



Main Plant Process Building Demolition



WVDP Act

The West Valley Demonstration Project (WVDP) Act, Public Law 96-368, was signed in 1980 and directed the U.S. Department of Energy (DOE) to complete specific activities at the West Valley site including solidification of liquid high-level waste and decommissioning the facilities used during the project. The Main Plant Process Building (MPPB) is the largest and most contaminated facility at the site and it is being demolished under the WVDP Act. Demolition is planned to begin in 2018 and take about 18 months to complete.

Main Plant Process Building

The MPPB was constructed between 1963-1966 as a commercial reprocessing facility to recover reusable plutonium and uranium from spent nuclear reactor fuel. It operated from 1966 to 1972, during which approximately 640 metric tons of irradiated nuclear fuel was processed. Several areas of the MPPB were decontaminated and reused by DOE to support liquid high-level radioactive waste vitrification.

The five-story, 350,000 square foot structure is radioactively contaminated as a result of fuel reprocessing and related activities. In addition to radiological contamination, the facility also contains hazardous materials, including asbestos insulation, lead and PCBs.

MPPB Description

The MPPB is a reinforced concrete structure that is 130-feet-wide, 270-feet-long and 79-foot-tall at its highest point. A 160-foot-tall cement-reinforced stainless steel ventilation stack is positioned on top of the MPPB. The MPPB foundation includes "H" piles that extend to 70 feet below grade.

As part of the Phase I Decommissioning – Facilities Disposition contract, CH2M HILL BWXT West Valley, LLC (CHBWV) will demolish the MPPB to the grade level floor slab. Structures that extend below the grade level are scheduled for removal in a follow-on contract.



Demolition of the Main Plant Process Building is scheduled to begin in 2018.

Extensive equipment and material removal was performed in the Main Plant Process Building (MPPB) to prepare the facility for demolition. Nearly all process vessels, tanks and piping have been removed from the facility. In isolated areas where vessel removal is prevented by lack of access or supportive equipment, vessels are being flushed and internal and external contamination fixed in place to allow their removal during demolition using heavy equipment. Waste and hazardous materials inside the facility are being removed and packaged for disposal or relocated to alternative onsite storage locations. Technical feasibility and the ability to meet established regulatory requirements are deciding factors in determining which materials and equipment would be removed prior to demolition or stabilized in place for removal during demolition.

Protection of workers, the public and the environment and compliance with all applicable federal and state laws and regulations are primary considerations in planning for demolition. Preparation and demolition activities are being conducted in accordance with strict work controls that anticipate and mitigate potential hazards, (i.e., procedures, Radiation Work Permits and Industrial Work Permits). Task-specific worker training and proficiency is required for all personnel at the WVDP.

Security restrictions prevent unauthorized individuals from entering the WVDP site. During MPPB deactivation, entry into active work areas is limited to personnel involved in the work (i.e., asbestos workers, radiological workers, etc.). A boundary will surround the active demolition area to keep non-demolition personnel at a safe distance from heavy equipment and debris when structural demolition begins.



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Demolition Safety – Industrial, radiological and environmental safety are foremost considerations in planning and executing demolition of the MPPB. Throughout demolition, activities will be monitored and controlled to ensure worker, public and environmental safety.



High-visibility paint will be used to identify equipment that requires special handling during demolition. This practice safeguards against unintended radiological releases and maximizes operator distance from radioactive materials. These measures were successfully demonstrated during demolition of the contaminated 01-14 Building at the WVDP in 2013.



Waste debris packaging at the point of generation is one method used to control contamination. Air monitors located in the cab of the demolition equipment and in stand-alone ground units like the one outlined in the foreground above will monitor the demolition area for any unintended airborne disturbance.

Defined Plans – Work plans are developed using corporate experience, industry best practices and lessons learned from similar demolition projects to anticipate and mitigate potential adverse events during demolition.

- Radioactive and hazardous materials are being removed prior to demolition or controlled in place (i.e., fixative applied to immobilize loose contamination and water misting to control dust during demolition).
- Decontamination is performed, followed by air dispersion modeling to verify that demolition work will meet protective limits.
- Extensive pre-demolition characterization was performed to identify areas where residual radiological and hazardous materials require special handling during demolition.
- Equipment to be removed during demolition is being marked with high visibility paint for special handling.
- Structural evaluations were performed to establish a demolition sequence that prevents unintended structural failure during demolition.
- Water management and debris-handling controls are developed to mitigate contamination migration during demolition.
- Lessons learned from previous contaminated facility demolition projects were incorporated into the planning.

ALARA Principles – Time, distance and shielding are the methods employed to maintain radiological exposures that are As Low As Reasonably Achievable (ALARA). Work plans are developed to limit the amount of time, maximize the distance and shield workers from radiological sources during deactivation, structural demolition and waste packaging.

Radiological and Contamination Pathway Monitoring – Potential contamination release pathways and radiological emissions will be monitored throughout demolition. Air monitoring will be conducted in concentric rings beginning inside the demolition area and extending to offsite public areas where the nearest neighbors are located. Real-time monitoring at the demolition site will alert demolition operators in the event of an unplanned disturbance.

Waste Management and Disposal – Waste will be packaged as close to the time of generation as possible to prevent debris accumulation and reduce the potential for contamination migration. Debris will be shipped offsite for disposal at licensed disposal facilities. Approximately 21,550 tons of debris will be generated during MPPB demolition (~1437 shipments).

The West Valley Demonstration Project (WVDP) is a U.S. Department of Energy-led environmental remediation project located approximately 35 miles south of Buffalo, NY. CH2M HILL BWXT West Valley LLC, (CHBWL) was formed to meet the specific requirements for WVDP Phase 1 Decommissioning – Facility Disposition. The limited-liability partnership combines the experience and capabilities of CH2M HILL Constructors Inc. (CH2M HILL), BWX Technologies (BWXT), and Environmental Chemical Corporation (ECC).