Department of Energy
West Valley Demonstration Project
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May 18, 2020

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Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
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SUBJECT: U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) Main Plant Process Building (MPPB) Decommissioning & Demolition (D&D) Work Plan, WVDP-586, Revision 4

REFERENCES:

1) Letter (381198), B. C. Bower to A. Snyder, "U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) Main Plant Process Building Decommissioning & Demolition Plan (Plan), WVDP-586, Revision 3," dated September 12, 2019

2) Letter (380915), B. C. Bower to A. Snyder, "U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) Response to U.S. Nuclear Regulatory Commission (NRC) Request for Information and Analyses Supporting Demolition of the WVDP Main Plant Process Building (MPPB)," dated June 19, 2019

3) Letter (380841), A. Snyder to B. C. Bower, "U.S. Department of Energy West Valley Demonstration Project Main Plant Process Building Decommissioning & Demolition Plan, WVDP-586, Revision 1, dated September 27, 2017 (Docket No. 05000201 (POOM-032))," dated May 30, 2019

4) Letter (379162), A. Snyder to B. C. Bower, "U.S. Department of Energy West Valley Demonstration Project Main Plant Process Building Decommissioning & Demolition Plan, WVDP-586, Revision 1, dated February 27, 2017," dated August 27, 2018

5) Letter (377509), B. C. Bower to A. Snyder, "U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) Responses to U.S. Nuclear Regulatory Commission (NRC) Comments on DOE-WVDP Main Plant Process Building (MPPB) Decommissioning & Demolition (D&D) Plan, WVDP-586, Rev. 1, dated February 27, 2017," dated February 5, 2018

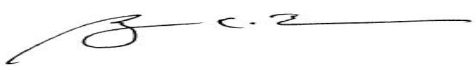
6) Letter (370151), B. C. Bower to M. R. Meyer, "Transmittal of U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) Main Plant Process Building (MPPB) Decommissioning & Demolition (D&D) Plan, Revision 1, February 27, 2017," dated March 23, 2017

Dear Ms. Snyder:

This letter transmits to the U.S. Nuclear Regulatory Commission, *WVDP-586 – West Valley Demonstration Project Main Plant Process Building Decommissioning & Demolition Work Plan, Revision 4.* This Revision serves to reflect the current status of the pre-demolition activities including an update to the demolition approach.

Please contact Moira N. Maloney of my staff at (716) 870-8679 if you have any questions, need additional information, or if you would like to schedule a conference call to discuss the enclosed.

Sincerely,



Bryan C. Bower, Director
West Valley Demonstration Project

Enclosure: WVDP MPPB D&D Work Plan, WVDP-586, Rev. 4

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West Valley Demonstration Project
Main Plant Process Building
Decommissioning & Demolition Work Plan,

WVDP-586, Rev. 4

WD:2020:0445

West Valley Demonstration Project

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WEST VALLEY DEMONSTRATION PROJECT
MAIN PLANT PROCESS BUILDING
DECOMMISSIONING & DEMOLITION WORK PLAN

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Acronyms

ACM	Asbestos-Containing Materials
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee's Dispersion Model
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
A&PC	Analytical & Process Chemistry
ARC	Acid Recovery Cell
ARPR	Acid Recovery Pump Room
BSFR	Bulk Survey for Release
CA	Contamination Area
CAM	Continuous Air Monitor
CAP88	Clean Air Act Assessment Package – 1988
CCR	Chemical Crane Room
CFR	Code of Federal Regulations
CHBWV	CH2M HILL BWXT West Valley, LLC
CPC	Chemical Process Cell
CSBD	Cut, Shear, Break, Drop
CSE	Criticality Safety Engineer
D&D	Decommissioning & Demolition
DAC	Derived Air Concentration
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DP	Decommissioning Plan
DR	Damage Ratio
DSA	Documented Safety Analysis
EDR	Equipment Decontamination Room
EIS	Environmental Impact Statement
EMOA	East Mechanical Operating Aisle
EPA	U.S. Environmental Protection Agency
ESH&Q	Environmental, Safety, Health, and Quality
EWTS	Electronic Waste Tracking System
FRS	Fuel Receiving and Storage
GCR	General Purpose Cell Crane Room
GCRE	General Purpose Cell Crane Room Enclosure
GCRX	General Purpose Cell Crane Room Extension
GOA	General Purpose Cell Operating Aisle
GPC	General Purpose Cell
HAC	Hot Acid Cell
HEV	Head End Ventilation
HEPA	High-Efficiency Particulate Air
HLW	High-Level Waste
HLWISF	High-Level Waste Interim Storage Facility
HWMU	Hazardous Waste Management Unit
HVAC	Heating Ventilation and Air Conditioning
IM	Intermodal
ISMS	Integrated Safety Management System
IWCP	Integrated Work Control Program
IWP	Industrial Work Permit
LLW	Low-Level Waste
LWA	Lower Warm Aisle
LWC	Liquid Waste Cell
LXA	Lower Extraction Aisle
LWTS	Liquid Waste Treatment System
MAR	Material at Risk

MEOSI	Maximally Exposed Off-Site Individual
MLLW	Mixed Low-Level Waste
MOA	Mechanical Operating Aisle
MPPB	Main Plant Process Building
NESHAP	National Emission Standards for Hazardous Air Pollutants
NNSS	Nevada National Security Site
NRC	U.S. Nuclear Regulatory Commission
NYCRR	New York State Official Compilation of Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOL	New York State Department of Labor
OGA	Off-Gas Aisle
OGBR	Off-Gas Blower Room
OGC	Off-Gas Cell
OSHA	Occupational Safety and Health Administration
PAR	Power Manipulator
PCB	Polychlorinated Biphenyl
PCR	Process Chemical Room
PMC	Process Mechanical Cell
PMCR	Process Mechanical Cell Crane Room
PMCRE	Process Mechanical Cell Crane Room Enclosure
PPC	Product Purification Cell
PPH	Product Packaging and Handling
PSC	Process Sample Cell
PVU	Portable Ventilation Unit
rad-NESHAP	National Emission Standards for Hazardous Air Pollutants (for Radionuclides)
RCRA	Resource Conservation and Recovery Act
RER	Ram Equipment Room
RM	Responsible Manager
RPP	Radiation Protection Program
RWP	Radiological Work Permit
SOP	Standard Operating Procedure
SPDES	State Pollutant Discharge Elimination System
SPRU	Separations Process Research Unit
SRR	Scrap Removal Room
SSC	Sample Storage Cell
SST	Solvent Storage Terrace
STR	Subcontractor Technical Representative
TRU	Transuranic
ULO	Uranium Load Out
UPC	Uranium Product Cell
UWA	Upper Warm Aisle
UXA	Upper Extraction Aisle
VEC	Ventilation Exhaust Cell
VF	Vitrification Facility
VSR	Ventilation Supply Room
VWR	Ventilation Wash Room
WAC	Waste Acceptance Criteria
WCS	Waste Control Specialists
WIP	Work Instruction Package
WNYNSC	Western New York Nuclear Service Center
WRPA	Waste Reduction and Packaging Area
WVDP	West Valley Demonstration Project
XC	Extraction Cell
XCR	Extraction Chemical Room

1.0 INTRODUCTION

1.1 Background

In December 2009 the U.S. Department of Energy (DOE) submitted Revision 2 of the Phase 1 Decommissioning Plan (DP) for the West Valley Demonstration Project (WVDP) to the U.S. Nuclear Regulatory Commission (NRC). The DOE prepared the DP pursuant to its statutory obligations under the *WVDP Act of 1980*, Public Law 96-368, and to satisfy a commitment in the 1981 Memorandum of Understanding between DOE and NRC. The proposed action in the Phase 1 DP is based on the preferred alternative (Phased Decisionmaking) in the *Final Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center* (EIS). Under the preferred alternative, decommissioning will be accomplished in two phases. Phase 1 decommissioning actions include removal of certain WVDP facilities including the Main Plant Process Building (MPPB) and the Vitrification Facility (VF). The Phase 2 decision involves decommissioning or long-term management decisions for those facilities remaining at the WVDP and Western New York Nuclear Service Center (WNYNSC) following Phase 1 decommissioning.

Under the WVDP Act, the NRC's responsibilities include prescribing requirements for decontamination and decommissioning of project facilities, providing informal review and consultation to DOE on activities related to the project, and monitoring project activities for the purpose of assuring public health and safety.

The organization and content of the Phase 1 DP prepared by DOE were based on NRC guidance in Volume 1 of NUREG-1757, *Consolidated Decommissioning Guidance, Decommissioning Process for Materials Licensees* and agreements made between NRC and DOE on the applicability of this guidance to the DP during a May 2008 meeting. Prior to DOE developing the Phase 1 DP, NRC agreed that certain DOE regulations, orders, and technical standards are adequate to define, control, and establish safe work activities at the site, and that DOE did not need to provide these details in the Phase 1 DP. In this respect, NRC considered areas such as project management and organization, the health and safety program, the environmental monitoring and control program, and the radioactive waste management program adequate under DOE's responsibility and authority.

The DP contains a general overview of Phase 1 decommissioning activities including a summary of remediation and demolition technologies. In the Phase 1 DP, DOE generally avoided being prescriptive in methods to be used to give the decommissioning contractor(s) flexibility. The DP stated that it would be supplemented by more detailed work plans for demolition of major facilities such as the MPPB and VF.

In June 2011, DOE awarded the Phase 1 Decommissioning and Facility Disposition Contract to CH2M HILL BWXT West Valley, LLC (CHBWV). Under this current contract, CHBWV, and its subcontractors, will deactivate and prepare the VF and MPPB for demolition, demolish the buildings to grade level (i.e., nominal 100 ±3 ft, plant reference elevation), and stabilize the remaining at-grade and below grade structures.

In 2012 the WVDP established an ambient air monitoring network and sampling program providing continuous environmental air sampling during all site activities for surveillance and regulatory compliance. Sixteen air monitoring stations encircling the WVDP are located near the closest off-

site receptor in each compass sector and one background location located about 18 miles from the site. In 2015, the U.S. Environmental Protection Agency (EPA) approved the use of "ambient environmental measurements" pursuant to 40 Code of Federal Regulations (CFR) 61.93(b)(5) for estimating off-site dose from airborne emissions and to demonstrate compliance with 40 CFR 61, Subpart H. As the predominant source of WVDP air emissions transitions from point sources (e.g., MPPB stack) to diffuse sources (i.e., releases from building demolition), the use of ambient air monitoring samplers becomes a more appropriate method of demonstrating compliance with radiological National Emission Standards for Hazardous Air Pollutants for radionuclides (rad-NESHAP) requirements.

In January 2016, the WVDP submitted to EPA a request for approval for alternative methodology, pursuant to 40 CFR Part 61.96(b), for radionuclide source-term calculations for air emissions from WVDP demolition activities. The WVDP believes the proposed alternative calculation is more appropriate for the estimation of radionuclide emissions from demolition activities, as demolition activities were not considered when the regulations (Appendix D to 40 CFR Part 61) were originally promulgated. The EPA approved the use of the alternative methodology to support VF demolition on May 3, 2016, with conditions to be implemented during demolition activities. The WVDP will continue to coordinate with EPA and perform calculations to support WVDP facility demolitions in accordance with rad-NESHAP requirements.

Within the MPPB are several areas/systems that are identified as Resource Conservation and Recovery Act (RCRA) Interim Status Hazardous Waste Management Units (HWMUs) with closure of these units to be performed in accordance with RCRA closure plans. The following are the RCRA Interim Status Units within the MPPB and the associated RCRA Closure Plans:

- Analytical and Process Chemistry (A&PC) Hot Cells - WVDP-447, *Resource Conservation and Recovery Act Hazardous Waste Closure Plan Analytical and Process Chemistry Hot Cells;* submitted to the New York State Department of Environmental Conservation (NYSDEC) in December 2014;
- High-Level Waste Interim Storage Facility (HLWISF) - WVDP-448, *Resource Conservation and Recovery Act Hazardous Waste Closure Plan for the High-Level Waste Interim Storage Facility;* submitted to the NYSDEC in February 2016; and
- Liquid Waste Treatment System (LWTS) - WVDP-154, *Resource Conservation and Recovery Act Hazardous Waste Closure Plan for the Liquid Waste Treatment System;* submitted to the NYSDEC in April 2016.

The RCRA closure plans were prepared to meet the requirements of the State and Federal hazardous waste regulations, specifically Title 6 of the New York State Official Compilation of Codes, Rules, and Regulations (6 NYCRR) §373-3 and 40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*. Closure certification and required documentation will be prepared at completion of closure activities for each HWMU and submitted to NYSDEC.

The Main Plant Process Building (MPPB) was evaluated in 1993 as part of the RCRA 3008(h) Administrative Order on Consent (Order). Under the Order, several cells referred to as "Sealed Rooms" were evaluated for releases or potential releases of hazardous constituents. Based on historical knowledge, limited testing, and MPPB operations, the Sealed Rooms were specifically identified as either inaccessible or their access was restricted due to very high radiation levels; therefore, they could not be initially characterized pursuant to RCRA. Due to high radiation levels

and As Low As Reasonably Achievable (ALARA) concerns, the RCRA Facility Investigation work plan directed that a paper investigation be conducted of the Sealed Rooms. This paper characterization was a historical review of existing documentation to assess potential pathways and determine whether hazardous waste or hazardous waste constituents were contained in the rooms. The Sealed Rooms Paper Characterization report, issued in June 1994, concluded that there were no known RCRA-listed wastes present inside the rooms; that some rooms and vessels may contain RCRA characteristic wastes; and that the evaluation did not identify a release of hazardous waste or hazardous constituents to the environment. In subsequent correspondence from NYSDEC to DOE, NYSDEC indicated that "the only further action necessary at this time for the Sealed Rooms is continued groundwater monitoring required pursuant to the West Valley Demonstration Project Groundwater Monitoring Plan." In addition to ongoing groundwater monitoring, the WVDP agreed to provide NYSDEC with updates on RCRA mixed waste generation from decontamination activities in the MPPB which are included in the Quarterly Progress Reports prepared in accordance with the Order. Observations regarding conditions in the Sealed Rooms have been collected during facility deactivation. Sealed Rooms and RCRA HWMUs on each level of the MPPB are shown in Attachment A.

1.2 Purpose

The purpose of this Decommissioning and Demolition (D&D) plan is to provide information on the tasks and approaches for deactivating (i.e., prepare for demolition), decommissioning, and demolishing the MPPB. The WVDP Phase 1 DP presented a general summary of remediation and demolition technologies with more detailed information to be included in decommissioning work plans such as this. The types of information to be provided were summarized in the Phase 1 DP checklist, based on NUREG-1757, Volume 1, Appendix D.

1.3 Scope

This D&D Plan provides a summary of tasks and techniques to decommission and demolish the MPPB structure, systems, and components and stabilize the grade-level and below grade-level portions of the structure. These activities will be performed by CHWBV and its subcontractor(s), according to the terms and scope of the Phase 1 Decommissioning and Facility Disposition Contract between CHBWV and DOE.

As noted above, the WVDP Phase 1 DP indicated that it would be supplemented with more detailed plans for demolition of major facilities such as the MPPB and VF. Consistent with NUREG-1757, the Phase 1 DP checklist summarizes the types of additional information to be provided which include: (plan sections providing the information are shown in parentheses)

- a summary of the deactivation and demolition tasks and the order in which they occur and a description of remediation techniques for contaminated structures, systems, and equipment (Sections 5.0 and 6.0);
- a summary of equipment being removed or decontaminated and decontamination approach(es) (Sections 5.0 and 6.0);
- commitment to conduct decommissioning activities in accordance with written, approved procedures (Sections 4.1 and 5.6); and
- a summary of unique safety or remediation issues associated with the facility and systems (Sections 5.2-5.4 and 6.0).

In addition to these primary topics, this D&D Plan presents a description of the MPPB, summary of characterization information and an overview of the management approach. Also included is information regarding work planning and work controls, radiological control measures, and waste management activities that are integrated by CHBWV to safely and compliantly demolish the MPPB.

This document is not intended as a comprehensive procedure for implementing MPPB D&D. This D&D Plan will be supplemented by specific Work Instruction Packages (WIP's) and CHBWV work procedures, Industrial Work Permits (IWPs), Radiological Work Permits (RWPs), and waste management and environmental monitoring procedures, as applicable. The WVDP work control process is described in more detail in Sections 4.1 and 5.6.

The specific D&D approaches, techniques, work sequencing and schedule are based on available information and planning and lessons learned from demolition of the 01-14 Building and Vitrification Facility. Demolition of the 01-14 Building was conducted first as a proof of concept for safe and compliant open air demolition of a radiological building. Demolition of the Vitrification Facility followed, and lessons learned from those activities will also be incorporated into the planning for MPPB demolition.

As the final steps are taken and equipment is removed to prepare the MPPB for demolition and facility demolition begins, it may become necessary to make adjustments to the approaches or sequencing outlined in this plan. Such potential adjustments will be documented and authorized through the work control process and associated documents.

2.0 FACILITY DESCRIPTION

The MPPB was built between 1963 and 1966. This multi-storied structure is approximately 130 feet wide, 270 feet long, and extends approximately 79 feet above the ground surface at its highest point. The original stack structure was about 160 feet tall, varying four to ten feet in diameter, and composed of Type 304L stainless steel and Gunite. The upper, stainless steel portion was removed down to the Gunite in 2018. Figures 1 and 2 and Attachment B illustrate the general layout of the building. The figures also show some adjacent structures that are not part of the MPPB demolition described in this plan.

2.1 Facility Design

The major MPPB structure is supported by approximately 480 driven steel H-piles which extend to depths ranging from approximately 60 to 70 feet below the ground surface. The building is composed of a series of cells, aisles, and rooms that are constructed of reinforced concrete and concrete block. The reinforced concrete walls, floors and ceilings range from one to six feet thick. The reinforced concrete walls are typically surrounded by walls of lighter concrete and masonry construction and metal deck flooring.

Most of the facility was constructed above grade. However, a few of the cells extend below the ground surface (i.e., nominal 100 ±3 ft, plant reference elevation). The deepest one, the General Purpose Cell, extends approximately 27 feet below the ground surface. The Cask Unloading Pool and the Fuel Storage Pool, located in the Fuel Receiving and Storage Area on the east side of the building, were used to receive and store spent fuel sent for reprocessing, and extend approximately 49 and 34 feet below the ground surface, respectively. These structures will not be removed during MPPB demolition.

Cells such as the Process Mechanical Cell (PMC), the Chemical Process Cell (CPC), and the extraction cells were constructed of reinforced, high-density concrete three to five feet thick and frequently lined with stainless steel. Such thicknesses were needed to provide radiation shielding.

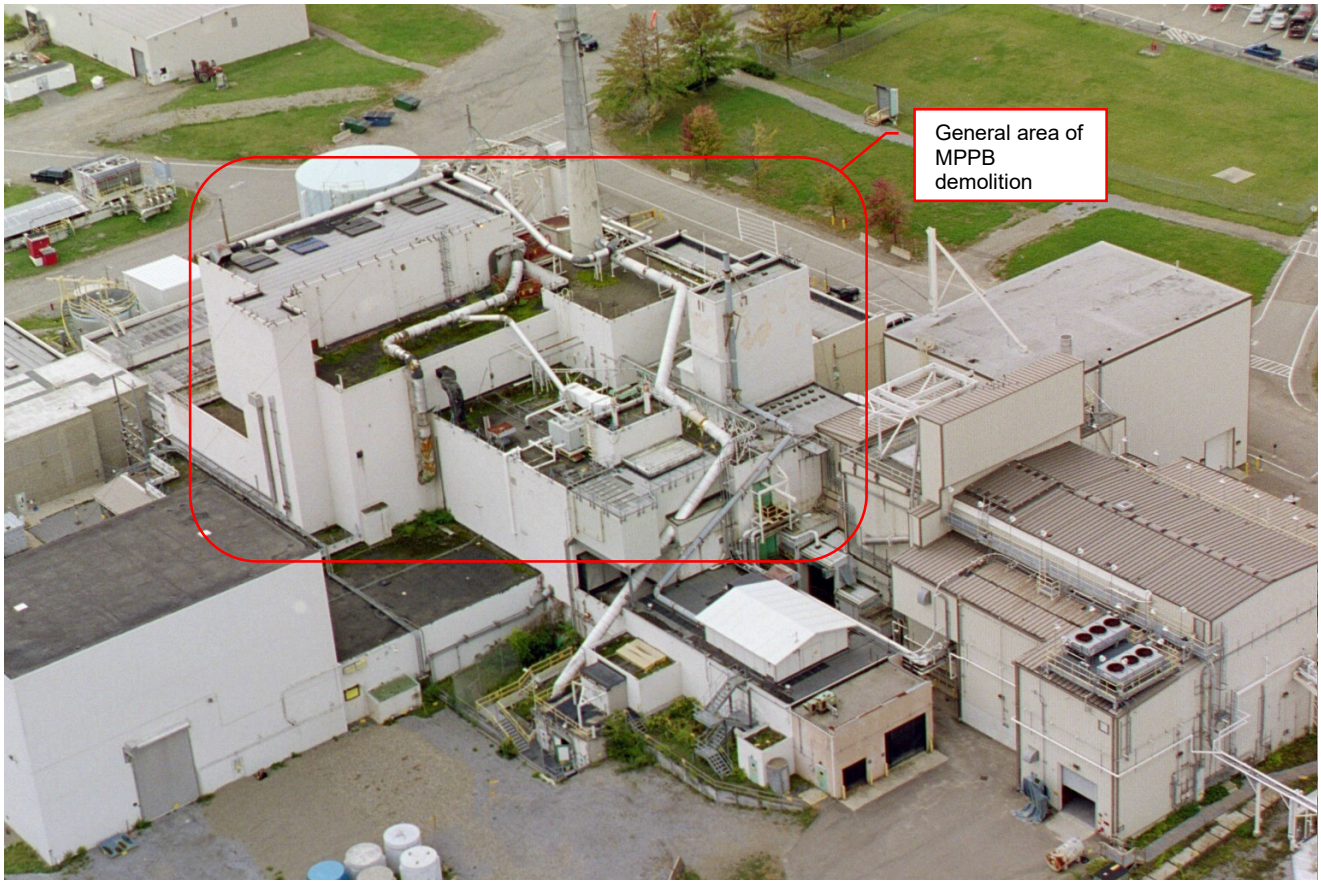
The operations performed in the cells were remotely controlled by individuals working in the various aisles of the MPPB, which were formed by adjacent walls of the cells. The aisles contained the manipulators and valves needed to support operations in the cells. Rooms not expected to contain radioactivity during operations – such as the Control Room, Ventilation Supply Room (VSR), and Extraction Chemical Room (XCR) – were typically constructed with concrete block and structural-steel framing.

2.2 Facility Use

The MPPB was used from 1966 to 1972 to recover uranium, plutonium, and thorium from irradiated nuclear fuel. Reprocessing involved a “chop-leach” method. The spent nuclear fuel assemblies were mechanically sheared and the sheared fuel was dissolved in concentrated nitric acid. The dissolved fuel was an aqueous stream containing uranium nitrate, plutonium nitrate, and fission products. A five-stage solvent extraction process using a tributyl phosphate/n-dodecane solution separated the fission products from the uranium and plutonium and then separated the uranium from the plutonium. Aqueous uranium nitrate and plutonium nitrate were the final products of the reprocessing cycle. Nuclear fuel was reprocessed until early 1972, when the process building was shut down for modification and expansion purposes, but fuel reprocessing was never resumed.

The mechanical process cells contained the equipment for trimming, chopping, and general handling of the spent fuel assemblies before and after chemical dissolution of the fuel material. The area was divided into several cells: the process mechanical cell (PMC), the general purpose cell (GPC), and the scrap removal room (SRR). Maintenance, repair, and decontamination of the cranes and manipulators were in a mechanical crane room, a manipulator repair room, and a GPC crane room (GCR).

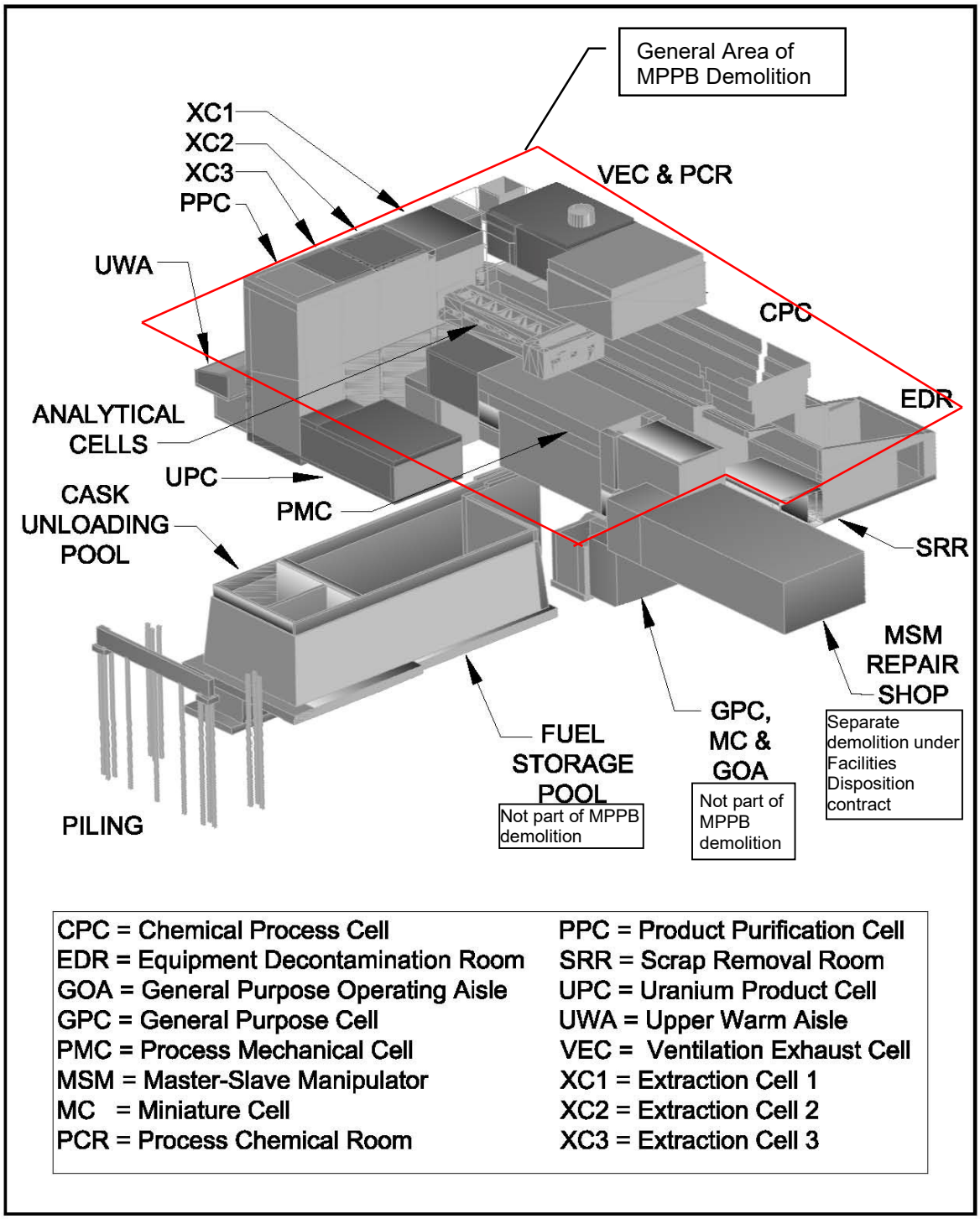
Figure 1, Photograph of Main Plant Process Building



Equipment for dissolution of the spent fuel, separation and purification of the uranium and plutonium, cleanup of used solvent, and concentration of the liquid wastes was housed in several process cells: the chemical process cell (CPC), three solvent extraction cells (XC-1, XC-2, and XC-3), the product purification cell (PPC), and the Acid Recovery Cell (ARC).

The WVDP modified portions of the MPPB to support its primary mission of solidifying High-Level Waste (HLW). Fuel reprocessing equipment was removed from the CPC to allow it to be used for storage of canisters of vitrified HLW. Original equipment in XC-3 and the PPC was removed and was replaced with equipment used to support the Liquid Waste Treatment System (LWTS). The LWTS was used to manage supernatant and sludge wash solutions from Tank 8D-2 that were treated in the Supernatant Treatment System, and to treat waste water generated during the vitrification process.

Figure 2, Main Plant Process Building Isometric View



3.0 CHARACTERIZATION SUMMARY

Characterization is an ongoing process with the obtained information used to guide the deactivation activities in preparation for demolition, including work planning and worker protection, and to support waste management and disposition. Characterization data will be utilized to help determine the engineering controls, work sequencing, personal protective equipment, demolition techniques and equipment needed to execute deactivation and demolition activities. Ultimately, characterization data will be used to ensure that the appropriate decontamination levels are achieved for safe and compliant open air demolition, taking into account demolition approaches and engineering controls and site specific environmental conditions.

3.1 Radiological Characterization

The December 2009 revision of the DP presented the amount of residual radioactivity estimated to be present in the MPPB at the beginning of WVDP Phase 1 decommissioning activities in 2011. The estimated total was approximately 6,100 curies (Ci) with the largest contributions from cesium-137 (Cs-137), strontium-90 (Sr-90), and plutonium-241 (Pu-241). The total estimate included 260 Ci of americium-241 (Am-241) and 310 Ci of alpha plutonium (Pu-238, 239, 240). This estimate does not include the HLW canisters stored in the CPC. Areas estimated to have the largest contributions to this total were the GPC, PMC, and Liquid Waste Cell (LWC).

The information on radiation levels presented in Table 1 was originally included in the DP, and is included here to provide perspective on the challenges faced with preparing the MPPB for demolition.

Table 1
Historical Measured Maximum Gamma Radiation Levels in Process Building Areas

Area	mR/h	Remarks
Chemical Process Cell	15,000	At south sump in 1994
Equipment Decontamination Room	50	On floor in 1997
General Purpose Cell	200,000	3 feet above floor
	32,000	9 feet above floor
Head-End Ventilation Cell	50,000	On pre-filters in 2002
Liquid Waste Cell	1,800	In 2002
Miniature Cell	80	In 1998
Off-Gas Blower Room	700	In 2003
Process Mechanical Cell	40,000	In 2004, 3 feet above floor
Product Purification Cell	53	Hot spot on wall in 2003
Sample Storage Cell	1,950	On floor in 2001
Ventilation Wash Room	1,500	On ventilation duct

The guiding WVDP document for hazard characterization for demolitions is WVDP-446, *Facility Demolition Hazard Characterization Planning*. Samples to assess surface contamination levels and radiation dose surveys are performed in accordance with WVDP-477, *CHBWV Documented Radiation Protection Program and Implementation for Title 10, Code of Federal Regulations,*

Part 835, as Amended May 2011. Characterization efforts will quantify residual contamination and radiological activity that is present, focusing on Cs-137, Sr-90, Pu-239/240, and Am-241, although not excluding other isotopes that may be present in measurable quantities. Table 2 shows an example of radioactivity levels for several areas based on the characterization data. The activity levels identified in Table 2 are total activity/100cm^2 (fixed plus removable). Surfaces of the facility will generally be painted (i.e., fixative applied) before MPPB demolition to reduce the remaining loose activity levels. Data collected are utilized for dose modeling to support demolition sequencing and limits (i.e., maximum number of square feet in a given area that can be removed or demolished in a given time period). Characterization data will also be used to model potential dose to onsite workers (i.e., using AERMOD, air dispersion modeling system and WVDP-593, "Air Monitoring of Radioactive Releases During the Uncontained Demolition of the West Valley Vitrification Facility") and the public (i.e. the maximally exposed off-site individual [MEOSI] using CAP88 dose modeling software).

Table 2
Radioactivity Levels Based on Survey Results for Several Areas of the Main Plant Process Building

	Extraction Cell - 2 (dpm/100cm^2)	**Off-Gas Aisle (dpm/100cm^2)**	**Extraction Chemical Room (dpm/100cm^2)**	**Liquid Waste Cell (dpm/100cm^2)**
Total Alpha	1.48E+05	6.75E+03	9.14E+03	1.15E+06
Total Beta	3.18E+05	1.00E+05	1.22E+05	1.57E+07
Total	4.66E+05	1.07E+05	1.31E+05	1.69E+07

Equipment removal and decontamination activities have removed and will continue to remove a significant quantity of radioactivity from the MPPB. Also, grout will be placed in below-grade portions of the MPPB and on the 100 foot plant elevation floor (i.e., ground level) prior to demolition, as necessary to reduce the radiological dose to workers and provide a protective barrier to prevent damage to the first floor slab and below-grade structures during and following demolition. Additional material such as gravel may also be used to protect the underlying surfaces. Information on residual radioactivity levels of these surfaces will be collected prior to grouting, but this radioactivity is not included in the dose modeling to support open air demolition since the surfaces will not be disturbed during this demolition. The below-grade portions and remaining grouted, ground-level surfaces of the MPPB will be removed during a subsequent phase of demolition.

Radioactivity levels will continue to be reduced as decontamination and deactivation activities continue to be performed in the various areas of the MPPB ahead of the planned start of demolition activities in 2020. Radiological surveys and samples continue to be collected to characterize and make a determination that each area is ready for demolition. Table 3 shows the radioactivity levels in two of the areas of the MPPB (Process Sample Cell-2 and Extraction Cell-2) where data have been collected and the determination made that the areas are ready for demolition. This is an example of the data that will be collected for the various areas of the MPPB and used to determine that the overall building is ready for demolition with the implementation of appropriate radiological controls. Calculations using AERMOD, WVDP-593, and the radioactivity levels for a given area are performed to show that the remaining activity levels are below the maximum that can be left behind to comply with worker dose limits.

The total Material at Risk (MAR), based on the area of each cell, will be used in the alternative calculation method approved by EPA for estimating emissions from the demolition activities as it relates to estimating dose to the public and compliance with 40 CFR 61 Subpart H. Public dose estimates are performed using the computer dispersion code CAP88.

Table 3
Residual Radioactivity Levels Prior to Demolition
Process Sample Cell-2 and Extraction Cell-2

Process Sample Cell-2 (PSC-2)						
Isotope	**Scaling Factor by Activity (2017)**		**Radioactivity (dpm/100cm^2)**	**Area of Cell (ft^2)***		**Total Material at Risk (Curies)**
Cs-137	1		6.37E+03	752		2.23E-04
Cm-243	4.94E-05		3.15E-01	752		1.10E-08
Cm-244	1.24E-03		7.90E+00	752		2.77E-07
Np-237	2.94E-05		1.87E-01	752		6.56E-09
Sr/Y-90	3.67E-01		2.34E+03	752		8.18E-05
Am-241	5.25E-02		3.34E+02	752		1.17E-05
Pu-238	1.60E-02		1.02E+02	752		3.57E-06
Pu-239	1.20E-02		7.64E+01	752		2.68E-06
Pu-240	9.05E-03		5.76E+01	752		2.02E-06
Pu-241	1.58E-01		1.01E+03	752		3.52E-05
U-232	1.05E-02		6.69E+01	752		2.34E-06
U-233	8.24E-04		5.25E+00	752		1.84E-07
U-234	3.84E-04		2.45E+00	752		8.56E-08
U-235	1.79E-05		1.14E-01	752		3.99E-09
U-238	2.58E-04		1.64E+00	752		5.75E-08
		TOTAL	1.04E+04		**TOTAL**	3.63E-04
		Total β	**8.71E+03****		**Total β**	**3.40E-04**
		Total α	**6.55E+02**		**Total α**	**2.29E-05**
Extraction Cell-2 (XC-2)						
Isotope	**Scaling Factor by Activity (2017)**		**Radioactivity (dpm/100cm^2)**	**Area of Cell (ft^2)***		**Total Material at Risk (Curies)**
Cs-137	1		2.36E+04	5,195.25		5.13E-04
Cm-243	6.10E-05		1.44E+00	5,195.25		3.13E-08
Cm-244	1.31E-03		3.09E+01	5,195.25		6.72E-07
Np-237	1.42E-05		3.35E-01	5,195.25		7.28E-09
Sr/Y-90	1.66E+00		3.92E+04	5,195.25		8.51E-04
Am-241	3.61E+00		8.52E+04	5,195.25		1.85E-03
Pu-238	1.23E+00		2.90E+04	5,195.25		6.31E-04
Pu-239	8.04E-01		1.90E+04	5,195.25		4.12E-04
Pu-240	6.13E-01		1.45E+04	5,195.25		3.14E-04
Pu-241	1.08E+01		2.55E+05	5,195.25		5.54E-03
U-232	5.74E-04		1.35E+01	5,195.25		2.94E-07
U-233	6.30E-03		1.49E+02	5,195.25		3.23E-06
U-234	3.05E-03		7.20E+01	5,195.25		1.56E-06
U-235	4.61E-03		1.09E+02	5,195.25		2.36E-06
U-238	1.20E-03		2.83E+01	5,195.25		6.16E-07
		TOTAL	4.66E+05		**TOTAL**	1.01E-02
		Total β	**6.28E+04****		**Total β**	**6.90E-03**
		Total α	**1.48E+05**		**Total α**	**3.22E-03**

* - Area of cell for PSC-2 includes the floor. Area of cell for XC-2 does not include the floor since it will be protected and not removed.

** - Not including Pu-241 which is not detected with field instrumentation

Radiological surveys will continue to be performed and documented in support of pre-demolition and demolition activities. Radiation and radiological contamination surveys are performed in accordance with WVDP radiological control procedure RC-RPO-104, *Performing Radiation and Contamination Surveys*. This procedure contains general guidelines for performing pre-demolition radiological surveys where the collected data is used for demolition calculations using air dispersion modeling. The source term calculations based on the collected data will be part of the final calculation package(s) that will be prepared to document that it is safe for demolition to proceed. All of the inventory present will be assigned to the MAR and the "Damage Ratio" (DR) in the calculations will be used to account for inventory that is impacted.

3.2 Hazardous and Other Materials

As mentioned in Section 1.1, The MPPB contains three RCRA HWMUs which have been used to treat and/or manage mixed waste (i.e., a solid waste that contains a hazardous waste component that is subject to RCRA and a radioactive component subject to the Atomic Energy Act). The HWMUs in the MPPB include the A&PC Hot Cells, HLWISF, and the LWTS. Wastes managed in these units were characteristically hazardous due to the presence of various metals and some were corrosive ($12.5<pH<2.0$). Some of the process equipment and residual materials removed from these areas during deactivation activities were also characterized as mixed wastes in accordance with the WVDP waste management program. Any spills that might have occurred in these areas during Nuclear Fuel Services or WVDP operations would have been contained by the cells' secondary containment systems (e.g., stainless-steel floor liners and sumps), then collected and transferred back into the WVDP treatment system. There have been no uncontained spills or releases to the environment resulting from waste storage operations at these HWMUs. As mentioned above, the floor surface will be covered with grout to provide a protective barrier during the upcoming phase of building demolition, with no current plan for further RCRA characterization of the floors.

As part of deactivation in preparation for demolition, potential hazardous materials are being identified and plans developed to remove the materials either prior to or during demolition. Materials being removed prior to demolition include lead counterweights and shielding not integral with the MPPB structure, electrical lamps, ballasts and switches, petroleum based oils from cranes, and zinc bromide and mineral oils from shield windows. Lighting ballasts that may contain polychlorinated biphenyls (PCBs) will be removed and paints historically applied in the MPPB are being characterized to determine if they contain PCBs. Any material packaged as mixed or hazardous wastes will be removed from the MPPB prior to demolition. Evaluation for the presence of remaining asbestos containing materials (ACM) is underway. A pre-demolition ACM survey will be performed and any additional ACM will be documented and dispositioned in accordance with New York State Department of Labor (NYSDOL) requirements.

In some instances the locations or types of hazardous materials cannot be removed before demolition. In these instances, the work documents will include steps to identify/mark, remove, and segregate the hazardous materials during the demolition operations. Examples may include leaded glass shield windows, lead materials in the shield window frames, lead in shield doors and shield plugs, and ACM on piping embedded in walls and in roof materials.

4.0 MANAGEMENT APPROACH

Using the guiding principles of the Integrated Safety Management System (ISMS), all work will be completed under the Integrated Work Control Program (IWCP). ISMS is built directly into the entire D&D planning and working phases through a team concept with continuous improvement including worker feedback and management self-assessments. The IWCP implements the ISMS core functions and guiding principles for planning the work at the activity level by: defining the scope of work; identifying, analyzing, and controlling associated hazards; performing the work safely within controls; and conducting a feedback and improvement process. Essential to the successful utilization of the IWCP and strongly supported by CHBWV management is worker input. Augmenting this work planning approach is a step back/stop work policy that is in effect whenever workers or support personnel are uncertain or concerned about an activity, thus ensuring workers and line management's total control of the work evolution. The Work Control process for identifying, planning, scheduling, authorizing, performance, and closeout of work activities at the WVDP is defined in WVDP-485, *Work Control*.

Senior management assigns work planning and control program roles and responsibilities and a Subcontractor Technical Representative (STR) is assigned to ensure requirements flow down to the subcontractor(s). Senior management also performs independent review of high hazard/complex work during the work package approval process in accordance with EMD-002, *Hazard Review Board*.
Line management is responsible for the protection of employees, the public, and the environment. Line management includes CHBWV and subcontractor employees managing or supervising employees performing work. CHBWV's program and implementing documents define clear and unambiguous lines of authority and responsibility for ensuring environmental, safety, and health requirements are established and maintained at all organizational levels and become an integral but visible part of the WVDP's work planning and execution process.

4.1 WVDP Work Planning and Implementation

The WVDP has a robust work planning and control program. Complex or high hazard work that is only performed once or a limited number of times requires the preparation of a WIP. High hazard or complex work activities involve tasks that require detailed work instructions and accompanying hazard analysis to be performed safely and correctly. WIPs are developed per EP-5-002, *Administration of Work Instruction Packages*, and hazard analysis is performed per WV-921, *Hazards Identification and Analysis*.

Each WIP will contain a thorough hazard analysis, all relevant design engineering documents, and tailored instructions for safely executing the scope within the safety basis of the facility. Hazard controls will be tailored for various facility conditions allowing a graded approach to address personnel and environmental safety concerns for specific activities.

More routine and repetitive operations and maintenance activities may be described in Standard Operating Procedures (SOPs). SOPs may be used for various levels of risk and complexity and the level of detailed instruction will vary based on the complexity. Hazard analysis is performed in accordance with WV-921 and hazard mitigations are included directly in the SOP or in permits required by the SOP (e.g., IWPs and RWPs). SOPs are developed, issued and maintained in accordance with DCIP-100, *Controlled Document Preparation and Revision Process* and DCIP-101, *Controlled Document Review, Approval, and Emergent Change Process*.

To fully embed the ISMS processes and expectations, work will commence at a controlled, deliberate pace. Work controls will also be reinforced by Human Performance tools such as those included in DOE-HDBK-1028-2009, *Human Performance Tools for Individuals, Work Teams, and Management*. The strategic approach for improving performance is to reduce human error and manage controls so as to reduce unwanted events and/or mitigate their impact should they occur. MPPB deactivation and demolition work will be planned to allow personnel to gain familiarity with the facility and gain confidence in the processes being used. This approach affords line management the opportunity to mentor and monitor the personnel in a less hazardous environment where the likeliness of personnel injury or environmental upsets is minimized.

4.2 Nuclear Criticality Safety Program Overview

The criticality safety program at the WVDP has been developed to control fissionable materials and potential nuclear criticality hazards in a way that assures that workers, members of the general public, government and personal property, and essential operations are protected from the effects of an inadvertent criticality accident. Fissionable materials at the WVDP are packaged, handled, and stored in a manner that assures that the potential for an inadvertent criticality is maintained acceptably low.

The criticality safety program assures that environmental, safety, and health protection matters associated with all fissile material operations at the WVDP are comprehensively addressed and receive an objective review, with all identifiable risks reduced to acceptably low levels, and that management authorization of all operations is documented. Consideration is given to all potential criticality hazards associated with fissionable material operations.

Criticality safety at the WVDP is achieved through the application of administrative controls. Evaluations have shown that there is no credible potential for an inadvertent criticality associated with site activities when fissile materials are packaged in conformance with site administrative controls.

Administration of the criticality safety program at the WVDP is through the CHBWV Environmental, Safety, Health and Quality (ESH&Q) organization. The ESH&Q Manager is responsible for monitoring and implementing nuclear criticality safety requirements and for assisting operating management in developing programs and plans for maintaining nuclear criticality safety by regular evaluations and assessments in work areas. The ESH&Q Manager is responsible for developing and maintaining the criticality safety program manual and for criticality safety training. Additional responsibilities of the ESH&Q Manager are listed in WVDP-162, *WVDP Nuclear Criticality Safety Program Manual*.

The Criticality Safety Engineer (CSE) is responsible for performing nuclear criticality safety evaluations for activities conducted at the WVDP. In addition, the CSE provides programmatic evaluation to ensure that fissile materials are packaged in a manner that protects worker health and safety and the environment, and that nuclear criticality safety evaluations are performed to identify potential accumulations of fissile material during production, storage, transport, and handling. The CSE is responsible for developing controls for fissile material accumulations to reduce the risk of accidental criticality.

The WVDP is supported by CSEs that have been qualified per a DOE-approved qualification standard that was developed to meet the requirements of DOE O 420.1C, *Facility Safety*, and guidance of ANSI/ANS-8.26, *Criticality Safety Engineer Training and Qualification Program*. WVDP criticality safety engineers are integrated into site work planning via the WVDP Integrated Safety Management System, which ensures that appropriate hazard control specialists are involved in all site work planning activities.

5.0 PRE-DEMOLITION ACTIVITIES

As previously stated, portions of the MPPB were modified to support its primary WVDP mission of solidifying HLW. Fuel reprocessing equipment was removed from the CPC to allow it to be used for storage of canisters of vitrified HLW. Fuel reprocessing equipment in XC-3 and the PPC was removed and was replaced with equipment used to support the LWTS. This system was used to manage treated supernatant, sludge wash solutions, and vitrification waste water from Tank 8D-2.

5.1 Deactivation Activities Completed

Major hazard reduction activities were performed in the MPPB prior to the start of the current contract in August of 2011 and have continued since. The current contract scope includes the demolition of the MPPB to the facility slab at grade elevation (100 ft +/- 3 ft). To date, the majority of the process cells (i.e. extraction cells, PPC, Off-Gas Cell (OGC), PMC, CPC) have all undergone a significant radiological source term reduction by removal of all process equipment, vessels, tanks, piping, and support systems. This effort has contributed to an overall radiological source term reduction which will support the demolition of the facility. There has been additional hazard reduction in the support areas (i.e. operating aisles, labs, offices, areas outside cells) that not only includes radiological source term reduction but also industrial hazards such as ACM, lead, PCBs, and hazardous waste components. This hazard reduction will continue until the MPPB is deemed demolition ready.

The following is a summary of MPPB deactivation activities in major areas, performed to support historical WVDP operations and in preparation for demolition:

- CPC
  - Prior to being established as the HLWISF, the process equipment, vessels, tanks, piping, and support systems were removed. Gross decontamination of the cell walls and floor was also performed.
  - On-site relocation of the vitrified HLW canisters is complete and removal of low-level waste (LLW), and transuranic (TRU) waste containers is progressing.
  - Removed associated equipment from HLW canister removal activities, LLW, and TRU waste containers.
  - Performed debris removal, gross decontamination, embedded wall penetration stabilization, sampler stabilization, and application of fixatives to cell surfaces.
  - Subgrade piping that will remain after demolition has been isolated so there will not be a pathway for water.
  - Performed additional characterization of the CPC racks to determine rack disposition.

- PMC
  - All process equipment and support systems were removed. In-cell debris was packaged in drums and removed. Gross decontamination of the walls was performed up to the crane rail elevation utilizing the nitrocision® decontamination system.
  - Performed debris removal, gross decontamination, stabilization of embedded wall penetrations, and applied fixatives, to the cell walls, ceiling, and floor.
  - Removed manipulators and stabilized ports within the walls.

  - Drained fluids from the shield windows, shield door gear boxes, and overhead cranes.
  - Decontaminated overhead cranes and applied fixative to stabilize the cranes for removal during demolition.
  - Installed structural hatch covers from PMC to GPC and PMC to Miniature Cell, to allow for floor grouting and strengthening to protect GPC during MPPB demolition.
  - Installed structural hatch cover from PMC to Fuel Receiving and Storage Facility (FRS) tunnel to allow for PMC floor grouting and strengthening to protect FRS tunnel during demolition.
  - Stabilized the cell floor with grout.

- Extraction Cells
  - All process equipment, vessels, tanks, piping, and support systems were removed. Targeted gross decontamination was performed on sections of walls. Embedded wall penetrations in the cell have been stabilized (i.e. expandable foam, fixative).
  - Applied fixative to the cell walls and floors.
  - Stabilized the cell floors with grout.

- PPC
  - All process equipment, vessels, tanks, piping, and support systems were removed. Some targeted gross decontamination was performed on sections of walls. Embedded wall penetrations of the cell have been stabilized (i.e., expandable foam, fixative).
  - Stabilized embedded wall penetrations and performed decontamination on isolated spots on walls.

- LWC
  - Eight of nine process tanks were flushed and decontaminated to reduce radiological source term for removal during demolition.
  - Process piping associated with each tank was removed.
  - Gross decontamination of the cell floor was performed.
  - Transferred decontamination water to waste containers and moved to waste storage areas in preparation for shipment/disposal.
  - Completed preparing all tanks for removal during demolition by capping openings, stabilizing interior with foam or grout, and removing anchors.
  - Stabilized embedded wall penetrations and performed decontamination on isolated wall locations.
  - Applied fixative, as necessary, to the cell walls and floors.
  - Stabilized the cell floor with grout.

- Uranium Product Cell (UPC) and Uranium Load Out (ULO)
  - Removal of the remaining process water from the tanks to waste containers for stabilization and or disposal was completed.
  - Samples to characterize the remaining material in the tanks have been collected.
  - Completed process piping removal and tank decontamination.
  - Removed remaining materials from the tanks.
  - Prepared the UPC tanks, including one single tank and one dual compartment tank, and one tank in the ULO for removal during demolition by capping openings, stabilizing interior (by grouting, foaming, or painting), and removing anchors.

  - Stabilized embedded wall penetrations and performed decontamination on isolated wall locations.
  - Applied fixative to the cell walls and floors.
  - Stabilized the cell floor with grout.

- A&PC Laboratory Area
  - All remaining chemicals and laboratory equipment were removed from the hoods and the hoods have been surveyed for demolition.
  - Extensive ACM removal was performed throughout the laboratory area.
  - Process equipment, piping, and working tables were removed from the hot cells. Gross decontamination was performed.
  - Manipulators containing lead counter weights were removed.
  - Shield windows have been drained.
  - Applied fixative to lab hoods, gloveboxes, ventilation duct, ceilings, and walls, as needed.
  - Evaluated A&PC Hot Cells process drain line and ventilation duct and stabilized for demolition.

- Ventilation Wash Room (VWR)
  - Performed radiological and ACM characterization for deactivation planning.
  - Removed partial wall sections to allow better access for deactivation.
  - Stabilized penetrations.
  - Reduced radiological source term associated with, filters, ACM, and piping; and stabilized (i.e., fixative, foaming, grout) some components for removal during demolition.
  - Prepared washer for removal during demolition.

- Operating Aisles and Support Areas
  - ACM removal was been performed extensively throughout the operating aisles and support areas, based on radiological hazard levels.
  - Removal of process and utility piping, and ventilation duct work was performed.
  - Removal of electrical components, conduit, wiring, and instrumentation was performed.

- Ventilation Exhaust Cell (VEC)
  - Stabilized or removed duct work.
  - Performed radiological and ACM characterization for deactivation planning.
  - Removed filters and package for disposal or further processing.
  - Removed rad source term, piping, and duct based on characterization or stabilized (i.e., fixative, foaming, grout) components for removal during demolition.

- Ventilation Supply Room (VSR)
  - Performed radiological and ACM characterization for deactivation planning.
  - Removed hazardous materials.

- Ram Equipment Room (RER)
  - Decontaminated area walls from spills originating in VWR.
  - Stabilized ram sleeves for demolition.
  - Stabilized the floor, as necessary.

- Roof ACM Mitigation
  - Abated/removed ACM insulation and associated piping.

- Main Stack
  - Removed the upper, approximately 110 ft portion of the stack, from the Gunite (dry mix shotcrete) level up to the top of the stack.

NOTE *Some of the piping, ventilation duct work, electrical components, conduit, wiring, instrumentation, and industrial equipment that have been determined to be non-hazardous will remain in the facility for removal during demolition.*

5.2 Deactivation Activities Remaining

In addition to the completed activities, the following deactivation activities will be completed prior to the start of MPPB demolition. As used below, "gross decontamination" refers to the removal of radiologically contaminated debris, sediment, and loose media that is readily removable from building surfaces, equipment, and components. Removed materials will be characterized and packaged for off-site disposal. Subgrade piping beneath the MPPB that penetrates the MPPB slab will be isolated prior to demolition so there will not be a pathway for water or contaminant transport. The need and extent of decontamination for some cells will be evaluated based upon the results of ongoing characterization. Deactivation activities for some areas may be adjusted once additional information is obtained.

Decontamination activities will continue to progress until such time that the structure meets prescribed limits for open air demolition. Actions such as painting surfaces and using a water curtain are being used to keep exposure during demolition ALARA.

These activities will be completed prior to the expected start of demolition in 2020:

- CPC
  - Perform application of fixatives to the upper cell walls and ceiling.
  - Drain fluids from the shield windows, shield door gear boxes, and overhead cranes
  - Decontaminate overhead cranes and apply fixative to stabilize for removal during demolition.
  - Provide structural hatch cover from CPC to GPC to allow for floor grouting and provide strength to protect GPC during MPPB demolition.
  - Stabilize the cell floor with grout.

- Scrap Removal Room (SRR)
  - Install structural hatch cover from SRR to GPC to allow for floor grouting and strengthening to protect GPC during demolition.
  - Drain fluids from equipment and apply fixative to cell surfaces.

- PPC
  - Perform additional aggressive decontamination to select cell surfaces.
  - Apply fixative, as necessary, to the cell walls and floors.
  - Stabilize the cell floor with grout.

- Ventilation Wash Room (VWR)
  - Cut ducting and stage for removal during demolition.

- Equipment Decontamination Room (EDR)
  - Perform debris removal, gross decontamination, stabilize embedded wall penetration, and apply fixatives to the cell walls, ceiling, and floor.
  - Drain fluids from the shield window, shield door gear boxes, and overhead crane.
  - Decontaminate overhead crane and apply fixative to stabilize crane for removal during demolition.
  - Stabilize the cell floor with grout or fixative.

- Operating Aisles and Support Areas
  - Remove electrical components that are hazardous or contain PCBs.
  - Apply fixative to the overhead ceilings and walls as necessary.
  - Stabilize floors, as necessary (e.g., paint, grout, fill, etc.).

- Off-Gas Cell (OGC) and Acid Recovery Cell (ARC)
  - Planning and engineering are underway for the potential use of a large concrete saw in the OGC and ARC prior to beginning open air demolition.
  - This would involve saw cutting the northwest corner of the OGC and making saw cuts in the floor of ARC.

5.3 Dispositioning “Stand-Alone” Items

Within the MPPB, there are several “stand-alone” items that will be processed and dispositioned as part of the open air demolition. These items include:

- CPC overhead cranes, Power Manipulator (PAR) arm, canister drum storage racks, 1C Sampler, and shield doors;
- PMC overhead cranes, PAR arm, and shield doors;
- EDR overhead crane and shield doors;
- EDR transfer Cart
- LWC nine process tanks;
- UPC and ULO process tanks;
- XC-1 Artisan robotic arm;
- Extraction Cells & PPC man-lifts/ automated scaffolds;
- VEC, and VWR filter housings and blowers, and washer;
- Sample transfer stations (multiple locations);
- VSR supply air filter housing & blower;
- Control Room cabinets;
- Analytical Aisle laboratory hoods and gloveboxes;
- Remaining piping, ductwork, small vessels, pumps, electrical wiring, conduits, light fixtures, control panels, motor control centers, and switchgear.

5.4 Structural Analysis

An engineering survey will be conducted and documented by a Professional Engineer to evaluate the structural condition of the MPPB in accordance with American National Standards Institute International (ANSI), American National Standard for Construction and Demolition Operations - Safety Requirements for Demolition Operations (ANSI A10.6); and 29 CFR Part 1926.850 - Safety and Health Regulations for Construction, Subpart T - Demolition.

The engineering survey will include a visual survey of the building and a structural assessment to evaluate the possibility of a premature collapse of portions of the building during demolition and steps to be taken to prevent any such occurrence. In addition, any adjacent structure where employees may be exposed shall also be similarly checked.

In addition to the engineering survey there are areas in the MPPB that required additional analysis prior to demolition and evaluation during demolition activities. Such areas include, but may not be limited to:

- The east wall of the East Mechanical Operating Aisle (EMOA) and the north walls of the UPC and the ULO area. These walls are common with the FRS which is not part of the current contract. Precautions for these areas are noted in the WIP, and wind load calculations have shown that leaving the remaining EMOA east wall is acceptable.
- Areas located above the Miniature Cell, General Purpose Cell (GPC), General Purpose Cell Operating Aisle (GOA), General Purpose Cell Crane Room (GCR) and extension, CPC Vault Waste Catch Tank, and associated stairwell. These below-grade areas will be filled with low strength flowable fill prior to MPPB demolition therefore, analysis for heavy equipment loading is not required.
- Hatches located in the CPC to the GPC, PMC to the FRS, PMC to the GPC, South Master Slave Manipulator Shop to the GOA, and SRR to the GPC. Areas below the hatches will be filled with a low strength flowable fill prior to MPPB demolition thereby alleviating the need to verify impact loading on the hatches. An exception to this is the area below the hatch from the PMC to the FRS, however there is a five foot thick layer of grout over the hatch that was added during PMC deactivation.
- Stainless steel chutes from the PMC to the Miniature Cell and from the PMC shear to the GPC. Areas below the chutes will be filled with a low strength flowable fill prior to MPPB demolition to address potential loading during demolition.
- The ceiling of the LWC (which has had several hatches cut through it). Calculations have shown that the hatches in the LWC ceiling require additional protection that will be put in place prior to the start of demolition, thereby protecting the remaining LWC tanks.

Additional analyses may be performed based on the judgement of the Professional Engineer.

As described below, a demolition readiness checklist will be prepared prior to demolition. This checklist will include an engineering section where completion of the engineering survey described above will be documented prior to initiating MPPB demolition. A New York State-licensed Professional Engineer is also part of the work planning and sequence development process. This individual will assess the demolition WIP(s) to ensure the demolition sequencing, means, and methods will not cause a premature collapse during demolition and will prevent damage to any adjacent structures.

5.5 Demolition Readiness Checklist

A demolition readiness checklist will be developed to ensure pre-demolition activities are completed and accepted as complete prior to starting MPPB demolition. Attachment C is an example of a checklist used for other WVDP demolition activities. The checklist will be reviewed by personnel from various departments whose signatures will indicate that they concur that all items and required actions, for their area of expertise, needed to make the facility ready for demolition have been identified and addressed. Organizations reviewing the checklist will include: Regulatory Strategy, Industrial Safety, Nuclear Safety, Radiological Controls, Quality Assurance, and Waste Operations.

Topical areas addressed by the checklist will include:

- Regulatory Notifications/Requirements
- Training Requirements
- Engineering Evaluation
- Utilities
- Hazardous Materials
- Other Hazards (e.g., radiological, biological, physical, etc.)

Once the checklist is reviewed and approved/signed by the necessary departments, the Facility Manager will approve it, indicating that the MPPB is ready for demolition.

5.6 Preparation of Work Documents

As described in Section 4.1, WVDP work planning follows a well-established and controlled process which insures that: 1) The work scope is well defined; 2) Hazards are identified and controlled; 3) Work is performed safely and within controls; and 4) Feedback is provided and lessons learned are shared. The work documents (i.e., WIPs) governing MPPB demolition activities will be prepared, reviewed, and approved according to this process as further described below.

As part of work planning and execution, the planning/work team, including workers and subject matter experts, performs walk downs using SOP 00-46, *Work Instruction Walkdowns, Pre-Job and Daily Briefings, and Post-Job Feedback/Lessons Learned* to better identify and analyze specific hazards and possible human performance issues. Other items accomplished during the walk downs also include:

- identify the specific tasks and associated steps necessary to accomplish the work;
- verify the equipment, components, locations, etc. described in the requested work are correct and accurate;
- identify the applicable and affected documents (e.g., procedures, drawings, specifications, vendor manuals, training materials, etc.), and the latest versions/revisions, and;
- determine that the work activity is clearly and adequately bounded/limited (e.g., physical boundaries such as equipment/components to which work activity is limited, specific work environment to which work is confined; conditions under which work can be performed; and organizations responsible for the various tasks, etc.).

Facility Assessments are an essential prerequisite to a safe and successful D&D process. An integrated group of personnel composed of safety, industrial hygiene, radiological controls, engineering, D&D management, workers, environmental and regulatory compliance, nuclear safety, waste operations, and quality assurance are involved in the WIP development.

As part of the planning process, hazard assessments are conducted to document existing conditions in and around the facility. Hazard assessments are performed by qualified individuals to document current facility conditions from a safety, radiological, engineering, utility, and demolition standpoint. An example of the hazards analysis form that is prepared is included in Attachment D. Pre-demolition surveys are conducted as part of the hazard assessments process on all structures decommissioned in accordance with Occupational Safety and Health Administration (OSHA) guidelines (29 CFR 1926.850) following WVDP-446, *Facility Demolition Hazard Characterization Planning*.

Prior to issuance of a WIP, the work review group coordinator performs a Work Control management review of the WIP and ensures that: 1) the WIP was developed following the processes in EP-5-002; and 2) all Hazard Control Specialists identified by the hazard analysis process were required to review and approve the WIP.

The Responsible Manager (RM) and Operations Manager also approve the WIP, and a final interactive meeting for high hazard or complex work is held when deemed necessary by the RM. The final interactive WIP review meeting is a face-to-face review of the draft WIP with planning team members. This allows the reviewers to improve the final product based on the shared discussions. Work Control reviews the WIP for completeness, insuring that all necessary signatures are present. The work package is then issued for implementation along with supporting documents such as an IWP, to identify hazards and establish worker health and safety controls, and a RWP to establish radiological controls. If it is necessary to make a Field Change to a WIP, the steps identified in EP-5-002 are followed, including obtaining signatures from all departments and work groups affected by the change.

6.0 MAIN PLANT PROCESS BUILDING DEMOLITION

This section provides an overall description of how the open air demolition approach and techniques will be executed to ensure the MPPB is safely and compliantly demolished. The overall approach is to perform characterization, decontamination, and source term reduction to a degree that supports conventional, uncontained, open air demolition. Techniques which utilize mechanical, hydraulic, or remote equipment, to the greatest extent possible, will be implemented to perform D&D activities in a manner which minimizes worker exposure to radiological, mechanical, and chemical hazards. The demolition approach may include the limited use of localized, portable ventilation controls to insure worker protection and public health and safety. The details of such localized controls would be based on the specific area and nature of the radioactivity/contamination levels present and would be included in a WIP. Lessons learned from the 2013 demolition of the WVDP 01-14 Building, demolition of the WVDP Vitrification Facility, the Separations Process Research Unit (SPRU) D&D activities at Knolls Atomic Power Laboratory, and other DOE facilities will be factored into the planning for the MPPB demolition. Among others, these lessons learned include:

- thorough characterization of the facility;
- utilization of personnel familiar with the facility and associated hazards;
- application of fixatives to control spread of contamination;

- identifying specific steps and sequencing in the WIP along with diagrams that identify safety and radiological considerations, precautions, and notes;
- utilization of real time air monitors and reviews of daily radiological data;
- careful consideration of dust suppression methods as well as the rate of application, wind speed, and direction;
- control of debris piles, including waste loading speed, less aggressive waste conditioning, and use of dust suppression;
- preparing an adequate supply of waste containers ready for loading; and
- timely application of process controls, as needed, based on the information collected.

Demolition of the WVDP Vitrification Facility was completed in September 2018, and lessons learned from that facility demolition will also be factored into the planning and approach for the MPPB demolition.

The following general performance criteria will be incorporated into the work scope for the MPPB D&D:

- demolition of the MPPB will be performed in accordance with all applicable Federal, State and DOE Environmental, Safety and Health Requirements, Laws and Regulations;
- demolition will be consistent with the WVDP DP, and the NRC *Technical Evaluation Report*;
- during the decommissioning and demolition work, CHBWV will minimize the generation of difficult to dispose of waste streams such as transuranic (TRU) and mixed-TRU waste and mixed low-level waste (MLLW);
- measures will be implemented to minimize and control the spread of contamination;
- an Ambient Air Monitoring Program approved by EPA is operational to support the decommissioning and demolition work, and;
- measures will be implemented to prevent the migration of water into, or out of all remaining penetrations, surfaces, and structures and the accumulation of water in below grade structures.

6.1 General Decommissioning Approach and Technologies

The MPPB demolition WIP(s) will identify the final, approved, specific sequence of demolition activities, including detailed means and methods and controlled demolition techniques consistent with the final approved calculation for open air demolition. The demolition WIP will also include a radiological monitoring plan to identify methods for monitoring the perimeter of the work area and personnel working within the area, environmental controls to mitigate potential releases, waste management practices, and safety and health processes to ensure worker safety. These items are discussed further below.

Some of the techniques and approaches to be used include development of detailed demolition drawings/sketches identifying the specific sequence of events, continuous air monitoring, control and disposition of wastewater, use of suppressants on demolition debris to prevent dispersion of particulates and/or contamination, timely loading and disposition of debris to prevent accumulation, and restricting access to the area to prevent unauthorized entry during demolition activities. Suppression of airborne contamination during demolition will be through the application of fixatives to contaminated building surfaces and the use of water fogging nozzles/misting equipment (stand-alone or equipment mounted), which may include dust control products, to suppress dust during demolition. Debris piles will be sprayed with a suppressant at the end of each day or more frequently.

The water will be pumped into collection tanks, sampled and transferred for treatment through the State Pollutant Discharge Elimination System (SPDES) permitted low-level waste treatment facility, or otherwise dispositioned based on the sample results. Efforts will be made to minimize the volume of water by using misting techniques, which may include dust control products. Storm drain inlets within the bermed area will be sealed. Minimizing the volume of dust suppression water and pumping collected water from the containment area will mitigate potential impacts to groundwater and minimize the potential for the spread of contamination both inside and outside work areas. The use of other collection methods may also be considered.

The MPPB floors and below-grade structures will be coated with a fixative and/or grouted, as necessary to maintain dose ALARA, protect the surfaces from damage during demolition, minimize equipment contamination, and deter water intrusion. Prior to placing grout, an engineering analysis will be performed to determine the thickness of grout needed to avoid damage to the underlying surfaces. Items such as filters, cell debris, piping, and miscellaneous equipment with high levels of radioactivity will already have been removed from the building or stabilized during deactivation. Some remaining items will be clearly marked (e.g., painted) for segregation and dispositioning during demolition. Remaining piping sections and wall penetrations containing piping that were stabilized during deactivation, and require special handling/cutting requirements, will be removed and segregated during demolition. Sufficient coat(s) of contamination fixatives will be applied to allow open air demolition; the criteria for fixing contamination and leaving contaminated materials/equipment in place for removal during demolition is an ALARA evaluation (Section 6.4.1) to determine if further decontamination efforts are justified in lieu of beginning demolition activities with fixatives applied. As described in Section 6.4, continuous monitoring will be performed near the demolition area to monitor worker safety. If necessary, additional fixatives can be applied during the demolition work process. Application of additional fixative will be considered for demolition materials/debris that require further processing on the ground or are awaiting packaging into waste containers. Gravel or similar material will be placed, as necessary, over the floors of the MPPB footprint to provide “cushioning” during demolition and support equipment passage. This material will be graded to promote drainage following demolition. The below-grade portions and remaining grouted, ground-level surfaces of the MPPB will be removed during a subsequent phase of demolition.

Demolition will primarily be performed using heavy equipment, with two to four pieces of complimentary heavy equipment typically used as described in Section 6.2. The demolition techniques will be performed by competent persons who are familiar with the building design and construction, demolition operations, equipment functions, and potential hazards. These individuals will perform what is generally described as a “Cut, Shear, Break, Drop” (CSBD) approach starting at the top of the building and working in a downward manner. The CSBD approach can generally be described as cutting or shearing followed by breaking and lowering the building pieces to the ground within the controlled/regulated work area (drop zone). The building structure and components are then sized into small manageable pieces on the ground through the use of hydraulic excavators (or other manual equipment) and appropriately sized attachments.

One important aspect to be maintained throughout demolition is that no undermining and no cutting or shearing of lower level/floors will occur that could jeopardize the structural integrity of the building. The overall demolition approach is to remove upper structures, roofs, walls and floors in a limited or general area, then work in a downward manner as each floor or area is completed. The individuals directing operation of the equipment (e.g., Demolition Superintendents, Foreman and craft work crew) are primarily responsible for determining, from the WIP, which pieces are cut,

broken or sheared as well as the general direction and sequencing of the demolition, such as either working from north to south, east to west, or any other direction as needed to address site specific concerns. The demolition activities will also be supported by a licensed Professional Engineer throughout the process.

Explanation of the following terms is provided to help describe the demolition process:

Cut - To cut apart using a combination of means and methods. Cutting typically involves the use of manually operated thermal torches, burning bars, cutoff saws, or pneumatic and hydraulically operated equipment to cut through steel, concrete, wood and other building materials.

Shear - To snip, saw, or otherwise tear apart (similar to a scissors) with the use of a hydraulically operated, mechanical device attached to a track excavator, crane, or other equipment. Shears (or similar devices) are typically capable of cutting through steel, metals, concrete, wood and typical building materials.

Break - To break apart building components with a combination of devices such as hydraulically operated hammers, pulverizers, grapples, buckets with thumbs, or other types of material processors generally attached to track mounted hydraulic excavators, cranes or other carriers. Typically, once a building component is “Cut” or “Sheared”, the piece may need to be further broken apart from the structure before being lowered to the ground.

Drop - Once the various types of building materials and structural components are cut, sheared, or broken apart from the building, they are then lowered to the ground under controlled conditions into the controlled/regulated work zone.

As the building demolition progresses, debris will be sized and loaded in appropriate containers for transportation to the designated waste disposal facility. Demolition debris will be packaged and transported in accordance with the waste management approach described in Section 7.0. The various sized excavators will perform the shearing and debris segregation/load out operations. The majority of debris will be loaded into intermodals (IMs) or other specified containers.

6.2 Equipment to be Utilized and Available

A primary processing excavator configured with a rotating shear or hydraulic breaker attachment along with a secondary processing excavator with a concrete pulverizer and handling attachment(s) will be the typical equipment utilized. Additional methods such as a concrete crusher on an excavator may also be used to fracture the thickest reinforced concrete walls of the MPPB.

Attachment E contains pictures and additional information regarding typical D&D equipment items. The following types of equipment (or equivalents) will be utilized as necessary:

- large excavator (such as CAT 374D, 160-220K class) with standard arm and combination shear for cutting/shearing steel and/or concrete crusher jaw and hydraulic hammer for breaking concrete and masonry, and high reach arm
- medium excavator (such as CAT 345D, 90 to 110K Class) with bucket and thumb, able to use 11,000 ft lb hammer, and or shear/concrete breaker high reach arm (30 ft extension = total height to +/- 60 ft)

- small excavator (such as CAT 320D, 40 to 50K Class) with standard arm and concrete pulverizing head for crushing concrete, segregating rebar, and breaking masonry, bucket and thumb, and 3-4K lb hammer,
- Aerial platforms (varies) to facilitate cutting and dust control
- Dust suppression equipment
- Front end loader(s)
- Skid steer(s)
- Crane(s)
- Waste Containers
- Forklifts
- Diamond Wire Saw (available if needed)
- Concrete Saw (e.g., wall saw)
- Oxy-Propane or oxy-gasoline cutting torch,
- Air sampling equipment.

Heavy equipment end effectors (attachments, such as shears, grapples, buckets, thumbs, hammers, etc.) will become contaminated during the course of MPPB demolition. At the completion of the MPPB D&D work, the equipment may require decontamination and/or bagging in order to be reused or dispositioned as waste if there is no foreseeable reuse.

6.3 Demolition Approach

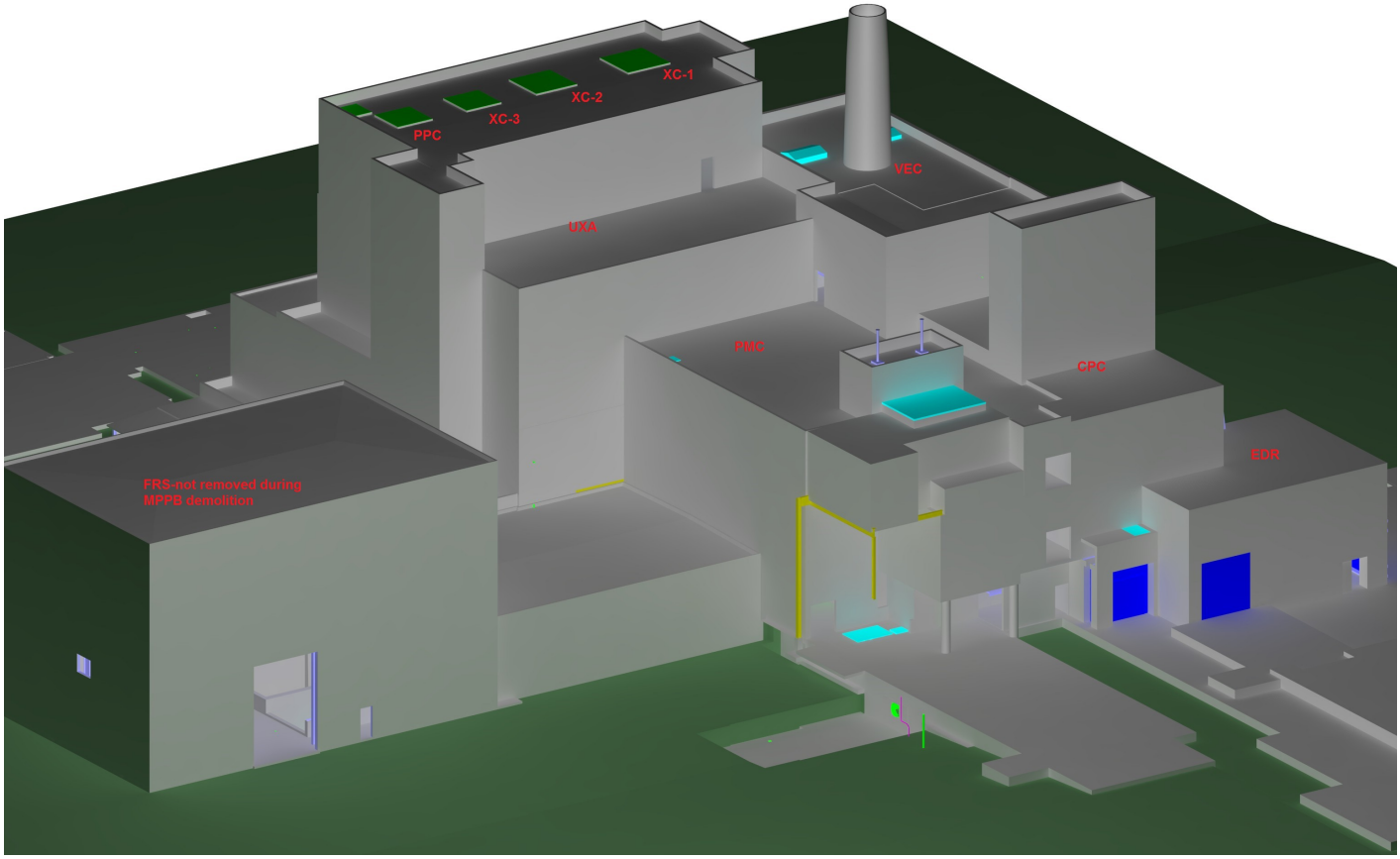
The overarching demolition approach for the MPPB is to perform the demolition in a stepwise manner based on structural evaluation from support areas (stairways, aisles, roofs) to main process areas (CPC, PMC, LWC, Extraction Cells, VWR, Hot Cells) and from top to bottom. This will minimize the potential for cross-contamination of facility areas, minimize migration of contamination and will reduce the time and resources associated with decontaminating equipment and materials from one area to another. This conceptual sequencing approach was successfully implemented during D&D of the WVDP 01-14 Building and during VF demolition. As discussed further in in Section 8.0, Appendix F includes a high level schedule showing estimated time frames and sequencing for the demolition activities. Figure 3 shows a schematic of the MPPB prior to demolition.

Figures 4 through 36, further described below, show the general demolition approach for the MPPB major processing areas using the methods and equipment described in the previous sections. There may be some overlap between areas and activities occurring in parallel as demolition progresses from area to area. As final steps are taken to prepare the MPPB for demolition and demolition gets underway, it may be necessary to make adjustments to the approaches and/or sequencing described below due to differing conditions. Such potential adjustments will be documented and authorized through the work control system and associated documents. Factors influencing the work process may include: structural integrity, activities and occupancy in adjacent nearby facilities, other surrounding site activities, radiological monitoring and controls, ventilation controls and requirements, or other project related factors.

The specific area(s) being addressed in each section are shown and labeled on the accompanying figures. A small inset of the MPPB with an arrow is included on most figures to show the general location of the specified area. Colors such as green or blue have been incorporated into the model to highlight certain types of common equipment located throughout the building such as doors or

hatches, which may not be associated with the specific area being addressed. When an area is listed as “common”, its demolition is considered structurally straightforward and it is being removed as part of a corresponding surrounding area, and additional detail is not warranted as part of the MPPB demolition discussed herein. Figures 37 and 38 show different views of the MPPB area following demolition.

Figure 3 – Main Plant Process Building Prior to Demolition
(Facing Southwest)

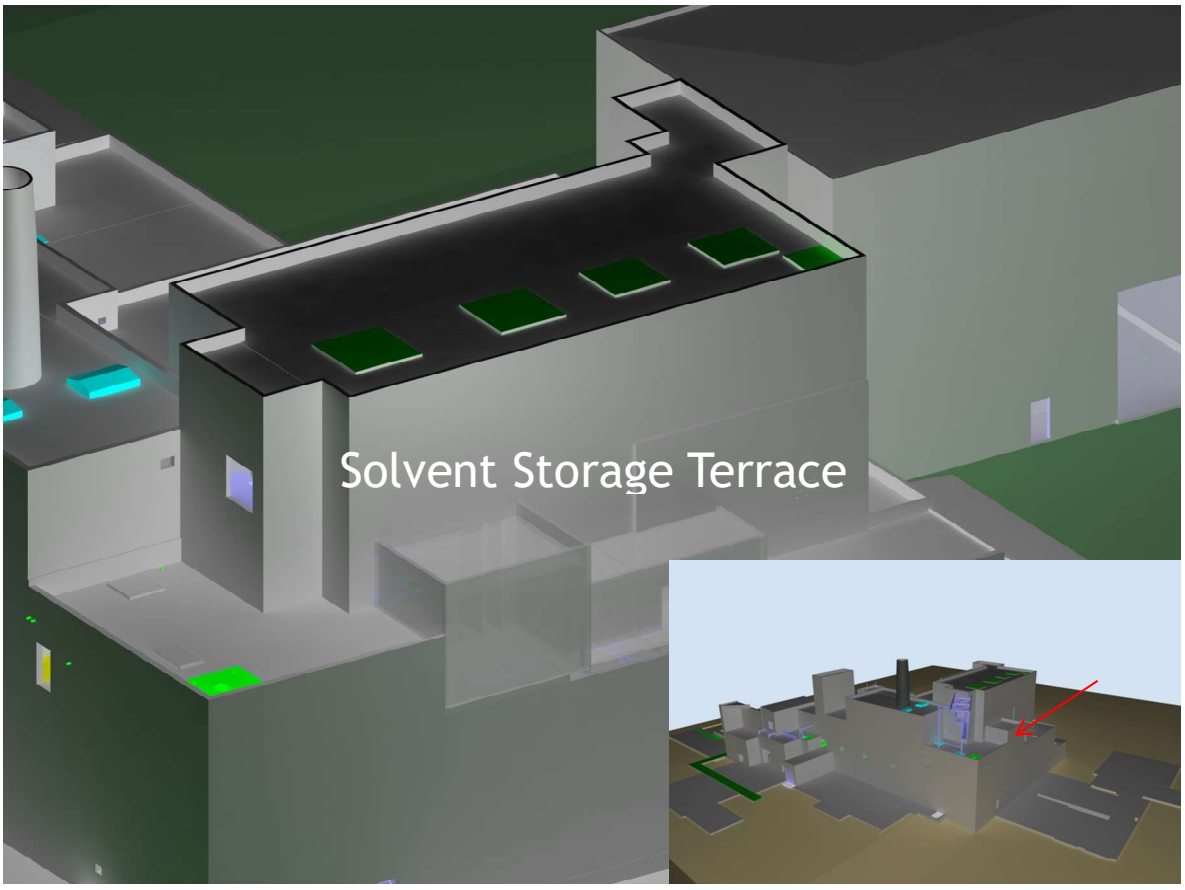


6.3.1 Solvent Storage Terrace (SST)

A. Hammer/Shear/Process roof, structural steel members, concrete block and reinforced concrete in descending order.

B. If necessary, remove parts of adjacent bays and/or lower floors to access upper floors.

Figure 4 - Solvent Storage Terrace



6.3.2 Upper Warm Aisle and Lower Warm Aisle

A. Remove, size, and disposition the UWA reinforced concrete walls in conjunction with the roof/ceiling with the hammer or processor. Remove up to the south wall of the Extraction Cells. Also remove the section of the south stairs at the west end of the UWA to include concrete masonry unit walls, structural steel framing, and stairs.

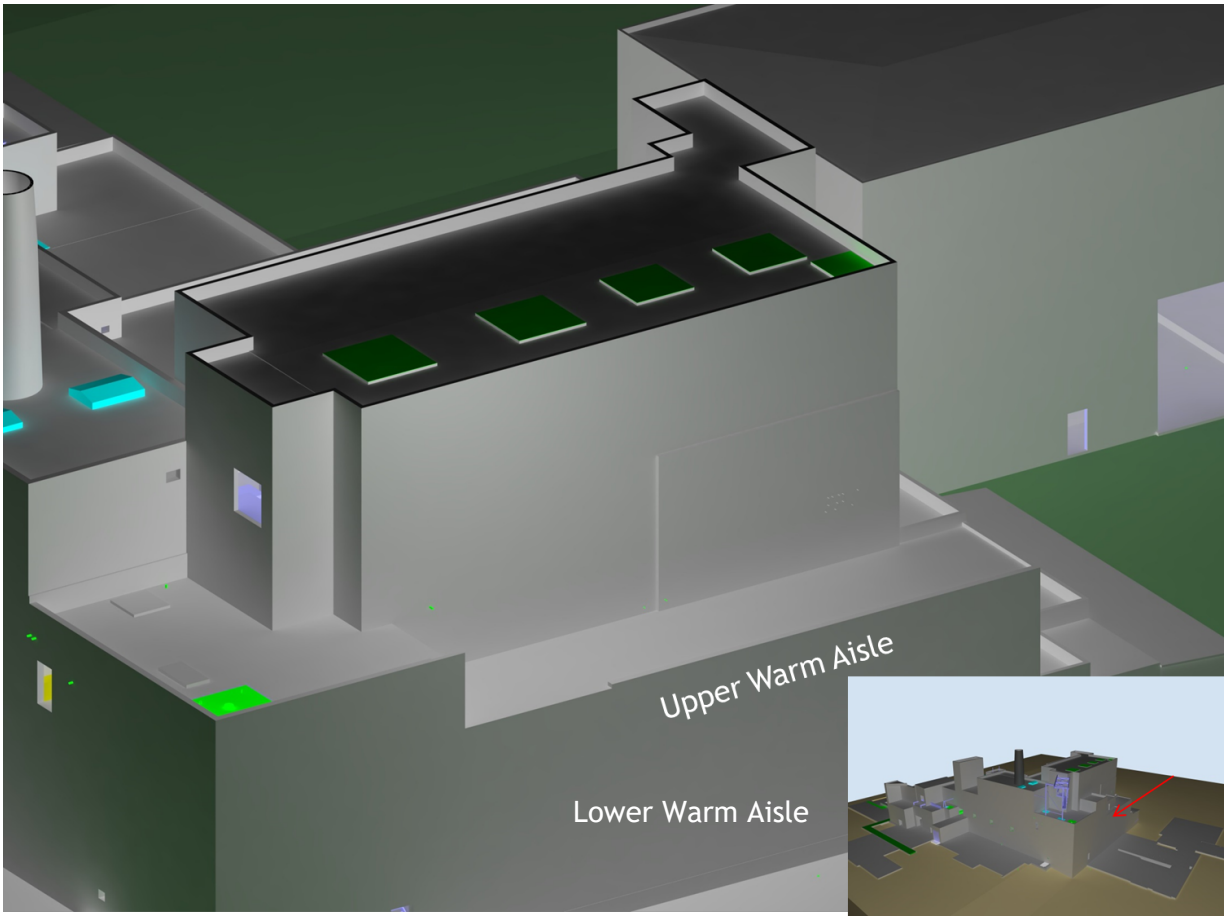
B. Remove, size, and disposition remaining internal components in conjunction with the walls/roof/ceiling which include the sections of shielded pipe chase, piping, electrical components, duct, gantry cranes, and platforms.

C. Hammer, as necessary and remove the reinforced concrete pump niches from the UWA floor.

D. Continue hammering the UWA floor (LWA ceiling) continuing down on the LWA walls stopping at the floor elevation. Remove the remaining sections of the stairs and all internal components, which are piping, electrical fixtures, and duct.

E. Fill penetrations from the pump niches, hammer the reinforced concrete pump niche covers from the LWA niches. Hammer the niche walls down to the level of the grout that was added prior to demolition.

Figure 5 - Upper Warm Aisle and Lower Warm Aisle



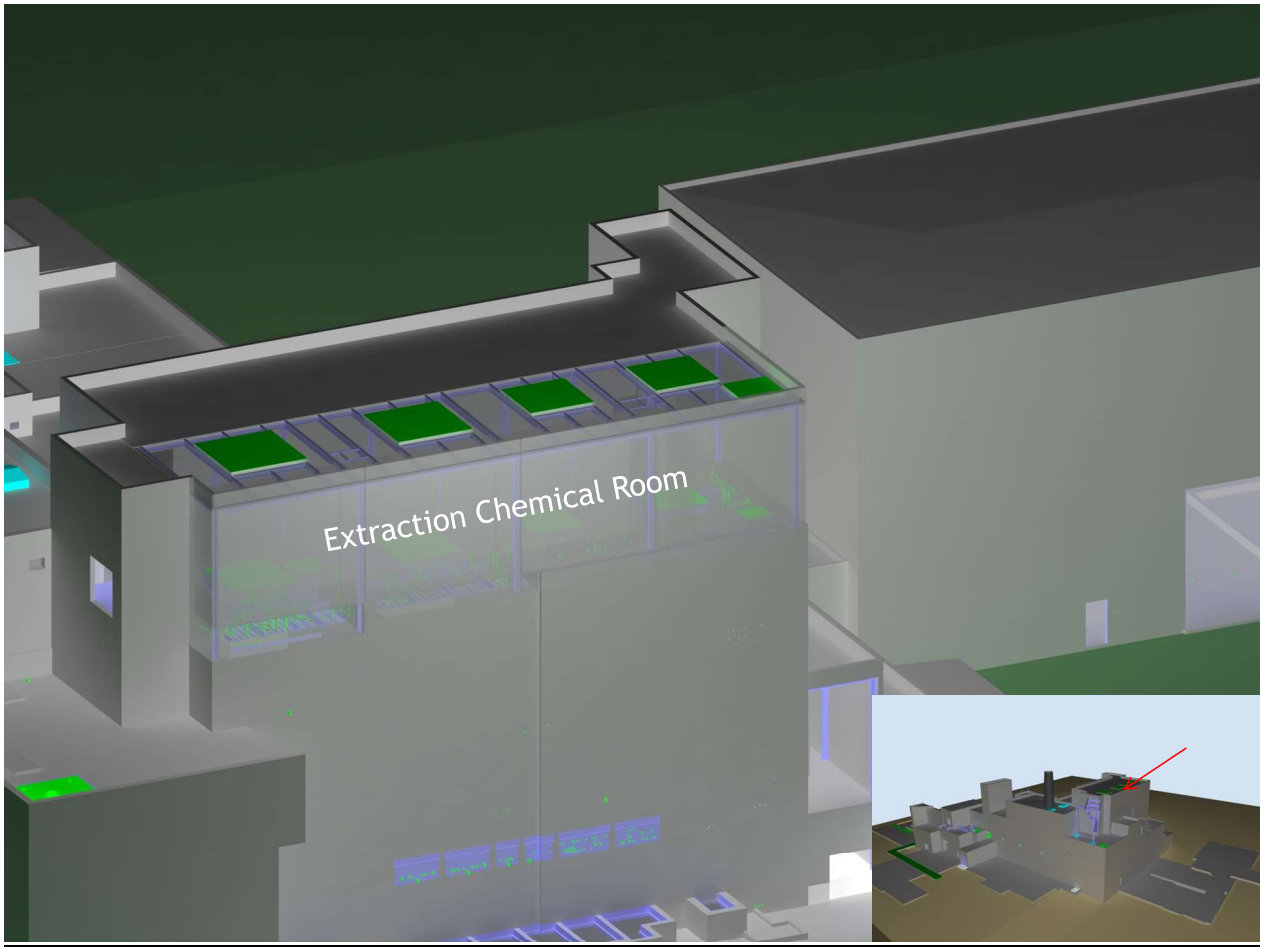
6.3.3 Extraction Chemical Room (XCR)

A. Remove, size, and disposition the concrete masonry unit walls (block wall) which includes remaining electrical components and piping attached to the walls. This includes the walls around the south stair chase. This will expose the structural steel framing.

B. Remove, size, and disposition remaining internal components which include the XCR containment structure, piping, electrical components, duct, heating ventilation and air conditioning (HVAC) unit, gantry cranes, and stairs.

C. Remove, size, and disposition the roof decking, roofing membrane, structural steel framing, and columns.

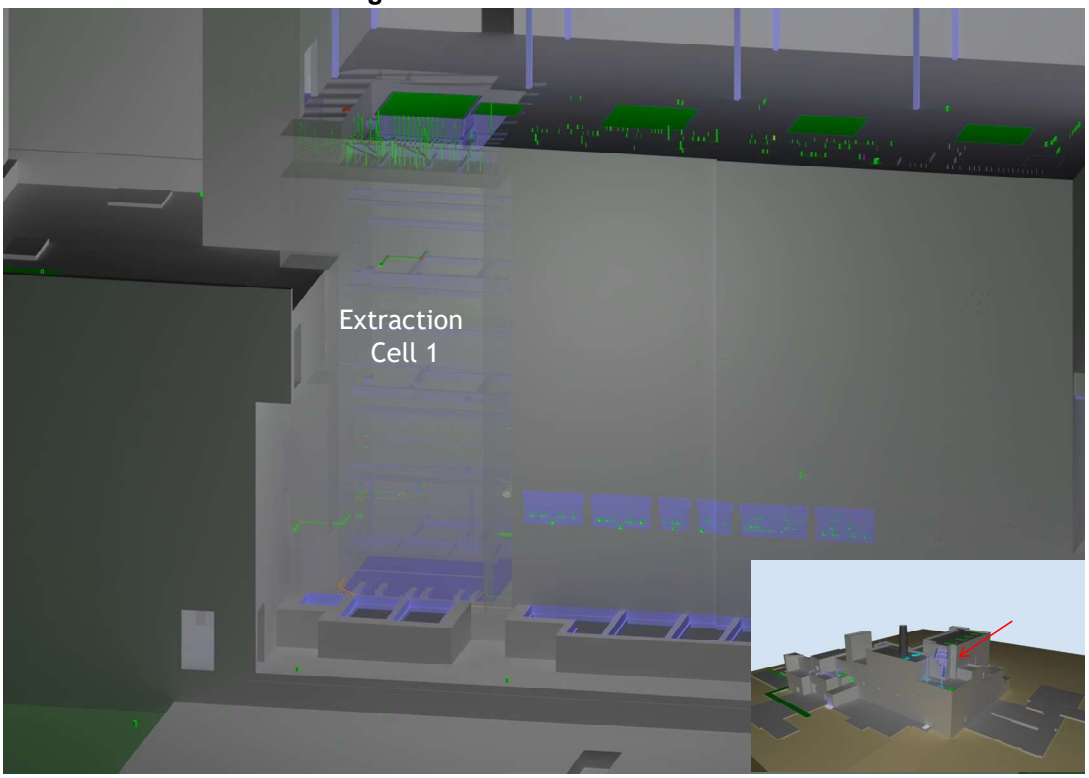
Figure 6 - Extraction Chemical Room



6.3.4 Extraction Cells (XC-1, XC-2 & XC-3)

A. Remove, size, and disposition the extraction cells reinforced concrete walls using the hammer or processor.

Figure 7 - Extraction Cells 1 & 2



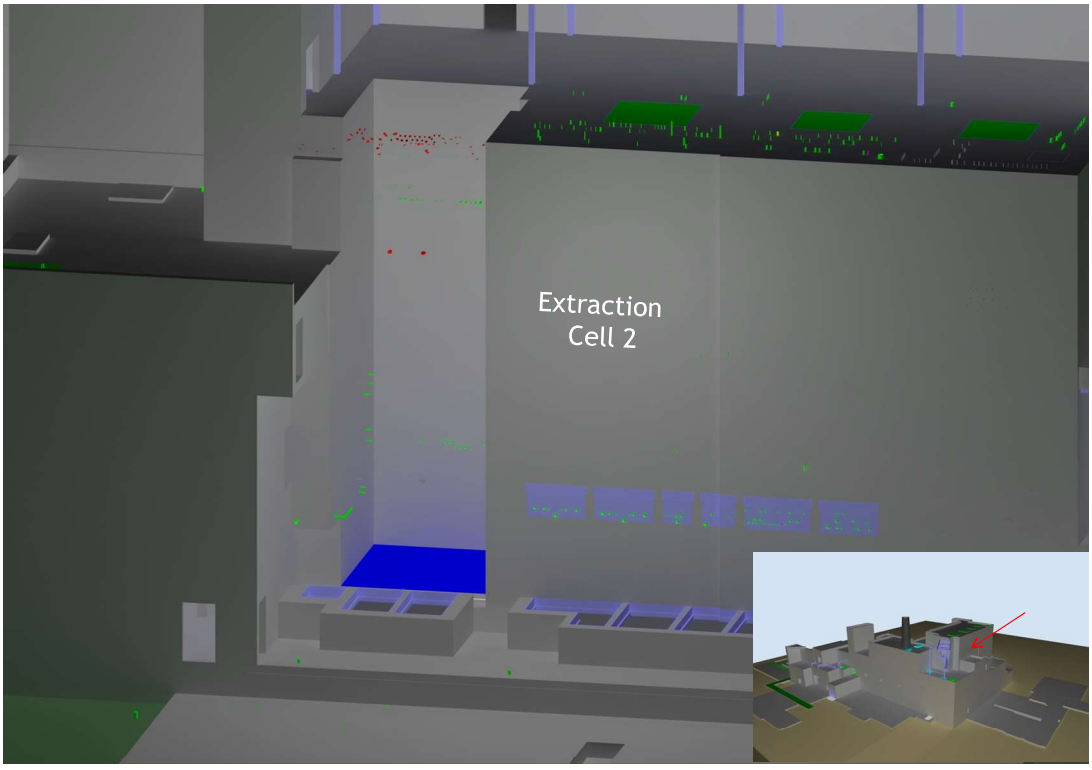
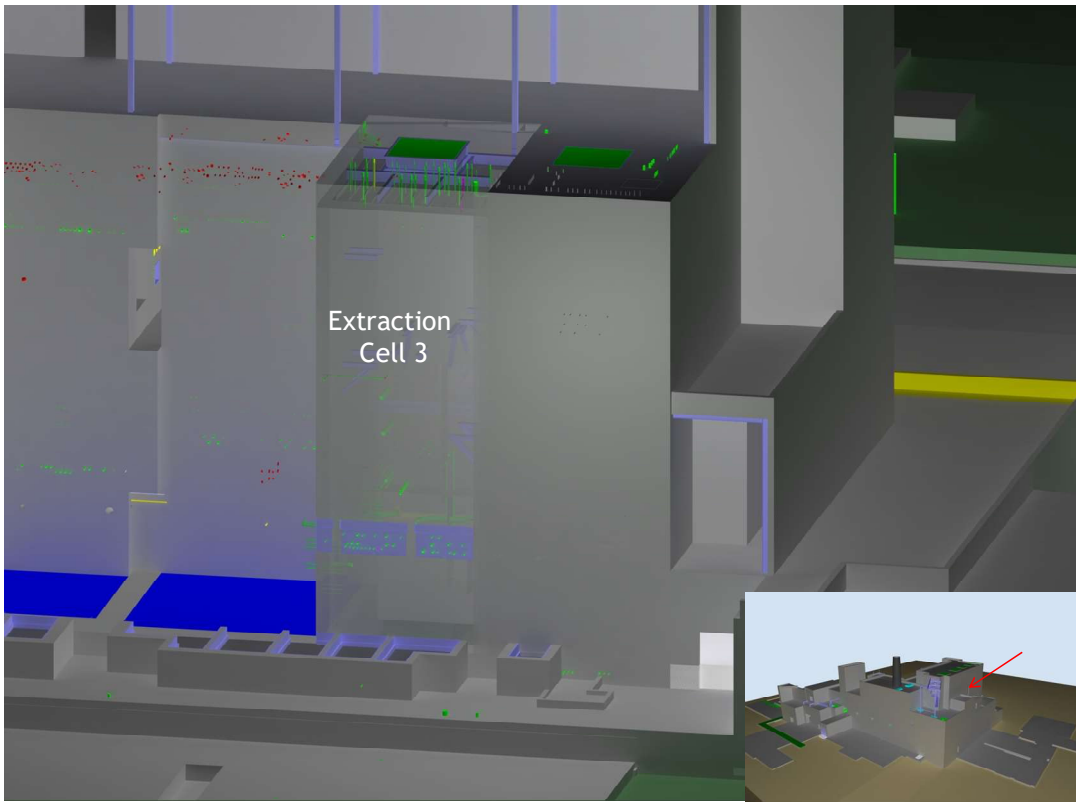


Figure 8 - Extraction Cell 3



6.3.5 Off-Gas Operating Aisle (OGA), Acid Recovery Cell (ARC), Off-Gas Blower Room (OGBR), Acid Recovery Pump Room (ARPR), Off-Gas Cell (OGC)

A. Remove, size-reduce, and disposition the concrete masonry unit walls on west side of the ARC starting at the highest elevation and including OGA and south stairs. Also remove remaining electrical components and piping attached to the walls.

B. Saw cutting on the ARC floor prior to demolition is being planned due to elevated radioactivity levels and to provide additional radiological controls and minimize the potential for elevated airborne releases during demolition. The ARC floor will be removed (portable ventilation controls will be available, if necessary), with pieces dropped to the ARPR and OGBR. Then the remainder of the ARC will be removed.

C. Hammer or process the reinforced concrete walls of the OGBR and ARPR starting at the west side and progressing to the east.

D. Saw cutting in the OGC prior to demolition is being planned, as noted above for the ARC floor. Hammer or process the reinforced concrete walls of the OGC. Remove, size-reduce, and disposition the northeast wall as one unit or segment using saw techniques.

E. Size-reduce the remaining internal components including piping, electrical, and platforms.

Figure 9 - Off-Gas Operating Aisle

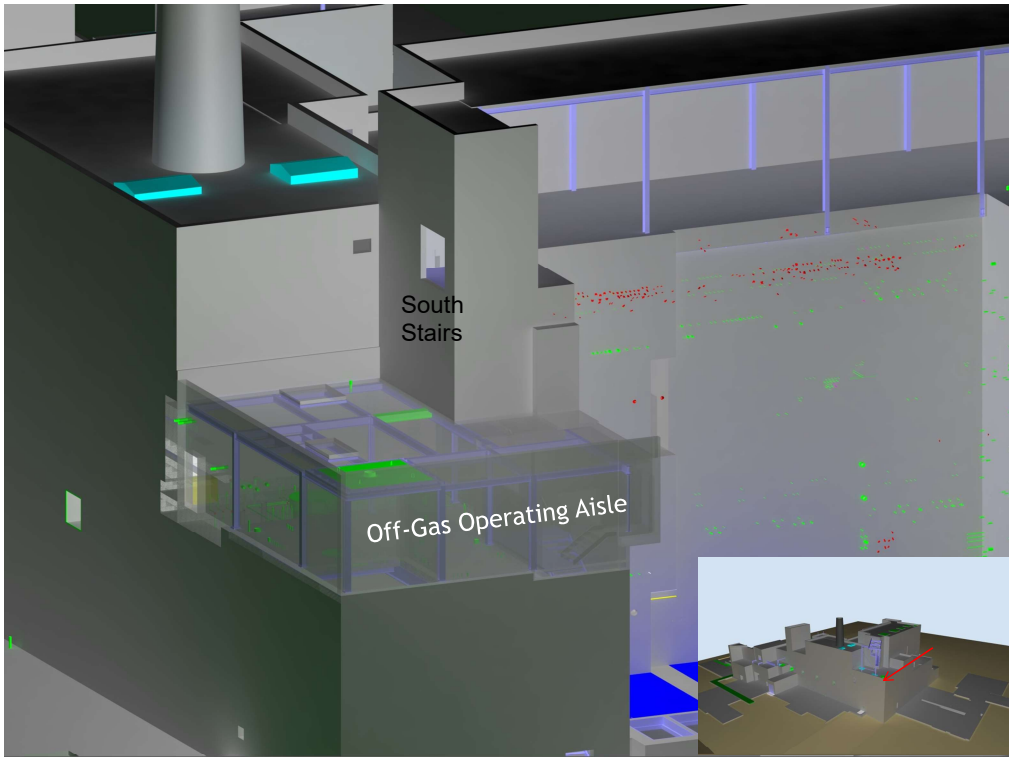


Figure 10 - Acid Recovery Cell

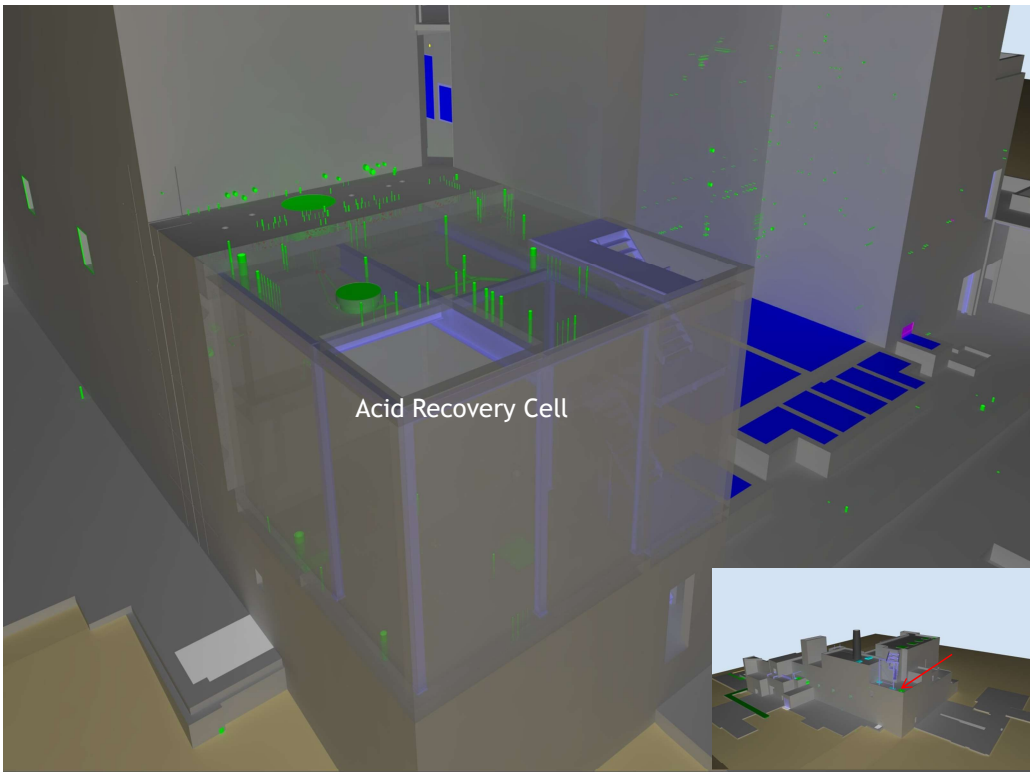


Figure 11 - Acid Recovery Pump Room

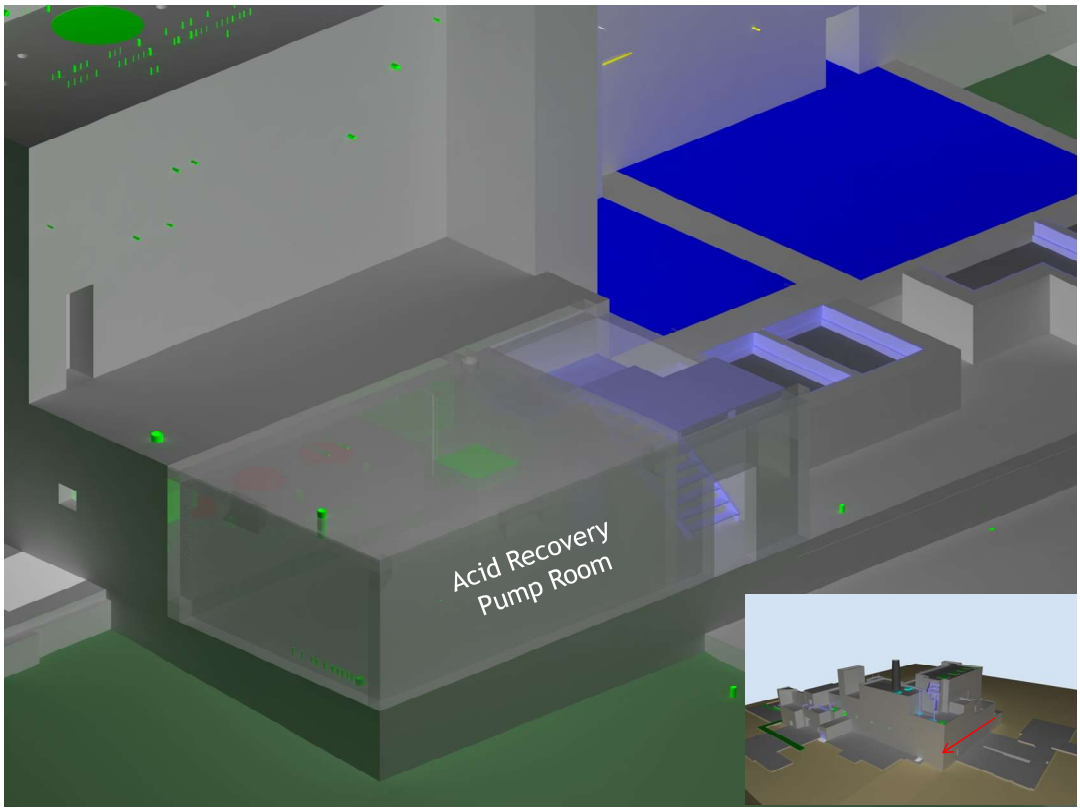


Figure 12 - Off-Gas Blower Room

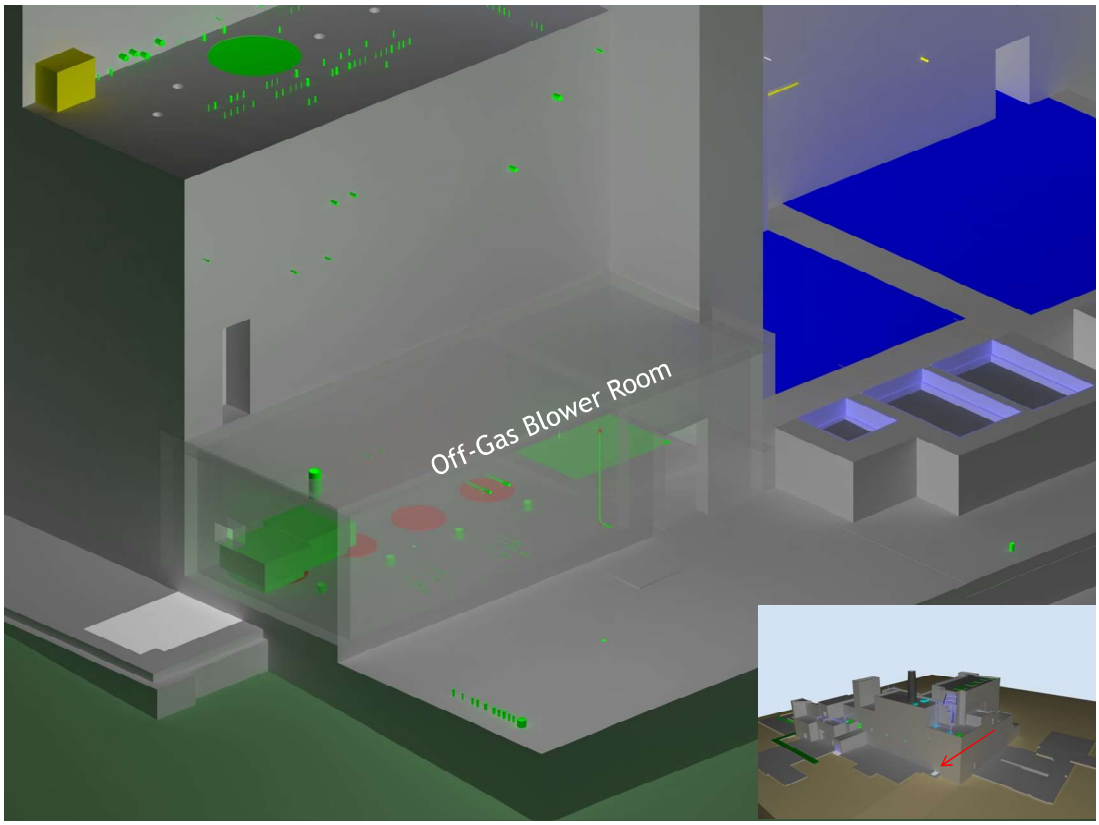
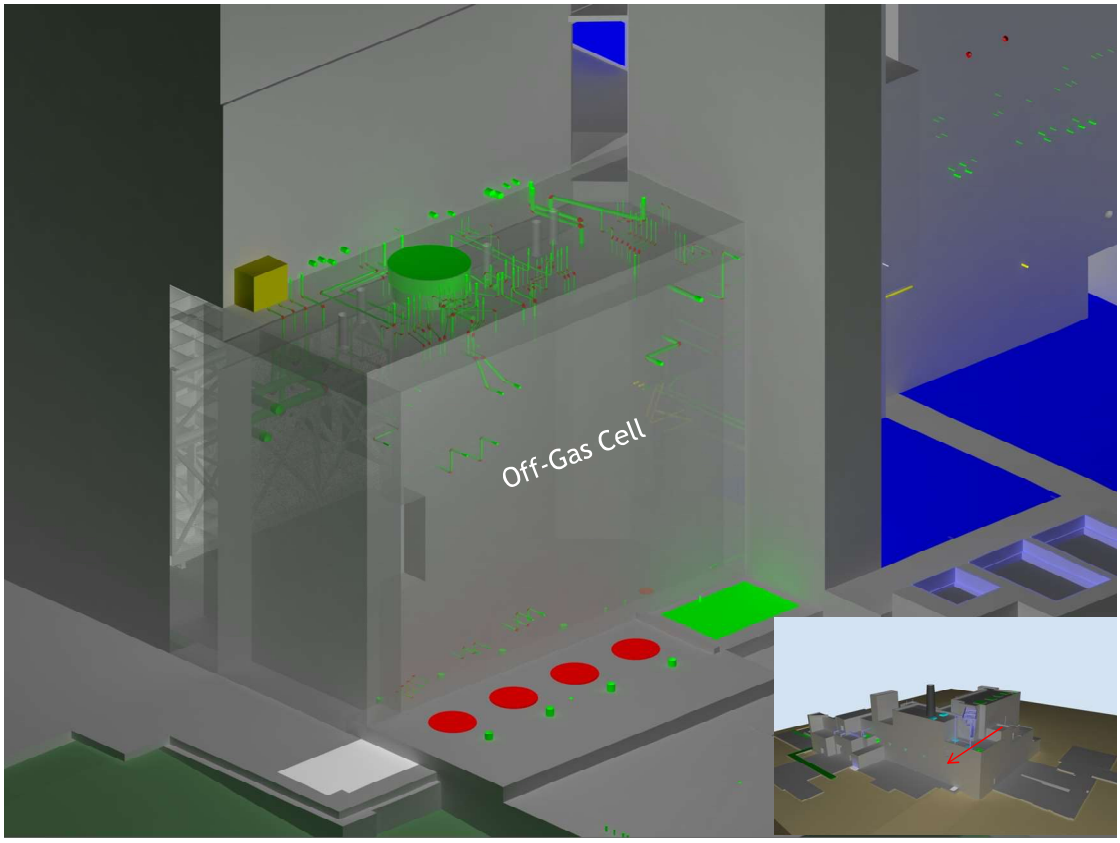


Figure 13 - Off-Gas Cell



6.3.6 Ventilation Exhaust Cell (VEC)

A. Remove, size, and disposition the VEC reinforced concrete walls using the hammer or processor.

B. Remove, size, and disposition remaining internal components including blowers, filter housings and associated ductwork.

C. Hammer the reinforced concrete portion of the stack remaining in the cell.

6.3.7 Main Stack

A. The upper, stainless steel portion of the Main Stack was removed and disposed of in 2018. Remove, size, and disposition the lower, gunite portion of the Main Stack with conventional demolition methods and package for disposal.

Figure 14 - Ventilation Exhaust Cell

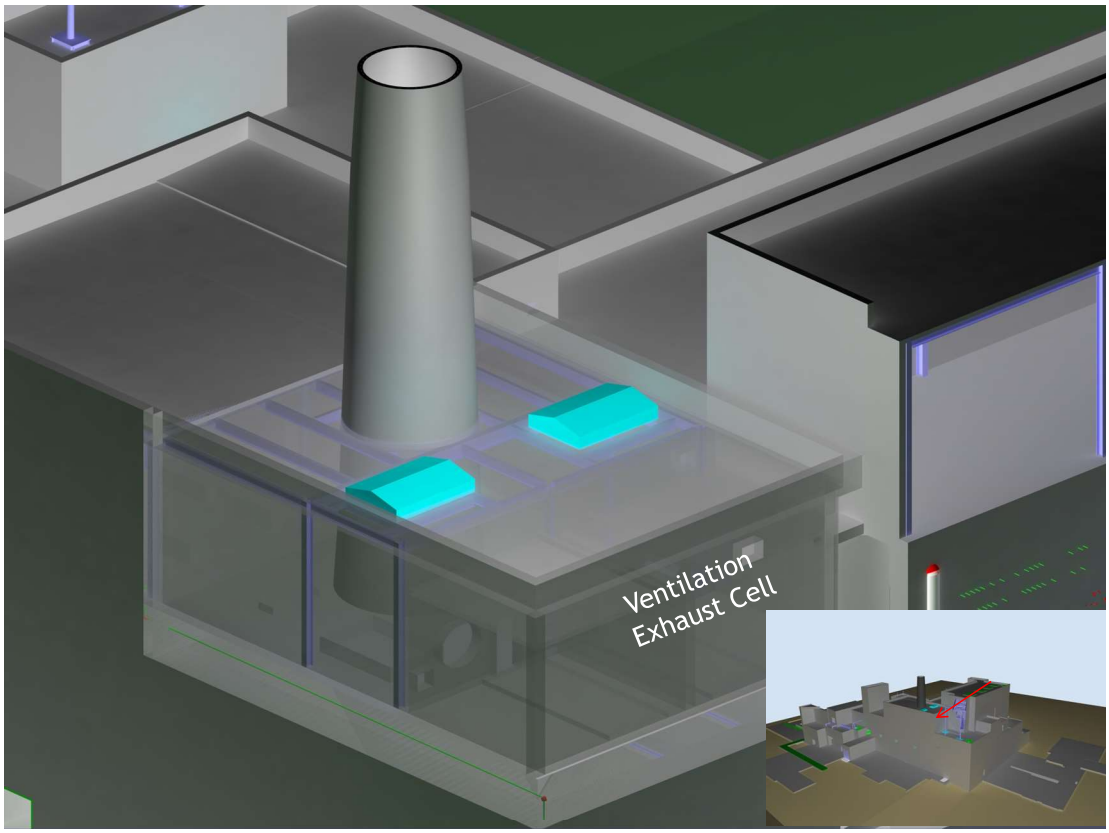
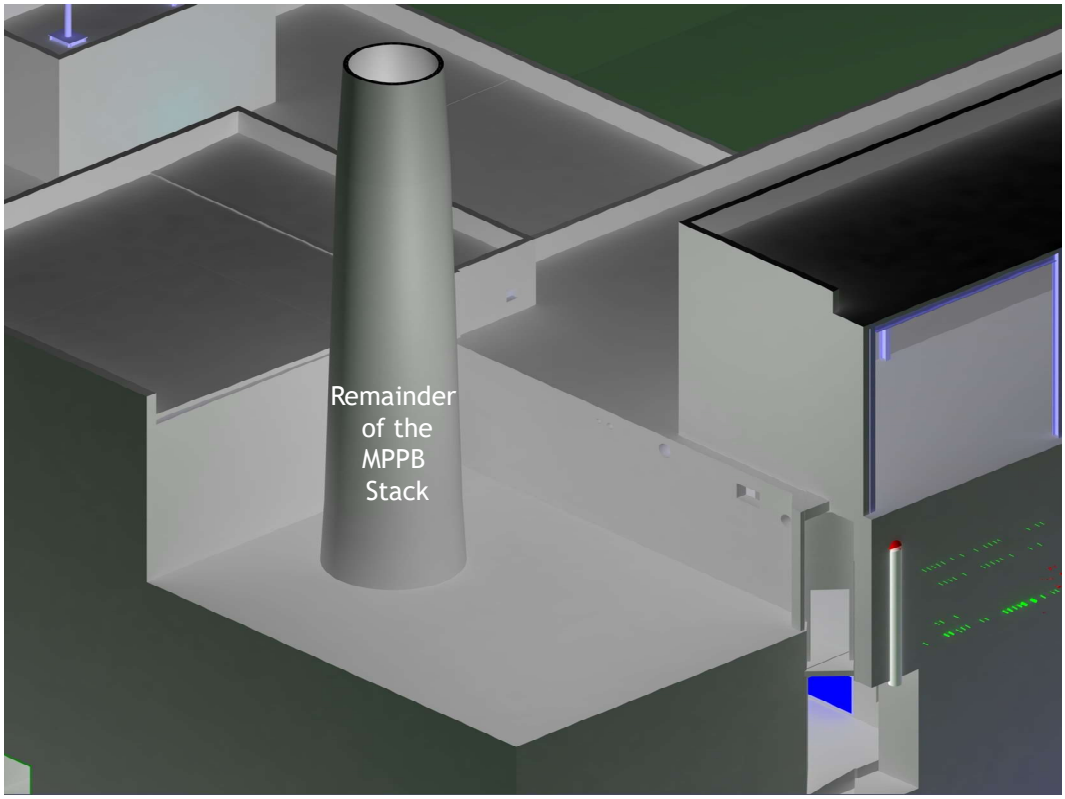


Figure 15 - Main Stack



6.3.8 Hot Acid Cell (HAC) and Process Chemical Room (PCR)

A. Remove, size, and disposition the concrete masonry unit walls (block wall) of the HAC starting at the highest elevation, including remaining electrical components, piping attached to the walls, and auxiliary blower unit. This part of the demolition activity may temporarily pause when reaching the shared wall with the VEC. The sump area may be removed as a block, based on radiological conditions.

B. Remove, size, and disposition the concrete masonry unit walls (block wall) of the PCR, including remaining electrical components and piping attached to the walls. The SGN sample transfer system will be removed in its entirety with no size reduction.

Figure 16 - Hot Acid Cell and Process Chemical Room

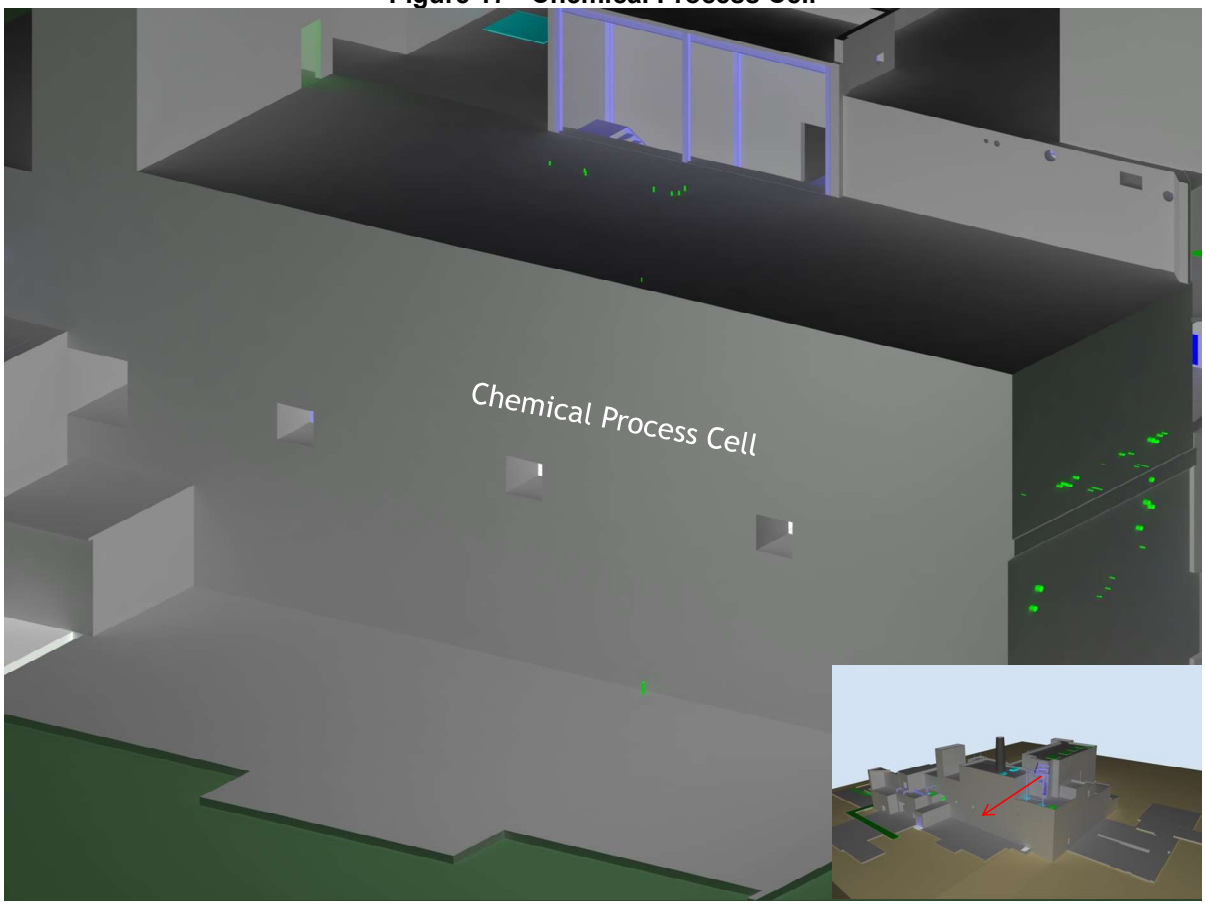
6.3.9 Chemical Process Cell

A. Remove, size, and disposition the CPC reinforced concrete walls using the hammer or processor.

B. Remove the CPC Racks and package as waste.

C. Remove the CPC shield windows and segregate during removal for separate packaging for disposal.

Figure 17 - Chemical Process Cell



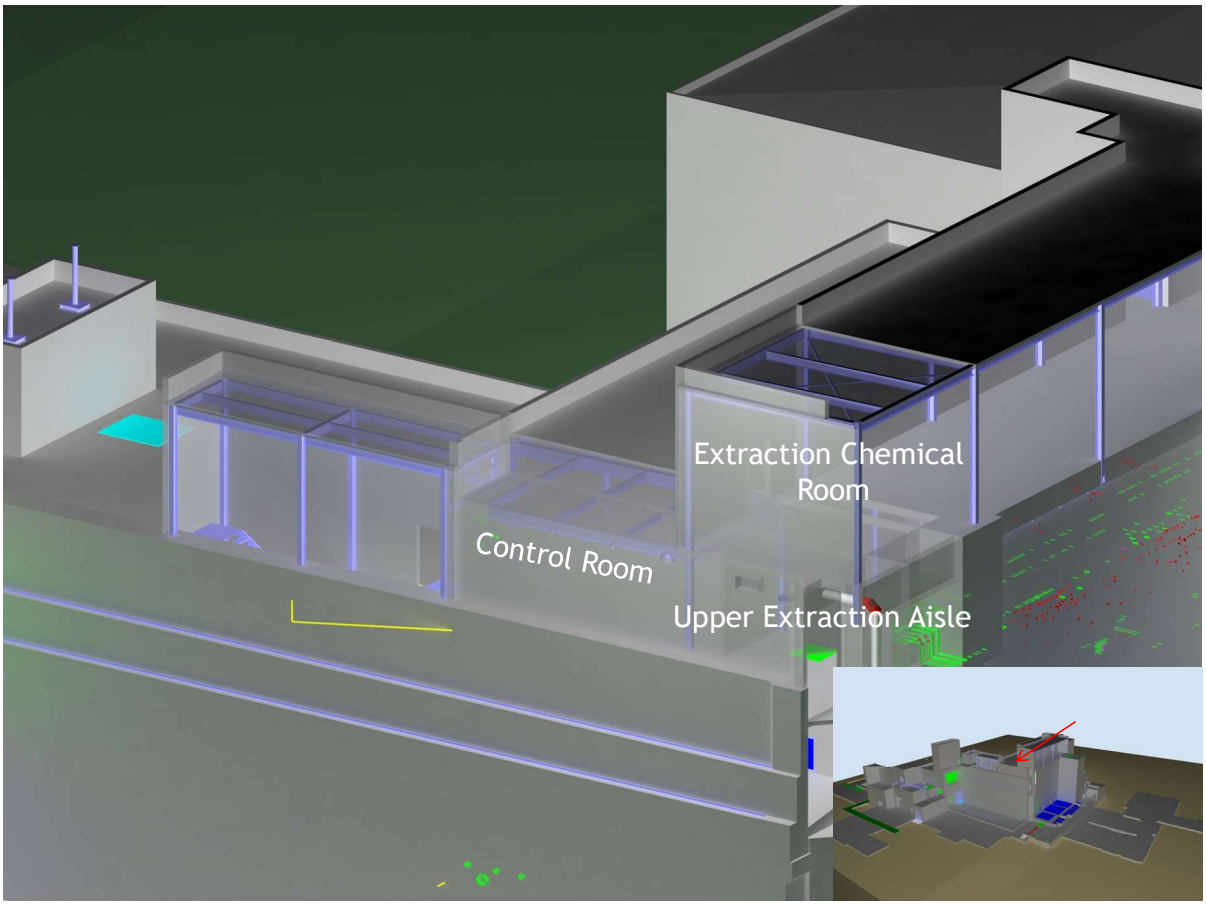
6.3.10 Upper Extraction Aisle (UXA) and Control Room

A. Remove remaining equipment, Motor Control Centers and piping in the UXA. Remove, size, and disposition the UXA roof, walls, and floor.

B. Remove, size, and disposition the control room panels and remaining instrumentation.

C. Remove, size, and disposition the nearby concrete masonry unit walls (block wall) up to the UXA and LXA, that were not previously removed.

Figure 18 - Extraction Chemical Room, Upper Extraction Aisle & Control Room



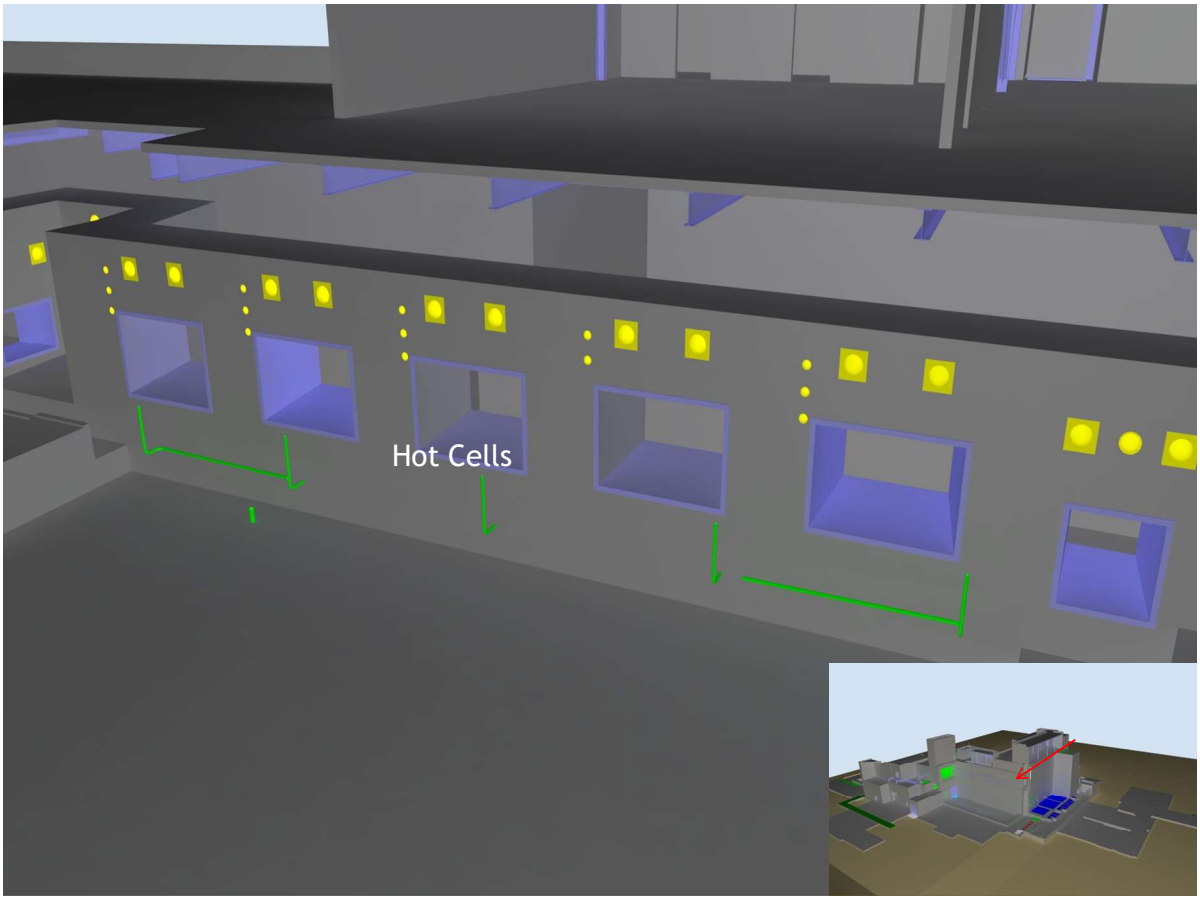
6.3.11 Analytical & Process Chemistry (A&PC) Hot Cells

A. Remove, size, and disposition the concrete masonry unit walls (block wall) of the aisles and around Laboratories.

B. Remove, size, and disposition the reinforced concrete walls of the Hot Cells using the hammer or processor. Contamination levels may require special size reduction in some areas (i.e., saw cutting or hammering around hot spots) of the Hot Cell floor liners.

C. Remove the shield windows, segregate and package separately for disposal.

Figure 19 - Analytical & Process Chemistry (A&PC) Hot Cells



6.3.12 Liquid Waste Cell

A. Remove, size, and disposition the roof and walls in descending order. Grout was previously added to the floor of the LWC up to the feet of the tanks.

B. Remove the nine LWC tanks and prepare for disposition as waste without size reduction.

C. Remove the inner criticality shield wall down to the approximate 100 ft plant elevation level.

D. Fill, similar to pea gravel, will be placed in the lower portion of the LWC after removing the tanks. The gravel layer will serve as a base to place the windows to be lowered from the Hot Cells.

Figure 20 - Liquid Waste Cell

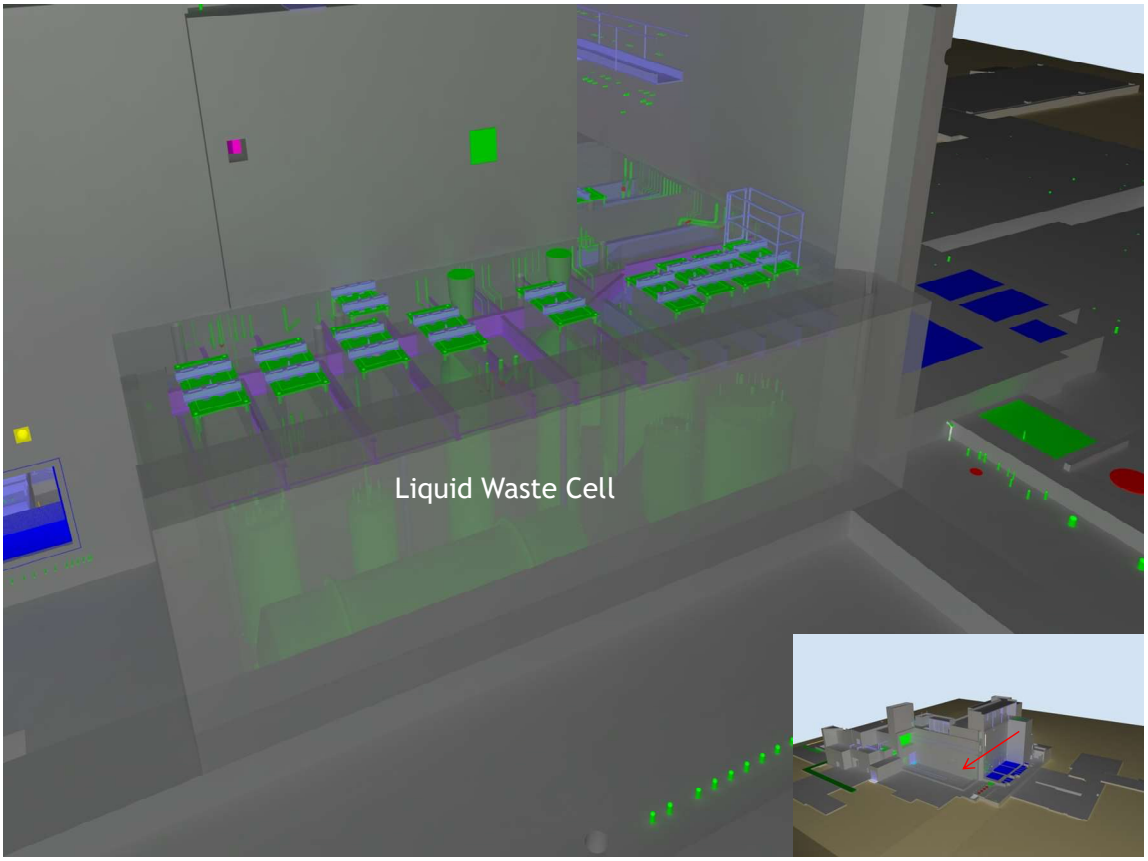
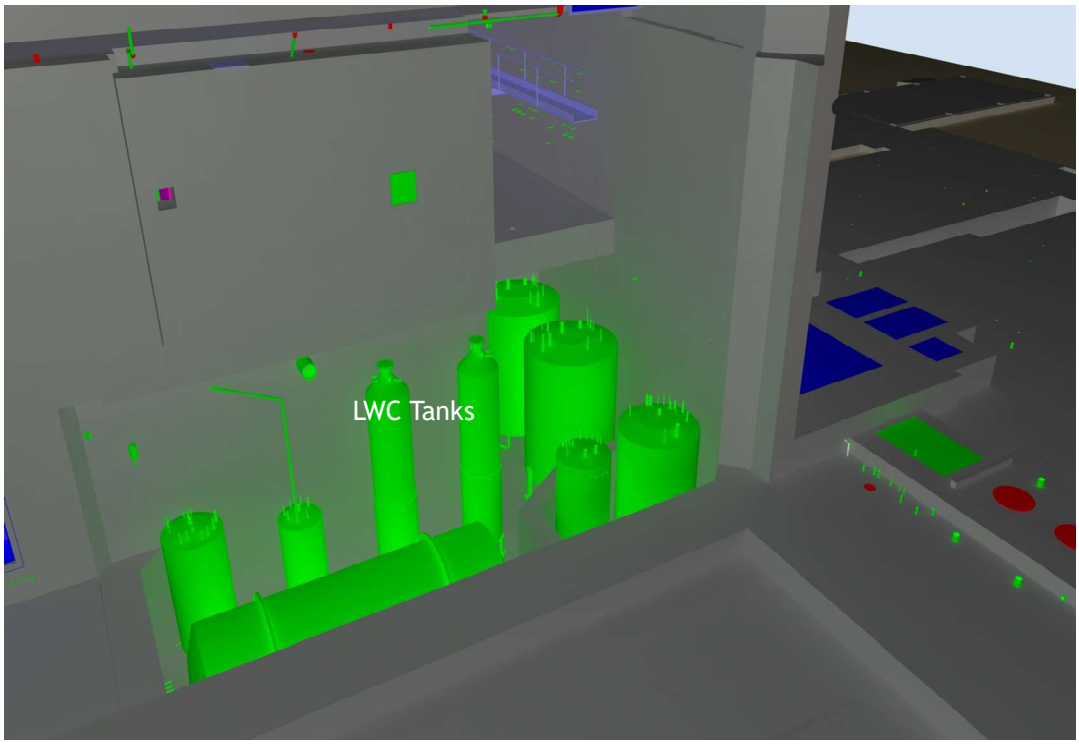


Figure 21 - Liquid Waste Cell Tanks



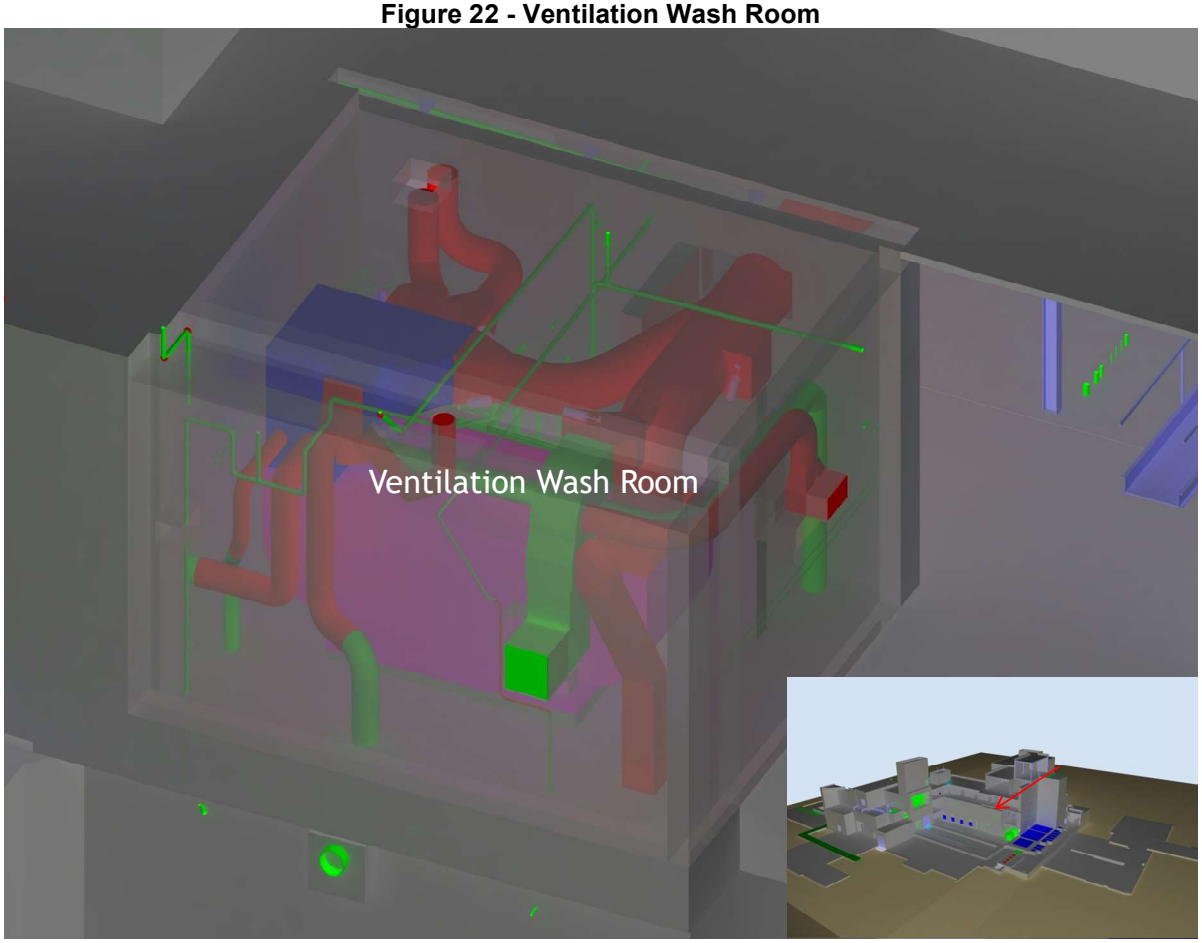
6.3.13 Ventilation Wash Room (VWR)

A. Remove, size, and disposition the VWR reinforced concrete walls in conjunction with the roof/ceiling with the hammer or processor, up to the Process Mechanical Cell (PMC) wall. Also remove the VSR reinforced concrete walls using the hammer or processor, up to the PMC wall.

B. Remove, size, and disposition remaining internal components including the washer, ducting, blowers, heaters, and utility piping cooling coils of the VSR.

C. Hammer the reinforced concrete pump niches from the VWR wall.

Figure 22 - Ventilation Wash Room



6.3.14 Uranium Product Cell (UPC)

A. Remove, size, and disposition the concrete masonry unit walls (block walls) above the UPC (partial portions of Control Room, Lab Area, UXA, & LXA), which includes remaining piping, electrical components, duct, control cabinets, platforms, and laboratory hoods. Remove the overlying material and structural steel framing to a point where the UPC is exposed.

B. Hammer or process the reinforced concrete walls of the UPC starting at the east side working west. The ceiling of the UPC will be removed in conjunction with the walls as the demolition proceeds to the west. The north wall that is shared with the FRS will not be demolished.

C. Remove the UPC process tanks without size reducing the tanks. The tanks will be packaged whole for waste disposal. The tanks may be removed as partial wall and ceiling removal progress, providing enough access to remove the tanks from the UPC with the demolition excavator.

D. Remove, size, and disposition the remaining internal components, which includes piping, electrical, and platforms.

Figure 23 - Uranium Product Cell

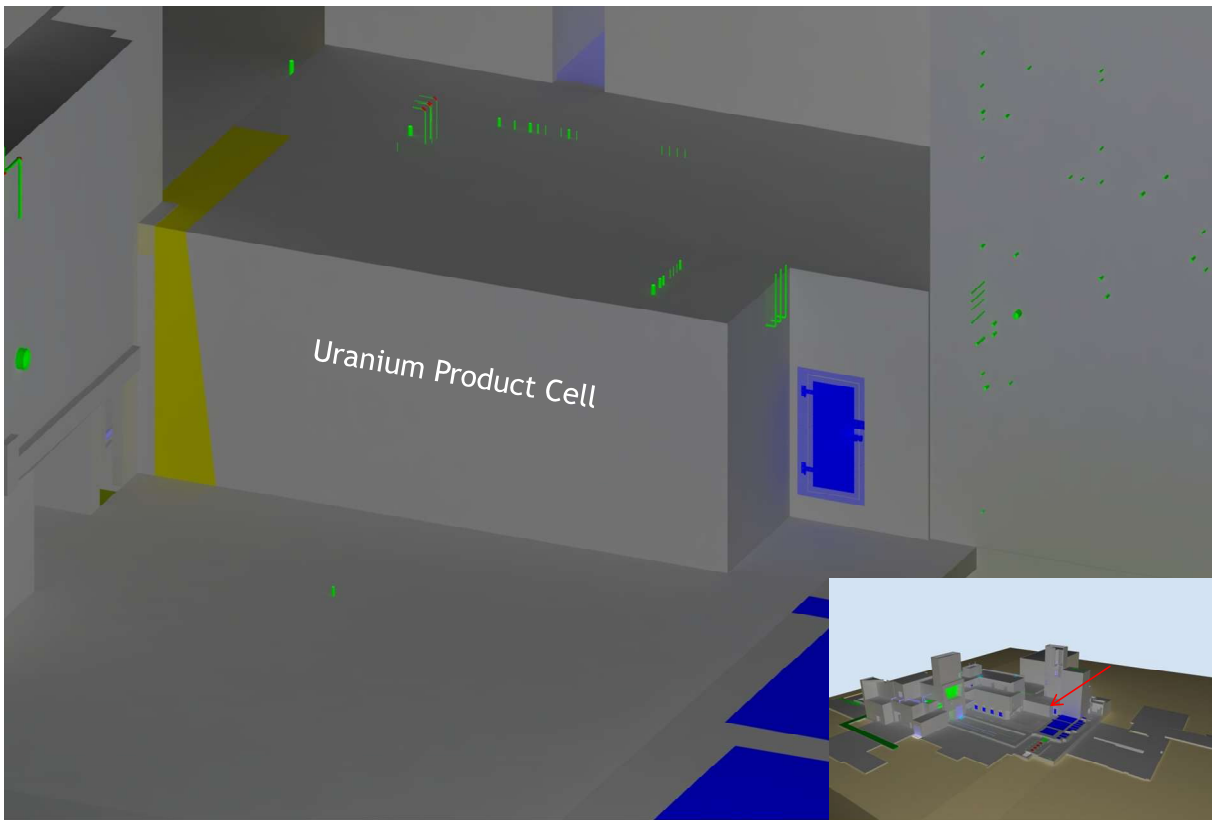
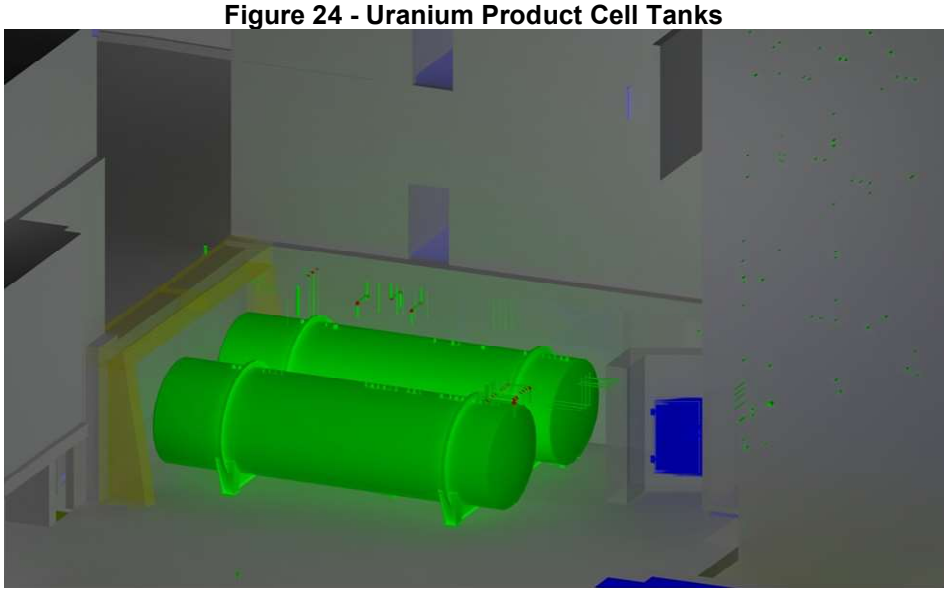


Figure 24 - Uranium Product Cell Tanks



6.3.15 Uranium Load Out (ULO) & Product Packaging and Handling (PPH) Area

A. Remove, size, and disposition the ULO and PPH ceilings and concrete masonry unit walls (block wall) to the WRPA dock and ULO slab level, which includes structural steel framing and columns, and remaining electrical components and piping attached to the walls. Remove internal components which include pumps, portable ventilation unit (PVU), duct, and a waste water treatment skid. The PPH demolition may temporarily pause at the west wall which is a common wall with the UPC. The ULO demolition will stop at the north wall which is a common wall with the FRS.

B. Remove the ULO process tank without size reducing the tank. The tank will be packaged whole for waste shipment. Partial removal of the roof structure may be necessary at this stage to provide access to remove the tank from the ULO with the demolition excavator.

C. Fill the relatively large PPH stainless steel-lined sump with grout, or other means, to prevent water collection/infiltration.

Figure 25 - Uranium Load Out

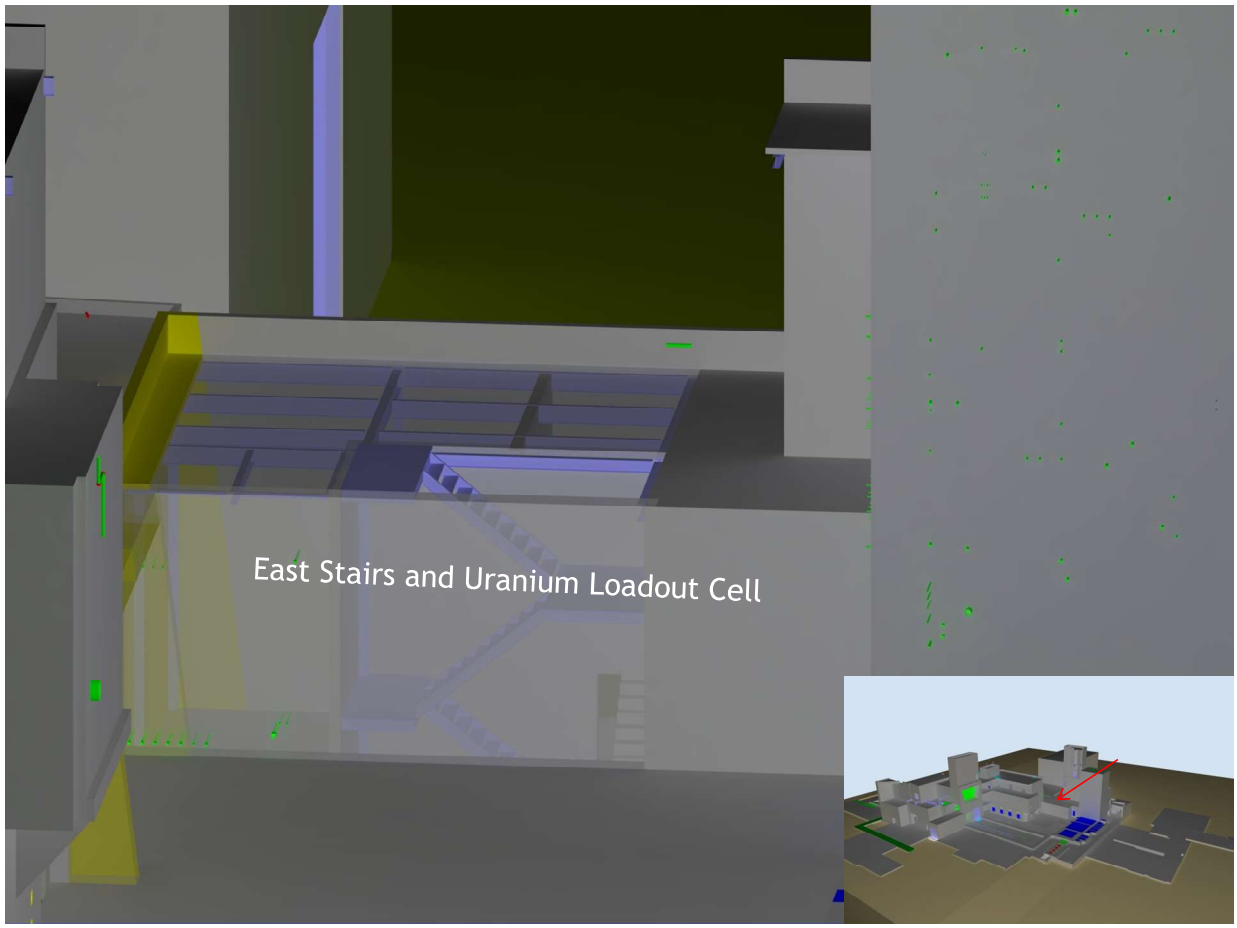
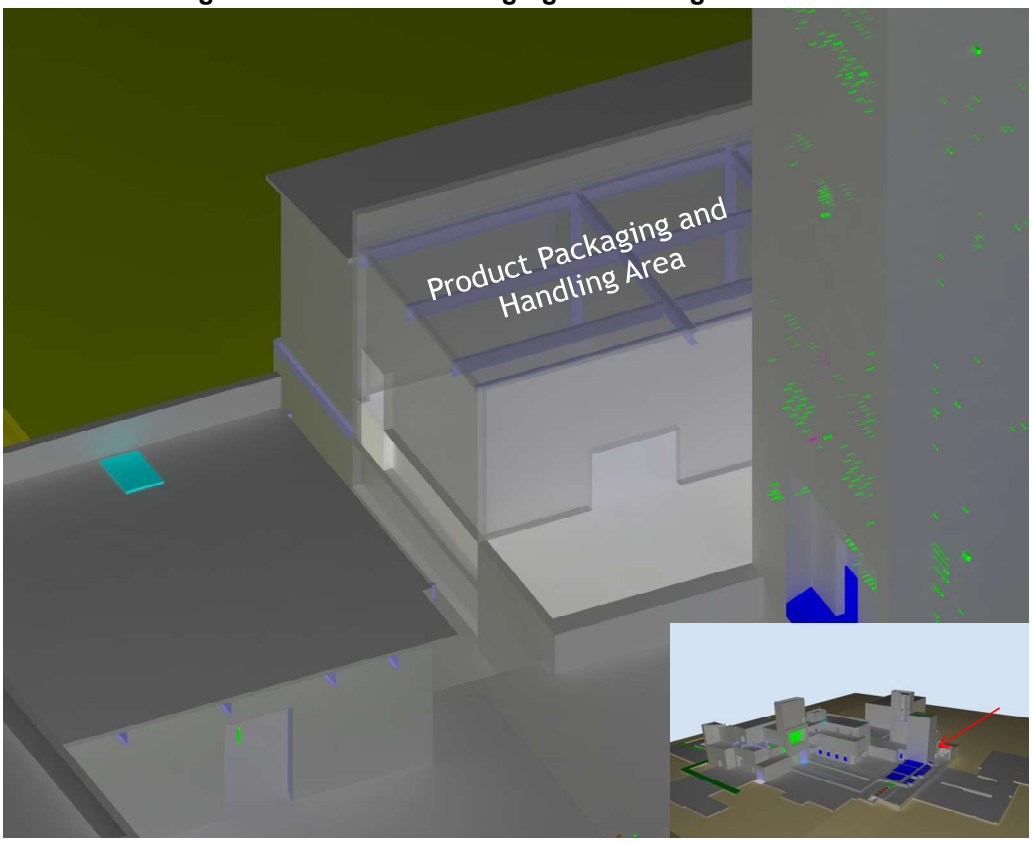


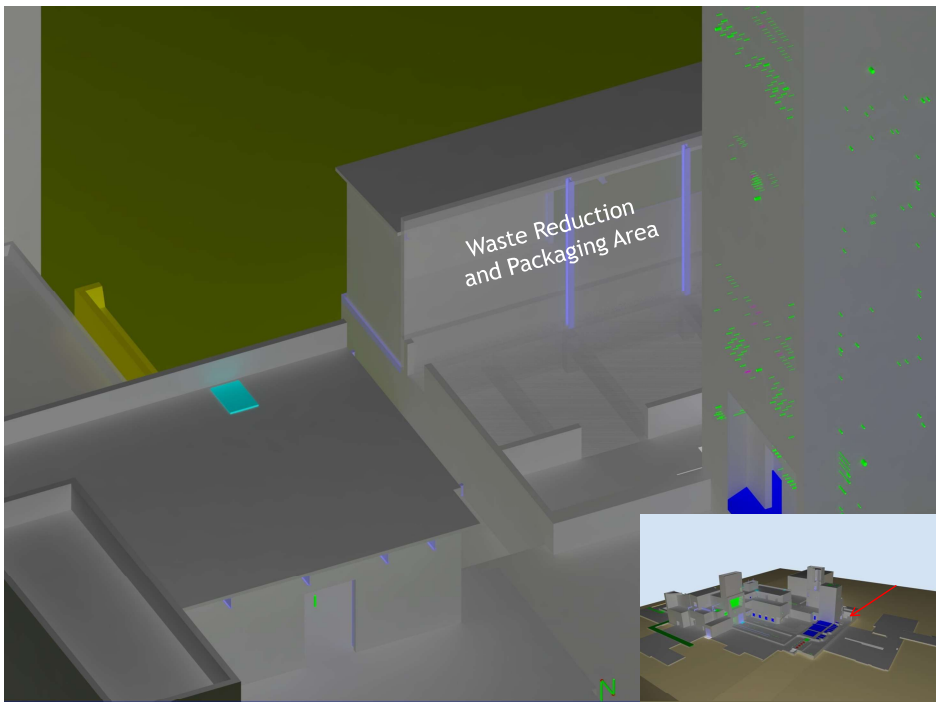
Figure 26 - Product Packaging & Handling Area



6.3.16 Waste Reduction and Packaging Area (WRPA)

A. Remove outside WRPA dock structure and block wall, including isolated mercury abatement system tanks.

Figure 27 - Waste Reduction and Packaging Area



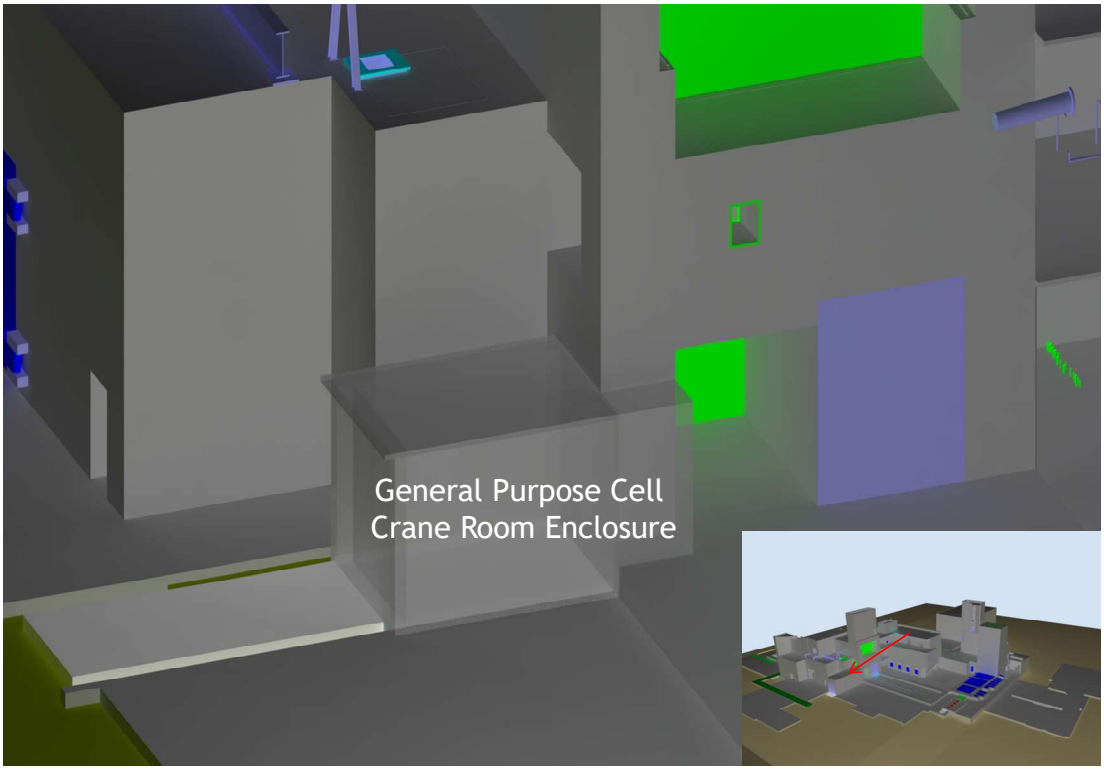
6.3.17 General Purpose Cell Crane Room Enclosure (GCRE)

A. Remove, size, and disposition the sheet metal unit walls, including remaining electrical components and piping attached to the walls. Remove, size, and disposition the roof decking, roofing membrane, structural steel framing, and columns.

B. Provide weather protection for the hatches from the GCRE to the General Purpose Cell Crane Room Extension (GCRX).

C. Remove size and disposition the remainder of the CPC north wall and the EDR shield door

Figure 28 - General Purpose Cell Crane Room Enclosure



6.3.18 Chemical Process Cell Penthouse

A. The 100 ton Chemical Crane Room (CCR) shield door will be lowered into the CCR.

B. Routine demolition of common low risk, block wall structure of the door hoist enclosure.

C. Remove and size reduce the CCR shield door (3M-2).

Figure 29 - Chemical Process Cell Penthouse

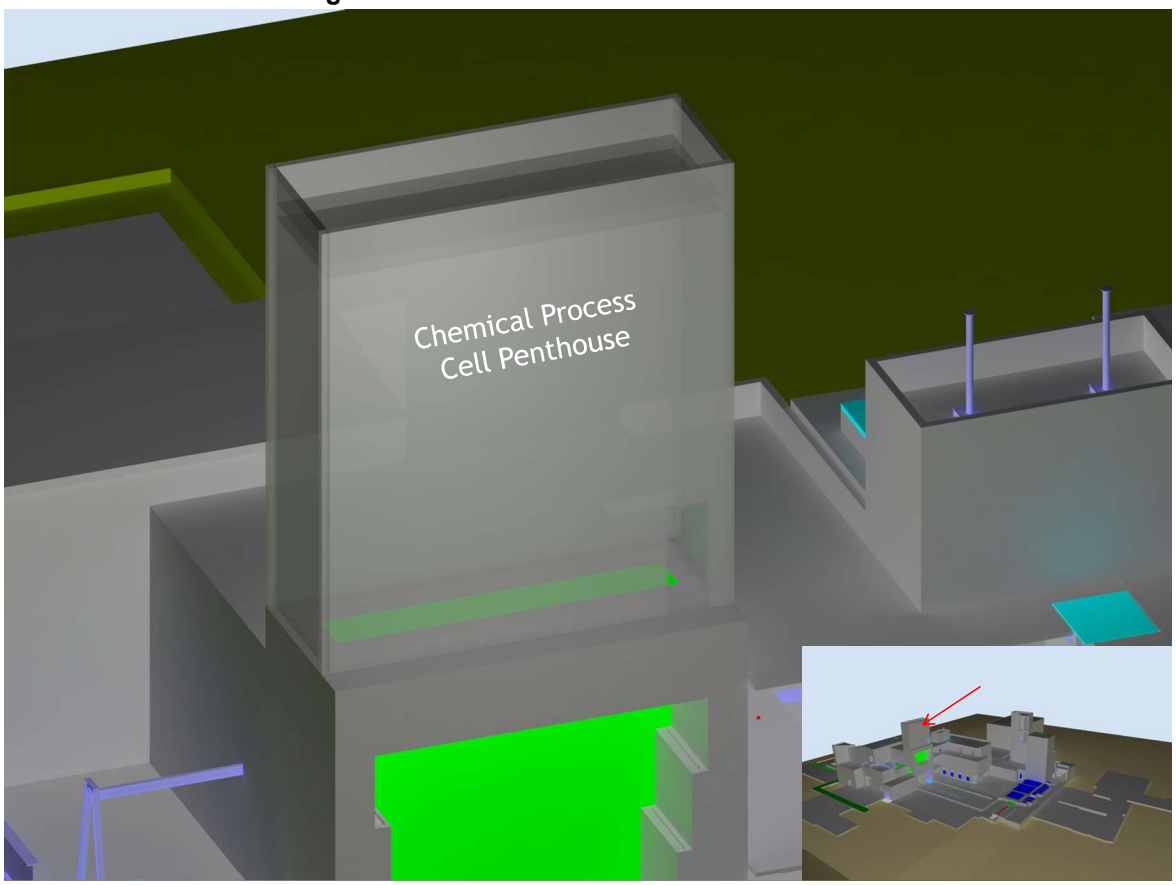
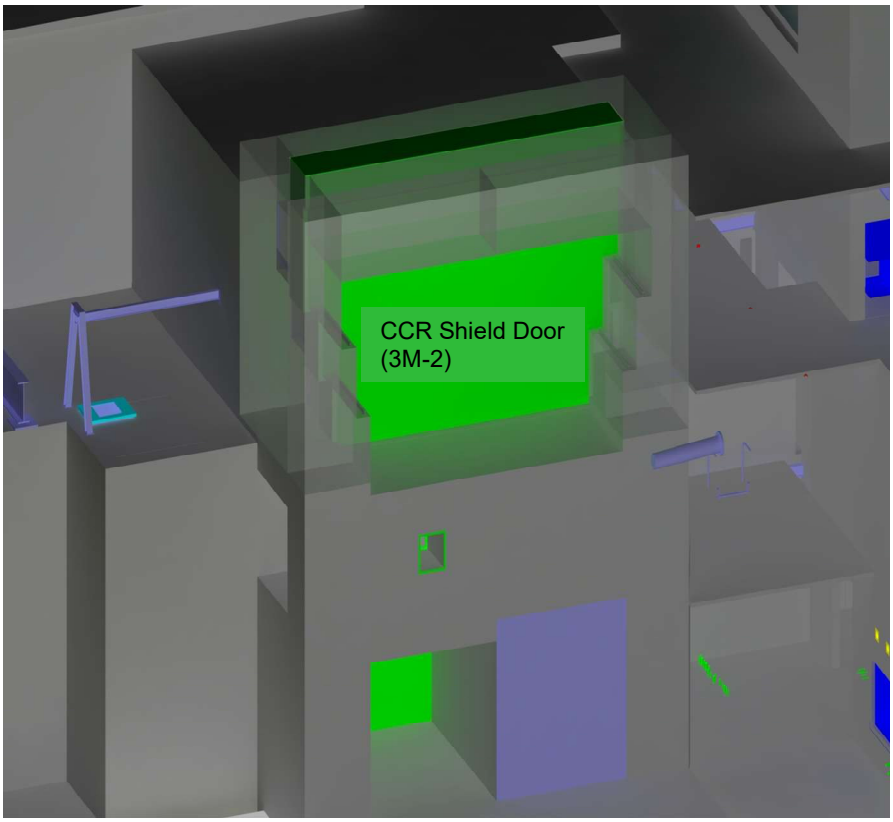


Figure 30 - Chemical Crane Room Shield Door



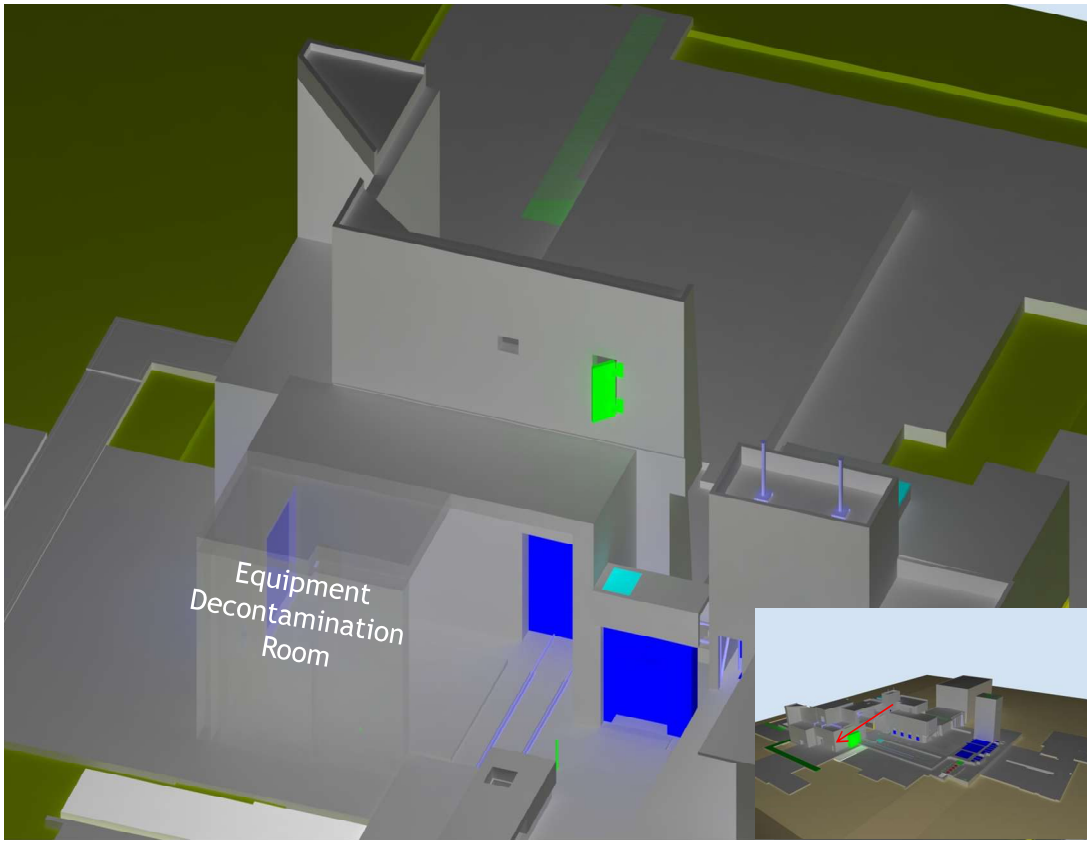
6.3.19 Equipment Decontamination Room (EDR)

A. Remove, size, and disposition the EDR reinforced concrete walls using the hammer or processor.

B. Remove the cranes and carts and package as waste.

C. Remove the EDR shield window, segregate and package separately for disposal.

Figure 31 - Equipment Decontamination Room



6.3.20 Process Mechanical Cell (PMC)

A. Remove the PMC shield windows and segregate for separate packaging for disposal.

B. Remove, size, and disposition the PMC reinforced concrete walls using the hammer or processor.

C. The PMC table will be left behind since it is part of the floor liner and situated at a plant elevation of less than or equal to 103 ft.

D. If not previously filled, fill remaining portion of cell to prevent water collection/infiltration.

Figure 32 - Process Mechanical Cell Shield Windows

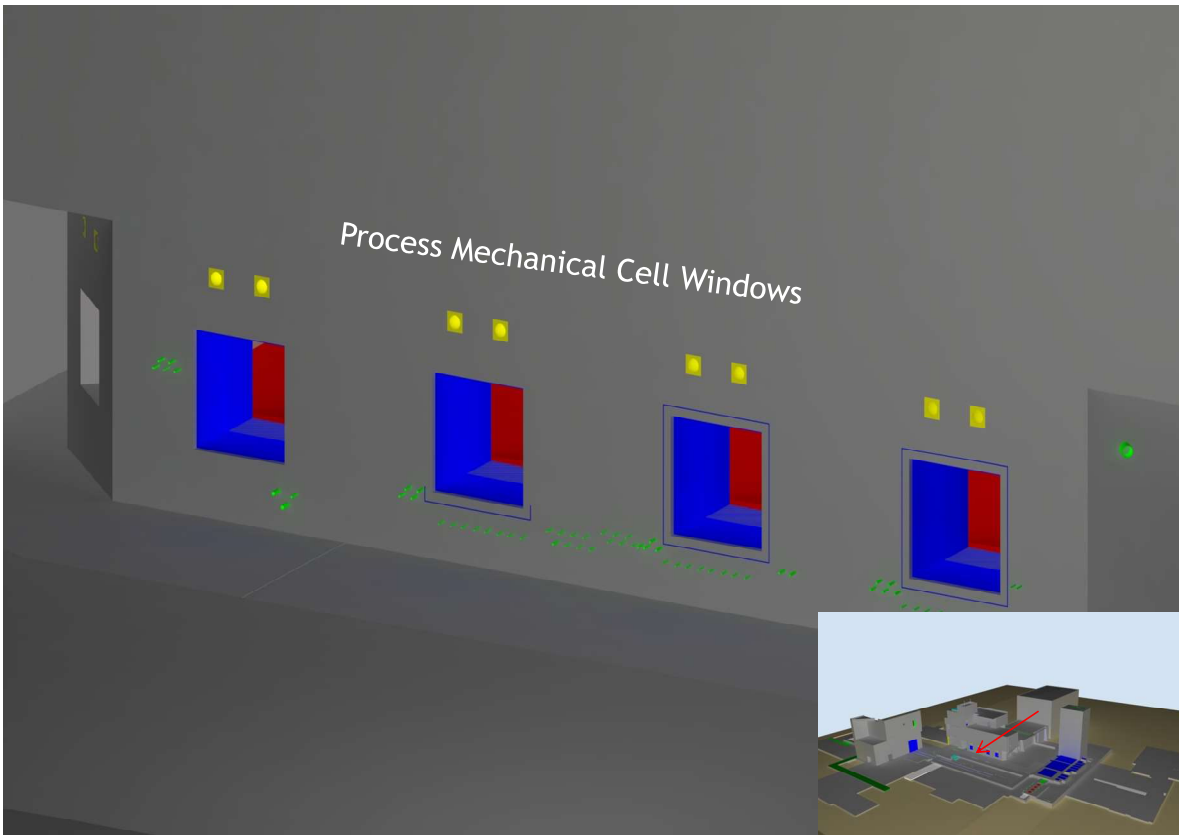
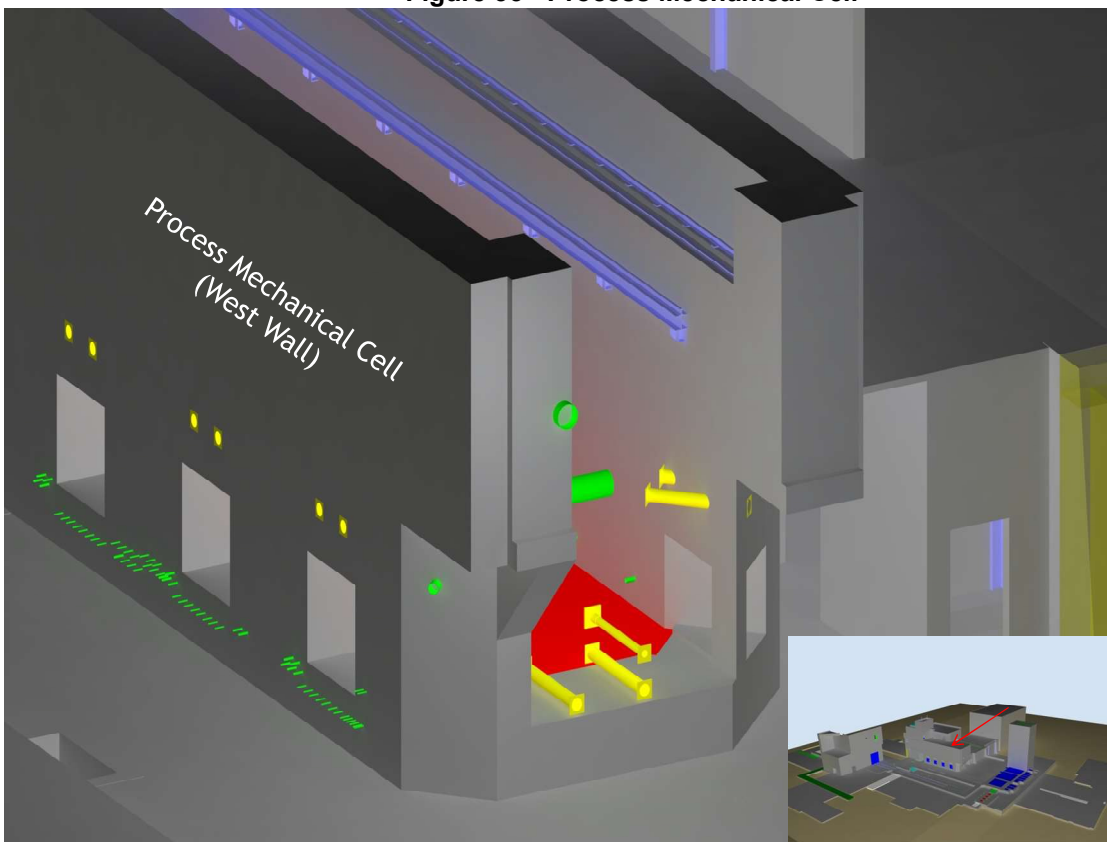


Figure 33 - Process Mechanical Cell



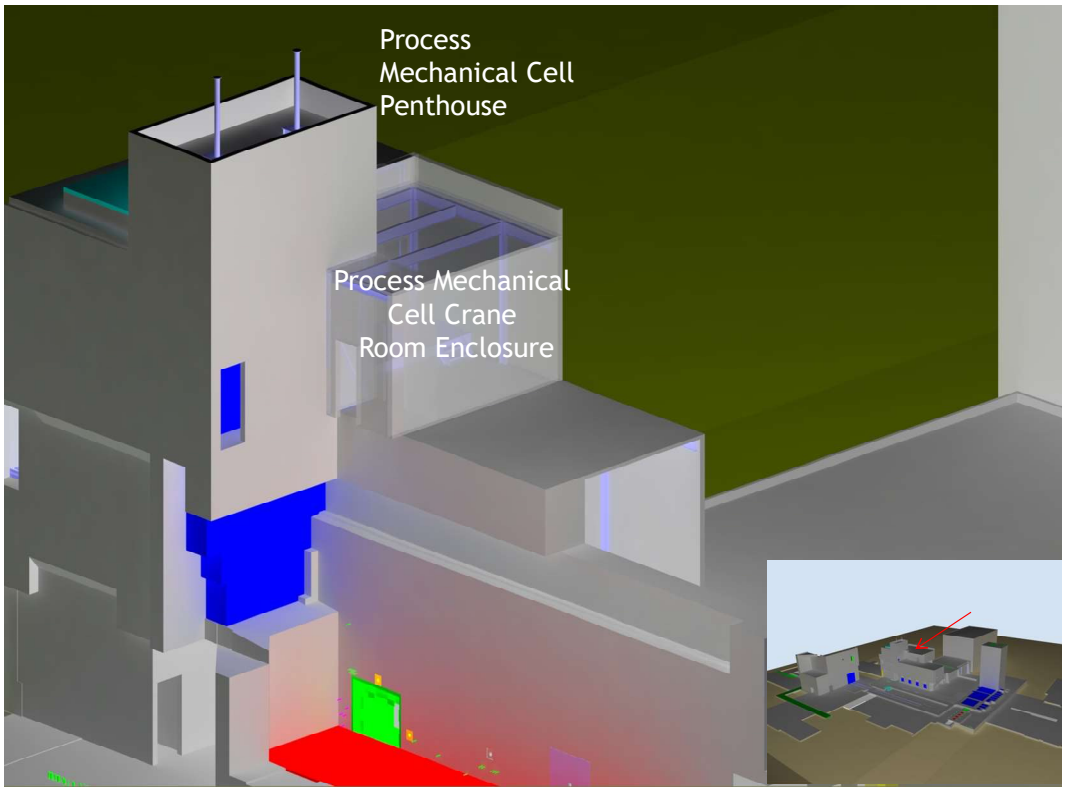
6.3.21 Process Mechanical Cell Crane Room Enclosure (PMCRE) and Penthouse

A. For PMCRE, routine demolition of common low risk sheet metal structure, with details to be defined in WIPs.

B. The 55 ton concrete PMC shield door will be lowered into the Process Mechanical Cell Crane Room (PMCR).

C. The PMC Penthouse or door hoist enclosure will be demolished as routine demolition of a common low risk, block wall structure.

Figure 34 - Process Mechanical Cell Crane Room Enclosure and Penthouse



6.3.22 Process Mechanical Cell Crane Room (PMCR)

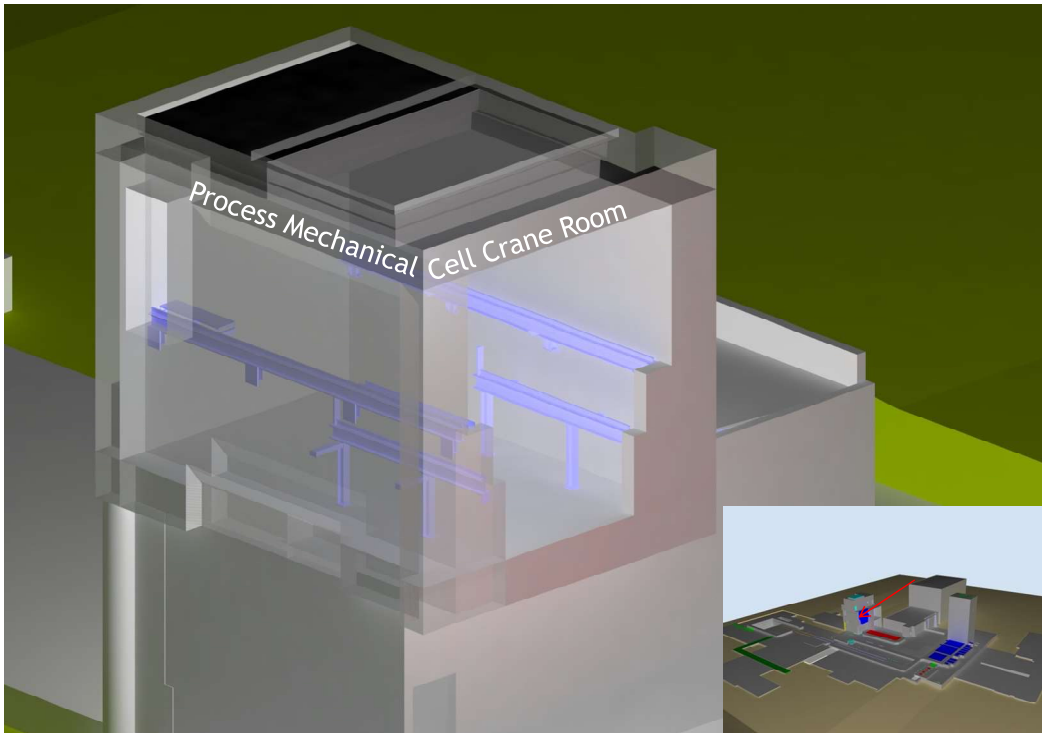
A. Remove, size, and disposition the PMCR reinforced concrete walls using the hammer or processor, leaving the PMC door for later PMC demolition.

B. Remove the cranes, previously moved into the PMCR, and package for disposal.

C. Remove the PMCR shield window, segregate and package separately for disposal.

D. Remove, size, and disposition the PMCR shield door.

Figure 35 - Process Mechanical Cell Crane Room

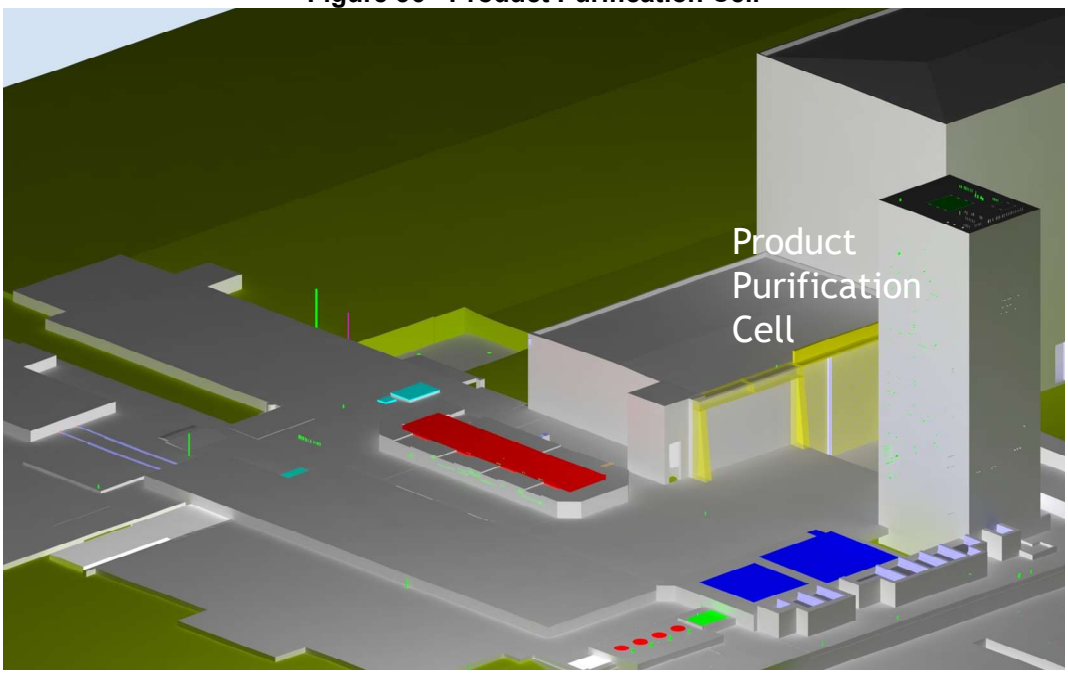


6.3.23 Product Purification Cell (PPC)

A. PPC walls will be removed by segmentation or alternate demolition methods utilizing additional radiological control measures.

B. If not previously filled, fill cell to prevent water collection/infiltration.

Figure 36 - Product Purification Cell



Following demolition and debris removal, gravel placed over the floors of the MPPB footprint, as needed, for "cushioning" during demolition would be graded to promote drainage. If necessary, additional material would be placed over portions of the area to support equipment passage. This material may need to be removed to satisfy contract requirements. A weather protective cover will then be placed over the MPPB footprint and integrated with the Vitrification Facility cover.

Figure 37 - End of Demolition Cross Section View Looking East

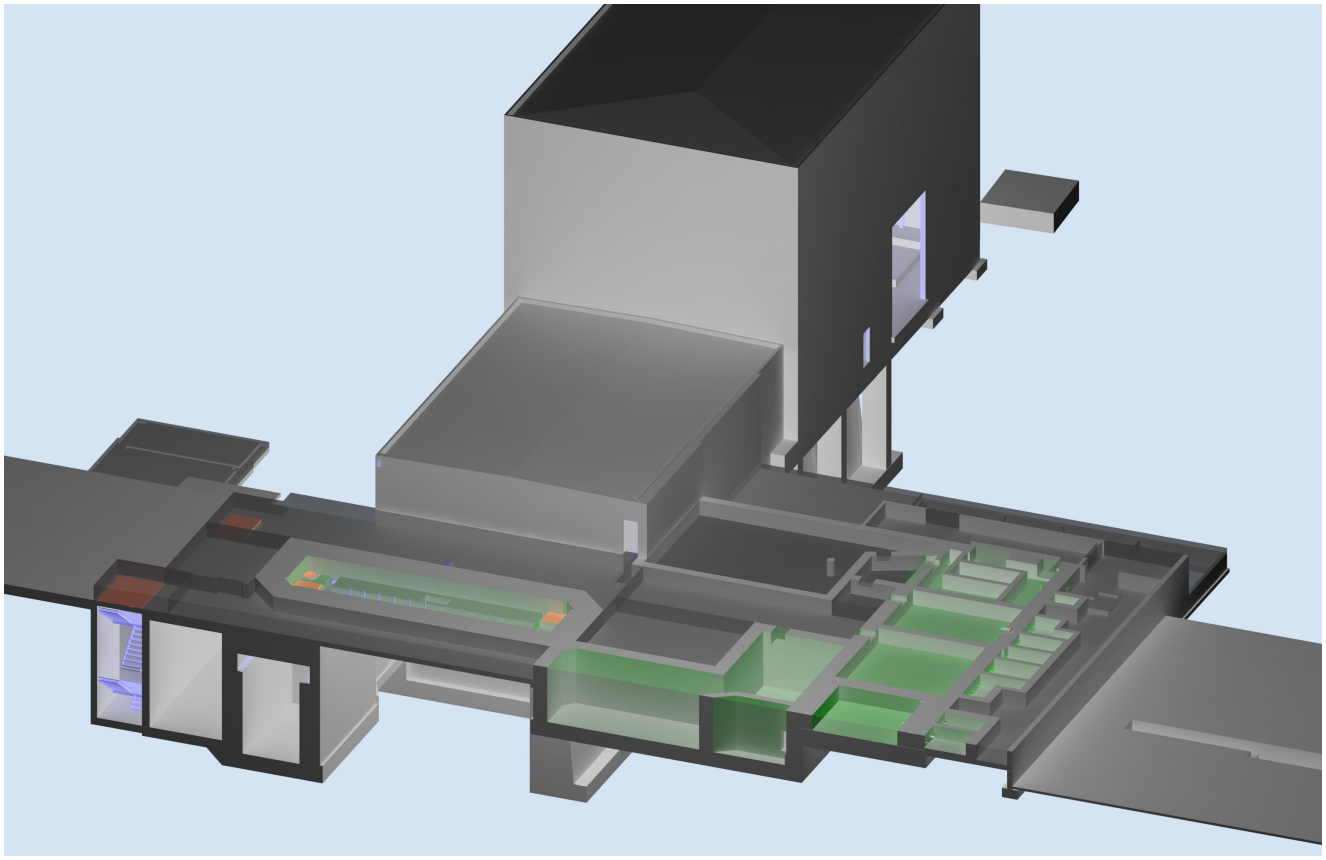
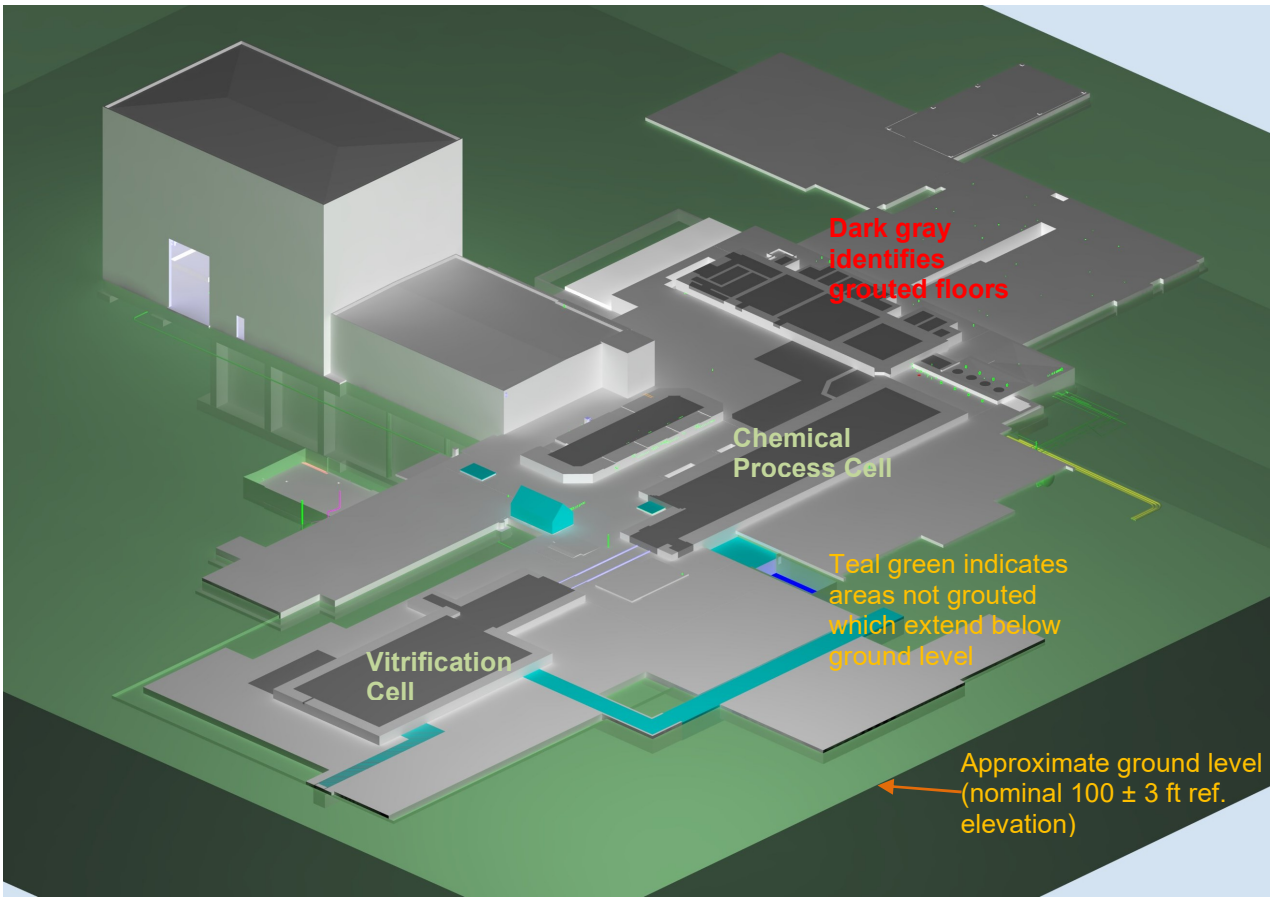


Figure 38 - End of Demolition Plan View Looking Southeast



6.4 Radiation Protection and Radiological Controls

It is the policy of DOE to conduct its radiological operations in a manner that ensures the health and safety of all its employees, contractors, and the general public. In achieving this objective, the DOE will ensure that radiation exposures to its workers and the public and releases of radioactivity to the environment are maintained below regulatory limits and deliberate efforts are taken to further reduce exposures and releases as low as reasonably achievable. The DOE is committed to implementing high quality radiological control programs that consistently reflect this policy.

CHBWV utilizes the Radiation Protection Program (RPP), as defined in WVDP-477, to implement the requirements of 10 CFR 835 *Occupational Radiation Protection* at the WVDP. The RPP implements the necessary programmatic requirements to ensure that radiological operations are performed in a manner to protect the health and safety of all employees, contractors and the general public. Specific sections are included covering area monitoring and radiological controls. All radiological activities performed by CHBWV and other WVDP site contractors, under DOE contract, will meet the requirements of this RPP. The RPP was developed following the guidance provided by DOE G 441.1-1C *Radiation Protection Programs Guide*, Section 3.0, Radiation Protection Programs. The requirements of the RPP are implemented through specific statements contained in the *WVDP Radiological Controls Manual* (WVDP-010), and enhanced by WVDP procedures.

The RPP provides for the following:

- ensuring that a compliant radiation protection program is established and maintained;
- ensuring personnel responsible for performing radiological work are appropriately trained;
- ensuring the technical competence of personnel responsible for implementing and overseeing the Radiation Protection Program;
- ensuring that radiological control personnel are an integral part of the D&D operations;
- ensuring line management's involvement and accountability for radiological work performance;
- ensuring that radiological measurements, analyses, worker monitoring results and estimates of public exposures are accurately and appropriately made in accordance with the site's environmental monitoring program;
- ensuring that radiological operations are conducted in a manner that controls the spread of radioactive materials and minimizes the risk to the work force and the general public and that a process is utilized that seeks exposure levels ALARA; and
- ensuring that the ALARA process is incorporated into facility design and modifications, and during D&D operations.

As described previously in Section 6.3, open air demolition of the above grade portions of the MPPB will be performed in a controlled step-by-step process based on structural evaluation, proceeding from support areas to the main process areas. To minimize the potential for airborne releases during demolition and to stay within regulatory limits, application of strippable coatings and fixatives, stabilizing tanks with foam or grout, and/or other processes will be employed during deactivation prior to demolition of the building. Methods will be taken to prevent the release of radioactive and hazardous constituent contaminants following demolition of the above grade structures.

Air dispersion models, AERMOD and CAP88, along with radionuclide source term estimates are used to estimate potential radiological dose to workers and the public, respectively, during demolition. This modeling is then supported by continuous monitoring during demolition to ensure all levels are within regulatory limits.

The following monitoring approaches, described in more detail later in this section, will be implemented to insure protection of the workers, the public, and the environment. Monitoring during demolition of the building includes air monitoring in the vicinity of the demolition actions for radiological releases to protect worker health and safety. This monitoring will also serve as an indication of potential airborne hazardous constituent releases. Should releases be detected above preset levels, work will be stopped and additional controls will be evaluated and implemented, as necessary. Ambient air monitoring stations located around the perimeter of the WVDP will monitor for airborne radioactivity and confirm protection of the public (i.e., regulatory limits are maintained).

6.4.1 ALARA

As low as reasonably achievable or “ALARA” is a philosophy of striving for excellence in the practice of health physics and is an important aspect of radiation-safety regulations. The National Council on Radiation Protection and Measurements has stated “ALARA is simply the continuation of good radiation-protection programs and practices which traditionally have been effective in keeping the average and individual exposures for monitored workers well below the limits”. The application of ALARA clearly includes the consideration of economic and social factors, and thus will inherently be different for different sources or facilities. From 10 CFR 20.1003:

ALARA means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

The 10 CFR 20.1003 Standard for ALARA is similar to that in DOE-STD-1098-2008:

10 CFR 835 requires DOE activities to develop and implement plans and measures to maintain occupational radiation exposures as low as is reasonably achievable (ALARA) [see 10 CFR 835.101 and 835.1001]. As applied to occupational radiation exposure, the ALARA process does not require that exposures to radiological hazards be minimized without further consideration, but that such exposures be optimized, taking into account both the benefits arising out of the activity and the detriments arising from the resultant radiation exposures and the controls to be implemented.

The ALARA concept is founded on the professional judgment of radiation-safety managers and personnel and is not, therefore, able to be used as a measure as to whether or not a particular radiation-safety program is adequate in comparison with other programs.

Additionally, the ALARA concept does not provide a numerical limit below which the ALARA concept is achieved; ALARA makes every reasonable effort to maintain exposure as far below regulatory limits as possible.

Quantitative ALARA analyses include societal, technological, economic, and public policy considerations. In addition, these ALARA analyses consider NRC and DOE guidance for performing the following ALARA assessments:

- Identification of possible radiation protection systems, such as alternative operating methods or controls, that is reasonably achievable. The options range from the most rudimentary (base case) to the most technologically sophisticated systems.
- Quantification of exposures and doses to workers and the public in the vicinity of the work through air monitoring and dosimetry.
- Quantification of the economic factors, including the costs of purchasing, installing, operating, and maintaining the radiological equipment, and the potential health effects associated with the exposure of people and any other direct or indirect cost resulting from exposures to radiation during investigations and/or remediation.
- Identification and estimation of other health and non-health detriments and benefits, such as equipment loss and accidents.
- Evaluation of process alternatives using a quantitative cost-benefit analysis, when possible (NUREG-1530, 10 CFR 50 Appendix I, REG GUIDE 8.37).
- Implementation of the ALARA principles and monitoring of the results.

The following specific factors were used in performing a quantitative ALARA analysis:

- Dose to workers, the public, and the environment before and during work processes using AERMOD.
- Residual dose to the local population (CAP88 Modeling).
- Applicable alternative processes (treatments, operating methods, or controls) for site investigations or remediation.
- Costs for each alternative evaluated compared to standards listed in NUREG-1530 and/or REG Guide 8.37.
- Societal and environmental (positive and negative) impacts associated with alternatives.

6.4.2 Demolition Support Monitoring

Real time air monitoring will be performed near the demolition site to monitor worker safety and maintain proper radiological control of the work area. The worker safety monitoring goal is to maintain safe levels at the demolition area boundary and demonstrate success of the engineered controls. The air monitoring program, as implemented, is designed to reduce the internal dose to the radiation workers and is part of the overall ALARA program. Air samples will be taken as necessary to detect and evaluate the level of airborne radioactivity at the work locations. Real-time air monitoring will be performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action.

The WIP will include a radiological monitoring plan with action levels. There will be alerts set up on the Continuous Air Monitors (CAMs) that will alert the workers before a “stop work” level would be reached. Based on such an alert, the ongoing work will be evaluated to determine if the increase in activity is anticipated and what actions, if any, may be needed. CAMs will be used for real time monitoring and will measure Alpha and Beta/Gamma activity along the approximate 30 meter contamination area boundary and also at locations beyond the contamination area boundary.

Monitoring of demolition activities will include the steps outlined below which were successfully implemented during demolition of the WVDP 01-14 Building and Vitrification Facility, and any Lessons Learned from those activities. The 01-14 Building and Vitrification Facility demolitions did not result in detection of any WVDP radionuclide contaminants above decision levels and demonstrated the feasibility of compliant open air demolition. Airborne radioactivity levels will be monitored in worker breathing zones and demolition boundary areas per RWP specifications.

- Low volume air samplers and real time air monitors will be located at the demolition site boundary. A breathing zone air sampler will be located in the cab of the excavator(s).
- Dust monitoring will be performed by health and safety personnel.
- Real time air monitoring will be utilized during demolition and debris/waste packaging activities.
- At the end of each shift, air sample filters will be counted for gross alpha and gross beta activity levels.
- Radiological data will be evaluated each day and approval to commence work by the Radiological Controls department is required each morning.
- Abnormalities in the data will be evaluated and reviewed with the work crews in the morning prior to beginning/resuming work.
- Contamination surveys at the approximate 30 meter contamination area boundary and also at locations beyond the contamination area boundary will be performed during demolition, and demolition equipment will also be surveyed.
- Final counting of air sample filters for gross alpha and gross beta seven days after collection to allow for decay of normally occurring radioactive material such as radon and associated decay products with short half-lives.

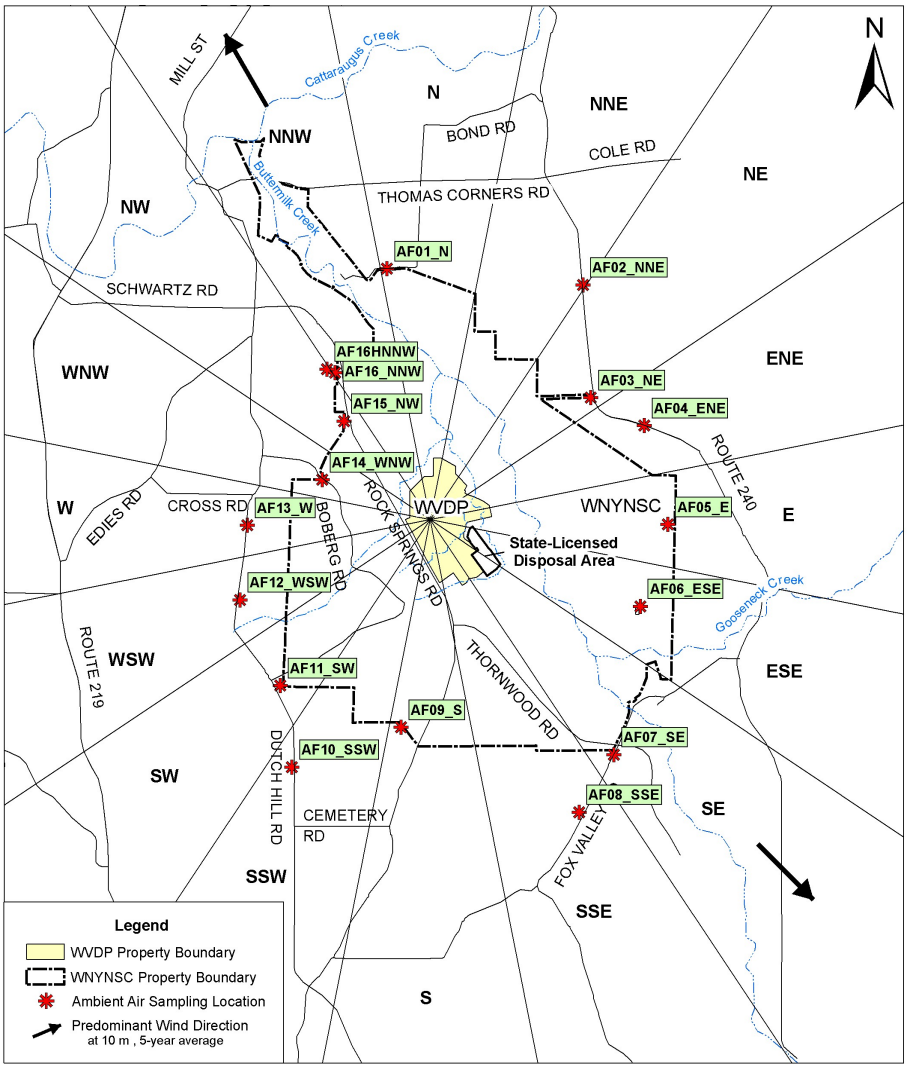
Alerts will be established for CAMs to alert the workers before a stop work level is reached. At an alert, an evaluation of the ongoing work will take place to determine if the increase in activity was anticipated, and what actions, if any, are needed. Preset levels for alerts will be provided by the radiological controls department. The final WIP will present the Alerts, and actions to take in the event that Alerts are exceeded (including in the event of a significant release).

6.4.3 Ambient Monitoring Program

As indicated in Section 1.1, the WVDP implemented and EPA approved an ambient air environmental measurements system to estimate off-site dose from airborne emissions and demonstrate compliance with rad-NESHAP requirements from site operations, including facility demolition. The ambient air sampling program provides continuous environmental air sampling for surveillance and regulatory compliance. The location of the

16 low-volume samplers is shown on Figure 26. In addition, a high-volume sampler is co-located in the sector most often identified as the critical receptor (NNW) to allow data comparison with the low-volume sampler. Filter samples from the ambient air monitoring locations are collected biweekly for gross alpha and gross beta screening and charcoal cartridges are collected monthly for iodine-129 screening analysis. Samples collected on a biweekly or monthly basis are also composited quarterly and analyzed for radioisotopes known to have been managed on the site. Samples of ambient air will include naturally occurring radioisotopes such as radon decay products which will be detected in the gross radioactivity analyses. Results from more than three years of monitoring have been generally similar across the 16 locations and consistent with background levels.

Figure 39 - Ambient Air Monitoring Locations



The ambient air monitoring data were used to estimate the dose from airborne releases for NESHAP compliance for the first time in the 2014 evaluation. The estimated dose to the off-site critical receptor from airborne emissions at the WVDP in 2014 was <0.52 millirem (mrem) which is well below the 10-mrem limit established by EPA and mandated by DOE Order 458.1, *Radiation Protection of the Public and the Environment*.

6.4.4 Air Dispersion Modeling

Air dispersion modeling using the CAP88 and AERMOD programs is being performed to show that residual radiation levels within the MPPB are low enough to perform open air demolition while insuring potential doses to the workers and the public remain well below established standards. As indicated in Section 3.1, radiation and radiological contamination surveys, including pre-demolition surveys, are performed in accordance with established radiological control procedures with guidelines for collecting data used for demolition calculations using air dispersion modeling. Such radiological engineering calculations are documented consistent with radiological control procedure RC-ALAR-9, *Documentation of Radiological Engineering Calculations.* The calculations supporting MPPB demolition shall receive a peer review and computer software used in the computations shall be independently validated and verified. Results produced by software that is developed for a single application and single user (e.g., excel spreadsheet, mathcad worksheet, etc.) will be checked as part of the peer review process. Results from modeling with AERMOD will be used to establish worker protection limits to maintain airborne concentrations below acceptable criteria at an established boundary from the active demolition zone.

The WVDP submitted a request for approval to EPA to utilize alternative methodology for radionuclide source-term calculations for air emissions from WVDP demolition activities as permitted by 40 CFR Part 61.96(b). The EPA approved the request with conditions to be implemented during demolition activities, and the WVDP will continue to coordinate with EPA and perform calculations to estimate radiological emissions and demonstrate compliance with rad-NESHAP requirements. As part of the approval process with EPA, an emissions study was conducted during Vitrification Facility demolition to validate the alternative calculation methods for estimating dose to the public. This study included locating two air samplers on site during demolition. As required by EPA, the study was designed to show that emissions during demolition are not significantly underestimated using the alternative methodology.

The alternative method will be used to demonstrate that the emissions from demolition will result in a dose to the maximally exposed individual that would not exceed 0.1 mrem/yr. The Federal Limit for an exposed public individual, which is protective of the public, as promulgated in 40 CFR 61 Subpart H is 10 mrem/yr. Air dispersion modeling using CAP88 will use the release source term calculated with the alternative methodology, to estimate dose to the public. Meeting worker protection limits will also help protect the public, who are located farther away from active demolition. However, this is not relied upon to assure and document protection of the public.

The action levels at the WVDP site perimeter will be 0.02 Derived Air Concentration (DAC) which is the maximum weekly average concentration according to the AERMOD calculation and activity on the deposition mats of 20 dpm/100cm^2 alpha and 1000 dpm/100cm^2 beta-gamma. The 0.02 DAC comes from the DAC values provided in 10 CFR 835 that would trigger mandatory personnel monitoring (100 person-mrem/yr) and the contamination levels are the levels for a Contamination Area (CA), which the intent is to remain below in the area outside the CA boundary. AERMOD modeling of residual

contamination obtained from radiological surveys will be used to determine if contamination—including the demolition approaches used in a specific area (Cut, Shear, Break, Drop), fixative applications, and misting controls—will ensure that DAC objectives are met (0.02 DAC at the WVDP site perimeter).

Wind speed and stability class limitations will be provided in the demolition WIP.

6.5 Access Control and Security

The approximately 152 acres (61 hectares) that comprise the WVDP are enclosed by an 8-ft-high (2.4-m) security fence with 3-strand barbed wire. The entire WVDP perimeter is patrolled on a random schedule by Safeguards and Security personnel. Other security measures, including entry badge systems, intrusion alarms, and video surveillance, limit the potential for unauthorized entry to the WVDP.

Access for equipment and waste removal and for remote decontamination activities is through the doors and hatches of adjoining rooms of the MPPB. Access to MPPB areas is controlled administratively through postings and via access-badge restrictions. Only authorized and appropriately trained and badged personnel, including contractor personnel, are granted access to these areas.

The following boundaries will be established around the active demolition zone, including waste loading operations:

1. Contamination Area/Monitoring Boundary - Approximately 30 meters from the active demolition zone. CAMs will be located at this boundary to ensure worker protection levels are achieved.
2. Buffer Area Boundary - Approximately 90 meters from the active demolition zone to keep unauthorized persons away from demolition activities and supporting functions.

7.0 WASTE MANAGEMENT

The WVDP maintains a comprehensive waste management program which includes the following programs, policies, and procedures:

Document No.	Document Name
WVNS-DSA-001	*Documented Safety Analysis for Waste Processing and Support Activities*
WVDP-107	*WVDP Waste Analysis Plan*
WVDP-112	*Transportation Safety Document*
WVDP-446	*Facility Demolition Hazard Characterization Planning*
WVDP-508	*WVDP Hazardous Waste Contingency Plan and Emergency Procedures*
WVDP-568	*Radioactive Waste Management Basis (RWMB) for the Lag Storage System*
WM-210	*Waste Stream Characterization*
WM-230	*Determining Radioactivity in a Waste Package*
WM-250	*Waste Container Characterizations*
WM-310	*Conducting Waste Certification Activities*
WM-340	*Off-Site Shipment Preparation*
SOP 009-12	*Municipal Waste Management and Recyclable Materials*
SOP 300-07	*Waste Generation, Packaging and On-Site Transportation*

SOP 300-26 *Off-Site Transportation of Waste and Hazardous Material*
SOP 300-32 *Container Handling and Inspection*
(*Note that these documents are not listed again in Section 9.0, References*)

7.1 Waste Identification and Characterization

The waste generated from the MPPB D&D operations will be evaluated for RCRA and radiological characterization prior to packaging and shipment for offsite disposal. Preliminary waste profiles and characterization will be performed prior to demolition, with final surveying and confirmation performed prior to shipping the waste from the WVDP.

7.1.1 RCRA Characterization

RCRA Characterization of the demolition debris will be conducted in accordance with WM-210, *Waste Stream Characterization*. The characterization will be applied to the overall facility structure prior to demolition using historical data and process knowledge. The characterization will be documented in accordance with SOP 300-07, *Waste Generation, Packaging and On-Site Transportation.* Mixed wastes to be removed and segregated for disposal during demolition include leaded glass shield windows from the MPPB, lead materials in the window frames, and lead from shield doors and shield plugs.

7.1.2 Radiological Characterization

Radiological Characterization of the demolition debris will also be conducted in accordance with WM-210, *Waste Stream Characterization* for the demolition waste streams and to establish the isotopic scaling factors for the waste. Characterization of the IM containers or other containers of demolition debris will be performed in accordance with WM-250, *Waste Container Characterizations* and WM-230, *Determining Radioactivity in a Waste Package*. Waste package characterizations will utilize the same unit-by-unit source term estimates being prepared to substantiate the acceptability for open-air demolition. The disposition of each unit/component will be tracked to individual waste packages and summed to provide the total radioactivity content of a given package.

7.2 Waste Minimization and Mitigation Strategies

The overall WVDP waste management program proactively provides for waste mitigation and minimization strategies. Due to the configuration of the building, the entire MPPB demolition will be packaged and disposed of as low-level radioactive waste and asbestos containing material. Waste with a RCRA hazardous component will be segregated and packaged separately to minimize the amount of material requiring treatment and/or disposal as mixed waste. Wastewater from demolition that is too radiologically contaminated for direct discharge to the on-site SPDES permitted system will be processed to reduce the levels and minimize the amount of water requiring off-site treatment and disposal. Where feasible, prior decontamination and deactivation activities will further reduce the waste types and quantities as low as reasonably achievable prior to the start of D&D activities. In this manner the overall waste quantities and types are minimized and the overall cost and expense for transportation and disposal is mitigated.

7.3 Disposal Pathways

The WVDP has identified the following facilities for off-site disposal of LLW demolition debris and waste from the MPPB D&D operations:

7.3.1 Nevada National Security Site, Nye County Nevada

The Nevada National Security Site (NNSS) is a DOE owned disposal facility authorized to accept the following waste: DOE LLW, DOE MLLW, DOE hazardous and non-hazardous waste, non-radioactive classified waste, and U.S. Department of Defense (DOD) classified waste.

7.3.2 Energy Solutions, Clive, Utah

Energy Solutions is permitted, licensed and authorized to receive, treat and dispose of Class A mixed and non-mixed wastes, byproduct material, special nuclear material based on concentration limits, PCB radioactive waste, and PCB mixed waste.

7.3.2 Energy Solutions, Bear Creek, Tennessee

The Bear Creek Tennessee facility provides an opportunity for Bulk Survey for Release (BSFR) disposal pathway. BSFR is a licensed process approved by the Regulatory Agencies (NRC, or Agreement State) that allows for the bulk survey and release of materials with extremely low levels of radioactive contamination in specific industrial waste landfills. This option is available to the WVDP under various DOE contracts.

7.3.3 Waste Control Specialists, LLC (WCS), Andrews County, Texas

WCS is a full service radioactive waste disposal facility which can accept Class A, B and C LLW for land disposal, and mixed LLW for both treatment and/or disposal. WCS also has an exempt cell for very low-level waste (one-tenth of the Class A limits).

7.4 Packaging, Transportation and Disposal

All D&D building debris will be compliantly packaged into containers suitable for the type of debris generated, and meeting the U.S. Department of Transportation (DOT) regulations as well as the WAC for each specific facility. Most waste will be placed into IM containers. A small amount of soil, stone, and/or small sized debris will often be placed on the bottom of the IM's prior to loading in the building rubble.

Demolition activities will be conducted in a manner to facilitate the size reduction and subsequent loading of debris directly into final containers for transportation and disposal. In this manner, double handling of waste debris and containers is eliminated and there is no need for reopening waste containers prior to shipping them off-site.

Intermodals of debris will be shipped by rail or a combination of truck to trans-load facility and rail to the designated disposal facility. Trucking will be done by licensed and trained drivers and companies covered in the DOE Motor Carrier Evaluation Program.

7.5 Summary of Estimated Waste Quantities

Based on preliminary deactivation and decontamination activities which have already occurred in the MPPB, and available characterization data, the following table represents an initial estimate of waste quantities and type from MPPB demolition. The quantities are broken down by general areas and are subject to further revision as additional characterization and deactivation activities continue.

Table 4
Estimated Low-Level Waste Quantities from MPPB Demolition

MPPB Area	Tons	Containers*
Extraction Cells	4,844	323
ARC/OGC/ SW Stairs	857	57
CPC/CCR	7,430	495
Upper & Lower warm aisles & pump niches	681	45
LWC/UPC	1,079	72
PMC/PMCR	2,777	185
Analytical Cells/Aisles	992	66
EDR	931	62
Subtotal	19,591	1,306
+ 10% for Equipment & Miscellaneous	1,959	131
MPPB Total	21,550	1,437

* Container size assumed to be 25 cu yd carrying 15 tons/container

7.6 Record Keeping and Disposal Records

Waste Operations will track the transportation and dispositioning of the MPPB demolition waste in the Electronic Waste Tracking System (EWTS) or similar inventory tracking system. A record will be kept of each container (IM or special package), and the transportation vehicle and final disposition/disposal of that container. The weight of the waste along with waste profile and disposal facility will also be included.

8.0 SCHEDULE

Attachment F includes a MPPB demolition schedule. This is a high level schedule showing planned time frames and sequencing for the demolition activities. The actual dates and sequence of when activities are performed may change based on integration of this work with, and the timing of, other ongoing WVDP Phase 1 decommissioning activities. The dates, durations, and sequence may also be adjusted based on the completion of characterization and deactivation activities and conditions encountered once demolition begins. Should circumstances warrant a change, updates to the schedule are documented through the WVDP change control process. Given the nature of this work, some adjustments to the schedule and sequence are likely to occur. However, this plan is not anticipated to be revised only for such updates.

9.0 REFERENCES

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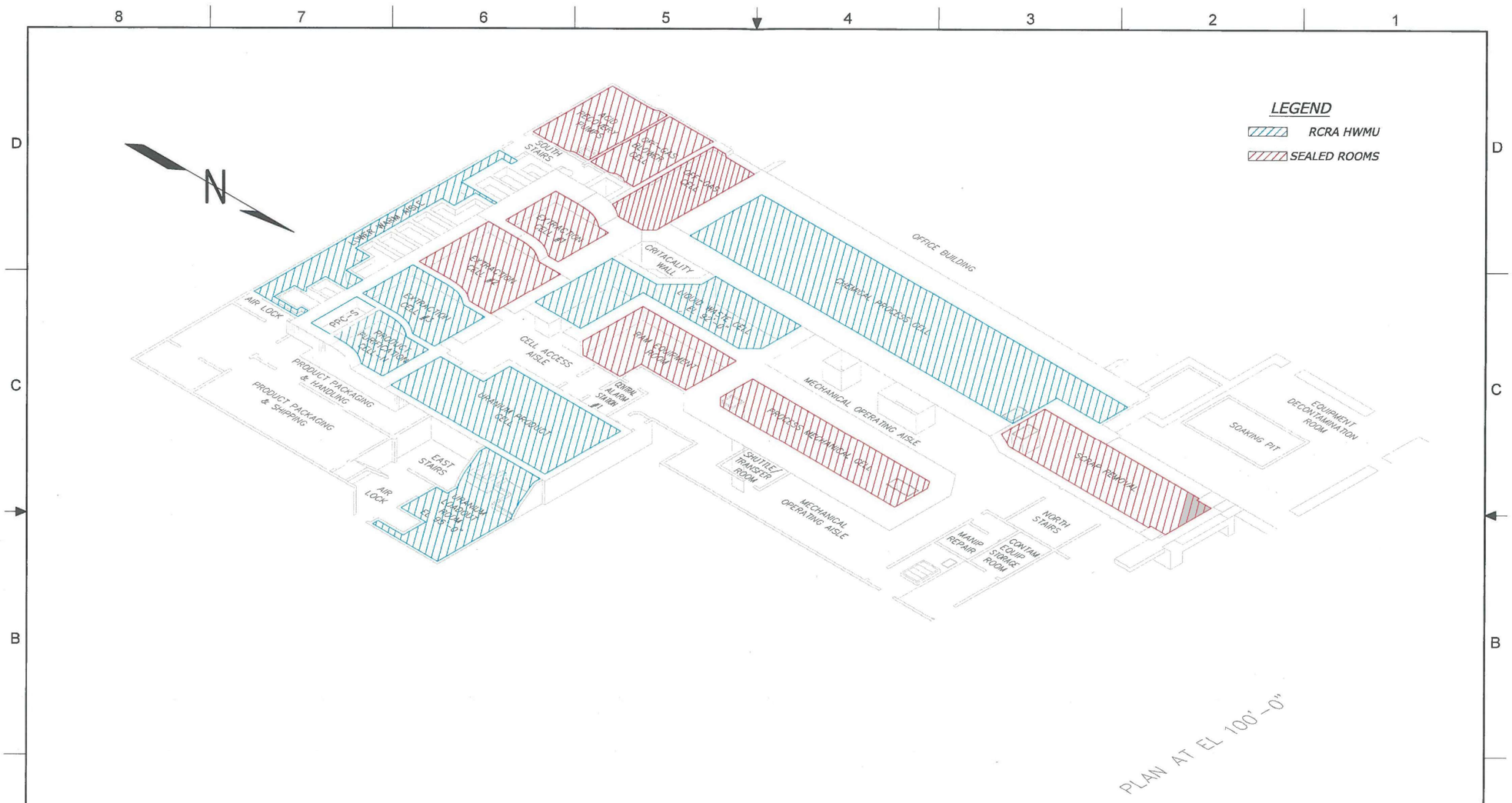
ATTACHMENTS

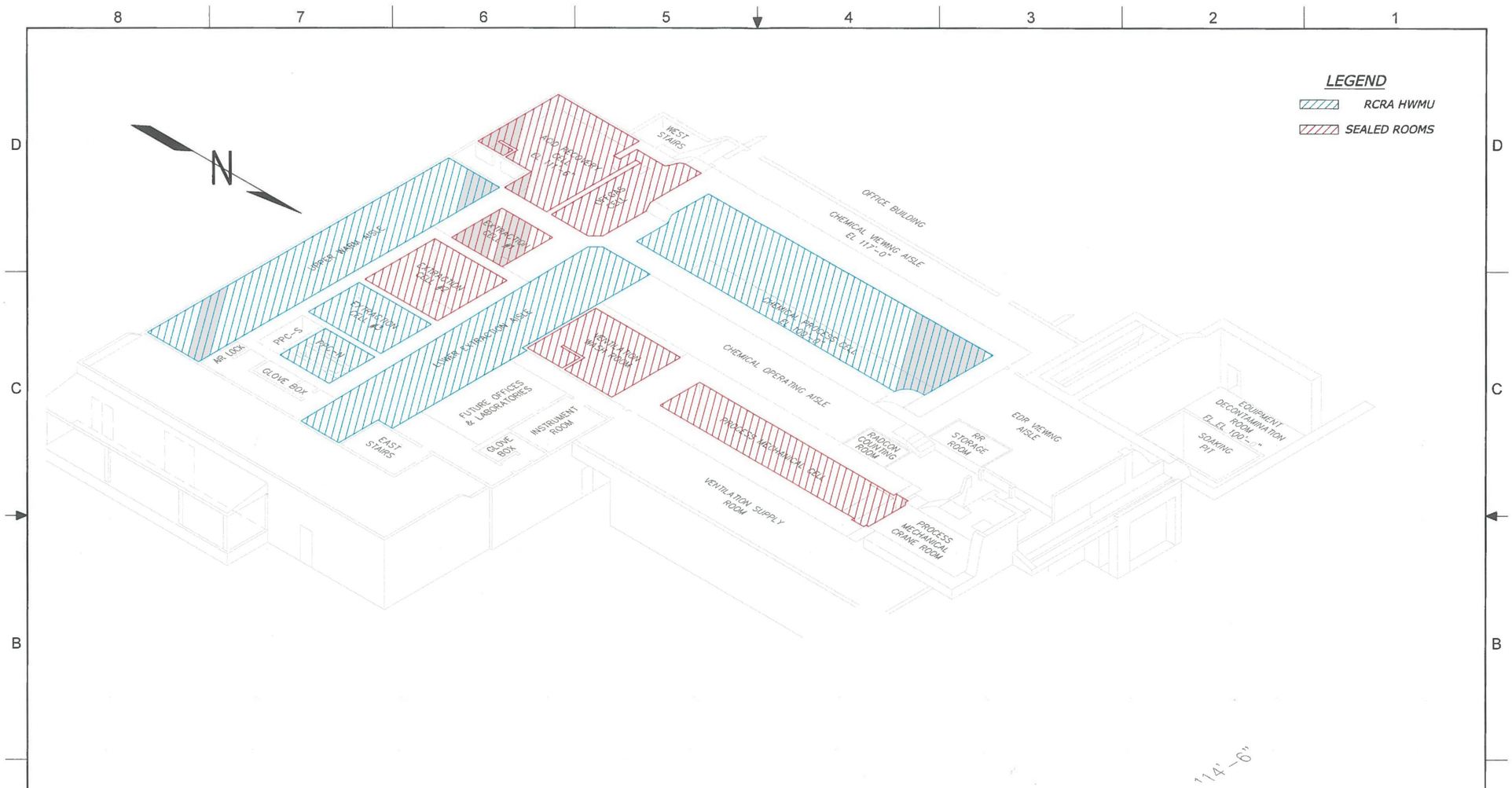
Attachment A
Main Plant Process Building Breakdown By Level



PURPOSE STATEMENT: TO SUPPORT WITH DEMOLITION OF MPPB	REVISION NOTES:	ER NUMBER:	
DESIGN BASIS REFERENCE: N/A	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS IN INCHES	ENGINEERING SKETCH	WVDP West Valley Demonstration Project
SUPPORT CALCULATION REFERENCE: N/A	MACHINED SURFACES N/A	ORIGINATOR: Michael Weyand 01-24-18; REVIEWER: 1/31/18; QA: 1-31-18	MAIN PROCESS PLANT BUILDING DEMO 100' LEVEL RCRA LOCATION PLAN
SYSTEM / SECONDARY SYSTEM NAME & NUMBER: PRIMARY - 15-4 PROCESS BUILDING STRUCTURE	TOLERANCES N/A	GRAPHIC SCALE	SCALE: N.T.S.; QUALITY LEVEL: C; SKETCH#: 913-S-0051; REV: 0; ORIGINATOR INITIALS: MW; BY: P. FINTAK; DATE: 01/05/2018; SHEET: 6 OF; PLOTSCALE: 1=1; FILENAME: 913-D-0051(006)(000)

CAD SKETCH-DO NOT REVISE THIS ORIGINAL

Attachment A (continued)
Main Plant Process Building Breakdown By Level



PURPOSE STATEMENT: TO SUPPORT WTH DEMOLITION OF MPPB	REVISION NOTES:	ER NUMBER:	
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SUPPORT CALCULATION REFERENCE: N/A	MACHINED SURFACES N/A	APPROVALS / SIGNATURE / DATE: ORIGINATOR Michael Wayne 01-24-18; REVIEWER 1/31/18; QA 1-31-18	MAIN PROCESS PLANT BUILDING DEMO 114'-6" LEVEL RCRA LOCATION PLAN
SYSTEM / SECONDARY SYSTEM NAME & NUMBER: PRIMARY - 15-4 PROCESS BUILDING STRUCTURE	GRAPHIC SCALE	TOLERANCES N/A	SCALE: N.T.S. · QUALITY LEVEL: C · SKETCH#: 913-S-0051 · REV: 0 · ORIGINATOR INITIALS: MW · BY: P. FINTAK · DATE: 01/05/2018 · SHEET: 7 OF · PLOTSCALE: 1=1 · FILENAME: 913-S-0051(007)(000)

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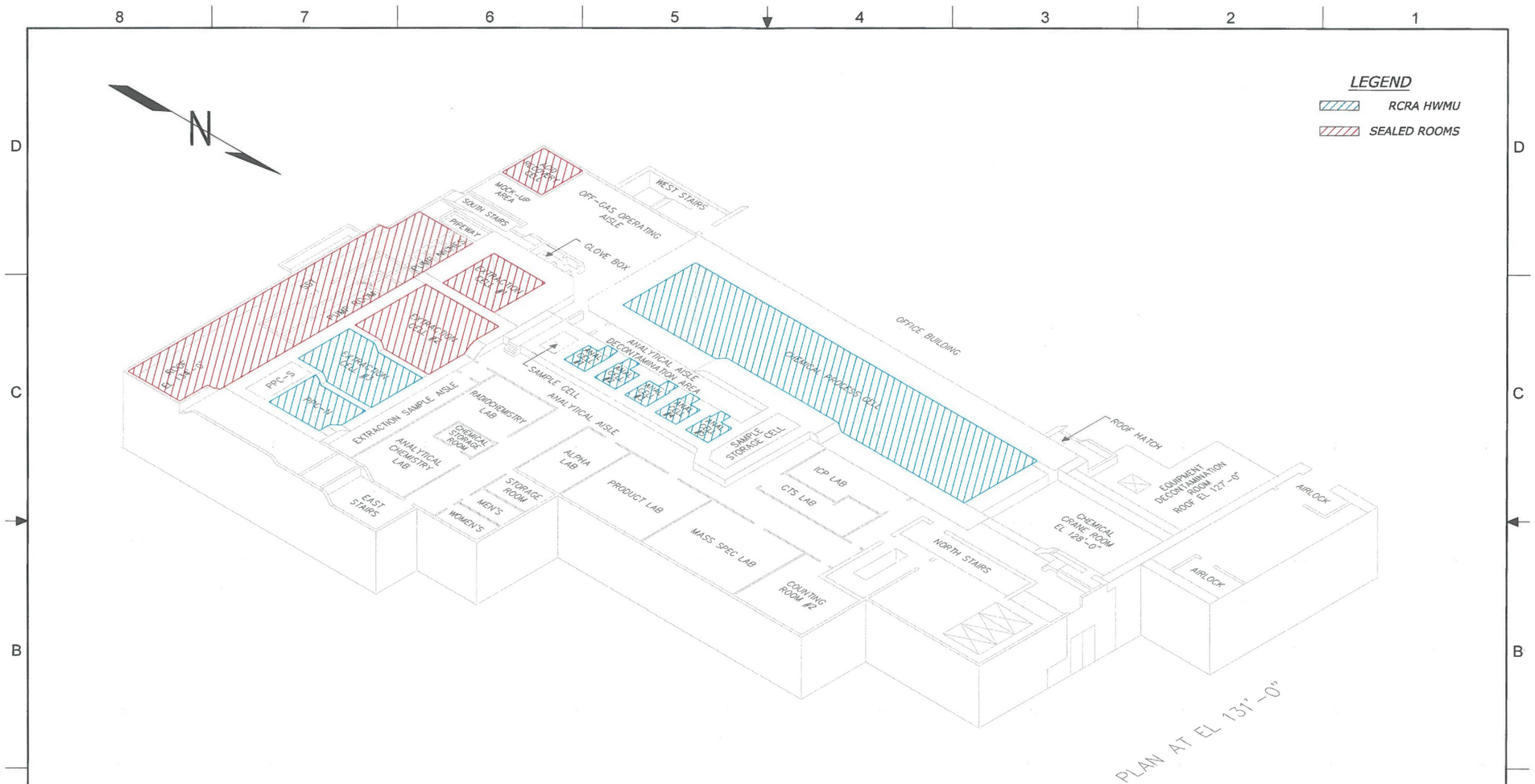
Attachment A (continued)
Main Plant Process Building Breakdown By Level



PURPOSE STATEMENT: TO SUPPORT WITH DEMOLITION OF MPPB	REVISION NOTES:	ER NUMBER:	
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SUPPORT CALCULATION REFERENCE: N/A	MACHINED SURFACES N/A	APPROVALS / SIGNATURE / DATE: ORIGINATOR Michael Weyand 01-24-18; REVIEWER 1/31/18; QA 1-31-18	MAIN PROCESS PLANT BUILDING DEMO 131' LEVEL RCRA LOCATION PLAN
SYSTEM / SECONDARY SYSTEM NAME & NUMBER: PRIMARY - 15-4 PROCESS BUILDING STRUCTURE	GRAPHIC SCALE	TOLERANCES N/A	SCALE: N.T.S. · QUALITY LEVEL: C · SKETCH#: 913-S-0051 · REV: 0 · ORIGINATOR INITIALS: MW · BY: P. FINTAK · DATE: 01/05/2018 · SHEET: 8 OF · PLOTSCALE: 1=1 · FILENAME: 913-S-0051(008)(000)

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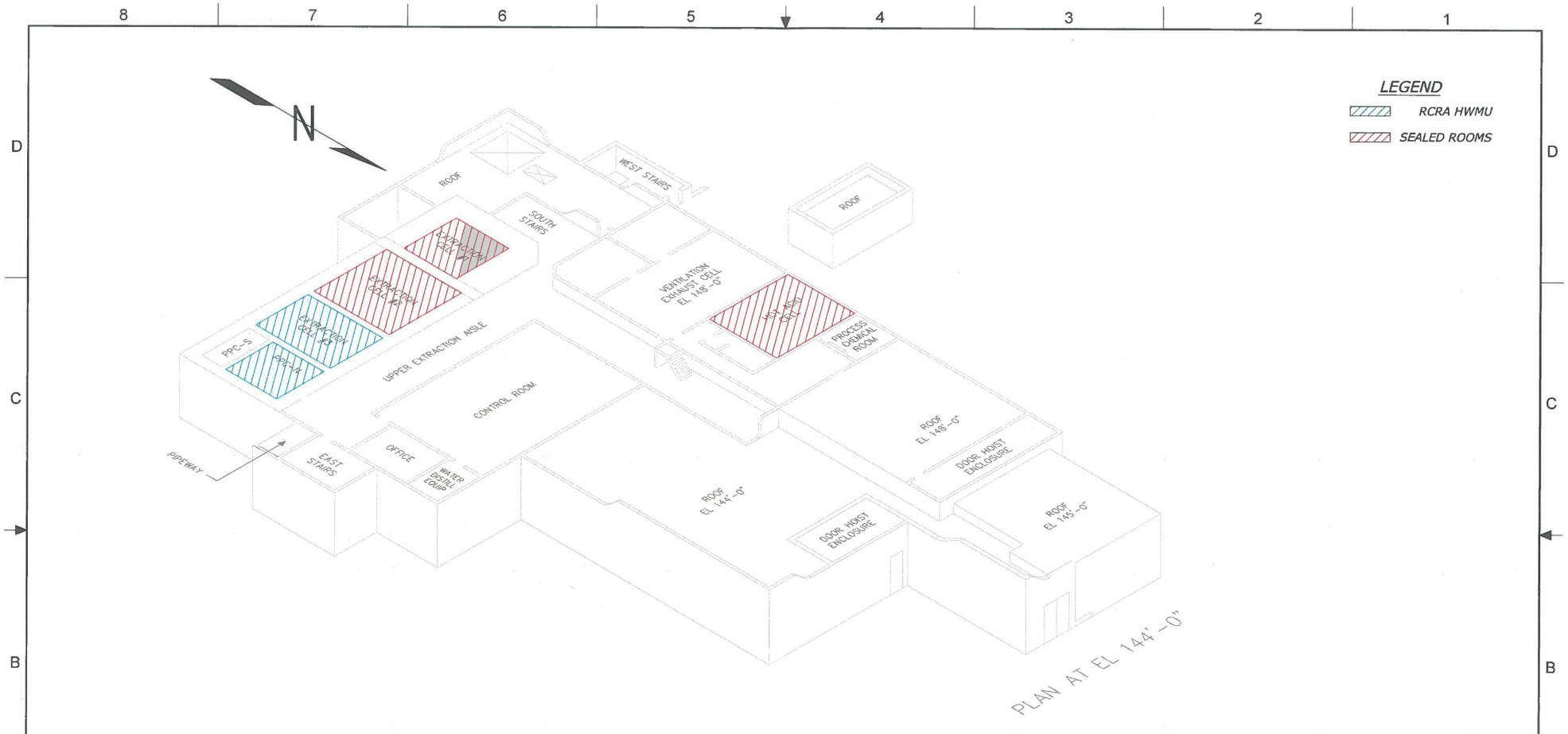
Attachment A (completed)
Main Plant Process Building Breakdown By Level



PURPOSE STATEMENT: TO SUPPORT WITH DEMOLITION OF MPPB	REVISION NOTES:	ER NUMBER:	
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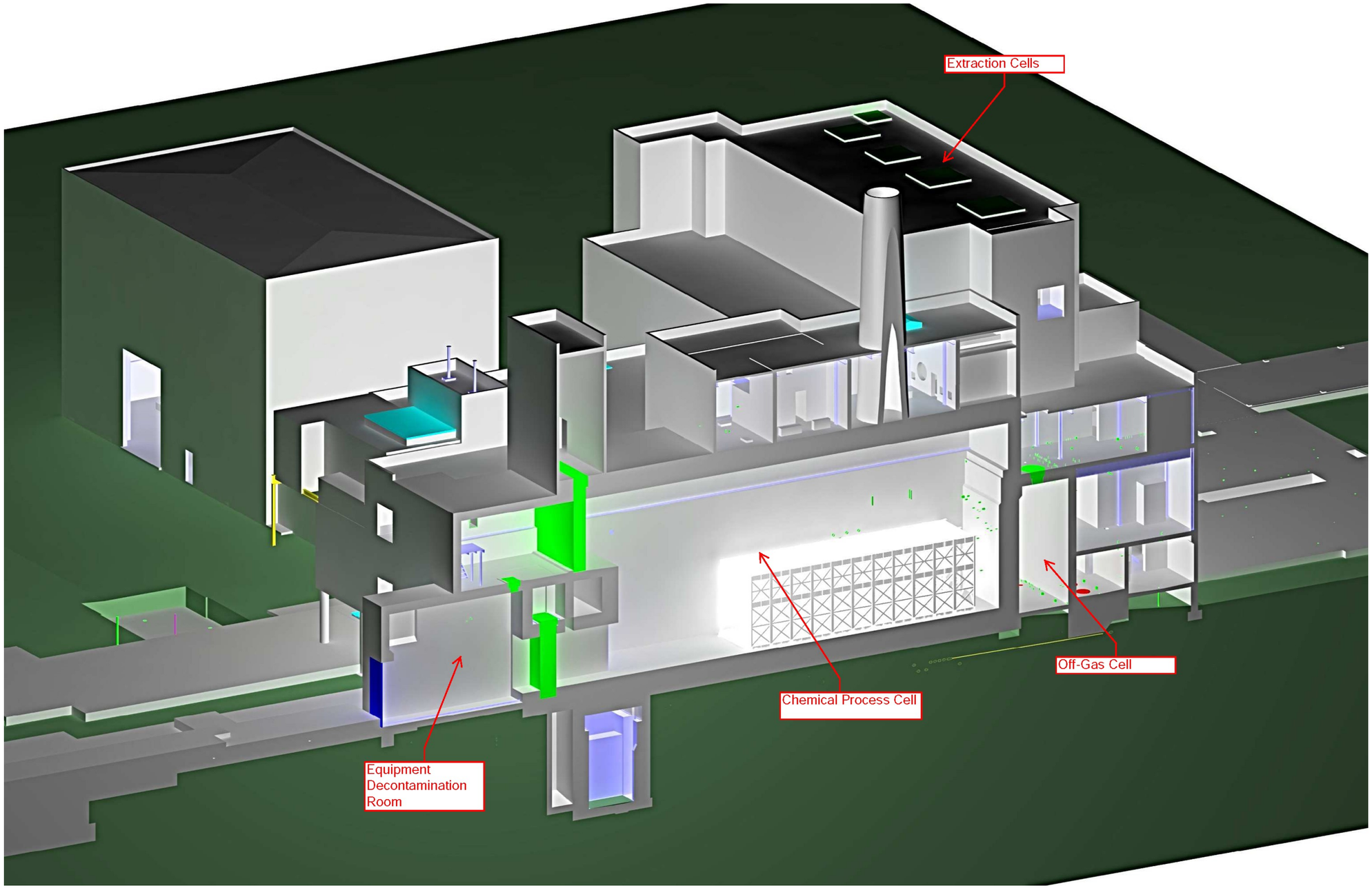
SUPPORT CALCULATION REFERENCE: N/A	MACHINED SURFACES N/A	APPROVALS / SIGNATURE / DATE: ORIGINATOR Michael Weyand 01-24-18; REVIEWER 1/31/14; QA 1-31-14	MAIN PROCESS PLANT BUILDING DEMO 144' LEVEL RCRA LOCATION PLAN
SYSTEM / SECONDARY SYSTEM NAME & NUMBER: PRIMARY - 15-4 PROCESS BUILDING STRUCTURE	TOLERANCES N/A	GRAPHIC SCALE	SCALE: N.T.S. · QUALITY LEVEL: C · SKETCH #: 913-S-0051 · REV: 0 · ORIGINATOR INITIALS: MW · BY: P. FINTAK · DATE: 01/05/2018 · SHEET: 9 OF

CAD SKETCH-DO NOT REVISE THIS ORIGINAL

Attachment B

Main Plant Building View Through Chemical Looking

Process North to South Process Cell, Southeast



Z

Attachment C
WVDP Demolition Readiness Checklist Form

Demolition Readiness Checklist *for:* _____		
☐	**- Items with a Y in the left side column require action to be completed before the facility is ready for demolition.** **- Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.**	**Completion Signature** ☐

Demolition Readiness Checklist Reviewers

Signatures below signify that the Demolition Readiness Checklist has been reviewed by the parties indicated, and they concur with the stated disposition for each item as it applies to their area of expertise. **Their signature DOES NOT signify the building is ready for demolition, only that all items and actions required to make the facility ready for demolition have been identified.**

Department/Position	Name	Date	Signature
Professional Engineer			
(Primary) System Engineer			
(Structural) System Engineer			
(Ventilation) System Engineer			
(Site Piping) System Engineer			
Asbestos Program Manager			
Emergency Management			
Fire Protection Specialist			
Nuclear and Criticality Safety			
Property Management			
Quality Assurance			
Radiological Engineering			
Regulatory Strategy			
Safety			
Security			
Subcontract Technical Representative (STR)			
Training			
Waste Planning & Disposition (WPD)			

Part I – Building Information

Building/Area Name								
Hazard Category								
Year Building Built								
Facility Mgr.								
Cognizant System Design Manager								
System Engineer								
System Number								
Building/Area Dimensions	Width		Length		Height		Total Square Feet	
Structure Type:								
Foundation Type:								
Demolition Work Instruction Package (WIP) Number & Title								
End State Vision Statement How facility will be left at end of project. (Physical alterations and surveillance & maintenance following demolition)								
Facility Areas Omitted from Demolition								

Action items identified have been verified as completed by the appropriate SMEs and Part X Pre-Demolition Walkdown items have been addressed.

Signature in this box indicates that the _____ is ready for Demolition.

Facility Manager (Signature) _____ (Date) _____

Demolition Readiness Checklist *for:* _____		
☐	**- Items with a Y in the left side column require action to be completed before the facility is ready for demolition.** **- Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.**	**Completion Signature** ☐

Part II – WVDP Policies & Procedures Compliance Documentation

Participate in an integrated facility walkdown inspection and explain pre-demolition actions required. Additional facility-specific lines of inquiry may be added as necessary. Reference the associated completion documentation for "Yes" determinations.
Signatures below indicate that actions have been completed or added to Part X for Subcontract Technical Representative (STR) verification.

	Asbestos Program ___ Yes ___ No Certified Asbestos Inspector Survey Required? (Possible source: insulation, floor, roof, caulk, mastic) ___ Yes ___ No Asbestos Abatement Required? ___ Yes ___ No Asbestos Site Inventory Update Required? Explain:	Asbestos Program Manager
	Emergency Management ___ Yes ___ No Emergency Management Implementing Procedure Modifications Required? ___ Yes ___ No Relocation of Emergency Equipment Required (e.g., all-page speakers, assembly area, SCBAs, etc.)? Explain:	Emergency Management
	System Engineer ___ Yes ___ No Prototype, Mockup and/or Proof of Application Test Required? ___ Yes ___ No Design/Engineering Drawings Required? ___ Yes ___ No Standard Operating Procedure (SOP) Modification/Cancellation Required? ___ Yes ___ No Engineering Change Notice (ECN) Required? ___ Yes ___ No System Description Modification or Cancellation? ___ Yes ___ No Preventative Maintenance Card Modification or Cancellation? ___ Yes ___ No Warehouse Stock/Spare Part Review Required? ___ Yes ___ No Hoisting & Rigging Lift Plans Required? ___ Yes ___ No Detailed Section Cut Plans Required? Explain:	System Engineer
	Facility Disposition ___ Yes ___ No Demolition Plan Required (Hazard Category 3)? ___ Yes ___ No Risk Management Plan Required? ___ Yes ___ No Hazard Review Board (HRB) Approval Required? ___ Yes ___ No Subcontract Purchase Order/Change Order Required? Explain:	Facility Disposition
	Facility Manager - Infrastructure ___ Yes ___ No WVDP-183, Freeze Protection Program Modification Required? ___ Yes ___ No Outdoor Lighting, Speakers or Lightning Protection Required? ___ Yes ___ No Off-shift Demolition Monitoring Activities Defined? ___ Yes ___ No Surveillance & Maintenance (S&M) Plan Required per WVDP-546 (e.g., inspections, surveys)? Explain:	Facility Manager
	Fire Protection ___ Yes ___ No Transitional Fire Hazard Analysis (FHA) or Facility Fire Assessment (FFA) Required? ___ Yes ___ No Adjacent Facility Access/Egress Points Affected by Demolition? ___ Yes ___ No Combustible Loading Surveillance Schedule Required? ___ Yes ___ No Temporary Fire Protection Equipment Required? ___ Yes ___ No Fire Protection Review of Demolition Documents Required (i.e., Field Changes, WIPs)? ___ Yes ___ No Compensatory Measures In Place? Explain:	Fire Protection Specialist
	Nuclear & Criticality Safety ___ Yes ___ No Is a USQD Required? If yes, USQD No.:_____ ___ Yes ___ No Facility Categorization Downgrade Required? (WVDP-227) _____ ___ Yes ___ No Postings Required to Preclude Addition of Rad Inventory? ___ Yes ___ No Nuclear Safety Review of Documents Required (SOPs, WIPs, ECNs, Approval Requests, etc.)? Explain:	Nuclear & Criticality Safety
	Property Management ___ Yes ___ No Have associated facility Warehouse stock items and spare parts been excessed? ___ Yes ___ No Has government furnished property within this structure been removed, excessed or dispositioned? Explain:	Property Management
	Radiation Protection ___ Yes ___ No Have contaminated materials that could create a building demolition issue been addressed? ___ Yes ___ No Have dismantlement activities that require fixatives, shielding or temporary ventilation been identified? ___ Yes ___ No Have potential airborne releases modeled for remaining contaminants yielded acceptable levels? ___ Yes ___ No Have in-situ nondestructive assay (NDA) methods been established for residual nuclear material? ___ Yes ___ No Have radiological monitoring and surveying protocols been established for each demolition phase? ___ Yes ___ No ALARA Committee Approval Required? Explain:	Radiological Engineering

Demolition Readiness Checklist for: _____

□	**- Items with a Y in the left side column require action to be completed before the facility is ready for demolition. - Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.**	**Completion Signature** □

Part II – WVDP Policies & Procedures Compliance Documentation

Participate in an integrated facility walkdown inspection and explain pre-demolition actions required. Additional facility-specific lines of inquiry may be added as necessary. Reference the associated completion documentation for "Yes" determinations. Signatures below indicate that actions have been completed or added to Part X for Subcontract Technical Representative (STR) verification.

	Regulatory Strategy ___ Yes ___ No RCRA Closure Plan Required? ___ Yes ___ No SPDES Closure Plan Required? ___ Yes ___ No Storm Water Pollution Prevention Plan (SWPPP) Required? ___ Yes ___ No Regulatory Agency Permits Modification Required (NEPA/NESHAPS)? ___ Yes ___ No Environmental Assessments Modification Required? ___ Yes ___ No Effluent Monitoring Controls Required? ___ Yes ___ No Portable Ventilation Unit (PVU) Required? ___ Yes ___ No Are there rodents, animals or migratory birds that may be disturbed during dismantlement/demolition? ___ Yes ___ No Asbestos Variance Required? ___ Yes ___ No Are there any backflow preventers that have been taken out of service? (CCHD Notification Required) ___ Yes ___ No EPA 10 day Notification for ACM Removal (if more than 260 LF or 160 SF of ACM to be abated)? ___ Yes ___ No EPA 10 day Demolition Notification? ___ Yes ___ No NYSDOL 10 day ACM Removal Notification (if more than 260 LF or 160 SF of ACM to be abated)? ___ Yes ___ No NYSDOL Pre-Demolition Survey Report Submittal for Buildings erected before 1974? **Notification Date:** **Earliest Demolition Date:** Explain:	Regulatory Strategy
	Safety ___ Yes ___ No Special or Additional Health and Safety Plan (HASP) Required? ___ Yes ___ No New/Revised Safety & Health Implementing Procedures (SHIP) Required? ___ Yes ___ No Baseline Sampling/Monitoring for Dismantlement/Demolition Activities Required? ___ Yes ___ No New or Updated Job Safety Analysis (JSA) Required? ___ Yes ___ No Confined Space Rescue Plan Required? ___ Yes ___ No Fall Protection Evaluation Required? Explain:	Safety
	Security ___ Yes ___ No Demolition Traffic Detour Routes Required ___ Yes ___ No Emergency Vehicle Access Points Required ___ Yes ___ No Security Cameras Required Explain:	Security
	Subcontract Technical Representative ___ Yes ___ No Subcontract Approval Requests (e.g. lift plans, training certifications, etc.) Required? Explain:	STR
	Waste Planning & Disposition ___ Yes ___ No Sample Analysis Plan (SAP) Required? ___ Yes ___ No Appendix B - Per SOP 300-07 Required? ___ Yes ___ No Waste Stream Profiles Approved by Disposal Facility? ___ Yes ___ No Transportation Permits Required? ___ Yes ___ No Specialty Waste Containers Procured? ___ Yes ___ No Are an Adequate Number of Waste Containers Ready (e.g., inspected, cribbing & shielding installed)? ___ Yes ___ No Required Samples Collected and Results Obtained? Explain?	WPD

Part III – Training

Ensure training is aligned with the work activities and responsibilities. Reference completion documentation for items marked Yes.

	Training ___ Yes ___ No Do Personnel Training Requirements Need to be Established for Subcontract and CHWBV Personnel? ___ Yes ___ No Do Personnel Performing the Work Require Training on the Processes, Methods or Procedures? ___ Yes ___ No Have Qualifications, Including Heavy Equipment, Been Reviewed as Current and Adequate? Explain:	Training

Part IV –Quality Assurance

Ensure completion of Action Items. Ensure remaining work scope items (if any) are adequately addressed within this document.

	Quality Assurance ___Yes ___ No Parts I through III Completion Signatures Obtained or Remaining Work Scope Items Identified ? ___Yes ___ No Part VII Utility End Point Actions Completed? Explain:	Quality Assurance

Demolition Readiness Checklist for: _____		
☐	- Items with a Y in the left side column require action to be completed before the facility is ready for demolition. - Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.	Completion Signature ☐

Part V – Property Management

Identify major facility equipment and materials by location below and document disposition.					Property Management	
	Description	QTY	Reuse	Excess	Waste	Abandon
Location:						

Part VI – Engineering Evaluation

List reference documentation (e.g. calculations, sketches) or mitigating actions for items marked Yes below.		Professional Engineer
	Do any component(s) of the building/structure display signs of weakness, deterioration or failure which may cause inadvertent collapse during dismantlement or demolition? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Have there been any structural modifications to this facility/building that would affect structural integrity? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Does the building contain any pre-stressed construction? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Does the building contain any post-stressed construction? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Will adjacent facilities/buildings be impacted structurally by demolition activities? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Are there any common structural members or interferences between adjacent facilities/buildings? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	By what method is the structure anchored to the foundation? Explain:	
	Will the de-coupling of the super-structure from the foundation cause any structural instability? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Are there items (below grade projections, wells, trenches, etc.) around the facility that need protection or monitoring during demolition? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Are there below grade utilities that need protection against outrigger loading? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Are there any overhead obstructions (guy wires, power lines, communication cables, and building overhangs) that require relocation or signage to prevent inadvertent contact? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	
	Have dust suppression needs been calculated and water collection systems designed, installed and tested for adequacy? ___ Yes ___ No ___ Questionable (further investigation required) Explain:	

Demolition Readiness Checklist for: _____		
☐	- Items with a Y in the left side column require action to be completed before the facility is ready for demolition. - Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.	Completion Signature ☐

Part VII - Utilities

Check applicable utilities, the desired End Point (I- Isolated; R – Re-routed; N/A – Not Applicable) and remaining work scope or implementing work document(s) (e.g., isolate, air-gap, grout, cap, re-route, etc.) and status below. — System Engineer

	Utility Type	End Point	Work Document	Description	Status
	Natural Gas				
	Electrical				
	Potable Water				
	Utility Water				
	Fire Water				
	Demin Water				
	Waste Water				
	Cooling Water				
	Vacuum Air				
	Fuel Oil				
	Steam				
	Steam Condensate				
	Utility Air				
	Breathing Air				
	Instrument Air				
	Ventilation				
	Chemical				
	Data				
	Communication				
	Storm Sewer Inlets				
	Sanitary Sewer				
	Fire Detection				
	Fire Suppression				
	Floor Drains				
	Sumps				
	Sampling Wells				
	Other				

Part VIII – Hazardous Materials

Have any of the following hazardous substances been used, stored, handled or are part of the structural surfaces or materials of the facility/building? Identify those hazardous materials that may exist or could have existed, locations (real and suspect) of the equipment or surface containing the hazardous material and the proposed method of abatement or mitigation. — WPD

	Lead: ___ Yes ___ No (Possible sources: paint or other protective coating, lead acid batteries, shielding, solder, joint packing, lead flashing) Include any supporting documentation which eliminates or confirms the suspect materials. Explain:	
	Batteries: ___ Yes ___ No Explain:	
	Mercury (Possible sources: switch gears, thermostats, flourescent light bulbs, floats, detectors, elec. relays, inst. controls) Explain:	

Demolition Readiness Checklist for: _____		
□	- Items with a Ÿ in the left side column require action to be completed before the facility is ready for demolition. - Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.	Completion Signature □

Part VIII – Hazardous Materials

	Have any of the following hazardous substances been used, stored, handled or are part of the structural surfaces or materials of the facility/building? Identify those hazardous materials that may exist or could have existed, locations (real and suspect) of the equipment or surface containing the hazardous material and the proposed method of abatement or mitigation.	WPD
	Asbestos or ACM ___ Yes ___ No (Possible sources: insulation, flooring, roofing, caulk, mastic) Explain:	
	Heavy Metals (In Hazardous Form) Check any that apply: ___ Yes ___ No Aluminum (Possible sources: building materials, electrical components) ___ Yes ___ No Arsenic (Possible sources: chemical and hazardous wastes) ___ Yes ___ No Cadmium (Possible sources: batteries, cadmium vapor lamps, paints, motor oils) ___ Yes ___ No Copper (Possible sources: electrical and plumbing equipment and supplies) ___ Yes ___ No Nickel (Possible sources: stainless steel, combustion fuel oils) Explain:	
	PCB's ___ Yes ___ No (Possible sources: light ballasts, transformers, capacitors, heat transfer equipment) Explain:	
	Refrigeration/Cooling Units ___ Yes ___ No Explain:	
	Oil/Petroleum Based Lubricants ___ Yes ___ No (Possible sources: drums/cans, door closers, gear boxes, HVAC equip., shield windows) Explain:	
	Glycol ___ Yes ___ No (anti-freeze) Explain:	
	Tritium ___ Yes ___ No (exit signs) Explain:	
	Glass/Shield Windows: Is there glass or other surfaces/materials in the area that may shatter or fragment? ___ Yes ___ No Explain:	
	Biological Organisms: Are there molds, mildews, algae's, animal feces or other biologically hazardous materials? ___Yes ___ No ___ Questionable (further investigation required) Explain:	
	Toxic Chemicals or Corrosive Materials: ___ Yes ___ No If any, have the lines been flushed and purged? ___ Yes ___ No Is there any supporting documentation which confirms the absence of chemical residuals? ___ Yes ___ No Explain:	
	Pressurized Vessels/Cylinders ___ Yes ___ No (e.g., aerosols, gas cylinders) Explain:	
	Expired or Excess Chemicals ___ Yes ___ No Explain:	

Part IX – Waste Planning

List bulk contaminated items (i.e., tanks, vessels & equipment), status and actions (e.g., size reduction) to prepare for disposition.	WPD

	Number	Description	Status (flushed, empty)	Actions Required (fix, foam)

Demolition Readiness Checklist for: _____		
□	**- Items with a Y in the left side column require action to be completed before the facility is ready for demolition. - Subject matter expert (SME) to sign the right column when the action requirement(s) have been satisfied.**	**Completion Signature** □

Part X – Pre-Demolition Walkdown		
	Conduct demolition area walkdown confirming the following conditions.	STR
	Are high visibility markers in place?	
	Have radiologically contaminated components requiring special handling been marked (pink) per SOP 00-30?	
	Is the demolition boundary clearly established (signs, ropes and postings in place)?	
	Have temporary utilities (e.g., electric, water) been run or portable equipment (e.g., air compressors, generators) staged?	
	Are all isolations, temporary modifications and re-routes properly installed and protected from potential damage?	
	Has infrastructure within the demolition area been protected with plates, jersey barriers, etc.?	
	Have signs, surfaces or other displays showing the WVDP name or other logo been removed or obliterated?	
	Has a size reduction area been established?	
	Have the waste container staging and loading areas been established?	

Attachment D

ACTIVITY HAZARDS ANALYSIS

Training TR791B is required to complete this form.

Project/Document ID:	Rev.	FC#	Originator:	Date:

NOTE: *The hazards identified should be specific to the job tasks. Identifying generic hazards that are already addressed by other programs dilute the effectiveness of this analysis.*

Performing an Activity Hazards Analysis (AHA) shall identify (1) the hazards applicable to the specific tasks, (2) the hazard mitigations/controls required for the identified hazards, and (3) the applicable Hazards Controls Specialists (HCSs)/Subject Matter Experts (SMEs) to be included in the work planning process. Mitigations for the identified hazards will be captured in the procedure or work instruction, applicable permits, or the pre-job brief.

For revisions/FC: Perform the following:

Screening of a change to a previously approved activity needs to address the impact of the change on the original Activity Hazards Analysis (AHA). If the hazards of the work change, indicate in the Rev/FC/Other column on the original AHA the number of the revision, field change, or other change that is being made.

- For newly identified hazards, the HCSs must approve the change.
- For changes in hazards or mitigations that result in changes to the document associated with the AHA, the HCSs must approve the change.
- For changes in hazards or mitigations that are captured in the associated ALARA checklist or approved permits with no change to the document associated with the AHA, no further approval is required
- If a hazard is eliminated by the change, change the Yes in the left hand column of the original AHA to a No. HCS review is not required.

Hazard Control Specialists (HCSs) /Subject Matter Experts (SMEs)

CSE - Criticality Safety Engineer	**IH – Industrial Hygiene**	**RC - Radiological Controls**
EM - Emergency Management	**NS - Nuclear Safety**	**Safety**
FM - Facility Manager	**PSOS – Plant Systems Ops Supervisor**	**Security**
FSS - Fire Safety Specialist	**RS - Regulatory Strategy**	**WPD - Waste Planning & Disposition**

NOTE: *Work Group Supervisor participation in ALL hazard analysis is REQUIRED.*

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
1.			**RADIOLOGICAL SAFETY**				
a.			Will the work activity be performed inside a Radiological Controlled area such as: Radiological Buffer Area; Radioactive Material Area; Radiation Area; High Radiation Area; Very High Radiation Area; Contamination Area; High Contamination Area; or Airborne Radioactivity Area?			RC	
b.			Could the activity involve the transfer, pumping, or draining of potentially radioactive or radioactively contaminated liquids (including storm water)?			RC, RS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
1.			**RADIOLOGICAL SAFETY**				
c.			Could the activity involve the breaching of systems containing potentially radioactive or radioactively contaminated liquids (including storm water)?			RC, RS	
d.			Could the work activity involve demolition or work activities on a component, system, or equipment that has the potential for internal contamination?			RC	
e.			Could the work activity involve handling, movement or transportation of radioactive material or waste?			RC, WPD	
f.			Could the activity involve welding, grinding, cutting, surface preparation, abrasive blasting, scabbling, chipping, or other treatment on or near a surface in a manner that contamination could be uncovered or become airborne?			RC, RS, Safety	
g.			Could the work be conducted on, or affect, equipment containing radiation/contamination detectors?			RC	
h.			Could the work require the use of fixatives?			RC	
i.			Will the work activity interfere with the use of the Personnel Decontamination Room?			RC	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
2.			**INDUSTRIAL HYGIENE AND SAFETY – GENERAL SAFETY**				
a.			Could the work activity create or occur in an area with inadequate lighting?			IH, Safety	
b.			Could the work activity increase the potential for slips, trips, and fall injuries or be performed in an area with a higher than average potential for slips, trips, and falls?			IH, Safety	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
2.			**INDUSTRIAL HYGIENE AND SAFETY – GENERAL SAFETY**				
c.			Could the activity involve work on rotating machinery or near unguarded operating equipment that could pose a pinching or crushing problem?			IH, Safety	
d.			Could the worker be exposed to the danger of being struck by, or making harmful contact with an object (e.g., overhead obstructions, falling objects, areas where workers could be caught or struck by moving equipment)?			IH, Safety	
e.			Could the worker sustain pinches, punctures, cuts, lacerations or other similar injuries from working with portable equipment (e.g., drills, nibbler saws, metal saws, hand tools) or be exposed to sharp or pointed edges?			IH, Safety	
f.			Could the work activity include the manual lifting of heavy objects. (nominally 50 lbs. or 1/3 body weight, whichever is less)?			IH, Safety	
g.			Could the work activity have ergonomic hazards present (e.g., repetitive motion, excessive manual force, awkward or static postures, contact stress on body, vibration, work system not accommodating employee physical shape)?			IH	
h.			Could the work activity involve a suspected confined space (Permitted or Non-Permitted) or potentially create a confined space?			IH, Safety	
i.			Are additional resources required to remove an injured or incapacitated worker from the work space?			IH, Safety, Rescue SME, EM	
j.			Could the work activity include initially accessing areas closed for long periods?			IH	
k.			Is the work area posted as a high noise area (greater than 85 dBs) or could the work activities produce high noise levels?			IH	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
2.			**INDUSTRIAL HYGIENE AND SAFETY – GENERAL SAFETY**				
l.			Is the work activity likely to result in inhalation of, or eye or skin exposure to: ➢ Dust, mists, or ashes resulting from surface preparation, including grinding, abrasive blasting, scabbling, chipping or other demolition activities ➢ Fumes, vapors, mists, gases (includes painting or working with heavy metals, e.g., lead, mercury, cadmium, hexavalent chromium) ➢ Nuisance dust (e.g., from sweeping)?			IH	
m.			Could the activity expose workers to an extreme temperature environment or expose workers to conditions that prevent the body from maintaining proper body temperature (e.g., hot weather, outside work in the cold, wearing of PPE)?			IH	
n.			Will the work activity expose or have the potential to expose workers to blood-borne and/or other potentially infectious materials, biohazards, agents, pathogens, or toxins, including: ➢ Potentially infectious materials such as: raw sewage; birds or animal waste. ➢ Potential to disturb areas contaminated with rodent or bird feces or urine. ➢ Presence of mold			IH	
o.			Could hazards from the proposed work be reasonably expected to expose employees in adjacent work areas?			IH, Safety	
p.			Could the work cause flying dust and debris which could cause injury?			IH, Safety	
q.			Could the work involve heavy equipment vehicle operations or transportation of heavy loads (e.g., supporting demolition activities)?			Safety	
r.			Could the work involve Hoisting and Rigging operations?			Safety, H&R SME	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
2.			**INDUSTRIAL HYGIENE AND SAFETY – GENERAL SAFETY**				
s.			Could the work involve the temporary or permanent routing of utilities (e.g., electricity, air, gas, steam, water, gasoline, fuel oil) that may become damaged as a result of exposure to personnel or vehicular traffic or that may become covered in some manner by material (e.g., snow, water, sand, dirt, gravel, mud, boxes, containers)?			Safety, PSOS	
t.			Could the work involve conditions where the unexpected energization or startup of machines or equipment or the release of stored energy could cause injury or death to personnel?			Safety PSOS	
u.			Could the work activity be performed on a system, equipment or component that stores energy (such as springs, batteries, capacitors, hydraulic accumulators, pressurized gas cylinders, compressors, etc.)?			Safety	
v.			Could the work activity involve breaching a system known or suspected to contain hazardous materials (e.g., mercury, acids, natural gas) or energy sources (e.g., steam, electricity)?			IH, Safety	
w.			Will the work be required to be performed as a Remote Worker?			Safety	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
3.			**EXCAVATION, SUBSURFACE PENETRATION**				
a.			Could the work activity involve digging, drilling, pile driving; or cutting into walls, floors, or ceilings; removal of soil, or other surface penetration activities regardless of depth; where a potential for damaging underlying cables or piping exists)? ➢ Includes: Hand (Non-intrusive) and Mechanical (Intrusive) methods			IH, Safety, RC	
b.			Could the work activity have the potential to cause engulfment?			IH, Safety	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
4.			FIRE SAFETY				
a.			Could the work activity involve heat producing operations (e.g., cutting, welding, flame soldering, grinding, or plasma arc cutting) or otherwise produce sparks or flames outside an approved welding area?			IH, Safety, FSS	
b.			Could the work activity be located where a heat source greater than 100ºC will be used, produced, or located in close proximity to the work. (e.g., steam lines or muffler)?			IH, Safety, FSS	
c.			Could the work impair or disable a fire alarm or protective system or potentially cause inadvertent activation of a fire alarm or protective system? This includes but is not limited to: ➢ Fire Suppression Systems (water or dry) ➢ Fire Detection or Alarm Systems, includes site Keltron system ➢ Fire Doors or Barriers ➢ Fire Dampers or Fire/Ventilation interface components			FSS, FM, PSOS, Security EM	
d.			Could the work impact means of egress (e.g., blocked hallways, stairs removed for repairs) or block or obstruct access to safety equipment?			Safety, FSS, PSOS, Security EM	
e.			Could the work activity result in an increase to existing combustible loading above the limits established in WVDP-177, Fire Protection Program Manual?			FSS	
f.			Could the work involve erecting a containment tent or entering a containment area?			FSS	
g.			Could the work activity involve the use of foam or other heat generating chemicals?			FSS, IH, Safety, RS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
5.			**CHEMICAL SAFETY** **NOTE:** *Obtain and review Safety Data Sheets for all chemicals involved.*				
a.			Could the work involve exposure to uncharacterized or unknown chemical hazards (e.g., potential container mislabeling; abandoned pipes/equipment; accessing closed/sealed drums, vaults, tanks, cells) that could pose an inhalation, ingestion, injection hazard or IDLH condition?			IH, RS	
b.			Could the work involve handling of corrosive, toxic, caustic, carcinogenic (e.g., PCBs), cryogenic, flammable, combustible, explosive or reactive chemicals or could pose an inhalation, ingestion, injection hazard or an IDLH condition?			IH, RS	
c.			Could the work activity involve breaking the boundary to a system containing corrosive, toxic, caustic, carcinogenic (e.g., PCBs), cryogenic, flammable, combustible, explosive or reactive chemical liquids or gases with the potential for uncontrolled release or that could result in oxygen displacement?			IH, RS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
6.			**FALL PROTECTION**				
a.			Could the work activity be performed from elevated heights or elevated work platforms where fall hazards exist? Includes: ➢ Aerial Lifts, Man-lifts, Scissor Lifts, etc. ➢ Scaffolds (including erection, alteration, and dismantlement)(Ensure properly tagged per WVDP-011) ➢ Ladders (from a ladder or mobile ladder stand at a height above 6 feet for construction or demolition work or a height above 4 feet for general operational or maintenance work) ➢ Roof tops			Safety	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
7.			**ELECTRICAL SAFETY**				
a.			Could the work involve electrical work activities? ➢ Electrical LOTO Isolation ➢ Zero Energy Verification ➢ Air-gapping ➢ Electrical D&D (removal of wires and components) ➢ Electrical troubleshooting and repair ➢ Where the potential for Arc Flash or Electrical Shock exists Performance of any of these items requires walk down of the specific activities to be performed and for D&D, work specific marking of isolated/inactive systems that are to be removed.			Safety, PSOS	
b.			Could the work activity involve replacement or work on batteries including removing/replacing intercell connections, where the potential for Arc Flash or Electrical Shock exists? (Excludes small appliance/flashlight batteries)			IH, Safety	
c.			Could the work activity encounter electrical overhead hazards?			Safety	
d.			Could the work activity use hand or electrical powered portable tools or equipment. (Includes temporary power cords and equipment, portable generators, etc.)?			Safety	
e.			Could the work activities have the potential to generate static electrical discharges?			Safety	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
8.			CONSTRUCTION, RE-MODELING, OR DEMOLITION SAFETY				
a.			Will the work activities perform construction, re-modeling or demolition activities of building or structures?			IH, Safety, RS	
b.			Does the work have the potential for contaminating the breathing air system or potable water system?			IH, Safety, PSO, RS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
9.			REGULATORY STRATEGY AND ENVIRONMENTAL COMPLIANCE, WASTE MINIMIZATION AND POLLUTION PREVENTION				
a.			Could the work activity disturb, break up, dislodge, asbestos-containing (ACM) or suspect material (PACM) (such as thermal insulation; gaskets; valve packing; wall, floor, or ceiling material; roofing; insulated wiring; transite siding)?			IH, Safety, RS, WPD	
b.			Could the work require the disturbance of bird nests or involve animal or insect control?			IH, Safety, RS	
c.			Could the work result in changes to the site storm water drainage system (e.g., pathways/ patterns) removal of established vegetative ground cover or exposure of soil to rain/snowfall, or placement of quarried materials (soil, stone)?			RS	
d.			Will the work activity involve performing activities with the potential for any airborne releases (e.g., smoke, fumes, gases, exhaust, dust, mercury, radioactive material) into the environment?			IH, Safety, RS, RC	
e.			Could the work activity involve operating, sampling, constructing, or modifying wells?			RS	
f.			Could the work involve changes to the site wastewater or potable water systems?			RS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
9.			REGULATORY STRATEGY AND ENVIRONMENTAL COMPLIANCE, WASTE MINIMIZATION AND POLLUTION PREVENTION				
g.			Could the work activity potentially result in any liquid releases (e.g., water, petroleum products, mercury, chemicals, etc.) into the environment?			RS	
h.			Could the work disable, be performed in close proximity to, or affect access to, any environmental monitoring equipment (e.g., air monitors, groundwater wells)?			RS	
i.			Could the work involve PCB items in use (e.g., transformers, capacitors, and voltage regulators), PCB wastes, Lead, or the removal or abandonment of pipes that distribute natural gas?			IH, Safety, RS, WPD	
j.			Could the work potentially affect wetlands or the associated 100 foot buffer area (click on **Wetland Delineation Map**), the flow of creeks or streams, or lake discharges?			RS	
k.			Could the work activity involve waste generation, treatment, storage, or management of any waste (e.g., industrial waste, hazardous waste, mixed waste, radiological waste) or involve the on-site or off-site transportation of any waste?			RS, WPD	
l.			Could the work involve management of Environmental Media (e.g., surface soil, subsurface soil, streambed sediment, groundwater, vegetation, and fauna)?			RS, WPD	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
10.			**NUCLEAR AND CRITICALITY SAFETY**				
a.			Could the work activity involve moving, handling, processing, staging/storage, or transporting TRU or TRU mixed waste?			RC, NS, WPD	
b.			Could the work activity involve or potentially affect equipment or contamination containing greater than 1 gram of fissile material (i.e., U-233, U-235, Pu-239, Pu-241) (e.g., vacuum collection, HEPA filter)?			RC, NS, CSE, WPD	
c.			Could the work or design activity involve collection, staging or storage of fissile material in a container other than described in PSR-6. (e.g., drum liners, 30-gallon drums, 5-gallon pails)?			RC, NS, CSE, WPD	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Hazard Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
11.			**FACILITY OPERATIONS**				
a.			Is the work performed on or could the work potentially impact ventilation systems or air effluent monitoring systems?			FM, RC, RS, PSOS	
b.			Could the work affect any air supply, including instrument or utility air, or fresh air intake?			FM, PSOS	
c.			Could the work activity restrict access to other equipment for an extensive period of time?			FM, PSOS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
12.			**SITE SECURITY**				
a.			Could the work involve disabling of SECURITY alarms?			FM, EM, Security PSOS	
b.			Could the work involve working in secured areas?			FM, Security PSOS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
12.			**SITE SECURITY**				
c.			Could the work involve firearms or other specialized security equipment?			Security	

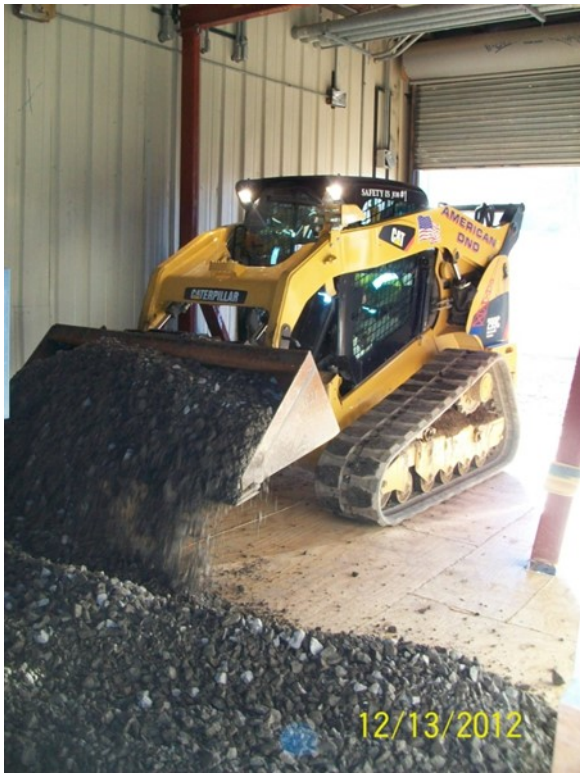
#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
13.			**EMERGENCY PREPAREDNESS**				
a.			Could the work disable or impair ability to hear the 812 all-page system, the 222 plant-page system, or the sheltering alarm?			FM, EM, PSOS	
b.			Could the work disable the Meteorological Tower or instrumentation?			RS, EM, PSOS	
c.			Could the work block or render inaccessible any emergency access or emergency relocation routes or assembly areas?			EM, FSS, PSOS, Security	
d.			Could the work affect the ability to respond to an emergency at an adjacent facility?			EM, PSOS, Safety, Security	
e.			Could the work involve maintenance on, temporary or permanent relocation of, or disablement of emergency response equipment?			FM, EM, Security PSOS	
f.			Could the work require the development of new or a change to existing emergency management postings, signs, instructions, or response actions (e.g., relocation route postings, assembly area maps, or ventilation or sheltering instructions)?			FM, EM, PSOS	
g.			Could the work directly or indirectly affect the operability of the Emergency Operations Center's (EOC), the Technical Support Center's (TSC), or Consequence Assessment Area's (CAA) facility or equipment?			EM, PSOS	
h.			Could the work require personnel in work zone to respond to an alternate designated assembly area?			EM, PSOS	

#	YES	NO	Potentially Hazardous Situation or Hazard	Task Specific Hazard	Mitigations/Controls	HCS/ SME	Rev./ FC/ Other
14.			**OTHER HAZARDS** *List any hazards not already identified on the Hazard Screen that may be encountered during the work evolution. Consider both normal operations and process upset conditions.*				
a.							
b.							
c.							
d.							

Attachment E
Typical Types of Demolition Equipment

This section includes pictures of typical types of demolition equipment as identified earlier in this plan.
Many of the pictures are directly from the prior 01-14 Building demolition work completed by CHBWV in early 2013 at the WVDP.

Work Area Air Sampling Station



Placing stone over Slab BEFORE 01-14 Demo with Skid Steer

11,000 ft lb Hydraulic Hammer (01-14 Demo)

1 - Demo with 200,000 lb Class Excavator with Shear (01-14 Demo)

3 - 200,000 lb Class Excavator with Hydraulic Hammer (01-14 Demo)

2 - 200,000 lb Class Excavator = Start of Demo at Top of Bldg (01-14 Demo)

4 - 40,000 lb Class Excavator with Concrete Pulverizer

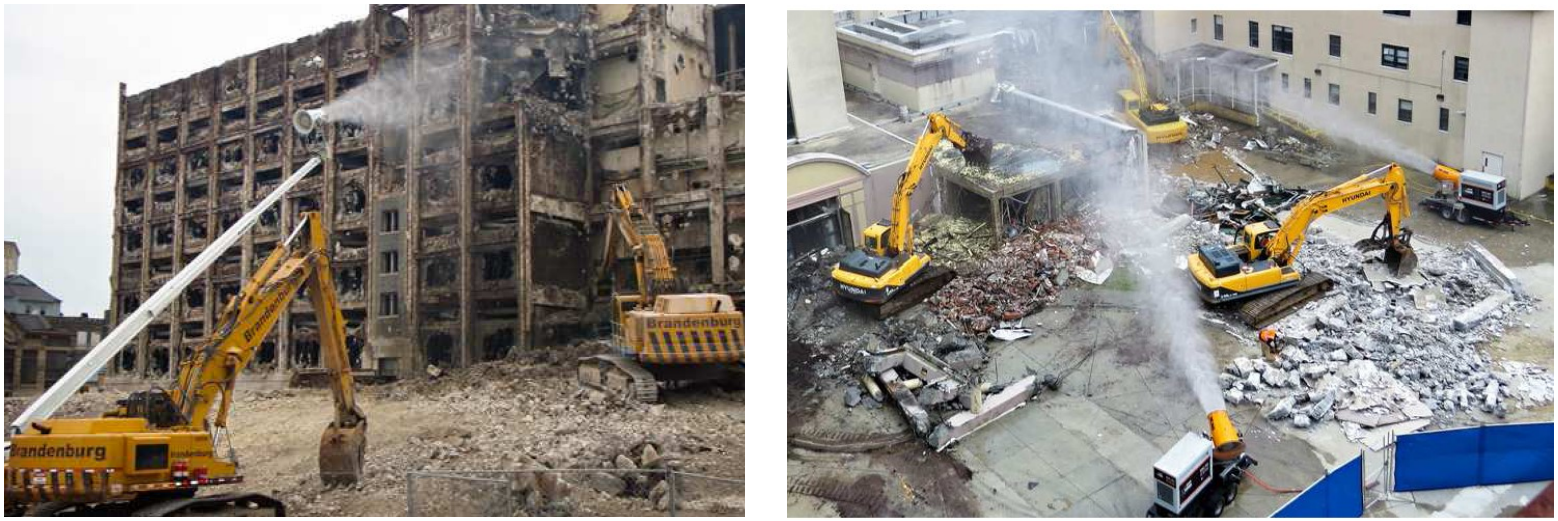
Selective Dismantling of Rad-component DURING 01-14 Demo

Hammer & Pulverizer Size Reducing Concrete Rubble (01-14 Rubble Pile)

Processing and Size Reducing Concrete Rubble at 01-14

Sorting & Segregating Waste Piles at 01-14

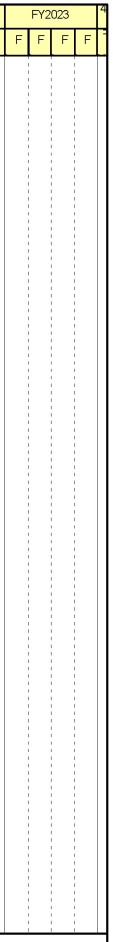
Dust Suppression Equipment Previously Used At WVDP



Dust Suppression Equipment Used At Other Sites

Attachment F
Main Plant Process Building (MPPB) Facility Demolition Schedule
(As noted in Section 6.3, some overlap may occur between areas. Parallel demolition activities and adjustments to the sequence may also occur.)

Activity ID	Activity Name	OD	Start	Finish
Main Plant Process Building (MPPB) Demolition - Re-Sequence				
10601302019MS	Interim MS 03-41: MPPB - Commencement of Demolition	0	04-Nov-20*	
1060170101001	MPPB Demo: Solvent Storage Terrace (SST)	1	04-Nov-20	04-Nov-20
1060170101002A	MPPB Demo: Upper Warm Aisle (UWA) Structure for Access	2	05-Nov-20	09-Nov-20
1060170101002B	MPPB Demo: Upper Warm Aisle (UWA) Shielded Pipe Chase Removal	2	10-Nov-20	11-Nov-20
1060170101002C	MPPB Demo: Upper Warm Aisle (UWA) Removal of Niches (6)	10	12-Nov-20	02-Dec-20
1060170101002D	MPPB Demo: Upper Warm Aisle (UWA) Remaining Structure	1	03-Dec-20	03-Dec-20
1060170101003A	MPPB Demo: Lower Warm Aisle (LWA) Structure for Access	2	07-Dec-20	08-Dec-20
1060170101003B	MPPB Demo: Lower Warm Aisle (LWA) Remove Niche Covers (9)	2	09-Dec-20	10-Dec-20
1060170101003C	MPPB Demo: Lower Warm Aisle (LWA) Remaining Structure	1	14-Dec-20	14-Dec-20
1060170101004	MPPB Demo: Extraction Chemical Room (XCR) (South Structure)	2	15-Dec-20	16-Dec-20
1060170101084C	MPPB Demo: Extraction Cell #1 (XC-1) South Wall Structure	5	17-Dec-20	30-Dec-20
1060170101085C	MPPB Demo: Extraction Cell #2 (XC-2) South Wall Structure	5	31-Dec-20	11-Jan-21
1060170101085A	MPPB Demo: Extraction Cell #2 (XC-2) West Wall Structure	6	12-Jan-21	20-Jan-21
1060170101086C	MPPB Demo: Extraction Cell #3 (XC-3) South Wall Structure	5	21-Jan-21	28-Jan-21
1060170101086A	MPPB Demo: Extraction Cell #3 (XC-3) West Wall Structure	6	01-Feb-21	09-Feb-21
1060170101018	MPPB Demo: XCR Monorail Structure	3	10-Feb-21	15-Feb-21
1060170101019	MPPB Demo: Off-Gas Operating Aisle (OGA)	2	16-Feb-21	17-Feb-21
1060170101020	MPPB Demo: Top of South Stairs	1	18-Feb-21	18-Feb-21



"After" Remaining
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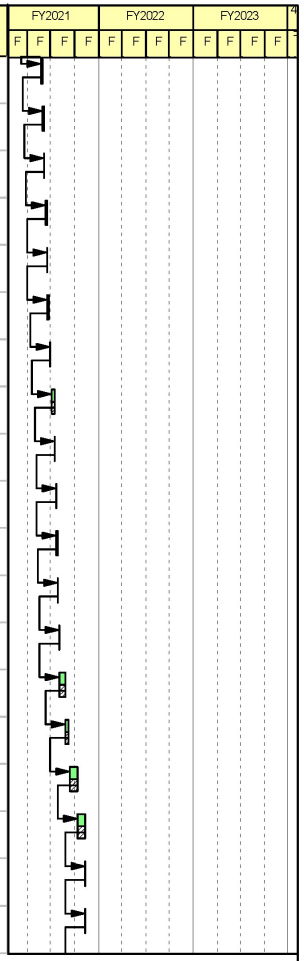
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101021	MPPB Demo: Acid Recovery Cell (ARC)	4	22-Feb-21	25-Feb-21
1060170101022	MPPB Demo: Acid Recovery Pump Room (ARPR)	4	01-Mar-21	04-Mar-21
1060170101023	MPPB Demo: Remainder of South Stairs	1	08-Mar-21	08-Mar-21
1060170101024A	MPPB Demo: Off Gas Blower Room (OGBR)	4	09-Mar-21	15-Mar-21
1060170101024B	MPPB Demo: OGBR Shield Window	1	16-Mar-21	16-Mar-21
1060170101074B	MPPB Demo: Off Gas Cell (OGC) Remainder of Structure	6	17-Mar-21	25-Mar-21
1060170101074A	MPPB Demo: Northwest Corner of Off Gas Cell (OGC)	3	29-Mar-21	31-Mar-21
1060170101084A	MPPB Demo: Extraction Cell #1 (XC-1) West Wall Structure	6	05-Apr-21	13-Apr-21
1060170101027	MPPB Demo: Ventilation Exhaust Cell (VEC)	2	14-Apr-21	15-Apr-21
1060170101026	MPPB Demo: Remainder of Stack	2	19-Apr-21	20-Apr-21
1060170101025	MPPB Demo: Ventilation Exhaust Cell (VEC) Plenum	4	21-Apr-21	27-Apr-21
1060170101028	MPPB Demo: Hot Acid Cell (HAC)	2	28-Apr-21	29-Apr-21
1060170101029	MPPB Demo: Process Chemical Room (PCR)	2	03-May-21	04-May-21
1060170101075B	MPPB Demo: Chemical Process Cell (CPC) Access Interior Through West Wall	12	05-May-21	25-May-21
1060170101075A	MPPB Demo: Chemical Process Cell (CPC) Remove 3 Windows	9	26-May-21	10-Jun-21
1060170101075C	MPPB Demo: Chemical Process Cell (CPC) Remove Racks	16	14-Jun-21	12-Jul-21
1060170101075D	MPPB Demo: Chemical Process Cell (CPC) Remove South Wall Including Ceiling Above	16	13-Jul-21	09-Aug-21
1060170101063A	MPPB Demo: Extraction Chemical Room (XCR) West Portion	1	10-Aug-21	10-Aug-21
1060170101061	MPPB Demo: Upper Extraction Aisle (UXA) West Portion	1	11-Aug-21	11-Aug-21



"After" Remaining
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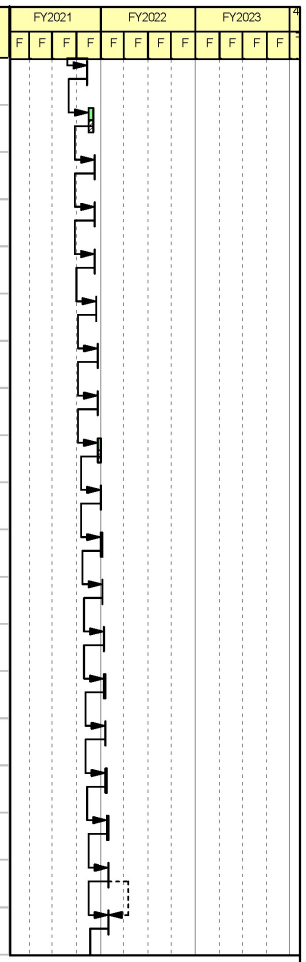
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101063B	MPPB Demo: Control Room (CR) - West Portion	1	12-Aug-21	12-Aug-21
1060170101079A	MPPB Demo: Chemical Process Cell (CPC) East Wall to 1C Sampler	12	16-Aug-21	02-Sep-21
1060170101070	MPPB Demo: Analytical Decontamination Aisle (ADA)	1	07-Sep-21	07-Sep-21
1060170101078	MPPB Demo: ICP Lab	1	08-Sep-21	08-Sep-21
1060170101077	MPPB Demo: CTS Lab	1	09-Sep-21	09-Sep-21
1060170101076B	MPPB Demo: Sample Storage Cell (SSC) Remove Remainder of Cell	4	13-Sep-21	16-Sep-21
1060170101051	MPPB Demo: Control Room (CR)	1	20-Sep-21	20-Sep-21
1060170101050	MPPB Demo: Extraction Chemical Room (XCR) North Portion of Structure	2	21-Sep-21	22-Sep-21
1060170101084B	MPPB Demo: Extraction Cell #1 (XC-1) North Wall Structure	5	23-Sep-21	30-Sep-21
1060170101064B	MPPB Demo: Sample Cell #2 (SC2) Remainder of Cell	1	04-Oct-21	04-Oct-21
1060170101065B	MPPB Demo: Remainder of Hot Cell #1	2	05-Oct-21	06-Oct-21
1060170101066B	MPPB Demo: Remainder of Hot Cell #2	2	07-Oct-21	11-Oct-21
1060170101067B	MPPB Demo: Remainder of Hot Cell #3	2	12-Oct-21	13-Oct-21
1060170101068B	MPPB Demo: Remainder of Hot Cell #4	2	14-Oct-21	18-Oct-21
1060170101069B	MPPB Demo: Remainder of Hot Cell #5	2	19-Oct-21	20-Oct-21
1060170101079B	MPPB Demo: Chemical Process Cell (CPC) 1C Sampler Removal	4	21-Oct-21	27-Oct-21
1060170101072	MPPB Demo: Chemical Operating Aisle (COA) South Portion (Bays 4 & 5)	2	28-Oct-21	01-Nov-21
1060170101017	MPPB Demo: Lower Extraction Aisle (LXA)	1	02-Nov-21	02-Nov-21
1060170101082	MPPB Demo: Bottom Portion of Chemical Process Cell (CPC) East Wall	1	03-Nov-21	03-Nov-21



"After" Remaining
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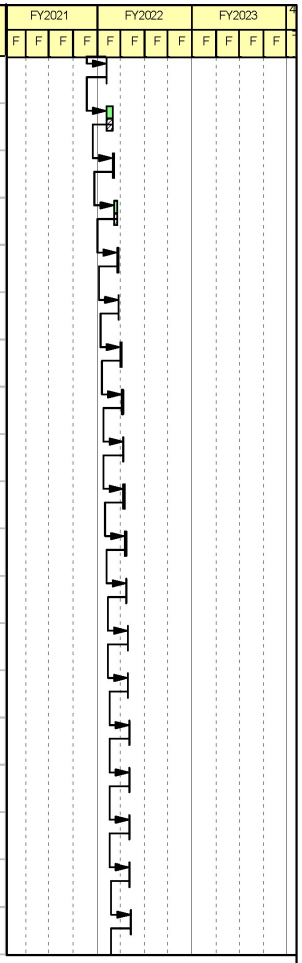
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101081	MPPB Demo: West Mechanical Operating Aisle (WMOA) South Portion	1	04-Nov-21	04-Nov-21
1060170101079C	MPPB Demo: Chemical Process Cell (CPC) Remaining East Wall	12	08-Nov-21	30-Nov-21
1060170101073A	MPPB Demo: Liquid Waste Cell (LWC) Ceiling	4	01-Dec-21	07-Dec-21
1060170101073B	MPPB Demo: Liquid Waste Cell (LWC) Tank Removal (9 tanks)	6	08-Dec-21	16-Dec-21
1060170101073C	MPPB Demo: Liquid Waste Cell (LWC) Remainder of Cell	2	20-Dec-21	21-Dec-21
1060170101064A	MPPB Demo: Sample Cell #2 (SC2) Window Removal	1	22-Dec-21	22-Dec-21
1060170101076A	MPPB Demo: Sample Storage Cell (SSC) Remove Windows	4	29-Dec-21	05-Jan-22
1060170101065A	MPPB Demo: Hot Cell #1 Shield Window Removal	2	06-Jan-22	10-Jan-22
1060170101066A	MPPB Demo: Hot Cell #2 Shield Window Removal	2	11-Jan-22	12-Jan-22
1060170101067A	MPPB Demo: Hot Cell #3 Shield Window Removal	2	13-Jan-22	17-Jan-22
1060170101068A	MPPB Demo: Hot Cell #4 Shield Window Removal	2	18-Jan-22	19-Jan-22
1060170101069A	MPPB Demo: Hot Cell #5 Shield Window Removal	2	20-Jan-22	24-Jan-22
1060170101011	MPPB Demo: Continuation of Extraction Chemical Room (XCR) East Structure	2	25-Jan-22	26-Jan-22
1060170101012	MPPB Demo: Control Room (CR)	1	27-Jan-22	27-Jan-22
1060170101052	MPPB Demo: Upper Extraction Aisle (UXA)	1	31-Jan-22	31-Jan-22
1060170101054	MPPB Demo: Analytical Laboratory	1	01-Feb-22	01-Feb-22
1060170101055	MPPB Demo: Radiochemistry Laboratory	1	02-Feb-22	02-Feb-22
1060170101056	MPPB Demo: Extraction Sample Aisle (XSA) West Portion	1	03-Feb-22	03-Feb-22
1060170101058	MPPB Demo: Lower Extraction Aisle (LXA)	1	07-Feb-22	07-Feb-22



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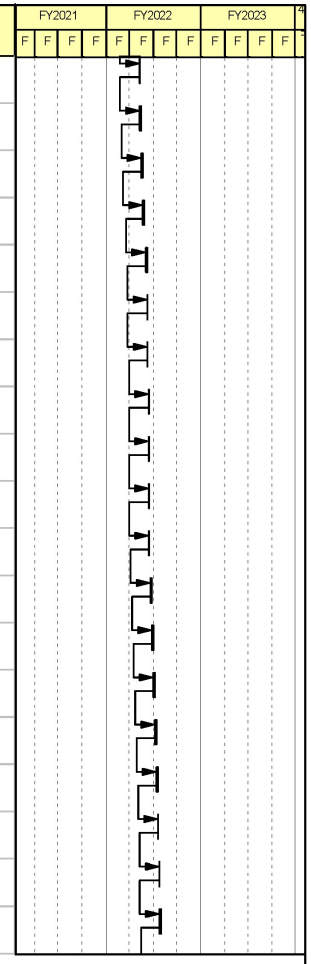
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101059	MPPB Demo: Cell Access Aisle (CAA) West Portion	1	08-Feb-22	08-Feb-22
1060170101085B	MPPB Demo: Extraction Cell #2 (XC-2) North Wall Structure	5	09-Feb-22	16-Feb-22
1060170101060A	MPPB Demo: Ventilation Wash Room (VWR) Ceiling and East Wall	2	17-Feb-22	21-Feb-22
1060170101060B	MPPB Demo: Ventilation Wash Room (VWR) Duct Removal	4	22-Feb-22	28-Feb-22
1060170101060C	MPPB Demo: Ventilation Wash Room (VWR) Washer Removal	4	01-Mar-22	07-Mar-22
1060170101060D	MPPB Demo: Ventilation Wash Room (VWR) Remaining South Wall	2	08-Mar-22	09-Mar-22
1060170101062	MPPB Demo: Ram Equipment Room (RER) East Wall	1	10-Mar-22	10-Mar-22
1060170101013	MPPB Demo: Upper Extraction Aisle (UXA)	1	14-Mar-22	14-Mar-22
1060170101014	MPPB Demo: Analytical Chemistry Lab (ACL)	1	15-Mar-22	15-Mar-22
1060170101015	MPPB Demo: 3rd Floor Restroom	1	16-Mar-22	16-Mar-22
1060170101016	MPPB Demo: Extraction Sample Aisle (XSA)	1	17-Mar-22	17-Mar-22
1060170101086B	MPPB Demo: Extraction Cell #3 (XC-3) North Wall Structure	5	21-Mar-22	28-Mar-22
1060170101049	MPPB Demo: Cell Access Aisle (CAA) East Portion	3	29-Mar-22	31-Mar-22
1060170101048A	MPPB Demo: Uranium Product Cell (UPC) Structure for Access	2	04-Apr-22	05-Apr-22
1060170101048B	MPPB Demo: Uranium Product Cell (UPC) Tank 5D-15A1/A2	3	06-Apr-22	11-Apr-22
1060170101048C	MPPB Demo: Uranium Product Cell (UPC) Tank 5D-15B	3	12-Apr-22	18-Apr-22
1060170101048D	MPPB Demo: Uranium Product Cell (UPC) Remaining Structure	3	19-Apr-22	21-Apr-22
1060170101009	MPPB Demo: East Stairs	3	25-Apr-22	27-Apr-22
1060170101007A	MPPB Demo: Uranium Load Out (ULO) Structure	2	28-Apr-22	02-May-22



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MPPB Demolition Path Forward

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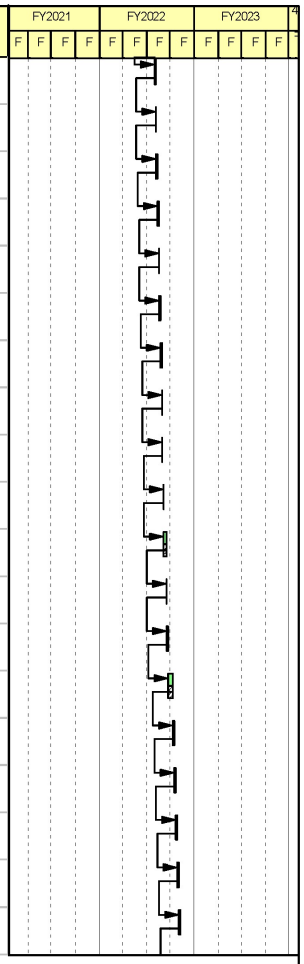
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101007B	MPPB Demo: Uranium Load Out (ULO) Remove Tank 5V-1	2	03-May-22	04-May-22
1060170101007C	MPPB Demo: Uranium Load Out (ULO) Scale	2	05-May-22	09-May-22
1060170101007D	MPPB Demo: Uranium Load Out (ULO) Remaining Structure	2	10-May-22	11-May-22
1060170101008	MPPB Demo: PSC#1	2	12-May-22	16-May-22
1060170101010	MPPB Demo: Product Packaging and Handling Area (PPH)	2	17-May-22	18-May-22
1060170101006	MPPB Demo: Product Packaging & Shipping (PPS)	2	19-May-22	23-May-22
1060170101005A	MPPB Demo: Build-up to Waste Receiving and Packaging Area (WRPA)	4	24-May-22	31-May-22
1060170101005B	MPPB Demo: Waste Receiving and Packaging Area (WRPA) Structure	1	01-Jun-22	01-Jun-22
1060170101053	MPPB Demo: Vitrification Laboratory	1	02-Jun-22	02-Jun-22
1060170101030A	MPPB Demo: Chemical Process Cell (CPC) Penthouse	2	06-Jun-22	07-Jun-22
1060170101030B	MPPB Demo: Chemical Crane Room (CCR) Structure for Access	4	08-Jun-22	14-Jun-22
1060170101080	MPPB Demo: Chemical Operating Aisle (COA) Remainder	1	15-Jun-22	15-Jun-22
1060170101075F	MPPB Demo: Chemical Process Cell (CPC) Remove Shield Window	2	16-Jun-22	20-Jun-22
1060170101075E	MPPB Demo: Chemical Process Cell (CPC) Remove North Wall Including Door and Ceiling Above	12	21-Jun-22	12-Jul-22
1060170101030C	MPPB Demo: Chemical Crane Room (CCR) Shield Window	3	13-Jul-22	18-Jul-22
1060170101030D	MPPB Demo: Chemical Crane Room (CCR) Crane	2	19-Jul-22	20-Jul-22
1060170101030E	MPPB Demo: Chemical Crane Room (CCR) PaR	4	21-Jul-22	27-Jul-22
1060170101030F	MPPB Demo: Chemical Crane Room (CCR) Remainder of Cell	3	28-Jul-22	02-Aug-22
1060170101075G	MPPB Demo: Chemical Process Cell (CPC) Remove Steel Shield Wall	4	03-Aug-22	09-Aug-22



"After" Remaining
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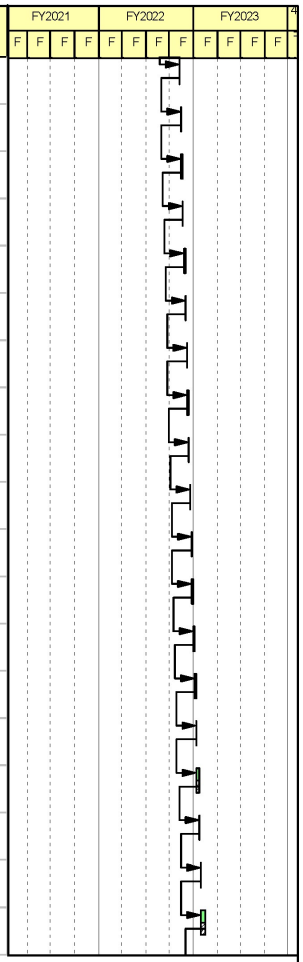
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101033	MPPB Demo: Upper Section of North Stairs	2	10-Aug-22	11-Aug-22
1060170101034	MPPB Demo: North Portion of Chemical Operating Aisle (COA)	2	15-Aug-22	16-Aug-22
1060170101035A	MPPB Demo: Scrap Removal Room (SRR) Bridge/Trolley	2	17-Aug-22	18-Aug-22
1060170101035B	MPPB Demo: Scrap Removal Room (SRR) Shield Window	2	22-Aug-22	23-Aug-22
1060170101035C	MPPB Demo: Scrap Removal Room (SRR) Structure	3	24-Aug-22	29-Aug-22
1060170101032B	MPPB Demo: EDR Viewing Aisle (EDRVA) Structure	3	30-Aug-22	01-Sep-22
1060170101031A	MPPB Demo: Equipment Decontamination Room (EDR) Structure for Access	2	06-Sep-22	07-Sep-22
1060170101031B	MPPB Demo: Equipment Decontamination Room (EDR) Crane	2	08-Sep-22	12-Sep-22
1060170101031C	MPPB Demo: Equipment Decontamination Room (EDR) 63M-003 (EDR-LILO) Remove Shield Door Leaves	3	13-Sep-22	15-Sep-22
1060170101031D	MPPB Demo: Equipment Decontamination Room (EDR) 63M-003 (EDR-LILO) Cut Shield Doors	3	19-Sep-22	21-Sep-22
1060170101031F	MPPB Demo: Equipment Decontamination Room (EDR) 63M-003 (EDR-LILO) Package Shield Doors	2	22-Sep-22	26-Sep-22
1060170101031G	MPPB Demo: Equipment Decontamination Room (EDR) 63M-008 (EDR-TT) Remove Shield Door Leaves	3	27-Sep-22	29-Sep-22
1060170101031H	MPPB Demo: Equipment Decontamination Room (EDR) 63M-008 (EDR-TT) Cut Shield Doors	3	03-Oct-22	05-Oct-22
1060170101031J	MPPB Demo: Equipment Decontamination Room (EDR) 63M-008 (EDR-TT) Package Shield Doors	2	06-Oct-22	10-Oct-22
1060170101031L	MPPB Demo: Equipment Decontamination Room (EDR) Hoists	2	11-Oct-22	12-Oct-22
1060170101031M	MPPB Demo: Equipment Decontamination Room (EDR) Remainder of Structure	6	13-Oct-22	24-Oct-22
1060170101032A	MPPB Demo: EDR Viewing Aisle (EDRVA) Shield Window	2	25-Oct-22	26-Oct-22
1060170101083A	MPPB Demo: Process Mechanical Cell (PMC) Build Up Area/Prep	2	27-Oct-22	31-Oct-22
1060170101083B	MPPB Demo: Process Mechanical Cell (PMC) Remove Windows (5)	8	01-Nov-22	14-Nov-22



"After" Remaining
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MPPB Demolition Path Forward

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Decommissioning
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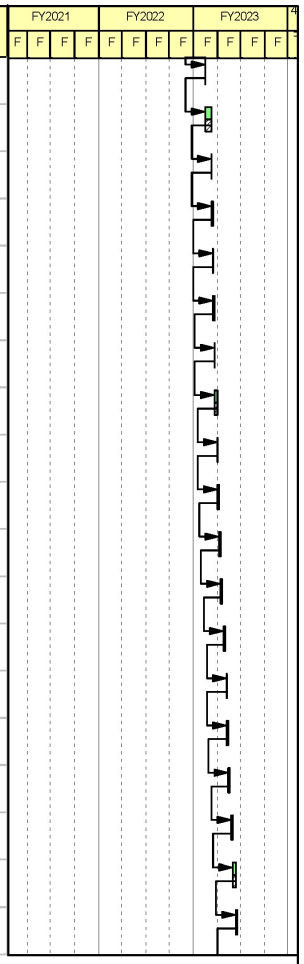
Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101083K	MPPB Demo: Process Mechanical Cell (PMC) South Wall to Access Ram	2	15-Nov-22	16-Nov-22
1060170101083C	MPPB Demo: Process Mechanical Cell (PMC) West Wall	10	17-Nov-22	07-Dec-22
1060170101083L	MPPB Demo: Process Mechanical Cell (PMC) Remove Ram on South Wall	1	08-Dec-22	08-Dec-22
1060170101083M	MPPB Demo: Process Mechanical Cell (PMC) Remainder of South Wall	2	12-Dec-22	13-Dec-22
1060170101063C	MPPB Demo: Remainder of Analytical Aisle (AA)	1	14-Dec-22	14-Dec-22
1060170101046	MPPB Demo: Mass Spec Lab	2	15-Dec-22	19-Dec-22
1060170101043	MPPB Demo: PMC Change Room	2	20-Dec-22	21-Dec-22
1060170101044	MPPB Demo: Counting Room	2	22-Dec-22	02-Jan-23
1060170101036A	MPPB Demo: West Mechanical Operating Aisle	2	03-Jan-23	04-Jan-23
1060170101037	MPPB Demo: Process Mechanical Cell Crane Room Enclosure (PMCRE)	3	05-Jan-23	10-Jan-23
1060170101038A	MPPB Demo: Build-up to Process Mechanical Cell Door Hoist Enclosure/Penthouse	2	11-Jan-23	12-Jan-23
1060170101038B	MPPB Demo: Process Mechanical Cell Door Hoist Enclosure/Penthouse Structure	4	16-Jan-23	19-Jan-23
1060170101083D	MPPB Demo: Process Mechanical Cell (PMC) North Wall Including Shield Door	8	23-Jan-23	02-Feb-23
1060170101039A	MPPB Demo: Process Mechanical Crane Room (PMCR) Structure for Access	2	06-Feb-23	07-Feb-23
1060170101039B	MPPB Demo: Process Mechanical Crane Room (PMCR) Shield Window	3	08-Feb-23	13-Feb-23
1060170101039C	MPPB Demo: Process Mechanical Crane Room (PMCR) Crane	4	14-Feb-23	20-Feb-23
1060170101039D	MPPB Demo: Process Mechanical Crane Room (PMCR) Remaining Structure	4	21-Feb-23	27-Feb-23
1060170101083F	MPPB Demo: Process Mechanical Cell (PMC) East Wall to Inserts	8	28-Feb-23	13-Mar-23
1060170101083G	MPPB Demo: Process Mechanical Cell (PMC) Remove Inserts in East Wall	3	14-Mar-23	16-Mar-23



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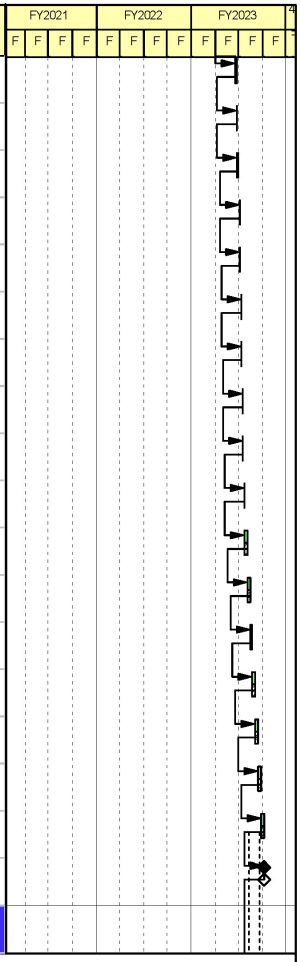
MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

Attachment F (continued)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101083H	MPPB Demo: Process Mechanical Cell (PMC) Remainder of East Wall	4	20-Mar-23	23-Mar-23
1060170101083J	MPPB Demo: Process Mechanical Cell (PMC) Removal of Shield Window on East Wall	1	27-Mar-23	27-Mar-23
1060170101071B	MPPB Demo: East Mechanical Operating Aisle (EMOA) Including Shuttle Transport Room (STR)	3	28-Mar-23	30-Mar-23
1060170101071C	MPPB Demo: East Mechanical Operating Aisle (EMOA) Shear	2	03-Apr-23	04-Apr-23
1060170101057	MPPB Demo: Ventilation Supply Room (VSR) South Portion	1	05-Apr-23	05-Apr-23
1060170101047	MPPB Demo: Ventilation Supply Room (VSR) Middle Section	2	10-Apr-23	11-Apr-23
1060170101045	MPPB Demo: Ventilation Supply Room (VSR) North End	2	12-Apr-23	13-Apr-23
1060170101040	MPPB Demo: Contaminated Equipment Room (CER)	2	17-Apr-23	18-Apr-23
1060170101041	MPPB Demo: Manipulator Repair Room	2	19-Apr-23	20-Apr-23
1060170101042	MPPB Demo: MSM South	2	24-Apr-23	25-Apr-23
1060170101087A	MPPB Demo: Product Purification Cell - North (PPC-N) West Wall Structure	6	26-Apr-23	04-May-23
1060170101087B	MPPB Demo: Product Purification Cell - North (PPC-N) North Wall Structure	5	08-May-23	15-May-23
1060170101087C	MPPB Demo: Product Purification Cell - North (PPC-N) East Wall Structure	5	16-May-23	23-May-23
1060170101088L	MPPB Demo: Product Purification Cell - South (PPC-S) North Wall Structure	6	24-May-23	05-Jun-23
1060170101088M	MPPB Demo: Product Purification Cell - South (PPC-S) East Wall Structure	6	06-Jun-23	14-Jun-23
1060170101088N	MPPB Demo: Product Purification Cell - South (PPC-S) West Wall Structure	6	15-Jun-23	26-Jun-23
1060170101088P	MPPB Demo: Product Purification Cell - South (PPC-S) South Wall Structure	6	27-Jun-23	06-Jul-23
1060170101089END	MPPB Demo Complete	0		06-Jul-23
Main Plant Process Building (MPPB) Post Demolition and Closure Activities				



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MPPB Demolition Path Forward

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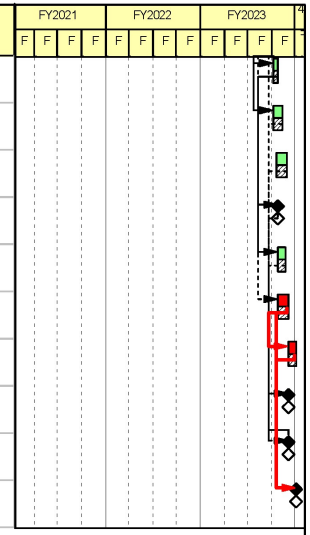
West Valley Decommissioning Team

Attachment F (concluded)
Main Plant Process Building (MPPB) Facility Demolition Schedule

Activity ID	Activity Name	OD	Start	Finish
1060170101089A	MPPB Demo: Install Fill to Bring to Grade	10	10-Jul-23	25-Jul-23
1060170101090	MPPB Demo: Demobilization of Equipment	20	10-Jul-23	10-Aug-23
1060170101133	MPPB Demo: Water Management System Resin Removal and Pump Remaining Water	24	20-Jul-23	30-Aug-23
10601302020KP3	Piping and Conduit In/Out of Remaining Foundation Isolated (KPP-MP3)	0		25-Jul-23
1060170101089B	MPPB Demo: Install Cover	16	26-Jul-23	22-Aug-23
10601302030	Prepare and Submit Final Documentation for Completion of MPPB D&D	23	26-Jul-23	05-Sep-23
1661106971	GFSI: DOE Reviews Final Documentation for Completion of MPPB D&D (SVT)	16	06-Sep-23	03-Oct-23
10601302020KP1	MPPB Demolished (KPP-MP1)	0		07-Sep-23
10601302020MS4	Interim MS03-20: MPPB - Demolition and Removal Complete	0		07-Sep-23
10601302MS	GFSI: Obtain DOE MPPB/Vit Facility CD-4 Approval (SVT)	0		03-Oct-23



"After" Remaining
"After" Critical Path
"Before" Baseline
"After" Milestone
"Before" Milestone

MPPB Demolition Path Forward

CHBWV
West Valley Decommissioning Team

WVDP RECORD OF REVISION

Rev. No.	Description of Changes	Revision On Page(s)	Dated
0	Original Issue This document affects Facility Disposition, Regulatory Strategy & Chief Engineer, and Waste Operations.	All	11/30/16
1	General Revision This revision reflects comments by DOE and NYSERDA. Reference Letters DW:2017:0113 and DW:2017:0114 This document affects Facility Disposition, Regulatory Strategy & Chief Engineer, and Waste Operations.	All	02/27/17
2	General Revision This revision primarily reflects comments from the U.S. Nuclear Regulatory Commission and updates the document to reflect current status, early planning for demolition, and recent revisions to WVDP-011 and WVDP-177. Several new figures were added as Attachment A. Updated form WV-3909 in Attachment D. This document affects Facility Disposition, Regulatory Strategy, and Waste Operations.	All	07/18/19
3	Minor Revision Text was added on the noted pages to indicate that the upper, stainless steel portion of the main stack was previously removed. This document affects Facility Disposition, Regulatory Strategy, and Waste Operations.	10, 23, & 33	09/05/19
4	General Revision Added reference to WVDP-593 Updated section 5.2 on remaining deactivation activities. Updated section 5.4 on structural analysis. Updated section 6.3 on the demolition approach. Updated section 6.4.2 on demolition support monitoring. Updated section 7.2 on waste minimization and mitigation strategies. Updated section 7.4 on waste packaging and transportation. This document affects Facility Disposition, Regulatory Strategy, and Waste Operations.	16 & 70 24 & 25 26 32 - 58 62 67 68	05/07/2020