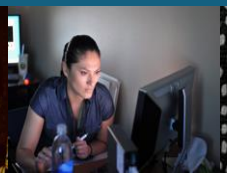
Chemical Waste Landfill Post-Closure Care Permit Renewal



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Hazardous Waste Permits and Permit Applications

- Permits are required for certain hazardous waste management activities
  - Treatment, storage, and disposal (TSD)
  - Post-closure care of closed TSD facilities (TSDFs) where wastes remain in place
- Hazardous waste permits are issued to TSDF owner(s) and operator(s)
  - Owner(s) and operator(s) are defined as "permittees"
  - Permits are effective for 10 years
  - Permittees must apply for renewal of each permit
  - Permits remain in effect while renewal application is reviewed
- A complete hazardous waste permit application has two parts
  - Part A is a completed form with information that describes the TSDF location, contacts, operations, and types of wastes managed
  - Part B is a description of the TSDF, proposed operations, and features to protect human health and the environment

Opportunities for Public Input to Hazardous Waste Permits

Public input is built into the process

- Permit applications
  - Before permit applications for new waste management facilities
  - Before permit renewal applications for facilities with significant changes
  - When the regulatory agency denies permit applications
  - When the regulatory agency issues draft permits
- Modifications to existing permits
  - Three levels of permit modifications – minor (Class 1) to significant (Class 3)
  - When the permittees request one or more Class 2 or Class 3 modifications
  - When the regulatory agency decides to approve or deny Class 3 modification requests
- Additional public notice and information (not input)
  - When the regulatory agency receives permit applications or permit renewal applications
  - When the agency approves Class 1 and Class 2 permit modifications

Sandia National Laboratories (SNL)

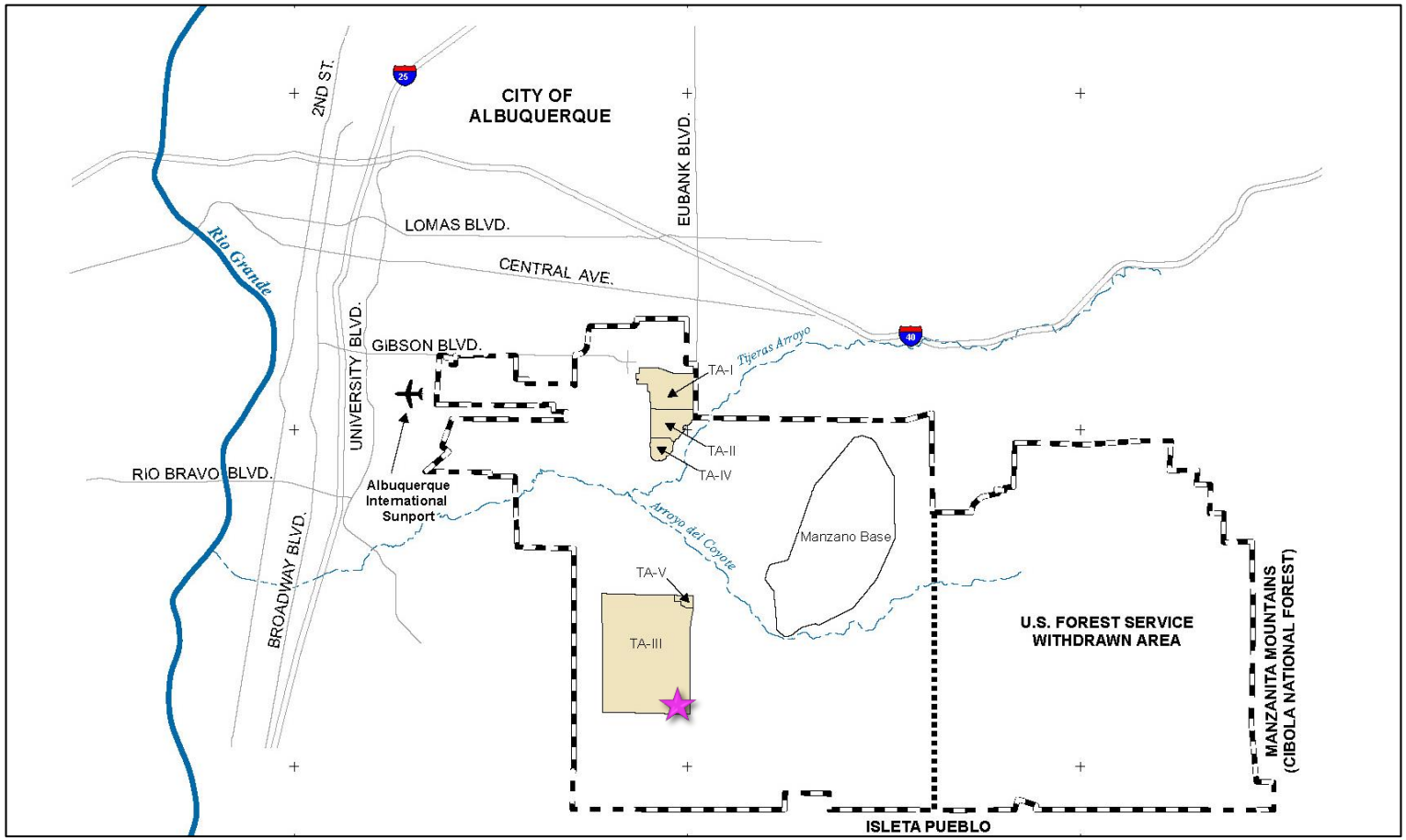
- Locations in Albuquerque, New Mexico and Livermore, California
  - Additional smaller facilities Nevada, Hawaii, and other states
- Albuquerque
  - Located on Kirtland Air Force Base
  - Additional locations in Albuquerque
- Activities in Albuquerque
  - Wide variety of research and development projects
  - Projects related to national security initiatives
  - Ongoing maintenance and repair
  - Renovation of buildings and test areas
  - Decommissioning and demolition of aging buildings and test areas that are no longer needed
- Hazardous and mixed hazardous/radioactive wastes are generated during ongoing activities

Hazardous and Radioactive Mixed Wastes at SNL

- Active and successful program to minimize hazardous and mixed wastes
  - Substitute less hazardous materials in processes where feasible
  - Re-use chemicals and materials where feasible
  - Change processes to reduce quantity and hazards of waste generated
  - Separate hazardous wastes from other wastes
  - Periodic training for all personnel
- Stages of management for hazardous and mixed wastes at SNL
  - Accumulated in containers at or near the point of generation
  - Collected and taken to one of seven on-site permitted hazardous and mixed waste management units
  - Some wastes are treated
  - Repackaged for shipment to permitted TSDFs
- Wastes were historically disposed on-site
  - Early 1950s to late 1980s
  - All wastes have been sent to permitted off-site TSDFs since late 1980s

Chemical Waste Landfill (CWL) at Sandia National Laboratories

- Located in SNL Technical Area III
  - Groundwater occurs 500 feet below ground surface, not used for any purpose
  - Used for disposal from 1962 through 1985, containers of hazardous waste stored at the landfill from 1981 to 1989
  - Trichloroethene (TCE) detected in groundwater at concentrations exceeding the drinking water maximum contaminant level (MCL) in 1990
  - Nickel, chromium, and other volatile organic compounds (VOCs) also monitored in groundwater
- Closure plan approved by New Mexico Environment Department (NMED) in 1993
  - Included corrective action to address contaminated groundwater
- Multiple closure activities
  - Extracted TCE from soil between ground surface and groundwater using a vacuum system in 1997 and 1998
  - Excavated CWL in September 1998 through February 2002, removed containers and contaminated soil
  - Backfilled excavation with soil
  - Constructed at-grade cover system
  - Installed replacement groundwater monitoring wells
  - Installed soil-vapor monitoring wells
- Closure completed and approved by NMED June 2011
- Post-closure care permit (PCCP) took effect June 2011



Location of CWL at SNL

Characteristics of Closed CWL

- At-grade vegetative soil cover system
  - Bottom layer is 3-foot-thick layer of clean native soil
  - Top layer is 1.5-foot-thick layer of topsoil with native plants
  - Gently sloped to direct precipitation to flow off the cover
  - Minimizes moisture infiltration into former disposal area
- Residual contamination and risk
  - Residual contamination in soil below excavated landfill
  - Residual contamination in soil used as backfill
  - Contaminants in soils meet NMED risk-based levels for industrial land use
  - Ongoing activities must not disturb the cover
  - VOCs, nickel, and chromium present in groundwater
  - No contaminants in groundwater exceed MCLs
- Groundwater monitoring
  - 4 wells – 1 upgradient (background), 3 downgradient
- Soil vapor monitoring
  - 2 wells with 3 sampling ports each
  - 3 wells with 5 sampling ports each
  - Sampling ports at depths between 36 feet and 480 feet

Monitoring Systems at CWL in 2020

Above on left:

- 2 soil vapor monitoring wells at southeast corner of CWL
- Each well has protective casing (yellow) with passive venting device (white) and posts (yellow) to protect from vehicle damage
- Barrier fence with warning sign
- Cover vegetation (beyond fence) is alive but not green due to lack of summer rains

Above on right:

- Groundwater monitoring well on north side of CWL
- Each well has protective casing (yellow) with passive venting device (white) and posts (yellow) to protect from vehicle damage
- Barrier fence with warning sign
- Cover vegetation (beyond fence) is alive but not green due to lack of summer rains

CWL PCCP

- Monitor groundwater
  - Collect samples from each well semi-annually
  - Analyze samples for TCE, nickel, and chromium
  - Analyze samples for other VOCs annually
  - Repair monitoring wells if needed
  - Replace non-functioning wells after approval from NMED
  - Determine groundwater flow rate, flow direction, and hydraulic gradient annually
  - Evaluate whether contaminant concentrations are increasing
- Monitor soil vapor
  - Collect vapor samples from all ports in each well annually
  - Analyze samples for VOCs
  - Repair wells if needed
  - Replace non-functioning wells after approval from NMED
  - Evaluate whether contaminant concentrations are increasing

CWL PCCP (continued)

- Maintain cover
  - Inspect cover quarterly
  - Remove deep-rooted plants when they are small to prevent damage
  - Repair damage from erosion
  - Fill in animal burrows
  - Inspect health of vegetation annually
  - Reseed bare areas
- Maintain fence and drainage
  - Inspect fence and drainage quarterly
  - Remove weeds and repair damage from erosion
  - Repair fence and replace warning signs when needed
- Submit annual report to NMED
  - Report due March 31 each year
  - Include groundwater and soil-vapor monitoring results
  - Include evaluation of contaminant concentrations

CWL PCCP Results

- Conditions are protective of human health and the environment
- CWL controls and monitoring systems are in good condition and performing as designed
- CWL status
  - Cover vegetation is healthy
  - Cover is in good repair
  - Fences and drainage are in good condition
- Monitoring results demonstrate groundwater is protected
  - Soil-vapor results show plume of residual VOCs is stable and slowly diffusing
  - Only TCE detected in groundwater samples, concentrations are decreasing
  - All monitoring wells are in good repair
- Annual reports submitted to NMED
  - All reports have been approved
- Industrial land use maintained

Application for Renewal of CWL PCCP

- Conditions at the CWL are protective of human health and the environment
- The current permit expires June 2, 2021
- We are asking for the permit to be renewed
- We are not requesting any significant changes to the permit
  - There are no significant changes to the CWL conditions or monitoring systems
  - We are updating maps, photographs, and other information

For More Information

- View the current CWL PCCP on the NMED web site at https://www.env.nm.gov/hazardous-waste/sandia-national-laboratories/#SNLCWLPCCP
- Send questions to envinfo@sandia.gov