Site consist of Emergency Preparedness, the Hanford Fire Department, and Hanford Patrol. These services provide the support necessary for effective and efficient emergency response. The programs are aligned with the hazards and consequences associated with onsite facilities and activities, offsite facilities that may impact the site, and transportation emergency preparedness activities involving radiological and non-radionuclides, materials, both on and off site.

Major components of Emergency Services include:
- Planning and protection services for 21 hazardous facilities, maintaining:
  o The Hanford Emergency Management Plan
  o The 24/7/365 Emergency Operations Center and associated communication links
  o The situational awareness system
  o Interfaces with three affected counties and two states
  o Providing life safety services to the site and surrounding areas, including:
    o Emergency response to wildland and structure fires
    o Fire suppression and prevention
    o Responding to emergency medical incidents and providing Advanced Life Support
  o Incident command
- Developing capabilities to respond to:
  o Facilities that contain Category I-IV Special Nuclear Material
  o Hazardous materials incidents
  o Chemical/biological and radiological incidents

Security Services

Hanford Site Security Services include the protection of DOE interests from theft, diversion, or sabotage of Special Nuclear Material; espionage; loss or theft of classified/controlled matter or government property; and other hostile acts that may cause unacceptable adverse impacts to national security, health and safety of the public, Hanford employees, and the environment. The primary focus is the 200 East Area Interim Storage Area, which is the Category I and II Special Nuclear Material storage location.

Major components of Safeguards and Security include:
- Overall site security
- Protection, accountability, and control of Special Nuclear Material
- Information Protection
- Cyber Security
- Security analysis and assessments
- Personnel clearance programs
- Security Areas, including:
  o 14 Limited Areas
  o 2 Protected Areas
  o 25 Alarmed facilities

Infrastructure Projects

The Hanford site has many municipal-type utility systems that will require upgrades or replacement because of new requirements, age, obsolescence, failures, and wear. The systems will require upgrades over the next few years in order to support the Hanford Site cleanup mission.

Systems needing to be addressed include:
- Electrical System - electrical line, components, poles, and access roads
- Water System - water treatment components, pumps, piping, reservoirs, tanks, and electrical components
- Sewer System - sewage collection component and septic drain fields
- Road System - pavement cracking and road structure
- Fire response and protection - fire alarm systems, fire stations
- Emergency management - site emergency sirens
- Information management - network upgrades and services
- Emergency sirens upgrade