

# Mixed Waste Landfill (MWL)

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View to West of the MWL ET Cover. Inset Photograph – View to Northwest of Soil-Vapor Monitoring Well and the Native Grasses.

## Mixed Waste Landfill (MWL)

The Mixed Waste Landfill (MWL) is a Solid Waste Management Unit at Sandia National Laboratories/New Mexico (SNL/NM). The MWL is located 4 miles south of the central facilities at SNL/NM and 5 miles southeast of Albuquerque International Sunport. The landfill is a fenced, 2.6-acre site in the north-central portion of Technical Area-3. The MWL was established in 1959 as a disposal area for low-level radioactive waste generated by SNL/NM research facilities. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies of activity (at the time of disposal) were disposed of in the landfill from March 1959 through December 1988.

Wastes disposed of in the MWL include acids, organic compounds and oils, depleted uranium, lead shielding, activation products, beryllium, sodium, lithium, neutron generator tubes, liquid scintillation vials, assorted contaminated equipment, decontamination materials, construction debris, contaminated soils, and solid wastes. The majority of the waste in the MWL is low-level radioactive waste, with some hazardous waste and mixed waste. All liquid wastes were solidified prior to disposal with one exception (the 1967 disposal of 204,000 gallons of reactor coolant water). The MWL has been extensively studied and it does not represent a current or future threat to drinking water.

## Regulatory Background Information

The MWL CMS Report, which identified and evaluated corrective measures alternatives for the MWL, was submitted to the NMED in May 2003. The NMED held a public comment period from August 11, 2004 to December 9, 2004 and a public hearing was conducted on December 2-3 and 8-9, 2004. On May 26, 2005, the Secretary of the NMED selected a vegetative soil cover (i.e., an ET cover) with a biointrusion barrier as the final remedy for the MWL. The Secretary requested that a Corrective Measures Implementation Plan (CMIP) incorporating the final remedy be developed within 180 days following

the selection of the remedy. The NMED also required the following items to be addressed in the CMIP: a comprehensive fate and transport model and specific monitoring trigger levels.

The CMIP was submitted to the NMED in November 2005 and contained a description of the selected remedy, the objectives for the remedy, detailed engineering design drawings and construction specifications, a construction quality assurance plan, fate and transport modeling results, and proposed monitoring trigger levels for specific constituents. After two Notices of Deficiency issued by the NMED were addressed by DOE and Sandia, the CMIP was conditionally approved by the NMED in December 2008. The MWL Alternative ET Cover was installed from May 20 through September 3, 2009 and consists of four main layers: compacted subgrade, biointrusion barrier, compacted native soil, and topsoil. The Subgrade varies in thickness from 0 to 3.3 feet, and the combined average thickness of the overlying ET Cover layers (i.e., Biointrusion, Native Soil, and Topsoil Layers) is 5.37 feet. The ET Cover was constructed with approximately 33,000 cubic yards of soil fill and 6,800 cubic yards of rock (in-place, compacted volumes), with an overall footprint of 4.1 acres including side slopes. Verification that the ET Cover materials and construction meet CMIP specifications is based upon the results of 113 laboratory tests (Standard Proctor, Gradation, Classification, and Saturated

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Hydraulic Conductivity), 271 field tests (in-place density and moisture), and visual inspections. All MWL ET Cover construction activities were observed, inspected, and documented by an independent third-party Construction Quality Assurance (CQA) contractor. The CMI Report was submitted to the NMED within 180 days of completion of the cover construction on January 26, 2010.

## Long-Term Monitoring and Stewardship

A soil and soil-vapor survey was conducted in the spring of 2008 in order to update the characterization of soil and vadose zone conditions at the MWL at the request of the NMED. A final report was submitted to the NMED in August 2008 and approved in September 2008. Also in 2008, the Department of Energy (DOE)/Sandia updated the groundwater monitoring network at the MWL. Four of the earliest installed wells were decommissioned and four new wells were installed at locations approved by the NMED. The four new groundwater monitoring wells at the MWL are proposed for continued monitoring in the Long-Term Maintenance and Monitoring Plan (LTMMP), which was submitted to the NMED in September 2007. A revised LTMMP will be submitted to the NMED within 180 days after approval of the CMI Report that will update the 2007 LTMMP relative to groundwater monitoring well changes and ET Cover installation.

The LTMMP addresses a comprehensive, multi-media monitoring program for the MWL that includes sampling the air, surface soil, subsurface soil gas and moisture (in the vadose zone), and groundwater. An inspection and maintenance schedule for the ET Cover and site drainage is proposed, as well as physical and institutional controls. Annual reporting of monitoring and maintenance activities and results, as well as a review every 5 years of the effectiveness of the ET Cover and the feasibility of excavating the MWL, is also required. The long-term monitoring will ensure that the final remedy, the ET Cover, is protective of human health and the environment.

## Recent Activities, Current Status and Future Work at the MWL

The construction of the final ET Cover was completed from May 20 through September 3, 2009.



Native grass seedlings growing on the MWL ET Cover in November 2010

The CMI Report documenting ET Cover construction was submitted to the NMED on January 26, 2010. The NMED issued a Notice of Disapproval on the CMI Report in May 2011. DOE/Sandia submitted comment responses and replacement pages in August 2011 and NMED approved the revised report on October 14, 2011.

In August 2010, the DOE/Sandia submitted the MWL Toluene Investigation Report. The Report concludes that the MWL is not the source of low level toluene detected in some groundwater samples from the MWL groundwater monitoring network. The DOE/Sandia responded to a NMED Notice of Disapproval in October 2010 and submitted a revised report, which was approved by NMED in January 2011.

With approval of the CMI Report, the LTMMP has been revised and submitted to the NMED (March 2012).

Groundwater monitoring is ongoing and will continue. Annual groundwater data can be found on the following webpage:

<http://www.sandia.gov/news/publications/environmental>

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