1237243

DOE/RL-88-30 REV 25

HANFORD SITE WASTE MANGEMENT UNITS REPORT

SECTION 2 OF 4

Status: Inactive **End Date:** 1/1/1945

Description: This site consists of four areas divided into two subsites. Subsite 1 is three areas that include the CMX Building (Corrosion and Materials Experiment (CMX) Building; building 145) and two surface anomalies.

Subsite 2 consists of a burn area near CMX Building. Both subsites have been addressed so the Parent Site has been reclassified to Final Closed Out.

Subsite 1 has been evaluated and requires No Action.
Subsite 2 was reclassified to Final Closed Out in 2015.

Location: The site is located next to the bank of the Columbia River approximately 275 m (902 ft) upstream of the Hanford town site former ferry landing at the end of Division Street (C-127).

Process Description: The CMX Building was constructed between June and September 1943. The original purpose of the facility was to perform experiments to determine the corrosion rate of reactor tubes and jackets under simulated operating conditions (IN-6263 Volume 1). The test equipment included six, 3.05 meters (10 ft) long aluminum tubes built according to the design specifications for the production piles. In early 1944, two of the tubes were replaced with full-length, 12.2 meters (40 ft) long pile tubes. Auxiliary facilities consisted of a water laboratory, a completely equipped dark-room for photographic work, water softening equipment used in steam generation and office with locker-room space (HAN-73214-14). The objective was to determine satisfactory treatment of the process water surrounding the aluminum reactor tubes and canned slugs to assure continuous reactor operations, without tube failures.

Although the initial purpose of CMX facility was to investigate corrosion of aluminum and evaluate equipment design, after a short period of operation iron and aluminum compounds were depositing on process equipment. The deposits were sufficiently heavy to cause a significant reduction in flow rate. This caused high slug surface temperatures under plant conditions. Therefore, the program was expanded to include a fundamental study of film formation and its removal. In addition, it was necessary to include the development of several analytical procedures to ensure the precision required for several determinations (HW-7-4444).

Columbia River water was supplied to the CMX Building by two 1,136 liters per minute (300 GPM), self-priming pumps mounted in a moveable shelter at the river's edge on the downstream side of the facility (HAN-73214-14). Alum or an alkali was added prior to being passed through closed settling tanks and sand filters. The water was further treated by passing through one of three treatment systems: a secondary filtered water treatment system, a deaerated water treatment system, or a demineralized water treatment system. These systems fed high-head pumps which produced 350 psi water to the process tubes. The treated water was also heated to the temperatures expected in pile operation.

Between September 1, 1943 and October 30, 1944 the optimum concentrations of critical anti-corrosion (sodium dichromate) and anti-scaling (sodium silicate) chemicals were tested and perfected. Other chemicals used in the process were sulfuric acid, which was used extensively in the building for pH adjustments, ferric sulfate which was used during the development of coagulants, oxalic acid which was used as a film removal agent, and hydrogen peroxide which was used during testing for film removal. Much of the piping was either rubber-lined or stainless steel. Five railroad locomotives were connected in parallel to a single header just northwest of the 145 Building to furnish 1,500 boiler hp and process/heating steam. Air for the instruments and lab was supplied by a steam-driven compressor. Electric power and light was obtained from the Hanford Construction Site system (DUH-11843, HW-7-4444). In June 1944, a flocculator (with agitator) and a 95,635 L (25,000 gal) clearwell were added to CMX to study the removal of iron and aluminum from river water.

Building 145 was shut down October 30, 1944, when the final CMX runs were concluded. The facilities remained in standby condition until January 1945 when satisfactory pile operations in 100-B and 100-D Areas had indicated that no major film or corrosion problems were to be anticipated. The equipment was subsequently dismantled and excessed (HAN-73214-14). Similar experimental work continued through the use of flow laboratories that were installed adjacent to the production piles.

Waste Type: Soil

Waste Description: The waste is potentially contaminated soil and abandoned in-ground piping. The contaminants of potential concern include sodium dichromate, ferric sulfate, lead (from sulfuric acid), mercury (from the sulfuric acid), sulfuric acid and petroleum products.

This Site has the Following SubSites:

Code: 600-334:1
Names: 600-334:1; CMX Building and Surface Anomalies

Code: 600-334:2
Names: 600-334:2; Burn area near CMX Building

Code: 600-334:1 **Classification:** Accepted

Names: 600-334:1; CMX Building and Surface Anomalies **Reclassification** Interim No Action (4/26/2011)

Type: Process Unit/Plant **Start Date:**

Status: Inactive **End Date:**

Description: The 600-334:1 subsite has been evaluated and determined to require No Action. It consisted of three areas. Area 1 is a raised footprint where the 145 Building Complex was once located. Area 2 is located on the northwest, upstream side of Area 1, It is a 5 by 5 meter (16 by 16 ft) depression that is approximately 1.5 meters (5 ft) deep. Area 3 is on the north side of Area 1 near the river. It consists of three open-ended outfall pipes that protrude horizontally from what appears to have been the middle of the CMX Building. Two of these are vitrified clay pipe, and the southernmost is stainless steel.

Location: This site is located next to the bank of the Columbia River approximately 275 m (902 ft) upstream of the Hanford town site former ferry landing at the end of Division Street (C-127).

Process Description: Refer to the parent waste site (600-334) for a process description of the 145 building complex.

The site was identified during the Orphan Site Evaluation field walkdowns for the 100-IU-2 and 100-IU-6 areas on May 10, 2007 (EL-1616, OSR-2008-0001). The two vitrified clay pipes were sewers were found. One was the sanitary sewer for the 145 building and the other was the process sewer used to return the treated water back to the Columbia River (M-2899). The purpose of the cast iron pipe is unknown. It was originally thought that the pipes may have carried contaminants from experimental procedures to the river.

Geophysics investigation GI# 0585886 was conducted at this site January 2008 using ground penetrating radar (GPR) and a high sensitivity metal detector (EM-61). The results found the footprint of the 145 building. It is relatively clear in the geophysical data. All three of the exposed pipes were traced from the riverbank to the eastern edge of the building, suggesting that they are associated with the building. Two additional linears features were identified that extend from the river bank to the building footprint.

Closure Info: Interim: Confirmatory sampling of the 600-334:1 subsite was initiated and performed in October 2010. Based on the confirmatory sample results, no remediation was performed at this site.

Samples were collected from one Test Pit, two Test Trenches and from an outfall pipe.

The SubSite is Part Of:
Code: 600-334
Names: 600-334; CMX Building

Code:	600-334:2	**Classification:**	Accepted
Names:	600-334:2; Burn area near CMX Building	**Reclassification**	Final Closed Out (8/13/2015)
Type:	Process Unit/Plant	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: Subsite 2 was reclassified to Final Closed Out in 2015, based on sample analysis data. It consists of a 4.6 meter (15 ft) diameter burn area of unknown origin, located near the northwest corner of the former Corrosion and Materials Experiment (CMX) Building complex.

Location: The burn site is located next to the bank of the Columbia River, approximately 275 meters (902 ft) upstream of the Hanford town site former ferry landing at the end of Division Street (C-127).

Process Description: The parent site was identified during the Orphan Site Evaluation field walkdowns for the 100-IU-2 and 100-IU-6 areas on May 10, 2007 (EL-1616, OSR-2008-0001). The nearest facility to the burn site was the CMX Building (Building 145). Refer to the parent waste site (600-334) for a process description of Building 145.

Closure Info: Final (8/13/2015): One focused soil sample was collected in October 2010. Field instrumentation capable of detecting alpha, beta, and gamma radiation was used during sampling. No radiological activity was detected in the field above background levels.

The SubSite is Part Of:
Code: 600-334
Names: 600-334; CMX Building

Code:	JA JONES 1	**Classification:**	Accepted
Names:	JA JONES 1; JA Jones Construction Pit #1; JA Jones Dumping Pit #1; JA Jones 1	**Reclassification**	Interim Closed Out (11/8/2001)
Type:	Dumping Area	**Start Date:**	1/1/1975
Status:	Inactive	**End Date:**	1/1/1979

Description: The site has been remediated and Interim Closed Out. The site originally consisted of a trench dug from east to west, located on the west side of a depression and used by the J.A. Jones Company. The area was used for the disposal of miscellaneous debris and paint products.

Location: The JA Jones 1 site is located north of the 300 Area, east of the point where the railroad tracks cross Route 4 South, in the 100-IU-6 Operable Unit of the Hanford Site in southeastern Washington State.

Release Description: In 1980, 77 cubic meters (100 cubic yards) of contaminated soil excavated from the 305-B Berm were placed in this pit (see UPR-600-11). When the contamination was identified, the soil was removed from this pit and taken to the 200 Area for proper disposal.

Related Sites/ Structures: This site is associated with UPR-600-11 which was an area within the JA Jones Pit #1 where contaminated material was mistakenly disposed. The contaminated material was removed in 1980 and the area released from radiological control. JA Jones 1 is also associated WIDS waste

site is 600-1, a trench located adjacent to and east of the JA Jones #1 Pit. It was used by the 300 Area Westinghouse facilities as a disposal site for tumbleweeds that collected from the 300 Area fences.

Process Description: This site was used by the JA Jones company for the disposal of miscellaneous debris, construction waste and paint products. An interview with an employee revealed that in 1977, seven to ten pick up truck loads of overstocked paint and solvents were disposed of in this pit. The containers were opened and the contents emptied onto the ground in the pit. The empty containers were then thrown into the pit.

Waste Type: Construction Debris

Waste Description: This site contains miscellaneous nonradioactive solid wastes from various construction sites. It contains wood scraps, concrete, miscellaneous construction wastes and paint products.

Waste Type: Chemical Release

Waste Description: In 1977, seven to ten pick up truck loads of over stocked paint and solvents were disposed of into a pit located north of the 300 Area. A site visit with the employee who dumped the paint indicates it was placed in the trench known as JA Jones Pit 1. He indicated that latex, epoxy and enamel paints, as well as paint thinners were discarded. He opened the containers (one and 5 gallon cans) and emptied the contents into the pit. He then threw the empty containers into the pit.

Waste Type: Misc. Trash and Debris

Waste Description: The site may contain some low level uranium contaminated materials. However, this information can not be confirmed because of the uncertainty the location where the material was dumped.

Closure Info: Interim: Remedial activities began in January 2001 and continued through March 2001. Approximately 12,700 metric tons (14,000 tons) of material was disposed of at the ERDF facility. Material excavated from the site included soil, concrete, construction-type debris, crushed paint cans, dried paint debris, sandblast material, and flame-retardant-like material. The excavation was approximately 2694 square meters with a maximum depth of 3.4 meters (12 feet). The site was backfilled and recontoured using clean soil and some concrete debris that had been excavated from the site. Excavation was driven by remedial action objectives for direct exposure, protection of groundwater, and protection of the Columbia River.

Radiological surveys and Industrial Hygienist monitoring was performed throughout the excavation process. With the exception of the suspect flame retardant, no radioactive material above background levels was identified for the excavated material, anomalous waste, or residual soil. Field instruments used for IH monitoring did not detect any organic vapors in the excavated material, anomalous waste, or residual soil. Visual observation of the excavated material did not identify any areas of discolored soil or concrete.

Code:	UPR-600-11	**Classification:**	Accepted
Names:	UPR-600-11; Contaminated Soil Dumped at JA Jones Pit #1	**Reclassification**	Closed Out (1/27/1999)
Type:	Unplanned Release	**Start Date:**	5/29/1980
Status:	Inactive	**End Date:**	5/29/1980

Description: The site was declared Closed Out on Waste Site Reclassification form 98-215, signed in 1999. It was an area within the JA Jones Pit #1 where contaminated material was mistakenly disposed. The contaminated material was removed in 1980 and the area released from radiological control. There is no visual evidence of this occurrence. A Remedial Action was

done at this site in 2001.

Location: The release occurred in the JA Jones Pit #1, which is located about 1.2 kilometers (2 miles) north of 300 Area.

Release Description: On May 29, 1980, during a routine radiological survey, low-level beta-gamma contamination (approximately 600 counts per minute) was detected in a small amount of discarded blacktop rubble laying on the south end of the 305-B Berm. Some of the contaminated blacktop had mixed with the disturbed earthwork. JA Jones subcontractor workers had excavated 76.5 cubic meters (100 cubic yards) of soil from the 305-B Berm, which was thought to be uncontaminated, and taken it to the JA Jones Pit #1 before the contamination was detected. The JA Jones Pit #1 was designated as a non-radioactive landfill. Work was stopped immediately and the appropriate personnel were notified.

Related Sites/ Structures: UPR-600-11 was associated with the 305-B Berm (WIDS Sitecode 300-29) and the JA Jones Pit #1 (WIDS Sitecode JA Jones 1).

Waste Type: Soil

Waste Description: The waste included soil and blacktop rubble. Surveys of the blacktop rubble revealed contamination with a maximum reading of 1000 counts per minute. Soil at the dump site had readings of less than 200 counts per minute. This is believed to be the field instrument detection limit. Blacktop and soil samples (quantity unknown) were collected for a laboratory counting. The blacktop had a maximum reading of 600 counts per minute natural uranium. The soil measured at less then detectable.

Closure Info: Interim: The site was declared Closed Out on Waste Site Reclassification form 98-215, signed in 1999.

Following the discovery of the contaminated material in May 1980, the two affected areas (the 305-B Berm and the JA Jones dump site) were roped off, surveyed and posted as radiation zones. The subcontractor personnel and equipment were carefully surveyed and found to be free of contamination. The subcontractor personnel were given whole body and lung counts. All were found to be below detection levels. The contaminated soil dumped into the JA Jones pit was removed and taken to the 200 Area for disposal in 1980. Further soil excavation at the 305-B Berm was closely surveyed by a radiation monitor. The event resulted in 77 cubic meters (100 cubic yards) of contaminated soil needing proper disposal.

The unplanned release was also evaluated in the Cleanup Verification Package for the JA Jones 1 site (CVP-2001-00019).

Remedial Action at the JA Jones 1 site began on January 8, 2001. The lowest elevation of the bottom of the excavation was approximately 112.6 meters (369.4 ft) upon completion. The excavation was approximately 2,694 square meters (29,000 sq. ft.) in area with a maximum depth of approximately 3.4 meters (11.2 ft). The excavation was completed on March 6, 2001. Approximately 12,700 metric tons (14,000 tons) of material from the site were disposed of at ERDF.

Material excavated from the site included soil, concrete, construction-type debris, crushed paint cans, dried paint debris, sandblast material, and flame-retardant-like material. No liquid wastes were encountered during excavation. Clean overlying and co-mingled soil that was segregated during the excavation process was stockpiled at the site for potential use as backfill. Based on agreement between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy Unit Managers, large pieces of concrete debris will be used to partially backfill the site excavation. Approximately 38 cubic meters (50 yd) of concrete debris, with individual pieces as large as 1.2 meters by 2.4 meters by 0.6 meters (4 ft by 8 ft by 2 ft), were used to partially backfill the site excavation. Samples collected from the concrete indicate that the concrete is an inert demolition-type debris.

Code:	UPR-600-16	**Classification:**	Accepted
Names:	UPR-600-16; P-11 Fire and Contamination Spread; UN-600-16; UN-616-16	**Reclassification**	Interim Closed Out (10/28/2008)
Type:	Unplanned Release	**Start Date:**	1/1/1951
Status:	Inactive	**End Date:**	

Description: The waste site has been Interim Closed Out. The fire and resulting contamination spread unplanned release occurred on December 4, 1951, when plutonium contamination was spread by a fire that ignited inside the 120 Experimental Building. The area was a flat, featureless field that has been sown with rye grass. The P-11 Laboratory structure had been removed but its location is marked with a permanent concrete benchmark.

Location: The 120 Building was located approximately 4.8 kilometers (3 miles) southeast of 100-F Area, approximately 0.48 kilometers (0.3 mile) west of Route 2 North.

Release Description: The P-11 Facility was a laboratory for plutonium criticality studies. In November 1951, a criticality excursion resulted in extensive plutonium contamination inside the laboratory building (120 Building). Activities in the laboratory were suspended to conduct decontamination work. On December 4, 1951 decontamination was in the final stages when a spontaneous ignition of decontamination materials caused a fire that gutted the entire building. Plutonium contamination was spread by the fire and also washed into the soil by the waster used to extinguish the fire. The area was stabilized with clean soil and gravel to prevent wind from spreading the contamination further. The 120 Building and its crib were removed in 1974 and the area was released from radiological posting.

Related Sites/ Structures: The site was associated with the 120 Building and the P-11 Crib (site code 600-111).

Waste Type: Ash

Waste Description: An estimated amount of 1 to 4 grams (0.035 to 0.14 ounces) of plutonium was deposited over an area approximately 1,660 square meters (18,000 square feet) from a structure fire in 1951.

Closure Info: Interim: Confirmatory sampling from test pits and trenches was performed from April 29 2004 through May 10, 2004. To track results of confirmatory sampling, the P-11 lab complex waste site was stratified into the following seven areas for evaluation and sample collection. Area 1 was the Former 120 Experimental Building location, Area 2 was the Former P-11 Crib location, Area 3 was the Former 123 Control Building location, Area 4 was the Geophysical anomaly, Area 5 was the Septic Drain Field, Area 6 was the Septic Tank and Area 7 was the Surface Depression. Results of confirmatory sampling at Areas 1, 2,3 and radiological surveys at UPR-600-16 determined no action was required. Confirmatory samples from Areas 5 and 6 found elevated levels of PCB's, arsenic cadmium and lead.

Some minimal radioactivity was detected, but the RESRAD modeling determined the dose rare for all pathways was less than 15 millirem per year.

Remedial action of the septic system tank and drain field (Areas 5 and 6) located at 600-111 was performed between February 25, 2008 and March 25, 2008. The site was excavated to approximately 4.6 meters (15 ft) below grade (at the deepest portion), resulting in a combined volume of approximately 2,755 cubic meters (3,603 cu. yd) of material removed and disposed at the Environmental Restoration Disposal Facility. Verification soil samples for the septic system remediation were collected on April 21, 2008.

All test pits/trenches were excavated and sampled in late April 2004 through early May 2004 as

specified in the sampling work instruction. During excavation, field monitoring for VOCs was performed and no constituents were detected. In addition, FIDLER radiological surveys were performed during the excavations. No radiological contamination above twice the background level was found.

100-KR-1

Code:	100-K-57	**Classification:**	Accepted
Names:	100-K-57; 107-KE Drainage Ditches	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1967
Status:	Inactive	**End Date:**	1/1/1971

Description: The site appears as a dry, shallow ditch which extends from the 116-K-3 (1904-K Outfall Structure) and the 116-K-1 Crib. A second ditch extends from the culvert to the Columbia River. The culvert conveyed process effluent leakage from the area surrounding the 107-KE Basins under the road and to the ditch. The two ditches intersect below the bank located just north of the basins. The ditch at the bottom of the bank is approximately 300 meters (980 feet) long and 2 meters (6.6 feet) wide and the ditch leading from the culvert to the river is approximately 270 meters (890 feet) long and the width is generally 2 meters (6.6 feet) wide but widens significantly in the middle section. The southern portion of the ditch is located in an area posted as a "Soil Contamination Area." The ditch is barricaded from the river by a three strand barbed wire fence and is posted with "Keep Out" signs.

Location: The site is located north of 100-K Area, north of the 107-KE Retention Basins. It is between the Columbia River and security road inside the 100 KE Flood Plain (sitecode 100-K-64). It is inside the boundaries of the 100-K-64 radiologically posted area.

Related Sites/ Structures: The drainage ditch received process effluent from the 107-KE Retention Basins. It is associated with 100-K-64 flood plain.

Waste Type: Process Effluent

Waste Description: The site received process effluent from the 107-KE Retention Basins when the site was active.

Waste Type: Soil

Waste Description: The soil in and around the ditch is contaminated with radionuclides as a result of conveying reactor process effluent to the river.

Code:	100-K-63	**Classification:**	Accepted
Names:	100-K-63; 100-KW Flood Plain Contamination Area; 100-KW Floodplain; UN-116-KW-1	**Reclassification**	Interim Closed Out (9/7/2012)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It was a large portion on the flood plain, along the shore of the Columbia River, north of 100-K West Reactor Area. It was posted as a radiological contamination area. Most of it was posted as an Underground Radioactive Material Area, but there were two sections that were Soil Contamination Areas. The waste site also included four culverts that discharged directly into the flood plain that were removed during remediation activities.

Location: The waste site is located along the Columbia River shoreline, north of the 107-KW Basins. Significant quantities of the leakage accumulated on the floodplain over time and created preferential pathways through the natural topography of the site. The effluent concentrated in natural depressions, creating areas with potentially increased levels of contamination. Historical photographs taken during the operating period of the 107-KW Retention Basins show increased

vegetation within the 100-K-63 Waste Site due to the periods of significant effluent leakage from the basins, which overflowed from the open drainage ditches and spread over the floodplain area.

Release Description: The 107-KW Basins developed leaks over time. Leaks were estimated to be as great as 18,900 to 75,700 liters/minute (5,000 to 20,000 gallons/minute). A metal culvert to an open ditch diverted the water to the river shoreline.

Related Sites/ Structures: The 116-KW-3 (107-KW Basins) are related to this site.

Process Description: During reactor operations the 107-KW Retention Basins received cooling water effluent from the 105-KW Reactor to allow for radioactive decay and thermal cooling prior to release to the Columbia River. The 107-KW Retention Basins and their effluent lines developed leaks during their operating life. Most of the leakage was diverted to metal culverts, conveying the effluent to an open drainage ditch through the floodplain, which discharged to the Columbia River.

Closure Info: Interim (9/7/2012): Remediation of the 100-K-63 waste site began in July 2010 and was completed by November 2010. The remediation was conducted with a maximum excavation depth of 4.05 meters (13.3 ft). Radiological surveys of the waste site and in-process samples were used to guide the excavation. All of the areas with elevated radiological readings were remediated. No staining or other visible identifiers which would indicate a need for further remediation were observed. Concurrent with excavation of the waste site, thirty-one discrete and composite surface in-process samples were collected within the excavation area. To evaluate the un-excavated portion of the waste site, pothole sampling was performed at 18 locations. The potholing resulted in an additional forty-six samples, with sample depths ranging from surface to 2.67 meters (14 ft) below ground surface. The sample locations in the unexcavated portion of the waste site were focused in low-lying depressions, channels, and soil erosion locations caused by effluent discharges, which had the greatest potential for contaminant accumulation. Four culverts that discharged directly into the flood plain were also removed.

During active excavation of the waste site on September 23, 2010, there was an inadvertent discovery of cultural material. Work at the 100-K-63 Waste Site was suspended for a cultural resources impact assessment. The maximum excavation depth of 4.6 meters (15 ft) below grade surface was agreed to with cultural resource experts in consult with the Tribes.

All contaminated soils and structures (approximately 85,431 tons) removed as part of the remediation were disposed of at the Environmental Restoration Disposal Facility (ERDF). A fiber mulch was applied to prevent further erosion of the excavated waste site area after sampling. Interim backfill was completed in October of 2011. Interim revegetation was completed in February of 2012.

Code: 100-K-64 **Classification:** Accepted

Names: 100-K-64; 100-KE Flood Plain Contamination Area; 100-KE Floodplain; UN-116-KE-1 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is the portion of the flood plain, along the shore of the Columbia River, north of 100-K East Reactor Area that is posted as a radiological contamination area, Soil Contamination Area and Underground Radioactive Material. It is inside an 8 foot chain link fence. The gate has an Underground Radioactive Material sign posted on it.

Location: The site is located north of the 107-KE Retention Basins, along the Columbia River shoreline,

just west of the 116-K-1 Crib.

Release Description: The 107-KE Basins and associated 1.5 meters (5 ft) diameter effluent pipelines, located less than 305 meters from the Columbia River, developed leaks over time. Leaks were estimated to be as great as 18,900 to 75,700 liters/minute (5,000 to 20,000 gallons/minute). A metal culvert to an open ditch diverted the water to the river shoreline. (see UPR-100-K-1)

Related Sites/ Structures: The 116-KE-4 (107-KE Basins), UPR-100-K-1, 100-K-111 and the 100-K-57 Drainage Ditch are related to this site.

Process Description: The 107 retention basin tanks and associated 1.5 meters (5 ft) diameter effluent pipelines developed leaks during their operating life. The leakage rate from the butterfly valves (which conveyed flow to an adjacent trench) could have been as high as 18,930 to 37,850 liters/min (5,000 to 10,000 gal/min).

Code: 100-K-78 **Classification:** Accepted

Names: 100-K-78; Fenced Contamination Area **Reclassification** Interim No Action (4/6/2011)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site has been evaluated and determined to require No Action. In April 2000, the site was enclosed within a post and chain area and posted with Contamination Area signs. Based on the sample results reported in the Remaining Sites Verification Package, the posting was removed.

Location: The site is located northeast of the 116-K-1 Crib.

Waste Type: Soil

Waste Description:

Closure Info: Interim: A surface radiological survey was performed at the 100-K-78 waste site on February 25, 2010. A sodium-iodide probe was used to collect information on potential contamination. Although the survey record notes direct beta/gamma readings up to 3.5 times background, no removable contamination above radiological control limits was present at the site.

Confirmatory sampling was performed at 100-K-78 on April 19 and November 5, 2010. During the first sampling event, two samples plus one duplicate were collected of surface soil. One sample was collected at a location previously identified as having the highest radiological readings at the site. The second sample and duplicate were collected from material composited from five locations within the waste site. Field instruments did not detect elevated radiological or organic vapor readings in the sample material.

During the second sampling event, a test pit was excavated near the center of the site. Soil samples were taken in approximate 0.8-meters (2.5-feet) intervals from the surface to 3 meters (10 feet) below ground surface (bgs). Excavated material from 2.1 meters (7 feet) bgs exhibited slightly elevated radiological readings. Background was noted as ~400 counts per minute (cpm); the material was reading ~550 cpm. This material was collected for the 1.5- to 2.3-meters (5.0- to 7.5-feet) bgs sample. No other elevated radiological or organic vapor readings were detected.

No debris, anomalous material, or stained soil was observed during sampling activities.

Code: 100-K-80 **Classification:** Accepted

Names: 100-K-80; 100KW River Effluent Pipeline; 100KW River Line; River Line (West) from 116-K-3 Outfall

Reclassification None

Type: Radioactive Process Sewer

Start Date:

Status: Inactive

End Date:

Description: 100-K-80 is a 213 centimeters (84 inches) diameter, carbon steel river effluent pipelines that extends from the face of 116-K-3 outfall structure to the Columbia River. The 100-K-96 pipeline runs parallel to 100-K-80. The pipelines are approximately 122 centimeters (48 inches) apart. In January 2012, the river effluent pipeline designations were split. The portion of the 100-K-80 pipeline that extends into the river was given a new WIDS sitecode (100-K-113).

Location: The 100-K-80 river pipeline is located on the Columbia River shore, adjacent to the 100K Area. It is west of the adjacent 100-K-96 pipeline.

Related Sites/ Structures: The pipeline site is associated with the 116-K-3 Outfall Structure, the 100-K-83 Spillway, the 100-K-47 process sewer, 100-K-56 process effluent lines, 100-K-55 process effluent lines, the 100-K-60 process sewer, the 116-KW-3 Retention Basins, the 100-K-96 river pipeline, and the 100-K-113 river pipeline.

Process Description: 105-KW reactor cooling water was collected and temporarily stored in the 107-KW Retention Basins. The cooling water was discharged to the river, bypassing (underneath) the 116-K-3 (1908-K) outfall structure, through the 100-K-80 river pipeline. Process sewer waste, from both 100-KE and 100-KW facilities, entered the outfall structure and dropped into the 100-KE river pipeline (see 100-K-96) through large-diameter, vertical standpipes welded onto the pipelines.

Retention basins lines (100-K-55 and 100-K-56) did not discharge through the outfall structure, but passed under it. They are a continuous line that become the river effluent pipelines downstream of the outfall structure. The pipelines discharge into a recessed, sloped riprap river bed structure, measuring 9 meters (30 feet) wide by 12 meters (40 feet) long and 1 meter (3 feet) thick. The total drop from the face of the outfall structure to the discharge end of the pipelines is 18 meters (60 feet).

In 1955, the river effluent pipelines began to float and break. Both lines were damaged. To remedy the problem, a 2 to 3 meter (6 to 10 feet) thick riprap jetty was placed over the lines from the shoreline to a point approximately 320 meters (1050 feet) from the face of the outfall structure.

Waste Type: Process Effluent

Waste Description: The waste includes the pipeline and the contaminated scale contained within it. The effluent included both reactor cooling water and process sewer waste. The Contaminants of Potential Concern are based on the 116-K-3 outfall, and include Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, and Sr-90.

Code: 100-K-81

Classification: Accepted

Names: 100-K-81; Contamination Area West of 116-K-3

Reclassification None

Type: Unplanned Release

Start Date:

Status: Inactive

End Date:

Description: The site consists of a large cylindrical piece of equipment (tank) surrounded by a rope and posted as Soil Contamination Area.

Location: The posted Soil Contamination area is adjacent to 116-K-3 Outfall Structure, approximately 6.1

meters (20 feet) west of the Outfall Structure fence. It is inside the boundaries of the 100-K-64 (Flood Plain) radiologically posted area.

Related Sites/ Structures: The site is associated with the 100-K-64 flood plain, 116-K-3 Outfall, 100-K-83 spillway, the 116-KE-4 and 116-KE-3 retention basins, the 100-K-55 and 100-K-56 process effluent lines, the 100-K-47 process sewer, and the 100-K-80 and 100-K-113 river effluent pipelines.

Process Description: The large cylindrical piece of equipment could be lowered into the top of the outfall structure. It was used to plug the outfall structure and prevent water from going through the structure.

Waste Type: Construction Debris

Waste Description: The Contaminants of Potential Concern include Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, and Sr-90.

Code: 100-K-83 **Classification:** Accepted

Names: 100-K-83; 116-K-3; 1904-K Flume; 1904-K Outfall Structure; 1904-K Spillway **Reclassification** None

Type: Outfall **Start Date:**

Status: Inactive **End Date:**

Description: The 100-K-83 spillway (also referred to as a flume) was a combination of a three-sided, reinforced concrete trough beginning at the 116-K-3 Outfall, followed by an open earthen trench extending from the end of the concrete trough to the Columbia River shore.

Location: The concrete portion of the spillway exits the east side of the 116-K-3 Outfall, takes an immediate 45-degree turn in the downstream direction. An earthen trench continues in the same direction from that point to the river shoreline.

Related Sites/ Structures: The site is associated with 100-K-64 flood plain, 100-K-80, 100-K-96 (100-K River Effluent Pipelines) and 116-K-3 (1904-K) Outfall structure.

Process Description: The spillway was an alternate discharge point for the 116-K-3 Outfall structure. It was planned to be used only if the River Effluent Pipelines (sitecodes 100-K-80 and 100-K-96) were blocked, damaged, or undergoing maintenance. There is no corroborated physical or historical evidence that the spillway was ever used.

Waste Type: Construction Debris

Waste Description: If ever put into service, the COPCs for the 100-K-83 spillway would be the same as for the 116-K-3 outfall, including Cobalt-60, Cesium-137, Europium-152/154, Plutonium 239/240, and Strontium-90. There is no corroborated physical or historical evidence that the spillway was ever used.

Code: 100-K-86 **Classification:** Accepted

Names: 100-K-86; Four Areas of Stained Soil in 100-K Area; 100-K Stain Areas **Reclassification** Interim Closed Out (12/5/2013)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It consisted of four areas with stained soil in and some surface debris.

Location: The coordinates locations for the areas are:

Area 1 - N568381.27 E146009.94
Area 2 - N568923.50 E145541.86
Area 3 - N568443.18 E145437.89
Area 4 - N568848.48 E145301.50

Waste Type: Soil

Waste Description: The waste is potentially contaminated soil. There was no information describing the release of the observed materials.

Closure Info: Interim (12/5/2013): Waste sites 100-K-84, 100-K-86, 100-K-87, 100-K-91, 100-K-92, 100-K-95 were evaluated and reclassified as a group in the same RSVP document.

Remediation of the waste sites began in November 2012 and was concluded in June 2013. Due to elevated residual concentrations of contaminants after the initial remediation(s), additional remediation was required for the 100-K-84, 100-K-87, and 100-K-95 waste sites. All materials removed from the excavations were disposed at the Environmental Restoration Disposal Facility (ERDF) via direct load out. No staging pile areas were associated with the waste sites.

The excavation at the 100-K-84 waste site began on November 5, 2012, and concluded on March 14, 2013. Approximately 2,695 bank cubic meters (BCM) (3,525 bank cubic yards [BCY]) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-86 waste site began on November 13, 2012, and concluded on January 22, 2013. Approximately 342 BCM (447 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.5 meters (5 ft) bgs.

The excavation at the 100-K-87 waste site began on February 26, 2013, and concluded on April 3, 2013. Approximately 72 BCM (94 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-91 waste site was conducted on November 28, 2012. Approximately 0.2 BCM (0.26 BCY) of suspect asbestos, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.2 meters (4 ft) bgs.

The excavation at the 100-K-92 waste site began on November 13, 2012, and concluded on December 13, 2012. Approximately 32 BCM (42 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.6 meters (2 ft) bgs.

The excavation at the 100-K-95 waste site began on January 8, 2013, and concluded on June 24, 2013. Approximately, 4,272 BCM (5,588 BCY) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation at the 100-K-95 waste site was approximately 1.5 meters (5 ft) bgs.

Code:	100-K-87	**Classification:**	Accepted
Names:	100-K-87; 100-K Asbestos Lagging	**Reclassification**	Interim Closed Out (12/5/2013)
Type:	Unplanned Release	**Start Date:**	

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It consisted of a 0.6 meter (2 ft) segment of suspected friable asbestos pipe lagging and any contaminated soil related to the asbestos.

Location: The site was located approximately 285 meters (935 ft) south of the southern most corner of the 100-K perimeter fence, and approximately 440 meters (1440 ft) north of Route 1. The site was located approximately 15 meters (50 ft) outside the boundary of the 600-29 waste site (100-K Construction Lay-down Area). The Washington State Plane coordinates for the site are E568610.61 N145586.62.

Related Sites/ Structures: 600-29 Construction Lay-Down Area

Waste Type: Asbestos (friable)

Waste Description: The waste is soil with potential friable asbestos. The contaminant of potential concern is asbestos.

Closure Info: Interim (12/5/2013): Waste sites 100-K-84, 100-K-86, 100-K-87, 100-K-91, 100-K-92, 100-K-95 were evaluated and reclassified as a group in the same RSVP document.

Remediation of the waste sites began in November 2012 and was concluded in June 2013. Due to elevated residual concentrations of contaminants after the initial remediation(s), additional remediation was required for the 100-K-84, 100-K-87, and 100-K-95 waste sites. All materials removed from the excavations were disposed at the Environmental Restoration Disposal Facility (ERDF) via direct load out. No staging pile areas were associated with the waste sites.

The excavation at the 100-K-84 waste site began on November 5, 2012, and concluded on March 14, 2013. Approximately 2,695 bank cubic meters (BCM) (3,525 bank cubic yards [BCY]) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-86 waste site began on November 13, 2012, and concluded on January 22, 2013. Approximately 342 BCM (447 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.5 meters (5 ft) bgs.

The excavation at the 100-K-87 waste site began on February 26, 2013, and concluded on April 3, 2013. Approximately 72 BCM (94 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-91 waste site was conducted on November 28, 2012. Approximately 0.2 BCM (0.26 BCY) of suspect asbestos, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.2 meters (4 ft) bgs.

The excavation at the 100-K-92 waste site began on November 13, 2012, and concluded on December 13, 2012. Approximately 32 BCM (42 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.6 meters (2 ft) bgs.

The excavation at the 100-K-95 waste site began on January 8, 2013, and concluded on June 24, 2013. Approximately, 4,272 BCM (5,588 BCY) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation at the 100-K-95 waste site was approximately 1.5 meters (5 ft) bgs.

Code:	100-K-88	**Classification:**	Accepted
Names:	100-K-88; Yellow and White Granular Material	**Reclassification**	Interim No Action (4/6/2011)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site consists of stained soil, scattered yellow granular material and the underlying soil. There is no vegetation within the release area.

Location: The site is located in the 100K Area in the 100-KR-1 Operable Unit. The site is located approximately 422 m (1,385 ft) north of Route 1 and approximately 25 m (82 ft) east of the access road to the 100-K pump and treat facility. The site is located approximately 75 m (250 ft) west of the boundary of the 600-29 waste site (100-K Construction Laydown Area). The site is located at Washington State Plane coordinates E 568356.47, N 145569.09.

Waste Type: Soil

Waste Description: The contaminants of potential concern are unknown. The waste is potentially contaminated soil.

Closure Info: Interim (4/6/2011): Confirmatory sampling was initiated and performed in November 2010. The confirmatory sampling results indicated that the waste site achieved compliance with the remedial action objectives (RAOs) and remedial action goals (RAGs), and remediation was not necessary. A summary of the cleanup evaluation for the soil results against the applicable criteria was presented in Table ES-1 of the RSVP. The results of the confirmatory sampling were used to make reclassification decisions for the waste site in accordance with the TPA-MP-14 procedure in the Tri-Party Agreement Handbook Management Procedures (RL-TPA-90-0001, rev. 1).

Code:	100-K-90	**Classification:**	Accepted
Names:	100-K-90; 100-K White Granular Material	**Reclassification**	Interim No Action (4/6/2011)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site consists of white granular material and the underlying soil. The vegetation at the site appears to be unaffected by the presence of the substance.

Location: The site is located in the 100K Area in the 100-KR-1 Operable Unit. The site is located approximately 365 m (1,200 ft) north of Route 1 and 32 m (105 ft) east of the access road to the 100 K pump and treat facility. The site is approximately 105 m (345 ft) west of the 600-29 waste site boundary (100-K Construction Lay-down Area). The Washington State Plane coordinates for the site are E 568347.54, N 145512.27.

Closure Info: Interim: In November 2010 a focused sampling approach was used to evaluate the white granular material at 100-K-90 and determine if there is any soil contamination due to its presence (WCH 2010b). One shallow soil sample (0 to 0.15 meters [0 to 6 in.] below ground surface) and one duplicate soil sample were collected from the waste site. No radiological activity or volatile organic compounds (VOCs) were detected during confirmatory sampling. Furthermore, no stained soil or anomalous material was observed during sampling. Analysis was performed to evaluate if contamination associated with the white granular material was present. Confirmatory sampling at the 100-K-90 waste site indicated that environmental contamination above cleanup levels was not present, and remedial action was not necessary.

The confirmatory sampling data has been used for a No Action determination.

Code:	100-K-91	**Classification:**	Accepted
Names:	100-K-91; 100-K Battery	**Reclassification**	Interim Closed Out (12/5/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It consisted of one intact, partially buried, vehicle battery and the underlying soil. The surrounding vegetation appears to be unaffected by its presence.

Location: The site is located off of an unpaved secondary road west of the 100 K operable unit. Traveling west on Route 1 from the intersection with K Avenue proceed 2.3 km (1.4 m) to the unpaved road on the right. Turn right and travel approximately 355 meters (1165 ft). The site is located approximately 33 meters (110 ft) east of the road in an open area. The Washington State Plane coordinates are E567290.29 N145486.16.

Process Description: The origin of this battery, whether from the pre-Hanford or Hanford eras, is unknown. It appears to have been random littering.

Waste Type: Batteries

Waste Description: The contaminants of potential concern may contain lead and possibly sulfuric acid in the soil. The waste is the battery and potentially contaminated soil.

Closure Info: Interim (12/5/2013): Waste sites 100-K-84, 100-K-86, 100-K-87, 100-K-91, 100-K-92, 100-K-95 were evaluated and reclassified as a group in the same RSVP document.

Remediation of the waste sites began in November 2012 and was concluded in June 2013. Due to elevated residual concentrations of contaminants after the initial remediation(s), additional remediation was required for the 100-K-84, 100-K-87, and 100-K-95 waste sites. All materials removed from the excavations were disposed at the Environmental Restoration Disposal Facility (ERDF) via direct load out. No staging pile areas were associated with the waste sites.

The excavation at the 100-K-84 waste site began on November 5, 2012, and concluded on March 14, 2013. Approximately 2,695 bank cubic meters (BCM) (3,525 bank cubic yards [BCY]) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-86 waste site began on November 13, 2012, and concluded on January 22, 2013. Approximately 342 BCM (447 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.5 meters (5 ft) bgs.

The excavation at the 100-K-87 waste site began on February 26, 2013, and concluded on April 3, 2013. Approximately 72 BCM (94 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-91 waste site was conducted on November 28, 2012. Approximately 0.2 BCM (0.26 BCY) of suspect asbestos, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.2 meters (4 ft) bgs.

The excavation at the 100-K-92 waste site began on November 13, 2012, and concluded on December 13, 2012. Approximately 32 BCM (42 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.6 meters (2 ft) bgs.

The excavation at the 100-K-95 waste site began on January 8, 2013, and concluded on June 24, 2013. Approximately, 4,272 BCM (5,588 BCY) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation at the 100-K-95 waste site was approximately 1.5 meters (5 ft) bgs.

Code:	100-K-92	**Classification:**	Accepted
Names:	100-K-92; 100-K Reddish Stained Gravels	**Reclassification**	Interim Closed Out (12/5/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It consisted of two areas containing reddish crusted soil and the underlying soil. Area 1 was reddish crusted soil indicating that a liquid may have been dumped to the ground. There is little or no vegetation growing in the stained area. Area 2 was reddish stained soil, metal debris and the remnants of a crushed drum. There is little or no vegetation growing in the affected area.

Location: The Washington State Plane coordinates are:

Area 1 - E568334.35 N145456.30
Area 2 - E568355.99 N145418.29

These areas were outside the 100-K perimeter fence.

Related Sites/ Structures: 100-K-84

Process Description: It is suspected that this material is similar to that of 100-K-84 which was described as: crushed iron ore, a component of the concrete used in reactor and other facility construction because it provided additional shielding. The material is highly magnetic.

Waste Type: Construction Debris

Waste Description: The waste is the spilled/abandoned red material.

Closure Info: Interim (12/5/2013): Waste sites 100-K-84, 100-K-86, 100-K-87, 100-K-91, 100-K-92, 100-K-95 were evaluated and reclassified as a group in the same RSVP document.

Remediation of the waste sites began in November 2012 and was concluded in June 2013. Due to elevated residual concentrations of contaminants after the initial remediation(s), additional remediation was required for the 100-K-84, 100-K-87, and 100-K-95 waste sites. All materials removed from the excavations were disposed at the Environmental Restoration Disposal Facility (ERDF) via direct load out. No staging pile areas were associated with the waste sites.

The excavation at the 100-K-84 waste site began on November 5, 2012, and concluded on March 14, 2013. Approximately 2,695 bank cubic meters (BCM) (3,525 bank cubic yards [BCY]) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-86 waste site began on November 13, 2012, and concluded on

January 22, 2013. Approximately 342 BCM (447 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.5 meters (5 ft) bgs.

The excavation at the 100-K-87 waste site began on February 26, 2013, and concluded on April 3, 2013. Approximately 72 BCM (94 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-91 waste site was conducted on November 28, 2012. Approximately 0.2 BCM (0.26 BCY) of suspect asbestos, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.2 meters (4 ft) bgs.

The excavation at the 100-K-92 waste site began on November 13, 2012, and concluded on December 13, 2012. Approximately 32 BCM (42 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.6 meters (2 ft) bgs.

The excavation at the 100-K-95 waste site began on January 8, 2013, and concluded on June 24, 2013. Approximately, 4,272 BCM (5,588 BCY) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation at the 100-K-95 waste site was approximately 1.5 meters (5 ft) bgs.

Code:	100-K-93	**Classification:**	Accepted
Names:	100-K-93; 100-K Drum Remnant	**Reclassification**	Consolidated (12/17/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been evaluated and reclassified to Consolidated with the 100-K-111 waste site. It consisted of a 208 liter (55 gal) drum remnant with approximately 0.03 cubic meters (1 cu. ft) of solidified gray/black tar like substance and the underlying soil. The drum tar-like material and underlying soil were removed in November 2012. The 0.5 bank cubic meters of material was disposed at ERDF. Cleanup verification samples were collected in February 2103. The sample results contained elevated levels of total chromium and hexavalent chromium. The chromium contamination was determined not to be associated with the drum remnant. Therefore, the residual contaminated soil is being consolidated with the 100-K-111 waste site (see WSRF 2013-063).

Location: The site is located approximately 162 meters (530 ft) north of the 116-K-1 crib and 610 meters (2000 ft) northeast of the 181 KE river pump house. The site is approximately 90 meters (300 ft) from the Columbia River. The site is located at Washington State Plane coordinates E569226.34/N147476.24. It is located within the boundaries of waste site 100-K-111.

Related Sites/ Structures: 100-K-111

Waste Type: Sludge

Waste Description: The waste is the abandoned drum, tar like substance, and any contaminated soil.

This Site Was Consolidated With:

Code: 100-K-111
Names: 100-K-111; Effluent Seepage Area from 116-K-2

Code: 100-K-94
Names: 100-K-94; 1702-KE and 1702-KW Guard House Dry Wells
Type: French Drain
Status: Inactive
Classification: Accepted
Reclassification None
Start Date:
End Date:

Description: There are two identical dry wells, one at the 1702-KE guard house and one at the 1702-KW guard house. Each 76 centimeter (30 inch) dry well received drinking water through a 7.6 centimeter (3 inch) cast iron pipe that exited guard houses.

Location: The dry well associated with 1702-KE is approximately north of the facility, centered at Washington State Plane coordinates E 569083.43, N 146600.77. The dry well associated with 1702-KW is approximately north of the facility, centered at Washington State Plane coordinates E 568808.6, N 146453.6.

Process Description: Excess drinking water effluent flowed from the drinking fountain in each guard house through underground piping to the dry well.

Waste Type: Water

Waste Description: No evidence of hazardous or dangerous waste being discharged to these sites was discovered. The waste was excess (unconsumed) water coming from the drinking fountains at both guard houses.

Code: 100-K-95
Names: 100-K-95; 100-K Tar Dump
Type: Unplanned Release
Status: Inactive
Classification: Accepted
Reclassification Interim Closed Out (12/5/2013)
Start Date:
End Date:

Description: This waste site has been remediated and Interim Closed Out. It consisted of a large area, approximately 150 meters (500 ft) in diameter, of scattered tar and the underlying contaminated soil. A field walkdown of the site was conducted on July 07, 2008.

Location: The site was located in the 100K Area at coordinates E569072.38 N145469.5. It was about 60 meters (200 feet) south of the 600-29 Construction Lay-down Area. The nearest maintained road is 270 meters (900 ft) away.

Related Sites/ Structures: Associated with 600-29. Analogous sites include 600-280 and 600-190.

Process Description: These tar dumps, located south of the 600-29 Construction Lay-down Area, probably occurred as a way of disposing of excess oil and tar during 100-K Area Construction.

Waste Type: Construction Debris

Waste Description: The waste is construction debris. The contaminants of potential concern consist of PAHs and PCBs.

Closure Info: Interim (12/5/2013): Waste sites 100-K-84, 100-K-86, 100-K-87, 100-K-91, 100-K-92, 100-K-95 were evaluated and reclassified as a group in the same RSVP document.

Remediation of the waste sites began in November 2012 and was concluded in June 2013. Due to elevated residual concentrations of contaminants after the initial remediation(s), additional remediation was required for the 100-K-84, 100-K-87, and 100-K-95 waste sites. All materials removed from the excavations were disposed at the Environmental Restoration Disposal Facility (ERDF) via direct load out. No staging pile areas were associated with the waste sites.

The excavation at the 100-K-84 waste site began on November 5, 2012, and concluded on March 14, 2013. Approximately 2,695 bank cubic meters (BCM) (3,525 bank cubic yards [BCY]) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-86 waste site began on November 13, 2012, and concluded on January 22, 2013. Approximately 342 BCM (447 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.5 meters (5 ft) bgs.

The excavation at the 100-K-87 waste site began on February 26, 2013, and concluded on April 3, 2013. Approximately 72 BCM (94 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.91 meters (3 ft) bgs.

The excavation at the 100-K-91 waste site was conducted on November 28, 2012. Approximately 0.2 BCM (0.26 BCY) of suspect asbestos, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 1.2 meters (4 ft) bgs.

The excavation at the 100-K-92 waste site began on November 13, 2012, and concluded on December 13, 2012. Approximately 32 BCM (42 BCY) of debris, soil, and rock were removed and disposed at ERDF. The maximum depth of the excavation was approximately 0.6 meters (2 ft) bgs.

The excavation at the 100-K-95 waste site began on January 8, 2013, and concluded on June 24, 2013. Approximately, 4,272 BCM (5,588 BCY) of soil and rock were removed and disposed at ERDF. The maximum depth of the excavation at the 100-K-95 waste site was approximately 1.5 meters (5 ft) bgs.

Code:	100-K-99	**Classification:**	Accepted
Names:	100-K-99; 116-KE-4 Contaminated Soil and Items; Radioactive Material Area Remaining After 107-KE Basin Removal	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: On August 25, 2009, while constructing the 100K Container Transfer Area north of 105-KE, the equipment operator unearthed radioactive contaminated material while excavating. The radioactive material was Grifflon material. This material was typically used to wrap contaminated items. The 107-KE Retention Basins had been located in this area, but were removed in 1995 (see sitecode 116-KE-4).

Location: The site is located north of the 105-KE Reactor building, inside the 100-K fence.

Related Sites/ Structures: The waste site is associated with 116-KE-4.

Waste Type: Misc. Trash and Debris

Waste Description: Radioactively contaminated soil, Grifflon material and a concrete block was found while excavating an area adjacent to the remediated 116-KE-4 basins. 24,000 dpm per 100 centimeters (squared) beta/gamma was found on the Grifflon material. 6,000 dpm per 100 centimeters (squared) beta/gamma was found on the soil around the concrete block.

Code: 100-K-100 **Classification:** Accepted

Names: 100-K-100; 116-KW-3 Remaining Contaminated Soil and Items; Radioactive Material Area Remaining After 107-KW Basin Removal **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is the discovery of potential contaminated soil and material adjacent to the remediation area. The 107-KW Retention Basins had been located in this area, but were removed in 1995 (see sitecode 116-KW-3).

Location: The site is located north of the 105-KW Reactor building, inside the 100-K Area fence.

Code: 116-K-1 **Classification:** Accepted

Names: 116-K-1; 116-K-1 Trench; 100-K Crib; 100-K Emergency Pond; 100-K Pond; 107-K Pond; 107-K(E) Sump **Reclassification** Interim Closed Out (5/17/2004)

Type: Crib **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1956

Description: The site has been remediated and Interim Closed Out.

Location: The site was northeast of 116-KE-4 (107-KE Retention Basins).

Related Sites/ Structures: The crib was related to the 107-KE/KW Retention Basins (116-KE-4, 116-KW-3). The crib received cooling water from the reactor via 100-K-55 and 100-K-56 cooling water effluent pipelines.

Process Description: The unit was a structure within a structure, the dimensions were 61 meters (200 feet) by 61 meters (200 feet) at the bottom and 122 meters (400 feet) by 122 meters (400 feet) at the top of diked sides. The inner structure rested within a sand-filled excavation that was 3 meters (10 feet) wide at the sides, 3 meters (10 feet) deep (parallel to the excavation) with 0.3-meter (1-foot) of underlying gravel. Both the inner and outer structures had a side slope ratio of 4:1. The 41-centimeter (16-inch) sewer entered 8 meters (27 feet) below the top of grade. A 107-centimeter (42-inch) drain line entered north of the 41-centimeter (16-inch) line, and 6 meters (20 feet) below the top of the structure. The natural ground elevation was 406 feet (124 meters) above mean sea level (MSL). An earthen dike with a slope ratio of 4:1 surrounded the unit from 2.1 meters (7 feet) below grade (bottom of outer structure) to 8 meters (26 feet) above the natural ground surface (top of structure). A 0.6-meter (2-foot) layer of riprap surrounded the earthen dike from natural grade to 3.4 meters (11 feet) above grade.

Waste Type: Process Effluent

Waste Description: The site received reactor coolant water from the 107-K Retention Basins during reactor outages due to fuel ruptures. The site received 107-K Basin cleanout slurry from February 1955 to May 1956.

Closure Info: Interim: Remedial action at the 116-K-1 site began in September 2003. Excavation of the site involved removing the overburden materials, crib structure, and underlying contaminated soil. Contaminated materials were disposed of at ERDF. The area to the northeast is likely the area where the washout of the crib occurred.

Portions of the 100-K-55 and 100-K-56 pipelines, located within the remedial excavation footprint of the 116-K-1 Crib, were removed during remediation of the 116-K-1 site. Excavations of these pipelines were terminated at the notched portion of the 116-K-1 Crib excavation along the southwest wall of the excavation. Final remediation of these pipelines will be included in a future CVP reports.

At the conclusion of excavation activities, the elevation of the bottom of the excavation was at approximately El. 124.1 meters (407 ft). The excavation was approximately 15,700 square meters (168,900 sq. ft.) in area, with a depth of approximately 11 meters (36 ft) as measured from the uphill or southern surface grade. Approximately 101,396 metric tons (111,536 tons) of material from the site were disposed of at ERDF.

Code:	116-K-2	**Classification:**	Accepted
Names:	116-K-2; 116-K-2 Trench; Bypass Crib Ditch; K Trench; 100-K Emergency Trench; 100-K Mile Long Trench; 107-K Effluent Trench	**Reclassification**	Interim Closed Out (3/28/2006)
Type:	Trench	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The site has been remediated and Interim Closed Out. The site has been backfilled and stabilized using the original spoil piles that were located on either side of the trench.

Location: The site was located northeast of 116-KE-4 (107-KE Retention Basins) and ran parallel to the river.

Release Description: During reactor operation, several washout areas were created along the river side of the unit. The unit was at a much higher elevation than the area between it and the Columbia River. The washout areas resulted from extensive seepage through the north side of the unit, which ran along the surface of the ground until reaching the river (See 100-K-111).

Related Sites/ Structures: The site was associated with 116-KE-4 and 116-KW-3 Retention Basins via the 100-K-55 and 100-K-56 pipelines. It is also associated with 100-K-111, Effluent Seepage Area from 116-K-2.

Process Description: The trench was fed by a 40.6 centimeter (16 inch) pipe that was part of the retention basin drain system. The trench was originally 1250 meters (4100 feet) long, 17.2 meters (56.5 feet) wide at the top, 1.2 meters (4 feet) wide at the bottom, and 5.3 meters (17.5 feet) deep. The side slope ratio was 1.5:1. The spoil piles on both sides of the trench originally had a top width of approximately 3.7 meters (12 feet). The site received all contaminated effluent from floor drains in the 105-KE and 105-KW Reactors, 105-KE and 105-KW Reactors metal storage basin overflow. Until 105-KE and 105-KW shut down around February 1, 1970, an undetermined amount of Retention Basin effluent leaked through 107-centimeter (42-inch) butterfly valves in the tank bottoms. Other periodic flows included low volume, neutralized, dummy decontamination waste, process-cooling water during charge/discharge; occasional special disposals; and occasional tanks of process cooling water that was collected after a fuel cladding failure. In 1972, a minor construction tractor and hydride tanks removed from 100-K Area facilities were buried in the trench. In 1978, the radioactive inventory at the site was calculated at 2,100 curies.

Waste Type: Process Effluent

Waste Description: The site received all contaminated effluent from floor drains in the 105-KE and 105-KW Reactors (low volume) and approximately 1893 liters (500 gallons) per minute of 105-KE and 105-KW Reactors metal storage basin overflow. Until 105-KE and 105-KW shut down around February 1, 1970, an undetermined amount of Retention Basin effluent leaked through 107-centimeter (42-inch) butterfly valves in the tank bottoms. Leakage was estimated at 37,854 to 75,708 liters (10,000 to 20,000 gallons) per minute. The valve leakage showed a history of increase until the 1968 valve and tank renovation. Leakage gradually increased again after these repairs. Other periodic flows included low volume, neutralized, dummy decontamination waste, process-cooling water during charge/discharge; occasional special disposals; and occasional tanks of process cooling water that was collected after a fuel cladding failure. In 1972, a minor construction tractor and hydride tanks removed from 100-K Area facilities were buried in the trench. In 1978, the radioactive inventory at the site was calculated at 2,100 curies.

Closure Info: Interim: Remedial action activities were conducted from February 17, 2004, to October 27, 2005. Remediation involved excavation and staging of clean overburden material and removal of contaminated soil to the extent required to satisfy the RAOs and corresponding RAGs. A previously disposed construction tractor, a small amount of concrete and steel debris were also excavated at the western end of the former trench. The maximum depth of excavation was 7.6 meters (25 feet).

Approximately 55,540 square meters (597,830 square feet) of plan area was excavated, including excavation within the deep zone (greater than 4.6 meters [15 feet] below ground surface) up to 7.6 meters (25 feet) below ground surface. Approximately 410,000 metric tons (451,900 U.S. tons) of contaminated material from the site was removed and disposed at the ERDF.

The trench received liquid effluent waste via the retention basin drain system (100-K-55 and 100-K-56 pipelines). The liquid consisted of reactor cooling water effluent, overflow from the 105-KW and 105-KE Reactor Building fuel storage basins, contaminated liquid from the 105-KW and 105-KE Reactor Building floor drains, dummy decontamination waste, process cooling water following fuel cladding failures, and some special disposal. Up to 76,000 Liters per minute (20,000 gallons per minute) of leakage through the 100-K retention basin butterfly valves was also discharged to the trench. The 100-K Area was deactivated in 1971 and 1972, at which time the 116-K-2 trench was backfilled with the soil from the original excavation. A small construction tractor and all (empty) 100-K Area hydride tanks were also disposed in the trench during deactivation.

Code:	116-K-3	**Classification:**	Accepted
Names:	116-K-3; 1904-K Outfall Structure; 1908-K Outfall Structure	**Reclassification**	None
Type:	Outfall	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	

Description: The waste site includes the concrete outfall structure. Differing from designs at other early reactors, two 213 centimeter (84 inch) retention basin lines did not discharge into the outfall structure, but passed directly and continuously under it, becoming the river effluent pipelines. In the event a pipeline became plugged downstream of the outfall structure, overflow standpipes inside the outfall would divert effluents into the concrete structure, and ultimately out the spillway.

Location: The site is located in the 100-K Area between the 100-K Area perimeter fence and the Columbia River.

Related Sites/ Structures: The site is associated with the 100-K-83 spillway, the 116-KE-4 and 116-KE-3 retention basins, the 100-K-55 and 100-K-56 process effluent lines, the 100-K-47 process sewer, the 100-K-64 flood plain, and the 100-K-80 and 100-K-96 river effluent pipelines. In January 2012, the river effluent pipeline designations were split. The portion of the 100-K-96 pipeline that extends into the river was given a new WIDS sitecode (100-K-114).

Process Description: Process sewer wastes, and reactor cooling water collected and temporarily stored in the 116-KE-4 and 116-KW-3 retention basins, were pumped to the river via the outfall structure's associated 100-K-80 river effluent pipelines.

Waste Type: Construction Debris

Waste Description: The unit received reactor coolant water from the 107-K Retention Basins. The radionuclide content is unknown. The structure also received general area wastes through the concrete box sewer. The concrete box sewer wastes went into the single chamber of the structure and then drained into the two pipelines into the river. The Contaminants of Potential Concern include Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, and Sr-90.

Code: 116-KE-4 **Classification:** Accepted

Names: 116-KE-4; 107-KE; 107-KE Retention Basins **Reclassification** Interim Closed Out (6/30/2005)

Type: Retention Basin **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The site has been remediated and Interim Closed Out. The site consisted of three open top, carbon-steel circular tanks with steel bottoms.

Location: The site was located northeast of 118-KE-1 (105-KE Reactor Building).

Release Description: The basins and their 1.5-meter (5-foot) diameter effluent line developed leaks during the site's operating life. The leakage rate from the butterfly valves (which went to an adjacent trench) could have been as high as 18,930 to 37,850 liters/minute (5,000 to 10,000 gallons/minute). Most of the basin leakage was diverted to an open canal and disposed to the river.

Related Sites/ Structures: The associated sites include 100-K-64 (100 KE Contaminated Flood Plain), 100-K-57 (107-KE Drainage Ditch), 100-K-41, 150-KE and 105-KE and 100-K-99 (Contaminated Material).

Process Description: The circular basins were 6.1 meters (20 feet) apart. The basins received 105-KE reactor effluent via a 183-centimeter (72-inch) pipe. Additional effluent from the 150-KE Building was received via 61-centimeter (24-inch), 46-centimeter (18-inch), 10-centimeter (4-inch) and 7.6-centimeter (3-inch) steel pipes. Basin effluent was discharged to the outfall structure via a 152-centimeter (60-inch) pipe. Discharges to the 116-K-1 and 116-K-2 Trenches could be made through 91-centimeter (36-inch) pipes that combined flows in a 106-centimeter (42-inch) pipe.

Waste Type: Process Effluent

Waste Description: This site received cooling water effluent from the 105-KE Reactor for radioactive decay and thermal cooling prior to release to the Columbia River. Eighty percent of the total radionuclide inventory was contained within the soil adjacent to the basin.

Closure Info: Interim: The steel walls of the tanks were removed and the site was interim stabilized in 1995. Decommissioning activities included removal of large steel access plates. The bottoms of the tanks were left in place and 45.7 to 61 centimeters (18 to 24 inches) of uncontaminated backfill was placed over them.

Remedial action activities at the 116-KE-4 site began on October 2, 2003. No clean overburden material was associated with this site. The excavation of the site involved removing piping,

debris, and contaminated soil. Contaminated materials were disposed of at ERDF. Remedial action excavation was completed on March 15, 2005. At the conclusion of excavation activities, the average surface elevation of the bottom of the excavation was approximately 132.6 meters (435 ft). The excavation covered an area of approximately 16,730 square meters (180,000 sq. ft.) with a maximum depth of approximately 4.3 meters (14.1 ft). Approximately 167,634.1 metric tons (184,785 U.S. tons) of material from the site were removed and disposed of at ERDF.

Code:	116-KW-3	**Classification:**	Accepted
Names:	116-KW-3; 107-KW; 107-KW Retention Basin	**Reclassification**	Interim Closed Out (4/12/2004)
Type:	Retention Basin	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1970

Description: The site has been remediated and Interim Closed-Out. The unit consisted of three open-top, circular carbon steel tanks with steel bottoms. The tanks were 61 meters (20 feet) apart. Decommissioning activities included removal of large steel access plates.

Location: The site was located north of 118-KW-1 (105-KW Reactor Building).

Release Description: The basins and their effluent lines developed leaks during their operating life. The leak rate from the butterfly valves (that went to an adjacent trench) could have been as high as 18,930 to 37,850 liters/minute (5,000 to 10,000 gallons/minute). Most of the basin leakage was diverted to an open canal and discharged to the Columbia River.

Related Sites/ Structures: The structures associated with the basins were 100-K-63 (100 K West Contaminated Flood Plain), 118-KW-1 (105-KW Reactor Building), 116-KW-4 (150-KW Heat Recovery Station) and 100-K-100 (Contaminated soil).

Process Description: The basins received 105-KW Reactor effluent via a 183-centimeter (72-inch) pipe. Additional effluent from the 150-KW Building was received via 61-centimeter (24-inch), 45.72-centimeter (18-inch), 10-centimeter (4-inch) and 7.6-centimeter (3-inch) steel pipes. Basin effluent was discharged to the outfall structure via a 152.4-centimeter (60-inch) pipe. Discharges to the 116-K-1 and 116-K-2 Trenches could be made through 91.4-centimeter (36-inch) pipes that combined flows in a 106-centimeter (42-inch) pipe.

Waste Type: Process Effluent

Waste Description: This site received cooling water effluent from the 105-KW Reactor for radioactive decay and thermal cooling prior to release to the Columbia River. Eighty percent of the total radionuclide inventory is contained within the soil adjacent to the basin.

Closure Info: Interim: The steel walls of the tanks were removed in 1995. The bottoms of the tanks were left in place with 45.7 to 61 centimeters (18 to 24 inches) of uncontaminated backfill placed over them.

The remedial action at 116-KW-3 began on December 11, 2002 and continued through October 20, 2003. At the completion of remedial action, the excavation was approximately 17,240 square meters (185,570 square feet) in area with an maximum depth of approximately 6.1 meters (20 feet). Approximately 169,893 metric tons (167,209 tons) of material, including soil, debris, and piping were removed from the 116-KW-3 site and disposed of at the Environmental Restoration Disposal Facility (ERDF).

The pipelines beneath the retention basin floor will be addressed during the closeout of the effluent pipelines (100-K-55).

100-KR-2

Code:	100-K-1	**Classification:**	Accepted
Names:	100-K-1; 100-K-45; 119-KW Exhaust Air Sample Building French Drain; 119-KW French Drain	**Reclassification**	None
Type:	French Drain	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site is a 0.46 meter (1.5 foot) diameter concrete french drain that extends approximately 15 centimeters (6 inches) above the surrounding grade. It had a blue metal cover that is posted with "Confined Space" and "Surface Contamination" warning signs. A site visit in April 2000 found the area had been covered with cobble and surrounded with posts and chain. A sign reading "116-KW-1 Storage Basin French Drain is still marking the area.

Location: The site is located to the east of the 105-KW Reactor Building, north of the 116-KW Stack, and south of the 119-KW Exhaust Air Sample Building.

Waste Type: Water

Waste Description: The unit received heat exchanger cooling water from sample equipment in the 119-KW Building, wastewater from a swamp-type cooler and effluent from a floor drain also located in the 119-KW Building.

Code:	100-K-3	**Classification:**	Accepted
Names:	100-K-3; 1706-KE Fish Pond Heat Exchanger Pit. Pump Pit and Assoiciated Piping; Water Studies Semi-Works	**Reclassification**	Interim Closed Out (10/23/2012)
Type:	Valve Pit	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1965

Description: The waste site has been remediated and Interim Closed Out. It included the Heat Exchanger Pit, the Pump Pit and the pipelines that were specific to the 1706-KE Water Studies Semi-Works.

The Heat Exchanger Pit was a concrete pad on the surface. The structure was entirely below grade. A 1.2 by 3.0-meter (4 by 10-foot) access hatch was located at the south end. Adjacent to the access hatch was a square inlet ventilation pipe. A 61 centimeters (24 inches) in diameter exhaust vent pipe was visible on the north end. On the west side of the pad, a 7.6-centimeter (3-inch) pipe extended approximately 0.3 meters (1 foot) above the surface of the pad. It was surrounded by a 4.9 by 7.3-meter (16 by 24-foot) yellow wooden fence and a light duty post and chain barricade posted with "Surface Contamination" signs.

The Pump Pit was a concrete pad on the surface. The structure was entirely below grade. The Pump Pit above-grade concrete pad had been painted and marked as a "Confined Space".

Two 3 inch diameter pipelines connected the Heat Exchanger and Pump Pit to the 100-K-56 (36 inch and 72 inch diameter) pipelines. A 2.54-centimeter (1-inch) pipeline exited the 105-KE Reactor, near the two main effluent lines, and extended to the Heat Exchanger Pit. This pipeline is labeled PIEX (Pile Effluent from Experimental Tubes) on drawing H-1-24974KE.

The Heat Exchanger egress pipelines provided raw water that "cooled" process effluent to the

fish troughs in the 1706-KE Wet Fish Studies Laboratory (Sitecode: 100-K-52). The pipelines ran from the Heat Exchanger Pit to the northwest corner of the 1706-KE Building. They included a 7.6-centimeter (3-inch) raw water pipeline, a 2.54-centimeter (1-inch) PIE pipeline, and a 5.1-centimeter (2-inch) PIEX pipeline. A 3.8-centimeter (1.5-inch) PIE pipeline and a 5.1-centimeter (2-inch) pipeline that connected the Heat Exchanger Pit and to the Valve Pit at the front of the Fish Pond (Site: 100-K-4). Portions of these pipelines were removed during the demolition of the 1706-KE, KER and KEL buildings in 2010 (see DOE/RL-2012-40). The pipeline removal was completed during the 100-K-3 structure remediation (see DOE/RL-2012-46).

Location: The 1706-KE Heat Exchanger Pit was located west of the northwest corner of the 105-KE Reactor Building. The Pump Pit is located to the east of the Heat Exchanger Pit.

Related Sites/ Structures: The site is related to 100-K-52, 1706-KE Wet Fish Studies Laboratory, 100-K-4, 1706-KE Wet Fish Studies Ponds and Valve Pit and pipeline 100-K-56.

Waste Type: Process Effluent

Waste Description:

Closure Info: Interim (10/23/2012): For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 1 remediation area, adjacent to the northwest corner of the reactor. (Note: One waste site located within Area AG Zone 1, the 116-KE-3 (105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib), was not remediated. Due to the extend of the deep zone contamination attributed to the 116-KE-3 waste site, it was placed in an "excluded region" within Area AG Zone 1. Waste site 116-KE-3 will be addressed at a later date.)

The remediated waste sites located in Area AG Zone 1 include 100-K-68, 100-K-69, 100-K-70, 100-K-71 and 100-K-3. A portion of the 100-K-3 pipeline was remediated with the area AG Zone 2 (see DOE/RL-2012-40). (Note: Portions of 100-K-47 and 100-K-56 pipelines were removed and considered part of the Area AG Zone 1 remediation activities. Approximately 452 feet of the 100-K-56, 36-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 338 feet of the 100-K-56, 72-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 12-inch pipeline exiting the 100-K-71 collection box was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 16-inch pipeline (exiting the 100-K-71 collection box) was removed from Area AG Zone 1 and 3. The remaining portions of the 100-K-47 and 100-K-56 pipelines will be addressed in future remediation activities.)

Remediation of the waste sites within Area AG Zone 1 began in September 2009 and was finished in May 2012. In-process samples were collected and radiological surveys were conducted to guide the remediation. Contaminated structures, pipelines, and associated soil and debris attributed to these waste sites have been removed and disposed at the ERDF. During this remedial activity, Stockpile #3 was created from excavated soil from the overburden and layback from Area AG Zone 1 waste sites. Radiological surveys were conducted on the material prior to placing it in the stockpile. Stockpile #3 was located northwest of Area AG.

The 105-KE fuel storage basin (100-K-42 waste site) borders the Area AG Zone 1. UPR-100-K-1 (105-KE Fuel Storage Basin Leak) is an unplanned release from the discharge chute of the fuel storage basin. It leaked highly radioactive water underneath the basin into the ground for an unknown period of time. Boreholes were drilled to evaluate the subsurface soil conditions. The results indicated significant residual radioactivity underneath the footprint of the fuel storage basin. The residual radioactivity distorted the radiological surveys conducted within the adjacent Area AG Zone 1.

The remediation of the 100-K-3 waste site began in January 2010 and was completed in May 2012. The remediation of this waste site included excavation of the heat exchanger, the pump pit, associated piping and contaminated soil. A total of 709 ERDF containers (11,513 metric tons [12,691 short tons]) was disposed at the ERDF from the Area AG 100-K-3 waste site (Zones 1 and 2 combined). Along with remediation of the waste sites in Area AG Zone 1, a 20.3 cm (8 in.) diameter Process Sewer Outside (PSO) drain line was also excavated. This pipeline exited the 100-K-3 heat exchanger pit and tied into the 100-K-47 concrete process sewer. This portion of pipeline was removed with a composite in-process sample taken along the length of the excavation in August 2011. The in-process sample results did not exceed the RAGs. The region within Area AG Zone 1 where this pipeline was removed was included in the Shallow Zone decision unit. In addition, the 100-K-3, 2.54 cm (1 in.) diameter PIEX pipeline (connecting the 100-K-3 heat exchanger to the 105-KE reactor) was documented in the shallow zone decision unit. This pipeline was originally buried 1.2 meters (4 ft) deep. When removed, the footprint was wholly contained within the layback region of the 100-K-56 waste site.

The 100-K-68 waste site structure (caisson with catch tank) was removed during waste site remediation. The remediation of the 100-K-68 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the corrugated steel caisson, catch tank and pumping equipment. However, deep residual contamination associated with the 116-KE-3 waste site remains underneath the footprint of the 100-K-68 waste site.

The remediation of the 100-K-69 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the concrete sump and associated contaminated soil.

The remediation of the contaminated soil beneath the 100-K-70 waste site began in April 2010 and was completed in May 2012. The tank associated with the 100-K-70 waste site had been previously removed, prior to the fuel storage basin demolition in 2008.

A total of 599 ERDF containers (11,920 metric tons [13,139 short tons]) was disposed at the ERDF from the combined 100-K-68, 100-K-69, and 100-K-70 waste sites.

The remediation of the 100-K-71 waste site began in March 2010 and was completed in May 2012. The remediation of the waste site included excavation of the collection box and associated contaminated soil. A total of 285 ERDF containers (5,858 metric tons [6,457 short tons]) was disposed at the ERDF from the 100-K-71 waste site. In-process samples collected at the collection box were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these COCs.

The remediation of portions of the 100-K-47 pipeline began in November 2009 and was completed in September 2011. The partial remediation of the pipeline waste site included excavation of the underground process sewer pipelines and associated contaminated soil. In-process samples were collected within the remediated portion of the 100-K-71 waste site (collection box) footprint, because the 10.2 cm (4 in.) diameter cement asbestos pipeline from the 117-KE Filter Building (100-K-62 waste site) terminated at the collection box. Samples were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these contaminants of concern (COCs). Therefore, carbon-14 and tritium were eliminated from the list of COCs for this waste site. A total of 1,240 ERDF containers (20,802 metric tons [22,930 short tons]) was disposed at the ERDF from the Area AG 100-K-47 waste site (Zones 1 and 3 combined).

The remediation of portions of the 100-K-56 Subsite 2 pipeline began in September 2009 and was completed in June 2011. The remediation excavated the part of the process effluent

underground pipelines and associated contaminated soil. A total of 800 ERDF containers (13,071 metric tons [14,408 short tons]) was disposed at the ERDF from the Area AG 100-K-56 waste site (in Zones 1 and 3 combined).

A total of 63,292 metric tons of material was disposed at the ERDF during the AG Zone 1 remediation activity. (33,873 metric tons was related to the 100-K-47 and 100-K-56 partial pipeline excavations.)

No evidence of spills or leaks from Area AG Zone 1 waste sites was found after remediation. Post remediation, a Global Positioning Environmental Radiological Survey (GPERS) and radiological surveys using hand-held instrumentation were conducted. The GPERS is rendered ineffective in regions close to the 105-KE Reactor fuel storage basin (100-K-42 waste site) and the unplanned release site (UPR-100-K-1) due to the sensitive detection capabilities of the sodium iodide instrumentation and the elevated radiation background levels associated with the fuel storage basin subsurface soil.

Follow-up radiological surveys using hand-held instruments were conducted in the region around the 100-K-68, 100-K-69, 100-K-70, and 100-K-71 waste sites, immediately north of the fuel storage basin. The survey indicated elevated radiological contamination where piping from the 105-KE Reactor fuel storage basin traveled to the 105-KE Collection Box (100-K-71 waste site). One of the pipelines entering the south side of the collection box was equipped with a direct buried flanged gate valve, located at a depth of approximately 8.5 meters (27 ft 11 in.). A focused verification sample of this location was collected to determine contamination levels present in the soil. This follow-up survey also indicated elevated radiological contamination in the area around the 100-K-68 waste site. Verification sampling beneath the 100-K-68 waste site was not conducted because the residual soil contamination is attributed to the 116-KE-3 waste site. NOTE: 116-KE-3 is located within Area AG Zone 1 but was not part of the remediation work scope.

Code:	100-K-4	**Classification:**	Accepted
Names:	100-K-4; 1706-KE Wet Fish Studies Ponds and Valve Pit	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Pond	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1965

Description: This waste site has been demolished and Interim Closed Out. The site was two, 9.1 meter (30 foot) diameter circular ponds separated by a 2.7 by 9.1 meter (9 by 30 foot) rectangular pond and valve pit. The ponds contained drains which presumably discharged to the process sewer.

Location: The ponds were located approximately 50 meters (164 feet) west of the northwest corner of the 105-KE Reactor Building.

Related Sites/ Structures: The site was related to the 1706-KE Wet Fish Studies Laboratory (Site: 100-K-52) and the 1706-KE Heat Exchanger Pit (Site: 100-K-3). Process piping connected the ponds to the Heat Exchanger Pit (100-K-3).

Process Description: Waste Site 100-K-4, 1706-KE Wet Fish Studies Ponds and Valve Pit, supported the 1706-KE Wet Fish Studies Laboratory (Waste Site 100-K-52) and the 1706-KE Heat Exchanger Pit (Waste Site 100-K-3). Waste Site 100-K-52 was a small laboratory consisting of long troughs used to conduct wet fish studies using a mixture of raw water and heated effluent water from the 105-KE Reactor, which normally flowed to the Heat Exchanger Pit (100-K-3). Originally the laboratory was constructed to function as a backup laboratory in the event of shutdown of the 105-F Reactor and its associated aquatic biology laboratory. The 100-K-4 ponds were constructed in 1956 and operated intermittently through 1965, receiving mixed water effluents

from the Laboratory (100-K-52).

Waste Type: Water

Waste Description: A mixture of raw water and heated effluent water passed though the troughs.

Closure Info: Interim: The selected remedy for waste site 100-K-4 was Remove, Treat and Dispose. This was achieved through removal and disposal of the 1706-KE Wet Fish Studies Ponds and Valve Pit and remediation of underlying contaminated soil.

The waste site excavation was initiated in January of 2010 and completed in February of 2010. Radiological surveys done during the remediation indicated minor residual radioactivity in the drains. The concrete ponds and associated piping were removed and disposed. The waste site was excavated to a maximum depth of approximately 5.37 meters (17.6 feet) in the deep zone of the excavation. A total of 2,989.26 tons of soil and debris were disposed of at the ERDF. No cracking was noted in the concrete and the piping appeared to be intact. The 100-K-4 Waste Site remediation coincided with the ongoing remediation of the 100-K-3, 100-K-47, and 100-K-56 Waste Sites.

Code: 100-K-5 **Classification:** Accepted

Names: 100-K-5; 1705-KE French Drain **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site is a french drain consisting of a 0.9 meter (3 foot) diameter vitrified clay pipe which protrudes approximately 0.3 meter (1 foot) above grade and has a heavy wooden cover.

Location: The site is located just east of the 1705-KE Water Treatment Facility.

Waste Type: Process Effluent

Waste Description: The site received waste effluent from floor drains, overflows, and drainage from the 1705-KE Experimental Water Treatment Basin and facilities.

Code: 100-K-6 **Classification:** Accepted

Names: 100-K-6; 105-KE Vacuum Pit; Cyclone Separator; Vacuum Pit **Reclassification** Interim Closed Out (8/29/2012)

Type: Process Unit/Plant **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The vacuum pit contained a cyclone separator in a vertically oriented 3-meter (10-foot) diameter culvert which extends from grade level to 9.2 meters (30 feet) below grade.

Location: The site is located on the east side of the 105-KE Reactor Building and just south of the reactor stack.

Related Sites/ Structures: The site is associated with the Turco Pit in the 105-KE Reactor Building.

Process Description: The cyclone separator was used to separate solids from the vacuum air stream. The cyclone separator was used to separate solids from the vacuum air stream associated with the reactor

building decontamination solution pit, which was inside the basement of the 105-KE Reactor and contained a large stainless steel tank. The tank was used to mix decontamination solutions within the reactor facility. Site employees report that the vacuum system portion of the cyclone separator was used during maintenance on the reactor core or for the movement of the Ball 3X Safety System balls, which were collected in drums. Vacuum hoses exited and entered the reactor pit via a small concrete trench with a steel lid located at grade and running due east under the concrete sidewalk and into and out of the vacuum pit in a closed loop system, during normal operation.

Waste Type: Soil

Waste Description: The 100-K-6 Waste Site received radiologically-contaminated exhaust air from the decontamination solution pit. The contaminants were cobalt-60, cesium-137, carbon-14, and tritium, as well as strontium-90, europium-152, europium-154, and europium-155.The soil beneath the steam turbine is reported to have been contaminated with radioactive materials and was covered with about 0.3 meters (1 foot) of gravel. The dose rate at the pit opening on January 20, 1994 was slightly less than 2 millirad/hour, suggesting a higher dose rate at the pit bottom.

Closure Info: Interim (8/29/2012): Remediation and sampling began in January of 2009 and was completed in April of 2012. The large excavation area, known as 100-K Area AH, encompassed waste sites 100-K-6, 100-K-46, 100-K-62 and 132-KE-1. The excavation area also included Stockpile #4, which contained overburden and layback soil from the excavation of the 116-KE-1 Condensate Crib. Information supporting the use of Stockpile #4, located within the AH excavation, as backfill was also included in the DOE/RL-2012-38 Remaining Sites Verification Package report.

Remediation of the identified Area AH waste sites was accomplished by demolishing the structures and excavating contaminated soil. All waste (soil and debris) associated with these waste sites was disposed at the Environmental Restoration and Disposal Facility (ERDF). The demolition activities were conducted using standard demolition techniques, including explosives for demolition of 132-KE-1 (116-KE Reactor Exhaust Stack). Approximately 1,809 ERDF containers (37,700 tons) of waste from these waste sites were sent to the ERDF for disposal.

Remediation of the 100-K-6 vacuum pit began in August 2011 and was completed in September 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The original waste site description estimated the depth of the cyclone separator as 9.14 meters (30 ft). However, during remediation the actual excavation depth was measured as 5.8 meters (19 ft).

The remediation of the 100-K-46 french drain was associated with the removal of the 119-KE building, which began in January 2009 and was completed in February 2009. The drywell was less than 1.5 meters (5 ft) deep.

The remediation activities at the 100-K-62 filter building began in August 2010 and were completed in May 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The maximum depth from grade within the waste site footprint was approximately 10.6 meters (34.8 ft).

The remediation activities at waste site 132-KE-1 exhaust stack began in July 2010 and were completed in September 2011. Removal of the above-grade portion of the stack was conducted using explosives placed near the base of the stack. The explosion caused the debris to fall in a designated area. The material was then loaded and disposed at ERDF. The entire below grade portion of the stack base was then removed. The maximum depth from grade within the waste site footprint was approximately 6.1 meters (20 ft).

In October of 2010, excavation of the overburden and layback soil for the 116-KE-1 Crib began and Stockpile #4 was created. Samples were collected in the 116-KE-1 waste site footprint and sent for analytical leach testing of the soils to determine carbon-14 leachability from the 100-K soil. During remediation of the co-located waste sites inside the AH excavation area, the 116-KE-1 crib was partially backfilled with soil from Stockpile #4 as a contamination control measure.

Note: Area-wide carbon-14 contamination exists in the deep zone above the criteria for protectiveness. This contamination is associated with the 105-KE Reactor ventilation filtration system and the deep contamination from the condensate that collected in the previously excavated 116-KE-1 Condensate Crib. Additional remediation of the deep vadose zone cannot be completed in proximity to the 105-KE Reactor without impacting structural stability. Available information about the nature and extent of the carbon-14 contamination has been documented in the 116-KE-1 Condensate Crib waste site description. Due to the depth of the contamination, the carbon-14 remediation will coincide with the final decision on 105-KE reactor removal.

Code: 100-K-13 **Classification:** Accepted

Names: 100-K-13; French Drain West of the 166-KW Oil Storage Tank Facility **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site is a french drain that is a 1.5 meter (5-foot) diameter vertical concrete pipe filled with gravel. Prior to the construction of the Cold Vacuum storage Facility, the drain had been almost flush with the ground surface. Facility construction required the area to be graded. The construction project has scraped the ground down about 1.8 meters (6 feet) leaving the french drain about 2.3 meters (7.5 feet) above ground level. The french drain is now covered by a corrugated metal caisson to protect the french drain structure. Prior to current construction activities, the drain extended above grade about 0.46 meters (1.5 feet) and was surrounded by a yellow wooden barricade.

The french drain has no markings of any kind. No other documentation or drawings could be found that identify the site or its purpose. Prior to current construction, no facilities were close to the site.

Location: The site was located on a small rise that is west of the southwest corner of the 166-KW Oil Storage Tank Facility and 10.4 meters (34 feet) west of the small access road that runs along side of the 166-KW. The Cold Vacuum Storage Facility was recently built in this area and graded the area to accommodate construction.

Code: 100-K-14 **Classification:** Accepted

Names: 100-K-14; 183-KE Acid Neutralization Pit and Overflow French Drain **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The pit is 4.6 meters (15 feet) deep with a bottom dimension of 1.5 meters (5 feet) in diameter. Eight to thirteen centimeter (3 to 5 inch) aggregate was placed to a depth of 2.1 meters (7 feet).

A 0.76 meter (2.5 foot) diameter, 2.4 meter (8 foot) long vitrified clay pipe (VCP) was placed vertically in the center of the pit and 1.2 meters (4 feet) of aggregate were placed around the pipe exterior. Approximately 1.5 meters (5 feet) of limestone chips were added to the pipe interior. A 5.1-centimeter (2 inch) schedule 80 polyvinyl chloride (PVC) pipe enters through the side 1 meter (3.3 feet) below grade. The pipe is an overflow and drain line for the 183-KE Day Use Acid Tank. The pit was then backfilled to grade. The VCP is exposed a few inches above grade and is covered with a 0.64 centimeter (0.25 inch) steel plate with four 2.54 centimeter (1 inch) vent holes. Four steel yellow corner posts surround the above grade VCP.

Location: The site is located near the 183-KE Alum Storage Tanks, 11 meters (36 feet) southeast of the railroad track, and directly south of the 183-KE Head House.

Related Sites/ Structures: The site received overflow and drainage from the 183-KE Day Use Acid Tank.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid overflow and drainage from the 183-KE Day Use Acid Tank.

Code: 100-K-18 **Classification:** Accepted

Names: 100-K-18; 183-KW Caustic Neutralization Pit **Reclassification** Interim Closed Out (6/27/2012)

Type: Sump **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The pit was a brick lined concrete box with a wooden cover. The pit was constructed in such a way that small volumes of waste chemicals could be held up in a brick lined compartment for neutralization. After neutralization, waste was flushed to a larger compartment within the structure, which then drained to the process sewer.

Location: The site was northeast of the 183-KW Head House, northwest of the railroad tracks running in front of 183-KW, and southeast of the grade-level concrete base of the old caustic soda storage tank.

Waste Type: Process Effluent

Waste Description: The pit received, neutralized, and disposed of caustic (sodium hydroxide) waste from overflow and transfers associated with the 183-KW water treatment system.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

Code:	100-K-19	**Classification:**	Accepted
Names:	100-K-19; 183-KW Caustic Soda Storage Tank Site	**Reclassification**	Interim Closed Out (6/27/2012)
Type:	Foundation	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The site was originally an above-ground, cylindrical, vertical steel storage tank on a concrete base. The above-ground tank was 7.8 meters (25.5 feet) in diameter with a 287,660 liter (76,000 gallon) capacity. Some time in the past (date unknown) the tank was removed. Then the waste site was a 9.1-meter (30-foot) diameter grade-level concrete tank base and the soil surrounding the base.

Location: The site was located 12.2 meters (40 feet) northeast of the southeast corner of the 183-KW Head House and 4.6 meters (15 feet) northwest of the railroad tracks in front of 183-KW.

Release Description: Spills may have occurred near the tank and the piping system may have developed leaks. This is likely to have resulted in sodium hydroxide leaking to the soil beneath and around the tank. No known sampling has been performed at this site.

Related Sites/ Structures: The site was related to the 183-KW Head House that controlled and monitored water quality. The site was also related to the 100-K-18 Neutralization Pit. Overflow and transfer waste from this tank was routed to the nearby caustic neutralization pit.

Process Description: Caustic soda (sodium hydroxide) was injected into the filtered water as a pH correction. It was proportioned and metered in a single step operation. Caustic soda was injected into a softened water stream in the 183-KE Head House. The softened water was used as a dilutant and as a vehicle to transport the caustic to the injection point at the clearwells. Since caustic soda was injected at only two points, the proportioning was regulated by the half plant effluent rate. Sodium hydroxide was also used to regenerate the ion exchange columns in the water softener system and for maintaining a neutral pH of the reactor cooling water. It was most likely the neutralizing agent for excess or spilled sulfuric acid that was used in the 183-K facilities.

Waste Type: Chemical Release

Waste Description: The unit was used to store sodium hydroxide. Spills may have occurred near the unit. The piping system may have developed leaks. This is likely to have resulted in sodium hydroxide in the soil beneath and around the unit.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that

piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

Code: 100-K-25 **Classification:** Accepted

Names: 100-K-25; 183-KE Caustic Neutralization Pit **Reclassification** None

Type: Sump **Start Date:**

Status: Inactive **End Date:**

Description: The 183-KE Caustic Neutralization Pit is an underground concrete structure used to neutralize caustic waste prior to disposal. The structure has been backfilled and covered to grade with gravel. The "pit" is a concrete box that is lined with acid-proof bricks. A 10.2-centimeter (4-inch) vitrified tile drain was located in the bottom of the pit and discharged the neutralized waste to the process sewer. The top of the pit was level with the surface and had a 7.6-centimeter (3-inch) plank cover.

Location: The site is located near the 183-KE Head House, southeast of the 183-KE Caustic Soda Storage Tank Site (100-K-27).

Related Sites/ Structures: The pit was used to neutralize and dispose of caustic overflow and transfer waste associated with the caustic soda tank and the 183-KE water treatment process. After neutralization, the waste was drained to the process sewer.

Process Description: The pit received, neutralized, and disposed of caustic waste from overflow and transfers associated with water treatment at 183-KE. The method of caustic neutralization is not known.

Waste Type: Chemicals

Waste Description: The pit received and neutralized sodium hydroxide waste.

Code: 100-K-27 **Classification:** Accepted

Names: 100-K-27; 183-KE Caustic Soda Storage Tank Site **Reclassification** None

Type: Foundation **Start Date:** 1/1/1954

Status: Inactive **End Date:**

Description: The site was originally an above-ground, cylindrical, vertical steel storage tank on a concrete base. In the past (date unknown) the tank was removed. The above-ground tank was 7.8 meters (25.5 feet) in diameter with a 287,660-liter (76,000-gallon) capacity. Currently, is the 9.1-meter (30-feet) diameter grade-level concrete tank base and the soil surrounding the base remain.

Location: The site is located 12.2 meters (40 feet) northeast of the southeast corner of the 183-KE Head House and 4.6 meters (15 feet) northwest of the railroad tracks in front of 183-KE.

Release Description: Spills may have occurred near the tank and the piping system may have developed leaks. This is likely to have resulted in sodium hydroxide leaking to the soil beneath and around the tank. No known sampling has been performed at this site.

Related Sites/ Structures: The site was related to the 183-KE Head House that controlled and monitored water quality. The site was also related to the 100-K-25 Neutralization Pit. Overflow and transfer waste from

this tank was routed to the nearby caustic neutralization pit.

Process Description: Caustic soda (sodium hydroxide) was injected into the filtered water as a pH correction. It was proportioned and metered in a single step operation. Caustic soda was injected into a softened water stream in the 183-KE Head House. The softened water was used as a dilutant and as a vehicle to transport the caustic to the injection point at the clearwells. Since caustic soda was injected at only two points, the proportioning was regulated by the half plant effluent rate. Sodium hydroxide was also used to regenerate the ion exchange columns in the water softener system and for maintaining a neutral pH of the reactor cooling water. It was most likely the neutralizing agent for excess or spilled sulfuric acid that was used in the 183-K facilities.

Waste Type: Chemical Release

Waste Description: The tank was used to store sodium hydroxide. There is a possibility the tank and/or piping may have leaked.

Code: 100-K-29 **Classification:** Accepted

Names: 100-K-29; 183-KE Sandblasting Site **Reclassification** Interim Closed Out (6/24/2004)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. Before remediation the site surface was gravel/cobble and purple garnet. It was irregularly shaped and covered an area of 46 meters (50 yards) x 27 meters (30 yards).

Location: Located 40-feet SW of the 183-KE Chlorine Storage Vault and just west of the 183-KE Alum Storage Tanks (126-KE-1 and 126-KE-2).

Process Description: In the early 1980s, steel components from the 183-KE settling basins were sandblasted at this site prior to being sold as scrap. The site consisted of surface gravel/cobble and red/purple garnet.

Waste Type: Chemicals

Waste Description: At this site in the early 1980's, steel components from the 183-KE settling basins were sandblasted prior to being sold as scrap. Sampling in 1989 indicated the material present to be nonregulated for EP Toxicity.

Closure Info: Interim: A phased sampling approach was implemented at the site based on site photographs, historical use information, suspected waste materials, and statistical information. Confirmatory sampling was conducted during April 2003. The analytical laboratory results for total chromium, lead, hexavalent chromium, and Aroclor-1254 exceeded action levels, indicating that site remediation (remove, treat, and dispose) was required. A cleanup action was implemented during December 2003, removing the sandblast media and approximately 5.1 centimeters (2 inches) of underlying soil from the site.

A total of 187 metric tons (206 tons) of sandblast media and underlying soil were removed and disposed of it at the Environmental Restoration Disposal Facility. The maximum detected results from underlying soil samples collected at locations suspected of having the greatest potential for contamination were shown to meet the cleanup objectives for direct exposure, groundwater protection, and river protection.

Code: 100-K-30 **Classification:** Accepted

Names: 100-K-30; 183-KE Sulfuric Acid Tank Bases **Reclassification** Interim Closed Out (8/2/2004)

(West Tank)

Type: Storage Tank **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. The site consisted of two, above ground, U-shaped concrete bases and above ground piping. A cylindrical tank had laid horizontally on the two concrete U-shaped bases. The tank measured 3 meters (10 feet) in diameter, 10 meters (33 feet) long and had a 77,140-liter (20,380-gallon) capacity. It is unknown when the tank was removed.

Location: The site was located in the 100-K Area. It was 8.2 meters (27 feet) northeast of 120-KE-4.

Related Sites/ Structures: The site was associated with 100-K-31 and the 183-KE Water Treatment Plant.

Process Description: The 183-KE Sulfuric Acid Storage Tank was associated with 183-KE Water Treatment Plant. West of this tank were two smaller sulfuric acid tanks (120-KE-4 and 120-KE-5) which were used for the same purpose. East of the tank was another tank the same size, that was used for the same purpose.

Waste Type: Chemicals

Waste Description: The tank bases held a tank that was used to store sulfuric acid.

Closure Info: Interim: Results from the historical research and confirmatory sampling that had been conducted during April 2003 were used to make decisions for reclassifying the site. The soil achieved compliance with the remedial objectives, but the concrete and felt material exceeded the remedial action levels. In January 2004, a remedial action activity was implemented to remove the stained concrete bases and felt to a depth of 1 meter (3 ft.). The material from the site was disposed at the Environmental Restoration Disposal Facility. Since the soil already met the RAOs, no further verification sampling was required.

Code: 100-K-31 **Classification:** Accepted

Names: 100-K-31; 183-KE Sulfuric Acid Tank Bases (East Tank) **Reclassification** Interim Closed Out (8/2/2004)

Type: Storage Tank **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. The site consisted of two above ground U-shaped concrete bases and above ground piping.

Location: The unit was located 14.3 meters (47 feet) northeast of 120-KE-4 (60 degrees).

Related Sites/ Structures: This site was associated with sites 100-K-30 and 100-K-32 and the 183-KE Water Treatment Plant.

Process Description: The Sulfuric Acid Storage Tank was associated with 183-KE Water Treatment Plant. West of this tank are two smaller sulfuric acid tanks (120-KE-4 and 120-KE-5) and another tank the same size as the one described here, all of which were used for the same purpose.

Waste Type: Chemicals

Waste Description: The tank was used to store sulfuric acid.

Closure Info: Interim: The above ground tank had been removed prior to 1994. The aboveground piping was removed in June 2000.

Results from confirmatory sampling that had been conducted in April 2003 were used to make decisions for reclassifying the site. The confirmatory samples exceeded the action levels for, barium, cadmium, lead, mercury and hexavalent chromium. A cleanup action was implemented during December 2003, removing the concrete bases and about 0.61 meters (2 feet) of contaminated soil and disposing them at the Environmental Restoration Disposal Facility.

The sampling results supported a reclassification of the waste site to interim closed out.

Code: 100-K-32 **Classification:** Accepted

Names: 100-K-32; 183-KW Sulfuric Acid Tank Bases (East Tank) **Reclassification** Interim Closed Out (7/27/2004)

Type: Storage Tank **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. The unit consisted of two above-ground U-shaped concrete bases and aboveground piping. The U-shaped bases were 3.7 meters (12 feet) wide, 1.2 meters (4 feet) long, 1.8 meters (6 feet) high, and 10 meters (33 feet) apart. The surface soils were stained with what appeared to be acid residue.

Location: The site was located east of the 183-KW Head House, south of the end of the railroad tracks and 14.3 meters (47 feet) northeast (60 degrees) of 120-KW-4.

Related Sites/ Structures: The Sulfuric Acid Storage Tank was associated with 183-KW Water Treatment Plant. West of this tank were two smaller sulfuric acid tanks (120-KW-3 and 120-KW-4) and another tank (100-K-33) the same size as the one described here, all of which were used for the same purpose.

Process Description: A cylindrical tank (which appeared at the site in a March 1962 photograph) had laid horizontally on two concrete U-shaped bases. The tank was 3 meters (10 feet) in diameter, 10 meters (33 feet) long and had a 77,140-liter (20,380-gallon) capacity. It was unknown when the tank was removed.

Waste Type: Soil

Waste Description: The soil was contaminated from sulfuric acid leaks or spills.

Waste Type: Equipment

Waste Description: Two concrete tank pedestals and associated sulfuric acid piping were at the site.

Closure Info: Interim: The April 2003 analytical laboratory results for cadmium and total chromium in the concrete and lead and mercury in the soil exceeded action levels, indicating that site remediation (remove, treat, and dispose) was required. A cleanup action was implemented during December 2003, removing the concrete bases (including the felt) and about 0.61 meters (2 feet) of contaminated soil from the site and disposing of it at the Environmental Remediation Disposal Facility. Verification sampling was conducted during December 2003 and January 2004. The verification sampling results indicated that the cleanup action had achieved compliance with the remedial action objectives (RAOs) for the site.

Code: 100-K-33 **Classification:** Accepted

Names: 100-K-33; 183-KW Sulfuric Acid Tank Bases (West Tank)
Reclassification Interim Closed Out (8/24/2004)

Type: Storage Tank
Start Date:

Status: Inactive
End Date:

Description: The site has been remediated and Interim Closed Out. The unit consisted of two above-ground U-shaped concrete bases and above-ground piping. Yellow stains and tar-like material was in the surrounding gravel.

Location: The unit was located 8.2 meters (27 feet) northeast (60 degrees) of 120-KW-4.

Related Sites/ Structures: The Sulfuric Acid Storage Tank was associated with 183-KW Water Treatment Plant. West of this tank were two smaller sulfuric acid tanks (120-KW-3 and 120-KW-4) which were used for the same purpose. East of the tank location described by this entry was another tank (100-K-32) the same size that was used for the same purpose.

Process Description: The U-shaped bases were 3.7 meters (12 feet) wide, 1.2 meters (4 feet) long, 1.8 meters (6 feet) high, and 10 meters (33 feet) apart. A cylindrical tank laying horizontally on the two concrete U-shaped bases was observed in a March 1962 photograph.

The tank was 3 meters (10 feet) in diameter, 10 meters (33 feet) long and had a 77,140-liter (20,380-gallon) capacity. The tank was used to store sulfuric acid and was removed at an unknown date.

Waste Type: Chemicals

Waste Description: The unit consisted of two above-ground U-shaped concrete bases and above-ground piping. The U-shaped bases were 3.7 meters (12 feet) wide, 1.2 meters (4 feet) long, 1.8 meters (6 feet) high, and 10 meters (33 feet) apart. A cylindrical tank laying horizontally on the two concrete U-shaped bases was observed in a March 1962 photograph. The tank was used to store sulfuric acid and was removed at an unknown date.

Closure Info: Interim: A remedial action was implemented in December 2003. The concrete bases, including the felt pads, were removed and about 30 cubic meters (990 cubic feet) of contaminated soil was disposed of at the Environmental Restoration Disposal Facility.

A test pit was dug in the center of the excavation to a depth of 4 meters (13 feet) to collect soil data on mercury for RESidual RADioactivity (ANL 2002) modeling and characterize the potential depth of metals contamination beneath the other 100-K Area sulfuric acid tanks (100-K-30, 100-K-31, and 100-K-32).

Following remediation, verification sampling was conducted during December 2003 and January 2004. The post-remediation verification sampling contaminants of concern (COCs) for the 100-K-33 waste site were identified based on the results of the confirmatory sampling effort. The results indicated that the remedial action achieved compliance with the remedial action objectives for the site. The results of the verification sampling were used to support decisions to reclassify the site in accordance with the waste site reclassification guideline TPA-MP-14 (DOE-RL 1998) process.

Code: 100-K-34
Classification: Accepted

Names: 100-K-34; 183-KW Acid Neutralization Pit
Reclassification Interim Closed Out (7/10/2012)

Type: Sump
Start Date:

Status: Inactive
End Date:

Description: The waste site has been remediated and Interim Closed Out. The acid pit consisted of 2.5 by 1.9-meter (8.3 by 6.3-foot) brick-lined concrete boxes. The boxes were 1.5 meters (5 feet) deep and backfilled with crushed limestone. Drain pipes entered about 0.6 meters (2 feet) below grade and emptied into a 0.9-meter (3-foot) diameter vitrified clay pipe (VCP) placed vertically in limestone chips. The VCP was filled with limestone chips. The VCP was intentionally broken at the top to allow acid solutions to overflow into the interior of the pit.

Location: The unit is located in the 100KW Area, adjacent and 0.6 meters (2 feet) west of 183-KW and 3.7 meters (12 feet) east of the 183-KW Chlorine Vault.

Related Sites/ Structures: The site received transfer and overflow waste from nearby sulfuric acid tanks associated with the 183-KW Water Treatment Plant. The site drained to the process sewer back into the 183.1-KW Headhouse, and into a floor drain to the process sewer line that ran through the 183.7-KW Tunnel.

Waste Type: Chemicals

Waste Description: The site was used to neutralize and dispose of overflow and transfer waste from nearby sulfuric acid tanks.

Closure Info: Interim (7/10/2012): Remediation of the Area AA Zone 1 Waste Sites began in April 2010 and ended in January 2012. The waste site structures and soils have been excavated as part of the remedial activities for the 100-K Area. The excavation area was designated as 100-K Area AA, Zone 1 (Area AA, Zone 1). It encompassed the individual waste sites 100-K-34, 100-K-102 and 1607-K3. Stockpile #11 contains layback soil from remediation of Area AA, Zone 1. These waste sites are adjacent to the 100-K-59 pipelines. Since visible sediment was observed in the severed pipelines, a sample was collected in February 2011 from the open end of the pipe west of the 183.1KW Headhouse. A section of the 100-K-59 pipeline was removed.

Excavation of the waste sites continued to a final remediation maximum depth of 9.82 meters (32.2 ft), which was located within the footprint of 100-K-102. To support the deeper excavation for Area AA, Zone 1, layback soil was accumulated and managed as Stockpile #11. The excavation decision unit was approximately 7,331 square meters (78,910 ft2) for 100-K Area AA, Zone 1. The original footprint prior to additional process sewer pipe removal was divided into evenly spaced areas for statistical sampling outside the waste sites to address any potential for contamination spread.

Code: 100-K-35 **Classification:** Accepted

Names: 100-K-35; 183-KE Acid Neutralization Pit **Reclassification** None

Type: Sump **Start Date:**

Status: Inactive **End Date:**

Description: The site is a below grade, 2.5 meter by 1.9 meter (8.33 feet by 6.33 feet) brick-lined concrete box, approximately 1.5 meters (5 feet) deep and backfilled with crushed limestone. Drain pipes entered the pit approximately 0.6 meters (2 feet) below grade and emptied into a vertical 0.9 meter (3 foot) diameter vitrified clay pipe. The vitrified clay pipe is also filled with limestone chips and appears to be broken at the top. The site is covered by a wooden lid labeled "Confined Space" and is surrounded by post and chain.

Location: The site is located between the 183-KE Head House and the 183-KE chlorine vault.

Related Sites/ Structures: The site received transfer and overflow waste from nearby sulfuric acid tanks associated with the 183-KE Water Treatment Plant. The site drained to the process sewer.

Waste Type: Chemicals

Waste Description: The site was used to neutralize and dispose of overflow and transfer waste from nearby sulfuric acid tanks.

Code:	100-K-36	**Classification:**	Accepted
Names:	100-K-36; 1706-KE Chemical Storage Facility Dry Well	**Reclassification**	Interim Closed Out (10/19/2012)
Type:	French Drain	**Start Date:**	1/1/1962
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It was a dry well (french drain) that was added to the 1706-KE Building as part of the Chemical Storage Facility. The drain was located at grade level and centered between the 1706-KE Caustic Tank and the 1706-KE Sulfuric Acid Tank. The french drain was constructed from an 0.46 meter (18 inch) vitrified clay pipe that is 1.2 meters (4 feet) long and extended 7.6 centimeters (3 inches) above grade. The site was filled to grade with crushed limestone. Overflow and drain pipes [two 5.1 centimeter (2 inch) pipelines from each chemical storage tank] extended to just above the surface of the limestone fill.

Location: The site was located in the southeast corner and adjacent to the 1706-KE Building. The site was between the 100-K-37, 1706-KE Sulfuric Acid Tank and 100-K-38, 1706-KE Caustic Soda Tank.

Release Description: The dry well was located near an underground tunnel to the 105-KE Reactor Building. At a point within the tunnel very near the drain, a white crystalline material was seen in the cracks of the tunnel ceiling. This may be sodium hydroxide from the 100-K-38, 1706-KE Caustic Soda Tank. A former site employee reports that small spills did occur during filling operations of the storage tanks on several occasions.

Related Sites/ Structures: The site is related to the 1706-KE Building, 100-K-37, 1706-KE Sulfuric Acid Tank, and 100-K-38, 1706-KE Caustic Soda Tank.

Process Description: The chemical storage facility at 1706-KE was installed in 1963 to provide bulk quantities of 93 percent by weight sulfuric acid and 50 percent by weight sodium hydroxide. The chemicals were used to regenerate the ion columns in the 1706-KE demineralizer plant. The demineralizer plant supplied demineralized water to two experimental single pass process tube in the 105-KE reactor core. The demineralizer plant was a duplex unit with two sets of ion columns. It operated with one set in service and the other either being regenerated or in a ready-standby condition. Typically three regenerations were performed each day during this period. Shipping manifests indicate that approximately 7,948.5 liters (2100 gallons) of sulfuric acid and 10,976.5 liters (2900 gallons) of sodium hydroxide were delivered to 1706-KE at 4-6 week intervals. In 1971, the 100-K production reactors were shut down and the demineralizer plant was deactivated. It was reactivated some years later to provide demineralized water to the 100-K area fuel storage basins. The quantity of demineralized water produced during this period of operation was a small fraction of that produced during reactor operation. Thus, the number of regenerations was steadily reduced from an initial amount of approximately 12 times per year to 3 times per year when the demineralizer plant was finally taken out of service.

Waste Type: Chemicals

Waste Description: A white crystalline material that may be sodium hydroxide can be seen in cracks of the tunnel. This may indicate that large quantities of sodium hydroxide and/or water have been disposed to this drain.

Closure Info: Interim (10/19/2012): The D4 (deactivation, decommissioning, decontamination and demolition) organization removed the above ground parts of the 1706-KE, 1706-KEL, and

1706-KER buildings, plus three feet of the below ground structures. The 1706-KE, 1706-KER, 1706-KEL building demolition to grade was completed in October 2010. Directly after completing D4 work, the area was transitioned to the soil remediation organization. The 100-K-36 french drain, and portions of the 100-K-3 pipeline and a portion of the 100-K-79 Subsite 7 pipeline were removed, as designed along with the 1706-KE, 1706-KEL, and 1706-KER buildings.

For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 2 remediation area, adjacent to the southwest corner of the reactor. Remediation of the Area AG, Zone 2 waste sites and removal of the below grade 1706-KE, 1706-KEL, and 1706-KER buildings began in June 2010. Remediated soil and debris disposed were of at the ERDF. Remediation of the waste sites coincided with the removal of the below ground portions of the 1706-KE, 1706-KEL, and 1706-KER buildings. Below-grade demolition 1706-KE and 1706-KER and waste site remediation completed in September 2011. The final maximum remediation depth of excavation for the area was 11.15 meters (36.58 ft) below ground surface.

Pipelines connected to the 1706-KE, 1706-KEL and 1706-KER buildings (excluding 100-K-3 associated pipelines) were gravity flow systems which drained away from the buildings to either the 100-K-47 Process Effluent Line, the 116-KE-2 Crib, the 1607-K4 or the 1607-K5 Sanitary Sewer System waste sites. Remediation of these pipelines was beyond the scope of the remedial action and this RSVP. However, during building removal, portions of these pipelines were removed to the edge of the excavation footprint. Although the ends of the pipelines were not capped due to the higher elevations at the pipeline openings, any residual liquids would flow away from the excavation footprint, rather than into it. Remediation of these pipelines will be completed at a later date during remediation of their respective waste sites. The GPS locations where the lines were severed at the sloped edge of the excavation footprint were documented.

The 100-K-36 dry well remediation area was approximately 0.17 square meters (1.83 sq. ft.). Due to the size of the sample area, only one discrete sample was collected. Following removal of all components of the 100-K-36 french drain waste site, stained soil was found adjacent to the waste site. In-process sampling indicated that copper, chromium and zinc were present in exceedance of the Remedial Action Goals. The stained soil area associated with 100-K-36 was approximately 54.0 square meters (581.3 square feet). Four sample increments were collected from randomly selected nodes within the stained soil sample area and combined into a single composite sample. The stained soil was removed to a depth of approximately 8 meters (26.2 ft) below grade.

The 100-K-79 confirmatory samples collected in August 2011 exceeded the RAGs for metals and the site was assigned a RTD remedy. Two samples were collected for the 100-K-79 Subsite 7 (partial) pipeline remediation area. One was a composite per the sample design. The other was a composite sample collected with the "sample as you go" strategy. The 100-K-79 Subsite 7 pipeline sample area was approximately 65.9 square meters (709.3 sq. ft.). It consisted of one sample area. Four sample increments were collected from randomly selected nodes within the sample area and combined into a single composite sample. The second composite sample was collected from the area extending from the end of the pipeline in AG Zone 2 to where it entered the pipe valve box south of the 105-KE Reactor.

The partial 100-K-3 pipeline remediation area was approximately 196.4 square meters (2,114.0 sq. ft). It consisted of three sample areas. Four sample increments were collected from randomly selected nodes within each sample area and combined into a single composite sample.

A portion of the sewer line discharging from the 1706-KER building was removed (40.8 sq.

meters [439.2 sq. feet]) incidental to the building removal. To evaluate this area, four sample increments were collected from randomly selected nodes within the sample area and combined into a single composite sample.

In August 2012, the sample results were received and excavation backfill activity began.

Code:	100-K-37	**Classification:**	Accepted
Names:	100-K-37; 1706-KE Sulfuric Acid Tank	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Storage Tank	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1986

Description: The waste site has been remediated and Interim Closed Out. It consisted of an above ground, vertical, stainless steel storage tank. The tank rested on a redwood timber deck above a 1.4 meter (4.45 foot) service space (at grade) that is protected by guard posts. A 5.1 centimeter (2 inch) fill line for tank truck usage was also located in the same area. Two 5.1 centimeter (2 inch) drain lines, one for vent and overflow and the other for valve leakage, entered a french drain (Site: 100-K-36) that was located (in the service area) between the caustic soda tank (100-K-38) and the sulfuric acid tank. The tank had a liquid level gauge, a 5.1 centimeter (2 inch) fill line, and a vent and overflow line. The top of the tank could be accessed via a ladder and platform at the top elevation of the tank. The tank was constructed with a bottom sloping towards the drain. When installed, the tank was shimmed to level it.

Location: The site was located southeast of the reactor and adjacent to the 1706-KE Building. 1706-KE Building, 0-Foot Level from the Part B Application shows the location of the tank.

Release Description: Site employees report that during operational history, the tank was rinsed down on a few occasions and the material went to the general soil area.

Related Sites/ Structures: The site is related to the 1706-KE Building, 100-K-38, 1706-KE Caustic Soda Tank, and 100-K-36, 1706-KE Chemical Storage Facility Dry Well.

Process Description: The chemical storage facility at 1706-KE was installed in 1963 to provide bulk quantities of 93 percent by weight sulfuric acid and 50 percent by weight sodium hydroxide. The chemicals were used to regenerate the ion columns in the 1706-KE demineralizer plant. The demineralizer plant supplied demineralized water to two experimental single pass process tube in the 105-KE reactor core. The demineralizer plant was a duplex unit with two sets of ion columns. It operated with one set in service and the other either being regenerated or in a ready-standby condition. Typically three regenerations were performed each day during this period. Shipping manifests indicate that approximately 7,948.5 liters (2100 gallons) of sulfuric acid and 10,976.5 liters (2900 gallons) of sodium hydroxide were delivered to 1706-KE at 4-6 week intervals.

in 1971, the 100-K production reactors were shut down and the demineralizer plant was deactivated. It was reactivated some years later to provide demineralized water to the 100-K area fuel storage basins. The quantity of demineralized water produced during this period of operation was a small fraction of that produced during reactor operation. Thus, the number of regenerations was steadily reduced from an initial amount of approximately 12 times per year to 3 times per year when the demineralizer plant was finally taken out of service.

Waste Type: Chemicals

Waste Description: A heel of sulfuric acid remains on the bottom of the tank, and an unknown quantity of sulfuric acid remains in the transfer lines inside the 1706KE facility.

Closure Info: Interim: The 100-K-37 and 100-K-38 waste sites were removed using standard industrial equipment for structural demolition. The removed tanks and related debris were disposed at the

Environmental Restoration Disposal Facility on November 19, 2009 and November 23, 2009. Verification sampling was not required to demonstrate protectiveness for waste sites 100-K-37 and 100-K-38. The CERCLA removal action for the 1706-KE Building will address the underlying foundation.

Code:	100-K-38	**Classification:**	Accepted
Names:	100-K-38; 1706-KE Caustic Soda Tank	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Unplanned Release	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1986

Description: The waste site has been remediated and Interim Closed Out The site consisted of contaminated soil from spills related to a caustic soda storage tank. The tank was an above ground, vertical, stainless steel storage tank. The tank rested on a redwood timber deck above a 1.4 meter (4.45 foot) service space (at grade) that is protected by guard posts. A 5.1 centimeter (2 inch) fill line for tank truck usage was also located in the same area. Two 5.1 centimeter (2 inch) drain lines, one for vent and overflow and the other for valve leakage, entered a french drain (Site: 100-K-36) that is located (in the service area) between the caustic soda tank and the sulfuric acid tank (Site: 100-K-37). The tank was insulated, had a liquid level gauge, a 5.1 centimeter (2 inch) fill line, a vent and overflow line, thermostat, and heating element. The top of the tank could be accessed via a ladder and platform at the top elevation of the tank. The tank was constructed with a bottom sloping towards the drain. When installed, the tank was shimmed to level it.

Location: The site is located in the southeast corner and adjacent to the 1706-KE Building. Figure B-4 1706-KE Building, 0-Foot Level from the Part B Application shows the location of the tank.

Release Description: Site employees report that during the operational history, spills occurred. The tank exterior was rinsed down after these spills and the material was released to the soil.

Related Sites/ Structures: The site is related to the 1706-KE Building, 100-K-37, 1706-KE Sulfuric Acid Tank, and 100-K-36, 1706-KE Chemical Storage Facility Dry Well.

Process Description: The chemical storage facility at 1706-KE was installed in 1963 to provide bulk quantities of 93 percent by weight sulfuric acid and 50 percent by weight sodium hydroxide. The chemicals were used to regenerate the ion columns in the 1706-KE demineralizer plant. The demineralizer plant supplied demineralized water to two experimental single pass process tube in the 105-KE reactor core. The demineralizer plant was a duplex unit with two sets of ion columns. It operated with one set in service and the other either being regenerated or in a ready-standby condition. Typically three regenerations were performed each day during this period. Shipping manifests indicate that approximately 7,948.5 liters (2100 gallons) of sulfuric acid and 10,976.5 liters (2900 gallons) of sodium hydroxide were delivered to 1706-KE at 4-6 week intervals. In 1971, the 100-K production reactors were shut down and the demineralizer plant was deactivated. It was reactivated some years later to provide demineralized water to the 100-K area fuel storage basins. The quantity of demineralized water produced during this period of operation was a small fraction of that produced during reactor operation. Thus, the number of regenerations was steadily reduced from an initial amount of approximately 12 times per year to 3 times per year when the demineralizer plant was finally taken out of service.

Waste Type: Chemicals

Waste Description: Site employees have reported that spills occurred at the site. The tank exterior was rinsed down after the spills and into the soil column. A white material that may be sodium hydroxide powder can be seen in the cracks of the lower level ceiling beneath the location of the tank base.

Closure Info: Interim: The 100-K-37 and 100-K-38 waste sites were removed using standard industrial equipment for structural demolition. The removed tanks and related debris were disposed at the

Environmental Restoration Disposal Facility on November 19, 2009 and November 23, 2009. Verification sampling was not required to demonstrate protectiveness for waste sites 100-K-37 and 100-K-38. The CERCLA removal action for the 1706-KE Building will address the underlying foundation.

Code:	100-K-42	**Classification:**	Accepted
Names:	100-K-42; 100-KE Fuel Storage Basin; 105-KE Fuel Storage Basin; Irradiated Fissile Material Storage; KE Basin; Metal Storage Basin; Potential Asbestos in Soil; 100-K East Basin; 100-K-40	**Reclassification**	None
Type:	Storage	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	

Description: The waste site is the fuel storage basin for the 105-KE Reactor. The fuel storage basin was demolished in 2009. It was located at the rear of the reactor. All that remains is a portion of the discharge chute that is attached to the reactor building. The slab of the basin was also been removed. Portions of the excavation were backfilled in 2012. Determination that asbestos containing material (ACM) was left in place and abated during demolition is based on a Quality Assurance review of project documentation and interviews with activity personnel.

The concrete basin area served as a collection, storage, and transfer facility for the irradiated fuel elements discharged from the reactor. Irradiated reactor fuel elements were stored at the bottom of large water filled storage basins pending their shipment to the chemical separations facilities in the 200 Areas. The water in the basins served both as coolant and as shielding. The basin consists of a discharge chute and fuel element pickup area, a storage area, a transfer area, and a wash pad area.

After reactor operations were terminated in 1975, a number of irradiated uranium fuel elements were found in both fuel storage basins when sludge was removed. Dorian and Richards (1978) reports that the 105-KW storage basin was cleaned, modified and being used for the storage of irradiated fuels from N Reactor. At the time of the report the 105-KE basin had been cleaned and was in the process of being modified for the same purpose. In 1974 and 1975, both basins were modified to a recirculating cooling system by the utilization of heat exchangers once used to transfer heat from the reactor cooling water elimination system to facility heating (Project H-501). The 105-KE basin has been used to store irradiated fuel in open containers. Consequently, the 105-KE basin is considered more radioactively contaminated than the 105-KW basin.

Location: The storage basin extended from the north wall of the 105-KE Reactor Building to the open area behind the reactor, with its longitudinal axis running parallel to the north wall of the building. Its east-west location was roughly in the center of the building.

Release Description: The 105-KE Fuel Storage Basin was constructed with a secondary seepage barrier in the form of an asphalt membrane under the basin floor. The 5.1 centimeters (2 inches) thick membrane was installed under the entire storage basin except for the pickup chute area and was designed to collect leakage in perforated pipes that lie on top of the membrane. These pipes drain to a sump. During testing that was conducted in 1974, a 16 day basin drawdown established a 15.1 liters per minute (4 gallons per minute) seepage rate from the basin system. At least 90 percent of this seepage was thought to be collected by the membrane system and sump. Two automatic pumps were installed in the sump to return any seepage back to the basin. 10 percent of the seepage was assumed to discharge to the soil beneath the basin. In mid-February 1977, an unusually high seep rate 51.1 liters (13.5 gallons per minute) was identified. The increased seepage was determined to have been caused by reduced basin water temperature, which caused concrete contraction to expand existing minor cracks in the basin. Detailed analysis showed that

no radioactivity was being released in liquid effluents from K Area and no water was being collected in the membrane drainage sump. Therefore, all of the seepage was assumed to be going to ground either through or past the membrane. A number of steps were taken to control and reduce the basin leakage, including maintaining higher basin temperatures, identification and repair of seep areas, use of ion exchange system to reduce cesium, and improving monitoring. In spite of the repairs, drawdown testing in 1979 showed that the basin was still leaking (See Releases Section). Eventually, an expansion joint in the floor of the basin discharge chute was isolated by water-tight dams that reduced leakage to a "near zero" rate of 11.4 liters (3 gallons per minute). During the 16 year operating history of the 105-KE Reactor, radioactive material most likely seeped from the basin to the soil beneath the facility through the same pathway that is open today. No direct measurements have been taken of the radionuclide inventories beneath the basin. The total estimated radionuclide inventories in the soil beneath the 105-KE Fuel Storage Basin (from operations between 1975 and 1979) are: cobalt-60 - 3.6 curies; strontium-90 - 1470 curies; cesium-137 - 1050 curies; plutonium-238 - 0.21 curies; plutonium-239/240 - 1.3 curies.

Related Sites/ Structures: The site is associated with the 105-KE Reactor Building, 116-KE-3 crib and UPR-100-K-1.

Process Description: The transfer area contained two sets of standard gauge railway tracks which extend into the building at ground level through the west wall. Adjacent to each track was a loading pit, which lead from the main basin. Irradiated metal slugs dropped from the rear or discharge face of the reactor through a discharge gate to the bottom of the bay between reactor and basin. A heavy rubber mattress was installed to cushion the fall of the slugs. The slugs were picked up by long handled tongs manipulated from the floor grating, and placed into buckets. The loaded buckets were suspended on the monorail conveyor system, and conveyed across and around the storage basin to the loading pits. This transfer was timed in short moves over a lengthy period so that the slugs are stored for some time in the storage basin, for the purpose of dissipating radioactivity. When the slugs reached the transfer area they were placed, still underwater, into large specially constructed containers called "casks". The loaded casks were hoisted from the bottom of the pits and placed on the cask cars, which were switched in on the adjacent tracks. The cars approximate were designed and built for the cask freightage. The viewing and weasel pits at the other end of the storage basin contained equipment for manipulating and examining selected slugs while under water. The function of the entire basin installation was to provide handling of radioactive metal under a shielding layer of water.

During the reactor refueling process, the fuel storage basins were used to receive the discharged fuel rods. New fuel elements were pushed into the process tube by a charging machine which caused the irradiated fuel elements in the tube to be displaced. The discharged irradiated fuel elements dropped into a water filled discharge chute and slid down into the metal pickup area at the end of the storage basin. The water in the chute area provided shielding as the elements accumulated and were sorted into buckets using long, hand-operated tongs. The buckets were then transferred by an overhead monorail system to the storage aisles where they were held for a time to allow the decay of short-lived radionuclides. Following the storage period, the buckets of fuel elements were moved by the overhead monorail system to the transfer area. At the transfer area, the irradiated fuel was loaded into a cask, then raised by a crane and placed in special railroad cars for shipment to the chemical reprocessing facilities in the 200 Area.

Occasionally, fuel elements would rupture or become damaged during handling and storage, causing contamination to the basin shielding water. Experience at other Hanford reactors suggests that the occurrence and inspections of the fuel element ruptures almost certainly occurred at both 100-KE and 100-KW basins throughout their operating histories.

Although the basins originally served the K Reactors, N Reactor fuel was accumulated from 1979 through 1987. Storage at K Basins was intended to be only as needed to sustain operation of N Reactor while the Plutonium and Uranium Recovery through Extraction Facility (PUREX)

was placed in standby for refurbishment and restart. Although PUREX processed much of the N Reactor fuel as planned, the decision by the Department of Energy in December 1993 to deactivate the PUREX facility left approximately 2,100 metric tons (2, 310 tons) of N Reactor spent nuclear fuel in the K Basins with no provision for near term removal and processing.

Waste Type: Sludge

Waste Description: The spent nuclear fuel in the KE basin was in the form of irradiated uranium elements clad in aluminum or zirconium alloy and immersed in water. The fuel elements in the K East Basin were stored in open canisters. By-product material which includes corroded cladding, fuel particles, and insoluble plutonium and uranium metal had settled on the basin floor. Concrete debris resulting from erosion of the basin walls, transient soil and other types of dregs had also accumulated in the basins. This concurrent accumulation of various materials in the basins was commonly referred to by the Spent Nuclear Fuel (SNF) Project as the 100-K Basins sludge. The 100-K East Basin contained approximately 50 cubic meters of sludge.

Code:	100-K-43	**Classification:**	Accepted
Names:	100-K-43; 105-KW Fuel Storage Basin; Irradiated Fissile Material Storage; K West Basin; KW Basin	**Reclassification**	None
Type:	Storage	**Start Date:**	1/1/1955
Status:	Active	**End Date:**	1/1/1971

Description: The site is the fuel storage basin for the 105-KW Reactor. The fuel storage basin is located at the rear of the reactor. The concrete basin area served as a collection, storage, and transfer facility for the irradiated fuel elements discharged from the reactor. Most of the basin is below grade. Irradiated reactor fuel elements were stored at the bottom of large water filled storage basins pending their shipment to the chemical separations facilities in the 200 Areas. The water in the basins served both as coolant and as shielding. The basin consists of a discharge chute and fuel element pickup area, a storage area, a transfer area, and a wash pad area.

The basin area is floored throughout at ground level with steel grating which is suspended from the steelwork of the roof above by means of vertical pipe columns. A grid of 32 monorails evenly spaced crosses the basin, overhead, from north to south, connects at the ends with a monorail which completely encircles the area. Bars suspended from trolleys which roll on these rails extend down through slots in the floor grating to a point near the bottom of the basin, where they support and carry buckets used for conveying the processed metal. Transverse rails extend from the outer rail loop into the transfer area at the west end of the basin, and the viewing and weasel pits at the east end. Crossovers are installed for switching the trolleys from track to track.

The transfer area contains two sets of standard gauge railway tracks which extend into the building at ground level through the west wall. Adjacent to each track is a loading pit, which leads off from the main basin. As the system functions, irradiated metal slugs drop from the rear or discharge face of the reactor through a discharge gate of special design to the bottom of the bay between reactor and basin. A heavy rubber mattress is installed here to cushion the fall. The slugs are picked up by long handled tongs manipulated from the floor grating, and placed into buckets. The loaded buckets are suspended on the monorail conveyor system, by which they are conveyed across and around the storage basin to the loading pits. This transfer is timed in short moves over a lengthy period so that in effect the slugs are stored for some time in the storage basin, for the purpose of dissipating radioactivity. When the slugs reach the transfer area they are placed, still underwater, into large specially constructed containers called "casks". The loaded casks are hoisted from the bottom of the pits and placed on the cask cars, which are

switched in on the adjacent tracks. The cars approximate standard railway equipment in size, and are designed and built for the cask freightage.

The viewing and weasel pits at the other end of the storage basin contain equipment for manipulating and examining selected slugs while under water. The function of the entire basin installation is to provide for handling radioactive metal under a shielding layer of water.

A number of irradiated uranium fuel elements were found in both fuel storage basins when sludge was removed in 1975 after reactor operations were terminated. Dorian and Richards (1978) reports that the 105-KW storage basin was cleaned, modified and being used for the storage of irradiated fuels from N Reactor. At the time of the report the 105-KE basin had been cleaned and was in the process of being modified for the same purpose. In 1974 and 1975, both basins were modified to a recirculating cooling system by the utilization of heat exchangers once used to transfer heat from the reactor cooling water elimination system to facility heating (Project H-501). The 105-KW basin has been used to store fuels in sealed storage containers. Consequently, the 105-KW basin is far less radioactively contaminated than the 105-KE basin.

Location: The storage basin extends from the north wall of the 105-KW Reactor Building to the open area behind the reactor, with its longitudinal axis running parallel to the north wall of the building. Its east-west location is roughly in the center of the building.

Related Sites/ Structures: The fuel storage basin is associated with the 105-KW Reactor Building (sitecode 118-KW-1) and Unplanned Release - sitecode 100-K-82.

Process Description: During the reactor refueling process, the fuel storage basins were used to receive the discharged fuel rods. New fuel elements were pushed into the process tube by a charging machine which caused the irradiated fuel elements in the tube to be displaced. The discharged irradiated fuel elements dropped into a water filled discharge chute and slid down into the metal pickup area at the end of the storage basin. The water in the chute area provided shielding as the elements accumulated and were sorted into buckets using long, hand-operated tongs. The buckets were then transferred by an overhead monorail system to the storage aisles where they were held for a time to allow the decay of short-lived radionuclides. Following the storage period, the buckets of fuel elements were moved by the overhead monorail system to the transfer area. At the transfer area, the irradiated fuel was loaded into a cask, then raised by a crane and placed in special railroad cars for shipment to the chemical reprocessing facilities in the 200 Area.

Occasionally, fuel elements would rupture or become damaged during handling and storage, causing contamination to the basin shielding water. Experience at other Hanford reactors suggests that the occurrence and inspections of the fuel element ruptures almost certainly occurred at both 100-KE and 100-KW basins throughout their operating histories. Although the basins originally served the K Reactors, N Reactor fuel was accumulated from 1979 through 1987. Storage at K Basins was intended to be only as needed to sustain operation of N Reactor while the Plutonium and Uranium Recovery through Extraction Facility (PUREX) was placed in standby for refurbishment and restart. Although PUREX processed much of the N Reactor fuel as planned, the decision by the Department of Energy in December 1993 to deactivate the PUREX facility left approximately 2,100 metric tons (2310 tons) of N Reactor spent nuclear fuel in the K Basins with no provision for near term removal and processing.

Waste Type: Sludge

Waste Description: The spent nuclear fuel in the KW basin was in the form of irradiated uranium elements clad in aluminum or zirconium alloy and immersed in water. The fuel elements in the K West Basin were stored in closed canisters. By-product material which included corroded cladding, fuel particles, and insoluble plutonium and uranium metal gas settled on the basin floor. Concrete debris resulting from erosion of the basin walls, transient soil and other types of dregs had also accumulated in the basins. This concurrent accumulation of various materials in the basins was commonly referred to by the Spent Nuclear Fuel (SNF) Project as the K Basins sludge. The K

West Basin contained relatively little sludge as compared with the K East Basin which had approximately 50 cubic meters (38.2 cubic yards) of sludge.

Code:	100-K-46	**Classification:**	Accepted
Names:	100-K-46; 119-KE French Drain; Drywell	**Reclassification**	Interim Closed Out (8/29/2012)
Type:	French Drain	**Start Date:**	1/1/1959
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It was a drywell that received drainage from a floor drain in the 119-KE Sample Building. The site had been covered with crushed rock and there was no visible evidence of the drywell on the ground surface.

Location: The drywell was located 8.7 meters (28.5 meters) from the east side of the 105-KE Reactor Building and 8 feet (2.4 meters) south of the 119-KE Sample Building.

Related Sites/ Structures: The drywell is associated with the 119-KE Sample Building.

Process Description: The 119-KE Sample Building was situated over the intake and exhaust ducts to the 117-KE Filter Building and was used to sample effluent gases and particulates. Floor drainage from the 119-KE Exhaust Air Sample Building was directed to the drywell by a 5 centimeter (2 in) pipe buried at least 0.9 m (3 ft) below grade. In addition, a 1.9 centimeter (0.75 in) pipe from the building evaporative cooler also connected into the 5 centimeter (2 in) floor drain pipe near the southern edge of the building and discharged into the 100-K-46 Waste Site.

Waste Type: Process Effluent

Waste Description: The drywell received effluent from the building's evaporative cooler. It is likely that the floor drain also received sample waste and janitorial waste since the building had no other drains or connections to the process sewer system. The drywell was potentially contaminated with cobalt-60, cesium-137, carbon-14, and tritium, as well as strontium-90, europium-152, europium-154, and europium-155 from the exhaust air system and heavy metals from the floor drain.

Closure Info: Interim (8/29/2012): Remediation and sampling began in January of 2009 and was completed in April of 2012. The large excavation area, known as 100-K Area AH, encompassed waste sites 100-K-6, 100-K-46, 100-K-62 and 132-KE-1. The excavation area also included Stockpile #4, which contained overburden and layback soil from the excavation of the 116-KE-1 Condensate Crib. Information supporting the use of Stockpile #4, located within the AH excavation, as backfill was also included in the DOE/RL-2012-38 Remaining Sites Verification Package report.

Remediation of the identified Area AH waste sites was accomplished by demolishing the structures and excavating contaminated soil. All waste (soil and debris) associated with these waste sites was disposed at the Environmental Restoration and Disposal Facility (ERDF). The demolition activities were conducted using standard demolition techniques, including explosives for demolition of 132-KE-1 (116-KE Reactor Exhaust Stack). Approximately 1,809 ERDF containers (37,700 tons) of waste from these waste sites were sent to the ERDF for disposal.

Remediation of the 100-K-6 vacuum pit began in August 2011 and was completed in September 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The original waste site description estimated the depth of the cyclone separator as 9.14 meters (30 ft). However, during remediation the actual excavation depth was measured as 5.8 meters (19 ft).

The remediation of the 100-K-46 french drain was associated with the removal of the 119-KE building, which began in January 2009 and was completed in February 2009. The drywell was less than 1.5 meters (5 ft) deep.

The remediation activities at the 100-K-62 filter building began in August 2010 and were completed in May 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The maximum depth from grade within the waste site footprint was approximately 10.6 meters (34.8 ft).

The remediation activities at waste site 132-KE-1 exhaust stack began in July 2010 and were completed in September 2011. Removal of the above-grade portion of the stack was conducted using explosives placed near the base of the stack. The explosion caused the debris to fall in a designated area. The material was then loaded and disposed at ERDF. The entire below grade portion of the stack base was then removed. The maximum depth from grade within the waste site footprint was approximately 6.1 meters (20 ft).

In October of 2010, excavation of the overburden and layback soil for the 116-KE-1 Crib began and Stockpile #4 was created. Samples were collected in the 116-KE-1 waste site footprint and sent for analytical leach testing of the soils to determine carbon-14 leachability from the 100-K soil. During remediation of the co-located waste sites inside the AH excavation area, the 116-KE-1 crib was partially backfilled with soil from Stockpile #4 as a contamination control measure.

Note: Area-wide carbon-14 contamination exists in the deep zone above the criteria for protectiveness. This contamination is associated with the 105-KE Reactor ventilation filtration system and the deep contamination from the condensate that collected in the previously excavated 116-KE-1 Condensate Crib. Additional remediation of the deep vadose zone cannot be completed in proximity to the 105-KE Reactor without impacting structural stability. Available information about the nature and extent of the carbon-14 contamination has been documented in the 116-KE-1 Condensate Crib waste site description. Due to the depth of the contamination, the carbon-14 remediation will coincide with the final decision on 105-KE reactor removal.

Code:	100-K-47	**Classification:**	Accepted
Names:	100-K-47; 1904-K Process Sewer	**Reclassification**	None
Type:	Process Sewer	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	

Description: This site includes the underground process sewer pipelines that begin at the 105-KE Reactor, 105-KW Reactor, 165-KE, 190-KE, 1706-KE, and terminate either at the 116-K-3 Outfall or join the 100-K-56 Pipeline south of the outfall.

Manholes indicate the location of some sections of the process sewer. The main portion of the sewer that extends from the point of intersection of the 30.5 and 40.6 centimeter (12 and 16 inch) pipelines coming from 105-KW Reactor and 165-KE building with Manhole #5. This section is a 1.68 meters by 1.68 meters (66 inches by 66 inches) concrete sewer. All other process sewer pipelines are constructed of carbon steel. The pipelines near 100-K-71 include a 6 inch clean drain line, a 10 inch contaminated drain line, a 10 inch potentially contaminated drain line, a 6 inch rod cooling water line, a 6 inch drain line to the pluto crib, a 12 inch basin drain line, an 8 inch basin overflow line, a 6 inch vent line and a 4 inch vitrified clay decontamination drain line to the filter.

In 2002, approximately 600 feet of pipe, adjacent to 100-K-39, was removed. Portions of the

100-K-47 pipeline, located in remediation area AG Zone 1, were removed in 2011.

Location: This pipeline system includes process sewer lines from both the 105-KE and 105-KW reactor areas. The process sewer piping originates on the south (pre-reactor) and north (post-reactor) sides of the 105-KE and 105-KW Buildings. Portions run in an east-west direction to a point just west of the KE facilities and east of the KW facilities. The pipelines then run in a northerly direction to a point just south of the 116-K-3 Outfall where they intersect into a single discharge line to the Outfall structure.

Related Sites/ Structures: These pipelines are associated with 165-KE, 190-KE, 105-KW, 105-KE, and 1706-KE. Pipeline 100-K-60 is the corresponding pipeline from 165-KW and joins 100-K-47 midway between the two reactors.

Process Description: The process sewer system was used to dispose of treated and untreated waste water generated by the water treatment facilities, powerhouse, 1706-KE, and nonradioactive drains in the reactor facilities. The 100-K-47 waste site included underground process sewer pipelines that collected effluent from the 105-KE Reactor, the 105-KW Reactor, the 165-KE Facility, the 190-KE Facility, the 117-KE Filter Building, and the 1706-KE Facility, and either terminated at the 116-K-3 Outfall or joined the 100-K-56 waste site pipeline south of the outfall. Discharges into the 100-K-47 waste site included overflows from chemical makeup facilities that contained chemical additives for reactor cooling water, e.g., aluminum sulfate (alum), with excess hydrated calcium oxide, sulfuric acid, hexavalent chromium, and chlorine. Water pH was maintained at about 7.5, and free chlorine residual was about 0.3 mg/L. Other discharges to the system included filter backflush wastewater, coagulated sediments from the water treatment settling basins, demineralizer regeneration wastes, which included neutralized sulfuric acid and sodium hydroxide, brine wastes from water softeners, and pump cooling wastewater.

Waste Type: Process Effluent

Waste Description: Discharges included overflows from chemical makeup facilities that included chemical additives to reactor cooling water, e.g., aluminum sulfate (alum), with excess hydrated calcium oxide, sulfuric acid, and chlorine. Water pH was maintained at about 7.5, and free chlorine residual was about 0.3 milligrams per liter. Other discharges to the system included filter backflush waste water, coagulated sediments from the water treatment settling basins, demineralizer regeneration wastes, which included neutralized sulfuric acid and sodium hydroxide, brine wastes from water softeners, and pump cooling waste water.

Code: 100-K-48 **Classification:** Accepted

Names: 100-K-48; 100-KE Oil Contamination Areas **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is areas that show evidence of past fuel oil spills, especially around the railroad tracks. The spills have been absorbed into the soil and have formed an asphalt like substance. Some areas may have been covered with clean soil.

Location: The site is located in 100-K Area just north of the 166-KE Oil Storage Tank at the rail car holding point and just west of the 166-KE Oil Storage Tank.

Release Description: The site appears to be oil spillage from rail car off loading procedures. The oil appears to have been absorbed by sand and has formed a hard asphalt-like covering on the surface. It appears that the oil substance has exceeded the capacity of the sand absorbent and has formed a few tar-like patches of liquid oil that appear to be Bunker C type oil. There are some oil stains on the concrete tank top as well.

Related Sites/ Structures: The site is related to the 166-KE Fuel Oil Storage Bunker.

Waste Type: Oil

Waste Description: The waste is oil solidified into a hard asphalt-like substance.

Code: 100-K-49 **Classification:** Accepted

Names: 100-K-49; 100-KW Oil Contamination Areas **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is areas that show evidence of past fuel oil spills, especially around the railroad tracks. The spills have been absorbed into the soil and have formed an asphalt like substance. The area between the 166-KW and the road south of 166-KW was discovered to be contaminated with oil during excavation of a trench for the Cold Vacuum Drying Facility. An oil contaminated layer of soil about 7.6 to 10.2 centimeters (3 to 4 inches) thick was discovered a few inches below the surface.

Location: The site is located in 100K Area and adjacent to the 166-KW Oil Storage Tank, extending to the road off the north and west sides of 166-KW Oil Storage Tank. The site also extends to the northwest to a depression located 50 to 60 meters (140 to 170 feet) west of the 105-KW Reactor. Due to the discovery of subsurface oil contamination the full extent of the contamination is unknown.

Release Description: The site appears to have been created from spills of fuel oil that occurred during off loading operations. The largest portion of the contamination appears to have been absorbed by sand and formed a hard asphalt-like substance. This substance begins at the railcar offloading area and extends down gradient from the tank to an area west of the 105-KW Reactor Facility.

Related Sites/ Structures: The site is related to the 166-KW Fuel Oil Storage Bunker.

Waste Type: Oil

Waste Description: The waste is oil solidified into a hard asphalt-like substance.

Code: 100-K-50 **Classification:** Accepted

Names: 100-K-50; 1725-K & 1726-K Sanitary Sewer System Holding Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1996

Status: Active **End Date:**

Description: The site is an underground, sanitary sewage holding tank that services 1725-K and 1726-K. The site is marked by eight red concrete posts. The tank is constructed of concrete and has three manholes on top and one hinged hatch cover. A 20.3 centimeter (8 inch) sanitary sewer pipeline runs in a north-south direction 9.1 meters (30 feet) east of the 1725-K (MO-293) and the 1726-K (MO-442) buildings into the south side of the holding tank. The tank is divided into two chambers. The normal operating volume is 11,355 liters (3000 gallons) and the total reserve volume is 17,032 liters (4500 gallons).

Location: The site is located approximately 35 meters (115 feet) south southeast of the southeast corner of the 183-KE Settling Basins and 9.1 meters (30 feet) east of 1725-K.

Related Sites/ Structures: The site is related to 1725-K, 1726-K, and 124-N-10. Both 1725-K and 1726-K are mobile offices with alias names of MO-293 and MO-442, respectively.

Process Description: The holding tank collects septage from 1725-K and 1726-K mobile offices. Periodically, the septage is pumped out and taken to the 124-N-10 Sewage Lagoon for disposal.

Waste Type: Sanitary Sewage

Waste Description:

Code: 100-K-53 **Classification:** Accepted

Names: 100-K-53; 100-KE Glycol Heat Recovery Underground Pipelines **Reclassification** Interim Closed Out (8/29/2012)

Type: Product Piping **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: This waste site has been remediated and Interim Closed Out. It included two underground pipelines that transported glycol solutions from the 116-KE-5 (150 KE Heat Recovery Station) to their entrance to the 165-KE Powerhouse (Power Control Building) facilities. The pipelines consist of two 0.46-meter (1.5-foot) steel supply and return pipelines. It does not include the above-grade pipelines at the 116-KE-4 Station, the 100-K-7 Storage Tanks and piping, or the pipelines housed within these facilities. The waste site consisted two pipelines; one 0.46-meter (1.5-ft) diameter steel supply and one 0.46-m (1.5-ft) diameter steel return pipeline. The two pipelines ran parallel to each other and were buried approximately 1.5 meters (5 ft) below grade surface.

Location: The pipelines were located east of the 105-KE Reactor building. They originated at the 116-KE-5 (150-KE Heat Recovery Station) and terminated at the 165-KE Building north wall. The pipelines ran in a north-south direction.

Related Sites/ Structures: The site was associated with 116-KE-5 (150-KE Heat Recovery Station) and 165-KE (Power Control Building).

Process Description: This system was used to distribute heat taken, via a heat exchanger (116-KE-5, 150-KE Heat Recovery Station) to area buildings for space heating and process needs. The facilities, makeup and storage tanks where the pipelines terminated are not included. The heat recovery station was used to transfer heat from the 105-KE Reactor cooling water effluent. The pipelines contained an ethylene glycol and water solution that was maintained at a slightly positive pressure to preclude leakage of reactor effluent water into the system.

Waste Type: Chemicals

Waste Description: The waste is pipelines that contained an ethylene glycol/water solution that was maintained at a slightly positive pressure to preclude leakage of reactor effluent water into the system via the 150-KE Heat Exchanger.

Closure Info: Interim (8/29/2012): The remediation of the 100-K-53 Waste Site began in May 2010 and was completed in July 2011. Remediation of the pipelines had to be completed in stages due to interference from other buildings and waste sites, which required removal first to provide access to the remaining 100-K-53 pipelines. The ethylene glycol was drained from the pipelines inside the 165-KE Powerhouse and solidified for disposal at ERDF. Excavation and removal of the pipelines then began on the north end. The pipelines were again checked for any ethylene

glycol holdup at the first valve box on that north end and then the piping and valves were removed. As remediation progressed to the south, the pipelines were removed along with other structures and waste sites, which resulted in a deeper excavation (approximately 5.8 to 6.1 meters [19 to 20 ft]) on the east side of the 105-KE Reactor. During remediation, a new substation was built near the south end of the pipelines, resulting in a power line interference. The portion of the pipeline required to remain place was filled with grout. This interference deviated from the original design drawing for the remediation of the 100-K-53 Waste Site. The remediation of the waste site was completed by removal of the two ethylene glycol pipelines, except for the grouted portion left in place due to the power line interference. The grouted pipelines will remain in place and require no further remediation. The pipeline remediation ended outside the north end of the 165-KE Powerhouse. No holdup of ethylene glycol was found during removal of the pipelines. The pipelines and soils (a total of 22,240 tons) that were excavated were disposed of at the ERDF. No stockpiling of soils was completed during the remediation of 100-K-53.

The deep zone underneath the footprint of 100-K-53 is contaminated with carbon-14 from the reactor ventilation filtration system. The contamination is not associated with 100-K-53, but is associated with the nearby 116-KE-1 Condensate Crib waste site. This residual contamination will be remediated at a future date, and the 100-K-53 waste site and adjacent area will have institutional controls in place until it is remediated.

Code: 100-K-54 **Classification:** Accepted

Names: 100-K-54; 100-KW Glycol Heat Recovery Underground Pipelines **Reclassification** None

Type: Product Piping **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: This site includes those underground pipelines that transported glycol solutions from the 116-KW-4 (150 KW Heat Recovery Station) to their entrance into the 165-KW Powerhouse (Power Control Building) facilities. The pipelines consist of two 0.46-meter (1.5-foot) steel supply and return pipelines. It does not include the above-grade pipelines at the 116-KW-4 Station, the 100-K-8 Storage Tanks and piping, or the pipelines housed within these facilities.

Location: The pipelines originate at the 116-KW-4 (150-KW Heat Recovery Station) and terminate at the 165-KW Building north wall. Generally, the pipelines run in a north-south direction (K-Area Hanford Plant Grid). Because the pipelines are housed within facilities from the point where they enter the 165-KW Building, the housed sections are not included as a part of this site.

Related Sites/ Structures: The site was associated with 116-KW-4 (150-KW Heat Recovery Station) and 165-KW (Power Control Building).

Process Description: This system was used to distribute heat taken, via a heat exchanger (116-KW-4, 150-KW Heat Recovery Station) to area buildings for space heating and process needs. The facilities, makeup and storage tanks where the pipelines terminated are not included.

Waste Type: Chemicals

Waste Description: The waste is pipelines that contained an ethylene glycol/water solution that was maintained at a slightly positive pressure to preclude leakage of reactor effluent water into the system via the 150-KW Heat Exchanger.

Code: 100-K-55 **Classification:** Accepted

Names: 100-K-55; 100-KR-1 Pipelines; 100-KW Reactor **Reclassification** None

Cooling Water Effluent Underground Pipelines

Type: Radioactive Process Sewer **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: This site consists of two subsites. Subsite 1 has been remediated and Interim Closed Out. It included the underground process effluent pipelines located on the north side of 105 KW Reactor and pipelines located outside of the security fence that terminated at the 116-K-3 Outfall, the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KW-3 Retention Basins. Remedial action activities at the 100-K reactor effluent pipelines began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation of the pipelines involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005.

Subsite 2 consists of the remaining portion of the underground effluent pipeline inside the Reactor security fence and some segments near the 116-K-1 Crib, the 116-KW-3 Retention Basin and the 116-K-2 Trench.

In the interest of preserving the reactor security fence and some active underground utility features, some segments of pipe were not removed in 2002-2005.

Location: The pipelines ran in a north-south direction, north of the 105-KW Reactor Building and east-west on the outside of the reactor fence.

Related Sites/ Structures: The site was related to the 105-KW Reactor, the 116-K-3 Outfall, 100-K-83 Spillway, the 100-K-80 River Pipelines, the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KW-3 Retention Basins.

Process Description: The effluent system transported the reactor process effluent water by means of gravity flow to the river. There, the effluent water was discharged underwater to be diluted both thermally and radioactively by the flow of the river. The effluent system piping was located underground to provide shielding from the radioactive water. Before the water was discharged into the river, it was held for a period of time in retention basins, located approximately midway between the reactor building and the river, to allow decay of short-lived radioisotopes. In addition, the basins served to hold up flow of effluent with high radioactive isotope concentrations resulting from a ruptured fuel element. This effluent could be isolated and diverted by gravity to an open pond area, from which the effluent filtered through the ground before discharging to the river. Between the 105-KW Reactor Building downcomer outlet and the diversion valve box at the inlet of the 107-KW Retention Basins, the effluent pipeline was a single, 1.83-meter (72-inch), carbon steel pipeline measuring 190 meters (625 feet) in length. At the diversion valve box the flow could be diverted to any or all of the three retention basins by three, motor-operated, 1.83-meter (72-inch) butterfly valves. A 1.83-meter (72-inch) bypass pipeline was provided around the diversion valve station. This bypass pipeline tied into the inlet piping of one of the retention basins. During normal operation of the effluent system, flow was restricted in this bypass pipeline by an inverted 'U' bend which extended 9.1 meters (30 feet) higher than the elevation of the diversion valve station. If all the valves inadvertently closed, the effluent water flowed over the inverted 'U' bend and into the basin. The inlet 1.83-meter (72-inch) effluent piping ran to the side of a basin and discharged into an inlet chute, which in turn discharged to the bottom of the basin. The basin discharged to the river through a sump at the center of the basin. The basin discharge piping extended from the sump beneath the basins in reinforced concrete tunnels at the sides of the basins. The basin discharge piping was 1.7-meter (66-inch) carbon steel piping. The combined length of the discharge pipes from all three basins measured 478 meters (1,568 feet). The basin discharge piping combined into a common effluent pipeline. This pipeline discharged into the outfall structure (116-K-3). The common effluent from the 105-KW Reactor was a 1.83-meter (72-inch) pipeline. The effluent pipe system was Dresser

coupling connected. Concrete anchors were provided at each turn in the pipeline. The motor operated valves in the effluent system were controlled from the 105-KW Building Control Room. Miscellaneous piping included pipes to the 116-K-1 Crib, 116-K-2 Trench, and process sewer and piping to and from the 150-KW Heat Recovery Building. Discharges to 116-K-1 and 116-K-2 were made via 910-millimeter (36-inch) pipes that combined to flow into a 1,070-millimeter (42-inch) steel main pipe. Discharges to the process sewer were made through 250-millimeter (10-inch) steel pipes that combined into a 360-millimeter (14-inch) steel main pipe. Effluent from the 150-KW Building consisted of a 610-millimeter (24-inch), 460-millimeter (18-inch), 100-millimeter (4-inch) and 76-millimeter (3-inch) steel effluent piping system. Effluent from the 105-KW and 150-KW Buildings could bypass the retention basins through a 910-millimeter (36-inch) or a 300-millimeter (12-inch) steel pipe. Pipe depth varied from 1.3 meters (4 feet) to 9.7 meters (32 feet). The deepest pipes ran under an elevated contour that coincided with the retention basin exclusion fence.

Waste Type: Process Effluent

Waste Description: The waste was contaminated steel piping, concrete, and soil. Chemical additives to reactor cooling water included aluminum sulfate (alum) with excess hydrated calcium oxide, sulfuric acid, chlorine, diatomaceous earth (a scouring agent), and sodium dichromate. Water pH was maintained at about 7.5, and free chlorine residual was about 0.2 milligrams per liter. Radionuclide content at the retention basin during sampling by Richards for UNI-946, included the following: cesium-134, plutonium 239/240, cesium-137, strontium-90, hydrogen-3, nickel-63, europium-152, europium-154, europium-155, and cobalt-60.

This Site has the Following SubSites:

Code: 100-K-55:1
Names: 100-K-55:1; Process Pipelines Outside of Reactor Fence to Outfall

Code: 100-K-55:2
Names: 100-K-55:2; Effluent Pipelines Inside 105KW Reactor Security Fence

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Code: 100-K-55:1 **Classification:** Accepted

Names: 100-K-55:1; Process Pipelines Outside of Reactor Fence to Outfall **Reclassification** Interim Closed Out (9/23/2005)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Subsite 1 was remediated and Interim Closed Out. Remedial action activities involved excavation and staging of overburden material and removal of contaminated piping, debris, and soil. The project began on December 9, 2002. Contaminated materials were disposed at the ERDF.

Subsite 1 included the underground process effluent pipelines located on the north side of 105 KW Reactor, from the outside of the security fence to the active utilities 116-K-1 Crib, 116-K-2 Trench and 116-KE-4 Retention Basin, and the Process Water Pipeline between Reactors.

Location: The Process Pipelines were located outside of 105-KW Reactor Security Fence and extended to 116-K-3 Outfall.

Waste Type: Not Specified

Waste Description: The waste is contaminated piping, debris, and soil.

Closure Info: Interim: Remedial action activities at the 100-K reactor effluent pipelines began on December

9, 2002 by Washington Closure Hanford (WCH). Remediation of the pipelines involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005. The previously documented waste site boundaries for the 116-KW-4 and 116-KE-5 sites were much larger than the actual footprint of the heat recovery facilities. The soil area beneath each of the former heat recovery stations was excavated in its entirety with the removal of the co-located pipelines. Approximately 55,960 square meters (602,350 sq ft) of plan area was excavated, including excavation within the deep zone (greater than 4.6 meters [15 ft] below ground surface) up to 8.8 meters (29 ft) below ground surface where necessary to complete remediation. Approximately 86,551 metric tons (95,406 U.S. tons) of material from the sites was removed and disposed at the ERDF. The active 100-K-47 concrete culvert was not removed during remediation of the adjacent section of the 100-K-55 pipeline. Several 100-K-56 pipe segments, located west of 116-KE-4, were not included in the remediation scope.

The contaminated materials from these sites have been excavated and disposed at the ERDF. The remaining soils at the sites have been sampled, analyzed, and modeled, and the results do not preclude any future uses (as bounded by the rural-residential scenario), allow unrestricted use of shallow zone soils, and pose no threat to groundwater or the Columbia River. The 100-K-55:1, 100-K-56:1, 116-KW-4, and 116-KE-5 sites were verified to be remediated in accordance with the ROD and may be backfilled.

The SubSite is Part Of:

Code: 100-K-55

Names: 100-K-55; 100-KR-1 Pipelines; 100-KW Reactor Cooling Water Effluent Underground Pipelines

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Code: 100-K-55:2 **Classification:** Accepted

Names: 100-K-55:2; Effluent Pipelines Inside 105KW Reactor Security Fence **Reclassification** None

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Subside 2 consists of the remaining portion of the underground effluent pipeline inside the reactor security fence and some segments near the 116-K-1 Crib, the 116-KW-3 Retention Basin and the 116-K-2 Trench. The ends of the pipelines that were exposed when remediating 100-K-55:1 were covered with plywood prior to backfilling.

Location: The pipelines ran in a north-south direction, north of the 105-KW Reactor Building to the reactor security fence.

Waste Type: Not Specified

Waste Description: The waste is contaminated steel piping, concrete, and soil.

The SubSite is Part Of:

Code: 100-K-55

Names: 100-K-55; 100-KR-1 Pipelines; 100-KW Reactor Cooling Water Effluent Underground Pipelines

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Code: 100-K-56 **Classification:** Accepted

Names: 100-K-56; 100-KE Reactor Cooling Water Effluent Underground Pipelines; 100-KR-1 **Reclassification** None

Pipelines

Type: Radioactive Process Sewer **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The waste site is the gravity flow effluent pipelines that serviced the 105-KE Reactor. They terminated at the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KE-4 retention basins. The effluent lines were primarily carbon steel pipes ranging in size from 3 inches to 72 inches in diameter. This site has been divided into of three subsites.

Subsite 1 has been remediated and Interim Closed Out. Subsite 1 included the underground process effluent pipelines north of the 105 KE Reactor from the outside of the security fence. The pipelines terminated at the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KE-4 Retention Basins. A portion of 100-K-56:1 was removed with the excavation of the 116-K-1 crib in 2003. The remainder of 100-K-56:1 was remediated and Interim Closed Out in 2005.

Subsite 2 consists of 36 inch and 72 inch diameter process effluent underground pipelines located inside the original 100-K Area security fence (note: the fence has now been removed). These pipelines exited the west side of 105-KE reactor. The 72 inch line extended beyond the former security fence, and was addressed with Subsite 1. The 36 inch line tied into the 100-K-47 concrete sewer. The 100-K-56:2 pipeline that was located in remediation area AG Zone 1 and Zone 3 (northwest of 105KE) was removed in 2011.

Subsite 3 consists of process sewer pipeline segments located near the 116-K-3 Outfall Structure and the 116-K-4 Retention Basins. These pipe segments are adjacent to the remediated 100-K-56:1 excavation area. They were not considered part of the remediation scope in 2003 and were left in place.

In the interest of preserving the reactor security fence and some active underground utility features, some segments of pipe were not removed in 2002-2005.

Location: The pipelines mostly run in a north-south direction, northeast of the 105-KE Reactor Building.

Related Sites/ Structures: The waste site is related to the 105-KE Reactor, 100-K-79, the 116-K-3 Outfall, the 100-K-83 Spillway, the 100-K-80 River Pipelines, the 116-K-1 Crib, the 116-K-2 Trench, the 150-KE, and the 116-KE-4 Retention Basins.

Process Description: The effluent system transported the reactor process effluent water by means of gravity flow to the river. There, the effluent water was discharged underwater to be diluted both thermally and radioactively by the flow of the river. The effluent system piping was located underground to provide shielding from the radioactive water. Before the water was discharged into the river, it was held for a period of time in retention basins, located approximately midway between the reactor building and the river, to allow decay of short-lived radioisotopes. In addition, the basins served to hold up flow of effluent with high radioactive isotope concentrations resulting from a ruptured fuel element. This effluent could be isolated and diverted by gravity to an open pond area, from which the effluent filtered through the ground before discharging to the river. Between the 105-KE Reactor Building downcomer outlet and the diversion valve box at the inlet of the 107-KE Retention Basins, the effluent pipeline was a single, 1.83-meter (72-inch), carbon steel pipeline measuring 277 meters (908 feet) in length. At the diversion valve box the flow could be diverted to any or all of the three retention basins by three, motor-operated, 1.83-meter (72-inch), butterfly valves. A 1.83-meter (72-inch) bypass pipeline was provided around the diversion valve station. This bypass pipeline tied into the inlet piping of one of the retention basins. During normal operation of the effluent system, flow was restricted in this bypass pipeline by an inverted 'U' bend which extended 9.1 meters (30 feet) higher than the elevation of the diversion valve station. However, if all the valves closed, the effluent water flowed over the inverted 'U' bend and into the basin. The inlet 1.83-meter (72-inch) effluent piping ran to

the side of a basin and discharged into an inlet chute, which in turn discharged to the bottom of the basin. The basin discharged to the river through a sump at the center of the basin. The basin discharge piping extended from the sump beneath the basins in reinforced concrete tunnels at the sides of the basins. The basin discharge piping was 1.7-meter (66-inch) carbon steel piping. The basin discharge piping combined into a common effluent pipeline. This pipeline discharged into the outfall structure. The common effluent from the 105-KE Reactor was a 1.7-meter (66-inch) pipeline. The combined length of the discharge pipes from the three basins was 752 meters (2,469 feet). The effluent pipe system was Dresser coupling connected. Concrete anchors were provided at each turn in the pipeline. The motor operated valves in the effluent system were controlled from the 105-KE Building Control Room. Miscellaneous piping included pipes to the 116-K-1 Crib, 116-K-2 Trench, and process sewer and piping to and from the 150-KE Heat Recovery Building. Discharges to 116-K-1 and 116-K-2 were made via 910-millimeter (36-inch) pipes that combined to flow into a 1,070-millimeter (42-inch) steel main pipe. Discharges to the process sewer were made through 250-millimeter (10-inch) steel pipes that combined into a 360-millimeter (14-inch) steel main pipe. Effluent from the 150-KE Building consisted of a 610-millimeter (24-inch), 460-millimeter (18-inch), 100-millimeter (4-inch) and 76-millimeter (3-inch) steel effluent piping system. Effluent from the 105-KE and 150-KE Buildings could bypass the retention basins through a 910-millimeter (36-inch) or a 300-millimeter (12-inch) steel pipe. Pipe depth varied from 1.3 meters (4 feet) to 9.7 meters (32 feet). The deepest pipe ran under an elevated contour that coincided with the retention basin exclusion fence.

Waste Type: Process Effluent

Waste Description: The waste was contaminated steel piping, concrete, and soil. Chemical additives to reactor cooling water included aluminum sulfate (alum) with excess hydrated calcium oxide, sulfuric acid, chlorine, diatomaceous earth (a scouring agent), and sodium dichromate. Water pH was maintained at about 7.5, and free chlorine residual was about 0.2 milligrams per liter. Radionuclide content at the retention basin during sampling by Richards for UNI-946, included the following: cesium-134, plutonium 239/240, cesium-137, strontium-90, hydrogen-3, nickel-63, europium-152, europium-154, europium-155, and cobalt-60.

This Site has the Following SubSites:

Code: 100-K-56:1
Names: 100-K-56:1; 105-KE Reactor Process Effluent North of the Security Fence; Process Water Pipeline Between 105-KE Reactor and 116-K-3 Outfall, 116-K-2 Trench and 116-KE-4 Retention Basin

Code: 100-K-56:2
Names: 100-K-56:2; Effluent Pipelines Inside the 105-KE Reactor Security Fence

Code: 100-K-56:3
Names: 100-K-56:3; Remaing Pipeline near 116-K-3 Outfall Structure

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Code: 100-K-56:1
Classification: Accepted

Names: 100-K-56:1; 105-KE Reactor Process Effluent North of the Security Fence; Process Water Pipeline Between 105-KE Reactor and 116-K-3 Outfall, 116-K-2 Trench and 116-KE-4 Retention Basin
Reclassification Interim Closed Out (9/23/2005)

Type: Radioactive Process Sewer
Start Date:

Status: Inactive
End Date:

Description: 100-K-56 subsite 1 has been remediated and Interim Closed Out. The 100-K-56 pipelines consisted of the gravity-flow process effluent pipelines that formerly serviced the 105-KE

Reactor, terminating at the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KE-4 retention basins. Subsite 1 is the portion of pipeline from the 105-KE reactor building to the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KE-4 retention basins. A portion of the pipeline was removed during the remediation of the 116-K-1 crib.

Location: The pipelines ran from outside the 105-KE Reactor security fence to the 116-K-1 Crib, the 116-K-2 Trench, and the 116-KE-4 retention basins.

Related Sites/ Structures: The remediated pipelines are associated with the 100-K-56:3 pipe segments that were left in place.

Waste Type: Not Specified

Waste Description: The waste is contaminated steel piping, concrete, and soil.

Closure Info: Interim: Remedial action activities at the 100-K reactor effluent pipelines began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation of the pipelines involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005. The previously documented waste site boundaries for the 116-KW-4 and 116-KE-5 sites were much larger than the actual footprint of the heat recovery facilities. The soil area beneath each of the former heat recovery stations was excavated in its entirety with the removal of the co-located pipelines. Approximately 55,960 square meters (602,350 sq ft) of plan area was excavated, including excavation within the deep zone (greater than 4.6 meters [15 ft] below ground surface) up to 8.8 meters (29 ft) below ground surface where necessary to complete remediation. Approximately 86,551 metric tons (95,406 U.S. tons) of material from the sites was removed and disposed at the ERDF. The active 100-K-47 concrete culvert was not removed during remediation of the adjacent section of the 100-K-55 pipeline. Several 100-K-56 pipe segments, located west of 116-KE-4, were not included in the remediation scope.

The contaminated materials from these sites have been excavated and disposed at the ERDF. The remaining soils at the sites have been sampled, analyzed, and modeled, and the results do not preclude any future uses (as bounded by the rural-residential scenario), allow unrestricted use of shallow zone soils, and pose no threat to groundwater or the Columbia River. The 100-K-55:1, 100-K-56:1, 116-KW-4, and 116-KE-5 sites were verified to be remediated in accordance with the ROD and may be backfilled.

The SubSite is Part Of:

Code: 100-K-56

Names: 100-K-56; 100-KE Reactor Cooling Water Effluent Underground Pipelines; 100-KR-1 Pipelines

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Code: 100-K-56:2 **Classification:** Accepted

Names: 100-K-56:2; Effluent Pipelines Inside the 105-KE Reactor Security Fence **Reclassification** None

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: 100-K-56 Subsite 2 consists of the 1.8 meter (72 in.) diameter pipeline and a 91 cm (36 in.) diameter underground effluent pipeline located inside the 105-KE Reactor security fence (although this fence has since been removed). Both the 91 cm (36 in.) and 1.8 meter (72 in.) diameter process effluent underground pipelines exited the west side of the 105-KE Reactor. The 91 cm (36 in.) diameter pipeline connected with the 100-K-3 heat exchanger pit and pump

pit and traveled north and turned northwest to tie into the 1.68 meter by 1.68 meter (66 in.) 100-K-47 concrete sewer. Short lengths of 5.1 cm (2 in.) and 15.2 cm (6 in.) diameter pipelines connected the 91 cm (36 in.) diameter process effluent line to the 100-K-3 pump pit. The 1.8 meter (72 in.) diameter pipeline exited the reactor and continued north for approximately 90 meters (295 ft.), where it passed under the security fence and became 100-K-56 Subsite 1.

A portion of the 100-K-56:2 pipeline, located in remediation area AG Zone 1 (northwest of 105KE), was removed during 2009 through 2011. The 0.9 m (36 in.) pipeline, located in remediation area AG Zone 3 was also removed in 2011. Sample Area #15 of this excavation site exceeded remediation goals for Eu-152 and received a cover of backfill material. The 1.8 meter (72 in.) diameter pipeline connected to the 100-K-3 heat exchanger pit via a 7.6 cm (3 inch) diameter pipeline. The pipelines connecting the 0.9 meter (36 in.) and 1.8 meter (72 in.) pipelines to 100-K-3 were removed during this activity.

Location: The pipelines run in a north-south direction, north of the 105-KW Reactor Building inside the reactor security fence. They exit the north side of the reactor building and turn north.

Waste Type: Not Specified

Waste Description: The waste is contaminated steel piping, concrete, and soil.

The SubSite is Part Of:

Code: 100-K-56

Names: 100-K-56; 100-KE Reactor Cooling Water Effluent Underground Pipelines; 100-KR-1 Pipelines

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Code: 100-K-56:3 **Classification:** Accepted

Names: 100-K-56:3; Remaing Pipeline near 116-K-3 Outfall Structure **Reclassification** None

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Subsite 3 consists of process sewer pipeline segments located near the 116-K-3 Outfall Structure and the 116-K-4 Retention Basins. These pipe segments are adjacent to the remediated 100-K-56:1 excavation area. They were not considered part of the remediation scope in 2005 and were left in place.

The pipe segments either terminated at the 116-K-3 outfall, or tied into the 100-K-47 and 100-K-55 pipelines near the 1908-KE building.

Location: The pipe segments are located north of the 100-KE reactor operation area.

The SubSite is Part Of:

Code: 100-K-56

Names: 100-K-56; 100-KE Reactor Cooling Water Effluent Underground Pipelines; 100-KR-1 Pipelines

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Code: 100-K-60 **Classification:** Accepted

Names: 100-K-60; 1904-K Process Sewer (165-KW) **Reclassification** None

Type: Process Sewer **Start Date:** 1/1/1955

Status: Inactive **End Date:**

Description: This site includes the underground process sewer pipeline that begins at 165-KW and runs up to the point of intersection with the 30.5 and 40.6-centimeter (12 and 16-inch) pipelines coming from 105-KW Reactor. The portion of the sewer that extends from the 165-KW Building to the point of intersection with the 30.5 and 40.6-centimeter (12 and 16-inch) pipelines coming from 105-KW Reactor is a 1.68 by 1.68-meter (66 by 66-inch) concrete sewer.

This site does not include those underground process sewer pipelines that begin at the 105-KE Reactor, the 105-KW Reactor, the 165-KE, the 190-KE, or the 1706-KE, and terminate at the 116-K-3 Outfall. These components are included in 100-K-47. The site has been split because of the different programmatic responsibilities associated with the two sites.

The site does not include the facilities where the pipelines terminate, or pipelines that are housed within building structures, which are addressed separately. This site does not include the radioactive process sewer pipelines, water supply pipelines, glycol heat pipelines, or other reactor effluent underground pipelines addressed by other sites.

Location: The process sewer originates on the north side of 165-KW and runs east and then northeast to a point where it meets the process sewer pipelines coming from 105-KW. At that point the site is described in 100-K-47.

Related Sites/ Structures: The site is related to the 165-KW Building.

Waste Type: Process Effluent

Waste Description: Discharges included overflows from chemical makeup facilities that included chemical additives to reactor cooling water, e.g., aluminum sulfate (alum), with excess hydrated calcium oxide, sulfuric acid, and chlorine. Water pH was maintained at about 7.5, and free chlorine residual was about 0.3 milligrams per liter. Other discharges to the system included: filter backflush waste water; coagulated sediments from the water treatment settling basins; demineralizer regeneration wastes, which included neutralized sulfuric acid and sodium hydroxide; brine wastes from water softeners; and pump cooling waste water.

Code:	100-K-61	**Classification:**	Accepted
Names:	100-K-61; 117-KW Filter Building and Duct Work	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1960
Status:	Inactive	**End Date:**	1/1/1970

Description: The ventilation exhaust filter building houses blowers and particulate filters used to treat the ventilation exhausted from the 105-KW Reactor Building. Included in this site are the 117-KW Building, the intake ventilation duct from the 105-KW Reactor Building, and the exhaust ventilation ducts to the 116-KW Reactor Exhaust Stack. A large portion of the building is below ground. The building and duct work are all made of reinforced concrete, 0.3 to 0.6 meters (1 to 2 feet) thick. The building is 12.2 meters (40 feet) high with 2.4 meters (8 feet) above grade. A soil berm is built up around the building from grade level to the top of the structure. The hatch on the top of the above ground portion of the filter structure is posted as Contamination Area and Danger-Restricted Area, Multiple Hazards.

The building is divided into two large filter cells with a smaller operating area between them. The filter cells each held six filter frames (two wide and three deep). The filter frames were designed to hold thirty-six filters that were 0.6 meters (2 feet) square by 0.3 meters (1 foot) thick. There are spaces between the frames to allow access for filter maintenance. The operating area between the two cells is divided into two levels. The upper level, called the access gallery

has ten doors that lead from it. Four doors open into each of the filter cells and the two other doors provide access to the intake and exhaust ducts. The operating gallery is located below the access gallery. A sump is located at each end of the operating gallery to collect incidental drainage from above. A large open area extends the full length of the structure above the access gallery and the filter cells. It ranges in height between 2.5 and 2.4 meters (8.1 and 7.8 feet) due to the structure's sloping roof. The space provides access to the cement cover blocks that are positioned over each of the filter frames.

Location: The 117-KW Filter Building is located east of the 105-KW Reactor Building, northeast of the 116-KW Reactor Exhaust Stack.

Related Sites/ Structures: The site is associated with the 105-KW Reactor (118-KW-1), the 116-KW Reactor Exhaust Stack (132-KW-1), the 119-KW Sample Building, and the 1904-K Process Sewer (100-K-47).

Process Description: The 117-KW Building was constructed as part of the reactor confinement project. Prior to its use, unfiltered ventilation was exhausted directly from the reactor to the atmosphere. The confinement project diverted the exhaust just before the stack and routed it to the filter building where it passed through a series of filters. The filtered exhaust was then routed back to the ventilation exhaust stack where it was discharged to the atmosphere. Sealwells within the filter building provided the ability to direct the exhaust into one or both of the filter cells.

Waste Type: Equipment

Waste Description: The building contains radiologically contaminated equipment and surfaces that remain from when it was in use.

Waste Type: Demolition and Inert Waste

Waste Description: When the 116-KW Reactor Exhaust Stack was shortened, the debris was placed inside the stack. Some debris is probably within the exhaust duct connecting the filter building to the stack.

Code:	100-K-62	**Classification:**	Accepted
Names:	100-K-62; 117-KE Filter Building	**Reclassification**	Interim Closed Out (8/29/2012)
Type:	Process Unit/Plant	**Start Date:**	1/1/1960
Status:	Inactive	**End Date:**	1/1/1971

Description: The waste site has been remediated and Interim Closed Out. It was the 117-KE filter building. The 117-KE Filter Building housed particulate and activated charcoal filters to treat the ventilation exhaust air from the 105-KE Reactor. The structure also contained a small exhaust system for use during filter changes.

Location: The 117-KE Filter Building was located east of the 105-KE Reactor Building, northeast of the 116-KE Reactor Exhaust Stack.

Related Sites/ Structures: The site is associated with the 105-KE Reactor (118-KE-1), the 116-KW Reactor Exhaust Stack (132-KE-1), the 119-KE Sample Building, and the 1904-K Process Sewer (100-K-47).

Process Description: The 117-KE Building was constructed as part of the reactor confinement project. Prior to its use, unfiltered ventilation was exhausted directly from the reactor to the atmosphere. The confinement project diverted the exhaust just before the stack and routed it to the filter building where it passed through a series of filters. The filtered exhaust was then routed back to the ventilation exhaust stack where it was discharged to the atmosphere. Sealwells within the filter building provided the ability to direct the exhaust into one or both of the filter cells.

Waste Type: Equipment

Waste Description: The building contains radiologically contaminated equipment and surfaces that remain from when it was in use. Sections of the 117-KE Filter Building and associated tunnels were contaminated with cobalt-60, cesium-137, carbon-14, and tritium, as well as strontium-90, europium-152, europium-154, and europium-155.

Waste Type: Misc. Trash and Debris

Waste Description: When the 116-KE Reactor Exhaust Stack was shortened, the debris was placed in the "below ground interior portion" of the stack. Some debris is probably within the exhaust duct connecting the filter building to the stack.

Closure Info: Interim (8/29/2012): Remediation and sampling began in January of 2009 and was completed in April of 2012. The large excavation area, known as 100-K Area AH, encompassed waste sites 100-K-6, 100-K-46, 100-K-62 and 132-KE-1. The excavation area also included Stockpile #4, which contained overburden and layback soil from the excavation of the 116-KE-1 Condensate Crib. Information supporting the use of Stockpile #4, located within the AH excavation, as backfill was also included in the DOE/RL-2012-38 Remaining Sites Verification Package report.

Remediation of the identified Area AH waste sites was accomplished by demolishing the structures and excavating contaminated soil. All waste (soil and debris) associated with these waste sites was disposed at the Environmental Restoration and Disposal Facility (ERDF). The demolition activities were conducted using standard demolition techniques, including explosives for demolition of 132-KE-1 (116-KE Reactor Exhaust Stack). Approximately 1,809 ERDF containers (37,700 tons) of waste from these waste sites were sent to the ERDF for disposal.

Remediation of the 100-K-6 vacuum pit began in August 2011 and was completed in September 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The original waste site description estimated the depth of the cyclone separator as 9.14 meters (30 ft). However, during remediation the actual excavation depth was measured as 5.8 meters (19 ft).

The remediation of the 100-K-46 french drain was associated with the removal of the 119-KE building, which began in January 2009 and was completed in February 2009. The drywell was less than 1.5 meters (5 ft) deep.

The remediation activities at the 100-K-62 filter building began in August 2010 and were completed in May 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The maximum depth from grade within the waste site footprint was approximately 10.6 meters (34.8 ft).

The remediation activities at waste site 132-KE-1 exhaust stack began in July 2010 and were completed in September 2011. Removal of the above-grade portion of the stack was conducted using explosives placed near the base of the stack. The explosion caused the debris to fall in a designated area. The material was then loaded and disposed at ERDF. The entire below grade portion of the stack base was then removed. The maximum depth from grade within the waste site footprint was approximately 6.1 meters (20 ft).

In October of 2010, excavation of the overburden and layback soil for the 116-KE-1 Crib began and Stockpile #4 was created. Samples were collected in the 116-KE-1 waste site footprint and sent for analytical leach testing of the soils to determine carbon-14 leachability from the 100-K soil. During remediation of the co-located waste sites inside the AH excavation area, the 116-KE-1 crib was partially backfilled with soil from Stockpile #4 as a contamination control measure.

Note: Area-wide carbon-14 contamination exists in the deep zone above the criteria for protectiveness. This contamination is associated with the 105-KE Reactor ventilation filtration system and the deep contamination from the condensate that collected in the previously excavated 116-KE-1 Condensate Crib. Additional remediation of the deep vadose zone cannot be completed in proximity to the 105-KE Reactor without impacting structural stability. Available information about the nature and extent of the carbon-14 contamination has been documented in the 116-KE-1 Condensate Crib waste site description. Due to the depth of the contamination, the carbon-14 remediation will coincide with the final decision on 105-KE reactor removal.

Code:	100-K-66	**Classification:**	Accepted
Names:	100-K-66; 165-KW Power Control Building	**Reclassification**	None
Type:	Control Structure	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The building is painted a pink color and has three large stacks on the west end of the building. This site is a bomb resistant shelter without windows. All ventilation is supplied by fans. The building is posted Danger - Restricted Area - Asbestos (internal building asbestos).

Location: The 165-KW Building is located between the 183-KW Water Treatment Plant and the 105-KW Reactor Building. The 190-KW Main Pumphouse directly adjoins the south side of the 165-KW Power Control Building.

Process Description: The purpose of the 165-KW Power Control Building was to provide housing for the power house, control room, valve pit, and electrical switchgear of the water supply system.

The control room and valve pit are located directly over the pipe tunnel that extends from the 183 Building to the 105 Building. This section is 15 meters (50 feet) wide, and the two rooms are separated by a 46-centimeter (18-inch) concrete wall. The valve pit contains most of the motor-operated valves included in the cooling water, service water, and raw water systems. Steel grating serves as a floor at the operating level above the pit.

The electrical switchgear room houses all switchgear for the electrical system. Outside and adjoining the building is the 230 kilovolt Switchyard. Directly beneath the 165 Switchgear Room is the electrical cable room, occupied by two battery rooms, control panels for battery power, and 4,160 volt switchgear and building service transformers.

The control room is the nerve center of the entire water and power plant, more so than the comparable 190 Control Rooms in any of the older reactor areas. The importance of this center to the continuity of operation of the area has been recognized by its placement within the bomb-resistant shelter that also encloses the boiler and turbine room, the electrical switchgear, and the valve pit. Virtually all important pieces of equipment pertaining to maintaining water flow are started, stopped, or positioned directly from the control board in this room.

Steam is supplied by three complete package boilers. The steam is used to generate emergency power by three steam-driven turbo-generator sets, which provide 4.16 kilowatts of power to buses supplying selected low-lift pump motors in the 190-KW Building for reactor cooling and miscellaneous critical electrical components in the system. The power may also be used to operate river pumps to supply raw water to the 183-KW Water Treatment Plant.

In addition to the electrically-operated pumping system, a separate steam turbine driven pump is provided in the 190 Building to supply emergency flow to the reactor in the event both primary Bonneville Power Administration (BPA) and turbo-generator electrical power fails.

Waste Type: Equipment

Waste Description: The building contains asbestos and has been cleaned twice (in 1993) for PCBs.

Code: 100-K-67 **Classification:** Accepted

Names: 100-K-67; 165-KE Power Control Building **Reclassification** None

Type: Control Structure **Start Date:**

Status: Active **End Date:**

Description: The building is painted a pink color and has three large stacks on the west end of the building. This site is a bomb resistant shelter without windows. All ventilation is supplied by fans. The building is posted Danger - Restricted Area - Asbestos (internal building asbestos).

Location: The 165-KE building is located between the 183-KE Water Treatment Plant and the 105-KE Reactor Building. The 190-KE Main Pumphouse directly adjoins the south side of the 165-KE Power Control Building.

Process Description: The purpose of the 165-KE Power Control Building was to provide housing for the power house, control room, valve pit, and electrical switchgear of the water supply system. It is constructed as a bomb resistant shelter, without windows and all ventilation is supplied by fans.

The control room and valve pit are located directly over the pipe tunnel that extends from the 183 Building to the 105 Building. This section is 50 feet wide, and the two rooms are separated by an 18-inch concrete wall. The valve pit contains most of the motor-operated valves included in the cooling water, service water, and raw water systems. Steel grating serves as a floor at the operating level above the pit.

The electrical switchgear room houses all switchgear for the electrical system. Outside and adjoining the building is the 230 kilovolt Switchyard. Directly beneath the 165 Switchgear Room is the electrical cable room, occupied by two battery rooms, control panels for battery power, and 4160 volt switchgear and building service transformers.

The control room is the nerve center of the entire water and power plant, more so than the comparable 190 Control Rooms in any of the older reactor areas. The importance of this center to the continuity of operation of the area has been recognized by its being placed within the bomb-resistant shelter that also encloses the boiler and turbine room, the electrical switchgear, and the valve pit. Virtually all important pieces of equipment pertaining to maintaining water flow are started, stopped, or positioned directly from the control board in this room.

Steam is supplied by three complete package boilers. the steam is used to generate emergency power by three steam-driven turbo-generator sets, which provide 4.16 kilowatt power to buses supplying selected low-lift pump motors in the 190-KE Building for reactor cooling and miscellaneous critical electrical components in the system. The power may also be used to operate river pumps to supply raw water to the 183-KE Water Treatment Plant.

In addition to the electrically-operated pumping system. a separate steam turbine driven pump is provided in the 190 Building to supply emergency flow to the reactor in the event both primary (BPA) and turbo-generator electrical power fails.

Code: 100-K-68 **Classification:** Accepted

Names: 100-K-68; 105-KE Pump Gallery and Catch **Reclassification** Interim Closed Out (10/23/2012)

Tank; D Sump

Type: Catch Tank **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The structure was constructed of an 2.44 meter (8 foot) diameter corrugated steel caisson. A vinyl lined concrete catch tank was located at the bottom of the caisson. The pump gallery, containing two sump pumps and a ladder for access was above the tank. The total depth of the caisson is 10.87 meters (35.67 feet) and extended from just above grade level.

Location: The site was located approximately 22 meters (61.8 feet) north of the northwest corner of the 105-KE Reactor Building and is located just south of 116-KE-3 (105KE Storage Basin French Drain).

Related Sites/ Structures: The catch tank receives basin overflow from an 20.3 centimeter (8 inch) galvanized storage basin overflow header and diverts tank overflow to site 116-KE-3 (Sub basin drainage disposal system).

Waste Type: Water

Waste Description: Waste water from 105-KE Spent Fuel Storage Basin sub-basin drainage header.

Closure Info: Interim (10/23/2012): For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 1 remediation area, adjacent to the northwest corner of the reactor. (Note: One waste site located within Area AG Zone 1, the 116-KE-3 (105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib), was not remediated. Due to the extend of the deep zone contamination attributed to the 116-KE-3 waste site, it was placed in an "excluded region" within Area AG Zone 1. Waste site 116-KE-3 will be addressed at a later date.)

The remediated waste sites located in Area AG Zone 1 include 100-K-68, 100-K-69, 100-K-70, 100-K-71 and 100-K-3. A portion of the 100-K-3 pipeline was remediated with the area AG Zone 2 (see DOE/RL-2012-40). (Note: Portions of 100-K-47 and 100-K-56 pipelines were removed and considered part of the Area AG Zone 1 remediation activities. Approximately 452 feet of the 100-K-56, 36-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 338 feet of the 100-K-56, 72-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 12-inch pipeline exiting the 100-K-71 collection box was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 16-inch pipeline (exiting the 100-K-71 collection box) was removed from Area AG Zone 1 and 3. The remaining portions of the 100-K-47 and 100-K-56 pipelines will be addressed in future remediation activities.)

Remediation of the waste sites within Area AG Zone 1 began in September 2009 and was finished in May 2012. In-process samples were collected and radiological surveys were conducted to guide the remediation. Contaminated structures, pipelines, and associated soil and debris attributed to these waste sites have been removed and disposed at the ERDF. During this remedial activity, Stockpile #3 was created from excavated soil from the overburden and layback from Area AG Zone 1 waste sites. Radiological surveys were conducted on the material prior to placing it in the stockpile. Stockpile #3 was located northwest of Area AG.

The 105-KE fuel storage basin (100-K-42 waste site) borders the Area AG Zone 1. UPR-100-K-1 (105-KE Fuel Storage Basin Leak) is an unplanned release from the discharge chute of the fuel storage basin. It leaked highly radioactive water underneath the basin into the ground for an unknown period of time. Boreholes were drilled to evaluate the subsurface soil conditions.

The results indicated significant residual radioactivity underneath the footprint of the fuel storage basin. The residual radioactivity distorted the radiological surveys conducted within the adjacent Area AG Zone 1.

The remediation of the 100-K-3 waste site began in January 2010 and was completed in May 2012. The remediation of this waste site included excavation of the heat exchanger, the pump pit, associated piping and contaminated soil. A total of 709 ERDF containers (11,513 metric tons [12,691 short tons]) was disposed at the ERDF from the Area AG 100-K-3 waste site (Zones 1 and 2 combined). Along with remediation of the waste sites in Area AG Zone 1, a 20.3 cm (8 in.) diameter Process Sewer Outside (PSO) drain line was also excavated. This pipeline exited the 100-K-3 heat exchanger pit and tied into the 100-K-47 concrete process sewer. This portion of pipeline was removed with a composite in-process sample taken along the length of the excavation in August 2011. The in-process sample results did not exceed the RAGs. The region within Area AG Zone 1 where this pipeline was removed was included in the Shallow Zone decision unit. In addition, the 100-K-3, 2.54 cm (1 in.) diameter PIEX pipeline (connecting the 100-K-3 heat exchanger to the 105-KE reactor) was documented in the shallow zone decision unit. This pipeline was originally buried 1.2 meters (4 ft) deep. When removed, the footprint was wholly contained within the layback region of the 100-K-56 waste site.

The 100-K-68 waste site structure (caisson with catch tank) was removed during waste site remediation. The remediation of the 100-K-68 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the corrugated steel caisson, catch tank and pumping equipment. However, deep residual contamination associated with the 116-KE-3 waste site remains underneath the footprint of the 100-K-68 waste site.

The remediation of the 100-K-69 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the concrete sump and associated contaminated soil.

The remediation of the contaminated soil beneath the 100-K-70 waste site began in April 2010 and was completed in May 2012. The tank associated with the 100-K-70 waste site had been previously removed, prior to the fuel storage basin demolition in 2008.

A total of 599 ERDF containers (11,920 metric tons [13,139 short tons]) was disposed at the ERDF from the combined 100-K-68, 100-K-69, and 100-K-70 waste sites.

The remediation of the 100-K-71 waste site began in March 2010 and was completed in May 2012. The remediation of the waste site included excavation of the collection box and associated contaminated soil. A total of 285 ERDF containers (5,858 metric tons [6,457 short tons]) was disposed at the ERDF from the 100-K-71 waste site. In-process samples collected at the collection box were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these COCs.

The remediation of portions of the 100-K-47 pipeline began in November 2009 and was completed in September 2011. The partial remediation of the pipeline waste site included excavation of the underground process sewer pipelines and associated contaminated soil. In-process samples were collected within the remediated portion of the 100-K-71 waste site (collection box) footprint, because the 10.2 cm (4 in.) diameter cement asbestos pipeline from the 117-KE Filter Building (100-K-62 waste site) terminated at the collection box. Samples were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these contaminants of concern (COCs). Therefore, carbon-14 and tritium were eliminated from the list of COCs for this waste site. A total of 1,240 ERDF containers (20,802 metric tons [22,930 short tons]) was disposed at the ERDF from the Area AG 100-K-47 waste site (Zones 1 and 3 combined).

The remediation of portions of the 100-K-56 Subsite 2 pipeline began in September 2009 and was completed in June 2011. The remediation excavated the part of the process effluent underground pipelines and associated contaminated soil. A total of 800 ERDF containers (13,071 metric tons [14,408 short tons]) was disposed at the ERDF from the Area AG 100-K-56 waste site (in Zones 1 and 3 combined).

A total of 63,292 metric tons of material was disposed at the ERDF during the AG Zone 1 remediation activity. (33,873 metric tons was related to the 100-K-47 and 100-K-56 partial pipeline excavations.)

No evidence of spills or leaks from Area AG Zone 1 waste sites was found after remediation. Post remediation, a Global Positioning Environmental Radiological Survey (GPERS) and radiological surveys using hand-held instrumentation were conducted. The GPERS is rendered ineffective in regions close to the 105-KE Reactor fuel storage basin (100-K-42 waste site) and the unplanned release site (UPR-100-K-1) due to the sensitive detection capabilities of the sodium iodide instrumentation and the elevated radiation background levels associated with the fuel storage basin subsurface soil.

Follow-up radiological surveys using hand-held instruments were conducted in the region around the 100-K-68, 100-K-69, 100-K-70, and 100-K-71 waste sites, immediately north of the fuel storage basin. The survey indicated elevated radiological contamination where piping from the 105-KE Reactor fuel storage basin traveled to the 105-KE Collection Box (100-K-71 waste site). One of the pipelines entering the south side of the collection box was equipped with a direct buried flanged gate valve, located at a depth of approximately 8.5 meters (27 ft 11 in.). A focused verification sample of this location was collected to determine contamination levels present in the soil. This follow-up survey also indicated elevated radiological contamination in the area around the 100-K-68 waste site. Verification sampling beneath the 100-K-68 waste site was not conducted because the residual soil contamination is attributed to the 116-KE-3 waste site. NOTE: 116-KE-3 is located within Area AG Zone 1 but was not part of the remediation work scope.

Code:	100-K-69	**Classification:**	Accepted
Names:	100-K-69; 105-KE Sump C	**Reclassification**	Interim Closed Out (10/23/2012)
Type:	Sump	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The 100-K-69 waste site was a rectangular concrete structure, measuring approximately 2.3 meters (7.5 ft) by 1.4 meters (4.6 ft) by 3.7 meters (12 ft) deep. It received water from 105-KE fuel storage basin floor drains. Two electric powered sump pumps returned the drain water to the basin.

Location: The sump was located just off the north side of the 105-KE Reactor Building and is near the northwest corner of the building.

Waste Type: Process Effluent

Waste Description:

Closure Info: Interim (10/23/2012): For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 1 remediation area, adjacent to the northwest corner of the reactor. (Note: One waste site located

within Area AG Zone 1, the 116-KE-3 (105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib), was not remediated. Due to the extend of the deep zone contamination attributed to the 116-KE-3 waste site, it was placed in an "excluded region" within Area AG Zone 1. Waste site 116-KE-3 will be addressed at a later date.)

The remediated waste sites located in Area AG Zone 1 include 100-K-68, 100-K-69, 100-K-70, 100-K-71 and 100-K-3. A portion of the 100-K-3 pipeline was remediated with the area AG Zone 2 (see DOE/RL-2012-40). (Note: Portions of 100-K-47 and 100-K-56 pipelines were removed and considered part of the Area AG Zone 1 remediation activities. Approximately 452 feet of the 100-K-56, 36-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 338 feet of the 100-K-56, 72-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 12-inch pipeline exiting the 100-K-71 collection box was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 16-inch pipeline (exiting the 100-K-71 collection box) was removed from Area AG Zone 1 and 3. The remaining portions of the 100-K-47 and 100-K-56 pipelines will be addressed in future remediation activities.)

Remediation of the waste sites within Area AG Zone 1 began in September 2009 and was finished in May 2012. In-process samples were collected and radiological surveys were conducted to guide the remediation. Contaminated structures, pipelines, and associated soil and debris attributed to these waste sites have been removed and disposed at the ERDF. During this remedial activity, Stockpile #3 was created from excavated soil from the overburden and layback from Area AG Zone 1 waste sites. Radiological surveys were conducted on the material prior to placing it in the stockpile. Stockpile #3 was located northwest of Area AG.

The 105-KE fuel storage basin (100-K-42 waste site) borders the Area AG Zone 1. UPR-100-K-1 (105-KE Fuel Storage Basin Leak) is an unplanned release from the discharge chute of the fuel storage basin. It leaked highly radioactive water underneath the basin into the ground for an unknown period of time. Boreholes were drilled to evaluate the subsurface soil conditions. The results indicated significant residual radioactivity underneath the footprint of the fuel storage basin. The residual radioactivity distorted the radiological surveys conducted within the adjacent Area AG Zone 1.

The remediation of the 100-K-3 waste site began in January 2010 and was completed in May 2012. The remediation of this waste site included excavation of the heat exchanger, the pump pit, associated piping and contaminated soil. A total of 709 ERDF containers (11,513 metric tons [12,691 short tons]) was disposed at the ERDF from the Area AG 100-K-3 waste site (Zones 1 and 2 combined). Along with remediation of the waste sites in Area AG Zone 1, a 20.3 cm (8 in.) diameter Process Sewer Outside (PSO) drain line was also excavated. This pipeline exited the 100-K-3 heat exchanger pit and tied into the 100-K-47 concrete process sewer. This portion of pipeline was removed with a composite in-process sample taken along the length of the excavation in August 2011. The in-process sample results did not exceed the RAGs. The region within Area AG Zone 1 where this pipeline was removed was included in the Shallow Zone decision unit. In addition, the 100-K-3, 2.54 cm (1 in.) diameter PIEX pipeline (connecting the 100-K-3 heat exchanger to the 105-KE reactor) was documented in the shallow zone decision unit. This pipeline was originally buried 1.2 meters (4 ft) deep. When removed, the footprint was wholly contained within the layback region of the 100-K-56 waste site.

The 100-K-68 waste site structure (caisson with catch tank) was removed during waste site remediation. The remediation of the 100-K-68 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the corrugated steel caisson, catch tank and pumping equipment. However, deep residual contamination associated with the 116-KE-3 waste site remains underneath the footprint of the 100-K-68 waste site.

The remediation of the 100-K-69 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the concrete sump and associated contaminated soil.

The remediation of the contaminated soil beneath the 100-K-70 waste site began in April 2010 and was completed in May 2012. The tank associated with the 100-K-70 waste site had been previously removed, prior to the fuel storage basin demolition in 2008.

A total of 599 ERDF containers (11,920 metric tons [13,139 short tons]) was disposed at the ERDF from the combined 100-K-68, 100-K-69, and 100-K-70 waste sites.

The remediation of the 100-K-71 waste site began in March 2010 and was completed in May 2012. The remediation of the waste site included excavation of the collection box and associated contaminated soil. A total of 285 ERDF containers (5,858 metric tons [6,457 short tons]) was disposed at the ERDF from the 100-K-71 waste site. In-process samples collected at the collection box were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these COCs.

The remediation of portions of the 100-K-47 pipeline began in November 2009 and was completed in September 2011. The partial remediation of the pipeline waste site included excavation of the underground process sewer pipelines and associated contaminated soil. In-process samples were collected within the remediated portion of the 100-K-71 waste site (collection box) footprint, because the 10.2 cm (4 in.) diameter cement asbestos pipeline from the 117-KE Filter Building (100-K-62 waste site) terminated at the collection box. Samples were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these contaminants of concern (COCs). Therefore, carbon-14 and tritium were eliminated from the list of COCs for this waste site. A total of 1,240 ERDF containers (20,802 metric tons [22,930 short tons]) was disposed at the ERDF from the Area AG 100-K-47 waste site (Zones 1 and 3 combined).

The remediation of portions of the 100-K-56 Subsite 2 pipeline began in September 2009 and was completed in June 2011. The remediation excavated the part of the process effluent underground pipelines and associated contaminated soil. A total of 800 ERDF containers (13,071 metric tons [14,408 short tons]) was disposed at the ERDF from the Area AG 100-K-56 waste site (in Zones 1 and 3 combined).

A total of 63,292 metric tons of material was disposed at the ERDF during the AG Zone 1 remediation activity. (33,873 metric tons was related to the 100-K-47 and 100-K-56 partial pipeline excavations.)

No evidence of spills or leaks from Area AG Zone 1 waste sites was found after remediation. Post remediation, a Global Positioning Environmental Radiological Survey (GPERS) and radiological surveys using hand-held instrumentation were conducted. The GPERS is rendered ineffective in regions close to the 105-KE Reactor fuel storage basin (100-K-42 waste site) and the unplanned release site (UPR-100-K-1) due to the sensitive detection capabilities of the sodium iodide instrumentation and the elevated radiation background levels associated with the fuel storage basin subsurface soil.

Follow-up radiological surveys using hand-held instruments were conducted in the region around the 100-K-68, 100-K-69, 100-K-70, and 100-K-71 waste sites, immediately north of the fuel storage basin. The survey indicated elevated radiological contamination where piping from the 105-KE Reactor fuel storage basin traveled to the 105-KE Collection Box (100-K-71 waste site). One of the pipelines entering the south side of the collection box was equipped with a direct buried flanged gate valve, located at a depth of approximately 8.5 meters (27 ft 11 in.). A focused verification sample of this location was collected to determine contamination levels

present in the soil. This follow-up survey also indicated elevated radiological contamination in the area around the 100-K-68 waste site. Verification sampling beneath the 100-K-68 waste site was not conducted because the residual soil contamination is attributed to the 116-KE-3 waste site. NOTE: 116-KE-3 is located within Area AG Zone 1 but was not part of the remediation work scope.

Code:	100-K-70	**Classification:**	Accepted
Names:	100-K-70; 105-KE Waste Storage Tank; Holding Tank	**Reclassification**	Interim Closed Out (10/23/2012)
Type:	Storage Tank	**Start Date:**	1/1/1974
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It was a modified steel storage tank for the 105-KE Spent Fuel Storage Basin radioactive drains. The tank was buried under a 1.8 meter (6 foot) deep earth berm. An absolute filter was located on the east end of the tank and a tank level gauge was located on the west end of the tank. A 0.9 meter (3 ft) diameter access port was located at the approximate center of the tank and extended just above grade level. The tank associated with the 100-K-70 waste site was removed prior to the fuel storage basin demolition in 2008.

Location: The site was located approximately 8 meters (22.5 feet) north of the 105-KE Building.

Related Sites/ Structures: A pipeline designated as 100-K-47 connected 100-K-70 to the 105-KE waste storage tank. This section of 100-K-47 pipeline was within the remediation area AG Zone 1 and was removed.

Waste Type: Process Effluent

Waste Description:

Closure Info: Interim (10/23/2012): For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 1 remediation area, adjacent to the northwest corner of the reactor. (Note: One waste site located within Area AG Zone 1, the 116-KE-3 (105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib), was not remediated. Due to the extend of the deep zone contamination attributed to the 116-KE-3 waste site, it was placed in an "excluded region" within Area AG Zone 1. Waste site 116-KE-3 will be addressed at a later date.)

The remediated waste sites located in Area AG Zone 1 include 100-K-68, 100-K-69, 100-K-70, 100-K-71 and 100-K-3. A portion of the 100-K-3 pipeline was remediated with the area AG Zone 2 (see DOE/RL-2012-40). (Note: Portions of 100-K-47 and 100-K-56 pipelines were removed and considered part of the Area AG Zone 1 remediation activities. Approximately 452 feet of the 100-K-56, 36-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 338 feet of the 100-K-56, 72-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 12-inch pipeline exiting the 100-K-71 collection box was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 16-inch pipeline (exiting the 100-K-71 collection box) was removed from Area AG Zone 1 and 3. The remaining portions of the 100-K-47 and 100-K-56 pipelines will be addressed in future remediation activities.)

Remediation of the waste sites within Area AG Zone 1 began in September 2009 and was finished in May 2012. In-process samples were collected and radiological surveys were conducted to guide the remediation. Contaminated structures, pipelines, and associated soil and

debris attributed to these waste sites have been removed and disposed at the ERDF. During this remedial activity, Stockpile #3 was created from excavated soil from the overburden and layback from Area AG Zone 1 waste sites. Radiological surveys were conducted on the material prior to placing it in the stockpile. Stockpile #3 was located northwest of Area AG.

The 105-KE fuel storage basin (100-K-42 waste site) borders the Area AG Zone 1. UPR-100-K-1 (105-KE Fuel Storage Basin Leak) is an unplanned release from the discharge chute of the fuel storage basin. It leaked highly radioactive water underneath the basin into the ground for an unknown period of time. Boreholes were drilled to evaluate the subsurface soil conditions. The results indicated significant residual radioactivity underneath the footprint of the fuel storage basin. The residual radioactivity distorted the radiological surveys conducted within the adjacent Area AG Zone 1.

The remediation of the 100-K-3 waste site began in January 2010 and was completed in May 2012. The remediation of this waste site included excavation of the heat exchanger, the pump pit, associated piping and contaminated soil. A total of 709 ERDF containers (11,513 metric tons [12,691 short tons]) was disposed at the ERDF from the Area AG 100-K-3 waste site (Zones 1 and 2 combined). Along with remediation of the waste sites in Area AG Zone 1, a 20.3 cm (8 in.) diameter Process Sewer Outside (PSO) drain line was also excavated. This pipeline exited the 100-K-3 heat exchanger pit and tied into the 100-K-47 concrete process sewer. This portion of pipeline was removed with a composite in-process sample taken along the length of the excavation in August 2011. The in-process sample results did not exceed the RAGs. The region within Area AG Zone 1 where this pipeline was removed was included in the Shallow Zone decision unit. In addition, the 100-K-3, 2.54 cm (1 in.) diameter PIEX pipeline (connecting the 100-K-3 heat exchanger to the 105-KE reactor) was documented in the shallow zone decision unit. This pipeline was originally buried 1.2 meters (4 ft) deep. When removed, the footprint was wholly contained within the layback region of the 100-K-56 waste site.

The 100-K-68 waste site structure (caisson with catch tank) was removed during waste site remediation. The remediation of the 100-K-68 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the corrugated steel caisson, catch tank and pumping equipment. However, deep residual contamination associated with the 116-KE-3 waste site remains underneath the footprint of the 100-K-68 waste site.

The remediation of the 100-K-69 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the concrete sump and associated contaminated soil.

The remediation of the contaminated soil beneath the 100-K-70 waste site began in April 2010 and was completed in May 2012. The tank associated with the 100-K-70 waste site had been previously removed, prior to the fuel storage basin demolition in 2008.

A total of 599 ERDF containers (11,920 metric tons [13,139 short tons]) was disposed at the ERDF from the combined 100-K-68, 100-K-69, and 100-K-70 waste sites.

The remediation of the 100-K-71 waste site began in March 2010 and was completed in May 2012. The remediation of the waste site included excavation of the collection box and associated contaminated soil. A total of 285 ERDF containers (5,858 metric tons [6,457 short tons]) was disposed at the ERDF from the 100-K-71 waste site. In-process samples collected at the collection box were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these COCs.

The remediation of portions of the 100-K-47 pipeline began in November 2009 and was completed in September 2011. The partial remediation of the pipeline waste site included

excavation of the underground process sewer pipelines and associated contaminated soil. In-process samples were collected within the remediated portion of the 100-K-71 waste site (collection box) footprint, because the 10.2 cm (4 in.) diameter cement asbestos pipeline from the 117-KE Filter Building (100-K-62 waste site) terminated at the collection box. Samples were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these contaminants of concern (COCs). Therefore, carbon-14 and tritium were eliminated from the list of COCs for this waste site. A total of 1,240 ERDF containers (20,802 metric tons [22,930 short tons]) was disposed at the ERDF from the Area AG 100-K-47 waste site (Zones 1 and 3 combined).

The remediation of portions of the 100-K-56 Subsite 2 pipeline began in September 2009 and was completed in June 2011. The remediation excavated the part of the process effluent underground pipelines and associated contaminated soil. A total of 800 ERDF containers (13,071 metric tons [14,408 short tons]) was disposed at the ERDF from the Area AG 100-K-56 waste site (in Zones 1 and 3 combined).

A total of 63,292 metric tons of material was disposed at the ERDF during the AG Zone 1 remediation activity. (33,873 metric tons was related to the 100-K-47 and 100-K-56 partial pipeline excavations.)

No evidence of spills or leaks from Area AG Zone 1 waste sites was found after remediation. Post remediation, a Global Positioning Environmental Radiological Survey (GPERS) and radiological surveys using hand-held instrumentation were conducted. The GPERS is rendered ineffective in regions close to the 105-KE Reactor fuel storage basin (100-K-42 waste site) and the unplanned release site (UPR-100-K-1) due to the sensitive detection capabilities of the sodium iodide instrumentation and the elevated radiation background levels associated with the fuel storage basin subsurface soil.

Follow-up radiological surveys using hand-held instruments were conducted in the region around the 100-K-68, 100-K-69, 100-K-70, and 100-K-71 waste sites, immediately north of the fuel storage basin. The survey indicated elevated radiological contamination where piping from the 105-KE Reactor fuel storage basin traveled to the 105-KE Collection Box (100-K-71 waste site). One of the pipelines entering the south side of the collection box was equipped with a direct buried flanged gate valve, located at a depth of approximately 8.5 meters (27 ft 11 in.). A focused verification sample of this location was collected to determine contamination levels present in the soil. This follow-up survey also indicated elevated radiological contamination in the area around the 100-K-68 waste site. Verification sampling beneath the 100-K-68 waste site was not conducted because the residual soil contamination is attributed to the 116-KE-3 waste site. NOTE: 116-KE-3 is located within Area AG Zone 1 but was not part of the remediation work scope.

Code:	100-K-71	**Classification:**	Accepted
Names:	100-K-71; 105-KE Collection Box	**Reclassification**	Interim Closed Out (10/23/2012)
Type:	Diversion Box	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The 105-KE Collection Box collected effluent from nine underground process sewer lines that originated in the 105-KE Reactor Building and also from the 117-KE filter building (100-K-62). The effluent exited the Collection Box via 12 inch and 16 inch cast iron process sewer pipelines. The Process Sewer pipelines that entered and exited the 100-K-71 Collection Box are part of sitecode 100-K-47.

Location: The site was located underground approximately, 12 meters north of the 105-KE Reactor

Building.

Related Sites/ Structures: Two pipelines designated as 100-K-47 exited the north side of the 100-K-71, 105-KE collection box. The portions of the 100-K-47 pipelines that connected to the collection box were within the remediation area AG Zone 1 and were removed.

Waste Type: Process Effluent

Waste Description: The collection box received waste water from the contaminated drain, potentially contaminated drain, clean drain, drain to pluto crib, basin drain line, ink system drain, rod cooling water drain, floor drains, the decon drain to filter and basin overflow drain.

Closure Info: Interim (10/23/2012): For the purposes of implementing and documenting remedial activities, the 100-K Area was divided into several informal remediation areas. The waste sites of this remedial activity were informally designated as being located within the Area AG Zone 1 remediation area, adjacent to the northwest corner of the reactor. (Note: One waste site located within Area AG Zone 1, the 116-KE-3 (105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib), was not remediated. Due to the extend of the deep zone contamination attributed to the 116-KE-3 waste site, it was placed in an "excluded region" within Area AG Zone 1. Waste site 116-KE-3 will be addressed at a later date.)

The remediated waste sites located in Area AG Zone 1 include 100-K-68, 100-K-69, 100-K-70, 100-K-71 and 100-K-3. A portion of the 100-K-3 pipeline was remediated with the area AG Zone 2 (see DOE/RL-2012-40). (Note: Portions of 100-K-47 and 100-K-56 pipelines were removed and considered part of the Area AG Zone 1 remediation activities. Approximately 452 feet of the 100-K-56, 36-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 338 feet of the 100-K-56, 72-inch pipeline was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 12-inch pipeline exiting the 100-K-71 collection box was removed from Area AG Zone 1 and 3. Approximately 344 feet of the 100-K-47, 16-inch pipeline (exiting the 100-K-71 collection box) was removed from Area AG Zone 1 and 3. The remaining portions of the 100-K-47 and 100-K-56 pipelines will be addressed in future remediation activities.)

Remediation of the waste sites within Area AG Zone 1 began in September 2009 and was finished in May 2012. In-process samples were collected and radiological surveys were conducted to guide the remediation. Contaminated structures, pipelines, and associated soil and debris attributed to these waste sites have been removed and disposed at the ERDF. During this remedial activity, Stockpile #3 was created from excavated soil from the overburden and layback from Area AG Zone 1 waste sites. Radiological surveys were conducted on the material prior to placing it in the stockpile. Stockpile #3 was located northwest of Area AG.

The 105-KE fuel storage basin (100-K-42 waste site) borders the Area AG Zone 1. UPR-100-K-1 (105-KE Fuel Storage Basin Leak) is an unplanned release from the discharge chute of the fuel storage basin. It leaked highly radioactive water underneath the basin into the ground for an unknown period of time. Boreholes were drilled to evaluate the subsurface soil conditions. The results indicated significant residual radioactivity underneath the footprint of the fuel storage basin. The residual radioactivity distorted the radiological surveys conducted within the adjacent Area AG Zone 1.

The remediation of the 100-K-3 waste site began in January 2010 and was completed in May 2012. The remediation of this waste site included excavation of the heat exchanger, the pump pit, associated piping and contaminated soil. A total of 709 ERDF containers (11,513 metric tons [12,691 short tons]) was disposed at the ERDF from the Area AG 100-K-3 waste site (Zones 1 and 2 combined). Along with remediation of the waste sites in Area AG Zone 1, a 20.3 cm (8 in.) diameter Process Sewer Outside (PSO) drain line was also excavated. This pipeline exited the 100-K-3 heat exchanger pit and tied into the 100-K-47 concrete process

sewer. This portion of pipeline was removed with a composite in-process sample taken along the length of the excavation in August 2011. The in-process sample results did not exceed the RAGs. The region within Area AG Zone 1 where this pipeline was removed was included in the Shallow Zone decision unit. In addition, the 100-K-3, 2.54 cm (1 in.) diameter PIEX pipeline (connecting the 100-K-3 heat exchanger to the 105-KE reactor) was documented in the shallow zone decision unit. This pipeline was originally buried 1.2 meters (4 ft) deep. When removed, the footprint was wholly contained within the layback region of the 100-K-56 waste site.

The 100-K-68 waste site structure (caisson with catch tank) was removed during waste site remediation. The remediation of the 100-K-68 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the corrugated steel caisson, catch tank and pumping equipment. However, deep residual contamination associated with the 116-KE-3 waste site remains underneath the footprint of the 100-K-68 waste site.

The remediation of the 100-K-69 waste site began in April 2010 and was completed in May 2012. The remediation of the waste site excavated the concrete sump and associated contaminated soil.

The remediation of the contaminated soil beneath the 100-K-70 waste site began in April 2010 and was completed in May 2012. The tank associated with the 100-K-70 waste site had been previously removed, prior to the fuel storage basin demolition in 2008.

A total of 599 ERDF containers (11,920 metric tons [13,139 short tons]) was disposed at the ERDF from the combined 100-K-68, 100-K-69, and 100-K-70 waste sites.

The remediation of the 100-K-71 waste site began in March 2010 and was completed in May 2012. The remediation of the waste site included excavation of the collection box and associated contaminated soil. A total of 285 ERDF containers (5,858 metric tons [6,457 short tons]) was disposed at the ERDF from the 100-K-71 waste site. In-process samples collected at the collection box were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these COCs.

The remediation of portions of the 100-K-47 pipeline began in November 2009 and was completed in September 2011. The partial remediation of the pipeline waste site included excavation of the underground process sewer pipelines and associated contaminated soil. In-process samples were collected within the remediated portion of the 100-K-71 waste site (collection box) footprint, because the 10.2 cm (4 in.) diameter cement asbestos pipeline from the 117-KE Filter Building (100-K-62 waste site) terminated at the collection box. Samples were analyzed for carbon-14 and tritium. The results indicated no residual contamination of these contaminants of concern (COCs). Therefore, carbon-14 and tritium were eliminated from the list of COCs for this waste site. A total of 1,240 ERDF containers (20,802 metric tons [22,930 short tons]) was disposed at the ERDF from the Area AG 100-K-47 waste site (Zones 1 and 3 combined).

The remediation of portions of the 100-K-56 Subsite 2 pipeline began in September 2009 and was completed in June 2011. The remediation excavated the part of the process effluent underground pipelines and associated contaminated soil. A total of 800 ERDF containers (13,071 metric tons [14,408 short tons]) was disposed at the ERDF from the Area AG 100-K-56 waste site (in Zones 1 and 3 combined).

A total of 63,292 metric tons of material was disposed at the ERDF during the AG Zone 1 remediation activity. (33,873 metric tons was related to the 100-K-47 and 100-K-56 partial pipeline excavations.)

No evidence of spills or leaks from Area AG Zone 1 waste sites was found after remediation. Post remediation, a Global Positioning Environmental Radiological Survey (GPERS) and radiological surveys using hand-held instrumentation were conducted. The GPERS is rendered ineffective in regions close to the 105-KE Reactor fuel storage basin (100-K-42 waste site) and the unplanned release site (UPR-100-K-1) due to the sensitive detection capabilities of the sodium iodide instrumentation and the elevated radiation background levels associated with the fuel storage basin subsurface soil.

Follow-up radiological surveys using hand-held instruments were conducted in the region around the 100-K-68, 100-K-69, 100-K-70, and 100-K-71 waste sites, immediately north of the fuel storage basin. The survey indicated elevated radiological contamination where piping from the 105-KE Reactor fuel storage basin traveled to the 105-KE Collection Box (100-K-71 waste site). One of the pipelines entering the south side of the collection box was equipped with a direct buried flanged gate valve, located at a depth of approximately 8.5 meters (27 ft 11 in.). A focused verification sample of this location was collected to determine contamination levels present in the soil. This follow-up survey also indicated elevated radiological contamination in the area around the 100-K-68 waste site. Verification sampling beneath the 100-K-68 waste site was not conducted because the residual soil contamination is attributed to the 116-KE-3 waste site. NOTE: 116-KE-3 is located within Area AG Zone 1 but was not part of the remediation work scope.

Code: 100-K-72 **Classification:** Accepted

Names: 100-K-72; 105-KW Pump Gallery and Catch Tank; D Sump **Reclassification** None

Type: Catch Tank **Start Date:**

Status: Active **End Date:**

Description: The structure is located below grade. It is constructed of a 2.4 meter (8 foot) diameter corrugated steel caisson. A vinyl lined concrete catch tank is located at the bottom of the caisson. Above the catch tank, is a pump gallery containing two sump pumps and a ladder for access. The total length of the caisson is 11 meters (35 feet 8 inches) and extends from just above grade level at elevation 464.50 feet to elevation 430.83 feet.

Location: The site is located approximately 22 meters (73 feet) north of the northwest corner of the 105-KW Reactor Building and is located just south of 116-KW-2 (105KW Storage Basin French Drain).

Related Sites/ Structures: The catch tank receives basin overflow from the 20 centimeter (8 inch) sub-basin drainage header and a 2" RDW (Radioactive Drain Water) and diverts the catch tank overflow to site 116-KW-2 (Sub basin drainage disposal system).

Waste Type: Water

Waste Description: Waste water from 105-KE Spent Fuel Storage Basin sub-basin drainage header.

Code: 100-K-73 **Classification:** Accepted

Names: 100-K-73; 105-KW Collection Box **Reclassification** None

Type: Diversion Box **Start Date:**

Status: Inactive **End Date:**

Description: The 105-KW Collection Box collects effluent from nine underground process sewer lines that

originate in the 105-KW Reactor Building. The effluent exits the Collection Box via 30 centimeter (12 inch) cast iron and a 41 centimeter (16 inch) cast iron process sewer pipelines. Sewer pipelines entering the "Collection Box" include the following: 15 centimeter (6 inch) clean drain, 25.4 centimeter (10 inch) contaminated drain, 25.4 centimeter (10 inch) potentially contaminated drain, 15 centimeter (6 inch) rod cooling water, 15 centimeter (6 inch) drain to pluto crib, 30 centimeter (12 inch) basin drain line, 20 centimeter (8 inch) basin overflow line, 15 centimeter (6 inch) vent line, and 10 centimeter (4 inch) vitrified clay tile decon drain to filter.

Location: The site is located approximately 6.5 meters (21 feet) north of the 105-KW Reactor Building. The site is underground and its location is not discernible from the ground surface.

Waste Type: Process Effluent

Waste Description: The collection box received waste water from the contaminated drain, potentially contaminated drain, clean drain, drain to pluto crib, basin drain line, ink system drain, rod cooling water drain, floor drains, the decon drain to filter and basin overflow drain.

Code: 100-K-74 **Classification:** Accepted

Names: 100-K-74; 105-KW Waste Storage Tank; Holding Tank **Reclassification** None

Type: Storage Tank **Start Date:**

Status: Inactive **End Date:**

Description: The site is a steel storage tank for the 105-KW Spent Fuel Storage Basin radioactive drains. The tank is buried under a 1.8 meter (6 foot) deep earth berm. An absolute filter is located on the east end of the tank and a tank level gauge is located on the west end of the tank.

Location: The site is located approximately 8 meters (26 feet) north of the 105-KW Building.

Related Sites/ Structures: A 5 centimeter (2 inch) line connects the waste storage tank to the Sump "C" (Site Code 100-K-75).

Waste Type: Process Effluent

Waste Description:

Code: 100-K-75 **Classification:** Accepted

Names: 100-K-75; 105-KW Sump C **Reclassification** None

Type: Sump **Start Date:**

Status: Inactive **End Date:**

Description: The structure is a concrete sump that receives water from the 105-KW fuel storage basin floor drains in the transfer area. Two electric powered sump pumps return the drain water to the basin and/or the underground holding tank.

Location: The site is located just north of the 105KW Reactor Building and is near the northwest corner of the building.

Related Sites/ Structures: Sump "C" pumps return waste water from the floor drains in the 105-KW Basin Transfer Area to the 105-KW Basin and/or the Holding Tank (site code 100-K-74).

Waste Type: Water

Waste Description:

Code: 100-K-77 **Classification:** Accepted

Names: 100-K-77; Underground Railroad Ties Southeast of 1706KE **Reclassification** Interim Closed Out (10/4/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated. The site was railroad ties discovered at the bottom of an open excavation. The excavation measured approximately 2.9 meters by 3.1 meters by 2.1 meters deep (9.5 feet by 10 feet by 6.9 feet deep). The sidewalls were braced with lumber. The open excavation had been backfilled, and the railroad ties at the bottom of the excavation were left in place. The sidewall braces were probably removed prior to backfilling. In June 2011, the area was re-excavated. The railroad ties and original backfill soil was removed. The second excavation was backfilled in July 2011.

Location: The site is located approximately 7 meters (23 feet) east southeast of the 1706KE building.

Related Sites/ Structures: The reason for the railroad ties is not known, consequently associated structures are also unknown.

Process Description: The sides of the excavation were braced with lumber to prevent cave in and the top was covered with a tarp to keep precipitation out. Ultrasonic testing was used to find any pipe leaks that might have been causing the subsidences, but no leaks were identified.

Waste Type: Misc. Trash and Debris

Waste Description: Buried railroad ties.

Closure Info: Interim (10/4/2011): The exact location of the buried railroad ties was not known. Several areas near the 1706-KE Building were excavated while searching for the waste site location. When the correct location was identified, the railroad ties and original backfilled soil were removed. Approximately 4,651 tons of railroad ties and soil were disposed of in the ERDF landfill. No visual evidence of spills or leaks was found during or after remediation in the excavation. No in-process sampling was conducted for this waste site. The excavation was backfilled in July 2011.

Code: 100-K-79 **Classification:** Accepted

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: This waste site includes the pipelines that carried pure chemical and treated cooling water at both the 105KE and 105KW reactors. The piping in this waste site has been split into eight subsites.

Subsite 1 - The sodium dichromate product pipelines at KW, that ran from the railroad offloading areas to the dichromate storage tanks and then to the adjacent 183.1KW Headhouse, became subsite 1. This subsite has been remediated and is Interim Closed Out.

Subsite 2 - The sulfuric acid product pipelines at KW, that ran from the sulfuric acid storage tanks to the 183.1KW Headhouse, and then adjacent railroad offloading areas, became subsite 2. This subsite has been remediated and is Interim Closed Out.
Subsite 3 - The sodium dichromate lines at 183.1KE became subsite 3.
Subsite 4 - The sulfuric acid lines at 183.1KE became subsite 4.
Subsite 5 - The treated water pipelines, that ran north/south between the 105KW Reactor and 165KW Power Control Building, became subsite 5.
Subsite 6 - The treated water pipelines, that ran north/south between the 105KE Reactor and 165KE Power Control Building became subsite 6.
Subsite 7 - The 0.61-meter (24-inch) process water pipeline that connected the 105KE and 105KW reactor buildings is known as the original cross-tie line. The parallel, replacement 0.61-meter (24-inch) process water pipeline that connected to the 105KE and 105KW reactor buildings is known as the "New" cross-tie line. Both the original and new cross tie lines are considered Subsite 7.
Subsite 8 - The 1.21 meter (48 inch) Clearwell cross tie line became subsite 8.

Location: These pipelines are located south of 105KE and south of 105KW. They connect the 105 Reactor buildings to the 165 and 183.1 Buildings. There is also cross-tie pipeline between the 105KE and 105KW Reactors buildings that is orientated in a east/west direction.

Release Description: No releases to the environment have been recorded from the pipelines enclosed in the tunnels. However, the railroad offloading facilities and pipe valves may have leaked at various times.

Related Sites/ Structures: These pipelines are related to the 120-KW-5 and 120-KE-6 dichromate tank foundations, the 120-KE-4, 120-KE-5, 120-KW-3, and 120-KW-4 sulfuric acid tank foundations, the 183.1 Headhouses and the 165 Power Control Buildings, and 105 Reactors.

Process Description: Concentrated sodium dichromate and sulfuric acid flowed through the product lines, which are encased inside concrete pipe tunnels. The pipelines between the 165 Buildings and the 105 Reactors carried treated water with more dilute sodium dichromate.

Waste Type: Equipment

Waste Description: The waste is residual sodium dichromate (chromium 6) and mercury (from sulfuric acid) in the pipes and potential leaks from the offloading station.

This Site has the Following SubSites:

Code: 100-K-79:1
Names: 100-K-79:1; 100-KW Sodium Dichromate Product Pipelines from the Railroad Offloading areas to the Sodium Dichromate storage tanks and 183.1 KW Headhouse

Code: 100-K-79:2
Names: 100-K-79:2; 100-KW Sulfuric Acid Product Pipelines from the Sulfuric Acid storage tanks to the 183.1 KW Headhouse

Code: 100-K-79:3
Names: 100-K-79:3; 100-KE Sodium Dichromate Product Pipelines from the Railroad Offloading areas to the Sodium Dichromate storage tanks and 183.1 KE Headhouse

Code: 100-K-79:4
Names: 100-K-79:4; 100-KE Sulfuric Acid Product Pipelines from the Sulfuric Acid storage tanks to the 183.1 KE Headhouses and the Railroad Offloading areas

Code: 100-K-79:5
Names: 100-K-79:5; Treated Water Pipelines between the 105KW Reactor and 165KW Power Control Building

Code: 100-K-79:6
Names: 100-K-79:6; Treated Water Pipelines between the 105KE Reactor and 165KE Power Control Building

Code: 100-K-79:7
Names: 100-K-79:7; Cross-Tie Line; Original Cross Tie Line and the New Cross Tie Line; Process Water Pipelines between the 105KE and 105KW Reactor Buildings

Code: 100-K-79:8
Names: 100-K-79:8; 48 Inch Line between 183.4 KW and 183.4KE; Clearwell Cross Tie Line

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Code: 100-K-79:1
Classification: Accepted

Names: 100-K-79:1; 100-KW Sodium Dichromate Product Pipelines from the Railroad Offloading areas to the Sodium Dichromate storage tanks and 183.1 KW Headhouse
Reclassification Interim Closed Out (6/27/2012)

Type: Product Piping
Start Date:

Status: Inactive
End Date:

Description: The subsite has been remediated and Interim Closed Out. It was the sodium dichromate product pipelines that ran from the railroad offloading areas to the sodium dichromate storage tanks and to the adjacent 183.1 KW Headhouse.

Related Sites/ Structures: These pipelines were related to the 120-KW-5 dichromate tank, the 120-KW-3 and 120-KW-4 sulfuric acid tanks, and the 183.1-KW Headhouse.

Process Description: Concentrated sodium dichromate (70% solution) and sulfuric acid flowed through 3/8-inch product lines, which were encased in concrete pipe tunnels. The sulfuric acid was known to have had mercury contamination. In July 1985, a sample of sulfuric acid sludge was collected for analysis; regulated levels of mercury were detected in the sludge with lesser amounts of barium, total chromium, lead, and selenium.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

The SubSite is Part Of:

Code: 100-K-79
Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:2
Classification: Accepted
Names: 100-K-79:2; 100-KW Sulfuric Acid Product Pipelines from the Sulfuric Acid storage tanks to the 183.1 KW Headhouse
Reclassification Interim Closed Out (6/27/2012)
Type: Product Piping
Start Date:
Status: Inactive
End Date:

Description: The subsite has been remediated and Interim Closed Out. It was the sulfuric acid product pipelines that ran from the sulfuric acid storage tanks to the 183.1 KW Headhouses and to the adjacent railroad offloading areas.

Location: This pipeline is located south of the 183 KW basins.

Release Description: These pipelines were related to the 120-KW-5 dichromate tank, the 120-KW-3 and 120-KW-4 sulfuric acid tanks, and the 183.1-KW Headhouse.

Process Description: Concentrated sodium dichromate (70% solution) and sulfuric acid flowed through 3/8-inch product lines, which were encased in concrete pipe tunnels. The sulfuric acid was known to have had mercury contamination. In July 1985, a sample of sulfuric acid sludge was collected for analysis; regulated levels of mercury were detected in the sludge with lesser amounts of barium, total chromium, lead, and selenium.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

The SubSite is Part Of:

Code: 100-K-79
Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:3
Classification: Accepted
Names: 100-K-79:3; 100-KE Sodium Dichromate Product Pipelines from the Railroad Offloading areas to the Sodium Dichromate storage tanks
Reclassification None

and 183.1 KE Headhouse

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is the sodium dichromate product pipelines that ran from the railroad offloading areas to the sodium dichromate storage tanks and to the adjacent 183.1 KE Headhouse.

Location: This pipeline is located south of the 183 KE basins.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:4 **Classification:** Accepted

Names: 100-K-79:4; 100-KE Sulfuric Acid Product Pipelines from the Sulfuric Acid storage tanks to the 183.1 KE Headhouses and the Railroad Offloading areas **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is the sulfuric acid product pipelines that ran from the sulfuric acid storage tanks to the 183.1 KE Headhouse, and to the adjacent railroad offloading areas.

Location: This pipeline is located south of the 183 KE basins.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:5 **Classification:** Accepted

Names: 100-K-79:5; Treated Water Pipelines between the 105KW Reactor and 165KW Power Control Building **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is the treated water pipelines that ran north/south between the 105KW Reactor and 165KW Power Control Building.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:6 **Classification:** Accepted

Names: 100-K-79:6; Treated Water Pipelines between the 105KE Reactor and 165KE Power Control Building **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is the treated water pipelines that ran north/south between the 105KE Reactor and 165KE Power Control Building.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:7 **Classification:** Accepted

Names: 100-K-79:7; Cross-Tie Line; Original Cross Tie Line and the New Cross Tie Line; Process Water Pipelines between the 105KE and 105KW Reactor Buildings **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The 100-K-79, Subsite 7 is known as the Cross Tie Line. It is composed of two, parallel treated water pipelines that connect the 105-KE Reactor and the 105-KW Reactor. One 24-inch pipeline is the Original Cross Tie line. The other 24-inch pipeline is known as the New Cross tie line. It replaced the Original pipeline. They ran east to west. It also includes a 36 inch high pressure discharge line segment, that connected to the 182-K Emergency Cooling Water Pump House.

Both pipelines are constructed from 24 inches in diameter carbon steel. They are connected to each reactor through valve pits located on the south end of each reactor building. The treated water into each pipeline is fed from a 36-inch carbon steel pipeline from the 182-K Emergency Water Reservoir Pump House, which used diesel-fueled pumps to supply treated water for the 100-K Coolant Backup System. The treated water flowed into the 182-K Pump House from the 183.4-KE and 183.4-KW Clearwells.

Each of the 24-inch pipelines is enclosed in 36-inch corrugated piping. The corrugated piping rests on concrete footings. The 36-inch pipeline is enclosed in a 48-inch corrugated pipe which also rests on concrete footings.

A portion of 100-K-79:7 was removed during the demolition of the 1706-KE, KER and KEL buildings in 2010 (see DOE/RL-2012-40). Verification samples collected in 2011 found contamination that exceeded Remedial Action Goals for metals. Additional excavation was required. Verification sampling was completed in July 2012 on the remediated portion of 100-K-79:7.

Location: The parallel pipelines are located in the center of 100-K Area, just south or the reactor buildings.

Related Sites/ Structures: The pipeline is part of the Reactor Cooling Water Backup System.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-79:8 **Classification:** Accepted

Names: 100-K-79:8; 48 Inch Line between 183.4 KW and 183.4KE; Clearwell Cross Tie Line **Reclassification** None

Type: Product Piping **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is an underground 48 inch diameter pipeline that ran wet to east to connected the 183.4 KW Clearwell to the 183.4 KE Clearwell. A pipe segment also extended north to connect with the 182K Emergency Water Reservoir Pump House.

Location: The pipeline is located in the center of 100-K Area, south of the reactor buildings.

Related Sites/ Structures: The pipeline is part of the Reactor Cooling Water Backup System.

The SubSite is Part Of:

Code: 100-K-79

Names: 100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-KE and 100-KW

Code: 100-K-82 **Classification:** Accepted

Names: 100-K-82; 105-KW Fuel Storage Basin Leak **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1974

Status: Inactive **End Date:** 1/1/1978

Description: This unplanned release is associated with the 105 KW fuel storage basin (100-K-43). It is analogous to the documented liquid release that occurred at the 105-KE fuel storage basin (100-K-42), known as UPR-100-K-1. The release is not marked or posted. In 1978, leakage was discovered in the 105-KW pickup chute area. The basin leaks were repaired with epoxy fiberglass. It is possible the leakage rates were similar to those noted at the 105-KE basin (see UPR-100-K-1).

Location: The storage basin extends from the north wall of the 105-KW Reactor Building to the open area behind the reactor, with its longitudinal axis running parallel to the north wall of the building. Its east-west location is roughly in the center of the building. The leak occurred on the north side of the 105 KW basin.

Related Sites/ Structures: The release is associated with 100-K-43.

Process Description: In 1978, the 105-KW basin was approved to be used as supplemental storage for irradiated 100-N irradiated fuel storage.

Waste Type: Water

Waste Description: Fuel storage basin effluent that included debris from fuel cladding failures. The release is analogous to the release at 105-KE basin. Cobalt-60, Strontium-90, Cesium-137 and small amounts of plutonium were noted in the soil beneath the 105- K East basin.

Code: 100-K-85 **Classification:** Accepted

Names: 100-K-85; 100-K Temporary Construction Pit **Reclassification** Interim No Action (4/6/2011)

Type: Trench **Start Date:**

Status: Inactive **End Date:**

Description: The site is a large open pit estimated to be 30 m (98 ft) in diameter and appears to have supported construction operations. The site appears as a flat grassy area.

Location: The site is located in the 100-KR-2 Operable Unit, approximately 284 m (932 ft) southeast of the 1720-K building. It was dug approximately 10 m (33 ft) south of the temporary construction area outside of Site 600-29.

Waste Type: Construction Debris

Waste Description: The waste may be temporary construction debris.

Closure Info: Interim: The 100-K-85, 100-K Temporary Construction Pit waste site, located in the 100-KR-2 Operable Unit, consisted of a large open pit that appears in a historical photograph of 100-K Area from 1953. The pit was expected to be 30 m (100 ft) in diameter, covering and area of approximately 700 m2 (7,600 ft2), and assumed to have supported construction operations. A site visit in December 2009 indicated no debris, staining, and no vegetation differences in comparison to the surrounding area.

Based on the 1953 photograph, the 2009 site visit, knowledge of historical processes, and a 2008 geophysical survey of the 100-K-85 waste site, confirmatory sampling was performed in November 2010. The results indicated that the waste site achieved compliance with the remedial action objectives (RAOs) and remedial action goals (RAGs) for the 100-K-85 waste site; therefore, remediation was not necessary. A summary of the cleanup evaluation for the soil analyses against the applicable RAGs is presented in Table ES-1. The results of the confirmatory sampling are used to make reclassification decisions for the 100-K-85 waste site in accordance with the TPA-MP-14 procedure in the Tri-Party Agreement Handbook Management Procedures (DOE-RL 2007).

Code: 100-K-89 **Classification:** Accepted

Names: 100-K-89; 100-K Burn Site **Reclassification** Interim Closed Out (8/15/2012)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. Prior to remediation this site consisted of burnt materials laying on the ground surface. The 100-K-89 waste site was completely remediated and removed when one of the 600-29 excavations was expanded beyond the original waste site boundary to encompass additional contamination found during remediation.

Location: The site is 60 meters (197 ft) south of site 600-29. The Washington State Plane coordinates for the site are E 568597.54, N 145529.56.

Related Sites/ Structures: The waste site is associated with 600-29.

Waste Type: Construction Debris

Waste Description: Contaminants of potential concern may include asbestos and petroleum products. The waste is burned debris (wood, metal and roofing material) and any potentially contaminated soil.

Closure Info: Interim (8/15/2012): Remedial action at the 600-29 and 100-K-89 waste sites began on September 21, 2011, and continued through April 5, 2012. Most of the remedial excavations were the result of visible surface debris, stains, and materials. These areas were excavated from

a minimum of 0.3 meter (1 ft) in depth to as much as 3 meters (10 ft) in depth, as needed, to remove contamination. Excavations for french drains ranged from 1.2 to 1.8 meters (4 to 6 ft) in depth. A septic vault in the eastern portion of 600-29 required excavation to 10 feet below ground surface. All materials removed from the excavations were stockpiled within the excavations and then directly loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). No stockpiles external to the excavations were created. The 100-K-89 waste site comprised a burned area with burnt material present on the surface (wood, metal, and roofing material) and the underlying soil. Contamination identified on the southwest edge of the 600-29 waste site led to an excavation that was expanded during remediation based on field observations. The expansion encompassed and completely removed the 100-K-89 waste site.

Contaminated materials removed from the 600-29 waste site consisted of red, black, and white stained soils or colored materials, concrete pads and rubble, a concrete sewer junction box, abandoned iron and vitrified clay piping, abandoned wiring, friable and nonfriable asbestos, metallic and wood debris, burnt wood, ash, tar, and other miscellaneous demolition debris. Materials removed from the 100-K-89 waste site consisted of burned debris (wood, metal, roofing material) and associated soils.

A total volume of 10,293 bank cubic meters (BCM) (6,157 BCM from the east side of 600-29 and 4,136 BCM from the west side of 600-29) was removed and disposed to ERDF during remediation.

Code:	100-K-97	**Classification:**	Accepted
Names:	100-K-97; 183-KW French Drain and Rail Spur Unplanned Release	**Reclassification**	Interim Closed Out (6/27/2012)
Type:	French Drain	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The site consisted of a French Drain that was used to collect drainage from the chromate system transfer hose after unloading the railcar. It also included an unplanned release along the railroad tracks on the Head House rail spur.

Location: The French Drain was located south of the 183 KW Head House, just south of the 100-K-19 (183-KW Caustic Soda Storage Tank Site), southwest of 100-K-18 (183-KW Caustic Neutralization Pit), and north of the railroad.

Process Description: The Head House rail spur was used for delivery of water treatment equipment and chemicals. Anecdotal information indicates that sodium dichromate and sulfuric acid spills were not uncommon during railcar unloading operations, which led to the assignment of the unplanned release along the rail spur. After railcar unloading operations were complete, the sodium dichromate transfer hose was placed into the open French Drain to collect excess product in a controlled manner.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone

2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

Code: 100-K-98 **Classification:** Accepted

Names: 100-K-98; 183-KE French Drain and Rail Spur Unplanned Release **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of a French Drain that was used to collect the drainage from the transfer hose after unloading the railcar.

Location: The French Drain is located south of the 183 KE Head House, just south of the 100-K-25, 183-KE Caustic Neutralization Pit, southwest of 100-K-25, 183-KE Caustic Neutralization Pit, and north of the railroad.

Process Description: The Head House rail spur was used for delivery of water treatment equipment and chemicals. Anecdotal information indicates that sodium dichromate and sulfuric acid spills were not uncommon during railcar unloading operations, which led to the assignment of the unplanned release along the rail spur. After railcar unloading operations were complete, the sodium dichromate transfer hose was placed into the open French Drain to collect excess product in a controlled manner.

Code: 100-K-101 **Classification:** Accepted

Names: 100-K-101; French Drains and Mercury Stained Soils near the 183KE Sedimentation Basin **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of a French Drain surrounded by mercury stained soil adjacent to the KE Sedimentation Basin near the abutments. There is also a black hose assembly.

Location: The site is located in the KE area along the south face of the Sedimentation Basin.

Code: 100-K-102 **Classification:** Accepted

Names: 100-K-102; French Drains and Mercury Stained Soils near the 183KW Sedimentation Basin **Reclassification** Interim Closed Out (7/10/2012)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It consisted of two French drains surrounded by sulfuric acid stained soil adjacent to the 183.2-KW Flocculation and

Sedimentation Basins near the abutments. It also had a partially exposed acid delivery piping (i.e., dosing pipes) system and associated man-holes.

Location: The site is located in the KW area between the Sedimentation Basin and the Headhouse.

Process Description: Sulfuric acid, along with sodium silicate and alum, was piped from the 183.1-KW Headhouse through the dosing pipes into the abutments to initiate flocculation of the raw river water as an initial step in the reactor cooling water treatment process. The sulfuric acid was contaminated with metals, including mercury with lesser amounts of barium, total chromium, lead and selenium. Disposal of excess acid into the French drains, as well as leakage and overspray from the dosing pipes, led to contamination of the surrounding soils.

Closure Info: Interim (7/10/2012): Remediation of the Area AA Zone 1 Waste Sites began in April 2010 and ended in January 2012. The waste site structures and soils have been excavated as part of the remedial activities for the 100-K Area. The excavation area was designated as 100-K Area AA, Zone 1 (Area AA, Zone 1). It encompassed the individual waste sites 100-K-34, 100-K-102 and 1607-K3. Stockpile #11 contains layback soil from remediation of Area AA, Zone 1. These waste sites are adjacent to the 100-K-59 pipelines. Since visible sediment was observed in the severed pipelines, a sample was collected in February 2011 from the open end of the pipe west of the 183.1KW Headhouse. A section of the 100-K-59 pipeline was removed.

Excavation of the waste sites continued to a final remediation maximum depth of 9.82 meters (32.2 ft), which was located within the footprint of 100-K-102. To support the deeper excavation for Area AA, Zone 1, layback soil was accumulated and managed as Stockpile #11. The excavation decision unit was approximately 7,331 square meters (78,910 ft2) for 100-K Area AA, Zone 1. The original footprint prior to additional process sewer pipe removal was divided into evenly spaced areas for statistical sampling outside the waste sites to address any potential for contamination spread.

Code: 100-K-103 **Classification:** Accepted

Names: 100-K-103; 1704-K and 1717-K Septic Systems; Additional Components of 1607-K4 **Reclassification** None

Type: Settling Tank **Start Date:**

Status: Inactive **End Date:**

Description: This WIDS site addresses seven components of the 1717K Septic System (1607-K4) that were not included in the Closed Out documentation for the 1607-K4 waste site. 100-K-103 includes the Original Tile Field, the Replacement Septic Tank, one Leaching Trench and four distinct Replacement Tile Field, built in 1995.

Location: The additional septic system components surround the Closed Out 1607-K4 Septic Tank and Tile Field. All of the components are located north of the 1717K building, inside the 100-K Area.

Related Sites/ Structures: 1607-K4 Septic Tank was abandoned in 1999.

Process Description: The leaching trench received waste from only the 1717-L Maintenance Building. The remaining components received waste from both 1717-K and the 1704-K office building.

Code: 100-K-104 **Classification:** Accepted

Names: 100-K-104; 166-KE French Drain **Reclassification** None

Type: French Drain **Start Date:**

Status: Unknown **End Date:**

Description: A site visit in July 2008 could not visually identify the french drain. The drain was fed by approximately 30 meters (100 feet) of underground piping.

Location: The french drain is described on drawings to be approximately 30 meters (100 feet) west of the 166-KE building.

Process Description: The source of the effluent is a sump in the 166-KE Pump Room.

Code: 100-K-105 **Classification:** Accepted

Names: 100-K-105; Pit at Southeast Corner of 100K **Reclassification** None

Type: Depression/Pit (nonspecific) **Start Date:** 1/1/1955

Status: Inactive **End Date:**

Description: The pit cannot be visually identified at the present time. An open pit was clearly visible on historical photograph 3346-NEG, taken in April 1955. Later photographs do not show any evidence of the pit. It is presumed to have been backfilled prior to 1965.

Location: The open pit is located in the southwest corner of 100-K West Area, near the perimeter road.

Process Description: There are no facilities near the open pit. It is not known what the pit was used for.

Code: 100-K-106 **Classification:** Accepted

Names: 100-K-106; 182-K Fuel Oil Crib **Reclassification** Interim Closed Out (1/8/2013)

Type: Crib **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It was an underground, rock filled drainage crib next to the demolished 182-K Building.

Location: The centerline of the crib was approximately 6.1 meters (20 feet) west of the northwest corner of the 182-K building.

Process Description: The crib supported the 182-K midway pump station that contained three diesel powered pumps. Discharge to crib was via a 15 centimeter (6 inch) diameter crib drain, that exited the building in two locations. One exited on the north end of the building and entered the east end of crib. Upon entering the crib, the piping consists of a 6 inch diameter corrugated metal perforated pipe. The other source to the crib is through a floor drain that collected drainage from a fuel oil centrifuge and a refrigerated drinking fountain. Influent to the waste site would have been water or, potentially, an oily, nonradioactive liquid waste.

Closure Info: Interim (1/8/2013): The crib, drain pipeline, and associated contaminated soil from the excavation site (including from beneath the 182-K Emergency Water Pump House) have been removed and disposed at the Environmental Restoration Disposal Facility (ERDF). Approximately 400 ERDF containers (7,324 tons [8,073 short tons]) of soil and debris were disposed at ERDF from the combined waste site and 182-K pump house excavation site.

Remediation of Waste Site 100-K-106 and removal of the drain pipeline coincided with the removal of the below grade portions of the 182-K Emergency Water Pump House, which began in March 2012 and was completed in June 2012. Because the sump of the pump house extended to approximately 10.8 meters (35.5 ft) below grade, the excavation removed the crib structure, the sump and the drain pipeline.

The soil excavated from the waste site appeared to be stained, indicating the possibility of one or more releases to the crib. Soil from the crib area was in-process sampled to characterize residual contamination. Sampling results exceeded land disposal restrictions for chromium and required some of the soil be segregated for treatment before disposal at the ERDF. Sample results also indicated elevated levels of copper, lead, vanadium, and zinc. An area of soil staining was also observed at the excavation floor just east of the waste site. A focused sample was collected from this location during verification sampling. Sample results were below Hanford Site background values or constituents were undetected.

Three stockpiles were created from the excavated soil of the joint 182-K Emergency Water Pump House and Waste Site 100-K-106 excavation site. Stockpile 1 was located northeast of the excavation site. Stockpile 2 was located to the south of the excavation site. Stockpile 3 was located northwest of the excavation site. Due to safety issues associated with the steep side-slopes of the excavation and protruding pipelines, a civil survey of the excavation site was not prepared. A civil survey of the stockpiles was completed post remediation. The combined stockpiles were approximately 5,378 square meters (57,889 sq. ft) and consisted of two sampling subunits with the eight sampling areas. Sampling areas of the stockpiles did not their side slopes because the stockpiles surrounded the edge of the excavation site. The side slopes of the stockpiles joined the steep side slopes of the excavation site, making them unstable. Therefore, for the safety of sampling personnel, stockpile side slopes were not included within the sampling areas.

The crib and pipeline sample area was approximately 9.29 square meters (100 sq. ft.) in size. Four sample increments were collected from randomly selected nodes within this sampling area and combined into a single composite sample for that area. Soil from six discrete locations in the vicinity of the waste site and drain pipeline were sampled.

The excavation was backfilled in August 2012.

NOTE: During excavation activities, evidence of a past fuel oil spill, along with a some concrete, was encountered approximately 30 meters (98 ft) northeast of the pump house. This spill was not explored further, but was covered with a layer of protective soil. Remediation of this spill is planned for future work as a part of either the adjacent 100-KE Oil Contamination Area (sitecode 100-K-48) or the 166-KE Oil Storage Tank bunker waste site (sitecode 130-KE-2). It is not associated with the pump house, Waste Site 100-K-106, or drain pipeline. Also, after backfill for the excavation site was completed, potentially asbestos containing material was found in the footprint of the excavation site. Consequently, a discovery waste site (100-K-119) was assigned to the excavation site which is currently being evaluated for future action to address potential residual asbestos in the soil.

Code:	100-K-107	**Classification:**	Accepted
Names:	100-K-107; 1706-KER Abandoned Drain Field	**Reclassification**	None
Type:	Drain/Tile Field	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: A fenced area 31 meters (102 feet) northwest of the northwest corner of the 1706-KER building is assumed to be this abandoned drain field.

Location: The abandoned drain field is located north and west of 1706-KER.

Process Description: The 1706-KER facility provided experimental data on the effect of water qualities, water temperature and pressure, and physical and chemical properties of materials of construction upon reactor operation and control, upon reactor tubes and slugs, and upon associated equipment when operating closed in-pile recirculation systems at elevated temperatures and pressures. It was also known as a decontamination and hot shop. Effluent from the building toilets and floor drains exited the facility via a 10.2 centimeter (4 inch) drain line to this drain field.

Code: 100-K-108 **Classification:** Accepted

Names: 100-K-108; 1706-KER Septic System; 1706-KER Septic Tank; Crib and Sewer Line **Reclassification** None

Type: Septic Tank **Start Date:**

Status: Unknown **End Date:**

Description: The site consists of a septic tank, crib, and associated piping that received effluent from the hot maintenance shop in 1706-KER building.

Location: The septic tank, crib, and associated piping are located northwest of the 1706-KER Building.

Process Description: The 1706-KER facility provided experimental data on the effect of water qualities, water temperature and pressure, and physical and chemical properties of materials of construction upon reactor operation and control, upon reactor tubes and slugs, and upon associated equipment when operating closed in-pile recirculation systems at elevated temperatures and pressures. It was also known as a decontamination and hot shop. The septic tank has a 2271 liter (600 gallon.) capacity tank, measuring 1.37 meters (54 inches) diameter by 1.78 meters (70 inches) depth. It is asphalt coated. The septic tank weighs 197 kilograms (435 pounds) and is constructed of 14 gauge steel. The crib is 1.8 meters (6 feet) wide by 2.1 meters (7 feet) tall. It was constructed of 15.2 by 15. 2 centimeter (6x6 inch) treated (coal tar creosote) wooden timbers. The outside of the crib is covered with wire mesh. A 10.2 centimeter (4 inch) vent pipe exits the top of the crib. During operation of the building, the crib was surrounded by wood guard posts. The pipeline has a minimum soil cover of 0.8 meters (2.5 feet).

Waste Type: Chemicals

Waste Description: Contaminants of Potential Concern may include radionuclides (fission products), ICP metals, mercury, TPH and hexavalent chrome.

Code: 100-K-109 **Classification:** Accepted

Names: 100-K-109; Unplanned Chemical Release near 183.1KW Head House; Yellow Stained Soil adjacent to 183.1KW Head House **Reclassification** Interim Closed Out (11/18/2011)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It was an area of yellow stained soil, from an unplanned release that is adjacent to the railroad track, south-southwest of the demolished 183.1KW headhouse.

Location: The visible stained soil was located near the southwest corner of the demolished 183.1KW Head House building near the railroad track.

Related Sites/ Structures: The area is associated with the 183.1KW Head House and the 100-K-15 and 100-K-16 Alum tanks.

Process Description: The Head House rail spur was used for delivery of water treatment equipment and chemicals. Anecdotal information indicates that sodium dichromate and sulfuric acid spills were common during railcar unloading operations, which led to the unplanned releases along the rail spur. Historical drawings and photographs show this stained soil area is adjacent to a rail car unloading area. It is also adjacent to a 183.1KW head house and two alum storage tanks (previously removed).

Closure Info: Interim (11/18/2011): Excavation of 100-K-109 began in August, 2010 to remove stained soils, and excavation was completed in June, 2011, when the last stained soil was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). The original area, based on the posted Underground Radioactive Material Area, was estimated to be 48.7 meters (160 ft) long by 21.3 meters (70 ft) wide that equaled an area of 981 square meters (10,559 sq. ft.). The actual remediated area more than double the original estimate. 1,861 square meters (20,031.6 sq. ft.) was excavated, due to removal of a significant amount of stained soils. The excavation was anticipated to end at a depth of 4.6 meters (15 ft). However, the excavation the yellow-colored contaminated soil continued to the final depth of the remediation was 7.84 meters (25.7 ft), due to the ongoing detection of mercury contamination at levels above the RAGs in the RDR/RAWP (DOE/RL-96-17).

Code: 118-K-1 **Classification:** Accepted

Names: 118-K-1; 100-K Burial Ground; 118-K **Reclassification** Interim Closed Out (2/26/2014)

Type: Burial Ground **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1975

Description: The 118-K-1 burial ground has been remediated and Interim Closed Out. The trenches ran northwest and southwest. It contained approximately fifty trenches and pits and eleven silos. The trenches and pit dimensions varied greatly. The silos ranged from 1.4 meter (4.5 feet) to 3 meters (10 feet) in diameter with depths from 7.6 meters (25 feet) to 9.8 meters (32 feet deep). The site had two parts, the main burial ground and the area known as the CGI-791 addition. Based on the results reported in CVP-2013-00002, the radiological postings were removed from the 118-K-1 burial ground in February 2014.

Location: The site was located 244 meters (800 feet) northeast of 105-KE Reactor Building, outside the 100-K Area perimeter fence.

Related Sites/ Structures: The burial ground is associated with sitecode 100-K-132, Deep Contamination Below Trenches N and O of the 118-K-1.

Process Description: This burial ground received solid waste from both the 100-K and 100-N Areas. A low level waste incinerator was located near the southeast corner of the burial ground. The incinerator was constructed of a steel plate box, measuring 1.8 meters (6 feet) by 6.1 meters (20 feet). It had a 2.4 meter (8 foot) high stack. There are eleven silos. Six silos received reactor hardware, three silos contain incinerator ashes and two silos contain irradiated nickel plated boron balls from the emergency 3X system.

Waste Type: Equipment

Waste Description: This unit contains numerous trenches and vertical steel pipes of various sizes that contain radioactive solid waste from 105-K and 105-N Reactors. The trenches miscellaneous debris. Some 100-N waste includes zirconium cladding hulls and basin n sludge. The incinerator operated for several years burning low-level contaminated combustible material. All contaminated burning was halted in October 1960. Six silos received reactor hardware, three

silos contain incinerator ashes and two silos contain irradiated nickel plated boron balls from the emergency 3X system.

Closure Info: Interim (2/26/2014): Remedial action at the 118-K-1 Burial Ground began on May 30, 2006. Trenches A and B were excavated to a depth of approximately 5.5 meters (18 ft) and 4.0 meters (13 ft) bgs, respectively, resulting in approximately 4,035 bank cubic meters (BCM) (5,278 bank cubic yards [BCY]) of material removed for disposal at ERDF. Excavation of Trench M began on July 10, 2006, to a depth of approximately 4.6 m (15 ft) bgs, resulting in approximately 1,170 BCM (1,530 BCY) of material removed for disposal at ERDF. The remediation was partially completed in July 2008 (phase 1 remediation) and then placed in a safe shutdown mode. Two sorting cells were established east of the burial ground and were used to process the soil from the burial ground prior to being loaded out for disposal at ERDF. Field observations during excavation and sorting of material from Trenches A, B, and M indicated that only construction debris was discovered and removed. No spent nuclear fuel (SNF) or other anomalous materials (containers, stained soils, or other waste forms) were discovered. Phase 1 verification sampling indicated that additional remediation was needed for Trench A and a portion of one of the sorting cells. Verification sampling of Trenches B and M indicated that remedial action objectives were met and a backfill concurrence was approved on June 16, 2009.

The stabilization of the remaining trenches, pits, and silos was deferred to the Phase 2 remediation, that resumed in October 2009 and was completed in March 2012. Approximately 127,768 BCM (167,114 BCY) of material was removed for disposal at ERDF or other approved facilities. During the excavation, in-process field radiological surveys using hand-held instrumentation and in-process soil samples were collected. Field screening at the site included using systematic global positioning radiological data mapping surveys (Global Positioning Environmental Radiological Surveyor [GPERS]) in the excavation with instrumentation specific to the detection of radiation associated with gamma- and beta-emitting radionuclides. In-process samples were collected from Trenches C and F; Trenches D, E, P, G; Trench K; Trench N; and Trench O at locations of elevated radiological activity identified by GPERS. In-process sample results for Trenches O and K identified strontium-90 in excess of groundwater and river protection RAGs at the base of the excavation.

On October 27, 2011, test pits were excavated at the base of both Trenches K and O excavations to collect vertical profile samples to evaluate residual strontium-90 activity with depth. Samples were collected at 0.9 meter (3 ft) intervals and analyzed for strontium-90, tritium, nickel-63, carbon-14, and gamma-emitting radionuclides. The results of this sampling showed strontium-90 decreasing with depth to activities less than the RAGs. However, tritium was detected in the deep vadose zone at Trench O with concentrations increasing with depth and above soil lookup values for groundwater protection. Tritium was not detected above RAGs in the Trench K characterization test pit samples. However, tritium above groundwater and river protection RAGs was detected at a separate excavation surface location in the Trench K deep zone.

On March 29, 2012, a test pit was excavated to a depth of 4.6 meters (15 ft) at the base of the Trench N excavation to collect vertical profile samples at 0.9 meter (3 ft) intervals to evaluate residual tritium contamination. Tritium was detected in all the test pit samples at activities exceeding criteria for protection of groundwater. The maximum activity detected was 13,400 pCi/g. All Phase 2 remediation areas have been backfilled. A new waste site, 100-K-132, was created to address residual deep vadose contamination within the context of the future final ROD.

The buried waste removed included non-reactor construction debris, reactor debris, lead shielding, reactor tubing, lead lined pigs, various glass and plastic containers, graphite canisters, drums, boron balls, incinerated radioactive material, zirconium jackets, dried paint, highly

radioactive piping and spent nuclear fuel. High dose rate material was shipped in concrete containers. Twelve pieces of spent nuclear fuel were removed, characterized and shipped to the 100-K Fuel Storage Basins.

Trenches A and B were excavated to a depth of 6 meters (19.7 ft). Trenches C and F were excavated to a depth of 7.1 meters (23 ft). Trenches D, E, P and G were excavated to a depth of 8.4 meters (27.5 ft). Trench H was excavated to a depth of 3.2 meters (10.5 ft). Trench I was excavated to a depth of 10 meters (35.7 ft). Trenches J and L were excavated to a depth of 9.9 meters (32.5 ft). Trench K was excavated to a depth of 9.4 meters (30.8 ft). Trench N was excavated to a depth of 15.6 meters (51.3 ft). Trench O was excavated to a depth of 12.2 meters (40 ft). Trench M contained only construction debris. The Phase 1 excavations were sampled and backfilled.

Remediation of the internal contents of the Trench I silos was completed on May 17, 2011. A total of 1,040 clamshell buckets of waste material were removed to empty these silos. These silos were found to contain soil, spacers, perforated aluminum fuel spacers, fuel baskets, activated metal wire, miscellaneous metal debris, fiberglass, conduit, crushed 208 liter (55 gal) drums, paraffin, various crushed containers, discarded tools, pipe, and pieces of SNF.

All Phase 2 remediation areas have been backfilled.

Code:	128-K-1	**Classification:**	Accepted
Names:	128-K-1; 100-K Burning Pit	**Reclassification**	Interim Closed Out (8/24/2004)
Type:	Burn Pit	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The site has been remediated and Interim Closed Out. The site was a slight depression, about 0.91 meters (3.0 feet) below the surrounding grade, with pieces of concrete and metal debris visible at the surface.

Location: The site was located outside of the perimeter fence, southeast of the 100-K Burial Ground (118-K-1) and northeast of the 183-KE Settling Basins.

Process Description: This site was used for the disposal of nonradioactive combustible materials such as paint waste, office waste, and chemical solvents.

Waste Type: Misc. Trash and Debris

Waste Description: The site was used for the disposal of nonradioactive, combustible materials, such as paint waste, office waste, and chemical solvents.

Closure Info: Interim: Remedial action at the site consisted of two phases of confirmatory sampling that was conducted at the site in April and May 2003. Phase I consisted of test trenches and a test pit to evaluate the potential presence of buried debris or contaminated soil. Phase II consisted of identification and removal of surface debris with waste characterization and soil sampling, as needed. During the Phase II sampling, one location (P16) was found to have semivolatile organic contamination that required remediation. With agreement from the U.S. Environmental Protection Agency, the area with elevated levels of contamination was excavated during December 2003.

Debris identified during the May 14, 2003, walkdown was removed and disposed of at the ERDF during Phase II confirmatory sampling. As previously stated, the Phase I confirmatory sampling results indicated that no remediation of the subsurface soil was required. However, based on the results of the Phase II confirmatory soil sampling, selective remediation of the 128-

K-1 site at the P16 location was necessary due to the presence of benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenzo[a,h]anthracene, and indeo(1,2,3-cd)pyrene, which exceeded the cleanup criteria. The remediation at the P16 location was performed during December 2003 by removing contaminated soil from an approximate 7 by 15 meters (23 by 49 ft) area to a depth of approximately 0.5 meter (1.6 ft) based on field observations of discolored soil. A total of 161 tons of contaminated soil from this location was disposed of at the ERDF.

After remediation, a verification sample of the underlying soil was collected to confirm that cleanup levels had been met. The results indicated that the waste removal action achieved compliance with the remedial action objectives for 128-K-1 site. The maximum detected residual contaminant levels from the soil samples were used to support site reclassification.

Code: 128-K-2 **Classification:** Accepted

Names: 128-K-2; 100-K Construction Dump **Reclassification** Interim Closed Out (10/18/2012)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The 128-K-2 waste site was a former construction dump and burn pit area. It had been marked with a single chain fence with "Danger - Asbestos" warning signs marks the area.

Location: The site was located approximately 0.3 kilometers (0.2 miles) southwest of the 100-K Area perimeter fence, along the old Hanford Irrigation Project Canal.

Process Description: The waste site was used as a construction dump pit and burn pit.

Waste Type: Misc. Trash and Debris

Waste Description: A wide variety of trash is exposed on the ground surface. There is evidence of burning in many locations. Most of the material on the surface is scrap metal and glass. Office waste, paint, solvents, laboratory waste have also been found. The area is also covered with nonfriable and friable asbestos.

Closure Info: Interim (10/8/2012): Remedial action at the 128-K-2 waste site began on December 13, 2011 and was completed on May 8, 2012. Excavated material consisted of miscellaneous construction disposal debris scattered throughout the excavation area. The materials removed from the 128-K-2 waste site consisted of friable and nonfriable asbestos, metallic and wood debris, burnt wood, ash, tar, yellow paint, broken and intact glassware, and concrete debris. Remediation of the 128-K-2 waste site extended from 0.3 meter (1 ft) to a maximum depth of 6.5 meters (21 ft) below ground surface (bgs). The excavation resulted in the removal of 13,465 bank cubic meters (BCM) (17,612 bank cubic yards [BCY]) of miscellaneous construction disposal debris including friable and non-friable asbestos, metallic and wood debris, burnt wood, ash, tar, yellow paint, broken and intact glassware, and concrete. All material removed from the site was disposed at the Environmental Restoration Disposal Facility (ERDF).

While excavating near the center of the 128-K-2 waste site, field personnel noticed fuel oil odor from the soil at coordinates N146174.9/E567968.3. Additional remediation was performed in the fuel oil-contaminated area with all soil directly loaded out for disposal at ERDF.

Code: 130-K-2 **Classification:** Accepted

Names: 130-K-2; 1717-K Waste Oil Storage Tank **Reclassification** None

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Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1972

Description: The site was an underground waste oil storage tank oriented with the long axis of the tank in a north-south direction. The tank was excavated in July 1989. The tank was used for storing used motor oil. The tank was left with a residual heel when the facilities were deactivated in 1971. The concrete pad over the top of the tanks was removed in July 1989. This allowed Pacific Northwest Laboratories to return to the tank site and perform Ground Penetrating Radar (GPR) to aid in locating the tank without the interference caused by the rebar in the concrete. The soil around where the tanks had been located was sampled, the results analyzed, and the site backfilled to match the surrounding grade.

Location: The site was located approximately 0.3 meters (1 foot) north of the 1717-K Maintenance and Transportation Service Building and 6.1 meters (20 feet) from the northwest corner of this building.

Related Sites/ Structures: The site was related to the 1717-K Maintenance and Transportation Service Building.

Waste Type: Oil

Waste Description: The unit was used for storage of used motor oil.

Code: 1607-K1 **Classification:** Accepted

Names: 1607-K1; 1607-K1 Sanitary Sewer System; 1607-K1 Septic Tank; 1607-K1 Septic Tank and Associated Drain Field; 124-K-1 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1955

Status: Active **End Date:**

Description: The sanitary sewer system is composed of a septic tank, leaching trench and associated piping. The septic tank and dosing chamber are composed of reinforced concrete per Hanford Standard E-5-11. There is a maximum of 1.5 meters (5 feet) of fill on the cover slab. There are 61 meters (200 feet) of 15 centimeter (6 inches) vitrified clay pipe to the septic tank, followed by 6.1 meters (20 feet) of 15 centimeter (6 inches) vitrified clay pipe to the leaching trench. The leaching trench contains 9.1 meters (30 feet) of 15 centimeters (6 inches) vitrified clay pipe laid with open joints.

Location: The system is located east of 1701-K, outside the patrol road and inside the 100K area fence.

Related Sites/ Structures: The system serviced the 1701-K (Badge House) and 1720-K (Offices and Telephone Exchange) buildings.

Waste Type: Sanitary Sewage

Waste Description: This unit receives sanitary sewage from 1701-K Badgehouse (security checkpoint), 1720-K Patrol Offices and Change Room, and 1721-K Trailer. The flow rate to this unit is estimated to have been 1,987 liters (525 gallons) per day.

Code: 1607-K2 **Classification:** Accepted

Names: 1607-K2; 1607-K2 Sanitary Sewer System; 1607-K2 Septic Tank; 1607-K2 Septic Tank and **Reclassification** None

Associated Drain Field; 124-KE-1

Type: Septic Tank **Start Date:** 1/1/1955

Status: Active **End Date:**

Description: The sanitary sewer system is composed of a septic tank, leaching trench and associated piping. The septic tank is composed of steel per Hanford Standard E-5-11. There is a maximum of 1.5 meters (5 feet) of fill on the cover slab. There are 26 meters (85 feet) of 15 centimeter (6 inches) vitrified clay pipe to the septic tank, followed by 6.1 meters (20 feet) of 15 centimeter (6 inches) vitrified clay pipe to the leaching trench. The leaching trench contains 33.5 meters (110 feet) of 15 centimeters (6 inches) vitrified clay pipe laid with open joints.

Location: The site is located east of 183-KE (Head House) and northeast of the 183-KE Chlorine Vault.

Related Sites/ Structures: The site serviced the 183-KE building.

Waste Type: Sanitary Sewage

Waste Description: This unit receives sanitary sewage from 183-KE Water Treatment Plant. The flow rate is estimated to have been 1230 liters (325 gallons) per day.

Code: 1607-K3 **Classification:** Accepted

Names: 1607-K3; 1607-K3 Sanitary Sewer System; 1607-K3 Septic Tank; 1607-K3 Septic Tank and Associated Drain Field; 124-KW-2 **Reclassification** Interim Closed Out (7/10/2012)

Type: Septic Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: The waste site has been remediated and Interim Closed Out. The tank and drain field were enclosed within a wooden fence and marked with Septic Tank and Drain Field signs.

Location: The site is located west of 183-KW (Head House) and northwest of the 183-KW Chlorine Vault.

Related Sites/ Structures: The site serviced the 183-KW Building.

Process Description: The 1607-K3 Sanitary Sewer System supported the 183-KW Water Treatment Plant, operating from 1955 to 1970. The volume of waste received is unknown. The sewer system was not known to have received hazardous or radioactive wastes, as it was installed for sanitary use.

The sanitary sewer system is composed of a septic tank, leaching trench, and associated piping. The 1900-liter (500-gallon) septic tank is constructed of steel per Hanford Standard E-5-11. There is a maximum of 1.5 meters (5 feet) of fill on the cover slab. The inlet pipe is 26 meters (85 feet) long and is constructed of 15-centimeter (6-inch) vitrified clay pipe. The pipe from the tank to the leach trench is 6.1 meters (20 feet) long and is also constructed of 15-centimeter (6-inch) vitrified clay pipe. The leaching trench contains 33.5 meters (110 feet) of 15-centimeter (6-inch) vitrified clay pipe laid with open joints.

Waste Type: Sanitary Sewage

Waste Description: This unit received sanitary sewage from 183-KW Water Treatment Plant. The flow rate is estimated to have been 1,230 liters (325 gallons) per day.

Closure Info: Interim (7/10/2012): Remediation of the Area AA Zone 1 Waste Sites began in April 2010 and ended in January 2012. The waste site structures and soils have been excavated as part of the

remedial activities for the 100-K Area. The excavation area was designated as 100-K Area AA, Zone 1 (Area AA, Zone 1). It encompassed the individual waste sites 100-K-34, 100-K-102 and 1607-K3. Stockpile #11 contains layback soil from remediation of Area AA, Zone 1. These waste sites are adjacent to the 100-K-59 pipelines. Since visible sediment was observed in the severed pipelines, a sample was collected in February 2011 from the open end of the pipe west of the 183.1KW Headhouse. A section of the 100-K-59 pipeline was removed.

Excavation of the waste sites continued to a final remediation maximum depth of 9.82 meters (32.2 ft), which was located within the footprint of 100-K-102. To support the deeper excavation for Area AA, Zone 1, layback soil was accumulated and managed as Stockpile #11. The excavation decision unit was approximately 7,331 square meters (78,910 ft2) for 100-K Area AA, Zone 1. The original footprint prior to additional process sewer pipe removal was divided into evenly spaced areas for statistical sampling outside the waste sites to address any potential for contamination spread.

Code: 1607-K5 **Classification:** Accepted

Names: 1607-K5; 1607-K5 Sanitary Sewer System; 1607-K5 Septic Tank; 1607-K5 Septic Tank and Associated Drain Field; 124-KE-2 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1955

Status: Active **End Date:**

Description: The unit includes a tile field.

Location: This septic tank and drain field are east of the 105-KE Reactor and west of the 118-K-1 Burial Ground.

Related Sites/ Structures: This site services the 1706-KER Flow Laboratory, 1706-K Water Treatment Laboratory, 165-KE Powerhouse, 105-KE Reactor Building, and 115-KE Gas Recirculation System.

Waste Type: Sanitary Sewage

Waste Description: This unit receives sanitary sewage from 1706-KER Flow Laboratory, 1706-K Water Treatment Laboratory, 165-KE Powerhouse, 105-KE Reactor Building, and 115-KE Gas Recirculation System. The flow rate to this unit is estimated at 700 gal/d.

Code: 1607-K6 **Classification:** Accepted

Names: 1607-K6; 1607-K6 Sanitary Sewer System; 1607-K6 Septic Tank; 1607-K6 Septic Tank and Associated Drain Field; 124-KW-1 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1955

Status: Active **End Date:**

Description: The unit includes a tile field and the piping from the facilities to the tile field.

Location: This facility is east of the 105-KW Reactor.

Related Sites/ Structures: This unit receives sanitary sewage from 105-KW Reactor Building, 115-KW Gas Recirculation Building, and 165-KW Powerhouse.

Waste Type: Sanitary Sewage

Waste Description: This unit receives sanitary sewage from 105-KW Reactor Building, 115-KW Gas Recirculation Building, and 165-KW Powerhouse.

Code:	116-KE-1	**Classification:**	Accepted
Names:	116-KE-1; 115-KE Condensate Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The crib and pipeline were remediated in 2004, but the status was not reclassified. The Cleanup Status Report for the 116-KE-1 and 116-KW-1 (BHI-01737), documented the status of remediation at the sites to assist in future decision making. The crib structure was removed along with contaminated soil. At the completion of the 2004 project, the excavation approximately 717 square meters (7713 sq. ft.) with a depth of approximately 9.1 meters (30 ft.). The site excavation was backfilled with clean soil to the average adjacent grade elevation at that time.Carbon-14 was detected in deep zone soil at concentrations ranging from 1,880 pCi/g to 7,600 pCi/g. To avoid impacting adjacent building foundations and because of the depth of residual Carbon-14 contamination, impacted soils that did not meet the objectives of the interim ROD Amendment (EPA -1997) remain in place. Disposition of this site will be determined at a later date.

Remediation and sampling of a large excavation area, known as 100-K Area AH, began in January of 2009 and was completed in April of 2012. It encompassed waste sites 100-K-6, 100-K-46, 100-K-62 and 132-KE-1 waste sites and also the site of the previously excavated 116-KE-1 crib. Area-wide carbon-14 contamination exists in the deep zone above the criteria for protectiveness. This contamination is associated with the 105-KE Reactor ventilation filtration system and the deep contamination from the condensate that collected in the previously excavated 116-KE-1 Condensate Crib. Additional remediation of the deep vadose zone cannot be completed in proximity to the 105-KE Reactor without impacting structural stability. Due to the depth of the contamination, the carbon-14 remediation will coincide with the final decision on 105-KE reactor removal.

Location: The crib was located north of 115-KE and east of 118-KE-1 (105-KE Reactor Building).

Related Sites/ Structures: The distribution system was composed of a 10.2-centimeter (4-inch) pipe that led into an 20.3-centimeter (8-inch) corrugated galvanized steel perforated pipe, 3.2 meters (10.5 feet) long, with two 2-meter (6.5-foot) sections branching off at 45 degrees. The site received effluent from the 105-KE Reactor Buildings.

Process Description: The crib was constructed to receive condensate from the 105-KE gas purification system. The base of the crib was 1.8 meters (6 feet) in diameter and was positioned 7.8 meters (25.5 feet) below the ground surface. The top of the crib measures 12.2 meters (40 feet) in diameter. The crib was filled with coarse gravel to 3 meters (10 feet) above the base. The remainder of the crib was backfilled with dirt to grade. The site included the feed pipeline coming from the 115-KE Building.

Waste Type: Process Effluent

Waste Description: The site received condensate and other waste from reactor gas purification systems. Beta/gamma concentrations within the crib, taken from two sample boreholes drilled in 1976, range from 4.5E+05 picocuries per gram to 8.6E+05 picocuries per gram. The radionuclide inventory curies decayed through April 1, 1986, includes tritium (56.5 curies), carbon-14 (110 curies), and small amounts of other elements.

Code:	116-KE-2	**Classification:**	Accepted
Names:	116-KE-2; 1706-KER Waste Crib and Pipeline	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The waste site is a wooden crib structure and the associated piping.

Location: The crib is located west of the 1706-KER Building.

Waste Type: Process Effluent

Waste Description: The site received wastes from cleanup columns in the 1706-KER loop. Drilling in the mid-1970's next to the crib revealed concentrations of radionuclides in the soil. The total estimated concentration was 38 curies. The radionuclide inventory decayed through April 1, 1986, was estimated at approximately 14.6 curies, and is composed predominantly of cobalt-60 and strontium-90. Approximately 100,000 kilograms (220,500 pounds) of sodium hydroxide may have been disposed of into the crib as well as 100,000 kilograms (220,500 pounds) of sulfuric acid.

Code:	116-KE-3	**Classification:**	Accepted
Names:	116-KE-3; 105-KE Fuel Storage Basin Storage Basin French Drain; 105-KE Sub-Basin Drainage Disposal System Crib	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The waste site is part of the sub-basin drainage disposal system for the 105-KE Fuel Storage Basin (100-K-42). The site includes a feed pipe, crib structure, dry well, and test hole. Although 116-KE-3 was located inside the Area AG, Zone 1 boundary, it was in an "excluded region" and not considered part of the AG Zone 1 remediation scope. Remedial action from 2010 through 2012 at adjacent waste sites impacted waste site 116-KE-3. At this location, the excavation depth was approximately 12.5 meters (41 ft) from original grade at 116-KE-3 to 130 meters (426 ft) above mean sea level. Excavation to this depth resulted in the removal of the perforated crib pipelines. The gravel directly below the pipelines and the 8 in. steel well casing to groundwater were not completely removed. Remedial activities did not remove all of the vadose zone contamination encountered at 116-KE-3. The expected depth of the excavation necessary to remediate the contaminated soil was not possible without threat to the integrity of the KE Reactor. To provide immediate protection to human health, the area was backfilled with clean soil.

It had been cobble covered and posted with "Underground Radioactive Material" warning signs. A mound of soil, installed in 1977 or 1978, covered some of the ancillary units related to this site. The test hole's 10.2-centimeter (4-inch) diameter steel casing originally extended above finish grade level but was no longer visible.

A 20.3-centimeter (8-inch) corrugated galvanized steel feed pipe 8.8 meters (29 feet) below grade comes from the fuel storage basin. The feed pipe enters the crib structure at elevation 133 meters (435.5 feet).

The crib structure is trapezoid shaped with the top at grade level (Elevation: 142 meters [464.5 feet]) and approximately 18.3 meters (60 feet) in width (excavation and backfill width) and the bottom (Elevation: 425.5 feet) 3.05 meters (10 feet) in width. The bottom 3.7 meters (12 feet)

of the crib is filled with coarse gravel.

The distribution system (drain field) within the crib is a central feeder with side feeders ("fishbone") located 8.8 meters (29 feet) below grade. All feeder piping is composed of 20.3-centimeter (8-inch) corrugated and perforated galvanized steel pipe. The main feeder pipe within the drain field is 6.1 meters (20 feet) long. The side feeders coming from each side of the central feeder are 2.7 meters, 3.2 meters, 2.6 meters, and 1.5 meters (9.0 feet, 10.5 feet, 8.5 feet, and 5.0 feet) in length, 1.75 meters, 1.7 meters, and 1.3 meters (5.75 feet, 5.5 feet, 4.25 feet) apart, and set at an angle of 30 degrees (Drawing #H-1-23207 is labeled 30 degrees, however, it appears on the drawing to be closer to 60 degrees.) The drain field is 6.1 meters (20 feet) in diameter.

A dry well (injection well) was installed at the midpoint (Washington State Plane Coordinates: Easting 569130.985, Northing 146753.534) of the drain field main feeder pipe. The dry well is constructed of 20.3-centimeter (8-inch) schedule 40 steel well casing. The dry well casing runs from elevation 435.5 feet (8.8 meters/29 feet below grade) downward to a point 3.05 meters (10 feet) below the mean water table. The bottom 6.1 meters (20 feet) of the well casing is perforated.

The 10.2-centimeter (4-inch) steel test hole extended from the surface to the head end of the drain field. The test hole piping was the only part of site's structure that was above grade. The construction of the "D" catch tank modification would have covered the test hole.

Location: The site is located north of the 105-KE Reactor Building (118-KE-1) about 23 meters (75 feet).

Related Sites/ Structures: The site is associated with 100-K-42 fuel storage basin.

Process Description: The site operated from 1955 to 1971 as an overflow crib for sub-basin drainage from the 105-KE Fuel Storage Basin (100-K-42).

Waste Type: Process Effluent

Waste Description: The waste is contaminated structures and soil from the fuel storage basin sub-basin drainage system.

Code:	116-KE-5	**Classification:**	Accepted
Names:	116-KE-5; 150-KE Heat Recovery Station	**Reclassification**	Interim Closed Out (9/23/2005)
Type:	Process Unit/Plant	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The site has been remediated and Interim Closed Out. The facility was constructed on a concrete pad and consisted of heat exchangers and associated piping. The heat exchangers had been removed and are being used elsewhere. Exposed piping had wooden covers installed over the open ends. Remedial action activities at the 100-K reactor sites began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005.

Location: The site was located north of 118-KE-1 (105-KE Reactor Building) and east of the reactor cooling effluent lines near 116-KE-4 (107-KE Retention Basins).

Release Description: There were no known releases from this heat exchange station. Only surface contamination is on the remaining pipes.

Process Description: effluent. The station used an ethylene glycol solution as the heat exchanger medium. The system was no longer intact.

Waste Type: Equipment

Waste Description: Trace amounts of radioactive contamination remain on piping.

Closure Info: Interim: Remedial action activities at the 100-K reactor effluent pipelines began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation of the pipelines involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005. The previously documented waste site boundaries for the 116-KW-4 and 116-KE-5 sites were much larger than the actual footprint of the heat recovery facilities. The soil area beneath each of the former heat recovery stations was excavated in its entirety with the removal of the co-located pipelines. Approximately 55,960 square meters (602,350 sq ft) of plan area was excavated, including excavation within the deep zone (greater than 4.6 meters [15 ft] below ground surface) up to 8.8 meters (29 ft) below ground surface where necessary to complete remediation. Approximately 86,551 metric tons (95,406 U.S. tons) of material from the sites was removed and disposed at the ERDF. The active 100-K-47 concrete culvert was not removed during remediation of the adjacent section of the 100-K-55 pipeline. Several 100-K-56 pipe segments, located west of 116-KE-4, were not included in the remediation scope.

The contaminated materials from these sites have been excavated and disposed at the ERDF. The remaining soils at the sites have been sampled, analyzed, and modeled, and the results do not preclude any future uses (as bounded by the rural-residential scenario), allow unrestricted use of shallow zone soils, and pose no threat to groundwater or the Columbia River. The 100-K-55:1, 100-K-56:1, 116-KW-4, and 116-KE-5 sites were verified to be remediated in accordance with the ROD and may be backfilled.

Code: 116-KE-6A

Classification: Accepted

Names: 116-KE-6A; 1706-KE Condensate Collection Tank; 1706-KE Waste Treatment System

Reclassification Interim Closed Out (8/4/2010)

Type: Storage Tank

Start Date: 1/1/1984

Status: Inactive

End Date: 1/1/1987

Description: The site has been remediated and Interim Closed Out. The site consisted of a 96 gallon condensate collection tank, which was part of the 1706-KE Waste Treatment System installed in 1984.

Location: The tank was located northwest of the 1706-KER building.

Release Description: On August 18, 1986, a 30 gallon epoxy vessel overheated. The event resulted in the forcible ejection of some of the resin material from the treatment unit. The epoxy overheating caused the emission of thick white vapors but no fire was observed. The ejected waste material was slightly radioactive. The material was cleaned up and packaged for low-level burial by operations personnel. No radioactivity was found outside the radiation zone. The area was cleaned to background radiation levels. (see Event Investigation Report D/T-86-01)

Related Sites/ Structures: Other WTS sites were 116-KE-6B, 6C, 6D.

Process Description: In 1984, a new system of radioactive waste treatment was initiated that consisted of an evaporation and epoxy encapsulation unit. During the original operation, a small stream of

waste water was fed into a drum of hot epoxy at a constant rate. The water flashed to steam and traveled to a condenser where it was cooled and collected in the condensate collection tank. The liquid was sampled to determine if the radionuclide content was below releasable limits. Solids were collected in the epoxy. When a sufficient volume of epoxy (containing solid waste) was accumulated, a catalyst was added to harden the epoxy in the drum. The drum of solid epoxy was sealed and transported to a radioactive burial ground. This process ended in August 1986 when an ion exchange column was attached the accumulation tank. This process circulated the radioactive waste water through the ion exchange column until the radionuclide content was below the releasable limit.

Waste Type: Equipment

Waste Description: The unit was used to treat radioactive wastes generated from sample analysis and test activities conducted in the laboratories of the 1706-KE Building. The system stopped operating in 1987. All of the waste was removed in 1994.

Closure Info: Interim: The 1706-KE Waste Treatment System (WTS), was a Treatment, Storage and Disposal (TSD) unit located in the 1706-KER Building under the Resource Conservation and Recovery Act of 1976 (RCRA) and subject to RCRA corrective action requirements. As documented in the 100 Area Remaining Sites ROD, the RCRA corrective actions and CERCLA remedial actions were coordinated such that the result of the remedial action satisfied both sets of requirements. RCRA closure of the WTS was completed in 2009. The DOE/RL-2010-42 RSVP addresses the completion of the CERCLA remedial action.

The 116-KE-6A, 116-KE-6B, 116-KE-6C, and 116-KE-6D waste sites were removed using standard industrial materials and equipment. Remedial action activities were accomplished from June 15 through July 9, 2009. The waste materials from sites 116-KE-6A, 116-KE-6B, and 116-KE-6C were loaded on shipping containers July 1, 2009, and shipped to the Environmental Restoration Disposal Facility (ERDF) on July 9, 2009. The 116-KE-6D site was disposed in October 1996 at the low-level burial grounds. The ion exchange column, 116-KE-6D, was removed from the WTS in 1994. The column was containerized for future disposal at the Low-Level Burial Grounds and disposed in October 1996. Remedial activities for the 116-KE-6A, 116-KE-6B, and 116-KE-6C waste sites were initiated in June 2009, under RCRA TSD closure plan (DOE/RL-2009-29) and the RDR/RAWP for the 100 Area (DOE/RL-96-17) requirements. A pre-existing hatchway located immediately above the WTS area was utilized to move the condensate collection tank (116-KE-6A), evaporator tank (116-KE-6B), and waste accumulation tank (116-KE-6C) directly into shipping containers for disposal. Because of the size of the waste accumulation tank in relation to the hatchway, reducing the size of the tanks was necessary in order to remove them from the building. Following removal of the tanks, the room in which the tanks were located was cleaned of debris and surveyed for radiological contamination.

After completion of the TSD closure activities, Ecology provided an approval letter for the RCRA TSD closure plan. Upon completion of remediation, a Professional Engineer's Certification for the RCRA Closure of the 1706-KE WTS was issued. The engineer's certification and Ecology's acceptance letter were provided in Appendices A and B of the RSVP.

Verification sampling was not required under the scope of closure for the waste sites, since the floor and walls in the 1706-KER Building were not included as part of either the RCRA TSD closure certification or under this CERCLA remedial action.

The cost to remove the above-grade portion of the 1706-KER Facility, which included removal and disposal of the waste sites was approximately $1.60 million. The effort to remove the waste sites was estimated at 10 percent of the project cost, which yielded an estimated cost of $160,000 for remediation of the four waste sites.

Code:	116-KE-6B	**Classification:**	Accepted
Names:	116-KE-6B; 1706-KE Evaporation Tank; 1706-KE Waste Treatment System	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Storage Tank	**Start Date:**	1/1/1984
Status:	Inactive	**End Date:**	

Description: The site consisted of a 30 gallon evaporation unit, which was part of the 1706-KE Waste Treatment System installed in 1984.

Location: The tank was located northwest of the 1706-KER building.

Release Description: On August 18, 1986, a 30 gallon epoxy vessel overheated. The event resulted in the forcible ejection of some of the resin material from the treatment unit. The epoxy overheating caused the emission of thick white vapors but no fire was observed. The ejected waste material was slightly radioactive. The material was cleaned up and packaged for low-level burial by operations personnel. No radioactivity was found outside the radiation zone. The area was cleaned to background radiation levels. (see Event Investigation Report D/T-86-01)

Related Sites/ Structures: Other WTS sites were 116-KE-6A, 6C, 6D.

Process Description: In 1984, a new system of radioactive waste treatment was initiated that consisted of an evaporation and epoxy encapsulation unit. During the original operation, a small stream of waste water was fed into a drum of hot epoxy at a constant rate. The water flashed to steam and traveled to a condenser where it was cooled and collected in the condensate collection tank. The liquid was sampled to determine if the radionuclide content was below releasable limits. Solids were collected in the epoxy. When a sufficient volume of epoxy (containing solid waste) was accumulated, a catalyst was added to harden the epoxy in the drum. The drum of solid epoxy was sealed and transported to a radioactive burial ground. This process ended in August 1986 when an ion exchange column was attached the accumulation tank. This process circulated the radioactive waste water through the ion exchange column until the radionuclide content was below the releasable limit.

Waste Type: Equipment

Waste Description: The unit was used to treat radioactive wastes generated from sample analysis and test activities conducted in the laboratories of the 1706-KE Building. The system stopped operating in 1987. All of the waste was removed in 1994.

Closure Info: Interim: The 1706-KE Waste Treatment System (WTS), was a Treatment, Storage and Disposal (TSD) unit located in the 1706-KER Building under the Resource Conservation and Recovery Act of 1976 (RCRA) and subject to RCRA corrective action requirements. As documented in the 100 Area Remaining Sites ROD, the RCRA corrective actions and CERCLA remedial actions were coordinated such that the result of the remedial action satisfied both sets of requirements. RCRA closure of the WTS was completed in 2009. The DOE/RL-2010-42 RSVP addresses the completion of the CERCLA remedial action.

The 116-KE-6A, 116-KE-6B, 116-KE-6C, and 116-KE-6D waste sites were removed using standard industrial materials and equipment. Remedial action activities were accomplished from June 15 through July 9, 2009. The waste materials from sites 116-KE-6A, 116-KE-6B, and 116-KE-6C were loaded on shipping containers July 1, 2009, and shipped to the Environmental Restoration Disposal Facility (ERDF) on July 9, 2009. The 116-KE-6D site was disposed in October 1996 at the low-level burial grounds. The ion exchange column, 116-KE-6D, was removed from the WTS in 1994. The column was containerized for future disposal at the Low-Level Burial Grounds and disposed in October 1996. Remedial activities for the 116-KE-6A,

116-KE-6B, and 116-KE-6C waste sites were initiated in June 2009, under RCRA TSD closure plan (DOE/RL-2009-29) and the RDR/RAWP for the 100 Area (DOE/RL-96-17) requirements. A pre-existing hatchway located immediately above the WTS area was utilized to move the condensate collection tank (116-KE-6A), evaporator tank (116-KE-6B), and waste accumulation tank (116-KE-6C) directly into shipping containers for disposal. Because of the size of the waste accumulation tank in relation to the hatchway, reducing the size of the tanks was necessary in order to remove them from the building. Following removal of the tanks, the room in which the tanks were located was cleaned of debris and surveyed for radiological contamination.

After completion of the TSD closure activities, Ecology provided an approval letter for the RCRA TSD closure plan. Upon completion of remediation, a Professional Engineer's Certification for the RCRA Closure of the 1706-KE WTS was issued. The engineer's certification and Ecology's acceptance letter were provided in Appendices A and B of the RSVP.

Verification sampling was not required under the scope of closure for the waste sites, since the floor and walls in the 1706-KER Building were not included as part of either the RCRA TSD closure certification or under this CERCLA remedial action.

The cost to remove the above-grade portion of the 1706-KER Facility, which included removal and disposal of the waste sites was approximately $1.60 million. The effort to remove the waste sites was estimated at 10 percent of the project cost, which yielded an estimated cost of $160,000 for remediation of the four waste sites.

Code:	116-KE-6C	**Classification:**	Accepted
Names:	116-KE-6C; 1706-KE Waste Accumulation Tank; 1706-KE Waste Treatment System	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Storage Tank	**Start Date:**	1/1/1984
Status:	Inactive	**End Date:**	

Description: The site consisted of a 550 gallon waste accumulating tank, which was part of the 1706-KE Waste Treatment System installed in 1984.

Location: The tank was located northwest of the 1706-KER building.

Release Description: On August 18, 1986, a 30 gallon epoxy vessel overheated. The event resulted in the forcible ejection of some of the resin material from the treatment unit. The epoxy overheating caused the emission of thick white vapors but no fire was observed. The ejected waste material was slightly radioactive. The material was cleaned up and packaged for low-level burial by operations personnel. No radioactivity was found outside the radiation zone. The area was cleaned to background radiation levels. (see Event Investigation Report D/T-86-01)

Related Sites/ Structures: Other WTS sites were 116-KE-6A, 6B, 6D.

Process Description: In 1984, a new system of radioactive waste treatment was initiated that consisted of an evaporation and epoxy encapsulation unit. During the original operation, a small stream of waste water was fed into a drum of hot epoxy at a constant rate. The water flashed to steam and traveled to a condenser where it was cooled and collected in the condensate collection tank. The liquid was sampled to determine if the radionuclide content was below releasable limits. Solids were collected in the epoxy. When a sufficient volume of epoxy (containing solid waste) was accumulated, a catalyst was added to harden the epoxy in the drum. The drum of solid epoxy was sealed and transported to a radioactive burial ground. This process ended in August 1986 when an ion exchange column was attached the accumulation tank. This process

circulated the radioactive waste water through the ion exchange column until the radionuclide content was below the releasable limit.

Waste Type: Equipment

Waste Description: The unit was used to treat radioactive wastes generated from sample analysis and test activities conducted in the laboratories of the 1706-KE Building. The system stopped operating in 1987. All of the waste was removed in 1994.

Closure Info: Interim: The 1706-KE Waste Treatment System (WTS), was a Treatment, Storage and Disposal (TSD) unit located in the 1706-KER Building under the Resource Conservation and Recovery Act of 1976 (RCRA) and subject to RCRA corrective action requirements. As documented in the 100 Area Remaining Sites ROD, the RCRA corrective actions and CERCLA remedial actions were coordinated such that the result of the remedial action satisfied both sets of requirements. RCRA closure of the WTS was completed in 2009. The DOE/RL-2010-42 RSVP addresses the completion of the CERCLA remedial action.

The 116-KE-6A, 116-KE-6B, 116-KE-6C, and 116-KE-6D waste sites were removed using standard industrial materials and equipment. Remedial action activities were accomplished from June 15 through July 9, 2009. The waste materials from sites 116-KE-6A, 116-KE-6B, and 116-KE-6C were loaded on shipping containers July 1, 2009, and shipped to the Environmental Restoration Disposal Facility (ERDF) on July 9, 2009. The 116-KE-6D site was disposed in October 1996 at the low-level burial grounds. The ion exchange column, 116-KE-6D, was removed from the WTS in 1994. The column was containerized for future disposal at the Low-Level Burial Grounds and disposed in October 1996. Remedial activities for the 116-KE-6A, 116-KE-6B, and 116-KE-6C waste sites were initiated in June 2009, under RCRA TSD closure plan (DOE/RL-2009-29) and the RDR/RAWP for the 100 Area (DOE/RL-96-17) requirements. A pre-existing hatchway located immediately above the WTS area was utilized to move the condensate collection tank (116-KE-6A), evaporator tank (116-KE-6B), and waste accumulation tank (116-KE-6C) directly into shipping containers for disposal. Because of the size of the waste accumulation tank in relation to the hatchway, reducing the size of the tanks was necessary in order to remove them from the building. Following removal of the tanks, the room in which the tanks were located was cleaned of debris and surveyed for radiological contamination.

After completion of the TSD closure activities, Ecology provided an approval letter for the RCRA TSD closure plan. Upon completion of remediation, a Professional Engineer's Certification for the RCRA Closure of the 1706-KE WTS was issued. The engineer's certification and Ecology's acceptance letter were provided in Appendices A and B of the RSVP.

Verification sampling was not required under the scope of closure for the waste sites, since the floor and walls in the 1706-KER Building were not included as part of either the RCRA TSD closure certification or under this CERCLA remedial action.

The cost to remove the above-grade portion of the 1706-KER Facility, which included removal and disposal of the waste sites was approximately $1.60 million. The effort to remove the waste sites was estimated at 10 percent of the project cost, which yielded an estimated cost of $160,000 for remediation of the four waste sites.

Code:	116-KE-6D	**Classification:**	Accepted
Names:	116-KE-6D; 1706-KE Ion Exchange Column; 1706-KE Waste Treatment System	**Reclassification**	Interim Closed Out (8/4/2010)
Type:	Process Unit/Plant	**Start Date:**	1/1/1984

Status: Inactive **End Date:**

Description: The site consisted of a 5 cubic foot mixed-bed resin ion exchange column, which was part of the 1706-KE Waste Treatment System installed in 1984.

Location: The ion exchange column was located northwest of the 1706-KER building.

Release Description: On August 18, 1986, a 30 gallon epoxy vessel overheated. The event resulted in the forcible ejection of some of the resin material from the treatment unit. The epoxy overheating caused the emission of thick white vapors but no fire was observed. The ejected waste material was slightly radioactive. The material was cleaned up and packaged for low-level burial by operations personnel. No radioactivity was found outside the radiation zone. The area was cleaned to background radiation levels. (see Event Investigation Report D/T-86-01)

Related Sites/ Structures: Other WTS sites were 116-KE-6A, 6B, 6C.

Process Description: In 1984, a new system of radioactive waste treatment was initiated that consisted of an evaporation and epoxy encapsulation unit. During the original operation, a small stream of waste water was fed into a drum of hot epoxy at a constant rate. The water flashed to steam and traveled to a condenser where it was cooled and collected in the condensate collection tank. The liquid was sampled to determine if the radionuclide content was below releasable limits. Solids were collected in the epoxy. When a sufficient volume of epoxy (containing solid waste) was accumulated, a catalyst was added to harden the epoxy in the drum. The drum of solid epoxy was sealed and transported to a radioactive burial ground. This process ended in August 1986 when an ion exchange column was attached the accumulation tank. This process circulated the radioactive waste water through the ion exchange column until the radionuclide content was below the releasable limit.

Waste Type: Equipment

Waste Description: The unit was used to treat radioactive wastes generated from sample analysis and test activities conducted in the laboratories of the 1706-KE Building. The system stopped operating in 1987. All of the waste was removed in 1994.

Closure Info: Interim: The 1706-KE Waste Treatment System (WTS), was a Treatment, Storage and Disposal (TSD) unit located in the 1706-KER Building under the Resource Conservation and Recovery Act of 1976 (RCRA) and subject to RCRA corrective action requirements. As documented in the 100 Area Remaining Sites ROD, the RCRA corrective actions and CERCLA remedial actions were coordinated such that the result of the remedial action satisfied both sets of requirements. RCRA closure of the WTS was completed in 2009. The DOE/RL-2010-42 RSVP addresses the completion of the CERCLA remedial action.

The 116-KE-6A, 116-KE-6B, 116-KE-6C, and 116-KE-6D waste sites were removed using standard industrial materials and equipment. Remedial action activities were accomplished from June 15 through July 9, 2009. The waste materials from sites 116-KE-6A, 116-KE-6B, and 116-KE-6C were loaded on shipping containers July 1, 2009, and shipped to the Environmental Restoration Disposal Facility (ERDF) on July 9, 2009. The 116-KE-6D site was disposed in October 1996 at the low-level burial grounds. The ion exchange column, 116-KE-6D, was removed from the WTS in 1994. The column was containerized for future disposal at the Low-Level Burial Grounds and disposed in October 1996. Remedial activities for the 116-KE-6A, 116-KE-6B, and 116-KE-6C waste sites were initiated in June 2009, under RCRA TSD closure plan (DOE/RL-2009-29) and the RDR/RAWP for the 100 Area (DOE/RL-96-17) requirements. A pre-existing hatchway located immediately above the WTS area was utilized to move the condensate collection tank (116-KE-6A), evaporator tank (116-KE-6B), and waste accumulation tank (116-KE-6C) directly into shipping containers for disposal. Because of the size of the waste accumulation tank in relation to the hatchway, reducing the size of the tanks was necessary in order to remove them from the building. Following removal of the tanks, the

room in which the tanks were located was cleaned of debris and surveyed for radiological contamination.

After completion of the TSD closure activities, Ecology provided an approval letter for the RCRA TSD closure plan. Upon completion of remediation, a Professional Engineer's Certification for the RCRA Closure of the 1706-KE WTS was issued. The engineer's certification and Ecology's acceptance letter were provided in Appendices A and B of the RSVP.

Verification sampling was not required under the scope of closure for the waste sites, since the floor and walls in the 1706-KER Building were not included as part of either the RCRA TSD closure certification or under this CERCLA remedial action.

The cost to remove the above-grade portion of the 1706-KER Facility, which included removal and disposal of the waste sites was approximately $1.60 million. The effort to remove the waste sites was estimated at 10 percent of the project cost, which yielded an estimated cost of $160,000 for remediation of the four waste sites.

Code: 118-KE-2 **Classification:** Accepted

Names: 118-KE-2; Rod Cave; 105-KE Horizontal Control Rod Storage Cave **Reclassification** Interim Closed Out (6/14/2011)

Type: Storage **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The waste site has been remediated and Interim Closed Out. The site was constructed by pouring a concrete slab 18 meters (60 feet) long by 2.4 meters (8 feet) wide. Two sections of 61-centimeter (24-inch) pipe were cut in half lengthwise, laid open side down on the slab. Vertical concrete walls and steel doors were added to the ends of the pipe sections, with the walls forming a wing at each end. The pipe sections were then covered with 1.8 meters (6 feet) of clean fill material, forming a 12-meter (40-foot) long tunnel. The berm width after the fill material was added is approximately 8 meters (25 feet). The entire structure is above grade.

Location: The site is located northeast of the 105-KE Building.

Related Sites/ Structures: 105-KE Reactor and the 100-K-9 and 100-K-10 french drains.

Process Description: The unit was used for temporary storage of radioactive rod tips associated with the 105-KE Reactor for radioactive decay pending subsequent disposal.

Waste Type: Equipment

Waste Description: This site contains trace amounts of radionuclides. The radiation level at the entrance to the cave with the door open is 1 millirad/hour. The unit was used for temporary storage of radioactive rod tips for radioactive decay pending subsequent disposal.

Closure Info: Interim (6/14/2011): The entire 118-KE-2 Waste Site structure, including the concrete slab, was removed in September 2009 to facilitate heavy equipment access to the 105-KE Building and associated Fuel Storage Basin to support ongoing remedial activities. The interim action consisted of successful removal and disposal of the entire 118-KE-2 Waste Site. Materials from the demolition of the structure and shipped to the ERDF for disposal.

Code: 120-KE-1 **Classification:** Accepted

Names:	120-KE-1; 183-KE Acid Neutralization Pit; 183-KE Filter Waste Facility Dry Well; 183-KE Filter Water Facility; 100-K-26; 100-KE-1	**Reclassification**	None
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The site was an underground concrete structure used to neutralize acid waste prior to disposal. The "pit" was a concrete box lined with acid proof bricks. The structure was divided into three sections by dividing brick weirs. Effluent released into the system was held up in a small chamber by the first weir. Effluent overflowed the first weir into a second small chamber and then overflowed the second weir into the third larger chamber. A 10.2-centimeter (4-inch) vitrified tile drain was located in the bottom of the third large chamber and is believed to discharge to the process sewer (see Site Comment). The top of the pit was level with the surface and had a 7.6-centimeter (3-inch) plank cover that was posted with "Confined Space" and "Caution, Acid" warning signs. In August 2000, the area around the acid tanks was stabilized with gravel. The french drain and sump were backfilled. They are no longer visible. They are not marked or posted.

Location: The site is located near the southeast corner of the 183-KE Head House, south of the 120-KE-5 Sulfuric Acid Tank and east of the 100-K-23 Sodium Silicate Tank Site.

Related Sites/ Structures: The site was associated with the 183-KE Head House and the 183-KE Sulfuric Acid Tanks.

Process Description: The method of acid neutralization is not known. When two other acid neutralization pits (100-K-34 and 100-K-35) that were associated with the elevated day use tanks at 183-KE and 183-KW were opened, crushed limestone was visible. Limestone may also be at the 120-KE-1 site beneath the discarded sludge.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid for neutralization and acid sludge waste that was removed from the sulfuric acid storage tanks in the late 1960's and early 1970's.

Code:	120-KE-2	**Classification:**	Accepted
Names:	120-KE-2; 183 KE Filter Water Facility; 183-KE Filter Waste Facility French Drain; 100-KE-2	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The unit was an open-bottomed french drain with a depth of 0.9 meters (3 feet) and a diameter of 0.9 meters (3 feet). It is had been located inside four, yellow posts with chain. In August 2000, the drain was backfilled and the area around the acid tanks was stabilized with gravel. The french drain and sump were backfilled. They are no longer visible. They are not marked or posted.

Location: The site is located 37 meters (121.4 feet) east of the southeast corner of 183-1KE head house and adjacent to the 120-KE-4 Sulfuric Acid Tanks.

Process Description: Hanford drawing H-1-25264 describes this drain as being a 0.9-meter (3-foot) diameter, 1.8-meter (6-foot) long vitrified clay pipe placed vertically in an excavation that was about 4 meters (13 feet) across and 3.4 meters (11 feet) deep. The bottom 0.3 meters (1 foot) of the pipe was filled with course rock, as was the bottom 1.5 to 1.8 meters (5 to 6 feet) of the excavation.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid sludge that was removed from sulfuric acid storage tanks.

Code: 120-KE-3 **Classification:** Accepted

Names: 120-KE-3; 183-KE Filter Water Facility Trench; 100-KE-3 **Reclassification** None

Type: Trench **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The unit was a trench lined with sand. The trench received a sludge-water slurry. The contaminated soil was removed by an offsite vendor.

Location: The site was located east of 183-1KE, head house, north of the 120-KE-4 and 120-KE-5 sulfuric acid tanks, on the north side of the railroad tracks.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid sludge that was removed from sulfuric acid storage tanks.

Code: 120-KE-4 **Classification:** Accepted

Names: 120-KE-4; 183-KE1 Sulfuric Acid Storage Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The unit was located above ground and has a storage capacity of 38,267 liters (10,109 gallons). In June 2000, the above ground piping, motors, pumps and electrical wiring associated with the acid tanks were removed. The tank has been removed and disposed at ERDF. This tank is no longer in existence. The insides of the acid tanks were inspected, photographed and confirmed to be dry.

Location: The unit was located in the southeast corner of the 183-KE Headhouse.

Release Description: The supply pipe from this unit to the point of use inside the 183-KE Building developed a slow gradual leak. Before the leak was detected, an unknown quantity of sulfuric acid leaked into the ground at the northeast corner of 183-KE Building.

Related Sites/ Structures: The site is associated with the 183-KE Headhouse, 120-KE-1, 120-KE-2 and 120-KE-5.

Process Description: The sulfuric acid was used to activate sodium silicate. During seasons of high turbidity, activated silica solution was fed into the raw water to aid in coagulation.

Waste Type: Chemicals

Waste Description: The unit was used for storage of sulfuric acid product.

Code: 120-KE-5 **Classification:** Accepted

Names: 120-KE-5; 183-KE2 Sulfuric Acid Storage Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The site was the westernmost of the two original sulfuric acid tanks at the 183-KE Headhouse. The tank has been removed and disposed at ERDF. This tank is no longer in existence. The tank was a horizontal, cylindrical shaped, steel tank supported aboveground on concrete saddles. The tank had a capacity of 38,267 liters (10,109 gallons).

Location: The tank was located near the southeast corner of the 183-KE Headhouse, east of the eastern sodium silicate storage tank site (100-K-23), and west of the second sulfuric acid storage tank (120-KE-4).

Related Sites/ Structures: The site is associated with the 183-KE Headhouse and 120-KE-4.

Process Description: The sulfuric acid was used to activate sodium silicate. During seasons of high turbidity, activated silica solution was fed into the raw water as an aid in coagulation.

Code: 120-KE-6 **Classification:** Accepted

Names: 120-KE-6; 183-KE Sodium Dichromate Tank **Reclassification** None

Type: Foundation **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The site is a foundation where a sodium dichromate storage tank had been placed. The tank has been removed and all that remains is the concrete pad, contaminated soil, and any remaining piping. The vertical steel storage tank was 6.1 meters (20 feet) high, 5.8 meters (19 feet) in diameter, and had a 159,000-liter (42,000-gallon) storage capacity.

Location: The site is located on the east side of the 183-KE Building. The center of the pad is 6.1 meters (20 feet) from the building's east wall.

Release Description: There are no documented releases. However, there is evidence of residual sodium dichromate in the soil that has accumulated from many years of unloading and handling.

Related Sites/ Structures: The site is associated with the 183-KE Building.

Process Description: Sodium dichromate was added to the process water as a corrosion inhibitor. It was metered and proportioned by a single step operation in the head house, and diluted and injected into the process water in the process water pump house. The proportioning pumps took their suction directly from the storage tank. Near the process water pump house, the pumps discharged through a back pressure valve into a service water stream which diluted the dichromate on its way to injection into the process water. The injection point was located on the discharge of the low lift pump. Dichromate injection was determined by the process water flow. The chemical storage facilities at the 183-KE Building were sized to provide sufficient chemicals for two to three months continuous operation. Chemicals were delivered to the 183-KE Building by rail. With the exception of chlorine, all chemicals were transferred to their storage tanks by pumping or by pressurizing the tank cars with compressed air.

Waste Type: Chemicals

Waste Description: Staining from sodium dichromate can be seen in the soil near the concrete pad.

Code:	120-KE-8	**Classification:**	Accepted
Names:	120-KE-8; 165-KE Brine Mixing Tank; 165-KE Brine Pit	**Reclassification**	None
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The unit is a below grade concrete structure the provided brine for the 165-KE Powerhouse. The roof of the structure is approximately 0.3 meters (1 foot) above ground level. The opening into the pit is covered by a wooden cover that is in poor condition. The bottom of the pit has subsided and appears to have leaked or drained to the soils beneath the structure. Just south of the brine pit is a valve pit located within a vertical section of 1.2 meter (4 foot) diameter corrugated galvanized pipe. This valve pit contains residue and apparently was part of the brine operation. The brine pit has inner dimensions of 4.3 meters (14 feet) long by 2.4 meters (8 feet) wide by 2.7 meters (9 feet) tall. The bottom of each pit is filled with a 12.7 centimeter (7 inch) layer of 1.3 to 2.6 centimeter (1/2 to 1 inch) gravel topped by a 17.8 centimeter (7 inch) layer of 0.3 to 0.6 centimeter (1/8 to 1/4 inch) gravel. The pit has a 1.2 meter (4 foot) by 1.1 meter (3.5 foot) opening for receiving salt.

Location: The site is located near the northwest corner of the 165-KE Powerhouse.

Related Sites/ Structures: The site is associated with the 165-KE Powerhouse.

Process Description: The brine was probably used to regenerate the water softeners that treated water prior to steam generation within the 165-KE Powerhouse. Salt was off-loaded from rail cars and placed in the pit. Water was then circulated through the pit, and brine was pumped back to the 165-KE Powerhouse for further use.

Waste Type: Chemicals

Waste Description: The unit contains salt brine and residue. Based on sampling performed at the 120-KE-9 and 120-KW-7 brine pits, the brine and residue may be regulated as dangerous per WAC 173-303.

Code:	120-KE-9	**Classification:**	Accepted
Names:	120-KE-9; 183-KE Brine Pit; 183-KE Salt Dissolving Pits and Brine Pump Pit	**Reclassification**	None
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The site was interim stabilized in August 1998 the ceiling structures were demolished and the open chambers were backfilled to grade. Any remaining liquid was removed. All pit utilities were isolated.

The Salt Dissolving Pits and Brine Pump Pit are part of a single below-grade concrete structure that provided brine for the 183-KE Water Treatment Facility. Four wooden covers and one metal cover were visible at the surface. The wooden covers were in poor condition. In August of 1998 the ceiling structures were demolished and the open chambers were backfilled to grade.

The Brine Pump Pit is located adjacent to the two Salt Dissolving Pits. The pit is 3.3 meters (10.67 feet) long by 2.2 meters (7.33 feet) wide by 2.4 meters (8 feet) deep. It holds two pumps and the associated piping for the brine system. A 46 by 46 by 46-centimeter (18 by 18 by 18-inch) sump is located in the corner of the pit. The pump pit was accessible from the surface through a 0.6 by 0.6-meter (2 by 2-foot) opening.

Location: The site is located approximately 37 meters (120 feet) east of the east end of the 183-KE Water Filter Plant and just north of the railroad spur that serviced 183-KE.

Related Sites/ Structures: The brine pit is associated with the 183-KE Water Filter Plant.

Process Description: The salt brine was used to regenerate water softeners.

Waste Type: Chemicals

Waste Description: The unit contains salt brine and residue.

Code: 126-KE-2 **Classification:** Accepted

Names: 126-KE-2; 183-KE Liquid Alum Storage Tank #2 **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The site was an above ground vertical stainless steel storage tank mounted on a concrete base. The tank has been removed and disposed at ERDF. This tank is no longer in existence. The tank was part of a system called "The Liquid Alum System", that supplied liquid alum for water treatment. The liquid was supplied either by rail car or tank truck, as both connections are shown on the Liquid Alum System diagram in HW-24800-103. The piping and instrument identification diagram, H-1-16552, shows the pipelines, valves, and instrumentation related to the tank. During the winter, the liquid alum was pumped through heat exchangers for purpose of heating and agitating the chemicals. Use of this tank for the storage of alum was discontinued in the Fall of 1996.

Location: The site was the western-most of two alum storage tanks located approximately 15.2 meters (50 feet) from the southwest corner of the 183-KE Head House and 10.7 meters (35 feet) south of the 183-KE chlorine vault.

Related Sites/ Structures: The tank was associated with the 183-KE Head House. The head house was the water quality center for the entire water treatment plant. In it were the facilities for metering raw water, for chemical injection into raw, filtered, and process water, and for effluent and influent control throughout the filter plant.

Process Description: Alum was used as a coagulant in water treatment. During the season of water high turbidity activated silica was added as an aid in coagulation. Alum was fed from the storage tank and proportioned directly into the raw water line. The proportioning pump was paced by the flow of raw water in its 91 centimeters (36 inches) raw water pipeline and fed at 30 parts per million (ppm) at a maximum flow rate of 121,000 liters per minute (32,000 gallons per minute).

Waste Type: Chemicals

Waste Description: The unit was used for storage of liquid alum (aluminum sulfate). Material Safety Data Sheet (MSDS) #040407 lists aluminum sulfate as an EPA hazardous substance. The tank has not been cleaned out.

Code: 130-KE-1 **Classification:** Accepted

Names: 130-KE-1; 105-KE Emergency Diesel Fuel Tank; 105-KE Emergency Diesel Oil Storage Tank **Reclassification** Interim Closed Out (6/23/2011)

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The 130-KE-1 waste sites consisted of two 7,600-liter (2,000 gallon) capacity storage tanks, 130-KE-1A and 130-KE-1B. Once the storage tanks were removed from the site, the site was backfilled with native soil to grade and covered with gravel.

Location: The site is located on the east side of 105-KE, adjacent to the reactor exhaust stack.

Related Sites/ Structures: 105-KE Reactor

Process Description: The 130-KE-1 Waste Site Tank System was used for storing diesel fuel from 1955 to 1971 to support use of the emergency fans housed in the basement of the 105-KE Reactor. The fans were in place as a backup ventilation system for the reactor.

Waste Type: Oil

Waste Description: The unit was used for storage of diesel fuel (product).

Closure Info: Interim (6/23/2011): The 130-KE-1 Waste Site Tank System (including tanks 130-KE-1A and 130-KE-1B) was permanently closed by removal of the below-grade tanks and accessible piping on October 5, 1992. The remedial action for the 130-KE-1 Waste Site included removal and disposal of the tanks and sampling and analysis of the underlying soils for total petroleum hydrocarbons (TPH).

The 130-KE-1 Waste Site was removed using standard industrial equipment. The two tanks were empty upon removal. No visible staining was observed and no organic vapors were detected during monitoring of the excavation and 130-KE-1 Waste Site Tank System removal. Soils samples from the excavated area and the overburden were collected and analyzed in accordance with Ecology Publication 90-52. The 130-KE-1 Waste Site Tank System was received by Northwest EnviroField Services, Inc. on February 5, 1993, for disposal as scrap steel.

A complete site assessment was performed per WAC 173-360-390 immediately following the 130-KE-1 Waste Site Tank System removal. Samples were collected from the excavated area and the overburden. After the 130-KE-1 Waste Site Tank System was removed, the area was sampled and final data received, the site was backfilled to grade.

Code: 130-KE-2 **Classification:** Accepted

Names: 130-KE-2; 166-KE Oil Storage Tank; Oil Bunker **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The bunker is an underground, reinforced concrete structure. It has two compartments, each having a storage capacity of 3,033,629 liters (801,400 gallons).

Location: The fuel oil storage tanks are located southwest of 105-KE. They are west of the 165-KE Boilerhouse. The metal oil storage building is located on southeast corner of the site.

Related Sites/ Structures: The storage tanks are associated with the 165-KE boiler house.

Process Description: The tank was used for storage of fuel oil (product) for the 165-KW Boilers. Fuel was delivered to the bunkers from rail cars and filled through 15 centimeter (6 inch) diameter gravity lines. Two day tanks are located on the south side of each bunker. Each Day Tank had a 186,621 liter (49,300 gallon) capacity.

Waste Type: Oil

Waste Description: The unit was used for storage of oil (product) for the 165-KE Boilers.

Code: 132-KE-1

Names: 132-KE-1; 116-KE Reactor Exhaust Stack

Type: Stack

Status: Inactive

Classification: Accepted

Reclassification Interim Closed Out (8/29/2012)

Start Date: 1/1/1955

End Date: 1/1/1971

Description: The stack has been demolished and Interim Closed Out. It was a reinforced-concrete structure with an original height of 91.4 meters (300 ft). It also included the 3.1 meters (10 ft) below grade portion with a base diameter of 6.25 meters (20.5 ft). The stack was built on a 11 meter (36 ft) octagonal foundation that was approximately 1.2-meter (4 ft) thick. The entire below grade portion of the stack base was removed. The maximum excavation depth was approximately 6.1 meters (20 ft).

The original height of the exhaust stack was 91.5 meters (300 feet). In 1980 and 1981, the exhaust stack was shortened to 53.3 meters (175 ft). The debris from the stack shortening activity was placed inside the remaining portion of the stack. An opening at the bottom, with a steel door cover, provided access to the interior of the exhaust stack. Condensate from the stack discharged through a floor drain into the ground below the stack.

Location: The unit is located on the northeast side of the 105-KE Reactor Building.

Related Sites/ Structures: Following completion of the confinement project in 1960, the air was diverted via underground reinforced concrete ducts to the 117-KE Filter Building. After flowing through the filters, the air went through below-grade concrete ducts and into the exhaust stack.

Process Description: The 132-KE-1 Waste Site (aka 116-KE Reactor Exhaust Stack) was designed to discharge ventilation exhaust air into the atmosphere from the 105-KE Reactor Building to prevent the possible buildup of radioactivity near the reactor area. The 116-KE Reactor Exhaust Stack operated from 1955 to 1971. Prior to 1960, air from the 105-KE Reactor Building flowed through concrete ducts directly out of the stack, later the air was diverted via underground reinforced concrete ducts to the 117-KE Filter Building. After flowing through the filters, the air went through below-grade concrete ducts and into the 116-KE Reactor Exhaust Stack.

Waste Type: Demolition and Inert Waste

Waste Description: Discharged ventilated air from the 105-KE Building flowed through concrete ducts directly out of the stack. The Exhaust Stack received radiologically contaminated exhaust air. The contaminants were cobalt-60, cesium-137, carbon-14, europium-152, europium-154, and europium-155, strontium-90 and tritium.

Closure Info: Interim (8/29/2012): Remediation and sampling began in January of 2009 and was completed in April of 2012. The large excavation area, known as 100-K Area AH, encompassed waste sites 100-K-6, 100-K-46, 100-K-62 and 132-KE-1. The excavation area also included Stockpile #4, which contained overburden and layback soil from the excavation of the 116-KE-1 Condensate Crib. Information supporting the use of Stockpile #4, located within the AH excavation, as backfill was also included in the DOE/RL-2012-38 Remaining Sites Verification Package

report.

Remediation of the identified Area AH waste sites was accomplished by demolishing the structures and excavating contaminated soil. All waste (soil and debris) associated with these waste sites was disposed at the Environmental Restoration and Disposal Facility (ERDF). The demolition activities were conducted using standard demolition techniques, including explosives for demolition of 132-KE-1 (116-KE Reactor Exhaust Stack). Approximately 1,809 ERDF containers (37,700 tons) of waste from these waste sites were sent to the ERDF for disposal.

Remediation of the 100-K-6 vacuum pit began in August 2011 and was completed in September 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The original waste site description estimated the depth of the cyclone separator as 9.14 meters (30 ft). However, during remediation the actual excavation depth was measured as 5.8 meters (19 ft).

The remediation of the 100-K-46 french drain was associated with the removal of the 119-KE building, which began in January 2009 and was completed in February 2009. The drywell was less than 1.5 meters (5 ft) deep.

The remediation activities at the 100-K-62 filter building began in August 2010 and were completed in May 2011. An excavator was used to remove the vacuum pit and excavate the surrounding soil. The maximum depth from grade within the waste site footprint was approximately 10.6 meters (34.8 ft).

The remediation activities at waste site 132-KE-1 exhaust stack began in July 2010 and were completed in September 2011. Removal of the above-grade portion of the stack was conducted using explosives placed near the base of the stack. The explosion caused the debris to fall in a designated area. The material was then loaded and disposed at ERDF. The entire below grade portion of the stack base was then removed. The maximum depth from grade within the waste site footprint was approximately 6.1 meters (20 ft).

In October of 2010, excavation of the overburden and layback soil for the 116-KE-1 Crib began and Stockpile #4 was created. Samples were collected in the 116-KE-1 waste site footprint and sent for analytical leach testing of the soils to determine carbon-14 leachability from the 100-K soil. During remediation of the co-located waste sites inside the AH excavation area, the 116-KE-1 crib was partially backfilled with soil from Stockpile #4 as a contamination control measure.

Note: Area-wide carbon-14 contamination exists in the deep zone above the criteria for protectiveness. This contamination is associated with the 105-KE Reactor ventilation filtration system and the deep contamination from the condensate that collected in the previously excavated 116-KE-1 Condensate Crib. Additional remediation of the deep vadose zone cannot be completed in proximity to the 105-KE Reactor without impacting structural stability. Available information about the nature and extent of the carbon-14 contamination has been documented in the 116-KE-1 Condensate Crib waste site description. Due to the depth of the contamination, the carbon-14 remediation will coincide with the final decision on 105-KE reactor removal.

Code:	116-KW-1	**Classification:**	Accepted
Names:	116-KW-1; 115-KW Condensate Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955

Status: Inactive **End Date:** 1/1/1971

Description: The crib and pipeline were remediated in 2004, but the status was not reclassified. The Cleanup Status Report for the 116-KE-1 and 116-KW-1 (BHI-01737), documented the 2004 status of remediation at the sites to assist in future decision making. The waste site was excavated, to the extent that could be safely conducted in the vicinity of adjacent buildings and to the capability of the onsite excavation equipment. It is considered complete. The excavated waste disposal is complete, and the exposed surfaces of the excavation have been sampled and analyzed to assess remaining contaminant concentrations. The excavation has been backfilled. At the completion of the 2004 project, the excavation for the 116-KW-1 site was approximately 759 meters squared (8,162 square feet) in area. The bottom of the excavation for the site was approximately 9.1 meters (30 feet) below the surrounding grade. Approximately 2,519 bank cubic meters of material from the 116-KW-1 site were disposed of at the Environmental Restoration Disposal Facility (ERDF).

Location: The crib was located north of 115-KW and east of 118-KW-1 (105-KW Reactor Building).

Related Sites/ Structures: The distribution system was composed of a 10.2 centimeter (4 inch) pipe that led into an 20.3 centimeter (8 inch) corrugated galvanized steel perforated pipe that was 3.2 meters (10.5 feet) long, with two 2-meter (6.5 foot) sections branching off at 45 degrees. The site received effluent from the 105-KW Reactor Buildings.

Process Description: The crib was constructed to receive condensate from the 105-KW gas purification system. Before the 2004 remediation the bottom of the crib was 1.8 meters (6 feet) in diameter and was 7.8 meters (25.5 feet) below the ground surface. The top of the crib measures 12.2 meters (40 feet) in diameter. The bottom of the crib was filled with 3 meters (10 feet) of course gravel, then backfilled with dirt to grade. This site included the feed pipeline from the 115-KW Building.

Waste Type: Process Effluent

Waste Description: The site received condensate and other wastewater from reactor gas purification systems. Drilling of the crib in the mid-1970's revealed high concentrations of tritium and carbon-14. The radionuclide inventory in curies decayed through April 1, 1986, includes tritium (81.9 curies), carbon-14 (110 curies), and small amounts of other elements.

Code: 116-KW-2 **Classification:** Accepted

Names: 116-KW-2; 105-KW Basin Reverse Well; 105-KW Fuel Storage Basin Sub-Basin Drainage Disposal System Crib; 105-KW Storage Basin French Drain **Reclassification** None

Type: Injection/Reverse Well **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: The site is part of the sub-basin drainage disposal system for the 105-KW Fuel Storage Basin (100-K-43). The site includes a feed pipe, the crib structure, a dry well and test hole. The area is cobble covered. It is posted with "Underground Radioactive Material" warning signs. A mound of soil was installed in 1977 or 1978. The mound covers some of the ancillary units related to this site. The test hole is a 10.2-centimeter (4-inch) diameter steel casing that originally extended above grade level, but is no longer visible. The construction of the "D" catch tank modification would have covered the test hole.

Location: The site is located north of the 105-KW Reactor Building (118-KW-1) about 23 meters (75 feet).

Process Description: The site operated from 1955 to 1970 as an overflow crib for sub-basin drainage from the 105-KW Fuel Storage Basin (100-K-43).

Waste Type: Process Effluent

Waste Description: The waste is contaminated structures and soil from the fuel storage basin sub-basin drainage system.

Code:	116-KW-4	**Classification:**	Accepted
Names:	116-KW-4; 150-KW Heat Recovery Station	**Reclassification**	Interim Closed Out (9/23/2005)
Type:	Process Unit/Plant	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The site has been remediated and Interim Closed Out The site consisted of heat exchangers, pumps, and associated piping on a concrete pad. Remedial action activities at the 100-K reactor sites began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005.

Location: The site was located south of 116-KW-3 (107-KW Retention Basins) and north of the 118-KW-1 (105-KW Reactor Building).

Process Description: The site was used to transfer heat from the 105-KW Reactor cooling water effluent. The heat recovery stations used an ethylene glycol solution as the heat exchanger medium. The system is no longer intact.

Waste Type: Equipment

Waste Description: Trace amounts of radioactive contamination remained on the piping. The heat exchange medium consisted of a 34% ethylene glycol-water solution.

Closure Info: Interim: Remedial action activities at the 100-K reactor effluent pipelines began on December 9, 2002 by Washington Closure Hanford (WCH). Remediation of the pipelines involved excavation and staging of overburden material and removal of contaminated piping, debris and soil at the 100-K-55:1, 100-K-56:1, 116-KW-4 and 116-KE-5 waste sites. Contaminated materials were disposed at the ERDF. Remedial action excavation was completed on April 15, 2005. The previously documented waste site boundaries for the 116-KW-4 and 116-KE-5 sites were much larger than the actual footprint of the heat recovery facilities. The soil area beneath each of the former heat recovery stations was excavated in its entirety with the removal of the co-located pipelines. Approximately 55,960 square meters (602,350 sq ft) of plan area was excavated, including excavation within the deep zone (greater than 4.6 meters [15 ft] below ground surface) up to 8.8 meters (29 ft) below ground surface where necessary to complete remediation. Approximately 86,551 metric tons (95,406 U.S. tons) of material from the sites was removed and disposed at the ERDF. The active 100-K-47 concrete culvert was not removed during remediation of the adjacent section of the 100-K-55 pipeline. Several 100-K-56 pipe segments, located west of 116-KE-4, were not included in the remediation scope.

The contaminated materials from these sites have been excavated and disposed at the ERDF. The remaining soils at the sites have been sampled, analyzed, and modeled, and the results do not preclude any future uses (as bounded by the rural-residential scenario), allow unrestricted use of shallow zone soils, and pose no threat to groundwater or the Columbia River. The 100-K-55:1, 100-K-56:1, 116-KW-4, and 116-KE-5 sites were verified to be remediated in accordance with the ROD and may be backfilled.

Code:	118-KW-2	**Classification:**	Accepted
Names:	118-KW-2; 105-KW Horizontal Control Rod Storage Cave	**Reclassification**	Interim Closed Out (6/14/2011)
Type:	Storage	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The waste site has been remediated and Interim Closed Out. The cave was constructed by pouring a concrete slab 18.3 meters (60 feet) long by 2.4 meters (8 feet) wide. Two sections of 0.61-meter (24-inch) pipe were cut in half lengthwise and laid open side down, on the slab. Vertical concrete walls and steel doors were added to the ends of the pipe sections, with the walls forming a wing at each end. The pipe sections were then covered with 1.8 meters (6 feet) of clean fill material, forming a 12.2-meter (40-foot) long tunnel. The berm width after the fill material was added measured 7.6 meters (25 feet). The entire structure was above grade.

Location: The site was located northeast of the 105-KW Building.

Related Sites/ Structures: 105-KW Reactor, 100-K-11 and 100-K-12.

Process Description: The unit was used for temporary storage of radioactive rod tips associated with the 105-KW Reactor for radioactive decay pending subsequent disposal.

Waste Type: Equipment

Waste Description: The unit was used for temporary storage of irradiated and radioactively contaminated horizontal control rods containing unknown quantities of radionuclides. The tunnel contains four rod tips and other rod removal components. The radiation reading at the entrance to the cave with the door open is 50 millirad/hour.

Closure Info: Interim (6/14/2011): The entire 118-KW-2 Waste Site structure, including the concrete slab and drain system, was removed in November 2010 to facilitate future heavy equipment access to the 105-KW Building and associated Fuel Storage Basin to support remedial activities. The interim action consisted of successful removal and disposal of the entire 118-KW-2 Waste Site including rod tips stored within the cave. Minor soil contamination detected after demolition. The soil was excavated and taken to ERDF.

Code:	120-KW-1	**Classification:**	Accepted
Names:	120-KW-1; 183-KW Acid Neutralization Pit; 183-KW Filter Water Facility Dry Well; 100-K-17; 100-KW-1	**Reclassification**	Interim Closed Out (10/28/2011)
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The site was an underground concrete structure used to neutralize acid waste prior to disposal. The "pit" was a concrete box with approximate dimensions of 2.5 m (8.5 ft) x 2.0 m (6.3 ft) x 1.5 m (5 ft), and was lined on the sides with acid proof bricks. The structure is divided into three sections by dividing brick weirs. Effluent released into the system was held up in a small chamber by the first weir. Effluent overflowed the first weir into a second small chamber and then overflowed the second weir into the third larger chamber. A 10.2-centimeter (4-inch) vitrified tile drain was located in the bottom of the third chamber and is believed to discharge to the process sewer (see Site Comment). The top of the pit was level with the surface and had a 7.6-centimeter (3-inch) plank cover that is posted with "Confined Space" and "Caution, Acid"

warning signs. In August 2000, the area around the acid tanks was stabilized with gravel. The french drain and sump were backfilled. They are no longer visible. They are not marked or posted.

Location: The site is located near the southeast corner of the 183.1-KW Headhouse, south of the 120-KW-3 Sulfuric Acid Tank and east of the 100-K-21 Sodium Silicate Tank Site.

Related Sites/ Structures: The site was associated with the 183-KW Head House and the 183-KW Sulfuric Acid Tanks.

Process Description: The method of acid neutralization is not known. When two other acid neutralization pits (100-K-34 and 100-K-35) that were associated with the elevated day use tanks at 183-KE and 183-KW were opened, crushed limestone was visible. Limestone may also be at the 120-KW-1 site beneath the discarded sludge. From 1968 to 1971 commercial grade sulfuric acid was stored in the 183-KE/KW acid tanks. A heavy precipitate would accumulate in the bottom of the tanks. The tank sludge was periodically flushed from the tanks to adjacent drywells. When the K Reactors were shut down (1970-1971), the acid was removed from the tanks. Approximately 4950 kilograms (11,000 pounds) of sludge was washed out of the tanks into adjacent drainage trenches. The sludge was packaged into 55 gallon drums and sold to an off site vendor. Small amounts of sludge remained in the 183-KE/KW drywells. The drywell sludge was sampled in July 1985. The drywell at 183-KW exceeded the Washington State Department of Ecology Dangerous Waste Regulations limit for mercury. The dangerous waste limit for mercury was 0.2 parts per million. The sample collected in 1985 contained 0.387 parts per million of mercury.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid for neutralization and acid sludge waste from the sulfuric acid storage tanks. The drywell sludge was sampled in 1985 and was analyzed for arsenic, barium, cadmium. Chromium, lead, mercury, silver and selenium. The sample taken from the 183-KW drywell contained elevated levels of mercury. The Washington State dangerous waste limit for mercury is 0.2 parts per million. The sample contained 0.387 parts per million of mercury. The other metals were below dangerous waste limitations.

Closure Info: Interim (10/28/2011): Waste Sites 120-KW-1, 120-KW-2, 120-KW-3 and 120-KW-4 were remediated to remove the remaining structures and associated contaminated soil between May 2010 and June 2011. The original remediation activity for was anticipated to end once excavation to a depth of 4.6 m (15 ft) was achieved. Excavation to support remediation of the yellow-colored contaminated soil, however, continued due to the ongoing detection of mercury contamination levels above the RAGs in the RDR/RAWP (DOE/RL-96-17). The final depth of the remediation was 14.2 meters (46.6 ft), which was located within the footprint of 120-KW-2. To support the deeper excavation, layback soil was accumulated in stockpiles (#7 and #9).

Stockpile #7 was started on April 19, 2011. No field quality control samples were collected; however the samples were analyzed for metals, hexavalent chromium and anions.

Stockpile #9 was started on May 17, 2011. No field quality control samples were collected however the samples were analyzed for metals, hexavalent chromium and anions.

Remediation south of the sedimentation basin (183.2-KW) at 100-KW was conducted as an area-wide remediation (100-K Area AA) to examine the soil underneath several co-located waste sites. Based on proximity and process, the remediation area was divided into 4 zones. The four waste sites included in this report comprise Zone 3.

Code: 120-KW-2 **Classification:** Accepted

Names: 120-KW-2; 183-KW Filter Water Facility French **Reclassification** Interim Closed Out (10/28/2011)

Drain; 100-KW-2

Type: French Drain **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: The waste site has been remediated and Interim Closed Out. This unit was an open-bottomed french drain with a depth of 0.9 meters (3 feet) and a diameter of 0.9 meters (3 feet). In August 2000, the area around the acid tanks was stabilized with gravel. The french drain and sump were backfilled. They are no longer visible. They are not marked or posted.

Location: The site is located 37 meters (121.4 feet) east of the southeast corner of 183.1-KW Headhouse.

Process Description: The drain was constructed in an excavation that was about 4.0 meters (13 feet) across and 3.4 meters (11 feet) deep. The bottom 1.5 to 1.8 meters (5 to 6 feet) of the excavation was filled with course rock. A 0.9-meter (3-foot) diameter, 1.8-meter (6-foot) long vitrified clay pipe was placed vertically over the rock fill and the excavation was backfilled to grade. The bottom 0.3 meters (1 foot) of the pipe was filled with course rock.

Waste Type: Chemicals

Waste Description: The site received sulfuric acid sludge that was removed from sulfuric acid storage tanks.

Closure Info: Interim (10/28/2011): Waste Sites 120-KW-1, 120-KW-2, 120-KW-3 and 120-KW-4 were remediated to remove the remaining structures and associated contaminated soil between May 2010 and June 2011. The original remediation activity for was anticipated to end once excavation to a depth of 4.6 m (15 ft) was achieved. Excavation to support remediation of the yellow-colored contaminated soil, however, continued due to the ongoing detection of mercury contamination levels above the RAGs in the RDR/RAWP (DOE/RL-96-17). The final depth of the remediation was 14.2 meters (46.6 ft), which was located within the footprint of 120-KW-2. To support the deeper excavation, layback soil was accumulated in stockpiles (#7 and #9).

Stockpile #7 was started on April 19, 2011. No field quality control samples were collected; however the samples were analyzed for metals, hexavalent chromium and anions.

Stockpile #9 was started on May 17, 2011. No field quality control samples were collected however the samples were analyzed for metals, hexavalent chromium and anions.

Remediation south of the sedimentation basin (183.2-KW) at 100-KW was conducted as an area-wide remediation (100-K Area AA) to examine the soil underneath several co-located waste sites. Based on proximity and process, the remediation area was divided into 4 zones. The four waste sites included in this report comprise Zone 3.

Code: 120-KW-3 **Classification:** Accepted

Names: 120-KW-3; 183-KW1 Sulfuric Acid Storage Tank **Reclassification** Interim Closed Out (10/28/2011)

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: The site is the westernmost of the two original sulfuric acid tanks at the 183.1-KW Headhouse. The tank is a horizontal, cylindrical-shaped, steel tank supported above ground on concrete saddles. The tank has a capacity of 38,267 liters (10,109 gallons).

Location: The tank is located near the southeast corner of the 183.1-KW Headhouse, east of the eastern Sodium Silicate Storage Tank Site (100-K-21) and west of the second original Sulfuric Acid Storage Tank (120-KW-4).

Release Description: The supply pipe from this unit to the point of use inside the 183.1-KW Building developed slow leaks that deposited an unknown amount of sulfuric acid in the ground between the tanks and the building. The soil in the general area of the leak was neutralized.

Related Sites/ Structures: The site is associated with the 183.1-KW Headhouse, 120-KW-1, 120-KW-2 and 120-KW-4.

Process Description: The sulfuric acid was used to activate sodium silicate. During seasons of high turbidity, activated silica solution was fed into the raw water to aid in coagulation.

Waste Type: Chemicals

Waste Description:

Closure Info: Interim (10/28/2011): Waste Sites 120-KW-1, 120-KW-2, 120-KW-3 and 120-KW-4 were remediated to remove the remaining structures and associated contaminated soil between May 2010 and June 2011. The original remediation activity for was anticipated to end once excavation to a depth of 4.6 m (15 ft) was achieved. Excavation to support remediation of the yellow-colored contaminated soil, however, continued due to the ongoing detection of mercury contamination levels above the RAGs in the RDR/RAWP (DOE/RL-96-17). The final depth of the remediation was 14.2 meters (46.6 ft), which was located within the footprint of 120-KW-2. To support the deeper excavation, layback soil was accumulated in stockpiles (#7 and #9).

Stockpile #7 was started on April 19, 2011. No field quality control samples were collected; however the samples were analyzed for metals, hexavalent chromium and anions.

Stockpile #9 was started on May 17, 2011. No field quality control samples were collected however the samples were analyzed for metals, hexavalent chromium and anions.

Remediation south of the sedimentation basin (183.2-KW) at 100-KW was conducted as an area-wide remediation (100-K Area AA) to examine the soil underneath several co-located waste sites. Based on proximity and process, the remediation area was divided into 4 zones. The four waste sites included in this report comprise Zone 3.

Code:	120-KW-4	**Classification:**	Accepted
Names:	120-KW-4; 183-KW2 Sulfuric Acid Storage Tank	**Reclassification**	Interim Closed Out (10/28/2011)
Type:	Storage Tank	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The unit is an above ground sulfuric acid storage tank and has a capacity of 38,000 liters (10,109 gallons). The site is the easternmost of the two original sulfuric acid tanks at the 183.1-KW Headhouse. The tank is a horizontal, cylindrical-shaped, steel tank supported above ground on concrete saddles.

Location: The unit is located in the southeast corner of the 183.1-KW Headhouse. The tank is located near the southeast corner of the 183.1-KW Headhouse, east of the eastern Sodium Silicate Storage Tank Site (100-K-21) and east of the other Sulfuric Acid Storage Tank (120-KW-3).

Related Sites/ Structures: The site is associated with 120-KW-1, 120-KW-2 and 120-KW-3.

Process Description: The sulfuric acid was used to activate sodium silicate. During seasons of high turbidity, activated silica solution was fed into the raw water to aid in coagulation.

Waste Type: Chemicals

Waste Description: The unit was used for storage of sulfuric acid product.

Closure Info: Interim (10/28/2011): Waste Sites 120-KW-1, 120-KW-2, 120-KW-3 and 120-KW-4 were remediated to remove the remaining structures and associated contaminated soil between May 2010 and June 2011. The original remediation activity for was anticipated to end once excavation to a depth of 4.6 m (15 ft) was achieved. Excavation to support remediation of the yellow-colored contaminated soil, however, continued due to the ongoing detection of mercury contamination levels above the RAGs in the RDR/RAWP (DOE/RL-96-17). The final depth of the remediation was 14.2 meters (46.6 ft), which was located within the footprint of 120-KW-2. To support the deeper excavation, layback soil was accumulated in stockpiles (#7 and #9).

Stockpile #7 was started on April 19, 2011. No field quality control samples were collected; however the samples were analyzed for metals, hexavalent chromium and anions.

Stockpile #9 was started on May 17, 2011. No field quality control samples were collected however the samples were analyzed for metals, hexavalent chromium and anions.

Remediation south of the sedimentation basin (183.2-KW) at 100-KW was conducted as an area-wide remediation (100-K Area AA) to examine the soil underneath several co-located waste sites. Based on proximity and process, the remediation area was divided into 4 zones. The four waste sites included in this report comprise Zone 3.

Code:	120-KW-5	**Classification:**	Accepted
Names:	120-KW-5; 183-KW Sodium Dichromate Storage Tank	**Reclassification**	Interim Closed Out (6/27/2012)
Type:	Foundation	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1971

Description: The waste site has been remediated and Interim Closed Out. The site was a foundation where a sodium dichromate storage tank was placed. The tank had been removed in 1971. All that remained was the concrete pad, the contaminated soil, and any remaining piping.

Location: The site was located on the east side of the 183-KW Building. The center of the pad was 6.1 meters (20 feet) from the building's east wall.

Release Description: There are no documented releases. However, there is evidence of residual sodium dichromate in the soil that has accumulated from many years of unloading and handling.

Related Sites/ Structures: The site is associated with the 183-KW Building.

Process Description: Sodium dichromate was added to the process water as a corrosion inhibitor. It was metered and proportioned by a single step operation in the head house, and diluted and injected into the process water in the process water pump house. The proportioning pumps took their suction directly from the storage tank. Near the process water pump house, the pumps discharged through a back pressure valve into a service water stream which diluted the dichromate on its way to injection into the process water. The injection point was located on the discharge of the low lift pump. Dichromate injection was determined by the process water flow. The chemical storage facilities at the 183-KW Building were sized to provide sufficient chemicals for two to three months continuous operation. Chemicals were delivered to the 183-KE Building by rail. With the exception of chlorine, all chemicals were transferred to their storage tanks by pumping or by pressurizing the tank cars with compressed air.

Waste Type: Chemicals

Waste Description: Staining from sodium dichromate can be seen in the soil near the concrete pad.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

Code:	120-KW-6	**Classification:**	Accepted
Names:	120-KW-6; 165-KW Brine Mixing Tank; 165-KW Brine Pit	**Reclassification**	None
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The unit is a below grade concrete structure that provided brine for the 165-KW Powerhouse. The roof of the structure was approximately 0.3 meters (1 foot) above ground level. The opening into the pit was covered by a wooden cover. Just south of the brine pit is a valve pit located within a vertical section of 1.2-meter (4-foot) diameter corrugated galvanized pipe. This valve pit contains residue and apparently was part of the brine operation. In August 1998, remaining liquid was removed and the open pit was backfilled to grade. The brine pit has inner dimensions of 4.3 meters (14 feet) long by 2.4 meters (8 feet) wide by 2.7 meters (9 feet) tall. The bottom of each pit is filled with a 13-centimeter (7-inch) layer of 1.3 to 2.6-centimeter (0.5 to 1-inch) gravel topped by a 18-centimeter (7-inch) layer of 0.3 to 0.6-centimeter (1/8 to 1/4-inch) gravel. The pit has a 1.2-meter (4-foot) by 1.1-meter (3.5-foot) opening for receiving salt.

Location: The site is located near the northwest corner of the 165-KW Powerhouse.

Related Sites/ Structures: The site is associated with the 165-KW Powerhouse.

Process Description: The brine was probably used to regenerate the water softeners that treated water prior to steam generation within the 165-KW Powerhouse. Salt was off-loaded from rail cars and placed in the pit. Water was then circulated through the pit, and brine was pumped back to the 165-KW Powerhouse for further use.

Waste Type: Chemicals

Waste Description: The unit contains salt brine and residue. Based on sampling performed at the 120-KE-9 and 120-KW-7 Brine Pits, the brine and residue may be regulated as dangerous waste per

Washington Administrative Code (WAC) 173-303.

Code:	120-KW-7	**Classification:**	Accepted
Names:	120-KW-7; 183-KW Brine Pit; 183-KW Salt Dissolving Pits and Brine Pump Pit	**Reclassification**	Interim Closed Out (6/27/2012)
Type:	Sump	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The waste site has been remediated and Interim Closed Out. Only four wooden covers and one metal cover were visible at the surface. The wooden covers were in poor condition. The unit contained saltcake and brine. In August 1998, remaining liquid was removed. The pit utilities were isolated, the ceiling slabs were demolished and the unit was backfilled to grade. The area was later excavated and Interim Closed Out.

Location: The site was located approximately 37 meters (120 feet) east of the east end of the 183-KW Water Filter Plant and just north of the railroad spur that serviced the plant.

Related Sites/ Structures: The brine pit is associated with the 183-KW Water Filter Plant.

Process Description: The salt brine was used to regenerate water softeners.

Waste Type: Chemicals

Waste Description: The unit contains salt brine and residue. A minimal sampling was performed at the site. The brine samples were analyzed by Hanford Environmental Health Foundation (HEHF) on September 5, 1989. A sample from one of the dissolving pits was described as a light yellow water-miscible liquid with approximately 1% yellow/orange residue and a pH of 6. The sample contained 12.5% sodium ion, 19.8% chloride ion, and 33 milligrams/liter potassium. The measured concentrations of EP-Toxicity metals were 0.12 milligrams/liter arsenic, 1.3 milligrams/liter barium, 0.1 milligrams/liter cadmium, 0.78 milligrams/liter chromium, 0.58 milligrams/liter lead, 0.28 milligrams/liter selenium, and 0.66 milligrams/liter silver. All other analytes were below detection limits. A sample from the other dissolving pit was also described as a very light yellow water-miscible liquid with approximately 10% white and tan crystals and a pH of 6. The sample contained 7.9% sodium ion, 19.7% chloride ion, and 240 milligrams/liter potassium. The measured concentrations of EP-Toxicity metals were 0.14 milligrams/liter arsenic, 1.9 milligrams/liter barium, 0.57 milligrams/liter chromium, 0.72 milligrams/liter lead, 0.31 milligrams/liter selenium, and 0.58 milligrams/liter silver. All other analytes were below detection limits. Only the liquid portions of the samples were analyzed. An informal review of results by the Sitewide Hazardous Waste Engineering Support Unit (SHWES) indicated that the brine and residue may be regulated as Dangerous Waste per Washington Administrative Code (WAC) 173-303.

Closure Info: Interim (6/27/2012): Remediation of the Area AA, Zone 2 waste sites (100-K-18, 100-K-19, 100-K-79:1, 100-K-79:2, 100-K-97, 120-KW-5 and 120-KW-7) began in May 2010. Throughout the remedial activity, because of the contaminants found in the process equipment and surface soils, in-process samples were collected and analyzed for metals, including chromium VI and anions (e.g., sulfate due to the sulfuric acid), at multiple locations and depths. In-process sampling occurred across all four zones in 100-K Area AA, although this report focuses on Zone 2 only. Throughout remediation, stained areas were targeted for in-process sampling; soils often were yellow-colored and high in lead, total chromium and mercury. Hexavalent chromium, which is the groundwater contaminant of greatest concern at 100-K, was detected on the soil surface down to 6 feet, at the beginning of remediation for Area AA Zone 2. Excavation continued to a final remediation depth of 10.96 meters (35.96 ft).

During a walkdown of Area AA by RL and EPA on September 20, 2011, it was determined that piping found within Zone 1 needed to be further investigated. The piping identified was determined to be a part of the process sewer line and was subsequently removed.

The excavation decision unit was approximately 3,228 square meters (34,745.9 sq. ft.). All contaminated soils and debris from the waste sites was disposed of in the Environmental Restoration Disposal Facility (ERDF).

Code: 130-KW-1 **Classification:** Accepted

Names: 130-KW-1; 130-KW-1A/130-KW-1B Tanks; 105-KW Emergency Diesel Fuel Tank; 105-KW Emergency Diesel Oil Storage Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1971

Description: The site is the location of two underground diesel storage tanks that were removed in 1992. Although the location description states the diesel tanks were located between the 105-KW exhaust stack and the 119-KW building, a sign is posted at the northwest corner of the 115 KW building that reads "130-KW-1 Diesel Tanks" This is further east and south of the reactor stack. There is no visual evidence of the tanks in either location. The site has been backfilled with uncontaminated soil to grade and covered with gravel. There is a very large Underground Radioactive Material area that surrounds the reactor facility. This site is not separately posted or marked.

Location: The site is located on the east side of the 105-KW Reactor Building. The underground diesel tanks were located between the reactor exhaust stack and the 119-KW Building.

Release Description: During the excavation of the diesel tanks, the site was found to be radioactively contaminated with contamination levels up to 400 counts per minute in the soil and on the exterior of the tanks. Due to this contamination, the pit was backfilled with uncontaminated soil and posted appropriately. Attempts to decontaminate the tanks were unsuccessful. The tanks were wrapped with plastic and disposed of on the Hanford site. Since the tanks were located very close to the reactor building, the long term plan for is to decontaminate or remove the remaining contaminated soil when the reactor and surrounding site is remediated. The site was not released due to the radioactive contamination.

Related Sites/ Structures: 100-K-76 is a duplicate entry for this site.

Process Description: The tanks contained diesel fuel for the emergency generators during the operation of the 100-KW Reactor.

Waste Type: Soil

Waste Description: The tanks were used for storage of diesel fuel (product). Radioactive contamination was discovered on the exterior of both tanks when they were removed. The Organic Vapor Monitor readings were below the detection limit.

Code: 130-KW-2 **Classification:** Accepted

Names: 130-KW-2; 166-KW Oil Storage Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: The bunker is an underground, reinforced concrete structure. It has two compartments, each having a storage capacity of 3,033,629 liters (801,400 gallons).

Location: The storage tank is located southwest of 105-KW. It is an underground facility west of the 165-KW Boiler House.

Process Description: The tank was used for storage of fuel oil (product) for the 165-KW Boilers. Fuel was delivered to the bunkers from rail cars and filled through 15 centimeter (6 inch) diameter gravity lines. Two day tanks are located on the south side of each bunker. Each Day Tank had a 186,621 liter (49,300 gallon) capacity.

Waste Type: Oil

Waste Description: The tank was used for storage of oil (product) for the 165-KW Boilers.

Code: 132-KW-1 **Classification:** Accepted

Names: 132-KW-1; 116-KW Reactor Exhaust Stack **Reclassification** None

Type: Stack **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1970

Description: 132-KW-1 is the 116-KW Reactor Exhaust Stack. The original height for the stack was 91.5 meters (300 feet). The stack was decontaminated and shortened 38 meters (125 feet) between 1980 and 1981. The remaining stack is 53.4 meters (175 feet) high. All debris from the partial stack demolition is contained in the below-ground portion of the waste site.

Location: The stack is located on the northeast side of the 105-KW Building.

Related Sites/ Structures: Following completion of the confinement project in 1960, the air was diverted via underground reinforced concrete ducts to the 117-KW Filter Building. After flowing through the filters, the air went out the exhaust stack.

Waste Type: Demolition and Inert Waste

Waste Description: Discharged ventilation air from the 105-KW Building flowed through concrete ducts directly out the exhaust stack.

Code: 600-29 **Classification:** Accepted

Names: 600-29; 100-K Construction Lay-down Area; 100-K-41 **Reclassification** Interim Closed Out (8/15/2012)

Type: Dumping Area **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1954

Description: The waste site has been remediated and Interim Closed Out. The 600-29 waste site was approximately 82 acres (333,287 sq. meters) that, prior to remediation, contained multiple french drains, areas of burned material, barren soil, stained soil, suspect asbestos, and a variety of demolition-related surface debris. It was an abandoned dumping area containing several rectangular depressions and burn pits. Many areas of discolored soil included coal, rust colored soil and white residue patches. It also included a cement building foundation with two adjacent french drains. During the 2007 Orphan Site Evaluation (OSE) for the 100-K operable unit, the 600-29 waste site was walked down to collect further site characterization data. A total of forty discrete feature locations within the 600-29 site boundaries were collected using a hand-held

GPS unit. Photographs and GPS coordinates were documented for each feature. Each feature was categorized as a 600-29 waste component or as a miscellaneous restoration or stewardship item.

South of a gravel road that transverses the site is the Strong Motion Accelerometer (SMA) also known as H1K. The SMA site consists of a four-panel solar array and two 30-gallon galvanized drums. The two 30-gallon drums are set in the ground such that the base of the drum is about 1 meter below the surface. One drum houses only the SMA. The other drum contains the batteries and is connected to the SMA drum with a conduit.

Location: The site is located outside of the southern perimeter fence at 100K.

Related Sites/ Structures: This site is associated with 100-K-41 and 100-K-89.

Process Description: This location was originally used as the construction camp and lay-down yard during construction of 105-KW. The lay-down area was in operation from approximately 1952 through 1954. The 105-KW was commissioned in January 1955. Discolored soil and suppressed vegetation are evident within the unit. Old roadways and rectangular depressions are still distinguishable today based on 1952 and 1953 aerial photographs. No facilities were on the site prior to the start of construction of the 100-K Reactors. Both new and pre-existing structures moved from other areas around the Hanford Site were used as temporary construction facilities. The structures included warehouses, small offices, huts, and fabrication shops. Areas on the southwest side of the 600-29, 100-K Construction Laydown Area were cleared and made suitable for bus and car parking.

Waste Type: Construction Debris

Waste Description: Unit wastes consist of miscellaneous metals, wood, cans, bottles, construction hardware and materials, what appears to be tar dumped on the ground, buckets and mops covered with what appears to be tar, a 18.725-liter (5-gallon) bucket of oily rags, broken pieces of a toilet bowl, what appears to be asbestos and transite, and wire rope.

Closure Info: Interim (8/15/2012): Remedial action at the 600-29 and 100-K-89 waste sites began on September 21, 2011, and continued through April 5, 2012. Most of the remedial excavations were the result of visible surface debris, stains, and materials. These areas were excavated from a minimum of 0.3 meter (1 ft) in depth to as much as 3 meters (10 ft) in depth, as needed, to remove contamination. Excavations for french drains ranged from 1.2 to 1.8 meters (4 to 6 ft) in depth. A septic vault in the eastern portion of 600-29 required excavation to 10 feet below ground surface. All materials removed from the excavations were stockpiled within the excavations and then directly loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). No stockpiles external to the excavations were created. The 100-K-89 waste site comprised a burned area with burnt material present on the surface (wood, metal, and roofing material) and the underlying soil. Contamination identified on the southwest edge of the 600-29 waste site led to an excavation that was expanded during remediation based on field observations. The expansion encompassed and completely removed the 100-K-89 waste site.

Contaminated materials removed from the 600-29 waste site consisted of red, black, and white stained soils or colored materials, concrete pads and rubble, a concrete sewer junction box, abandoned iron and vitrified clay piping, abandoned wiring, friable and nonfriable asbestos, metallic and wood debris, burnt wood, ash, tar, and other miscellaneous demolition debris. Materials removed from the 100-K-89 waste site consisted of burned debris (wood, metal, roofing material) and associated soils.

A total volume of 10,293 bank cubic meters (BCM) (6,157 BCM from the east side of 600-29 and 4,136 BCM from the west side of 600-29) was removed and disposed to ERDF during remediation.

Code:	UPR-100-K-1	**Classification:**	Accepted
Names:	UPR-100-K-1; 105-KE Fuel Storage Basin Leak; UN-100-K-1; UN-116-KE-2	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1974
Status:	Inactive	**End Date:**	1/1/1979

Description: The unplanned release site is contaminated leakage known to have occurred from the fuel storage basin. It is not marked or posted on the surface.

Location: The leak occurred beneath the 105-KE Fuel Storage Basin.

Release Description: The 105-KE pickup chute area (of the 105-KE Fuel Storage Basin) had an estimated release to the ground of more than 1700 liters/ hour (450 gallons/hour) for an unknown period of time. Leak rates ranging from 2.6 to 9.5 gallons per minute were documented between 1974 and

Related Sites/ Structures: The leak is associated with 105-KE Fuel Storage Basin (sitecode 100-K-42) and 100-K-64 Flood Plain.

Waste Type: Water

Waste Description: The fuel storage basin effluent included contaminates from fuel cladding failures. Cobalt-60, Strontium-90, Cesium-137 and small amounts of plutonium were noted in the soil beneath the 105- K East basin.

100-NR-1

Code:	100-N-1	**Classification:**	Accepted
Names:	100-N-1; HGP Settling Pond; HGP SWMU #6	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Pond	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	1/1/1993

Description: The site has been remediated and Interim Closed Out. The settling pond was cut into the side of a steep slope leading to the river. A concrete flume was located at the south end of the site. An outlet valve and pipe were located on the west side of the site. It received effluent from the 185-N building drains (SWMU #3). After the solids settled, the liquid discharged to the 1908-NE outfall (SWMU #7). The settling pond was excavated and removed in 2001.

Location: The Hanford Generating Plant (HGP) Settling Pond was located between the HGP Seal Well building (1908-NE) and the 185-N Building.

Release Description: An oil spill occurred on January 2, 1987 that was contained in the settling pond. Clean up of the five gallon oil spill was conducted by United Nuclear Corporation (UNC) and JA Jones in February 1987.

Process Description: This unit was constructed to control the Hanford Generating Plant (HGP) waste stream effluents. The effluent flowed into the pond, allowed solids to settle, and the remaining liquid was released to 1908-NE (HGP outfall). A valve was installed on the outlet pipe to prevent the discharge of oil to the outfall. The unit received waste from the HGP condenser pit, service water pumps demineralizer backwash and runoff from the roof and parking lot. An outlet pipe drained the pond directly to 1908-NE (HGP Outfall). The piping from the HGP Building floor drains and sumps to the settling pond was included with the settling pond.

Waste Type: Process Effluent

Waste Description: The pond operated concurrently with the Hanford Generating Plant (HGP) and received process water from the plant that contained trace oxygen scavenging conditioners such as morpholine, hydrazine and ammonia. Sampling has indicated elevated levels of chromium, lead, nickel, calcium, copper, zinc and ammonia. Trace surface radioactive contamination is detectable.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation

determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-3	**Classification:**	Accepted
Names:	100-N-3; HGP SWMU #9; Maintenance Garage French Drain; Maintenance Garage Waste Water Treatment Unit	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	French Drain	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The french drain was marked by a 3-meter (10-foot) square barricade and gravel covering a 31-meter (100-foot) square surface. A 1.2-meter (4-foot) diameter steel plate covered the center. (the 100-N-3 garage french drain, the 100-N-41 septic tank and the 100-N-45 septic tank make up Solid Waste Management Unit (SWMU) #9).

Location: The site was located in the 100-N Area, at the Washington Public Power Supply System (WPPSS) Hanford Generating Plant Facility, approximately 7.6 meters (25 feet) east of 100-N-78 Hanford Generating Plant (HGP) Maintenance Garage.

Related Sites/ Structures: The unit received effluent from 100-N-78, the 1716-NE HGP Maintenance Garage.

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building. The site was an ancillary or support facility

to the former Hanford Generating Plant.

Waste Type: Oil

Waste Description: The unit received petroleum wastes.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The

building debris was used as fill for the 185-N Building basement.

Code:	100-N-4	**Classification:**	Accepted
Names:	100-N-4; HGP SWMU #5; HGP Tile Field	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Drain/Tile Field	**Start Date:**	1/1/1966
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The tile field received effluent from the 185-N Building drains of the HGP 185-N building chemical laboratory and sanitary drains.

Location: The unit was located between the Hanford Generating Plant (HGP) Seal Well building (1908-NE) and the 185-N Building, upslope and east of the HGP Settling Pond.

Related Sites/ Structures: The tile field is associated with septic tank 100-N-95 (remediated in 2013).

Process Description: The former HGP consisted of two 430 megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were formerly located in the 185-N Building. The site was an ancillary or support facility to the former HGP. The site was an ancillary or support facility to the former HGP, and received effluent from the 185-N Building drains of the HGP Sanitary Sewer and lab. The unit was designed to release waste water by allowing it to percolate into the soil.

Waste Type: Sanitary Sewage

Waste Description: The unit received sanitary sewage and lab waste. Testing for corrosion inhibitors hydrazine and morpholine were performed in the lab. It is likely that reagents used for these tests were discharged to the unit.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were

remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-5	**Classification:**	Accepted
Names:	100-N-5; HGP Bone Yard; HGP Disposal and Storage Area; HGP SWMU #10	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Storage	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The waste site was a surface storage yard. Some of the soil was oil stained. Garnet sandblasting grit was also present. Remedial and removal activities occurred in 2001.

Location: The unit was located southwest of the Hanford Generating Plant (HGP) Building (185-N) in the 100-N Area. It was inside the HGP security fence.

Related Sites/ Structures: The site was associated with the Hanford Generating Plant (HGP).

Process Description: Material and equipment were stored inside the southwest corner of the Hanford Generating Plant facility fence. Some of the material included scrap metal, electrical equipment, pipes and cables. The unit was located on a level area which had several spots of stressed or absent vegetation.

Waste Type: Construction Debris

Waste Description: The unit contained scrap iron, brass, copper, electrical components, piping, cable, and miscellaneous pieces of metal equipment. The site also contained oil stains, sand blasting grit, and ion exchange resin beads on the soil.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was

responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-6	**Classification:**	Accepted
Names:	100-N-6; 128-N-1; 128N-FS-3	**Reclassification**	Interim Closed Out (4/10/2013)
Type:	Burn Pit	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. In 1994, the site appeared to have been leveled and scraped.

Location: The site is located east of 1120-N and northwest of 124-N-10.

Related Sites/ Structures: The site is associated with 100-N-16 and 128-N-1.

Process Description: This site was used to burn miscellaneous trash and debris.

Waste Type: Misc. Trash and Debris

Waste Description: In 1992 soil samples were collected and analyzed for the 100-NR-1 Remedial Investigation/Corrective Measures Study (RI/CMS). Field screening were less than detectable for volatile organic compounds (VOC), total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCB). Heavy metals and metal-complexed compounds did not differ from background.

Closure Info: Interim (4/10/2013): Remediation of 100-N-6, 100-N-16, 100-N-98 area 1, and 128-N-1 waste sites began on August 2, 2010, and was completed on November 28, 2011. A total of approximately 20,334 bank cubic meters (BCM) (26,596 bank cubic yards [BCY]) were excavated and staged for removal to the Environmental Restoration Disposal Facility (ERDF). Between April 16 and 19, 2012, the excavation was expanded to the west to include stained soil Area 2 of the 100-N-98 waste site. Approximately 476 BCM (623 BCY) of soil was removed from 100-N-98 Area 2 and direct loaded for disposal at ERDF. The additional remediation of the spoil pile area (SPA) and the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site excavation generated an additional volume of 5,446 BCM (7,123 BCY) of material for direct load out to ERDF. A total volume of 26,256 BCM (34,342 BCY) was disposed at ERDF, to complete the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site remediation.

The materials removed from the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste sites consisted of abandoned wiring, transite pipe, metallic and wood debris, burnt wood, ash, tar, roofing felt, stained soil, a bucket of grout, an open glass bottle, green fibrous material, purple sandy material, a paint ball, drums containing bunker and amber oil, and miscellaneous demolition debris. Anomalous material discovered during remediation included six 208-L (55-gal) drums, small white ceramic balls used as filtering media, and soil with a strong solvent odor.

Code: 100-N-13 **Classification:** Accepted

Names: 100-N-13; Contaminated Soil Solid Waste Site 1 **Reclassification** Interim Closed Out (5/16/2012)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and interim Closed Out. The area contained miscellaneous construction debris. It had been posted at four corners with "Underground Radioactive Material" signs. Approximately 0.3 to 0.6 meters (1 to 2 feet) of soil had been placed on top of the site. The area contained miscellaneous construction debris. The radiological postings were removed in September 2012.

Location: The site was located in the 100 N area, about 124 meters (405 feet) northeast of the 1120-N Building. It was in the northeast quadrant of the dirt road intersection that is northeast of the 1120-N.

Process Description: In May 1993, a radiation survey identified the presence of cobalt-60 at what became the 100-N-13 waste site. The site was posted at four corners with "Underground Radioactive Material" signs, and approximately 0.3 to 0.6 meters (1 to 2 ft) of soil was placed on the top of the site. It was noted in 1994 that a photograph dated about 1963 showed a dark circular area (possibly a burn pit) in the vicinity of the 100-N-13 waste site.

Waste Type: Soil

Waste Description: A May 1993 radiation survey identified the presence of cobalt-60 at the site. A photograph from about 1963 shows a dark circular area (possibly a burn pit) in the vicinity of this site. A 1988 photo shows a crane (possibly regulated) parked in the vicinity of this site.

Closure Info: Interim (5/16/2012): Remedial action at the 100-N-13 waste site was performed between December 27, 2010, and March 7, 2011. Excavation continued until all debris and contamination associated with the waste site had been removed. The 100-N-13 waste site was excavated to a maximum depth of 4.6 meters (15 ft). Approximately 663 bank cubic meters (BCM) (867 bank cubic yards [BCY]) of contaminated soil and debris removed from the excavation and staged in the stockpile area before being loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Approximately 160 BCM (209 BCY) of soil was scraped and removed from the 100-N-13 stockpile area and disposed at ERDF between June 23 and 27, 2011.

The debris removed from the 100-N-13 waste site consisted of a small amount of metal debris. Although the radionuclide cobalt-60 is listed in the 100-N Area RDR/RAWP as a COPC for the 100-N-13 waste site, no radiologically contaminated material was detected during remediation activities. No indications of previous spills or releases were discovered during remediation of the 100-N-13 waste site.

Code: 100-N-14 **Classification:** Accepted

Names: 100-N-14; Contaminated Soil Solid Waste Site 2 **Reclassification** Interim Closed Out (4/25/2012)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It had been posted at four corners with "Underground Radioactive Material" signs. Approximately 0.3 to 0.6 meters (1 to 2 feet) of soil has been placed on top of the site. The radiological postings were removed in September 2012.

Location: The site was located in the 100N Area, about 453 meters (1500 feet) east of the 1120-N Building.

Release Description: A May 1993 radiation survey identified the presence of cesium-137 at the site.

Related Sites/ Structures: It is associated with 100-N-34 and 100-N-17.

Waste Type: Soil

Waste Description:

Closure Info: Interim (4/25/2012): Remedial action at the 100-N-14, 100-N-17, and 100-N-34 waste sites was performed between August 5, 2010, and January 4, 2011. Excavation continued to a depth of 10 meters (33 ft) at the lowest point, until all debris and visible contamination associated with the waste sites had been removed. The debris removed from the 100-N-14, 100-N-17, and 100-N-34 waste sites consisted of miscellaneous noncombustible debris including concrete, metal,

bricks, vitrified clay pipe, electrical wiring, and asbestos. Approximately 10,527 bank cubic meters (BCM) (13,769 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-17 and 100-N-34 combined excavation and staged in staging piles to the east before being loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Approximately 905 BCM (1,184 BCY) of contaminated soil and debris were removed from the 100-N-14 waste site excavation and directly loaded into trucks for shipment and disposal at the ERDF. Excavation continued until all debris and contamination associated with the waste sites had been removed. No radiologically contaminated material was discovered during remediation activities. The excavation boundary was expanded beyond the design during remediation due to debris found beyond the excavation limits.

The radiological postings were removed in September 2012.

Code: 100-N-16 **Classification:** Accepted

Names: 100-N-16; 128N-FS-2; Burn Pit 1 **Reclassification** Interim Closed Out (4/10/2013)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The site had been a 18 meters (20 yards) by 18 meters (20 yards) semi-cleared circular area. Ash was evident on the surface and the area was covered with glass, wire, coil, pipe, tin cans, metal, and other burned debris.

Location: The site was located east of 1120-N, northwest of 124-N-10.

Related Sites/ Structures: Other burn pits (128-N-1, 100-N-6, and 100-N-17) are located near this site and were used for similar purposes.

Process Description: Nonhazardous waste (paper, wood, trash) generated at 100-N were burned here.

Waste Type: Misc. Trash and Debris

Waste Description: Nonhazardous waste (paper, wood, trash) generated at 100-N were burned here. In 1992 soil samples were collected and analyzed for the 100-NR-1 Remedial Investigation/Corrective Measures Study (RI/CMS). Field screening samples were less than detectable for volatile organic compounds (VOC) and total petroleum hydrocarbons (TPH). Heavy metals and metal-complexed compounds did not differ from background. The site tested positive for polychlorinated biphenyls (PCBs).

Closure Info: Interim (4/10/2013): Remediation of 100-N-6, 100-N-16, 100-N-98 area 1, and 128-N-1 waste sites began on August 2, 2010, and was completed on November 28, 2011. A total of approximately 20,334 bank cubic meters (BCM) (26,596 bank cubic yards [BCY]) were excavated and staged for removal to the Environmental Restoration Disposal Facility (ERDF). Between April 16 and 19, 2012, the excavation was expanded to the west to include stained soil Area 2 of the 100-N-98 waste site. Approximately 476 BCM (623 BCY) of soil was removed from 100-N-98 Area 2 and direct loaded for disposal at ERDF. The additional remediation of the spoil pile area (SPA) and the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site excavation generated an additional volume of 5,446 BCM (7,123 BCY) of material for direct load out to ERDF. A total volume of 26,256 BCM (34,342 BCY) was disposed at ERDF, to complete the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site remediation.

The materials removed from the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste sites consisted of abandoned wiring, transite pipe, metallic and wood debris, burnt wood, ash, tar, roofing felt, stained soil, a bucket of grout, an open glass bottle, green fibrous material, purple sandy material, a paint ball, drums containing bunker and amber oil, and miscellaneous

demolition debris. Anomalous material discovered during remediation included six 208-L (55-gal) drums, small white ceramic balls used as filtering media, and soil with a strong solvent odor.

Code: 100-N-17 **Classification:** Accepted

Names: 100-N-17; 128N-FS-1; Burn Pit 2 **Reclassification** Interim Closed Out (4/25/2012)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It was covered with gravel, cobbles and dead tumbleweeds. Much of the site had been backfilled with miscellaneous material.

Location: The 100-N-17 waste site is located outside the 100-N industrial area approximately 803 meters (2,635 ft) east of the 105-N Reactor Building, and co-located with 100-N-34.

Related Sites/ Structures: The site is associated with 100-N-34 Dump Site.

Process Description: Combustible materials such as vegetation, office wastes, wood, trash, tools, hardware, and possibly paints and solvents have been burned at this site.

Waste Type: Misc. Trash and Debris

Waste Description: Nonhazardous waste (paper, wood, trash) generated at 100-N were burned here. Other combustible materials such as vegetation, office wastes, tools, hardware, and possibly paints and solvents have been burned at this site. In 1992 soil samples were collected and analyzed for the 100-NR-1 Remedial Investigation/Corrective Measures Study (RI/CMS). Field screening samples were less than detectable for volatile organic compound (VOC), total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCB). Heavy metals and metal-complexed compounds did not differ from background.

Closure Info: Interim (4/25/2012): Remedial action at the 100-N-14, 100-N-17, and 100-N-34 waste sites was performed between August 5, 2010, and January 4, 2011. Excavation continued to a depth of 10 meters (33 ft) at the lowest point, until all debris and visible contamination associated with the waste sites had been removed. The debris removed from the 100-N-14, 100-N-17, and 100-N-34 waste sites consisted of miscellaneous noncombustible debris including concrete, metal, bricks, vitrified clay pipe, electrical wiring, and asbestos. Approximately 10,527 bank cubic meters (BCM) (13,769 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-17 and 100-N-34 combined excavation and staged in staging piles to the east before being loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Approximately 905 BCM (1,184 BCY) of contaminated soil and debris were removed from the 100-N-14 waste site excavation and directly loaded into trucks for shipment and disposal at the ERDF. Excavation continued until all debris and contamination associated with the waste sites had been removed. No radiologically contaminated material was discovered during remediation activities. The excavation boundary was expanded beyond the design during remediation due to debris found beyond the excavation limits.

The radiological postings were removed in September 2012.

Code: 100-N-18 **Classification:** Accepted

Names: 100-N-18; Hanford Generating Plant Burn Pit; HGP Burn Pit **Reclassification** Interim Closed Out (8/2/2012)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:** 1/1/1989

Description: The waste site has been remediated and Interim Closed Out. It was an area that contained evidence of burning including charred wood and burned metal. Vegetation at the site was sparse with a few rabbitbrush plants.

Location: The Hanford Generating Plant (HGP) Burn Pit was located approximately 123 meters (404 feet) southwest of the Bonneville Power Administration (BPA) Hanford Substation.

Process Description: Combustible materials such as vegetation, office wastes, wood, trash, tools, hardware, and possibly paints and solvents have been burned at this site.

Waste Type: Misc. Trash and Debris

Waste Description: Soil samples were collected from disturbed areas of the pit and analyzed using field screening methods. Samples tested contained less than detectable concentrations of volatile organic compounds (VOCs), heavy metals, total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCBs).

Closure Info: Interim (8/2/2012): Several samples were collected to support waste characterization and designation at the 100-N-18 waste site prior to remediation. Three test pits were excavated within the boundary of the waste site and one soil sample was collected from each test pit at approximately 0.9 to 1.5 meters (3 to 5 ft) bgs. The initial remedial action at the 100-N-18 waste site was performed on September 27, 2011. The excavation continued to an approximate depth of 1.5 meters (5 ft) below ground surface (bgs) resulting in approximately 195 bank cubic meters (BCM) (255 bank cubic yards [BCY]) of soil, metal, ash, and wood debris being removed for disposal at the Environmental Restoration Disposal Facility. Debris similar to that previously removed remained just outside of the 100-N-18 Waste Information Data System boundary. Therefore, remediation resumed on November 15, 2011, resulting in an additional 870 BCM (1,138 BCY) of soil and debris being removed for disposal. The final depth of the excavation extended to 1.5 meters (5 ft) bgs at the deepest point. No anomalous material or radiologically contaminated material was discovered during remediation activities.

Code: 100-N-22 **Classification:** Accepted

Names: 100-N-22; 1705-N Septic Tank and Cesspool; 1706-NA Sanitary Sewer System **Reclassification** Interim Closed Out (11/1/2012)

Type: Septic Tank **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The waste site consisted of two below-grade structures, a reinforced concrete septic tank and a concrete block cesspool. The two structures were connected by a 10 cm (4 in.) concrete pipe. The septic tank and cesspool were abandoned in the 1980's.

Location: The site is located north-northeast of 1714-NB.

Related Sites/ Structures: This facility most likely served the 105-N, 1705-N and 1706-N Buildings.

Waste Type: Sanitary Sewage

Waste Description:

Closure Info: Interim (11/1/2012): Remediation of the 100-N-22 waste site occurred from April 12 to 18, 2012, and resulted in approximately 665 bank cubic meters (870 bank cubic yards) of soil and

debris being removed and disposed at the Environmental Restoration Disposal Facility. During remediation, it was discovered that the septic tank had previously been removed and its former location filled with dirt. The 100-N-22 waste site was excavated to a depth of approximately 4 meters (13 ft) below ground surface. The debris consisted of the concrete cesspool structure, rock, cast iron and polyvinyl chloride piping, and wiring. No anomalies were discovered during remediation. All material was direct loaded from the excavation for disposal at the Environmental Restoration Disposal Facility; therefore, no waste staging pile area was created. Additionally, there is no overburden soil stockpile associated with the 100-N-22 waste site.

Portions of the 100-N-84:1, 100-N-84:3, 100-N-84:5, and 100-N-84:8 pipeline subsites were co-located with the 100-N-22 waste site.

Code: 100-N-23 **Classification:** Accepted

Names: 100-N-23; Resin Disposal Pit Liquid Waste Site 1 **Reclassification** Interim Closed Out (7/18/2013)

Type: Process Pit **Start Date:**

Status: Inactive **End Date:**

Description: The overflow sump has been remediated and Interim Closed Out. It was an open, rectangular, unlined pit with a 61-centimeter (24-inch) overflow pipe protruding from the north side of the pit. The pit received spent resin from the 163-N Demineralized Water Treatment Plant.

Location: The site was located west of the 116-N-8 Facility (163-N Mixed Waste and Hazardous Waste Container Storage Pad).

Related Sites/ Structures: There are two drain pipes that discharged into this site. Both pipelines are part of the 100-N-84:6 subsite. The larger drain originated from the 183-NB Clearwell and the other originated from the 163-N Demineralization Plant.

Waste Type: Chemicals

Waste Description: According to site personnel, the pit was used to dispose of resin generated in the 163-N Demineralized Water Plant. The pit later served as the clearwell overflow up until about 1990. Although it is not used for that purpose anymore, it could be used on an emergency basis. On May 5, 1980 and January 1976 the overflow sump received neutralized waste that was pumped from cleanup actions for an acid spill that occurred on the 108-N/163-N Transfer Line.

Closure Info: Interim (7/18/2013): Remedial action at the 100-N-23 waste site was performed from July 20 through July 29, 2011. The excavation depth was approximately 4.5 meters (14.8 ft), resulting in approximately 1,922 bank cubic meters (BCM) (2,514 bank cubic yards [BCY]) of contaminated soil, piping, and resin (also referred to as resin beads). All material was direct loaded from the excavation for disposal at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation. Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted on August 18, 2011, within the 100-N-23 waste site following the site remedial action. No elevated radioactivity was detected.

Following analysis of the original excavation verification samples, it was determined that additional remediation was needed within the excavation because of remedial action goal (RAG) exceedances of polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAH). A total of four additional remediation and sampling campaigns occurred from November 9, 2012, through March 18, 2013, to a depth of approximately 5.8 m (19 ft). During this time, 1,175 BCM (1,537 BCY) of contaminated soil was direct loaded and disposed at the ERDF, for a final waste site disposal volume of 3,097 BCM (4,051 BCY).

Code:	100-N-24	**Classification:**	Accepted
Names:	100-N-24; Hydrogen Dry Well Liquid Waste Site; Hydrogen Peroxide Drywell	**Reclassification**	Interim Closed Out (7/24/2013)
Type:	French Drain	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It was a buried vertical concrete pipe with a 0.83-meter (2.75-foot) diameter steel cover. The hydrogen peroxide drywell was a non-reinforced concrete pipe of 0.83-meters (2.75-feet) above a subchamber 2.53 meters (8.3 feet) in diameter. The subchamber was set in a gravel pocket 3.35 meters (11 feet) in diameter. Welded wire fabric cells 15 centimeters (6 inches) by 10.1 centimeters (4 inches) were within the subchamber.

Location: The site was located south of the 184-N Building and west of the southwest corner of the 153-N Switch Gear Building.

Related Sites/ Structures: The hydrogen drywell was connected to a 5-centimeter (2-inch) chemical drain line which extends from the 109-N Building.

Process Description: The hydrogen peroxide drywell was constructed to receive and disperse liquids from the Hydrogen Peroxide Sump Pump to the surrounding soil below ground level.

Waste Type: Chemicals

Waste Description: The waste is the predominantly concrete and metal structure of the hydrogen peroxide drywell. The site received 50 percent hydrogen peroxide and water from the hydrogen peroxide sump under the hydrogen peroxide tank located in the 109-N Decontamination Facility. The solution used for washing down of the storage tank area.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements

slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

Code: 100-N-25 **Classification:** Accepted

Names: 100-N-25; French Drain 1 Liquid Waste Site **Reclassification** Interim Closed Out (12/11/2012)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It was a 0.9-meter (3-foot) diameter french drain with a metal cover at grade. The surrounding area was covered with gravel.

Location: This underground drain was located in the 100-N Area, approximately 82 meters (270 ft) south of 116-N-2 (Golf Ball).

Process Description: The purpose of this drain is unknown. The nearest structure was the 1105-N Administrative Office Trailer (MO919), from 1975 to 1986. 1105-N was replaced with 1129-N (MO536) in 1986. 1129-N was removed in 1993.

Closure Info: Interim (12/11/2012): No above or below grade pipelines were found to have led to the drain. Therefore, it was speculated that the drain was used for water runoff from the nearby office trailer roof or condensate from an air conditioning unit. Remediation of the 100-N-25 waste site was performed between March 27 and 29, 2012. The waste site was excavated to an approximate depth of 4 meters (13 ft) below ground surface resulting in approximately 333 bank cubic meters (436 bank cubic yards) of soil and debris being removed and disposed at the Environmental Restoration Disposal Facility. There was no evidence of a french drain found during remediation.

Code: 100-N-26 **Classification:** Accepted

Names: 100-N-26; French Drain 2 Liquid Waste Site **Reclassification** Interim Closed Out (9/26/2012)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: This site has been remediated and Interim Closed Out. The vertical concrete pipe extended 5 centimeters (2 inches) above grade and was closed by a vented metal cover. The surrounding area is covered with gravel.

Location: This underground site was in the 100-N Area, north-northeast of the 13-N Building (signed as Fitters Stock N-13 L).

Release Description: Waste sites 100-N-26 and 120-N-4 were impacted by a raw water pipeline break on December 11, 2008. The regulators and tribes have requested that this release information be noted in WIDS.

During the removal of the concrete pad at the 1524-N Hazardous waste storage facility on December 11, 2008 an unknown 1.5 inch tap into the export water line was inadvertently contacted. A rupture of the 12 inch export water line and a release of at least 50,000 gallons of raw water onto the surrounding area resulted. A temporary berm was constructed around the area using excess clean 100 Area Borrow Pit material to contain the release and control potential spread of radiological contamination associated with the 1524-N pad. Once the water line was turned off the water in the area immediately percolated into the ground.

In-process and post-event surface soil radiological field survey results did not find any contamination spread as a result of the water release. A follow-up review of nearby monitoring wells as well as the standard waste site confirmatory sampling will be used to ascertain potential impacts/conditions.

Process Description: The french drain received condensate from Trapping Station No. 3 along the 10 centimeter (4 in) high pressure steam supply line to the 166-N fuel oil unloading and storage facilities, as shown on drawing H-1-29456. The steam was supplied by the 184-N Stand-by Boiler to the 166-N facilities for heating the fuel oil. Steam condensation took place in the distribution piping due to heat loss. Trapping stations were installed at defined intervals to drain condensate and thereby prevent blockage of the steam line. The steam supply was independent of the reactor operation.

Waste Type: Steam Condensate

Waste Description: The site receives yard steam condensate.

Closure Info: Interim: Remedial action at the 100-N-26 waste site was performed on October 27, 2011. The site was excavated to an approximate depth of 3.5 meters (11.5 ft), resulting in complete removal of the french drain structure with approximately 276 bank cubic meters (361 bank cubic yards) of debris, sand, soil, and rocks. All excavated material was direct loaded from the excavation and disposed of at the Environmental Restoration Disposal Facility.

Code: 100-N-28 **Classification:** Accepted

Names: 100-N-28; Resin Disposal Pit Liquid Waste Site 2 **Reclassification** Interim Closed Out (4/3/2013)

Type: Process Pit **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It was a slight depression around a 1.5-meter (5-foot) square concrete structure that has a 0.8-meter (2.5-foot) by 0.63-centimeter (0.25-inch) rusted metal cover. The site was surrounded with four heavy steel posts connected with chain. The steel cover was posted as a confined space.

Location: This unit was located south of the 184-N Building and west of the 153-N Building.

Related Sites/ Structures: The Resin Disposal Pit is connected to a 7.6-centimeter (3-inch) chemical drain line which originates in the 109-N Building.

Process Description: The resin disposal pit was designed to receive the spent resin charge from the 109-N Ion Exchanger. The construction of the pit is such that all liquids entered the pit via the chemical drain line and the liquid entrained in the resin were filtered to the soil below the resin disposal pit. The effective volume of the resin disposal pit was 40.36 cubic meters (1,425 cubic feet) and the maximum resin charge in the ion exchanger was 3.12 cubic meters (110 cubic feet). A 7.62-centimeter (3-inch) chemical drain goes from the 109-N Decontamination Facility to the Resin Disposal Pit.

Waste Type: Process Effluent

Waste Description: The waste is the below grade structure, including the lead shield plug, piping to the pit from the 109-N Facility, and the pit structure. Site employees report that the pit was initially used for reactor decontamination waste and may have never actually been used as a resin disposal pit. Documentation (HW-69000-Volume II) states that the Resin Disposal Pit was designed to receive the resin charge from the 109-N Ion Exchanger.

Closure Info: Interim (4/3/2013): Remediation of the 100-N-28 waste site was performed between January 25 and March 29, 2012. The site was excavated to a depth of 8.4 meters (27.6 ft) below ground surface (bgs) and resulted in the removal of 2,577 BCM (3,371 BCY) of soil and debris. The debris consisted of soil, rock, a concrete resin pit, piping, and wiring. No resin was present in the pit and it is assumed the site was only used for liquid disposal from the 109-N Building. Soil and debris were directly loaded from the 100-N-28 excavation and disposed at the Environmental Restoration Disposal Facility (ERDF).

Remedial actions for the 100-N-61:2, 100-N-62, and 100-N-64:2 sites were performed between April 13, 2011, and March 29, 2012. Excavation depths ranged from 3 meters (9.9 ft) to 8 meters (26.2 ft) bgs. Approximately 24,113 bank cubic meters of contaminated soil and debris associated with the three pipelines was removed from the waste sites and staged in the South Staging Pile Area 1 (SSP Area 1) to the south of the excavation prior to load out for disposal at ERDF. The debris consisted of rock, concrete, piping, and wiring. Verification sampling of the SSP Area 1 will be addressed in the 100-N-61:4 verification work instruction. In addition, overburden (OB) material was stockpiled in three OB piles southwest of the waste sites. The OB piles will also be addressed in the 100-N-61:4 verification work instruction.

Multiple TPH and PAH results collected at the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation exceeded soil RAGs. However, these results were concluded to be cross contamination from petroleum releases unrelated to the waste sites and will be addressed as part of the 100-N-106 (Shallow Petroleum-Only Releases at 100-N; SPOR Releases) waste site and were not used for evaluation in this RSVP.

A valve pit (OSE ID N-244) was discovered at Washington State plane coordinates N149350.37, E571230.54, with asbestos pipe wrapping. The valve pit was a 1 meter (3.3 ft) diameter manhole, with a valve and a 7.6 centimeter (3 in.) pipeline running east to west. Spatial analysis indicated that valve pit N-244 is associated with the 100-N-84:3, potable water line. The valve pit was completely removed and disposed with soil and debris from the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation. No other anomalies were discovered during remediation.

Code: 100-N-29 **Classification:** Accepted

Names: 100-N-29; Unplanned Release on 25-Centimeter (10-Inch) Blowdown Pipeline #1 **Reclassification** Interim Closed Out (7/24/2013)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The unplanned release site has been remediated and Interim Closed Out. It was associated with the blowdown pipe connected to the 1300-N Emergency Dump Basin. The area surrounding it was level and graveled with no vegetation. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Location: The release site was located near the southwest corner of the 104-N Building between valve BDV 6214 and BDV 801 on the 25-centimeter (10-inch) blowdown pipeline.

Release Description: Through process knowledge, it is known that several water leaks occurred around and adjacent to the dump basin in the early 1980's.

Related Sites/ Structures: The 1300-N Emergency Dump Basin (116-N-4), 100-N Reactor, 109-N Building and the 259 centimeter (102 inch) Outfall (NPDES 009) are associated with this Unplanned Release site.

Waste Type: Water

Waste Description: An inventory table from an unnumbered document is attached to the listed reference. Contaminants in the Dump Basin liquid include average concentrations of 6.25 E+05 of H-3, 6.12 E+01 of C0-60, 5.70 E+04 of Sr-90, 2.51 E+01 of Zr-95,<5.16 E+01 of Ru-106, 2.16 E+01 of Sb-125, 5.16 E+00 of Cs-134, 9.27 E+02 of Cs-137, 1.62 E-02 of Pu-239 and 1.82 E-01 of Pu.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material

being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

Code:	100-N-30	**Classification:**	Accepted
Names:	100-N-30; Unplanned Release on 10-Inch Blowdown Pipeline #2	**Reclassification**	Interim Closed Out (7/24/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The unplanned release site has been remediated and Interim Closed Out. It was a level, graveled area with no vegetation. The area surrounding the dump basin was also graveled.

Location: The site was located just off the southwest corner of the 104-N Building at valve BDV 6214 on the 25-centimeter (10-inch) blowdown pipe line.

Release Description: Through process knowledge it is known that several water leaks occurred around and adjacent to the dump basin in the early 1980's.

Related Sites/ Structures: The 1300-N Emergency Dump Basin (116-N-4), 109-N Building and the 259-centimeter (102-inch) Outfall (NPDES 009) are associated with this Unplanned Release site.

Waste Type: Water

Waste Description: Contaminants in the Dump Basin liquid include average concentrations of 6.25 E+05 of H-3, 6.12 E+01 of C0-60, 5.70 E+04 of Sr-90, 2.51 E+01 of Zr-95, 5.16 E+01 of Ru-106, 2.16 E+01 of Sb-125, 5.16 E+00 of Cs-134, 9.27 E+02 of Cs-137, 1.62 E-02 of Pu-239 and 1.82 E-01 of Pu.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed.

Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

Code:	100-N-31	**Classification:**	Accepted
Names:	100-N-31; Unplanned Release on 30-Inch Pipe Line	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-31 was a leak from a valve (FLV-858) transferring radioactively contaminated water from the 105-N Reactor to the 1300-N Emergency Dump Basin. The surface area had no vegetation and was covered with gravel.

Location: 100-N-31 and the group of eleven adjacent sites were located west of the 105-N/109-N buildings. The 100-N-31 leak was near the northwest corner of the 109-N building.

Release Description: Through process knowledge, it is known that several water leaks occurred around and adjacent to the dump basin in the early 1980's.

Related Sites/ Structures: The waste site is associated with 100-N Reactor and 1300-N Emergency Dump Basin. It was adjacent to the 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39, UPR-100-N-4 and UPR-100-N-8 waste sites.

Waste Type: Water

Waste Description: Through process knowledge, it is known that water was slightly chemically treated with hydrazine and morpholine which are very volatile and most likely not detectable. The water was radioactively contaminated.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then

removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	100-N-32	**Classification:**	Accepted
Names:	100-N-32; Unplanned Release on 25-Centimeter (10-Inch) Blowdown Pipeline #3	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites were collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-32 was a leak from a valve (BDV-800) transferring radioactively contaminated water from the 105-N Reactor to the 1300-N Emergency Dump Basin. The surface area had no vegetation and was covered with gravel.

Location: 100-N-32 was located near the northeast side of the 1300-N Emergency Dump Basin at Valve #BDV-800, in the 25-centimeter (10-inch) blow down line between the steam generators and the basin.

Release Description: Through process knowledge it is known that several water leaks have occurred around and adjacent to the dump basin in the early 1980's.

Related Sites/ Structures: The 1300-N Emergency Dump Basin, 109-N Building, and 100-N Reactor are associated with the site.

Process Description: The Emergency Dump Basin received contaminated liquid generated during the periodic blowdown of the steam generators located in the 109-N Building. This condensate contained low levels of radioactive contaminants.

Waste Type: Water

Waste Description:

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-

61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: 100-N-33 **Classification:** Accepted

Names: 100-N-33; 100-N Military Installation Ash Pit
Reclassification Interim Closed Out (8/2/2012)
Type: Coal Ash Pit
Start Date:
Status: Inactive
End Date:

Description: The waste site has been remediated and Interim Closed Out. It was an irregularly-shaped area, covered with dark, uniform grain-size ash, perhaps the remnants of coal burning.

Location: The site is located generally southeast of the 100-N Area and southwest of the 100-N Military Artillery Site. The site is south southeast of the 105-N Reactor Building.

Process Description: The source of the material is unknown.

Waste Type: Ash

Waste Description: A description of the waste is not known at this time.

Closure Info: Interim: Remediation of the two waste sites was performed between December 27, 2010, and July 19, 2011.

The 100-N-33 waste site was excavated to a depth of approximately 0.5 to 1.0 meter (1.6 to 3.3 ft) below ground surface (bgs). Remediation of the 100-N-33 waste site involved removal of approximately 221 bank cubic meters (BCM) (289 bank cubic yards [BCY]) of ash and soil, which was staged at the southern staging pile or 100-N-33 staging pile before disposal at the Environmental Restoration Disposal Facility (ERDF).

The 100-N-47 waste site was excavated to a depth of approximately 2.0 to 5.5 meters (6.6 to 18.0 ft) bgs. Remediation of the 100-N-47 waste site included excavation of the septic system, all manholes, septic tanks, the drain field, associated piping, and miscellaneous material/debris. The contents of the septic tank were treated with soda lime to raise the pH above 12.0 in order to kill any coliform bacteria, and then the septage was solidified with Waterworks silica gel. The concrete septic tank, solidified contents of the septic tank, and pipeline between the drainfield and manhole/building footprint were direct loaded to ERDF, while the soil and debris from the remainder of the 100-N-47 waste site were staged in the northern staging pile, before being loaded out to ERDF. Approximately 9,776 BCM (12,787 BCY) of soil and miscellaneous debris, including concrete, solidified sewage, and tiles, from the 100-N-47 waste site was disposed at ERDF. No overburden soil stockpiles were associated with the waste sites.

Code: 100-N-34
Classification: Accepted
Names: 100-N-34; Debris Site
Reclassification Interim Closed Out (4/25/2012)
Type: Dumping Area
Start Date:
Status: Inactive
End Date:

Description: The 100-N-34 waste site consisted of a debris dumping site that encompassed the smaller 100-N-17 burn pit waste site and adjacent 100-N-14, contaminated soil solid waste site. The site was an irregular shape with gravel/cobble (some in piles), weedy vegetation, and dead tumbleweeds (some in piles) present. Construction debris including asphalt, concrete, and metal pipe were also present.

Location: The 100-N-34 waste site is located outside the 100-N industrial area approximately 803 meters (2,635 ft) east of the 105-N Reactor Building.

Related Sites/ Structures: It is associated with burn pits 100-N-14 and 100-N-17

Process Description: This site received debris from 100-N Area construction and operation activities.

Waste Type: Misc. Trash and Debris

Waste Description:

Closure Info: Interim (4/25/2012): Remedial action at the 100-N-14, 100-N-17, and 100-N-34 waste sites was performed between August 5, 2010, and January 4, 2011. Excavation continued to a depth of 10 meters (33 ft) at the lowest point, until all debris and visible contamination associated with the waste sites had been removed. The debris removed from the 100-N-14, 100-N-17, and 100-N-34 waste sites consisted of miscellaneous noncombustible debris including concrete, metal, bricks, vitrified clay pipe, electrical wiring, and asbestos. Approximately 10,527 bank cubic meters (BCM) (13,769 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-17 and 100-N-34 combined excavation and staged in staging piles to the east before being loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Approximately 905 BCM (1,184 BCY) of contaminated soil and debris were removed from the 100-N-14 waste site excavation and directly loaded into trucks for shipment and disposal at the ERDF. Excavation continued until all debris and contamination associated with the waste sites had been removed. No radiologically contaminated material was discovered during remediation activities. The excavation boundary was expanded beyond the design during remediation due to debris found beyond the excavation limits.

The radiological postings were removed in September 2012.

Code:	100-N-35	**Classification:**	Accepted
Names:	100-N-35; Oil Releases from Hanford Generating Plant (HGP) Substation Equipment	**Reclassification**	Rejected (10/8/2014)
Type:	Unplanned Release	**Start Date:**	7/12/1971
Status:	Inactive	**End Date:**	

Description: The waste site has been evaluated and reclassified to Rejected. It was reported releases of oil and hydraulic fluid from equipment located inside the Hanford Generating Plant (HGP) Substation. Two releases occurred in 1989 and were reported and documented.

A review of the 1992 RCRA Facility Assessment concluded no further cleanup action was required. In 2014, Bonneville Power Administration concurred that the waste site should be reclassified to Rejected.

Note: 100-N-35 was originally described in the WIDS database as the Hanford Generating Plant (HGP) Substation facility. The definition was later changed to address the potential for petroleum/PCB contamination in soil.

Location: The waste site is located southwest of the 100-N Reactor area.

Release Description: On June 6, 1989, oil leaked from equipment (BPA nno. 4001 MOD). The source document does not specify oil type or equipment use. On July 16, 1990, a hydraulic leak from a fitting on B-phase circuit breaker was repaired. Soil sampled near the leak at various times showed polychlorinated biphenyl (PCB) concentrations ranging from less than detectable to 7 milligrams/kilogram (7 parts per million).

Related Sites/ Structures: The site is associated with a construction dump area located outside the facility boundary known as Solid Waste Management Unit (SWMU) #11. See WIDS sites 100-N-19 and 100-N-39.

Process Description: The Hanford Generating Plant (185-N Building) produced electricity for the Bonneville Power Association (BPA) grid using steam from the N-Reactor operation. The Hanford Substation distributed the power into the grid. The Hanford Generating Plant operated continuously from April 1966 to December 1986. As of August 2000, the BPA Hanford Substation was still active. A telephone inquiry to MSA in June 2013 indicated the substation is still active.

Waste Type: Oil

Waste Description: There is asbestos insulted piping in the basement of the mechanical room. Mineral oil containing polychlorinated biphenyls and solvents is used during routine equipment maintenance.

Code: 100-N-36 **Classification:** Accepted

Names: 100-N-36; 107-N Oil Stained Pad **Reclassification** Interim Closed Out (4/8/2013)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site was remediated along with the demolition of the 107-N Recirculation Facility and has been Interim Closed Out. It consisted of a cement air compressor pad adjacent to the 107-N Building. The concrete pad and adjacent asphalt were stained with lubrication oil from the maintenance of air compressor. The area was covered with asphalt except for the concrete pad that measured approximately 1.2 meters (4 feet) by 2.4 meters (8 feet).

Location: The air compressor pad is adjacent to the 107-N Building.

Related Sites/ Structures: The 107-N Building is associated with the site.

Waste Type: Oil

Waste Description: The waste consists of non-hazardous petroleum product (oil) from air compressor leaks.

Closure Info: Interim (4/8/2013): The 100-N-36 waste site was within the layback for removal of the 107-N Building. The removal of the 107-N facility basement in 2012 resulted in the incidental remediation of the 100-N-36 waste site. Soils were excavated to a depth of approximately 7 meters (23 ft) below ground surface at the site location. No stained soil was observed. No verification samples were collected.

Code: 100-N-37 **Classification:** Accepted

Names: 100-N-37; 109-N Asbestos Release **Reclassification** Interim Closed Out (7/24/2013)

Type: Unplanned Release **Start Date:** 1/16/1995

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It was an area where asbestos insulation lagging from an above ground steam line was affected by a rain event. A large chunk of lagging fell to the ground.

Location: 100-N-37 was located south of 109-N.

Release Description: Heavy rainfall caused a subsidence next to a caisson directly beneath the west elbow of the steam transfer line at the 109-N Building. The same rainfall saturated asbestos insulation lagging on the steam transfer piping causing a large chunk (estimated to weigh 180 to 320 kilograms [400 to 500 pounds]) to fall off. It was apparent that some of the asbestos insulation washed down the subsidence next to the caisson. Surface asbestos material was cleaned up and disposed of. The subsidence was backfilled with clean fill material. No action was taken to remove asbestos contamination from the subsidence.

Related Sites/ Structures: The 109-N Building was associated with the site.

Waste Type: Asbestos (non-friable)

Waste Description:

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil

removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

Code:	100-N-38	**Classification:**	Accepted
Names:	100-N-38; Unplanned Release at 1300-N	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-38 was a leak of radioactively contaminated water from the 105-N Reactor to the 1300-N Emergency Dump Basin. The area surrounding the basin had no vegetation and was covered with gravel.

Location: 100-N-38 was located near the northeast corner of the 1300-N Emergency Dump Basin where the 25-centimeter (10-inch) blow down line connected to the basin.

Related Sites/ Structures: The 1300-N Emergency Dump Basin (116-N-4) and the 109-N Building are associated with the site.

Process Description: From 1973 to 1987, the Emergency Dump Basin received contaminated liquid generated during the periodic blowdown of the steam generators located in the 109-N Building. This condensate contained low levels of radioactive contaminants.

Waste Type: Water

Waste Description: Through process knowledge it is known that several water leaks have occurred around and adjacent to the dump basin in the early 1980's. Contaminants in the Dump Basin liquid include average concentrations of 6.25 E+05 of H-3, 6.12 E+01 of C0-60, 5.70 E+04 of Sr-90, 2.51 E+01 of Zr-95,5.16 E+01 of Ru-106, 2.16 E+01 of Sb-125, 5.16 E+00 of Cs-134, 9.27 E+02 of Cs-137, 1.62 E-02 of Pu-239 and 1.82 E-01 of Pu.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	100-N-41	**Classification:**	Accepted
Names:	100-N-41; 1701-NE Gate House Septic Tank; HGP SWMU #9	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Septic Tank	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	1/1/1986

Description: The site has been remediated and Interim Closed Out. The site consisted of a septic system that received effluent from the demolished 1701-NE Gate House. The site was not located in a known contaminated area. (the 100-N-3 garage french drain, the 100-N-41 septic tank and the 100-N-45 septic tank make up Solid Waste Management Unit (SWMU) #9). The septic tank

was an open bottomed cesspool constructed of concrete blocks and gravel. The septic structure was demolished in place and backfilled with clean soil.

Location: The site was located just off the north corner of the 1701-NE Gate House within the HGP portion of the 100N area.

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building. The site was an ancillary or support facility to the former HGP.

Waste Type: Sanitary Sewage

Waste Description:

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess

potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-45	**Classification:**	Accepted
Names:	100-N-45; 1703-N Office Building Septic Tank; HGP SWMU #9	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Septic Tank	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	1/1/1987

Description: The site has been remediated and Interim Closed Out. The waste site was septic tank, in a 3.0 meter (10 foot) by 3.0 meter (10 foot) square area of gravel with a 15-centimeter (6-inch) capped pipe at the center. (The 100-N-3 garage french drain, the 100-N-41 septic tank and the 100-N-45 septic tank make up Solid Waste Management Unit [SWMU] #9.) The septic tank was an open bottomed cesspool constructed of concrete blocks and gravel. The septic structure was demolished in place and backfilled with clean soil.

Location: The septic tank was located approximately 20 meters (66 feet) north of the 1703-N building, inside the Hanford Generating Plant (HGP) facility fence.

Related Sites/ Structures: 185-N Building, 1703-N Building

Process Description: The site received effluent from the 1703-N office building.

Waste Type: Sanitary Sewage

Waste Description:

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-46	**Classification:**	Accepted
Names:	100-N-46; HGP Diesel Oil Storage Tank	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Storage Tank	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The site consisted of a 5,300 liter (20,000 gallon) underground storage tank (UST) for diesel fuel. The 100-N-46 Diesel UST was excavated and removed in 2001.

Location: The UST was on the east side of the 185-N Building.

Release Description: There was no indication of a release from this tank.

Related Sites/ Structures: 185-N Building

Process Description: The tank supplied diesel fuel to a backup generator and backup heating boiler. The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building. The site was an ancillary or support facility to the former

HGP.

Waste Type: Storage Tank

Waste Description: The site consisted of an underground storage tank containing an unknown amount of diesel fuel.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The

building debris was used as fill for the 185-N Building basement.

Code:	100-N-47	**Classification:**	Accepted
Names:	100-N-47; Military Artillery Site Solid Waste Site	**Reclassification**	Interim Closed Out (8/2/2012)
Type:	Military Compound	**Start Date:**	1/1/1951
Status:	Inactive	**End Date:**	1/1/1958

Description: The waste site has been remediated and Interim Closed Out. It was a military installation that included ten separate intact concrete foundations and remnants of at least one other. A number of concrete walkways and remnants of walkways were associated with the foundations. There were remnants of asphalt roadways, parking areas, and piles of broken-up asphalt. There is a 0.6-meter (2-foot) diameter sewer manhole and three 1.2 by 1.2 meter (4 by 4 foot) square concrete hatch covers. These are likely to be underground sanitary waste holding areas.

Scattered debris included wood poles, metal cables, wire, metal pipe, glass, paint cans, fire hose, metal cans, broken up concrete, concrete blocks, wood pallets, bricks, and transite siding. A number of 0.3 meter (1 foot) diameter wooden poles were standing, and some had been cut off at ground level. On one concrete foundation were thirty one bee hive boxes left from a Pacific Northwest Laboratory (PNL) experiment conducted from 1981 to 1984.

Location: The site is located generally southeast of the 100-N-Area. Entrance to the site is from the 100-N access road to the west, approximately 1 kilometer (0.6 mile) before the 100-N Reactor entrance. A row of 6 locust trees is on the south side of the dirt road leading to the site.

Related Sites/ Structures: 100-N-91

Closure Info: Interim: Remediation of the two waste sites was performed between December 27, 2010, and July 19, 2011.

The 100-N-33 waste site was excavated to a depth of approximately 0.5 to 1.0 meter (1.6 to 3.3 ft) below ground surface (bgs). Remediation of the 100-N-33 waste site involved removal of approximately 221 bank cubic meters (BCM) (289 bank cubic yards [BCY]) of ash and soil, which was staged at the southern staging pile or 100-N-33 staging pile before disposal at the Environmental Restoration Disposal Facility (ERDF).

The 100-N-47 waste site was excavated to a depth of approximately 2.0 to 5.5 meters (6.6 to 18.0 ft) bgs. Remediation of the 100-N-47 waste site included excavation of the septic system, all manholes, septic tanks, the drain field, associated piping, and miscellaneous material/debris. The contents of the septic tank were treated with soda lime to raise the pH above 12.0 in order to kill any coliform bacteria, and then the septage was solidified with Waterworks silica gel. The concrete septic tank, solidified contents of the septic tank, and pipeline between the drainfield and manhole/building footprint were direct loaded to ERDF, while the soil and debris from the remainder of the 100-N-47 waste site were staged in the northern staging pile, before being loaded out to ERDF. Approximately 9,776 BCM (12,787 BCY) of soil and miscellaneous debris, including concrete, solidified sewage, and tiles, from the 100-N-47 waste site was disposed at ERDF. No overburden soil stockpiles were associated with the waste sites.

Code:	100-N-50	**Classification:**	Accepted
Names:	100-N-50; HGP SWMU #4; Turbine Oil Cleaning System; Turbine Oil Filter Unit	**Reclassification**	Interim Closed Out (6/15/2004)

Type: Single-Shell Tank **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1986

Description: The site has been remediated and Interim Closed Out. It consisted of two filtration units located in the basement of the 185-N building. The basement floor of the building is approximately 15.2 meters (50 ft) below surrounding grade. The turbines were supported on large concrete support pedestals extending from the basement floor and foundation to approximately surface grade. The reinforced concrete basement floor and foundation is approximately 1.5 meters (5 ft) thick. The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement.

Location: The 100-N-50 Turbine Oil Filter Unit (SWMU #4) was located in the 185-N Building basement along the northeast and southeast walls.

Release Description: No releases are known to have occurred from this unit.

Related Sites/ Structures: 100-N-51 HGP Building Oil Storage Area

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building.

The filter unit was used to clean turbine oil located in the basement of the Hanford Generating Plant (HGP) Building. It was surrounded by a concrete berm.

Waste Type: Oil

Waste Description: The filters were periodically changed, but no information was available on the location of their disposal. This unit likely managed impurities in the turbine oil such as metals.

Closure Info: Interim: The Hanford Generating Plant (HGP) solid waste management unit (SWMU) removal actions included in this CVP began in 2001 and were completed in 2004. The majority of the removal action activities were completed in 2003 and 2004. The remediation and report were done by Energy Northwest.

The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement. The debris was placed into the building basement from the bottom (15.2 meters [50 ft] below ground surface) to within 7.6 meters (25 ft) of the ground surface. The remaining void spaces among the debris fill were filled using a cement grout controlled density fill. The remaining below grade portion of the basement was backfilled with clean soil. The reinforced concrete turbine pedestals that extend from the basement floor to approximately the ground surface were left in place. Based on agreement with the Washington State Department of Ecology, the portions of the turbine pedestals at the ground surface were covered with 0.9 meter (3 ft) of soil consistent with requirements for other 100 Area facilities. The Removal Action Workplan (DOE-RL 1999) specified removal of structures to a minimum of 0.3 meter (1 ft) below the surrounding grade and other 100 Area action memorandums generally require that a structure be demolished to a minimum of 0.9 meters (3 ft) below the surrounding grade. However, in the case of the turbine pedestals, because of their mass and the amount of steel reinforcement, demolition was deemed impractical. The 0.9 meters (3 ft) of cover for the pedestals was placed to blend in with, and to gently slope with, the surrounding grade.

The 185-N Building is not a SWMU. However, SWMUs #2, 3, and 4 are located within the

building. To provide a complete description of the removal action activities for SWMUs #2, 3, and 4, a summary description of the removal action activities conducted for the 185-N Building is below.

UPR-100-N-37 Transformer Yard (SWMU #1): Eight of the nine transformers located in the transformer yard were removed prior to the Action Memorandum (EPA 1999). The ninth, smaller, operating transformer, was drained of oil and scrapped during the most recent 2003 and 2004 activities. The oil and transformer were disposed of based on historical data indicating that the transformer oil did not contain PCBs. During removal action activities conducted in 2001, minor areas of soil contaminated with oil were excavated from around each transformer pad and properly disposed. During the more recent 2003 and 2004 activities, the concrete pads were demolished, excavated and the concrete rubble used as fill for the demolished 185-N Building basement.

100-N-51 Oil Storage Area (SWMU #2): All stored oil and waste containers were previously removed from the oil storage area and properly disposed of or appropriately used. Miscellaneous concrete stained areas including the sump were cleaned. Cleaning of concrete surfaces included the use of concrete scabbling and water and detergents during the 2001 activities. The 100-N-51 Oil Storage Area (SWMU #2) was located at the bottom of the 185-N Building basement. It has been covered and filled with building debris, a cement grout controlled density fill, and borrow soil.

185-N Building Drains and Sumps (SWMU #3): The 185-N Building basement drains and sumps were emptied and cleaned during the 2001 removal action activities. Cleaning activities involved removal and proper disposal of sludges and liquids. Following removal of the sludges and liquids, the sump concrete and metal surfaces were hand cleaned, pressure washed, and scabbled as needed. During the recent 2003 and 2004 activities three of the sumps contained water. The water was characterized, removed from the sump, and properly disposed. All of the miscellaneous drains were filled with a cement grout controlled density fill during the 2003 and 2004 activities. The sumps were filled with borrow soil and capped with a minimum of 15 cm (6 in.) of cement grout during the 2003 and 2004 activities. Also, the sumps and drains have been covered with building debris fill, cement grout controlled density fill, and borrow soil.

100-N-50 Turbine Oil Filter Unit (SWMU #4): During the 2001 removal action activities, the two steel tank oil filtration units including the internal metal oil filtration screens were drained and cleaned. Residual oil from the units was removed and properly disposed. In addition, the two concrete sumps associated with the filter units were cleaned. Stained concrete was removed from the sumps through chipping and scabbling. These units were located at the bottom of the 185-N Building basement and have been filled and covered with the cement grout controlled density fill.

Code:	100-N-51	**Classification:**	Accepted
Names:	100-N-51; 100-N-51A; HGP Building Oil Storage Area; HGP SWMU #2	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Storage	**Start Date:**	1/1/1966
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The site consisted of a cinder block room in the basement of 185-N. It was equipped with a fire sprinkler system, steel grate floor, and shelving along the walls. Drums and smaller containers of product (petroleum, oil, and lubricants) were stored on the floor and shelving. A blind concrete sump (no outlet) was located below the grated floor. The basement floor of the building is approximately 15.2 meters (50 ft) below surrounding grade. The turbines were supported on large concrete support pedestals

extending from the basement floor and foundation to approximately surface grade. The reinforced concrete basement floor and foundation is approximately 1.5 meters (5 ft) thick. The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement.

Location: Located in the 185-N Building basement along the northwest basement wall.

Release Description: No releases are known to have occurred. Stains on the grate and sump floor indicated that minor leaks from containers had been contained within the unit.

Related Sites/ Structures: 100-N-51B HGP Building Floor Drains and Sump, and 100-N-50 Turbine Oil filter Unit, 185-N Building

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were formerly located in the 185-N Building.

Waste Type: Oil

Waste Description: Used oil and rags from maintenance activities are stored in drums inside the room.

Closure Info: Interim: The Hanford Generating Plant (HGP) solid waste management unit (SWMU) removal actions included in this CVP began in 2001 and were completed in 2004. The majority of the removal action activities were completed in 2003 and 2004. The remediation and report were done by Energy Northwest.

The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement. The debris was placed into the building basement from the bottom (15.2 meters [50 ft] below ground surface) to within 7.6 meters (25 ft) of the ground surface. The remaining void spaces among the debris fill were filled using a cement grout controlled density fill. The remaining below grade portion of the basement was backfilled with clean soil. The reinforced concrete turbine pedestals that extend from the basement floor to approximately the ground surface were left in place. Based on agreement with the Washington State Department of Ecology, the portions of the turbine pedestals at the ground surface were covered with 0.9 meter (3 ft) of soil consistent with requirements for other 100 Area facilities. The Removal Action Workplan (DOE-RL 1999) specified removal of structures to a minimum of 0.3 meter (1 ft) below the surrounding grade and other 100 Area action memorandums generally require that a structure be demolished to a minimum of 0.9 meters (3 ft) below the surrounding grade. However, in the case of the turbine pedestals, because of their mass and the amount of steel reinforcement, demolition was deemed impractical. The 0.9 meters (3 ft) of cover for the pedestals was placed to blend in with, and to gently slope with, the surrounding grade.

The 185-N Building is not a SWMU. However, SWMUs #2, 3, and 4 are located within the building. To provide a complete description of the removal action activities for SWMUs #2, 3, and 4, a summary description of the removal action activities conducted for the 185-N Building is below.

UPR-100-N-37 Transformer Yard (SWMU #1): Eight of the nine transformers located in the transformer yard were removed prior to the Action Memorandum (EPA 1999). The ninth, smaller, operating transformer, was drained of oil and scrapped during the most recent 2003 and 2004 activities. The oil and transformer were disposed of based on historical data indicating that the transformer oil did not contain PCBs. During removal action activities conducted in 2001, minor areas of soil contaminated with oil were excavated from around each transformer pad and properly disposed. During the more recent 2003 and 2004 activities, the concrete pads

were demolished, excavated and the concrete rubble used as fill for the demolished 185-N Building basement.

100-N-51 Oil Storage Area (SWMU #2): All stored oil and waste containers were previously removed from the oil storage area and properly disposed of or appropriately used. Miscellaneous concrete stained areas including the sump were cleaned. Cleaning of concrete surfaces included the use of concrete scabbling and water and detergents during the 2001 activities. The 100-N-51 Oil Storage Area (SWMU #2) was located at the bottom of the 185-N Building basement. It has been covered and filled with building debris, a cement grout controlled density fill, and borrow soil.

185-N Building Drains and Sumps (SWMU #3): The 185-N Building basement drains and sumps were emptied and cleaned during the 2001 removal action activities. Cleaning activities involved removal and proper disposal of sludges and liquids. Following removal of the sludges and liquids, the sump concrete and metal surfaces were hand cleaned, pressure washed, and scabbled as needed. During the recent 2003 and 2004 activities three of the sumps contained water. The water was characterized, removed from the sump, and properly disposed. All of the miscellaneous drains were filled with a cement grout controlled density fill during the 2003 and 2004 activities. The sumps were filled with borrow soil and capped with a minimum of 15 cm (6 in.) of cement grout during the 2003 and 2004 activities. Also, the sumps and drains have been covered with building debris fill, cement grout controlled density fill, and borrow soil.

100-N-50 Turbine Oil Filter Unit (SWMU #4): During the 2001 removal action activities, the two steel tank oil filtration units including the internal metal oil filtration screens were drained and cleaned. Residual oil from the units was removed and properly disposed. In addition, the two concrete sumps associated with the filter units were cleaned. Stained concrete was removed from the sumps through chipping and scabbling. These units were located at the bottom of the 185-N Building basement and have been filled and covered with the cement grout controlled density fill.

Code:	100-N-51B	**Classification:**	Accepted
Names:	100-N-51B; HGP Building Floor Drains and Sumps; HGP SWMU #3	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Sump	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It consisted of multiple drains and sumps located in the basement of the 185-N building. The basement floor of the building is approximately 15.2 meters (50 ft) below surrounding grade. The turbines were supported on large concrete support pedestals extending from the basement floor and foundation to approximately surface grade. The reinforced concrete basement floor and foundation is approximately 1.5 meters (5 ft) thick. The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement.

Location: Located in the 185-N Building basement along the northwest basement wall.

Related Sites/ Structures: 100-N-51A, HGP Building Oil Storage Area, 100-N-50 Turbine Oil filter Unit, and the 185-N Building

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were formerly located in the 185-N Building.

Closure Info: Interim: The Hanford Generating Plant (HGP) solid waste management unit (SWMU) removal actions included in this CVP began in 2001 and were completed in 2004. The majority of the removal action activities were completed in 2003 and 2004. The remediation and report were done by Energy Northwest.

The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement. The debris was placed into the building basement from the bottom (15.2 meters [50 ft] below ground surface) to within 7.6 meters (25 ft) of the ground surface. The remaining void spaces among the debris fill were filled using a cement grout controlled density fill. The remaining below grade portion of the basement was backfilled with clean soil. The reinforced concrete turbine pedestals that extend from the basement floor to approximately the ground surface were left in place. Based on agreement with the Washington State Department of Ecology, the portions of the turbine pedestals at the ground surface were covered with 0.9 meter (3 ft) of soil consistent with requirements for other 100 Area facilities. The Removal Action Workplan (DOE-RL 1999) specified removal of structures to a minimum of 0.3 meter (1 ft) below the surrounding grade and other 100 Area action memorandums generally require that a structure be demolished to a minimum of 0.9 meters (3 ft) below the surrounding grade. However, in the case of the turbine pedestals, because of their mass and the amount of steel reinforcement, demolition was deemed impractical. The 0.9 meters (3 ft) of cover for the pedestals was placed to blend in with, and to gently slope with, the surrounding grade.

The 185-N Building is not a SWMU. However, SWMUs #2, 3, and 4 are located within the building. To provide a complete description of the removal action activities for SWMUs #2, 3, and 4, a summary description of the removal action activities conducted for the 185-N Building is below.

UPR-100-N-37 Transformer Yard (SWMU #1): Eight of the nine transformers located in the transformer yard were removed prior to the Action Memorandum (EPA 1999). The ninth, smaller, operating transformer, was drained of oil and scrapped during the most recent 2003 and 2004 activities. The oil and transformer were disposed of based on historical data indicating that the transformer oil did not contain PCBs. During removal action activities conducted in 2001, minor areas of soil contaminated with oil were excavated from around each transformer pad and properly disposed. During the more recent 2003 and 2004 activities, the concrete pads were demolished, excavated and the concrete rubble used as fill for the demolished 185-N Building basement.

100-N-51 Oil Storage Area (SWMU #2): All stored oil and waste containers were previously removed from the oil storage area and properly disposed of or appropriately used. Miscellaneous concrete stained areas including the sump were cleaned. Cleaning of concrete surfaces included the use of concrete scabbling and water and detergents during the 2001 activities. The 100-N-51 Oil Storage Area (SWMU #2) was located at the bottom of the 185-N Building basement. It has been covered and filled with building debris, a cement grout controlled density fill, and borrow soil.

185-N Building Drains and Sumps (SWMU #3): The 185-N Building basement drains and sumps were emptied and cleaned during the 2001 removal action activities. Cleaning activities involved removal and proper disposal of sludges and liquids. Following removal of the sludges and liquids, the sump concrete and metal surfaces were hand cleaned, pressure washed, and scabbled as needed. During the recent 2003 and 2004 activities three of the sumps contained water. The water was characterized, removed from the sump, and properly disposed. All of the miscellaneous drains were filled with a cement grout controlled density fill during the 2003 and 2004 activities. The sumps were filled with borrow soil and capped with a minimum of 15 cm

(6 in.) of cement grout during the 2003 and 2004 activities. Also, the sumps and drains have been covered with building debris fill, cement grout controlled density fill, and borrow soil.

100-N-50 Turbine Oil Filter Unit (SWMU #4): During the 2001 removal action activities, the two steel tank oil filtration units including the internal metal oil filtration screens were drained and cleaned. Residual oil from the units was removed and properly disposed. In addition, the two concrete sumps associated with the filter units were cleaned. Stained concrete was removed from the sumps through chipping and scabbling. These units were located at the bottom of the 185-N Building basement and have been filled and covered with the cement grout controlled density fill.

Code:	100-N-52	**Classification:**	Accepted
Names:	100-N-52; HGP Gasoline Storage Tank	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Storage Tank	**Start Date:**	1/1/1976
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The waste site was an underground gasoline storage tank. The UST was excavated and removed in 1992.

Location: The gasoline filling area was located outside the northern corner of 100-N-78, Hanford Generating Plant (HGP) maintenance garage.

Release Description: No releases have been documented.

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building. The site was an ancillary or support facility to the former HGP. The 100-N-52 (UST) site was located immediately north of the former 1716-NE Maintenance Garage and was used for the storage and dispensing of gasoline for maintenance vehicles.

Waste Type: Storage Tank

Waste Description:

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-53	**Classification:**	Accepted
Names:	100-N-53; 181-N Building Waste Oil Tank	**Reclassification**	Interim Closed Out (7/24/2013)
Type:	Storage Tank	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It was an empty above-ground waste oil tank. The tank was 1.1 meters (3.5 feet) in diameter and 1.2 meters (4.1 feet) high.

Location: The site was located in the 100-N Area, 18 meters (60 feet) east of the 181-N Pumphouse, south of the river road.

Related Sites/ Structures: The 181-N Building is associated with this site.

Process Description: The site received waste oil from diesel powered emergency pumps in the 181-N Building.

Waste Type: Oil

Waste Description: The tank has been removed.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

Code:	100-N-54	**Classification:**	Accepted
Names:	100-N-54; 151-N Building Drywell; Miscellaneous Stream #727	**Reclassification**	Interim Closed Out (6/26/2014)
Type:	French Drain	**Start Date:**	1/1/1964

Status: Inactive **End Date:** 1/1/1997

Description: The site has been remediated and Interim Closed Out. It was a french drain, made of 1.2 meter (4 foot) inner diameter and 1.65 meter (5 foot 5 inch) outer diameter concrete pipe, with a steel cover.

The 151-N building was demolished and completely removed in December 2005, including incidental removal of the 100-N-54 drywell. Following demolition activities, excavation boundaries were surveyed and the site was temporarily backfilled.

Location: The site was located in the 100-N Area, just off the south wall of the 151-N Building. It was approximately 130 meters (430 ft) southeast of the 109-N Building.

Related Sites/ Structures: This site drains a sink in the 151-N Building, which is the Area Electrical Switchgear Building. It is 215 square meters (2,310 square feet), and takes 230 kilovolts down to 13.8 kilovolts.

Waste Type: Water

Waste Description: The site received waste water from the service sink located inside the 151-N building.

Closure Info: Interim (6/26/2014): Remedial action at the 100-N-54 waste site was conducted on November 4, 2013. The excavation extended to approximately 2 meters (6.6 ft) below ground surface (bgs) resulting in approximately 80 bank cubic meters (BCM) (105 bank cubic yards [BCY]) of soil and debris (transite conduit, concrete, and electrical wire) being removed for disposal at the Environmental Restoration Disposal Facility (ERDF). Additional remediation was conducted on March 4 and 5, 2014, due to several (PAH) and semivolatile organic compounds (SVOCs) exceeding direct exposure remedial action goals (RAGs). An additional 346 BCM (453 BCY) of soil was removed from the excavation. The final remediation depth was approximately 3 meters (9.8 ft) bgs, and a total of 426 BCM (558 BCY) of soil and debris was removed and disposed at the ERDF. All material was direct loaded from the waste site. No waste staging pile area was created.

Code: 100-N-55 **Classification:** Accepted

Names: 100-N-55; 153-N Building Drywell; Miscellaneous Stream #728 **Reclassification** Interim Closed Out (11/5/2012)

Type: French Drain **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site has been remediated and Interim Closed Out. It was a french drain with a 1.2-meter (4-foot) steel cover. Four yellow steel posts surrounded the drain that was located in a gravel road.

Location: The site was located in the 100-N Area, just off the northeast corner of the 153-N Building (Washington State Plane coordinates E 571293.6, N 149367.5).

Related Sites/ Structures: The 153-N Building is associated with this waste site. French drain 100-N-55 was located within the remediation footprint of UPR-100-N-36.

Process Description: The drywell received steam condensate from a condensate pump and drainage from a service sink in the 153-N Building. The 153-N Building was the switchgear building containing an electrical transformer/substation that reduced 13.8 kilovolt current down to 4160 volts.

Waste Type: Steam Condensate

Waste Description: The site receives steam condensate from a condensate pump and drainage from a service sink inside the 153-N Building.

Closure Info: Interim (11/5/2012): Demolition of the 153-N Building was completed in October 2006. The entire facility including the foundation and underground piping was removed to 1.5 meters (5 ft) outside of the building footprint. The site was backfilled and graded to match surrounding terrain. The adjacent 100-N-55 drywell was left intact during demolition operations with minimal disturbance.

The 100-N-55 waste site was remediated incidental to remediation of the co-located waste site, UPR-100-N-36. Remedial action at the UPR-100-N-36 waste site occurred between May 23 and November 11, 2011. This remediation resulted in complete removal of the 100-N-55 drywell structure, its contents and the underlying soil to a depth approximately 4.5 meters below the original ground surface. The 100-N-55 waste site was removed prior to confirmatory sampling or other determination of need for remediation. The removal (remediation) of the 100-N-55 waste site is therefore considered incidental to remediation of UPR-100-N-36.

Code:	100-N-57	**Classification:**	Accepted
Names:	100-N-57; 1304-N Emergency Dump Tank	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	Catch Tank	**Start Date:**	1/1/1970
Status:	Inactive	**End Date:**	1/1/1988

Description: The waste site has been remediated and Interim Closed Out. The 1304-N was a 500,000 gallon, above-ground storage tank with a dome-shaped top.

Location: The site was located in the 100-N Area, between the 105-N Building and the Columbia River and between the 1908-N Sealwell and the 107-N Building.

Release Description: Four unplanned releases of N-Reactor primary coolant water have occurred from the 1304-N EDT caused by leaking valves associated with the tank and one tank overflow.

Related Sites/ Structures: The 105-N Building, 1325-N Crib, and 102 Inch Outfall Discharge are related to this site. The site is associated with UPR-100-N-30.

Process Description: The 1304-N Emergency Dump Tank was a 4.9E+06-liter (1.3E+06-gallon) steel, above-ground storage tank. The tank is constructed of steel and insulated with asbestos and fiberglass under aluminum sheeting. It replaced the 1300-N Emergency Dump Basin as the storage facility used for emergency blowdown of thermally hot pressurized reactor primary coolant water. The tank maintained a constant volume of 2.6E+06 liters (6.8E+05 gallons) of unheated water for quenching the hot water to prevent it from flashing to steam. Because a small flow of primary coolant was maintained to the 1304-N Emergency Dump Tank to keep interconnecting piping in a thermally warm condition, the quench water normally contained a small inventory of radioactive materials.

The primary objective of the 1304-N Decontamination Project was to reduce the dose rate contribution of the Emergency Dump Tank (EDT) by at least 90% in accordance with the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone N-16-12F. A secondary objective was to demonstrate the effectiveness of decontamination and paint-removal chemicals manufactured by Corpex and distributed by MELE Associates, the licensed applicator.

Waste Type: Misc. Trash and Debris

Waste Description: Between March 14, 1995 and September 29, 1995 approximately 5,300 liters (1,400 gallons) of water, 230 liters (60 gallons) of sand, and 165 bags of debris were removed from the tank. The sectioned piping was left inside the tank and will be removed and disposed of during the subsequent final decontamination and demolition of the tank. Results from Ion Chromatography/Inductively Coupled Plasma analysis at the 222-S Laboratory detected levels

of lead and chromium content classified the waste as mixed.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	100-N-58	**Classification:**	Accepted
Names:	100-N-58; 120-N South Settling Pond; 1324-N South Settling Pond; South Pond	**Reclassification**	Closed Out (3/28/2002)
Type:	Pond	**Start Date:**	1/1/1977
Status:	Inactive	**End Date:**	1/1/1982

Description: The site has been remediated and closed out.

Location: The 100-N-58 site was co-located with 120-N-1, 120-N-2 sites in the 100-N Area in the 100-NR-1 Operable Unit of the Hanford Site in southeastern Washington State. These sites are about 100 m (328 ft) southeast of the 163-N Demineralization Plant Building, and are approximately 400 m (1,312 ft) from the Columbia River.

Related Sites/ Structures: The 163-N Building, 183-N Building, 120-N-2 (1324-N) Surface Impoundment, and 120-N-1 (1324-NA) Percolation Pond are associated with this site.

Process Description: In 1977 the 120-N-1, 120-N-2, and 100-N-58 sites were initially constructed as the East Percolation Pond and North and South Settling Ponds, respectively. These unlined ponds received 163-N anion/cation regeneration effluent as well as the 183-N Filtered Water Plant filter backwash effluent. In 1982, because of pond percolation problems, the 183-N filter backwash was rerouted to an effluent disposal pond (130-N-1). During this time period the 100-N-58 site was backfilled.

Waste Type: Process Effluent

Waste Description: The 1324N South Settling Pond received regeneration wastes containing aluminum sulfate, sulfuric acid, sodium hydroxide solutions and cooling water from the 163-N Building and filter backwash water from the 183-N Building.

Closure Info: Interim: The site was remediated in September/October 2000. A Reclassification form was completed for 100-N-58. However for 120-N-1 and 120-N-2, Washington State Department of Ecology rejected the certification of closure from DOE. A post-closure groundwater plan must

be submitted to Ecology and approved prior to approval of the Certification of Closure documentation.

Remedial/corrective action field activities at the 120-N-1, 120-N-2, and 100-N-58 sites were conducted in September 2000, and included the removal and disposal of miscellaneous structural debris-type items. A total of about 120 cubic meters (4,238 cu ft) of material was removed from the sites. The material consisted of about 15 cubic meters (530 cu ft) of concrete, 96 cubic meters (3,390 cu ft) of high-density polyethylene (HDPE) liner, 4 cubic meters (141.3 cu ft) of polyvinyl chloride (PVC) piping, and 0.5 cubic meters (17.7 cu ft) of steel fencing material. The material was disposed of in the inert demolition landfill in the 100-H Area. Waste designation and disposal documentation is kept in project files. The two 20.3-cm (8-in.) diameter influent pipelines were sampled and remain in place.

Closure performance standards were established by the Washington State Department of Ecology, in concurrence with the U.S. Department of Energy, Richland Operations Office. These performance standards are documented in the 100-NR-1 Treatment, Storage, and Disposal Units Corrective Measures Study/Closure Plan (CMS/CP) (DOE-RL-90-22) and the Remedial Design Report/Remedial Action Work Plan for the 100-NR-1 Treatment, Storage, and Disposal Units (RDR/RAWP) (DOE/RL-2000-16). Permit conditions were established in the Hanford Facility Dangerous Waste Permit (Ecology 1994). While sites 120-N-1, 120-N-2, and 100-N-58 are not included in a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) record of decision (ROD) corrective action activities have been documented in CVP-2001-00021 (CVP).

The soil investigation conducted at these sites in 1992 and 1993 for the CMS/CP indicated that the site did not require soil remediation. Therefore, the selected remedial/corrective action included the removal and disposal of the miscellaneous site structures, including the 120-N-2 liner system, a small sampling shed, fencing, and other miscellaneous debris. The CMS/CP soil investigation indicated that there generally are no contaminants of concern (COCs) for these waste sites. However, because a former overflow area and the waste site influent pipelines required additional sampling (as specified by the CMS/CP), these sites were included in the Sampling and Analysis Plan for the 100-NR-1 Treatment, Storage, and Disposal Units During Remediation and Closeout (SAP) (DOE-RL-2000-07). The verification samples collected under the sampling and analysis plan were analyzed for generally the same inorganic metals and wet chemical anions listed in the CMS/CP soil investigation. The samples were also analyzed for pH. The analytical results from the additional soil sampling and the pipeline scale sampling are presented in Appendix A of the CVP. The analytical results of the soil samples are consistent with the findings of the CMS/CP: soil concentrations are at or below Hanford Site or Washington State background concentrations.

Code:	100-N-59	**Classification:**	Accepted
Names:	100-N-59; Radioactively Contaminated Soil Northeast of 105-NB Building	**Reclassification**	Interim Closed Out (1/2/2013)
Type:	Unplanned Release	**Start Date:**	1/1/1995
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It was an area where a contaminated, underground pipeline broke. After excavating and repairing the broken pipe, the site was marked with a single Underground Radioactive Material sign. A site visit in August 2000 found that the single post with the Underground Radioactive Material sign was gone, but an Underground Radioactive Material sign was attached to the fence near the waste site.

Location: It was approximately 100 meters (300 ft.) northeast of the 105-NB Building, inside the double

fence.

Release Description: In September 1995, a 15 centimeter (6 inch) diameter underground liquid waste pipeline was found to be leaking. An area approximately 0.76 meters (2.5 feet) by 1.4 meters (4.5 feet) was excavated to repair the pipe. The soil below the pipe had a beta/gamma reading of 7,000 disintegrations per minute. A direct reading on the broken pipe found 35,000 disintegrations per minute. After repairing the pipe, the excavation was backfilled with clean dirt and posted with an Underground Radioactive Material sign.

Related Sites/ Structures: The site is associated with an underground waste line from the 105-N/109-N facility. (see sitecode 100-N-63:2)

Process Description: The soil was radioactively contaminated when a liquid waste line from the 109-N facility broke.

Waste Type: Soil

Waste Description: The soil was radioactively contaminated when a liquid waste line broke.

Closure Info: Interim (1/2/2013): Remedial action excavation at the 100-N-59 waste site was performed during December 2011 along with the 100-N-63:2 subsite, to a depth of approximately 1.5 meters (5 ft) below ground surface. The soil was loaded out directly for disposal at the Environmental Restoration Disposal Facility. No overburden soil stockpiles are associated with this waste site. Additional soil was removed on March 26, 2012.

Code: 100-N-60 **Classification:** Accepted

Names: 100-N-60; 1314-N Drywell **Reclassification** Interim Closed Out (3/28/2013)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The dry well was located under the 1314-N. In 1996, the field investigation did not visually locate the french drain, but a partially buried catch tank was observed inside the 1314-N Building. It was suspected that the area surrounding the catch tank may have been referred to as the drywell. Drawing H-1-37675, Detail D, shows a 5 centimeter (2 inch) underground drain pipe to a "drywell".

Location: The french drain was located underneath the southwest corner of the 1314-N building.

Release Description: 100-N Plant Operations personnel were filling a railroad waste tank car with spent decontamination solutions at a the 1314-N Loading Station. After approximately 26,500 liters (7,000 gallons) of solution had been pumped into the 75,700-liter (20,000-gallon) waste tank car, solution began overflowing from the tank car fittings. The tank car loading pump was turned off, then solution began flowing up through the drain in the catch basin beneath the car. The catch basin filled and overflowed into the adjacent drywell which also filled and overflowed. Approximately 380 liters (100 gallons) of solution flowed out of the drywell, covering a 6 by 6-meter (20 by 20-foot) section of ground inside the Radiation Zone at the loading station. The solution that spilled out of the drywell onto the ground was contained with trenches and earthen dams, then covered with plastic to prevent contamination spread. The solution contained in the catch basin was hosed down to remove loose contamination. Inspection of the loading and vent lines on the top of the waste tank car revealed that a manual valve on the vent line was in the closed position resulting in a pressure buildup in the tank car that caused backflow through the loading line, holding tank, and catch basin. Evaluation revealed that about 280 liters (75 gallons) of solution containing a total of 0.011 curies was discharged to the ground (sub surface) through the drywell.

Related Sites/ Structures: The 1314-N Loading Station, UPR-100-N-13 and UPR-100-N-26 are associated with this waste site.

Process Description: The drywell received overflow from the catch tank. The french drain was mapped as the catch tank on some drawings.

The 1314-N Liquid Waste Loadout Station was a 9 meter (30 ft) by 18 meter (60 ft) single story, metal-frame building supported on a reinforced concrete slab foundation. It began to operate in 1972. The facility was a transfer station consisting of numerous valves, pumps, underground and overhead piping and couplings, and underground tanks It was located approximately 100 meters (300 ft) from the Columbia River. This facility was used to loadout radioactive liquid waste from the 116-N-2 and 107-N facilities into railroad tank cars for shipment to the 200 Areas for processing and disposal. The loadout facility contained a tank car wash station with a sump to collect the wash water. The water drained into a 3,780 liters (1,000 gal) overflow tank. During the filling operation, excess liquid waste was designed to overflow through a closed piping system from the tank car to the overflow tank, which initiated pump shutdown. A 756 liters (200 gal) catch tank was installed to hold liquids that exceeded the capacity of the car wash sump.

Waste Type: Chemicals

Waste Description: The site received spent decontamination solutions from a railroad waste tank car.

Closure Info: Interim (3/28/2013): The 1314-N building was demolished in 2006. 100-N-60 and UPR-100-N-26 were located within the building footprint. UPR-100-N-13 was located near the 1314-N building, but outside the building footprint.

Remedial action for 100-N-60, UPR-100-N-13 and UPR-100-N-26 was performed between September 21 and November 14, 2011. Approximately 2,459.0 bank cubic meters (BCM) (3,216.3 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-60 group of waste sites excavation and direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Excavation continued until all debris and contamination associated with the waste site had been removed. No anomalous material was discovered during remediation activities.

The stained soil location was evaluated for TPH and PAH with a focused sample (FS-2), but the sample results were used to support a greater effort to identify the extent of the TPH and PAH contamination in the 100-N Area and were not included in the evaluation of the 100-N-60, UPR-100-N-13, UPR-100-N-26 group of waste sites.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	100-N-61	**Classification:**	Accepted
Names:	100-N-61; 100-N Water Treatment and Storage Facilities Underground Pipelines	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Process Sewer	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: The 100-N-61 waste site encompassed all underground water pipelines used to transport reactor cooling water between water treatment facilities and the 105-N/109-N Buildings. This included all underground pipelines between buildings and those connected to drainage facilities. It was subdivided into four subsites: 100-N-61:1 Water Treatment and Storage Facilities Underground

Pipelines South of 109-N, 100-N-61:2 Water Treatment and Storage Facilities Underground Pipelines East of 109-N, 100-N-61:3 Water Treatment and Storage Facilities Underground Pipelines West of 109-N and 100-N-61:4 Water Treatment and Storage Facilities Underground Pipelines South of 182-N. Each subsite was individually remediated and Interim Closed Out. Therefore the parent site is also Interim Closed Out.

Location: The site was located where the underground pipelines run from the 181-N River Pump House to the 163-N Water Treatment Plant, the 182-N Pump House and Storage Tanks, and to the 105-N Reactor Building. Also, any underground drainage pipelines running from the water treatment and storage facilities to the riverside outfall structures. Other underground pipelines running to the outfall structures are included in other waste sites and are therefore excluded from this site.

Related Sites/ Structures: Associated structures and waste sites include the 181-N River Pump House, the 182-N Pump House, the 163-N Water Treatment Plant, the 105-N Reactor Building, 100-N-103 and 100-N-84.

Process Description: Reactor cooling water was pumped from the Columbia River, settled and treated to remove minerals, then injected into the reactor primary coolant loop at a rate of about 760 liters/minute (200 gallons/minute).

Waste Type: Water

Waste Description: The waste is steel piping, concrete, and soil (if contaminants are present). Chemical additives to the reactor cooling water included sulfuric acid, sodium hydroxide, aluminum sulfate (alum) with excess hydrated calcium oxide, separan, chlorine, and sodium dichromate. Water pH was maintained at about 7.5, and the free chlorine residual was approximately 0.2 milligrams/liter.

This Site has the Following SubSites:

Code: 100-N-61:1
Names: 100-N-61:1; 109-N South side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

Code: 100-N-61:2
Names: 100-N-61:2; 109-N East side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

Code: 100-N-61:3
Names: 100-N-61:3; 109-N West side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

Code: 100-N-61:4
Names: 100-N-61:4; 182-N South side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

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Code: 100-N-61:1 **Classification:** Accepted

Names: 100-N-61:1; 109-N South side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines **Reclassification** Interim Closed Out (7/24/2013)

Type: Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: The 100-N-61:1 pipelines have been remediated and Interim Closed Out. The pipes varied in size 4 inch to 108 inch diameter. They were mainly steel and cast iron pipes wrapped in coal tar enamel mastic.

Location: They were located directly south of the 109N Heat Exchanger Building and transported mainly

water between the 109N Building and the water treatment and storage facilities (181-N, 182-N, 183-NA, 1900-N, and 1908N).

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include 100-N-37, 100-N-29, 100-N-30, 100-N-64:1, 100-N-103:1 (1 french drain on east side of 1902N), 100-N-84:1, :2, :3, :4, :5, :6, :7, Sump #2 (part of 100-N-84:5), and the 186N (slab) pipeline ends at 163N and 183N foundations. The foundations were left in place by the D4 project.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

The SubSite is Part Of:

Code: 100-N-61

Names: 100-N-61; 100-N Water Treatment and Storage Facilities Underground Pipelines

Code:	100-N-61:2	**Classification:**	Accepted
Names:	100-N-61:2; 109-N East side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines	**Reclassification**	Interim Closed Out (4/3/2013)
Type:	Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The 100-N-61:2 pipelines have been remediated and Interim Closed Out. They were located parallel to and directly east of the 109-N Heat Exchanger Building. They were used to transport transported raw water to the 109N Building from the 182-N High-Lift Pump House. These pipes varied in size 4 inch to 54 inch diameter and were mainly steel, wrapped in coal tar enamel mastic. The geographical location of the 100-N-61:2 sub-site also coincides with the 100-N-62, 100-N 105-N, 109-N, 163-N, 182-N, 183-N and 184-N Underground Pipelines waste site, which lie underneath.

Location: The pipelines were located east of the 105-N and 109-N buildings.

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include 100-N-62, 100-N-84:1, :2, :3, :4, :5, :6, 100-N-63:2 and 100-N-64:2.

Process Description: These pipelines transported reactor cooling water between the water treatment facilities and the 105-N Reactor Building.

Closure Info: Interim (4/3/2013): Remediation of the 100-N-28 waste site was performed between January 25 and March 29, 2012. The site was excavated to a depth of 8.4 meters (27.6 ft) below ground surface (bgs) and resulted in the removal of 2,577 BCM (3,371 BCY) of soil and debris. The debris consisted of soil, rock, a concrete resin pit, piping, and wiring. No resin was present in the pit and it is assumed the site was only used for liquid disposal from the 109-N Building. Soil and debris were directly loaded from the 100-N-28 excavation and disposed at the Environmental Restoration Disposal Facility (ERDF).

Remedial actions for the 100-N-61:2, 100-N-62, and 100-N-64:2 sites were performed between April 13, 2011, and March 29, 2012. Excavation depths ranged from 3 meters (9.9 ft) to 8 meters (26.2 ft) bgs. Approximately 24,113 bank cubic meters of contaminated soil and debris associated with the three pipelines was removed from the waste sites and staged in the South Staging Pile Area 1 (SSP Area 1) to the south of the excavation prior to load out for disposal at ERDF. The debris consisted of rock, concrete, piping, and wiring. Verification sampling of the SSP Area 1 will be addressed in the 100-N-61:4 verification work instruction. In addition, overburden (OB) material was stockpiled in three OB piles southwest of the waste sites. The OB piles will also be addressed in the 100-N-61:4 verification work instruction.

Multiple TPH and PAH results collected at the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation exceeded soil RAGs. However, these results were concluded to be cross contamination from petroleum releases unrelated to the waste sites and will be addressed as part of the 100-N-106 (Shallow Petroleum-Only Releases at 100-N; SPOR Releases) waste site and were not used for evaluation in this RSVP.

A valve pit (OSE ID N-244) was discovered at Washington State plane coordinates N149350.37, E571230.54, with asbestos pipe wrapping. The valve pit was a 1 meter (3.3 ft) diameter manhole, with a valve and a 7.6 centimeter (3 in.) pipeline running east to west.

Spatial analysis indicated that valve pit N-244 is associated with the 100-N-84:3, potable water line. The valve pit was completely removed and disposed with soil and debris from the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation. No other anomalies were discovered during remediation.

The SubSite is Part Of:

Code: 100-N-61

Names: 100-N-61; 100-N Water Treatment and Storage Facilities Underground Pipelines

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Code: 100-N-61:3

Names: 100-N-61:3; 109-N West side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

Type: Process Sewer

Status: Inactive

Classification: Accepted

Reclassification Interim Closed Out (9/6/2013)

Start Date:

End Date:

Description: The 100-N-61:3 pipelines have been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-61:3 consisted of a 30 inch diameter emergency raw water supply pipeline from the 182-N High-Lift Pump House, and a 30 inch diameter overflow pipeline located between the 1300-N Emergency Dump Basin and the 1908-N Seal Well Outfall Structure.

Location: The 100-N-61:3 pipelines were located west of the 109-N Heat Exchanger Building and 105-N Reactor Building.

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include 100-N-84:1, :2, :3, :4, :5, :6, 118-N-1, 100-N-64:3, 100-N-63:2 100-N-32, 100-N-38, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39.

Process Description: The 100-N-61 pipelines transported reactor cooling water between water treatment facilities and the 105-N/109-N Buildings.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were

removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

The SubSite is Part Of:

Code: 100-N-61

Names: 100-N-61; 100-N Water Treatment and Storage Facilities Underground Pipelines

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Code: 100-N-61:4

Classification: Accepted

Names: 100-N-61:4; 182-N South side pipelines of the 100-N Water Treatment and Storage Facilities Underground Pipelines

Reclassification Interim Closed Out (8/21/2013)

Type: Process Sewer

Start Date:

Status: Inactive

End Date:

Description: The 100-N-61:4 pipelines have been remediated and Interim Closed Out. The 100-N-61 waste site encompassed all underground water pipelines used to transport reactor cooling water

between water treatment facilities and the 105-N/109-N Buildings. 100-N-61:4 Water Treatment and Storage Facilities Underground Pipelines South of 182-N. The underground pipelines were steel pipes, wrapped in coal tar enamel mastic. They ranged in size from 4 inch to 42 inch diameter.

Location: The lines were located directly south of the 182-N High-Lift Pump House and underneath the 1900-N Water Supply Tank foundations.

Related Sites/ Structures: The pipelines are co-located and associated with 100-N-84 subsites :1, :2 :3, :4, :6 and :7. The pipe ends at 182N. D4 excavated 182N to 3 feet below grade and the 1900N partially removed tank. The tank foundations will need to be to be removed by D4 program as a TPA ancillary facility.

Process Description: These pipelines transported raw and filtered water in 4 inch to 42 inch diameter steel pipes.

Closure Info: Interim (8/21/2013): Remediation of 100-N-61:4 pipelines began after the deactivation, decontamination, decommissioning, and demolition (D4) of the 182-N Building and 1900-N Facility were completed. Several segments of the 100-N-84 pipelines were co-located in the 100-N-61:4 pipeline excavation. The 100-N South Staging Pile (SSP) began operation on February 16, 2011 and received waste from multiple adjacent or collocated waste sites. It was agreed that the SSP would be closed with the 100-N-61:4 waste site. An overburden staging area for multiple waste sites was also evaluated with 100-N-61:4. Some segments of pipelines described in 100-N-84:4 and 100-N-84:6 were co-located, remediated and sampled with the excavation of 100-N-61:4. The 100-N-61:4 and co-located pipelines were remediated between October 8, 2012, and February 4, 2013. Remediation included removal of soil, steel pipe, asbestos tar paper and mastic, concrete, steel debris, and building demolition debris. The lengths of pipeline removed and disposed at the Environmental Restoration Disposal Facility (ERDF) included approximately 565 meters (1,854 ft) for the 100-N-61:4 subsite, 152 meters (499 ft) for the 100-N-84:4 segments, and 199 meters (653 ft) for the 100-N-84:6 segments. Approximately 20,660 bank cubic meters (BCM) (26,950 bank cubic yards [BCY]) of material was removed during the remediation. Most of the material was directly loaded for disposal at the ERDF with only 4,589 BCM (5,986 BCY) staged at the SSP area prior to disposal. The pipeline excavation extended to a maximum depth of approximately 3.5 meters (11.5 ft) bgs.

Radiological surveys were conducted in March 2013. No anomalies were discovered during the remediation activities, but some soil staining was noted on the south wall of the excavation. Stain sampling found petroleum contamination that will be addressed with the 100-N-106 waste site.

Approximately 85,111 BCM (111,023 BCY) of waste material (from multiple waste sites) in the South Staging Pile was disposed at the ERDF in March 2012. In April 2012, 0.2 meters (0.5 ft) of material was scrapped from the surface of where the staging pile had been located. The area was then used to stage waste from the 100-N-61:4 excavation. This staged material was taken to ERDF in December 2012. Results of the staging area sampling found elevated levels of TPH and PAH. Further remediation of the staging area was not done, due to a previous agreement regarding cross contamination of asphaltic materials.

Three separate areas were used to stage overburden from pipeline remediations. Material with visible debris was removed and properly disposed. The overburden piles were sampled in December 2012. It was agreed that material with elevated levels of PAH would not be used as backfill in areas less than 3 meters (9.9 ft) above groundwater.

The SubSite is Part Of:

Code: 100-N-61
Names: 100-N-61; 100-N Water Treatment and Storage Facilities Underground Pipelines

Code:	100-N-62	**Classification:**	Accepted
Names:	100-N-62; 100-N, 105-N, 109-N, 163-N, 182-N, 183-N and 184-N Underground Pipelines	**Reclassification**	Interim Closed Out (4/3/2013)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: This site has been remediated and Interim Closed Out. It included the underground pipelines that transported reactor decontamination chemicals and/or radioactive liquid wastes from the 105-N/109-N Reactor facilities and other pipelines with the potential for radioactive contamination that were co-located on the east side of the 105-N/109-N Building complex. These pipelines consist of potentially contaminated underground steam and condensate return pipelines including a radioactive drain, miscellaneous chemical drains, a backwash return pipeline, chemical drain pipelines and chemical supply pipelines (sodium hydroxide, ammonium hydroxide and phosphoric acid).

This site does not include the pipelines that discharge to the 116-N-4 (1300-N), the 1304-N Emergency Dump Tank, pipelines to and from the 107-N and 105-N Buildings, or pipelines from the 105-N/109-N Buildings to the 1908-N Outfall that are addressed by a separate waste site (sitecode 100-N-65).

Location: The location of this site was all of the potentially radionuclide contaminated underground pipelines leaving the 105-N/109-N Buildings on the east side (east-west direction) and proceeding in a north-south direction to their respective treatment/disposal sites.

Related Sites/ Structures: The related structures are the 105-N Reactor Building, the 109-N Heat Exchange Building, the 184-N Powerhouse, the 100-N-23 and the 100-N-24 waste sites.

Process Description: Water was taken from the Columbia River and treated extensively to purify it prior to its use as reactor cooling water. In the reactor, the water circulated through the reactor core where it carried away heat to maintain safe core temperatures. This heat was transferred to a secondary system via heat exchangers from which the water returned to the reactor core in a closed loop. The secondary cooling system, also a "closed loop" system, could be maintained in a hot pressurized state from the 184-N Powerhouse when the reactor was down for maintenance or other reasons. Because of this interconnection between the auxiliary steam supply system and the contaminated secondary cooling system, the potential for cross-contamination exists. However, the auxiliary steam supply system was isolated by the use of motor operated valves and a "flow control" mode of operation that precluded back pressure contamination of the auxiliary steam system from the secondary cooling system.

Waste Type: Process Effluent

Waste Description: The waste is the underground pipelines from the east side of the 105-N and 109-N Buildings to the 184-N Powerhouse, 100-N-23 (Resin Disposal Pit Liquid Waste Site 1) and 100-N-24 (Hydrogen Dry Well Liquid Waste Site) waste sites. The chemical drain lines are known to have been used for the disposal of decontamination chemicals, however, specific chemicals and radionuclide content is currently unknown.

Closure Info: Interim (4/3/2013): Remediation of the 100-N-28 waste site was performed between January 25 and March 29, 2012. The site was excavated to a depth of 8.4 meters (27.6 ft) below ground surface (bgs) and resulted in the removal of 2,577 BCM (3,371 BCY) of soil and debris. The debris consisted of soil, rock, a concrete resin pit, piping, and wiring. No resin was present in the pit and it is assumed the site was only used for liquid disposal from the 109-N Building.

Soil and debris were directly loaded from the 100-N-28 excavation and disposed at the Environmental Restoration Disposal Facility (ERDF).

Remedial actions for the 100-N-61:2, 100-N-62, and 100-N-64:2 sites were performed between April 13, 2011, and March 29, 2012. Excavation depths ranged from 3 meters (9.9 ft) to 8 meters (26.2 ft) bgs. Approximately 24,113 bank cubic meters of contaminated soil and debris associated with the three pipelines was removed from the waste sites and staged in the South Staging Pile Area 1 (SSP Area 1) to the south of the excavation prior to load out for disposal at ERDF. The debris consisted of rock, concrete, piping, and wiring. Verification sampling of the SSP Area 1 will be addressed in the 100-N-61:4 verification work instruction. In addition, overburden (OB) material was stockpiled in three OB piles southwest of the waste sites. The OB piles will also be addressed in the 100-N-61:4 verification work instruction.

Multiple TPH and PAH results collected at the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation exceeded soil RAGs. However, these results were concluded to be cross contamination from petroleum releases unrelated to the waste sites and will be addressed as part of the 100-N-106 (Shallow Petroleum-Only Releases at 100-N; SPOR Releases) waste site and were not used for evaluation in this RSVP.

A valve pit (OSE ID N-244) was discovered at Washington State plane coordinates N149350.37, E571230.54, with asbestos pipe wrapping. The valve pit was a 1 meter (3.3 ft) diameter manhole, with a valve and a 7.6 centimeter (3 in.) pipeline running east to west. Spatial analysis indicated that valve pit N-244 is associated with the 100-N-84:3, potable water line. The valve pit was completely removed and disposed with soil and debris from the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation. No other anomalies were discovered during remediation.

Code:	100-N-63	**Classification:**	Accepted
Names:	100-N-63; 100-N Reactor (1314-N. 116-N-1 and 116-N-3) TSD Underground Pipelines	**Reclassification**	Interim Closed Out (10/1/2013)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: 100-N-63 was divided into two subsites. Both subsites were Reclassified to Interim Closed Out. Therefore, the parent site is also considered Interim Closed Out. The waste site encompassed the Treatment, Storage, and Disposal (TSD) underground pipelines that transported reactor cooling water and radioactive liquid wastes from the 105-N Reactor facilities to the 116-N-1 (1301-N), 116-N-3 (1325-N) Crib, and 116-N-2 (1310-N Tank).

The pipelines from 1310-N transfer tank (silo) to the 1310-N (aka 116-N-2 or Golf Ball) are 100-N-63:1. A third 30.5 centimeter (12 inch) chemical drain pipeline returns from 1310-N (Golf Ball) to the 1310-N transfer tank. From the 116-N-1 weir box, a 91.4 centimeter (36 inch) underground pipeline (100-N-63:1) connected the 116-N-1 crib and trench to the 1312-N diversion box and continued to the 116-N-3 crib and trench.

The pipelines in site 100-N-63 that exited the 105-N, 109-N and 1714-NB Buildings on the east, west and north sides are 100-N-63:2. They proceeded north-northeast to their respective treatment/disposal facilities. Pipeline diameter sizes beyond the 1322-N Building varied. A 30.5 centimeter (12-inch) radioactive drain originated on the west side of the 109-N Building as a 25.4 centimeter (10-inch) pipeline. It extended north to a 30.5 centimeter (12 inch) disposal system pipeline located east of the number 3 spacer silo. It proceeded north to a point east of the 1314-N Building and extended east to the 1322-N Building. It could be diverted to either the 1310-N (Golf Ball) via the 1310-N transfer tank or to the 1322-NC building and the 116-N-

1 weir box. The final pipeline in this subsite is the 91.4 centimeter (36-inch) contaminated drain/flush pipeline. It originated on the west side of the 105-N Building and passed under the 1722-N building. It continued in a parallel path with the 30.5 centimeters (12-inch) radioactive drain pipeline.

Not included in this waste site are underground pipelines that discharged to the 116-N-4 (1300-N Emergency Dump Basin), 1304-N Emergency Dump Tank, pipelines to and from the 107-N and 105-N Buildings, or pipelines from the 105/109-N Buildings to the 1908-N Outfall that are addressed by 100-N-64 (100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines) waste site.

Location: The location of the underground reactor effluent lines is between the 105-N Reactor Buildings and the 1314-N, 116-N-1, and 116-N-3 waste sites.

Release Description: A diesel fuel spill occurred on 1/10/2010 at the 100-N BioVenting Pilot Test Site at the 100-N Area. Approximately 330 gallons of diesel fuel were released due to an improper connection of the generator to a 1,000 gallon auxiliary fuel tank supporting the project. Spill cleanup activities on 1/10/2010 generated over 310 tons of contaminated soil that were removed and disposed at ERDF. The area of the spill was almost entirely contained within the 100-N-63:2 pipeline WIDS boundary west of the 1310-N Radioactive and Liquid Waste Treatment Facility (Golf Ball).

Agreement with the Washington State Department of Ecology on 2/4/10 determined that further cleanup actions at the site were not necessary at this time as long as the remediation design for the affected portion of the 100-N-63:2 pipeline was revised to encompass the entire area that was affected by the spill. Contractor remediation activities at 100-N are scheduled to begin in July 2010 and remediation of this portion of the waste site is anticipated to occur in late 2010. An update to the WIDS database was requested, documenting the location, including GPS, of the area impacted by the spill. GPS locations and a map of the spill location have been included in the WIDS database for the 100-N-63:2.

Related Sites/ Structures: The associated structures include: the 105-N Reactor Building, the 116-N-1 and 116-N-3 Cribs and Trenches, the 1322-N Monitoring and Pilot Plant Complex, the 1314-N Waste Transfer Station, and various valve stations, UPR-100-N-31, Radioactive Effluent Water Spill Near 116-N-1 (1301-N), UN-100-N-31.

Process Description: Water was taken from the Columbia River and treated extensively to purify it before its use as reactor cooling water. In the reactor, the water circulated through the reactor core where it carried away heat to maintain the core temperature at a safe level. This heat was yielded in a heat exchanger from which the water returned to the core in a closed loop. A small quantity of cooling water was bled off (about 760 liters/minute [200 gallons/minute]) and was replaced with fresh water from the water treatment plant. The bleed-off water and liquid wastes from other sources including decontamination stations and radioactive drains was transported to either the crib disposal system or to a storage and transportation system for disposal.

Waste Type: Process Effluent

Waste Description: The waste is the contaminated underground pipelines. The following radionuclides were released from the reactor to the 116-N-1 and/or 116-N-3 Cribs and Trenches, passing through the underground pipelines. Residual contaminants of some radionuclides may be expected to remain in the underground pipelines. These include: tritium, zinc-65, iodine-131, plutonium-238, phosphorous-32, strontium-89/90, xenon-133, plutonium-239/240, chromium-51, zirconium-niobium-95, cesium-134/137, neptunium-239, manganese-54, molybdenum-technetium-99, barium-140, iron-59, ruthenium-103/106, cerium-141, cobalt-58/60, antimony-124/125, and cerium-praseodymium-144. Additionally, decontamination chemicals are known to have passed through the underground pipelines, including phosphoric acid and diethylthiourea.

This Site has the Following SubSites:

Code: 100-N-63:1

Names: 100-N-63:1; Pipeline Section from 116-N-1 to 116-N-3 Crib Including Concrete Encased Pipe Bypass Structure

Code: 100-N-63:2

Names: 100-N-63:2; Pipelines Between 109N, 105N, 107N, 1310N, 1322N, 1926N And 36" Process Drain to Outfall

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Code: 100-N-63:1

Classification: Accepted

Names: 100-N-63:1; Pipeline Section from 116-N-1 to 116-N-3 Crib Including Concrete Encased Pipe Bypass Structure

Reclassification Interim Closed Out (12/23/2002)

Type: Radioactive Process Sewer

Start Date:

Status: Inactive

End Date:

Description: 100-N-63:1 has been remediated and Interim Closed Out with the 116-N-3 waste site. Two pipelines continued on from the 1312-N Diversion Box to the north then eastward to the southwest end of the crib. One of the pipelines was a pipe encased concrete by-pass structure that ran parallel to the original. The by-pass structure was built at the same time as the 1312-N Retention Basin (also know as the 1312-N LERF). However, neither was put into service.

Location: These pipelines were located in the northern part of the 100-N Area, between the 116-N-1 and 116-N-3 cribs.

Waste Type: Not Specified

Waste Description: The waste is the contaminated underground pipelines.

Closure Info: Interim: A portion of the pipeline 100-N-63:1 was remediated with the 116-N-3 Crib and Interim Closed Out in CVP-2002-00002. For purposes of the CVP and consistent with the permitted TSD site designation, the 116-N-3 Crib and Trench, the 100-N-63:1 Pipeline, and the bypass structure are collectively referred to as the 116-N-3 site.

Remediation at the 116-N-3 site began on July 21, 2000. Excavation of the site involved removing the overburden materials, debris, the contaminated and uncontaminated structure, and underlying contaminated soil. Based on field screening, overburden materials identified as potentially clean were placed in stockpiles for potential use as backfill. The pipeline bypass (100-N-63:1) trenches were excavated completely and clean backfill was used to provide a temporary road for utilities and crossing. Contaminated materials were disposed of at the ERDF. On December 21, 2001, the excavation was completed. Only the portion of the trench near the crib was excavated. Effluent in the trench percolated into the soil column before overflowing the first earthen dam. Thus, the remainder of the trench beyond the first dam was not affected by waste disposal activities and did not require remediation. The excavation for the entire 116-N-3 site was approximately 21,980 square meters (236,590 sq. ft.) in area. Soils were removed beneath the crib and trench to a minimum of 1.5 meters (5 ft) below the engineered structures. Approximately 140,270 metric tons (154,578 tons) of material from the site were disposed of at the ERDF.

The SubSite is Part Of:

Code: 100-N-63

Names: 100-N-63; 100-N Reactor (1314-N. 116-N-1 and 116-N-3) TSD Underground Pipelines

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Code:	100-N-63:2	**Classification:**	Accepted
Names:	100-N-63:2; Pipelines Between 109N, 105N, 107N, 1310N, 1322N, 1926N And 36" Process Drain to Outfall	**Reclassification**	Interim Closed Out (10/1/2013)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The 100-N-63:2 subsite has been remediated and Reclassified to Interim Closed Out. The 100-N-63:2 subsite encompassed the TSD underground pipelines that transported reactor cooling water and radioactive and chemical liquid wastes from the 105-N Reactor facilities to the 116-N-1 (1301-N Crib and Trench) and the 91.4 cm (36 in.) process drain that emptied into the 100-N-77 (100-N River Effluent Pipeline). The 100-N-63:2 pipelines originated on the north, east, and west sides of the 105-N Reactor Building and ran to either the 116-N-1 or the 100-N-77 effluent pipeline. The 100-N-63:2 subsite also includes the area where a diesel fuel spill occurred on January 10, 2010, at the 100-N Bioventing Pilot Test Site. The 100-N-77 effluent pipeline and the diesel fuel spill are not associated with the 100-N-63:2 TSD pipeline under the RCRA Permit (Ecology 2012), but are included in the evaluation of the 100-N-63:2 subsite cleanup.

The 100-N-63:2 waste site pipelines were located throughout the 100-N Area and were co-located with a number of other pipeline waste sites, including but not limited to the 100-N-84, 100-N Miscellaneous Pipelines waste site. During remediation of the 100-N-63:2 waste site, co-located waste sites were also partially or fully remediated.

Location: The 100-N-63:2 waste site pipelines are located throughout the 100-N Area and are collocated with a number of other pipeline waste sites including but not limited to the 100-N-84, 100-N Miscellaneous Pipelines waste site. The pipelines originated on the north, east and west sides of the 105-N Reactor Building and ran to either the 116-N-1 Crib or the 100-N-77 effluent pipeline.

Related Sites/ Structures: 100-N-63:2 is associated with the 100-N-77 and 100-N-84 pipeline sites and UPR-100-N-17.

Waste Type: Not Specified

Waste Description: The waste is the contaminated underground pipelines.

Closure Info: Interim (10/1/2013): The 100-N-63:2 subsite was remediated between June 2009 and May 2013, with all remaining RCRA TSD pipelines being completely removed. Excavation included the removal of the pipelines and the underlying contaminated soil. During the remediation of the 100-N-63:2 pipeline subsite, co-located sites were also either fully or partially removed. Independent site-specific closure documents will be prepared for co-located waste sites per agreement with Ecology. If the boundary of a co-located waste site extended beyond the 100-N-63:2 excavation boundaries, remediation of that waste site may require additional remediation independent of the 100-N-63:2 subsite. Several land bridges were constructed over the 100-N-63:2 excavation using clean fill to provide essential access within the 100-N Area. The remediation also included the area where a diesel spill occurred on January 10, 2010, at the 100-N Bioventing Well Island in the 100-N Area. Approximately 1,247 liters (330 gal) of diesel fuel was released due to an improper connection of the generator to a 3,780 liters (1,000-gal) auxiliary fuel tank supporting the project. Spill cleanup activities on January 10, 2010, generated over 310 tons of contaminated soil that were removed and disposed at ERDF. The area of the spill was almost entirely contained within the 100-N-63:2 pipeline boundary, west of the 116-N-2 waste site (1310-N Radioactive and Liquid Waste Treatment Facility [Golf Ball]).

The remedial action at the 116-N-2 (1310-N Golf Ball) was performed between March 1, 2011, and April 26, 2012 and removed several sections of 100-N-63:2 pipelines, with the exception of one pipeline section that remained on a side slope in the northern part of the excavation. This pipeline was a 7.6 meter (25 ft) long section of 30 cm (12 in.) diameter pipe that was remediated between March 22 and April 18, 2013.

The excavation depth varied from 0.9 to 5.5 meters (3 to 18 ft), below ground surface, depending on the depth of pipeline and the volume of the underlying contaminated soil. Approximately 2,465 meters (8,088 ft) of piping was removed from the 100-N-63:2 excavation. An estimated total volume of 39,753 bank cubic meters (51,995 bank cubic yards) of contaminated soil and pipelines was excavated and disposed of at the Environmental Restoration Disposal Facility. There were no staging pile areas (SPAs) or overburden piles associated with the 100-N-63:2 subsite excavation.

The SubSite is Part Of:

Code: 100-N-63

Names: 100-N-63; 100-N Reactor (1314-N. 116-N-1 and 116-N-3) TSD Underground Pipelines

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Code:	100-N-64	**Classification:**	Accepted
Names:	100-N-64; 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: The site was divided into three subsites based on geographical locations. The subsites are 100-N-64:1 Cooling Water Effluent Underground Pipelines South of 109-N, 100-N-64:2 Cooling Water Effluent Underground Pipelines East of 109-N and 100-N-64:3 Cooling Water Effluent Underground Pipelines West of 109-N. All the subsites have been remediated and reclassified to Interim Closed Out. Therefore, the parent site is also considered Interim Closed Out.

100-N-64 includes those underground pipelines that transported reactor cooling water from the 105-N Reactor facilities to the 116-N-4 (1300-N), the 1304-N Emergency Dump Basin and Tank respectively, the 107-N Filter Building and the pipelines from these facilities to the 1908-N Outfall Structure. The site does include overflow lines to the 1908-N Outfall Structure, but does not include the 1908-N Outfall Structure. It does not include the underground lines that discharged to the 1301-N (116-N-1) and/or 1325-N (116-N-3) Cribs. (see sitecode 100-N-63).

The 107-N Building includes return pipelines as well as other process pipelines contained in a concrete encasement between the 105-N and 107-N Buildings. This encasement houses 0.26-meter (10-inch) and 0.46-meter (18-inch) demineralized water lines, a 0.3-meter (12-inch) filtered water line, 1.3-centimeter (0.5-inch) instrument air, 5.1-centimeter (2-inch) steam, 15-centimeter (6-inch) fire, line and telephone, instrument, power, and fire alarm lines. The encasement is about 30 meters (98 feet) long. (The remaining underground pipelines associated with the 1300-N and 1304-N include a 0.76-meter [30-inch] flush line, a 0.61-meter [24-inch] vent, a 0.76-meter [30-inch] overflow, a 25.4-centimeter [10-inch] blowdown, and a connection to the 25.4-centimeter [10-inch] radioactive drain line that becomes the 0.3-meter [12-inch] radioactive drain line that are not included with this waste site.)

Location: This site was the underground pipelines running between the 105/109-N Buildings to the 116-N-4 (1300-N), the 1304-N Emergency Dump Basin and Tank, the 107-N Filter Building to the 1908-N Outfall Structure. The pipelines exited the 105-N Reactor Building on the west side and extended to the west to their respective treatment/disposal facilities.

Related Sites/ Structures: The associated structures are the 105-N and 109-N Reactor Buildings. The TSD pipelines are in site 100-N-63.

Process Description: The Emergency Dump Basin (116-N-4/1300-N) and the Emergency Dump Tank (1304-N) were designed to receive "single-pass" reactor cooling water in the case of an emergency. Both systems were used to periodically receive steam blowdown. The 1304-N Tank replaced the 1300-N Basin. This steam condensate normally contained low levels of radionuclide contamination and fission products. Overflow and drain lines to the 1908-N Outfall Structure are include in this waste site. However, the outfall structure is a separate waste site.

Waste Type: Process Effluent

Waste Description: The waste is the contaminated underground pipelines. The following radionuclides were released from the reactor through the underground pipelines to the 116-N-4 (1300-N), 1304-N Emergency Dump Basin and Tank, the 107-N Filter Building and to the 1908-N Outfall Structure. Residual contaminants of some may be expected to remain in the underground pipelines. These include: sodium-24, niobium-95, iodine-131, chromium-51, zirconium-95, tellurium-132, technetium-99, manganese-54, iron-59, ruthenium-103, cerium-144, and cobalt-60. Because of radioactive decay, only manganese-54, cobalt-60, and cerium-144 are expected to remain.

This Site has the Following SubSites:

Code: 100-N-64:1
Names: 100-N-64:1; 109-N South side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

Code: 100-N-64:2
Names: 100-N-64:2; 109-N East side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

Code: 100-N-64:3
Names: 100-N-64:3; 109-N West side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

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Code: 100-N-64:1
Classification: Accepted

Names: 100-N-64:1; 109-N South side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines
Reclassification Interim Closed Out (7/24/2013)

Type: Radioactive Process Sewer
Start Date:

Status: Inactive
End Date:

Description: The 100-N-64:1 subsite has been remediated and Interim Closed Out. They were 10 inch diameter pipelines, located directly south of the 109N Heat Exchanger Building. They were used as blowdown lines from the 109N Heat Exchanger Building to the 1908-N Seal Well Outfall Structure.

Location: This site is the location of underground pipelines running between the 105/109-N Buildings to the 116-N-4 (1300-N), the 1304-N Emergency Dump Basin and Tank, the 107-N Filter Building to the 1908-N Outfall Structure. The pipelines exit the 105-N Reactor Building on the west side and extend to the west to their respective treatment/disposal facilities.

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include: 100-N-37, 100-N-29, 100-N-30, 100-N-61:1, 100-N-103:1 (french drain on east side of 1902N), 100-N-84:1, :2, :3, :4, :5, :6, :7, Sump #2 (part of 100-N-84:5). The 186N (slab) pipeline ends at 163N and 183N foundations. The foundations were left in place by the D4 project.

Process Description: The pipelines transported reactor cooling water to the 1300-N Emergency Dump Basin.

Closure Info: Interim (7/24/2013): The 100-N-61:1 group includes co-located sites 100-N-61:1, 100-N-64:1, 100-N-24, 100-N-29, 100-N-30, 100-N-37 and 100-N-53. Remediation of the 100-N-61:1 grouping of waste sites and the 100-N-53 waste site began in February 2011 and continued through April 2012.

The 100-N-24, 100-N-29, 100-N-30, and 100-N-37 waste sites were located within the remediation boundary and removed during the 100-N-61:1 pipeline remediation. The remaining basement of the 1902-N Building, the 186-N concrete pad, concrete, valves and piping associated with the 163-N sump #2 were located within the remediation boundary and were subsequently removed. A french drain (known as french drain #2) was originally part of the 100-N-103:1 subsite. However, because of its location, the drain was removed with the 100-N-61:1 pipeline remediation. Installation of a haul road was necessary to gain access to the structures. Therefore, the 100-N-53 site and segments of the 100-N-61:1 and 100-N-64:1 pipelines that were located within the roadway boundary were removed and disposed. Verification samples were collected and 100-N-53 was backfilled as part of the haul road installation.

Petroleum-stained soil was observed throughout the excavation, but was determined to be unrelated to the waste site group. Focused verification samples were collected within the stained areas and analyzed for TPH, PAH, and PCBs. Concentrations of TPH and PAH were present in the samples above direct exposure RAGs. The oil staining is considered part of the 100-N-106, Shallow Petroleum-Only Releases waste site and no additional remediation was performed.

Global Positioning Environmental Radiological Surveyor (GPERS) surveys were conducted within the 100-N-61:1 waste site grouping excavation boundary. Radiological measurements slightly above background were observed in the northern portion of the site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Soil, concrete, piping, and rebar were among the types of material removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Prior to the material being loaded out for shipment to ERDF, the material was staged in a combined staging pile area (SPA). Verification sampling of the SPA will be addressed with the 100-N-61:4 waste site closeout.

Excavation of the 100-N-61:1 group extended to an approximate maximum depth of 7 meters (23 ft) below ground surface. The 100-N-53 waste site was excavated to an approximate depth of 3 meters (9.8 ft) below ground surface. An estimated 70,000 bank cubic meters (91,557 bank cubic yards) of soil and debris was removed from the entire excavation. A portion of the soil removed from on top of the pipelines was stockpiled for use as clean backfill and is included in the total volume of material removed. Asbestos was detected in the soil at the SZ3-7 location, and hexavalent chromium was detected above a remedial action goal (RAG) at the SZ4-10 location. Therefore, additional remediation was conducted January 21 through February 5, 2013. Asbestos was detected in nonsoil debris (tar/tar paper) at four locations within the excavation. A visual inspection was conducted and the visible pieces of tar and/or tar paper were removed. The volume of additional material removed is included in the estimated volume.

The SubSite is Part Of:

Code: 100-N-64

Names: 100-N-64; 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

Code:	100-N-64:2	**Classification:**	Accepted
Names:	100-N-64:2; 109-N East side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines	**Reclassification**	Interim Closed Out (4/3/2013)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The 100-N-64:2 sub-site has been remediated and Interim Closed Out.

Location: The pipeline was located parallel to and directly east of the 105-N reactor and the 109-N Heat Exchanger Building. The geographical location of the 100-N-61:2 sub-site also coincides with the 100-N-62, 100-N 105-N, 109-N, 163-N, 182-N, 183-N and 184-N Underground Pipelines waste site, that lie underneath.

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include 100-N-62, 100-N-84:1, :2, :3, :4, :5, :6, 100-N-61:2 and 100-N-63:2.

Process Description: The Emergency Dump Basin (116-N-4/1300-N) and the Emergency Dump Tank (1304-N) were designed to receive "single-pass" reactor cooling water in the case of an emergency. Both systems were used to periodically receive steam blowdown. This steam condensate normally contained low levels of radionuclide contamination and fission products. Overflow and drain lines to the 1908-N Outfall Structure are also included in this waste site.

Closure Info: Interim (4/3/2013): Remediation of the 100-N-28 waste site was performed between January 25 and March 29, 2012. The site was excavated to a depth of 8.4 meters (27.6 ft) below ground surface (bgs) and resulted in the removal of 2,577 BCM (3,371 BCY) of soil and debris. The debris consisted of soil, rock, a concrete resin pit, piping, and wiring. No resin was present in the pit and it is assumed the site was only used for liquid disposal from the 109-N Building. Soil and debris were directly loaded from the 100-N-28 excavation and disposed at the Environmental Restoration Disposal Facility (ERDF).

Remedial actions for the 100-N-61:2, 100-N-62, and 100-N-64:2 sites were performed between April 13, 2011, and March 29, 2012. Excavation depths ranged from 3 meters (9.9 ft) to 8 meters (26.2 ft) bgs. Approximately 24,113 bank cubic meters of contaminated soil and debris associated with the three pipelines was removed from the waste sites and staged in the South Staging Pile Area 1 (SSP Area 1) to the south of the excavation prior to load out for disposal at ERDF. The debris consisted of rock, concrete, piping, and wiring. Verification sampling of the SSP Area 1 will be addressed in the 100-N-61:4 verification work instruction. In addition, overburden (OB) material was stockpiled in three OB piles southwest of the waste sites. The OB piles will also be addressed in the 100-N-61:4 verification work instruction.

Multiple TPH and PAH results collected at the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation exceeded soil RAGs. However, these results were concluded to be cross contamination from petroleum releases unrelated to the waste sites and will be addressed as part of the 100-N-106 (Shallow Petroleum-Only Releases at 100-N; SPOR Releases) waste site and were not used for evaluation in this RSVP.

A valve pit (OSE ID N-244) was discovered at Washington State plane coordinates N149350.37, E571230.54, with asbestos pipe wrapping. The valve pit was a 1 meter (3.3 ft) diameter manhole, with a valve and a 7.6 centimeter (3 in.) pipeline running east to west. Spatial analysis indicated that valve pit N-244 is associated with the 100-N-84:3, potable water line. The valve pit was completely removed and disposed with soil and debris from the 100-N-61:2, 100-N-62, and 100-N-64:2 excavation. No other anomalies were discovered during remediation.

The SubSite is Part Of:

Code: 100-N-64

Names: 100-N-64; 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

Code:	100-N-64:3	**Classification:**	Accepted
Names:	100-N-64:3; 109-N West side pipelines of the 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This sub-site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-64:3 consisted of pipelines ranging from 2 inches to 32 inches in diameter. The pipelines were used to transport vent, flush, blow-down, filtered, fire line, and demineralized water between the 109-N Building and the 1304-N Emergency Dump Tank, 1300-N Emergency Dump Basin, 107-N Basin Recirculation Facility and the 1303-N Radioactive Dummy Burial Facility/Spacer Silos. It also included utility lines contained in a concrete trench. The hot spot contamination in the northern portion of the 116-N-4 Emergency Dump Basin excavation was deferred to 100-N-64:3.

Location: The 100-N-64:3 pipelines were located west of the 109-N Heat Exchanger Building and 105-N Reactor Building.

Related Sites/ Structures: Co-located associated waste sites and ancillary facilities include: 116-N-4, 100-N-84:1, :2, :3, :4, :5, :6, 118-N-1, 100-N-31 100-N-32, 100-N-38, 100-N-61:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-3.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-

N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

The SubSite is Part Of:

Code: 100-N-64

Names: 100-N-64; 100-N Reactor 105/109-N Cooling Water Effluent Underground Pipelines

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Code:	100-N-65	**Classification:**	Accepted
Names:	100-N-65; Diesel Oil Interceptor Trench; UPR-100-N-17 Interceptor Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1966
Status:	Inactive	**End Date:**	

Description: The site is a trench that was excavated along the Columbia River bank to intercept diesel oil before it could reach the river. The trench was excavated as a result of an unplanned release of 303,000 liters (80,000 gallons) of diesel fuel that leaked from a pipeline within 166-N Tank Farm (See UPR-100-N-17). Several smaller unplanned releases also contributed to the need for the trench (See UPR-100-N-19 and UPR-100-N-20). Oil trapped in the trench was ignited and burned. A significant portion of the oil was thus removed before it could reach the river. In 1994, the trench was backfilled with material to the top of the adjacent berm.

Location: The trench was located on the riverbank, northeast of 166-N Tank Farm.

Related Sites/ Structures: The site was related to the 166-N Tank Farm, the Fuel Oil Unloading Trench, and the Fuel Oil Day Tanks (184-N Powerhouse).

Process Description: The trench was excavated along the Columbia River bank to intercept diesel oil before it could reach the river.

Waste Type: Oil

Waste Description: The waste was diesel oil from spills in the 100-N Area diesel oil storage facilities.

Code: 100-N-67 **Classification:** Accepted

Names: 100-N-67; HGP Dumping Area **Reclassification** Interim No Action (9/11/2000)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site has been evaluated and determined to require No Action. It is a pile of metal banding material, barbed wire, wire rope, concrete, and pipe. Some of the materials are partially buried.

Location: The site is located approximately 250 meters (820 feet) west of the Bonneville Power Administration (BPA) substation and Hanford Generating Plant facility fence. It is between the facility fence and the Columbia River. It is directly under the western BPA powerlines that cross the Columbia River.

Process Description: The waste appears to have been generated from the construction of the Bonneville Power Administration (BPA) powerlines.

Waste Type: Construction Debris

Waste Description: The site contains metal banding material, barbed wire, pipe, and concrete.

Closure Info: Interim: In September 2000, Waste Site Reclassification Form 2000-057 declared the metal and concrete debris was not hazardous and reclassified the site to No Action.

Code: 100-N-68 **Classification:** Accepted

Names: 100-N-68; N Basin Low Level Radioactive Water Spill **Reclassification** Interim Closed Out (9/6/2013)

Type: Unplanned Release **Start Date:** 1/7/1998

Status: Inactive **End Date:** 2/20/1998

Description: The site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

100-N-68 was a release of contaminated water onto the floor of the 105-N building that seeped under the roll up doors and onto the ground outside. The release area had been posted with

Contaminated Area signs. In 1998, the contamination was temporarily stabilized with a fixative, tarps and plywood. Later it was stabilized with asphalt.

Location: The site was located just outside the N Basin Transfer area, west of the 105-N Building.

Release Description: On January 7, 1998, at approximately 0810 hours, a Decontamination and Decommissioning (D&D) worker in the 105-N Basin discovered water spraying from a hose connected to the Final Transfer Filtration (FTF) system. The worker immediately shut off the FTF system and notified management.

The event investigation determined the intake hose to the FTF system had split sometime between 2:00-4:00 am, causing contaminated water from the basin to be released to the floor. The estimated amount of water released from the basin is approximately 1.36E+05 liters (36,000 gallons). The basin drains captured most of the water, however an estimated 7,600 liters (2,000 gallons) leaked under a set of roll-up doors and ran outside of the building. This water pooled on concrete and gravel surfaces, in an area 6 by 9 meters (20 by 30 feet). Two pedestrians had walked through the contaminated area and had 30,000 disintegrations/minute beta/gamma contamination on their boots. Three areas, totaling approximately 280 square meters (3,000 square feet), were found to be contaminated.

Approximately 0.42 total curies had been released. No reportable quantities were exceeded. The primary radionuclides in the water are tritium (approximately 0.26 curies), strontium-90 (approximately 0.06 curies), and cesium-137 (approximately 0.013 curies). The calculated amount of N Basin water released to the environment, was 7,380 liters (1,950 gallons), which was used in the calculations and is believed to be conservative. This is because no adjustments were made for water absorbed during cleanup activities, evaporation, or for residual water that would be in the piping between the N Basin floor drains and the Lift Station (where the bulk of the water was collected). The extent of contamination found outside the basin appeared to substantiate the calculated amount.

Process Description: The filtration system at the 100-N Fuel Storage Basin (FSB) experienced a leak through a split hose of about 36,000 gallons of radioactively contaminated water on the morning of January 7, 1998. Approximately 2,000 gallons flowed outside the FSB enclosure. The final transfer filtration system was used to reduce the turbidity of the FSB water while decontamination and decommissioning (D&D) workers recovered items from the basin. The FTF was used to remove particulates from the basin water to increase water clarity.

Waste Type: Water

Waste Description: Using current analytical data on the N Basin water, the total curies released in the spill/leak for all of the radionuclides was calculated to be 0.42 curies. No reportable quantities were exceeded.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were

removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	100-N-77	**Classification:**	Accepted
Names:	100-N-77; River Line from 1908-N Outfall; 100N River Effluent Pipeline	**Reclassification**	None
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This site consists of a 260 centimeter (102 inch) pipeline that exits the northwest face of the Outfall (1908-N) to the Columbia River.

Location: The river line is located in the Columbia River, adjacent to the 100N area. The line extends into the main channel of the river from the 1908-N Outfall.

The 100-N-77 river effluent pipeline originates from, and is perpendicular to, the face of the

1908-N outfall structure. The pipeline extends 118 meters (386 feet) from the outfall face before turning 30 degrees upstream, and continuing for another 148 meters (485 feet) to its discharge point in the Columbia River.

Release Description: On April 18, 1986, there was a 70-minute undocumented liquid unplanned release to the river of wastewater that was beyond the pH limits allowed by the NPDES permit. The pH of the 163-N demineralization plant wastewater was permitted between 6 and 9. For about 60 minutes it was released to the river at a pH below 6, and for an additional 10 minutes at a pH above 9. The total volume released was not known.

Related Sites/ Structures: The site is associated with the 1908-N outfall (1908-N), an emergency outfall flume (100-N-79) and the 1300-N Emergency Dump Basin 76-centimeter (30 inch) overflow line.

Process Description: The river effluent pipeline received more than 2 million cubic meters per day of single pass raw river water from the Circulating Raw Water (CRW) System, and discharged it to the river. The CRW supplied once-through untreated river water to 16 dump condensers and 7 surface condensers. The water was used to cool the secondary cooling water for the N Reactor from the 1908-N Seal well (1908-N Outfall) and discharged it to the Columbia River.

Waste Type: Process Effluent

Waste Description: The waste includes the pipeline and the potentially contaminated scale and sediment contained within it.

Code: 100-N-78

Classification: Accepted

Names: 100-N-78; 1716-NE Maintenance Garage; HGP SWMU #8

Reclassification Interim Closed Out (6/15/2004)

Type: Maintenance Shop

Start Date:

Status: Inactive

End Date:

Description: The site has been remediated and Interim Closed Out. The 1716-NE Maintenance Garage was used for vehicle maintenance. The garage had three vehicle bays, each containing a floor drain that led to the 100-N-3 Maintenance Garage French Drain (SWMU #9).

Location: The 1716-NE Maintenance Garage (SWMU #8) was located to the east of the former 185-N Building.

Related Sites/ Structures: The garage is associated with the 100-N-52 Gasoline Storage Tank (UST).

Process Description: The former HGP consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. The generators were located in the 185-N Building. The site was an ancillary or support facility to the former HGP.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling

Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Code:	100-N-80	**Classification:**	Accepted
Names:	100-N-80; River Line from 1908-NE Outfall	**Reclassification**	None
Type:	Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This site includes one, 335-centimeters (132 inches) (2 centimeter (0.75 inch) wall thickness) steel pipeline, extending from the face of the 1908-NE Outfall into the main channel of the Columbia River.

Location: The 1908-NE Outfall is located in the 100-N Area, approximately 61 meters (200 feet) downstream of the 181-NE River Pumphouse on the Columbia River at river mile 379.6. The 100-N-80 river effluent pipeline extends from, and is perpendicular to, the face of the 1908-NE outfall structure. The pipeline extends 313 meters (1,028 feet) from the outfall face to its

discharge point in the Columbia River.

Related Sites/ Structures: The site is associated with the 1908-NE Outfall and the 100-N-1 Settling Pond.

Process Description: The river effluent pipeline received single pass raw river water which had passed through the Hanford Generating Plant (HGP) condensers, as well as waste water from the 100-N-1 Settling Basin. The pipeline contains seven, 20 centimeter (8 inch) vents along its length, and discharges to the river via four, 3.4 meter (11 feet) outlets. The pipeline is buried along its entire length to a depth of at least 1.2 meters (4 feet) with soil, gravel, and riprap.

Waste Type: Process Effluent

Waste Description: The waste includes the pipeline and the potentially contaminated scale and sediment contained within it. The contaminants of concern include cobalt-60, cesium-137, and petroleum hydrocarbons (diesel and heavy oil range hydrocarbons).

Code: 100-N-81

Classification: Accepted

Names: 100-N-81; 100-N Kaiser Shops Garnet Sandblasting Material

Reclassification Interim Closed Out (5/7/2014)

Type: Dumping Area

Start Date:

Status: Inactive

End Date:

Description: The site was remediated and Interim Closed Out. It consisted of garnet sand and any underlying contaminated soil surrounding the former 1517-N Paint Shop. The garnet sand was purple and covered an area approximately 577 square meters (690 square yards).

Location: The waste site was located at the 1517-N Paint Shop in the Kaiser Shop Area. The Paint Shop was located about 300 meters (1,000 feet) east of the 105-N Reactor facility.

Related Sites/ Structures: The garnet sandblasting operations were likely in support of the 1517-N Fixed Metal Paint Shop mission.

Process Description: The 1517-N Paint Shop was constructed in 1982 (HW-5000, 4/30/1982). It was originally operated by the J.A. Jones Construction Services Company. Kaiser Engineering Hanford (KEH) assumed responsibility for the Paint Shop in 1987 (HW-5000, 6/16/1987). Respiratory protection equipment was stored in part of the building at some point during its operation (CCN 125281). The paint shop was used to store supplies for the craft services painters. Materials needed for various outside jobs are taken from the shop to the job site only in quantities equal to the amount needed for that job or day's work. Unused materials are returned to the shop at the end of each day (WHC-SP-0460).

Paint, solvents, and oils were used at the Paint Shop. There were two waste accumulation areas, one for waste paint and the other for waste oil (DOE/RL-90-22). There was also an associated sandblasting area. An air compressor located east of the paint shop leaked nonhazardous lubrication oil over the years; the surrounding soil is oil-stained. The extent of contamination is unknown. Six drums of contaminated soil were removed (DOE/RL-90-22).

The 1517-N building was demolished in January 2006. Prior to demolition, the extent of the discarded sandblasting grit (garnet sand) was mapped using a global positioning system (GPS). The mapped area in conjunction with a 2004 aerial photograph (04080084-57cn) was used to establish the waste site boundary. The garnet material was stockpiled into the northeast corner of the Kaiser Shop Area in order to prevent its spread during demolition activities (CCN 126707). This stockpiled material falls within the waste site boundary.

Waste Type: Soil

Waste Description: The waste is a red colored granular material. In 2005 a grab sample of the sandblasting waste material was analyzed for metals (J10VC5). The material contained chromium at a level (45.0 mg/kg) exceeding the soil cleanup level (18.5 mg/kg) for protection of groundwater and protection of the river. Contaminants of potential concern have not been established at this time.

Closure Info: Interim (5/7/2014): Remedial action at the 100-N-81 waste site was performed between October 22 and October 31, 2013. The excavation depth ranged from 1 to 2 meters (3.3 to 6.6 ft) bgs resulting in approximately 1,200 bank cubic meters (1,570 bank cubic yards) of soil and debris (garnet sand, concrete, wood, and steel chain-link fencing) removed for disposal at the Environmental Restoration Disposal Facility (ERDF). All material was direct loaded from the excavation into trucks for disposal at the ERDF. Therefore, no waste staging pile area was created and no overburden soil pile associated with the waste site. A boundary survey was conducted following remedial action activities. A glass anomaly was encountered approximately 30 meters (98 ft) north of the 100-N-81 site boundary.

Code: 100-N-82 **Classification:** Accepted

Names: 100-N-82; 100-N Decontamination Pad **Reclassification** Interim Closed Out (9/9/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It included the decontamination pad and any underlying soil contamination was found. The decontamination pad had a reinforced (rebar) concrete slab with a center drainage trench and sump. The slab sloped toward the center concrete drainage trench where the water was trapped in the sump. A HDPE liner cover had been installed on top of the decontamination pad to prevent rainwater from entering the trench and sump area (CCN-107899). It was posted with radiological warning signs.

Location: The decontamination pad was located approximately 245 meters (804 ft) northeast of the 1120-N Building.

Related Sites/ Structures: The site was related to 1301-N (Sitecode 116-N-1) and 1325-N (Sitecode 116-N-3) cribs and trenches.

Process Description: The decontamination pad was constructed in 2000. It was constructed to support 100-N vehicles and equipment performing remediation work associated with sites 116-N-1 (1301 Crib/Trench) and 116-N-3 Crib/Trench. When a vehicle drove onto the pad, a self-contained steam cleaner, water tank, and pump with suction and discharge hoses was used to decontaminate the vehicle. Runoff water would enter the trench and sump, and, as needed, wash water would be pumped to a tank truck for removal. The pad was covered with a liner upon demobilization to prevent rainwater from entering the trench and sump (CCN-107899).

Waste Type: Equipment

Waste Description: The waste is a contaminated concrete pad. Contaminants of potential concern (COPCs) include Co-60, Cs-134, Cs-137, Pu-238, Pu-239, H-3 and Ru-106.

Closure Info: Interim (9/9/2014): Remediation of the 100-N-82, 100-N Decontamination Pad was performed between March 19 and March 24, 2014. Approximately 194 bank cubic meters (254 bank cubic yards) of excavated materials were removed and direct loaded for disposal at the Environmental Restoration Disposal Facility. The depth of the excavation was approximately 1.5 meters (4.9 ft). Excavated materials included plastic tarp, concrete, railroad ties, steel, rebar, soil, and other miscellaneous debris. The sump located near the center of the decontamination pad was also removed. No soil staining or anomalies were observed during and after the excavation. No

overburden materials were salvaged from the 100-N-82 waste site excavation. There was no overburden pile associated with the 100-N-82 waste site. A 100-N-82 waste site walk around boundary was used to determine the footprint for the 100-N-82 waste site and develop the verification sampling design.

A Global Positioning Environmental Radiological Surveyor (GPERS) survey was conducted within the 100-N-82 waste site open excavation. No radiological contamination was detected above background.

Code: 100-N-83 **Classification:** Accepted

Names: 100-N-83; Two Contamination Areas Found Near 116-N-1 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of two radiologically contaminated areas identified during remediation of 116-N-1 Crib and Trench. The first area is located where an uncontaminated soil stockpile was previously removed. The second area is relatively undisturbed located near and around the eastern end of the former 116-N-1 Trench.

Location: The two areas are located along the northeast excavation boundary of the 116-N-1 Crib and Trench. They are bound to the north and east by the security fence shown on drawing 0100N-DD-C0190.

Waste Type: Soil

Waste Description: The waste is radiologically contaminated soils. The contaminants of potential concern are radiological contaminants.

Code: 100-N-84 **Classification:** Accepted

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines **Reclassification** Interim Closed Out (10/1/2014)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: The parent site is also considered Interim Closed Out. The waste site consisted of all miscellaneous pipelines in the 100-N Area that were identified during the WCH Orphan Site Evaluation (OSE) process that were not associated with an existing waste site. The miscellaneous pipelines supported the reactor operation and related support facilities throughout the N-Area. The waste site had been divided into ten subsites to allow a phased remediation strategy. 100-N-84 includes product pipelines, service water pipelines, sewers and associated features (manholes, storm drains, valve boxes, etc.).

The waste site has nine subsites: 100-N-84:1, 100-N Area Raw Water Pipelines; 100-N-84:2, 100-N Area Fuel and Foam Pipelines; 100-N-84:3, 100-N Area Filtered and Potable Water Pipelines; 100-N-84:4, 100-N Area Steam and Condensate Pipeline; 100-N-84:5, 100-N Area Sanitary Pipelines; 100-N-84:6. 100-N Area Chemical and Process Sewer Pipelines; 100-N-84:7, 100-N Area Unidentified and Other Miscellaneous Pipelines; 100-N-84:8, 100-N Area Unidentified Pipelines within Planned Excavations. The tenth subsite, 100-N-84:9, 100-N Area Active Raw Water Pipelines and 100-N-84:10, Miscellaneous Pipelines within the Bioventing Well Island was consolidated with 100-N-107.

Location: The pipeline segments are located within the 100-N Area.

Process Description: Specific process descriptions are contained in the subsite descriptions.

This Site has the Following SubSites:

Code: 100-N-84:1
Names: 100-N-84:1; 100-N Area Raw Water Pipelines

Code: 100-N-84:2
Names: 100-N-84:2; 100-N Area Fuel and Foam Pipelines

Code: 100-N-84:3
Names: 100-N-84:3; 100-N Area Filter and Potable Water Pipelines

Code: 100-N-84:4
Names: 100-N-84:4; 100-N Area Steam and Condensate Pipelines

Code: 100-N-84:5
Names: 100-N-84:5; 100-N Area Sanitary Pipelines

Code: 100-N-84:6
Names: 100-N-84:6; 100-N Area Chemical and Process Sewer Pipelines

Code: 100-N-84:7
Names: 100-N-84:7; 100-N Area Unidentified and Other Miscellaneous Pipelines

Code: 100-N-84:8
Names: 100-N-84:8; 100-N Area Unidentified Pipelines within Planned Excavations

Code: 100-N-84:9
Names: 100-N-84:9; 100-N Area Active Raw Water Pipelines

Code: 100-N-84:10
Names: 100-N-84:10; Miscellaneous Pipelines within the Bioventing Well Island

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Code:	100-N-84:1	**Classification:**	Accepted
Names:	100-N-84:1; 100-N Area Raw Water Pipelines	**Reclassification**	Interim No Action (12/3/2012)
Type:	Product Piping	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The subsite has been evaluated and determined to require No Action. It consists of the inactive 100-N Area raw water pipelines including: low pressure water, raw water, raw water return, raw water supply, raw water supply high and low pressure, emergency The lines are raw water supply, sprinkler, vent, fire line, irrigation, fog, and fish line pipelines. They located in various throughout the 100-N Area.

The 100-N Area raw water system was built in 1963 with additional portions added as new support buildings were constructed. Raw water was pumped from the Columbia River at the 181-N Pump House to the 185-N Hanford Generating Plant, the 109-N Heat Exchanger Building, the 182-N High-Lift Pump House, and the 184-N Power House. These large delivery pipelines are not part of the 100-N-84 waste site. The subsite includes pipelines between the 105-N Reactor Building and it's supporting facilities.

The pipelines exiting the 182-N Building transferred raw water to the 105-N, 109-N, 163-N and 183-N Buildings. At the 182-N Building, raw water was passed through screens before it was

stored in 18.6 meter (61 ft) deep, independent pump suction wells for future distribution. Raw water supplied to the 109-N Heat Exchange Buildings supported the dump-condensers, graphite cooling heat exchangers and turbine surface-condensers. Additionally, raw water was supplied to the 182-N Building emergency raw water tank and various heat exchangers, along with the 100-N Area irrigation and fire systems. The fire system pipelines originating at the 182-N supported the 185-N Hanford Generating Plant and substation located outside of the 100-N Fenced area. Raw water from the 109-N and 184-N buildings could also be returned to the Columbia river through the Sealwell.

The pipelines located between the 109-N, 182-N, 163-N and the 183-N Buildings lay within the 100-N-61 water treatment pipeline removal excavation footprint (H-1-89933). This area was excavated and backfilled in 2008 through 2009. Raw water lines collocated with 105-N Reactor Treatment Storage and Disposal Underground Pipelines along the east side of the 109-N and 105-N Buildings lay within the 100-N-63 excavation footprint (H-1-89933). This area was excavated and backfilled in 2009.

Location: The large majority of the pipelines being located in and around the 182-N High-Lift Pump House, 163 Demineralization Plan, 183-N Water Filter Plant, 184-N Power House, the 185-N Hanford Generating Plant, 109-N Heat Exchanger Building and many office buildings and trailers located to the south and south east of the 105-N Reactor Building. One additional 12-inch raw water line, used for temporary construction, is located in the northeastern portion of the 100-N area and connects to the export water pipeline.

Closure Info: Interim (12/3/2012): Confirmatory samples were collected from test pits at nine locations on the 100-N-84:1 subsite between March 8 and July 19, 2012 to support an evaluation to determine if residual contaminant concentrations in the soil meet cleanup criteria. The 100-N-84:9 pipelines are still active while the 100-N-84:1 pipelines have been taken out of service and/or removed. Both subsite pipelines carried the same type of raw water. Therefore the confirmatory sampling conducted at the inactive 100-N-84:1 has been used to evaluate and support the 100-N-84:9 reclassification.

The SubSite is Part Of:

Code: 100-N-84
Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:2 **Classification:** Accepted

Names: 100-N-84:2; 100-N Area Fuel and Foam Pipelines **Reclassification** Interim Closed Out (8/13/2014)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: The subsite has been remediated and Interim Closed Out. It included the fuel oil and fire suppression foam, underground pipelines located on the northwest and west side of the 105-N Reactor Building. In addition to the pipelines, the subsite also included a fuel oil unloading facility that was used to unload both fuel oil (No. 6 fuel oil also known as Bunker C) and diesel oil (No. 2 fuel oil).

The fire suppression foam lines that supported the diesel oil tanks and pipelines were co-located with the diesel oil pipelines near the 166-N Building. The northwest portions of the 100-N-84:2 pipelines were located within the 100-N-63 excavation footprint (H-1-89933).

Location: Fuel and fire suppression foam underground pipelines were located in the 100-N Area, on the northwest and west side of the 105-N Reactor Building.

Related Sites/ Structures: UPR-100-N-17, UPR-100-N-18, UPR-100-N-19, UPR-100-N-20, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, UPR-100-N-36, UPR-100-N-42, and UPR-100-N-43.

Process Description: Diesel oil was used to fire the igniters in the boilers and to fuel the diesel-driven emergency low-lift, high-lift, and fog spray pumps. Bunker C was used as fuel for the 184-N boilers. Bunker C fuel oil was stored in a 5,204,925 liters (1,375,000-gal) capacity above-ground storage tank and transferred through underground lines to the two 184-N fuel oil day tanks. Two fuel oil unloading, storage and transfer systems were used in the 100-N Area. Diesel oil unloaded from rail cars at the 166-N unloading station was transferred for storage to the one of four aboveground storage tanks within the 1715-N Building. The diesel oil was then transferred through a 10.2 cm (4-in) underground supply pipeline to the 184-N Building day tank or through 5.1 cm (2-in) and 10.2 cm (4-in) underground pipelines to the three 56,781 liters (15,000 gal) day tanks outside of the 182-N building. The diesel fuel from the 182-N day tanks was used to support the 182-N and 181-N diesel oil systems. Number 6 fuel oil (also known as Bunker C fuel oil) was unloaded from rail cars at the 1900-N unloading station and transferred to the 166-N Building for storage in a 5,204,941 liters (1,375,000 gal) capacity aboveground storage tank. The No. 6 fuel oil was transferred through underground pipelines from 166-N to two 184-N fuel oil day tanks.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (8/13/2014): Demolition of the 166-N facilities included removal of the fuel oil (Bunker C) tank in January 2006 and removal of the 166-N Pump House and the 166-N Unloading Station in April 2006. The four 1715-N diesel tanks were removed during prior demolition work approximately 10 years earlier, leaving the tank foundations to be removed during the 2006 demolition. The contaminated soil associated with the 166-N facilities to the Field Remediation (FR) Closure Project for remediation.

The D4 Closure Project removed many of the 100-N-84:2 pipelines during facility demolition work that began in 2006 and continued through 2012. In some instances, the pipelines were removed at locations where they entered buildings and tanks. Field remediation of co-located waste sites removed portions of some pipelines during waste site excavation. Prior to removal, the pipelines were drained and the oil collected for waste disposition. It is estimated that over the past 7 years, approximately 3,030 L (800 gal) each of diesel and Bunker C had been drained from the pipelines.

Remediation of the 100-N-84:2 subsite began April 6, 2013, and was completed in March 21, 2014. The depth of the excavation after removal of the pipelines varied based upon the amount of excavation necessary to remove soil staining and petroleum contamination. In general, the pipeline excavations did not extend deeper than 4.9 meters (16 ft) below surface grade. Approximately 41,710 bank cubic meters (54,555 bank cubic yards) of petroleum-contaminated soil was removed for disposal at the Environmental Restoration Disposal Facility (ERDF).

No petroleum contamination or evidence of any release of petroleum was observed in soil associated with the 100-N-84:2 pipelines that ran from the fuel unloading station to the 181-N and 182-N facilities. In agreement with the Washington State Department of Ecology and the U.S. Department of Energy, the excavation associated with the pipelines in this area could be backfilled and no verification sampling was needed.

Significant petroleum-stained soil was present below 4.6 meters (15 ft) depth at the location where the 100-N-84:2 Bunker C and diesel pipelines entered the 166-N pump house and the Bunker C storage tank. A test pit was excavated and sampled on November 20, 2013, to a depth of approximately 9.4 meters (31 ft) bgs, at the location of the worst staining, to evaluate the

vertical extent of petroleum contamination and support decisions concerning the need for additional remediation. Heavily stained petroleum-contaminated soil was noted in the material that was excavated from this test pit and the contamination continued to be present at the base of the test pit (9.4 meters [31 ft] bgs). This petroleum contamination is suspected to be mostly Bunker C and may include weathered, aged diesel. This information was used to support assignment of this portion of the 100-N-84:2 subsite, located below 4.6 meters (15 ft), to the UPR-100-N-17 waste site for in situ bioremediation. The soil contamination in Test Pit #4 was located near the UPR-100-N-17 bioventing wells and was within the air injection radius of influence for the bioremediation system.

The waste site was divided into three sample Areas. Test Pits 1, 2 and 3 were excavated within Area 2, where the highest concentrations and staining of petroleum was observed at the base of the excavation. Test Pit 4 was excavated in Area 3, where heavily stained petroleum-contaminated soil was observed on the floor of the excavation.

Petroleum contamination was not detected above cleanup criteria in soil samples below a depth of approximately 6.7 meters (22 ft) in Test Pits 1, 2, and 3. The petroleum had not migrated deeper than 6.7 meters (22 ft) below ground surface at test pits 1, 2, and 3, indicating that petroleum was not present in groundwater at these test pit locations. However, the petroleum contamination remained present with depth in soil samples collected from Test Pit 4.

The SubSite is Part Of:

Code: 100-N-84

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:3 **Classification:** Accepted

Names: 100-N-84:3; 100-N Area Filter and Potable Water Pipelines **Reclassification** Interim No Action (11/5/2012)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: The 100-N-84:3 subsite has been evaluated and determined to require No Action. The 100-N Area filter and potable water pipelines include makeup water, filter water, demineralized water, and potable water pipelines.

Location: Filtered water lines are located to the north and south of the 105-N reactor Building. The potable water lines are located mainly to the southwest of the 105 reactor building connecting to the 105-N support facilities.

Process Description: Raw water was supplied to 183-N Filter Plant Building for pretreatment and filtration. The 183-N filter plant supplied sanitary water to the entire 100-N Area. The plant also supplied filtered water to various buildings throughout the 100 N Area for use where treated water was not desirable or required. During treatment, liquid alum (aluminum sulfate), Separan (polyacrylamide coagulant), and liquid chlorine were added. Chlorine was added for the control of slime and algae and may have been used to assist in coagulation, odor, and iron removal problems.

During treatment, liquid alum (aluminum sulfate), Separan (polyacrylamide coagulant), and liquid chlorine were added. Chlorine was added for the control of slime and algae and may have been used to assist in coagulation, odor, and iron removal problems. The alum used at 183-N contained trace amounts of naturally occurring radium-226, radium-228, and thorium-228, which may have resulted in formation of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). Previously, to determine if TENORM was present, a number

of samples downstream of the 183-N chemical mixing tank were collected and subsequently evaluated in the document Post Demolition Summary Report for the 163-N Water Demineralization Plant, 183-N Water Treatment Plant, 183-NA Pump House, 183-NB Clearwell, and the 183-NC Filter Backwash Sump. The evaluation of those samples found no detectable amounts of radioactive contamination.

Demineralized water from 163-N Building was used as makeup water feed for the pretreatment system in 183-N building, while raw water was used for chemical mixing in the 182-N and 183-N Buildings prior to being added to the water. The chemical feed systems were maintained using proportional ratios with the water flow. Demineralized water was used to prevent mineral deposits what would foul pipeline systems. Chlorine was added for the control of slime and algae, and may have been used to assist in coagulation, odor and iron removal problems. Alum was used as the principle coagulant during pretreatment. 100-N-84:3 pipelines located between the 109-N, 182-N, 163-N and the 183-N Buildings lay within the 100-N-61 water treatment pipeline removal excavation footprint (H-1-89932). This area was excavated and backfilled in 2008 through 2009. The north west portions of the 100-N-84:3 pipelines are located within the 100-N-63 excavation footprint (H-1-89933).

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (11/5/2012): The 100-N-84:3 pipelines located between the 109-N, 163-N, 181-N, 182-N, 183-N, and 184-N Buildings are co-located with 100-N-61 (100-N Water Treatment and Storage Facilities Underground Pipelines), the 100-N-62 (100-N, 105-N, 109-N, 183-N, and 184-N underground pipelines) and 100-N-63 (100-N Reactor Treatment Storage and Disposal Underground Pipelines). The portions of the 100-N-84:3 pipelines that lay within the 100-N-61 and 100-N-63 excavation footprint will be removed during the excavation of these sites and were not identified for confirmatory sampling during the 100-N-84:3 activities.

Eleven Test Pits were dug. Confirmatory samples were collected from Test Pits 3, 6, 8, and 10. No indications of previous spills or releases associated with the 100-N-84:3 pipelines were detected during confirmatory sampling. The 100-N-84:3 data set indicates elevated polycyclic aromatic hydrocarbons (PAH) in samples from two of the collection areas. The ground surface in much of the 100-N Area was covered with asphalt. Remnants of asphalt are visible on the surface and in excavations in various areas and are thought to be responsible for the PAH results. Also, many of the pipelines are covered in an asphalt mastic coating. Mechanical methods recently employed to access sample materials may also have resulted in small particles of asphalt becoming incorporated in the samples.

The SubSite is Part Of:

Code: 100-N-84
Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:4
Classification: Accepted
Names: 100-N-84:4; 100-N Area Steam and Condensate Pipelines
Reclassification Interim Closed Out (9/9/2014)
Type: Radioactive Process Sewer
Start Date:
Status: Inactive
End Date:

Description: The subsite has been remediated and Interim Closed Out. It included the 100-N Area steam, condensate, injection and vacuum pump water pipelines located near the reactor building and support facilities. 100-N-103:1 French Drains 9, 10 and 11 were deferred to 100-N-84:4

because they were within the planned pipeline remediation footprint or were removed during previous demolition and removal of the 105-N control room structure. The French drain #9 structure was removed during demolition of the 105-N Control Room structure.

Location: The steam and condensate pipelines are concentrated around the 105-N Reactor building to support facilities and the 185-N Hanford Generating Plant.

Related Sites/ Structures: Some of the 100-N-84:4 pipelines are associated with 100-N-61:4.

Process Description: The 100-N Reactor excess steam was used to generate electricity from 1966 to January 7, 1987. Condensate from the dump condensers was routed back to steam generators for regeneration. The main steam system was designed to distribute steam generated from generators on the roof of the 109-N Building as high, medium and low pressure steam. High pressures steam was exported through a 71 cm (28-in) pipeline to the 184-N Building to support the turbine generator and miscellaneous services. Medium pressure steam was distributed from 109-N for area heating (105-N, 182-N, 163-N, 183-N, 108-N, 1704-N, 1716-N, and 1734-N) and additional miscellaneous services. Low pressure steam was exported to the 184-N and 153-N Buildings for unit heaters and convectors. Stand-by boilers located 184-N were maintained independent of reactor operation supplying steam to the 184-N day tanks, the 166-N fuel unloading facilities and for the 109-N emergency seal water turbines. Once the steam had been utilized in each building condensate return pipelines exported the 184-N Building condenser receiver where it is re-circulated de-aerating heater for reuse. 109-N Building was equipped with a condensate diversion station controlling the levels in the de-aerated water storage tank.

A 10" condensate emergency drain could be used to release condensate from 109N to the 0.17 meters (66-in) raw water pipelines downstream of the Sealwell.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (9/9/2014): Confirmatory sampling was conducted in June and July 2011. No elevated radionuclides or industrial hygiene readings were detected at any of the eight test pits. Therefore, volatile organic analysis, gamma energy analysis, and gross alpha and gross beta analyses were not performed for any of the confirmatory samples.

Three french drains (formerly part of the 100-N-103:1) were added to the 100-N-84:4 subsite because they were within the planned layback of the 100-N-84:4 pipeline remediation. French drain 9 was removed during demolition activities performed in 2009. French drains 10 and 11 were removed and disposed with the remediation of the 100-N-84:4 pipeline subsite. Several segments of the 100-N-84:4 pipeline subsite were removed with previous waste site remediations. These segments were evaluated in the RSVP-2011-118 document.

The remediation of the 100-N-84:4 subsite was performed from December 2, 2013, through February 24, 2014. The depth of the remediation ranged from approximately 1.5 to 5 meters (4.9 to 16.4 ft) below ground surface, resulting in approximately 4,100 bank cubic meters (5,363 bank cubic yards) of soil and pipeline debris being removed for disposal at the Environmental Restoration Disposal Facility (ERDF). All waste material was loaded directly from the excavation into ERDF containers for disposal. No waste staging pile or overburden areas were created for the 100-N-84:4 subsite. Several in-process soil samples were collected from the 100-N-84:4 pipeline subsite during and at the completion of site remediation.

The SubSite is Part Of:

Code: 100-N-84
Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code:	100-N-84:5	**Classification:**	Accepted
Names:	100-N-84:5; 100-N Area Sanitary Pipelines	**Reclassification**	Interim Closed Out (9/9/2014)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The subsite has been remediated and Interim Closed Out. It included the 100-N Area sanitary pipelines that includes sanitary water, sewer, storm drains, and drain field pipelines. These pipelines included a variety of diameters of pipe ranging from 0.75 in. to 20 in. and were composed of cast iron, concrete, vitrified clay, or steel.

Location: The 100-N-84:5 pipelines are located throughout the 100-N Area's 100-NR-1 operable unit.

Process Description: The 100-N Area was serviced by ten separate sewer systems consisting of one cesspool, one lagoon, one septic tank with an associated tile field, two septic tanks with seepage pits, and five septic tanks associated with drain fields. The septic tanks, pits, cesspools and lagoon are identified as the 124-N-1 through 124-N-10 waste sites. Waste sites 124-N-5, 124-N-6, 124-N-7, 124-N-8 have been reclassified as "rejected". The feed and drainage pipelines associated with these waste sites are included in 100-N-84:5.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (9/9/2014): Portions of the 100-N-84:5 subsite were removed by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project in support of the demolition and removal of the 100-N river structures. Installation of a haul road was necessary to gain access to the structures. Therefore, segments of the 100-N-84:5 pipelines that were located within the roadway boundary were removed and disposed. The segments of pipeline associated with the Bonneville Power Administration (BPA) substation are active and expected to remain active for many years. These segments of pipeline were removed from the 100-N-84:5 subsite description. They will be dispositioned with the BPA substation at a future time.

The Field Remediation Closure Project continued the remediation of the 100-N-84:5 subsite from July 8, 2013, through February 28, 2014. The depth of the remediation ranged from approximately 1.5 to 4 meters (4.9 to 13 ft) below ground surface. Approximately 13,534 bank cubic meters (17,702 bank cubic yards) of soil and pipeline debris being removed for disposal at the Environmental Restoration Disposal Facility (ERDF). Some waste material was staged prior for loadout and disposal. A waste staging pile area (SPA) was generated. No overburden material was stockpiled for use as clean backfill. Two segments of the 100-N-84:8 subsite (segments 8 and 12) were located within the 100-N-84:5 subsite excavation. Both segments were removed and disposed at ERDF. Two pneumatic cylinders were found during the waste site remediation. These items were not considered anomalies and were disposed at ERDF. No anomalous material or stained soil was observed during the remediation.

Several segments of the 100-N-84:5 pipelines were approved to be left in place. These pipeline segments were not remediated and subsequently were not included in the verification sample design. Several in-process soil samples were collected from the 100-N-84:5 pipeline subsite during and at the completion of site remediation.

The SubSite is Part Of:

Code: 100-N-84
Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code:	100-N-84:6	**Classification:**	Accepted
Names:	100-N-84:6; 100-N Area Chemical and Process Sewer Pipelines	**Reclassification**	Interim Closed Out (10/1/2014)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The subsite has been remediated and Interim Closed Out. It included the 100-N Area Chemical and Process Sewer Pipelines. The lines carried chemical waste, a dummy disposal line and a radioactive drain line. The 100-N-103:1 French Drain 1 is also addressed with the pipelines in 100-N-84:6. The pipelines associated with the 100-N-23 resin pit are part of the 100-N-84:6 subsite.

Location: The 100-N-84:6 waste site pipelines were centrally located between the 100-N Area process buildings (105-N, 109-N, 182-N, 183-N, 184-N, and 163-N).

Related Sites/ Structures: Only one pipeline was visually observed at 100-N-23 during site walkdowns done in 2011. Some of the 100-N-84:6 pipelines are associated with 100-N-61:4.

Process Description: The 100-N-84:6 pipelines originate from the 109-N Heat Exchanger Building, the 105-N Reactor Building, the 163-N Demineralization Plant, 182-N High-Lift Pump House, 183-N Filter Plant, and 184-N Power House. Various chemicals were utilized in these buildings. Phosphoric, ascorbic and citric acids, and potassium permanganate were used in the 109-N and 105-N Buildings decontamination processes (WHC-SP-0460). Ammonium hydroxide, morpholine and lithium hydroxide were added to control cooling water pH. Hydrazine was added to reduce oxygen concentrations in cooling water (WHC-SP-0460). The addition of these chemicals and the core's cooling water system design allowed the water to recycled instead of using raw water as a once through coolant (DOE/RL-90-22).

Sulfuric acid and sodium hydroxide from supply tanks in 163-N Building were primarily consumed in the demineralizer plant. A 93% sulfuric acid solution was used to regenerate the cation resin used at the 163-N Building while a 50% sodium hydroxide solution was use to regenerate the anion resin. The 8-inch acid drain from 163-N connected into the 100-N river channel discharge line to the Columbia River. Sodium sulfite was used as a deoxygenizing chemical for low pressure filter water (182-N). Sodium dichromate was added to filtered water supply and raw water supply for cooling coils in the 105-N Reactor Building.

Radioactive drains at 109-N collect from the coolant systems, hot water quality laboratory, service bay hot shop. The 105-N and 109-N drains run to the 1301-N Liquid Waste Disposal Crib. 100-N-84:6 pipelines located between the 109-N, 182-N, 163-N and the 183-N Buildings lay within the 100-N-61 water treatment pipeline removal excavation footprint (H-1-89932). This area was excavated and backfilled in 2008 through 2009. A small portion of the 100-N-84:6 pipelines also lay within the adjacent 100-N-64 planned excavation (H-1-89934).

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (10/1/2014): Portions of the 100-N-84:6 subsite were removed by the Deactivation, Decontamination, Decommissioning, and Demolition Project (D4) in support of the removal of the 100-N river structures. Installation of a haul road was necessary to gain access to the structures. Segments of the 100-N-84:6 pipeline that were located within the roadway boundary

were removed and disposed. A verification soil sample (J1J4H9) and a duplicate sample (J1J4J0) were collected per an approved sampling agreement with the Washington State Department of Ecology (Ecology) and the excavation was backfilled. Several segments of the 100-N-84:6 pipeline subsite were removed with previous waste site remediations. Two segments of the 100-N-84:6 pipelines were approved to be left in place per an agreement with Ecology. Segment 16 of the 100-N-84:8 pipeline subsite was removed and disposed with the 100-N-84:6 remediation.

French drain 1 (formerly part of the 100-N-103:1), was removed during the demolition of the 108-N Building. The french drain was added to the 100-N-84:6 pipeline subsite because it was within the planned excavation footprint of the 100-N-84:6 pipeline remediation.

Remediation of the 100-N-84:6 subsite continued from April 10, 2013 through March 4, 2014. The depth of the remediation ranged from approximately 1.0 to 2.0 meters (3.3 to 6.7 ft) below ground surface, resulting in approximately 3,447 bank cubic meters (4,509 bank cubic yards) of soil and pipeline debris being removed for disposal at the Environmental Restoration Disposal Facility (ERDF). The pipeline debris includes steel pipe, concrete, rebar, wood, Gilsulate bedding material, asphalt, wire, and asbestos. Figure 4 shows the 100-N-84:6 pipeline remediation where it intersects with the UPR-100-N-31 waste site. There were no overburden soil stockpiles or waste staging pile areas associated with the 100-N-84:6 subsite.

Two empty, smashed, and rusted drums and a section of irrigation pipeline covered in friable asbestos insulation were encountered during the remediation. These items were not considered anomalies and were disposed of at ERDF. No anomalous material or stained soil was observed during the remediation.

The SubSite is Part Of:

Code: 100-N-84

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:7

Classification: Accepted

Names: 100-N-84:7; 100-N Area Unidentified and Other Miscellaneous Pipelines

Reclassification Interim No Action (5/16/2012)

Type: Radioactive Process Sewer

Start Date:

Status: Inactive

End Date:

Description: This subsite has been evaluated and reclassified to No Action. The 100-N-84:7 waste site pipelines include sections of various diameter pipelines located within the 100-NR-1 operable unit in and around the 105-N Reactor Building. These sections described as unidentified or multitube could not be positively identified based on review of historical documentation. The pipelines described as multitube are lateral airlines that extend from the 184-N Building to pressure reducing stations. They supplied dry, oil-free, compressed air to the control and instrumentation systems for the water pretreatment plant and the demineralization plant as part of the instrument control air system.

An above ground feature, labeled N-213, was observed during the 100-N Orphan Site Evaluation (OSR-2009-0001). Since it was co-located with the 100-N-84 pipelines, it was decided to incorporate this feature into this subsite.

Location: The 100-N-84:7 pipelines are located throughout the 100-N Area's 100-NR-1 operable in and around the 105-N Reactor Building.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (5/16/2012): Confirmatory sampling was performed in fifteen test pits, between June 27 and July 2, 2011. Suspect asbestos material was found in Test Pit 3. Diesel fumes were noted in Test Pit 5. No samples were collected from Test Pits 2, 4, 6, 7, 8, 10, 11, 12, 13, 14 or 15.

Subsequent to the sample design preparation, additional information regarding the process history of the multitubes that make up a portion of the 100-N-84:7 subsite test pits was obtained. The multitubes are part of an instrument CAS designed to supply dry, oil-free compressed air to the control and instrumentation systems for the water pretreatment plant and the demineralization plant. Therefore, the multitube test pit locations were removed from the confirmatory sampling activities because they were not considered dangerous or hazardous waste. These test pits included 6, 11, 12, 13, and 15.

The 100-N-84:7 pipelines are located throughout the 100-N Area. Due to changing conditions from ongoing other remediation and facilities demolition activities, some pipeline segments were identified to be removed from this scope and combined with other waste sites scheduled for remove, treat, and dispose (RTD) actions. Therefore, test pits include 4, 7, 8, and 14 were excluded.

The pipeline segment at Test Pit 7 was inaccessible for confirmatory sampling due to field activities, and was subsequently removed with the 117-N building.

The pipeline segments at Test Pit 4 and Test Pit 8 will be removed with the remediation of the 100-N-84:5 pipeline waste site.

The pipe at the Test Pit 5 location was uncovered at a depth of approximately 1.2 meters (4 ft). Diesel fumes were noted when the pipe was cut. However, there was nothing inside the pipe to sample. A soil sample (J1JDF9) was collected at a depth of approximately 1.5 meters (5 ft) and analyzed for ICP metals, mercury, hexavalent chromium, SVOCs, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons (TPHs), PCBs, pesticides, volatile organic compounds, gross alpha, gross beta, and by gamma energy analysis. The sample results exceeded direct exposure soil cleanup levels for benzo(a)pyrene. In addition, the groundwater and river protection RAGs were exceeded for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene. The pipe within Test Pit 5 is in the vicinity of the 100-N-84:2 pipeline subsite, which is scheduled for RTD. The pipeline segment from Test Pit 5 will be removed and documented with the 100-N-84:2 pipeline. The Test Pit 14 location will also be included with the 100-N-84:2 pipeline waste site.

The analytical results indicate that the residual concentrations of contaminants considered at the test pits meet the RAOs for direct exposure, groundwater protection, and river protection. In accordance with this evaluation, the confirmatory sampling results support a reclassification of the 100-N-84:7 subsite to No Action.

The SubSite is Part Of:

Code: 100-N-84
Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:8
Classification: Accepted
Names: 100-N-84:8; 100-N Area Unidentified Pipelines within Planned Excavations
Reclassification Interim No Action (4/2/2014)
Type: Radioactive Process Sewer
Start Date:

Status: Inactive **End Date:**

Description: The 100-N-84:8 waste site has been evaluated and determined to require No Action. It includes seventeen sections of various diameter pipelines located within the 100-NR-1 operable unit in and around the 105-N Reactor Building. These pipe sections are described as unidentified or multi-tube could not be positively identified based on review of historical documentation. Most are believed to be less than 4 meters (13 ft) long or are within the planned remedial action excavation area which will result in removal of the pipeline section. Pipe Segments that were removed with other waste site excavations include segments 1,2,3,4,5,8,12,14,15,16 and 17. Pipe Segments 6,7, 9, 10, 11 and 13 were left in place with No Action required.

Two of the pipeline sections included in the 100-N-84:8 waste site are longer than 4 meters (13 ft). However these pipeline sections lay completely within the planned remediation excavation of the UPR-100-N-21 and UPR-100-N-23 waste sites (H-1-89916), and 100-N-22 waste site (H-1-89924). An above ground feature, labeled N-218, was observed during the 100-N Orphan Site Evaluation (OSR-2009-0001) to be co-located with the 100-N-84 pipelines. As a consequence, this feature was dispositioned as part of 100-N-84.

Location: The 100-N-84:8 pipeline segments are located throughout the 100-N Area's 100-NR-1 operable in and around the 105-N Reactor Building.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (4/2/2014): The subsite consists of 17, previously unidentified, pipeline segments that were located throughout the area north and east of the 105-N Reactor Building. On historical drawings, these pipeline segments are labeled as "Unidentified" or had no labeling. Eleven of the 17 pipeline segments are located within completed or planned excavations. The remaining pipeline segments are associated with systems that serviced administrative offices or buildings that did not store or generate any hazardous or radioactive substances. Based on the review of historical drawings, process knowledge of adjacent waste sites and buildings, and the general location of these segments, it was concluded that contamination would not exist within these pipeline segments. Therefore, the remaining 100-N-84:8 subsite pipeline segments (6, 7, 9, 10, 11, and 13) are being left in place with No Action required.

It was determined that confirmatory sampling test pit excavations of the short sections of pipelines would result in the majority of the length of the pipeline segments being excavated. Therefore, the 100-N-84:8 subsite was recommended for remove, treat, and dispose without confirmatory sampling evaluation. However, because most of the pipeline segments are being removed with other excavations and it was concluded that contamination would not exist within the remaining pipeline segments, no action is required.

Pipe Segments that were removed with other waste site excavations include segments 1,2,3,4,5,8,12,14,15,16 and 17.

Pipe Segments 6,7, 9, 10, 11 and 13 were left in place with No Action required.

The SubSite is Part Of:

Code: 100-N-84

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:9 **Classification:** Accepted

Names: 100-N-84:9; 100-N Area Active Raw Water **Reclassification** Interim No Action (12/3/2012)

Pipelines

Type: Product Piping **Start Date:**

Status: Active **End Date:**

Description: The subsite has been evaluated and determined to require No Action. The 100-N Area active raw water pipelines range in size from 6 to 12 inches in diameter and are used for fire protection. The 100-N export water line (12 inch) is fed from the main 42 inch raw water export line located between 100-B and 100-D Areas. Smaller pipeline segments connect this line to various fire hydrants located in the 100-N industrial area.

Location: The 100-N-84:9 pipelines are located east of the 105-N Building.

Process Description: Raw water was pumped from the Columbia River and supplied to the fire protection pipelines.

Waste Type: Soil

Waste Description: The waste is the pipeline (if present),scale, sediment, or liquid present within the pipelines, and the underlying soil.

Closure Info: Interim (12/3/2012): Confirmatory samples were collected from test pits at nine locations on the 100-N-84:1 subsite between March 8 and July 19, 2012 to support an evaluation to determine if residual contaminant concentrations in the soil meet cleanup criteria. The 100-N-84:9 pipelines are still active while the 100-N-84:1 pipelines have been taken out of service and/or removed. Both subsite pipelines carried the same type of raw water. Therefore the confirmatory sampling conducted at the inactive 100-N-84:1 has been used to evaluate and support the 100-N-84:9 reclassification.

The SubSite is Part Of:

Code: 100-N-84

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-84:10 **Classification:** Accepted

Names: 100-N-84:10; Miscellaneous Pipelines within the Bioventing Well Island **Reclassification** Consolidated (4/2/2014)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Subsite 10 was consolidated into the 100-N-107 waste site. It is the miscellaneous pipelines located in the Bioventing Wells island.

This Site Was Consolidated With:

Code: 100-N-107

Names: 100-N-107; Bioventing Well Islands; Soil Contamination Adjacent to Bioventing Wells

The SubSite is Part Of:

Code: 100-N-84

Names: 100-N-84; 100-N 100-N Miscellaneous Pipelines

Code: 100-N-85 **Classification:** Accepted

Names: 100-N-85; Gas Station Fuel Tanks **Reclassification** Interim Closed Out (9/25/2015)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: This site has been remediated and Interim Closed Out. The waste site consisted of soil contaminated with gasoline and diesel that remained after the removal of two underground fuel storage tanks located at the former 1716-N Service Station.

Location: The tanks were located approximately 31.2 meters (102.4 ft) northwest of 1100-N (H-1-45007, sheet 42).

Related Sites/ Structures: 100-N-52 is the Hanford Generating Plant (HGP) gasoline tank.

Process Description: The original tank (100-N-SS-27) was installed in 1967 (WCH 147703 and WHC-SD-L044-CDR-001, Rev. 0). If the tank was originally installed in 1967, it may have been located at the 1716-N Garage Facility. This facility included a Gas Attendant's building and gasoline pumps (according to the official Hanford Atomic Product Operation Buildings List HW-5000 7/25/1967). A self-service gasoline station, 1716-NA, was established in 1972. The Gas Attendant's building and gasoline pumps were relocated to the self service gasoline station at that time. A second gasoline tank (100-N-SS-28) was installed at 1716-NA in 1976 (H-1-15635).

Tank 100-N-SS-27 was an 11,356 L (3000 gal), single wall, 0.48 cm (3/16 in) carbon steel tank with asphalt coating, buried approximately 1.8 meters (6 ft) below grade. The tank was used for regular leaded gasoline storage until 1987, when it began storing unleaded gasoline. The tank was removed from service in June 1990 when it failed a tightness test and a leak was found near the top of the tank. It was subsequently removed from the ground on December 18, 1990, and confirmed to be a release site. The underlying soil was sampled on the same day, and field screening with an organic vapor monitor revealed 200-350 ppm concentration of organic vapor. Approximately 7.6 meters (25 ft) of supply pipeline was also removed (WHC-SD-EN-TI-136).

Tank 100-N-SS-28 was a 7571 liters (2000 gal), single wall, 0.48 cm (3/16 in) carbon steel tank, buried 1 meter (3 ft) below grade (H-1-15635). The tank was originally used for diesel fuel storage and later converted to gasoline. It was removed from the ground on July 17, 1991 (WHC-SD-EN-TI-136). Contamination was believed to be the result of occasionally overfilling these tanks, a loose pipe connection on the delivery line leading from the tank to the pump island, as well as a reported release of 337 liters (89 gal) on January 18, 1988 (WHC-SD-EN-TI-136, appendix C-1). The soil is contaminated to an approximate depth of 11 meters (36 ft) below grade (WHC-SD-EN-TI-136). The lateral extent of the contamination is not documented.

Waste Type: Soil

Waste Description: The waste is soil contaminated with gasoline and/or diesel fuel from underground storage tanks and associated piping. Soil samples obtained from beneath the tanks indicated toluene (4.7 mg/kg), diesel range organics (1,000 mg/kg) and kerosene range organics (3,085 mg/kg) contamination (WHC-SD-EN-TI-136, Table 2).

Closure Info: Interim (9/25/2015): After failing a tank-tightness test, UST 100-N-SS-27 was removed in December 1990. Soil contaminated with petroleum products was detected in the excavation during the UST 100-N-SS-27 tank removal. As much of the contaminated soil as possible was removed without disturbing tank 100-N-SS-28, which was still in service at the time (WHC 1993, BHI 1995). Tank 100-N-SS-27 was closed in accordance with Washington State Department of Ecology (Ecology) requirements.

Tank 100-N-SS-28 was removed on July 17, 1991. Soil contaminated with petroleum products was detected during removal of this tank. Excavation of the contaminated soil was resumed in September 1991, to a depth of 7.6 meters (25 ft), where backhoe limitations prevented further

work. There was no indication that the extent of the contamination plume had been determined. Work was abandoned at this time pending further evaluation. In April 1992, additional soil was excavated to a reported depth of 10 meters (36 ft). Soil contaminated with weathered gasoline and diesel fuel was still detected in a sand lens in the excavation. These soils could not be removed because the backhoe arm was not long enough to dig deeper. Field screening results using an organic vapor monitor (OVM) indicated 760 ppm at 10 meters (36 ft) bgs. Offsite laboratory sample results indicated maximum contaminant concentrations of toluene at 4.7 mg/kg, diesel at 1,000 mg/kg, and kerosene at 3,085 mg/kg. The site was backfilled with clean fill following excavation activities.

In September 1992, a characterization borehole (199-N-83) was installed through the portion of the tank excavation directly beneath the previous location of the 100-N-SS-28 tank. The purpose of the borehole was to determine the depth of contamination and support evaluation of remediation methods. The borehole was drilled to a depth of 16.8 meters (55 ft) bgs. No contamination was detected during drilling or in soil samples. Three soil vapor probes were installed at approximate depths of 12.2 meters (20 ft), 14.3 meters (33 ft), and 16.8 meters (41 ft). No contaminants were detected during field screening analysis of the vapor probe samples. The lack of contamination found during the borehole sampling was speculated to be a result of volatilization and biodegradation of the petroleum products or that the borehole did not intersect the remaining contamination. A test pit investigation was performed in April 1994 to verify the results of the borehole. A small amount of black sand was encountered near the borehole. The sand was moist and a petroleum odor was evident. Cave-in material from the sidewalls of the pit was becoming a problem with increasing depth. The 1994 investigation did not excavate to the recommended depth of 12 meters (40 ft).

A characterization borehole was drilled from in February 2015 to a total depth of 30.46 meters (99.95 ft) below ground surface, at a location between the storage tanks and the service station pumps. It was near where the pipelines intersected at approximately N 149514.1, E 571395.1. The borehole was drilled to support completion as a groundwater monitoring well or bioventing air inject well, if needed. Eleven soil samples and one groundwater sample were collected at discrete depth intervals. No petroleum contamination or other hazardous constituents were detected above soil or groundwater cleanup levels.

Code:	100-N-86	**Classification:**	Accepted
Names:	100-N-86; 151-N Substation Transformer and Oil Circuit Breakers	**Reclassification**	Interim Closed Out (3/4/2014)
Type:	Electrical Substation	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. It consisted of concrete support pedestals for a 230-13.8 kv transformer, the concrete pad for three oil circuit breakers (OCBs) and any underlying contaminated soils. The 151-N Substation contained various electrical equipment and a control building surrounded by a fence.

Location: The 230 to 13.8 kv transformer and OCBs were located south of Trinity Drive and east of Timber Road. The OCBs were 265 meters (870 ft) southeast of the 105-N Reactor and the transformer was located 225 meters (738 ft) southeast of the 105-N Reactor. The oil Circuit Breakers were centered at coordinates E571374.21 N149310.86. The transformer was centered at coordinates E571328.21 N149328.45.

Related Sites/ Structures: 151-N Substation

Process Description: The 151-N Substation was the primary source for "off-site" electrical power for the 100-N Area. The substation was fed by Bonneville Power Administration Midway Switching Station. The 230 kv electrical feed passed through a bank of OCBs to the 230-13.8 kv main power transformer. The 13.8 kv lines went from the low side terminals of the transformer to the 151-N Building. There were three OCBs, one for each phase of electric power.

Construction of the 151-N Substation was completed in November 1961 (HW-83918). The substation continued to serve the 100-N area until it was decommissioned in 1998. The transformer and OCBs were isolated in March 1998. Based on aerial photographs, they were removed between November 2001 and May 2002. The transformer pedestals and OCB pad remained in place. The control building and 13.8-4.16 kv transformer were demolished and removed by the D4 Project in 2006 (D4-100N-0002). The excavation extended to the south pedestal for the 230 kv transformer.

Analogous sites at other reactor operational areas have had releases of polychlorinated biphenyl's (PCBs) and petroleum hydrocarbons to the underlying soil, due to routine maintenance and accidental releases during their operations.

Waste Type: Soil

Waste Description: The waste is potentially contaminated concrete and underlying soils.

Closure Info: Interim (3/4/2014): The transformers and oil circuit breakers were isolated in March 1998 and were removed between November 2001 and May 2002. The transformer pedestal and oil circuit breakers pad remained in place. Between December 2005 and March 2006, portions of the concrete support pedestals were removed by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) project during the demolition of the 151-N Building.

In April 2012, while removing the 151-N Building slab and foundation, D4 also removed the transformer support pedestals that were adjacent to and north of the former 151-N Building. The pedestals were removed to 1 meter (3 ft) bgs. A radiological survey was conducted in May 2012. No gamma-emitting radiological contamination above background was detected. The Field Remediation project resumed remedial action on May 14, 2013 and continued through June 6, 2013. In-process soil samples collected in the west excavation detected polycyclic aromatic hydrocarbons (PAH) above RAGs. Therefore remediation continued on the southern slope of the westernmost excavation on July 29 and 30, 2013. Additional in-process samples were collected following the completion of field remediation.

The excavation extended to approximately 1.5 to 3 meters (4.9 to 9.8 ft) bgs, resulting in approximately 725 bank cubic meters (948 bank cubic yards) of soil and debris being disposed at the Environmental Restoration Disposal Facility (ERDF). No anomalous material or soil staining was encountered during the waste site remediation. The railroad tracks and treated railroad ties that were located adjacent to the 100-N-86 waste site excavation have been removed as miscellaneous restoration items.

Code:	100-N-87	**Classification:**	Accepted
Names:	100-N-87; 116-N Ventilation Stack Piping and French Drain	**Reclassification**	Interim Closed Out (7/2/2013)
Type:	French Drain	**Start Date:**	1/1/1961
Status:	Inactive	**End Date:**	1/1/1991

Description: The site has been remediated and Interim Closed Out. It consisted of the stack drain piping and french drain for the 116-N ventilation Stack.

Location: The 116-N Exhaust Stack was located approximately 95 meters (312 ft) north of the 105-N Reactor Building. The french drain was located approximately 13 meters (43 ft) east of 116-N.

Related Sites/ Structures: 105-N Reactor Building, 117-N Filter Building

Process Description: The 116-N Exhaust Stack was constructed in 1961 and was in use until the N-Reactor was ordered permanently shut down in 1991. The stack was designed to control worker exposure to airborne radioactive contaminants from the reactor by discharging them high into the atmosphere. Air from all five ventilation confinement zones in the 105-N Reactor Building was routed through moisture separators, high efficiency particulate filters, and charcoal absorbers in the 117-N Filter Building to remove airborne contamination. The filtered air was discharged to the stack. Moisture and other condensates in the filtered air stream would plate out on the inside of the stack. The stack foundation contained a floor drain that discharged the condensate to a french drain through a 5.08 centimeter (2 in) galvanized iron pipe.

Waste Type: Soil

Waste Description: The waste consists of the drain piping, french drains and underlying gravel and soil.

Closure Info: Interim (7/2/2013): Remedial action at the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 waste sites was performed during January and February 2011. Remediation involved removal of the foundations of the 116-N stack, the 119-N and 119-NA structures, and the underlying soil. Excavation continued until the french drain, associated piping, and contaminated soil and debris were removed. This excavation exceeded the depth that would be required to remove the 100-N-102:1, UPR-100-N-9, and UPR-100-N-14 waste sites. According to drawing H-1-46389, the depth of the 100-N-102:1 subsite, and therefore the unplanned release waste sites UPR-100-N-9 and UPR-100-N-14, was at 0.76 meters (2.5 ft) bgs. The final excavation depth was approximately 8.5 meters (28 ft) bgs. Because the excavation and removal of the 116-N stack foundation was previously performed by the D4 Project, the exact volume of material removed is unknown.

The debris removed included soil, concrete, piping, and other debris associated with the 116-N, 119-N, and 119-NA structures and french drain. All material from these waste sites was disposed at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation.

In March 2012, the D4 Project constructed a ramp across the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation to provide access and to support remediation activities at 1303-N (118-N-1) waste site. The ramp material was excavated on September 28, 2012, and also disposed of at ERDF. A walk around the site boundary confirmed that all fill material used to build the ramp had been removed. After the excavation of the ramp material, a gamma survey was performed on October 3, 2012, within the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation. The gamma survey results indicated readings above background at two locations. Additional remediation was performed to address areas where the GPERS survey results indicated elevated radiological results. Follow up surveys on October 17, 2012 and October 19, 2012 indicated no elevated readings above background.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: 100-N-88 **Classification:** Accepted

Names: 100-N-88; 1143-N French Drain **Reclassification** Interim Closed Out (7/2/2013)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It was a 0.61 meter (24 in) catch basin (french drain), associated 5.1 centimeter (2 in) diameter drain pipeline and the underlying soil. A sink inside the 1143-N Paint Shop discharged to this site. The potential existed for the french drain to receive paint solvents and other hazardous liquids from the activities within the building. The sink was removed about 1997, and discharges to this site ceased.

Location: The 1143-N Carpenter/Paint Shop was approximately 360 meters (1181 ft) southwest of the 105-N Reactor building. The french drain was located approximately 3.5 meters (11.5 ft) southwest of the 1143-N Carpenter/Paint Shop.

Related Sites/ Structures: 1143-N Carpenter/Paint Shop

Process Description: The south half of 1143-N Building was used as a paint shop after the building was built in the early 1980's until the mid-1990's, when it was converted to a heavy equipment mechanics shop. The french drain received wastewater from a sink located in the south half of the shop from the early 1980's until 1997.

Waste Type: Soil

Waste Description: Soil within and beneath the french drain and associated pipeline, potentially wetted with hazardous solvents and lead-based paints. COPCs consist of paint solvents and lead-based paints.

Closure Info: Interim (7/2/2013): Remedial action at the 100-N-88 waste site was performed on February 28, 2012, as a part of the 1143-N Building remediation through the D4 Project. The excavation for the 100-N-88 waste site continued to an approximate depth of 1.3 meters (4.3 ft) over an area of 30.6 square meters (329.4 sq. ft.). All material (soil, concrete, gravel, and steel pipe) was directly loaded from the excavation into Environmental Restoration Disposal Facility (ERDF) containers for disposal at ERDF. There are no overburden piles or waste staging pile areas associated with the 100-N-88 waste site. No anomalous materials were encountered during the excavation.

Code: 100-N-89 **Classification:** Accepted

Names: 100-N-89; 117-NVH French Drain **Reclassification** Interim Closed Out (10/22/2013)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The french drain has been remediated and Interim Closed Out. It was a 61 cm (24 in) concrete pipe buried to a depth of 91 cm (36 in). The top of the pipe was at grade and it was filled with gravel. An additional 46 cm (18 in) of gravel was beneath the pipe. A metal plate covered the pipe (H-1-50093).

Location: The French drain was located on the west side and adjacent to the 117-NVH Valve House. It was approximately 112 meters (367 ft) north of the 105-N Reactor. It was within the excavation footprint when the 100-N-63 pipelines are remediated.

Related Sites/ Structures: Two 100-N-63, 100-N Reactor Underground Pipelines were located west of the French drain. A 91 cm (36 in) contaminated drain (CD) line was about 2 meter (6.5 ft) west and a 30.5 cm (12 in) radioactive drain (RDR) line was about 2.6 m (8.5 ft) to the west (H-1-45007, sheet 44).

Structures associated with the French drain included 117-N Filter House and the 117-NVH

Valve House. A 25.4 cm (10 in) nitrogen inerting system (NIS) pipe, associated with the construction of the post-Chernobyl upgrades to N Reactor, was buried to the west of the French drain (H-1-50223).

Process Description: The french drain received discharge from back flushing an in-line screen on the 10 cm (4 in) raw water supply line in the 117-NVH Valve House (H-1-50092). The discharge to the french drain was an above-grade 3.8 cm (1.5 in.) high-pressure raw water supply pipeline from the 10 cm (4 inch) raw water supply back flush pipeline.

Waste Type: Soil

Waste Description: The waste includes the concrete pipe and gravel (french drain) and underlying soils if determined to be contaminated. The french drain reportedly received raw water back flushed from an inline screen on the raw water supply. There are no contaminants of potential concern associated with raw water.

Closure Info: Interim (10/22/2013): The 100-N-89 french drain was removed by the Decontamination, Decommissioning, Deactivation, and Demolition (D4) Project during removal of the 117-NVH Valve Control House Building in April 2011. The waste was disposed at the Environmental Restoration Disposal Facility (ERDF). Radiological surveys were performed at an area north of the 118-N-1 spacer silo waste site to support evaluation of remediation of the nearby 100-N-63:2 pipelines detected radiological contamination associated with the 100-N-63:2 waste site that included identification of radiological contamination at the 100-N-89 waste site location. As a result, additional soil remediation was performed between May 22 and 30, 2013, to remove this residual radiological contamination. Approximately 1,448 bank cubic meters (1,894 bank cubic yards) of contaminated soil was removed during the subsequent 100-N-63:2 soil remediation. Additional soil was removed from below the former 100-N-89 french drain and 117-NVH Building locations during subsequent remediation of the 117-N Air Filter House. This additional soil removal was completed in September 2011. The excavation depth below the french drain was approximately 4.5 meters (14.8 ft) below surface grade. All material was disposed at ERDF.

The final excavation depth at the former location of the 100-N-89 french drain is approximately 5.5 meters (18.0 ft) below surface grade. The base of the french drain was approximately 1.4 m (4.5 ft) below surface grade. No anomalies were encountered or observed during the excavation.

Code: 100-N-90 **Classification:** Accepted

Names: 100-N-90; 100-N Reactor Rod Caves **Reclassification** Interim Closed Out (5/17/2013)

Type: Storage **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. Rod Cave was two 30.5 centimeter (12 in) carbon steel pipes buried in an earth berm on the north side of the 117-N Air Filter Building. The waste site also included potentially contaminated soil underlying the pipes. The west ends of the pipes had aluminum covers. The east ends were buried in the berm. Two vertical pipes for monitoring radiation levels extended through the berm.

Location: The rod cave was located in the earth shield berm on the north side of 117-N, 115 meters (377 ft) north of the 105-N Reactor.

Related Sites/ Structures: WIDS site 100-N-63, 100-N Reactor TSD Underground Pipelines, is located about 7 meters (23 ft) west of the rod cave. Facilities associated with the rod cave include the 105-N Reactor and 117-N Air Filter Building.

Process Description: The Rod Cave was the temporary storage for used control rods from N Reactor.

Waste Type: Equipment

Waste Description: The waste consists of two carbon steel pipes used to store control rods. COPCs Carbon-14 and Cobalt-60.

Waste Type: Soil

Waste Description: The waste includes potentially contaminated soils underlying the carbon steel pipes. COPCs Carbon-14 and Cobalt-60.

Closure Info: Interim (5/17/2013): The 100-N-90 Rod Caves were completely removed by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project in March 2011 as part of removal of the 117-N Exhaust Air Filter House and the 117-NVH Valve Control House. Two post-demolition Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in October 2011. Radiological contamination was identified within the 117-NVH facility footprint and the northern portion of the 117-N facility footprint. Therefore, the facility footprints were then excavated to a deeper extent and the previously contaminated portions of these footprints were resurveyed in December 2012. The soil below the 100-N-90 waste site was excavated to a depth of approximately 7 meters (23 ft) below surface grade as part of the 117-N and 117-NVH facility removal. Radiological surveys for beta and gamma contamination did not identify radiological contamination below the 100-N-90 waste site. Therefore, no verification samples were required and the 100-N-90 waste is reclassified as Interim Closed Out.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: 100-N-91 **Classification:** Accepted

Names: 100-N-91; 100-N Battery Debris **Reclassification** Interim Closed Out (5/14/2014)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It consisted of an area, approximately 0.6 meter diameter (2 feet) diameter, containing battery debris. The exterior of the batteries had degraded and the contents was mixed into the soil. No vegetation growing was in the affected area.

Location: This site was located 805 meters southwest of the 100-N-47 waste site (military camp landfill) at coordinates N148183 E571145.

Related Sites/ Structures: 100-N Military camp

Process Description: This waste site was created due to batteries being discarded in the field.

Waste Type: Batteries

Waste Description: The waste includes discarded batteries and potentially contaminated underlying soils. The COPCs consist of metals.

Closure Info: Interim (5/14/2014): The 100-N-91 waste site was remediated by hand digging on November 12, 2013, based on the recommendation of the remove, treat, and dispose report. Less than 1

bank cubic meters (1.3 bank cubic yards) of soil was collected in plastic bags for disposal at the Environmental Restoration Disposal Facility. There was no staging pile area or overburden soil stockpile associated with the 100-N-91 waste site excavation. Debris consisting of small dry-cell batteries and pieces of batteries was excavated by hand digging at the 100-N-91 waste site. No other anomalous material or staining was encountered during excavation.

The final depth of the 100-N-91 waste site excavation is approximately 0.5 meter (1.5 ft). Following remediation, a boundary walk-around survey of the 100-N-91 waste site excavation was not performed due to the very small size of the hand-dug excavation. The post-excavation footprint was a small, circular hole of approximately 0.9 meter (3 ft) in diameter resulting in an excavated waste site area of less than 1 square meter (10.8 sq. ft.).

Code: 100-N-92 **Classification:** Accepted

Names: 100-N-92; 100-N Stain Area #1 **Reclassification** Interim No Action (4/5/2012)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: This site was determined to be a No Action site. The site consisted of a 3 meter (10 feet) diameter area stained with a white substance resembling dried paint and two 4 liter (1 gallon) cans. Confirmatory sampling of the 100-N-92 waste site was performed on January 26, 2011. The results indicated that the waste site achieved compliance with the remedial action objectives (RAOs) and remedial action goals (RAGs) for the 100-N-92 waste site. Therefore, remediation was not necessary.

Location: This feature is located approximately 1200 meters southeast of the 105-N Reactor building and 123 meters southwest of 100-N-47 (Military Artillery Site Solid Waste Site). The coordinates for the area are E571851 N148367.

Related Sites/ Structures: The waste site may be associated with the 100-N Military Artillery Site Solid Waste Site (sitecode 100-N-47).

Waste Type: Misc. Trash and Debris

Waste Description: Site COPCs consist of volatile organic compounds and lead. The waste consists of the stained soil and debris.

Closure Info: Interim (4/5/2012): This is a Confirmatory Sampling/No Action waste site. Three soil samples (one beneath each paint can and one beneath the white substance and one duplicate) were collected from the surface of the 100-N-92 waste site. In addition, a solid sample of the white substance shown was also collected. No additional debris was observed during sampling, other than the paint cans and the black wire noted on May 19, 2010. No sign of oil staining was noted, so total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) analyses were not performed. No radiological activity was detected at this waste site; therefore, radionuclide analysis of the samples was not performed. Based on confirmatory sampling results at the 100-N-92 waste site, remedial action was determined to be unnecessary. The confirmatory sampling data has been used to document this waste site to be reclassified as a No Action site.

Code: 100-N-93 **Classification:** Accepted

Names: 100-N-93; 100-N Stain Area #2 **Reclassification** Interim Closed Out (9/9/2014)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site was remediated and Interim Closed Out. The site consisted of potentially contaminated soil. It also included concrete, metal, glass debris, stained soil, suspected friable asbestos, and garnet sand with areas lacking in vegetation.

Location: 100-N-93 was located within the 100-N-19 borrow pit near the west end of the pit. The stain was located 475 meters southwest of the rail spurs entering the south end of 100-N, and 85 meters southeast of the dirt access road between 100-N and 100-K.

Related Sites/ Structures: The stain was associated with the 100-N-19 borrow pit.

Process Description: The 100-N-19 pit used for disposal of nonhazardous debris from the 100-N Area and the Hanford Generating Plant (HGP).

Waste Type: Misc. Trash and Debris

Waste Description: The waste consists of potentially contaminated soil, concrete, metal, glass, friable asbestos and garnet sand.

Closure Info: Interim (9/9/2014): Remedial action at the 100-N-93 waste site was performed between March 26, 2013, and March 21, 2014. The depth of the remediation ranged from 4.6 to 6.1 meters (15 to 20 ft) below ground surface resulting in approximately 35,551 bank cubic meters (46,499 bank cubic yards) of soil and debris being removed for disposal at the Environmental Restoration Disposal Facility (ERDF). The debris consisted of lead-acid batteries, asbestos, miscellaneous steel, burnt wood, glass, concrete, empty steel drums, wire, garnet sand, and communications cable. All waste material was loaded directly from the waste site into the ERDF disposal containers. No waste staging pile area or overburden soil stockpiles were created. No anomalous materials were encountered during the remediation.

Code: 100-N-94 **Classification:** Accepted

Names: 100-N-94; 100-N Oil Filters #1 **Reclassification** Interim Closed Out (8/20/2014)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site consisted of the underlying soil and approximately 50 oil filters.

Location: The site was is located 30 meters west of Route 4 N, south of the railroad tracks near N Ave.

Process Description: This feature appears to have been caused by a random dumping of used oil filters.

Waste Type: Misc. Trash and Debris

Waste Description: Metals, polyaromatic hydrocarbons, total petroleum hydrocarbons, and polychlorinated biphenyls. The waste includes discarded oil filters and potentially contaminated soils.

Closure Info: Interim (8/20/2014): A waste characterization sample was collected on April 22, 2013, prior to the start of remediation. Waste site remediation was conducted on January 31, 2014. The remediation extended to approximately 1 meter (3.3 ft) below ground surface resulting in approximately 47 bank cubic meters (61 bank cubic yards) of soil and debris removed for disposal at the Environmental Restoration Disposal Facility (ERDF). The debris consisted of oil filters and concrete. All material was loaded directly into the ERDF containers. No waste staging pile areas were created. No overburden soil pile associated with the waste site. No anomalous material was encountered during the remediation. All visibly stained soil was removed. A post-remediation walk around boundary survey was conducted following remedial action activities.

Code:	100-N-95	**Classification:**	Accepted
Names:	100-N-95; Hanford Generating Plant (185-N) Septic Tank	**Reclassification**	Interim Closed Out (3/4/2014)
Type:	Sanitary Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It consisted of a septic tank, associated piping and underlying soil.

Location: This septic system was located approximately 4 meters from the NE corner of the Hanford Generating Plant (HGP) tile field (100-N-4).

Related Sites/ Structures: The septic tank is associated with 100-N-4 (HGP tile field also called SWMU #5).

Process Description: The septic tank supplied influent to 100-N-4 (Hanford Generating Plant (HGP) tile field). The tank received sanitary waste and lab waste influent from the 185-N building via a 20 cm (8 in) cast iron pipe (H-6-4025 sht. 1 rev. 1). The tank did not receive effluent from the 185-N building drains and sumps, which are identified as SWMU # 3 (per document HGP-CVP-SWMUs 5, 6, 7, 8, 9 & 10 Rev. 0, June 2004). Testing for corrosion inhibitors hydrazine and morpholine were performed in the 185-N lab. It is likely that the tank received these reagents (see sitecode 100-N-4).

Closure Info: Interim (3/4/2014): Remedial action at the 100-N-95 waste site was performed between April 29 and June 11, 2013, and continued to a maximum depth of approximately 4.0 meters (13.1 ft) below ground surface resulting in the removal of approximately 1,385 bank cubic meters (BCM) (1,812 bank cubic yards [BCY]) of contaminated soil, cast iron pipe, lead bells, and rebar. All material was direct loaded from the excavation for disposal at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation. The maximum excavation depth was 4 meters (13 ft). In-process soil samples were collected from the 100-N-95 waste site between April and June 2013.

Code:	100-N-96	**Classification:**	Accepted
Names:	100-N-96; 100-N Military Camp Disposal Pits	**Reclassification**	None
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This site consists of three separate suspect disposal pits located southwest of the 100-N-47 military camp, identified from a 1957 aerial photograph. The suspect disposal pits were located outside the boundary of the military camp.

Location: The three disposal pits were located about 570 meters (1870 ft) southwest of the military camp. Disposal Pit 1 was centered at 571505.3E, 148238.3N Disposal Pit 2 was centered at 571545.9E, 148068.8N Disposal Pit 3 was centered at E571672.4E N148106.7.

Related Sites/ Structures: WIDS Site 100-N-47 Military Artillery Site Solid Waste Site, was located to the northeast. Military Camp refuse and garbage was most likely disposed in the disposal pits.

Process Description: The "Army Agreement" of 1951 provided for the disposal of refuse by the Army as follows: "Army will dispose of its trash and garbage in a manner acceptable to the Atomic Energy Commission (AEC). The Army may make disposal pits off Army land, as necessary, at locations designated by AEC and such pits shall be subject to AEC inspection." (CCN#

589754). The 1957 aerial photo of the military site shows disturbances to the southwest of the military camp outside what appears to be the perimeter fence. These disturbances are suspect disposal pits. The military camp was in use by the Army from 1951 to 1958.

In 2008 aerial photos (115-rgb.tif and 116-rgb.tif) heavy equipment blade marks are visible which indicate the disposal pits have been backfilled.

Waste Type: Misc. Trash and Debris

Waste Description: The waste consists of solid waste generated by the military camp. Site COPCs were listed as volatile organics, semivolatile organics, polychlorinated biphenyls and metals.

Code: 100-N-97 **Classification:** Accepted

Names: 100-N-97; 100-N Oil Filters #2 **Reclassification** Interim Closed Out (9/9/2014)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It consisted of underlying soil and 3 oil filters. There was no vegetation growing within the release area.

Location: This feature was located approximately 56 meters (184 ft) west of the southwest corner of the 100-D Area perimeter, near Pumphouse Road.

Waste Type: Misc. Trash and Debris

Waste Description: The waste includes discarded oil filters and potentially contaminated soil. Site COPCs consist of metals, polyaromatic hydrocarbons, total petroleum hydrocarbons, and polychlorinated biphenyls.

Closure Info: Interim (9/9/2014): A characterization sample was collected on April 22, 2013, prior to the start of remediation.

Waste site remediation began on November 12, 2013, and continued through January 8, 2014. Because the waste site was located in a culturally sensitive area, it was remediated by hand digging. The material was placed into plastic bags for disposal. The plastic bags were hand carried to the nearest access road to be disposed in an Environmental Restoration Disposal Facility (ERDF) container.

The remediation extended approximately 0.61 meters (2 ft) below ground surface, resulting in approximately 1.3 bank cubic meters (1.7 bank cubic yards) of soil and debris being removed and disposed at ERDF. No anomalous material was encountered during the remediation of the site. All visibly stained soil was removed.

Two in-process soil samples were collected on November 13, 2013, and analyzed for the site COPCs to determine if remedial action activities were complete and if the site was ready for verification sampling. Total petroleum hydrocarbons (TPH) exceeded the RAG in both samples collected; therefore, remediation continued to remove the residual contaminated soil.

On January 8, 2014, two additional in-process soil samples were collected from the same locations as the previous in-process samples to determine if the residual contaminated soil had been removed. The samples were analyzed for TPH only. The results indicated that the contaminated soil had been removed. Therefore, the remediation was determined to be complete on January 8, 2014.

Code: 100-N-98 **Classification:** Accepted

Names: 100-N-98; 100-N Stain Area #3 **Reclassification** Interim Closed Out (4/10/2013)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The site consisted of two locations where the surface was stained and no vegetation was growing in the affected area. One location (OSE -N-193) consisted of multiple stained spots in a 30 meter (98.4 feet) diameter area. The other location (OSE -N-194) was a single stained spot approximately 3 meter (9.8 feet) in diameter.

Location: The larger stained area was located approximately 33 meters northwest of 128-N-1 (Burn Pit). The smaller stained area was located approximately 34 meters northeast of 128-N-1.

Waste Type: Soil

Waste Description: The waste consists of the stained soil.

Closure Info: Interim (4/10/2013): Remediation of 100-N-6, 100-N-16, 100-N-98 area 1, and 128-N-1 waste sites began on August 2, 2010, and was completed on November 28, 2011. A total of approximately 20,334 bank cubic meters (BCM) (26,596 bank cubic yards [BCY]) were excavated and staged for removal to the Environmental Restoration Disposal Facility (ERDF). Between April 16 and 19, 2012, the excavation was expanded to the west to include stained soil Area 2 of the 100-N-98 waste site. Approximately 476 BCM (623 BCY) of soil was removed from 100-N-98 Area 2 and direct loaded for disposal at ERDF. The additional remediation of the spoil pile area (SPA) and the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site excavation generated an additional volume of 5,446 BCM (7,123 BCY) of material for direct load out to ERDF. A total volume of 26,256 BCM (34,342 BCY) was disposed at ERDF, to complete the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site remediation.

The materials removed from the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste sites consisted of abandoned wiring, transite pipe, metallic and wood debris, burnt wood, ash, tar, roofing felt, stained soil, a bucket of grout, an open glass bottle, green fibrous material, purple sandy material, a paint ball, drums containing bunker and amber oil, and miscellaneous demolition debris. Anomalous material discovered during remediation included six 208-L (55-gal) drums, small white ceramic balls used as filtering media, and soil with a strong solvent odor.

Code: 100-N-99 **Classification:** Accepted

Names: 100-N-99; 100-N Oil Filters #3 **Reclassification** Interim Closed Out (8/20/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It consisted of two locations where oil filters were discarded. The affected areas were devoid of vegetation and appear stained.

Location: Both locations were west of Route 4N approximately 1,420 meters (4658 ft) south of Route 2N. The first area (OSE - N-196) was located approximately 148 meters (485 ft) west of Route 4N. The second area (OSE - N-197) was located approximately 55 meters (180 ft) west of Route 4N.

Waste Type: Misc. Trash and Debris

Waste Description: The waste includes discarded oil filters and potentially contaminated soil. Site COPCs consist of metals, polyaromatic hydrocarbons, total petroleum hydrocarbons, and polychlorinated biphenyls.

Closure Info: Interim (8/20/2014): A waste characterization sample was collected on April 22, 2013, prior to the start of remediation. The waste site remediation was conducted on January 31, 2014. The remediation extended to approximately 1 meter (3.3 ft) below ground surface resulting in approximately 47 bank cubic meters (61 bank cubic yards) of soil and debris removed for disposal at the Environmental Restoration Disposal Facility (ERDF). The debris consisted of oil filters. All material was loaded directly into the ERDF containers; therefore, no waste staging pile areas were created. Additionally, there was no overburden soil pile associated with the waste site. No anomalous material was encountered during the remediation. All visibly stained soil was removed.

Two in-process soil samples were collected on February 3, 2014, and analyzed for the site contaminants of potential concern (COPCs) to determine if remedial action activities were complete and if the site was ready for verification sampling.

Code: 100-N-100 **Classification:** Accepted

Names: 100-N-100; 100-N Oil Filters #4 **Reclassification** Interim Closed Out (6/12/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: This site was remediated and Interim Closed Out. It consisted of petroleum based material released to the ground surface and the underlying soils. The soil was crusted and no vegetation was growing in the affected area. There were 4 oil filters at this location.

Location: The site was located approximately 190 meters west of the north side of 116-N-1 at coordinates N150010.8 E571544.1.

Waste Type: Misc. Trash and Debris

Waste Description: The waste includes discarded oil filters and potentially contaminated soils. Site COPCs consists of metals, polyaromatic hydrocarbons, total petroleum hydrocarbons, and polychlorinated biphenyls.

Closure Info: Interim (6/12/2014): Remedial action of the 100-N-100 waste site was performed on November 13, 2013, and February 27, 2014. Due to cultural sensitivity of the area, the waste site was remediated by hand digging. The maximum depth of the excavation was 0.5 meters (1.5 ft) below ground surface and resulted in the removal of less than 1.0 bank cubic meters (1.3 bank cubic yards) of soil and debris. The debris consisted of oil filters in two distinct locations. The contaminated soil and debris were directly loaded into plastic bags and carried out for disposal at the Environmental Restoration Disposal Facility (ERDF). Oil-stained soil was observed during the excavation, and all oil-stained soil was removed and disposed at ERDF. No anomalous material was encountered during excavation.

The results of the initial verification sampling indicated exceedances of direct exposure RAGs for TPH. Therefore, additional remediation and sampling was conducted on February 27, 2014.

Code: 100-N-101 **Classification:** Accepted

Names: 100-N-101; 100-N Stain Area #4 **Reclassification** Interim Closed Out (5/27/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site has been remediated and Interim Closed Out. It consisted of an area of multiple stained soil spots with no growing vegetation. It was an area covering approximately 10 meters (33 ft) in diameter.

Location: The waste site was located east of the 105-N reactor, approximately 13 meters SW of the 100-N-13 site at coordinates N149379.8 E571718.7.

Waste Type: Soil

Waste Description: The waste consists of the stained soil.

Closure Info: Interim (5/27/2014): Confirmatory sampling was performed at the 100-N-101 waste site on January 24, 2011.

The 100-N-101 waste site was remediated on November 5, 2013. Approximately 64 bank cubic meters (BCM) (84 bank cubic yards [BCY]) of soil was direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). There is no staging pile area or overburden soil stockpile associated with the 100-N-101 waste site excavation. No debris was uncovered at the 100-N-101 waste site. No anomalous material or staining was encountered during excavation. The final depth of the 100-N-101 waste site excavation is approximately 1 meters (3.3 ft) below ground surface. Following remediation, a boundary walk-around survey of the 100-N-101 waste site excavation was performed.

Code: 100-N-102 **Classification:** Accepted

Names: 100-N-102; Potentially Contaminated French Drains and Drain Lines; 100-N Potentially Contaminated French Drains **Reclassification** Interim Closed Out (7/2/2013)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: This site consists three of potentially contaminated french drains, the associated piping and surrounding soil known as location 1A, 1B and 3. The waste site was divided into two subsites. Subsite 1 has been Interim Closed Out. Subsite 2 was determined to require No Action. Since both subsites have been reclassified, the Parent Site is also considered complete and is reclassified.

In order to facilitate closure of the removed portions, the 100-N-102 site was divided into two subsites:

100-N-102:1, 100-N Potentially Contaminated French Drains and Drain lines, Group 1. It has been excavated along with 100-N-87 and Interim Closed Out.

100-N-102:2, 100-N Potentially Contaminated French Drains and Drain Lines, Group 2. It consists of two french drains, known as location 1B and location 3. It has been evaluated and reclassified to No Action.

Note: The second french drain (166-N Pump House Dry Well), originally described in 100-N-102:2 as location 2, has been removed from this subsite. This drain was within the excavation footprint of the UPR-100-N-18 waste site excavation. It was completely removed as part of the UPR-100-N-18 remediation activity. See UPR-100-N-18 for details.

Location: The 119-N Exhaust Air Monitoring Building Absorption Pit is centered at E571244/N149685.

The French Drain outside the mobile office is centered at E571366/N149478.

Related Sites/ Structures: 105-N Reactor Building, 117-N Filter Building, 119-N Stack Sampler Building, 119-NA Continuous Airborne Effluent Monitoring Building, UPR-100-N-14 (119-N Drain System Leak), UPR-100-N-9 (119-N Cooling Water Drain Line Leak), 166-N Fuel Oil Storage Pump House.

Process Description: Subsite 1 - 119-N Exhaust Air Monitoring Building Absorption Pit -

Although the 116-N Ventilation Stack began operation in 1961, its exhaust stream was not continuously sampled until the construction of the 119-N Exhaust Air Monitoring Building in 1971. The sample stream was filtered, then cooled in a condenser. The 5 GPM cooling water stream for this condenser initially discharged via a 2-inch line to the 36-inch contaminated transfer line between the 105-N Lift Station and the 1301-N Crib. Back pressure from this lift station transfer line backed up the cooling water discharge line and resulted in UPR-100-N-14 in August 1974. The corrective action for this UPR was to construct a new cooling water discharge line and earth absorption pit, and abandon the old line (DC-3322). While this was being done, another release (UPR-100-N-9) occurred from the cooling water discharge line in October 1974, nearer the lift station transfer line. Then in 1984, the 119-NA Air Sample Monitoring Stack Sampler Building was constructed to assist with monitoring the stack exhaust for tritium. Excess tritium effluent condensate was also routed via a floor drain to the absorption pit (H-1-36322), until permanent reactor shut down in the early 1990's.

Subsite 2, French Drain Outside Mobile Office -

H-1-45007, sht 35, shows the french drain adjacent to a buried power line conduit. No lines are shown connecting to it, so sources of discharge to this drain are unknown. The trailers immediately adjacent to the french drain were used for offices and classrooms with restroom facilities and a kitchen.

This Site has the Following SubSites:

Code: 100-N-102:1

Names: 100-N-102:1; Potentially Contaminated French Drains and Drain Lines, Group 1; 100-N Potentially Contaminated French Drains, Group 1

Code: 100-N-102:2

Names: 100-N-102:2; Potentially Contaminated French Drains and Drain Lines, Group 2; 100-N Potentially Contaminated French Drains, Group 2

Code:	100-N-102:1	**Classification:**	Accepted
Names:	100-N-102:1; Potentially Contaminated French Drains and Drain Lines, Group 1; 100-N Potentially Contaminated French Drains, Group 1	**Reclassification**	Interim Closed Out (7/2/2013)
Type:	French Drain	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The subsite consisted of potentially contaminated piping associated with two french drains, the associated drain lines that received waste from the 119-N Exhaust Air Monitoring Building and surrounding soil. This was known as location 1A. The portions of piping that remain will be addressed as part of the 100-N-102:2 waste site.

Location: The 119-N Exhaust Air Monitoring Building is centered atE571236/ N149664.

Related Sites/ Structures: 105-N Reactor Building, 117-N Filter Building, 119-N Stack Sampler Building, 119-NA Continuous Airborne Effluent Monitoring Building, UPR-100-N-14 (119-N Drain System Leak), UPR-100-N-9 (119-N Cooling Water Drain Line Leak).

Process Description: Although the 116-N Ventilation Stack began operation in 1961, its exhaust stream was not continuously sampled until the construction of the 119-N Exhaust Air Monitoring Building in 1971. The sample stream was filtered, then cooled in a condenser. The 5 GPM cooling water stream for this condenser initially discharged via a 2-inch line to the 36-inch contaminated transfer line between the 105-N Lift Station and the 1301-N Crib. Back pressure from this lift station transfer line backed up the cooling water discharge line and resulted in UPR-100-N-14 in August 1974. The corrective action for this UPR was to construct a new cooling water discharge line and earth absorption pit, and abandon the old line (DC-3322). While this was being done, another release (UPR-100-N-9) occurred from the cooling water discharge line in October 1974, nearer the lift station transfer line. Then in 1984, the 119-NA Air Sample Monitoring Stack Sampler Building was constructed to assist with monitoring the stack exhaust for tritium. Excess tritium effluent condensate was also routed via a floor drain to the absorption pit (H-1-36322), until permanent reactor shut down in the early 1990's.

Waste Type: Not Specified

Waste Description: The waste will include the pipelines and any potential contaminated soil.

Closure Info: Interim (7/2/2013): Remedial action at the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 waste sites was performed during January and February 2011. Remediation involved removal of the foundations of the 116-N stack, the 119-N and 119-NA structures, and the underlying soil. Excavation continued until the french drain, associated piping, and contaminated soil and debris were removed. This excavation exceeded the depth that would be required to remove the 100-N-102:1, UPR-100-N-9, and UPR-100-N-14 waste sites. According to drawing H-1-46389, the depth of the 100-N-102:1 subsite, and therefore the unplanned release waste sites UPR-100-N-9 and UPR-100-N-14, was at 0.76 meters (2.5 ft) bgs. The final excavation depth was approximately 8.5 meters (28 ft) bgs. Because the excavation and removal of the 116-N stack foundation was previously performed by the D4 Project, the exact volume of material removed is unknown.

The debris removed included soil, concrete, piping, and other debris associated with the 116-N, 119-N, and 119-NA structures and french drain. All material from these waste sites was disposed at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation.

In March 2012, the D4 Project constructed a ramp across the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation to provide access and to support remediation activities at 1303-N (118-N-1) waste site. The ramp material was excavated on September 28, 2012, and also disposed of at ERDF. A walk around the site boundary confirmed that all fill material used to build the ramp had been removed. After the excavation of the ramp material, a gamma survey was performed on October 3, 2012, within the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation. The gamma survey results indicated readings above background at two locations. Additional remediation was performed to address areas where the GPERS survey results indicated elevated radiological results. Follow up surveys on October 17, 2012 and October 19, 2012 indicated no elevated readings above background.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

The SubSite is Part Of:

Code: 100-N-102
Names: 100-N-102; Potentially Contaminated French Drains and Drain Lines; 100-N Potentially Contaminated French Drains

Code: 100-N-102:2
Names: 100-N-102:2; Potentially Contaminated French Drains and Drain Lines, Group 2; 100-N Potentially Contaminated French Drains, Group 2
Type: French Drain
Status: Inactive
Classification: Accepted
Reclassification Interim No Action (6/19/2012)
Start Date:
End Date:

Description: The subsite has been evaluated and relcassified to No Action. It consists of two potentially contaminated french drains and associated piping (known as location 1B and Location 3).

One french drain had an absorption pit and two drain lines, located generally to the north of the former 116-N Ventilation Stack location. These components were associated with the former 119-N and 119-NA Sample Buildings, which sampled potentially contaminated exhaust air and associated condensate from the 116-N Stack. The stack and sample buildings have been demolished, and the line to the absorption pit was capped. The french drain and remaining piping are included in this subsite. It is described as location 1B.

The other french drain was located west of the former 1126-NA Mobile Office. It had had no identified associated piping. The mobile office, as well as other nearby buildings, have been demolished. It is described as location 3.

Location: The first drain is located near the 119-N Exhaust Air Monitoring Building Absorption Pit, centered at 571244E 149685N. It is described as location 1A. The second French Drain is located outside the 1126-NA mobile office, centered at coordinates E571366 N149478. It is described as location 3.

Related Sites/ Structures: 105-N Reactor Building, 117-N Filter Building, 119-N Stack Sampler Building, 119-NA Continuous Airborne Effluent Monitoring Building, UPR-100-N-14 (119-N Drain System Leak), UPR-100-N-9 (119-N Cooling Water Drain Line Leak), 166-N Fuel Oil Storage Pumphouse.

Waste Type: Sludge

Waste Description: The waste included water and miscellaneous floor drainage containing sludge, grit and oil.

Closure Info: Interim (6/19/2012): The 100-N-102:2 subsite consisted of two locations, 1B and 3, that were identified in the Confirmatory Work Instruction (CWI) as potential french drains.

Subsite 2 was reclassified with Waste Site Reclassification Form (WSRF) 2012-001. It addresses only the 100-N-102:2 subsite, which consists of two locations, 1B and 3.

Location 1B was excavated to 4.6 meters (15 ft) for confirmatory sampling, but no indication of a french drain structure, staining, debris, undisturbed soil, or contamination was found. The excavation was increased to 6.1 meters (20 ft), also with no indication of a french drain structure, staining or contamination. An evaluation of this location indicated that the structure was either removed with the 100-N-87 waste site remediation, or it was never present. In accordance with the CWI, location 1B was not sampled.

Excavation for confirmatory sampling at location 3 began, but was stopped when live 220 Kv electrical lines were encountered within the excavation. No samples were collected at location 3

due to safety concerns. Prior to the cessation of activities, the top of the french drain was uncovered. This french drain consists of a metal 55 gallon drum to which a pipe is attached. The drum was filled with cobble. This french drain is associated with a temporary administrative office and classroom trailer (MO 1126-N). An office and classroom trailer would have been supplied with steam for heating but would not be expected to have any chemical or radiological processes associated with the trailer and therefore with the french drain. French drains were constructed with the compatibility of the discharge taken into consideration. Steel would not have been used for acidic or other chemically active discharges because the metal is incompatible with those liquids. Chemically active liquids would have been disposed in clay pipes. The metal of construction of this french drain is consistent with french drains designed for steam condensate. This is also consistent with the historical description of the french drain at location 3 which is identified as servicing the 1126-N Mobile Office and classroom. This type of steam condensate french drain presents a very limited risk for contamination.

The SubSite is Part Of:

Code: 100-N-102

Names: 100-N-102; Potentially Contaminated French Drains and Drain Lines; 100-N Potentially Contaminated French Drains

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Code: 100-N-103 **Classification:** Accepted

Names: 100-N-103; 100-N Steam Condensate French Drains **Reclassification** Interim No Action (7/9/2012)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The waste site consists of 12 steam condensate french drains and their associated below grade piping components discovered during the Orphan Site Evaluation Report (OSR) historical review. It included subsites 100-N-103:1, 100-N Steam Condensate French Drains (eleven inactive drains) and 100-N-103:2, 100-N Steam Condensate French Drains (one active drain). Both subsites have been addressed, so the parent site has also been reclassified. Some of the drywells and their associated pipelines fall within a planned excavation of other waste sites. These french drains will be dispositioned during remediation of those waste sites.

Location: Refer to the subsites for locations of the french drains.

Process Description: Steam was typically used at all facilities for heating purposes. As a non-contact system the steam remained uncontaminated. The steam transport process utilized a high pressure supply line and a low pressure return or discharge line. It was necessary to bleed both the supply and return lines to prevent condensate build up. The condensate was typically blown off from the above grade piping system into a below grade, covered french drain. French drain diameters and construction material varied depending on steam piping size, service capacity pounds per hour, and expected flow rate received.

This Site has the Following SubSites:

Code: 100-N-103:1

Names: 100-N-103:1; 100-N Steam Condensate French Drains (inactive)

Code: 100-N-103:2

Names: 100-N-103:2; 609-E-1; 100-N Steam Condensate French Drains (active)

Code: 100-N-103:1 **Classification:** Accepted

Names: 100-N-103:1; 100-N Steam Condensate French **Reclassification** Interim No Action (7/9/2012)

Drains (inactive)

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: The eleven french drains have been evaluated and determined to require No Action.

Subsite 1 consists of 11, inactive steam condensate french drains and their associated below grade piping components.

The site descriptions for each of the 11 steam condensate french drains (FD) are:

FD1. The site was a french drain with a 1.9-cm (0.75-in.) clean medium pressure steam return line from the 108-N Building (H-1-29247). This french drain was removed during the demolition of the 108-N building. 100-N-103:1 French Drain 1 will be addressed with the pipelines in 100-N-84:6 (and 100-N-61). French Drain 1 is not considered a No Action component.

FD2. The site is a 7.6-cm (3-in.) french drain, 2.8-m (9.2-ft) to wall. The site is associated with the 1902-N building, which housed clean export water valving and piping (H-1-45007, sht 22). (removed with 100-N-61)

FD3. The site is a 0.61-m (24-in.) primary flash pipe with a 1.9-cm (0.75-in.) diameter, 13-m (43-ft) long medium pressure steam condensate pipeline from the wall of the 184-NC Building (H-1-45007, sht 28, 29). Confirmatory activities determined FD-3 was removed completely during the demolition of the 184-N Building in 2008.

FD4. The site is a 0.9-m (36-in.) french drain with a 6-m (20-ft) long pipe to the wall of the 1701-N clean badgehouse (H-1-45007, sht 27).

FD5. The site is a 0.9-m (36-in.) dry well abandoned in 1985, replaced by a 1.2-m (48-in) dry well, and received steam condensate from 184-N, 184-NA, and 184-N day tanks. (H-1-45007, sht 29; H-1-48915 shts 1 and 2). Confirmatory activities determined this dry well was removed during the demolition of the 184-N Building in 2008.

FD6. The site is a 1.2-m (48-in.) dry well that replaced a 0.9-m (36-in) dry well in 1985, and received steam condensate from 184-N, 184-NA, and 184-N day tanks. A 7.6-cm (3-in.) pipe enters the dry well (H-1-45007, sht 29). (removed with UPR-100-N-19 remedial excavation)

FD7. The site is a 0.61-m (24-in.) dry well with a 1.3-cm (0.5-in.) diameter, 31.5-m (103-ft) long steam condensate pipeline to the 1101-N wall, and a potable water line from the 1100-N office building (H-1-45007, sht 28). Confirmatory activities determined the structure at this location was a valve box. There was no dry well at the excavation.

FD8. The site is a dry well with a 30-m (98-ft) long, 2.54-cm (1.5-in.) diameter line connecting from the 1100-N Building (H-1-45007, sht 35, H-1-44195). There is a manhole with a valve and pipe inside immediately adjacent to the french drain.

FD9. The site is a 1.2-m (48-in.) dry well with a 10-cm (4-in.) floor drain from an equipment access pit, and a 10-cm (4-in.) cast iron floor drain line from a clean office area at the 105 N Building (H-1-28877, H-1-27705). (French Drain 9 has also been deferred for disposition with 100-N-84:4. This french drain structure was actually removed during demolition of the 105-N Control Room structure.)

FD10. The site is a dry well with a 10-cm (4-in.) steam condensate pipeline from the 105 N

Building and another 10-cm (4-in.) steam condensate pipeline from clean operations in 1712-N (H-1-45007, sht 43). (disposition with remediation of 100-N-84:4)

FD11. The site is a dry well with a 7.6-cm (3-in.) low pressure steam condensate pipeline from the 1734-N gas bottle storage building (H-1-45007, sht 43). (disposition with remediation of 100-N-84:4)

Location: The 100-N-103 Steam Condensate French Drains are located in the 100 NR-1 Operable Unit of the Hanford Site, near the 108-N chemical unloading facility, 1902-N export water tie-in building, 184-N powerhouse, 1701-N Gatehouse, 1100-N and 1101-N Office Buildings, 105-N Reactor, 1712-N Insulation Shop, and the 1734-N gas storage bottle building.

Waste Type: Not Specified

Waste Description: The waste will include the pipelines and any potential contaminated soil.

Closure Info: Interim (7/9/2012): Confirmatory sampling for the 100-N-103:1 subsite was performed between August 29, 2011, and September 19, 2011, to support a determination that residual contaminant concentrations at this site meet the cleanup criteria specified in the RDR/RAWP (DOE/RL-2006b) and the N-Area ROD (EPA 1999).

The french drains identified at each of the locations within the 100-N-103:1 subsite were selected for sampling, with six exceptions. Excavation was being undertaken at the locations of drain numbers 1, 2, 6, and 9 for the purpose of remediating the 100-N-61:1, UPR-100-N-19 waste sites and building demolitions in the vicinity during the confirmatory sampling effort. Access to these french drain locations was not available. The remediations removed the french drains as debris within the field remediation excavation boundaries. Therefore, no confirmatory sampling was performed at these locations. French drains 10 and 11 will be removed in the excavation for the scheduled remediation of the 100-N-84:4 pipeline subsite. These french drains will be dispositioned within the closeout documentation for the 100-N-61:1, UPR-100-N-19, and 100-N-84:4 waste sites, as appropriate.

Geophysical surveys performed at the french drain locations during confirmatory sampling activities revealed that french drain numbers 3 and 5 had been removed in their entirety during the demolition of the 184-N building. Test pits were excavated at the locations of french drain numbers 4 and 8.

The confirmatory sampling results support a reclassification of the 100-N-103:1 subsite to No Action.

The SubSite is Part Of:

Code: 100-N-103

Names: 100-N-103; 100-N Steam Condensate French Drains

Code: 100-N-103:2

Classification: Accepted

Names: 100-N-103:2; 609-E-1; 100-N Steam Condensate French Drains (active)

Reclassification Rejected (4/5/2012)

Type: French Drain

Start Date:

Status: Active

End Date:

Description: This french drain has been evaluated and Reclassified to Rejected. The french drain is associated with an active export water line. The waste site is an active 1.2 meter (4-ft) diameter, 5 meter (16-ft) long dry well used for a filter and water supply vault. The dry well is buried 7.3

meters (24 ft) below grade with coarse gravel at the bottom. The inlet is a 15-cm (6-in.) diameter cast iron inlet pipe (H-6-302).

Location: The 100-N-103:2 subsite french drain is located in the 100 NR-1 Operable Unit of the Hanford Site, on the east side of Route 4 North, near the 609 Fire Station. It is located adjacent to the active Export Water line.

Related Sites/ Structures: The french drain is associated with an active export water line.

Process Description: Well 609-E-1 is associated with the water supply vault, east of the fire station. The drain is buried 8 feet below grade, the bottom of the well is 24 feet below grade. The vault opening extends above grade. The water supply vault was designed to receive water from the Export Water system and provide treatment by adding sodium hypochlorite prior to importing it into the fire station. This well is connected to a drain in the floor of the vault.

Waste Type: Not Specified

Waste Description: The waste will include the pipelines and any potential contaminated soil.

The SubSite is Part Of:

Code: 100-N-103

Names: 100-N-103; 100-N Steam Condensate French Drains

Code: 116-N-1 **Classification:** Accepted

Names: 116-N-1; 1301-N Crib and Trench; 1301-N Liquid Waste Disposal Facility **Reclassification** Interim Closed Out (4/14/2009)

Type: Crib **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1985

Description: The waste site has been remediated and reclassified to Interim Closed Out. It included a large crib and trench. The crib began operation in 1963. In 1965, the trench was added to enhance percolation capacity. The crib and trench were used for the disposal of N Reactor cooling water. Before remediation, the site was enclosed within a chain link fence and posted with "No Trespassing", "Danger - Unauthorized Personnel Keep Out", "Radiologically Controlled Area", "Underground Radioactive Material" and "Surface Contamination" signs. All radiological postings were removed in 2015.

Location: The crib and trench were located northeast of the 105-N Building, outside the 100-N Area fence line. It was approximately 256 meters (840 feet) from the Columbia River.

Related Sites/ Structures: The site is associated 100-N-63, 100-N Reactor (1314-N, 116-N-1 and 116-N-3) TSD Underground Pipelines and UPR-100-N-31.

Process Description: The crib and trench received radiologically contaminated water from the 105-N Reactor basin floor drains and the 109-N floor drains. The effluent contained activation and fission products as well as small quantities of corrosive liquids and laboratory chemicals. At times, the effluent consisted of water from the primary reactor coolant system, the periphery reactor cooling system and decontamination wastes from these systems. The crib and trench operated in tandem until 1985, when the 116-N-3 Crib became the primary liquid disposal facility for the N Reactor, and the 116-N-1 Crib and Trench were taken out of service.

The crib began operation in 1963. In 1965, the trench was added to enhance percolation capacity. The crib and trench were used for the disposal of N Reactor cooling water. The crib

was an open, rectangular excavation, 88.5 by 38.1 by 1.52 meters (290 by 125 by 5 feet deep). A sloped soil and gravel embankment formed the walls of the crib. The bottom was filled with a 0.9-meter (3-foot) thick layer of large boulders. In 1981, an additional stabilizing layer of large rock was added to the area around the weir box at the south end of the crib.

In 1965 the "zigzag" trench was added to enhance percolation capacity. It measured 15.3 x 488 x 3.7 meter (50 by 1,600 by 12 feet) and ran northeast in a zigzag pattern from the north side of the crib. Wooden poles were laid across the trench to support wire screens to keep birds out of the trench. In 1982, the bird screens were covered with a precast concrete panel cover to minimize wildlife intrusion and airborne contamination. The dimensions of the concrete cover is 15.9 X 424 X 0.20 meters (52 by 1390 by 0.67 feet thick). The panels were placed over the existing wooden beams and the bird screens. The edges of the trench cover were backfilled and covered with shotcrete. Spaces between cover panels were grouted.

Waste Type: Process Effluent

Waste Description: The unit received radioactive water containing activation and fission products and small quantities of corrosive liquids and laboratory chemicals at an average flow rate of approximately 5,680 liters per minute (1,500 gallons per minute) (note: the 8 million liters assumes the crib effluent was steady 24 hours per day). The crib received radioactive effluent streams from the 105-N and 109-N Buildings. After 1965, the trench received the same wastes as the crib. Operational contaminant inventory records from 1964 through 1985 show a total of 3,000 curies of tritium, 2,300 curies of cobalt-60, 1,900 curies of strontium-90, 2,600 curies of cesium-137, and 23 curies of plutonium-239 being released to the crib and trench. An estimate of dangerous wastes from the decontamination of the primary coolant system discharged annually include 2,800 kilogram (6,100 pounds) of hydrazine test solution, 2,800 kilograms (6,100 pound) of ammonia test solution, 3,500 kilograms (7,800 pounds) of chloride test solution and 1,800 kilograms (3,900 pounds) of fluoride test solution per year of operation. No actual amounts are available. The estimates include common floor drains that discharged to the crib.

Closure Info: Interim: Remedial action at the site began in April 2002 and concluded in October 2005. Excavation of the site involved removing the overburden materials, debris, the contaminated and uncontaminated structure, and underlying contaminated soil. Approximately 8 meters (26.2 ft) of piping was also removed between the crib and the 1315-N valve station during excavation of the sidewall of the crib. Closeout of this segment of piping was addressed using the verification sampling for the crib. The contamination within the boundaries of the UPR-100-N-31 waste site was also removed, but the unplanned release waste site is not proposed to be Interim Closed Out because of contaminant plumes that impacted active facilities and cannot be excavated until the active facilities are closed or relocated. Approximately 333,528 metric tons (387,652 tons) of contaminated materials were disposed at ERDF. The crib was excavated to a depth of 6.5 meters (21 feet). The trench was excavated to a depth of 4.5 meters (14.8 feet).

Note: The original CVP-2006-004, Revision 0, was submitted to Ecology in 2006. Ecology rejected the Waste Site Reclassification Form at that time due to the verification sample results exceeding Washington Administrative Code (WAC) 173- 303- 610 (2)(b)(i) closure performance standards for hexavalent chromium of 2.0 mg/kg (based on WAC 173- 340, amended 1996). In 2008, DOE agreed to submit a revised CVP. This revised cleanup verification package (CVP-2006-004, Rev. 1) further documents completion of remedial action for the 116-N-1 Crib and Trench. The revised CVP-2006-0004 Rev. 1 applies only to the 116-N-1 Crib and Trench, which does not encompass the entire 1301-N TSD unit boundary.

Code: 116-N-2 **Classification:** Accepted

Names: 116-N-2; 1310-N Chemical Waste Storage Tank; 1310-N Waste Storage Area; The Golf Ball **Reclassification** Interim Closed Out (5/7/2013)

Type: Storage Tank **Start Date:** 1/1/1964

Status: Inactive **End Date:** 1/1/1987

Description: The waste site has been remediated and Interim Closed Out. 116-N-2 Facility complex consisted of piping, pumps, a transfer tank (commonly referred to as the silo) and a large, spherical storage tank (commonly referred to as the Golf Ball). The site was used as a collection tank for N Reactor primary piping decontamination wastes. The 3.4E+06-liter (9.0E+05-gallon) spherical tank was partially buried in the ground. A compacted soil radiation barrier, 7.6 meters (25 feet) high, surrounded the tank on three sides.

Location: The unit was located northeast of the 105-N Reactor Building, adjacent to the 116-N-1 Crib.

Related Sites/ Structures: 116-N-2 is associated with portions of the 100-N-63 piping.

Process Description: The 116-N-2 Tank was used to temporarily store and neutralize acidic decontamination waste from the internal decontamination of the N Reactor primary loop through an underground pipeline. An additional, small scale transfer line enters the tank from the N Reactor Building. The primary loop was decontaminated every three to five years. Each decontamination event resulted in approximately 2.3E+06 liters (6.0E+05 gallons) of contaminated solution. The decontamination solutions contained approximately 80,000 liters (21,000 gallons) of 70% phosphoric acid and 180 kilograms (400 pounds) of diethylthiourea. The solutions were neutralized in the tank. From 1968 to 1972, the neutralized solutions were pumped into trucks parked on the east side of the containment area and transported to 200 Area for disposal. After 1972, the solution was sent to the 1314-N Liquid Waste Loadout Station. The solutions were also discharged to the 116-N-1 Crib, if necessary.

Waste Type: Process Effluent

Waste Description: Phosphoric acid used in the internal decontamination of the primary loop of the reactor, and successive rinse water were temporarily stored in this tank before being shipped to the 200 Area storage tanks. The liquid in the tank was neutralized with sodium hydroxide. Three unplanned releases of decontamination solution occurred at this site which cumulatively totaled 3.43E+05 liters (90,600 gallons).

Closure Info: Interim (5/7/2013): Remedial action of the 116-N-2 (Golf Ball) waste site was performed between March 1, 2011 and April 26, 2012. Equipment decontamination was conducted within the southeast corner of the waste site excavation, and that area was remediated May 7 and 8, 2012. The maximum depth of the excavation was 13 meters (42.7 ft) bgs and resulted in the removal of approximately 11,144 bank cubic meters (BCM) (14,576 bank cubic yards [BCY]) of soil and debris. The debris consisted of rock, sand, and piping material. The contaminated soil and debris were directly loaded out for disposal at the Environmental Restoration Disposal Facility (ERDF). Also removed with the 116-N-2 excavation were the UPR-100-N-5 and UPR-100-N-25 waste sites, as well as portions of the 100-N-84 and 100-N-63 pipelines. A section of the 100-N-63:2 pipeline remained on a side slope in the northern part of the excavation until it was remediated between March 22, and 25, 2013. No anomalous material was found during remediation. No in-process samples were collected for the 116-N-2 grouping of waste sites.

Clean padding material (soil and gravel) had been previously placed on the ground surface south of the excavation to cover radiological contamination that resulted from the previous D4 activities to remove the golf ball and silo structures. The padding material and approximately 2 meters (6.5 ft) of soil below the padding was scraped and removed for disposal at ERDF.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	116-N-3	**Classification:**	Accepted
Names:	116-N-3; 1325-N Crib and Trench; 1325-N Liquid Waste Disposal Facility	**Reclassification**	Interim Closed Out (12/23/2002)
Type:	Crib	**Start Date:**	1/1/1983
Status:	Inactive	**End Date:**	1/1/1991

Description: The site has been remediated and Interim Closed Out.

Location: The site was located at the northeast corner of the 100-N Area outside the fence line, 305 meters (1,000 feet) east and 61 meters (200 feet) north of the 1301-N Crib.

Related Sites/ Structures: 116-N-3 is associated with the 100-N-63, 100-N Reactor (1314-N, 116-N-1 and 116-N-3) TSD Underground Pipelines and concrete encased pipe by-pass structure.

Process Description: The 116-N-3 Crib (1325-N LWDF) was designed for the disposal of liquid waste percolation through the soil column. It was built to replace the 116-N-1 Crib and first received N Reactor effluent in 1983. The 116-N-3 Trench was activated in September 1985 to provide additional disposal capacity. Effluent reportedly never overflowed beyond the first earthen dam in the trench. The LWDF has not received waste since February 1987 and was closed under interim status.

The process design capacity for the 1325-N LWDF was 1.64E+07 liters (4.32E+06 gallons) per day. The design capacity reflected the maximum volume of water discharged daily, rather than the physical capacity of the unit.

This unit consisted of a rectangular concrete crib that measured 76.25 by 73.20 meters (250 by 240 feet) and a percolation trench. The trench, located on the northeast side of the crib, measured 3 meters (10 ft) wide, 2.1 meters (7 ft) deep, and 915 meters (3,000 ft) in length. It was divided into four equal sections by three earthen dams. The trench was also covered with concrete panels. Effluent was delivered to the 116-N-3 Crib through a 448 meter (1,468 foot) long by 0.9 meter (Diameter Nominal [DN] 900) (36 inch) diameter pipeline that entered the crib at the southwest end. A covered concrete by-pass structure ran parallel to the pipeline and connected to the crib at the southwest end. The by-pass structure was built at the same time as the 1312-N Retention Basin (also known as the Liquid Effluent Retention Facility or LERF).

Waste Type: Process Effluent

Waste Description: This unit received radioactive activation and fission products and small quantities (below regulatory limits) of corrosive liquids and laboratory chemicals. Dangerous waste code numbers include: F003, D002, D006, D007, D008, D009, U133, WC02, and WT02.

Closure Info: Interim: A portion of the pipeline 100-N-63:1 was remediated with the 116-N-3 Crib and Interim Closed Out in CVP-2002-00002. For purposes of the CVP and consistent with the permitted TSD site designation, the 116-N-3 Crib and Trench, the 100-N-63:1 Pipeline, and the bypass structure are collectively referred to as the 116-N-3 site.

Remediation at the 116-N-3 site began on July 21, 2000. Excavation of the site involved removing the overburden materials, debris, the contaminated and uncontaminated structure, and underlying contaminated soil. Based on field screening, overburden materials identified as potentially clean were placed in stockpiles for potential use as backfill. The pipeline bypass (100-N-63:1) trenches were excavated completely and clean backfill was used to provide a temporary road for utilities and crossing. Contaminated materials were disposed of at the ERDF. On December 21, 2001, the excavation was completed. Only the portion of the trench near the crib was excavated. Effluent in the trench percolated into the soil column before overflowing the first earthen dam. Thus, the remainder of the trench beyond the first dam was not affected by waste disposal activities and did not require remediation. The excavation for the

entire 116-N-3 site was approximately 21,980 square meters (236,590 sq. ft.) in area. Soils were removed beneath the crib and trench to a minimum of 1.5 meters (5 ft) below the engineered structures. Approximately 140,270 metric tons (154,578 tons) of material from the site were disposed of at the ERDF.

Code:	116-N-4	**Classification:**	Accepted
Names:	116-N-4; 1300-N Emergency Dump Basin	**Reclassification**	Interim Closed Out (5/14/2013)
Type:	Retention Basin	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: The waste site has been remediated and Interim Closed Out. It consisted of the 1300-N Emergency dump basin. The 116-N-4 Emergency Dump Basin was a rectangular shaped, outdoor, concrete storage basin with a 10.7-centimeter (0.188-inch) carbon steel liner. During the basin demolition in 2011, hot spot contamination and a potential plume was identified on the north end of the basin excavation. This contamination was deferred to the 100-N-64:33 (105/109-N Cooling Water Effluent Underground Pipelines)site. Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Location: The basin was located on the west side of the 109-N Building and the 105-N Reactor Building.

Release Description: The basin leaked to the soil at the northeast and northwest corners of the basin during the early 1980s.

Related Sites/ Structures: The basin is associated with suspected unplanned releases 100-N-29, 100-N-30 and 100-N-38. It is also associated with 100-N-64:3, due to the hot spot contamination found on the north side of the basin.

Process Description: The 116-N-4 Emergency Dump Basin (EDB) was originally designed to receive emergency single pass cooling water from N Reactor. In the late 1960's the unit was determined to be insufficient for its original purpose because it did not have adequate capacity for the volume of coolant used during an emergency cooling operation. It was replaced with the 1304-N Emergency Dump Tank (EDT) in 1973. The EDB was never used for it's original purpose. Instead, 116-N-4 received contaminated liquid generated during the periodic blowdown of the steam generators located in the 109-N Building from 1973 to 1987. This condensate contained low levels of radioactive contaminants. It also received radioactive waste from the N Reactor Lift Station. Since the shutdown of N Reactor in 1987, approximately 2.0E+06 liters (7.5E+05 gallons) of water has been maintained in the basin to cover the layer of sludge in the bottom of the basin to prevent it from drying and causing airborne contamination. Non-filtered river water has been added as needed to maintain an adequate water level.

Waste Type: Sludge

Waste Description: Sediments were sampled in 1995 and found to contain radionuclides exceeding Westinghouse Hanford Company Category I limits and heavy metal concentrations below Resource Conservation and Recovery Act (RCRA) limits. The site is, therefore, radiologically contaminated but is not a mixed waste site. Radionuclide and heavy metal characterization is provided in BHI-00731. Since basin leakage has occurred, additional contaminants may be expected in the soils beneath the basin. Contaminants in the Dump Basin liquid include average concentrations of 6.25 E+05 of H-3, 6.12 E+01of C0-60, 5.70 E+04 of Sr-90, 2.51 E+01 of Zr-95,<5.16 E+01 of Ru-106, 2.16 E+01 of Sb-125, ><5.16 E+00 of Cs-134, 9.27 E+02 of Cs-137, 1.62 E-02 of Pu-239 and 1.82 E-01 of Pu.

Closure Info: Interim (5/14/2013): DOE agreed to defer the remediation of the "hot spots" plume (north end of the 116-N-4) to occur during the excavation of the collocated 100-N-64 and UPR-100-N-7 waste sites. The northern portion of the 116-N-4 waste site was reassigned to waste site 100-N-64:3 (105/109-N Cooling Water Effluent Underground Pipelines) on April 16, 2013 per the

agreement.

Remedial action at the 116-N-4 Emergency Dump Basin (EDB) waste site was performed between March 21 and June 29, 2011. Due to safety issues involved in removing the fuel storage basin, the northern section of the 116-N-4 waste site was not remediated and was deferred to the 100-N-64 waste site excavation (WCH 2011c). Excavation continued until all debris and contamination associated with the waste site had been removed. Approximately 413 bank cubic meters (BCM) (540 bank cubic yards [BCY]) of contaminated soil and debris was direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Approximately, 1,680 BCM (2,197 BCY) of contaminated soil and debris was stockpiled and later loaded out for disposal at the (ERDF). Approximately 1,105 BCM (1,445 BCY) of additional contaminated soil was later direct loaded for disposal at the ERDF for a final disposal volume of 3,198 BCM (4,182 BCY). No stained soil or anomalous material were discovered during remediation activities.

During remediation of the 116-N-4 EDB, it was recommended to include excavation only to a depth necessary to remove the west and south walls and the basin steel structure. The north and east walls (closest to the 105-N/109-N Buildings) were left in place to prevent an unstable condition of other structures, including the 105-N/109-N Buildings and adjacent piping (sitecode 100-N-64). The east wall was eventually removed during the excavation of the 116-N-4 EDB. The remaining contamination from the north and east walls was removed during deactivation, decontamination, decommissioning, and demolition (D4) removal of the fuel storage basin, which was completed in spring 2012. The west excavation boundary of borders the 100-N-57, 1304-N Emergency Dump Tank waste site excavation and is included in the 100-N-57 work instruction. Unplanned releases associated with the 116-N-4 waste site will be reclassified separately.

Code:	118-N-1	**Classification:**	Accepted
Names:	118-N-1; 1303-N Radioactive Dummy Burial Facility; 1303-N Spacer Silos; 100-N Area Silos; 100-N Area Spacer Silos; 118-N	**Reclassification**	Interim Closed Out (8/16/2013)
Type:	Silo	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1995

Description: The site has been remediated and Interim Closed Out. The 1303-N Spacer Silos consisted of three buried silos used for temporary storage of irradiated metallic fuel rod spacers removed from the 105-N Reactor. The silos were covered and surrounded with an earth berm and had a 30.5 meters (100 ft) reinforced concrete retaining wall along the west side. The soil berm had scant vegetation growing on it and a single vent stack protruded from the mound. A chain link fence surrounded the site on three sides and was posted with "Contamination Area, Underground Radioactivity and Soil Contamination Area" signs. The western side was barricaded with a 2.1 meter (7 foot) concrete wall. Following surface stabilization in 1998, the site was posted with Underground Radioactive Material signs. The silos were demolished in 2012.

Location: The site was located outside the northwest corner of the 105-N Building, approximately 30 meters (98 feet) northwest of the 105-N Transfer Area.

Related Sites/ Structures: The spacer transfer line (dummy disposal line) became part of 100-N-84:6. UPR-100-N-3 and UPR-100-N-12 were documented leaks in the spacer transfer line.

Process Description: The site contained three concrete silos, each 4.9 meters (16 feet) in diameter. Periodically, the contents were shipped to the 200 Area Burial Grounds for permanent disposal. Two of the silos are open bottomed.

Silo 1 began operation in 1963 and was a 30.5 centimeter (12 inch) thick reinforced concrete culvert 4 meters (13 ft) in diameter and 7.6 meters (25 ft) long, buried upright and extending about 7.1 meters (20 ft) below grade. Approximately 0.9 meters (3 ft) of packed aluminum turnings were placed at the base of silo 1. Silos 2 and 3 were added in 1967 and were corrugated, galvanized-steel culverts 5.2 meters (17 ft) in diameter and 10.7 meters (35 ft) long that extended 9.1 meters (30 ft) below grade. All three silos were standing vertically on end with the top 1.5 meters (5 ft) being above grade with concrete covers.

When a silo was completely full, the spacers were removed and shipped to the 200 Area burial grounds for disposal.

Waste Type: Equipment

Waste Description: This site received byproduct radioactive metallic fuel spacers from the reactor. Quantities were variable based upon reactor operation levels. The radioactively contaminated fuel spacers were temporarily stored in the underground silos and then shipped to the 200 Area Low-Level Burial Grounds for disposal. All spacers were removed from the silos in September 1995.

Closure Info: Interim (8/16/2013): The 118-N-1 silos were remediated in 2012. Approximately 8,680 bank cubic meters of soil was removed by the Field Remediation project from January 4, 2013, through March 22, 2013. Radiological surveys were performed after the soil was removed. All waste was direct loaded during the excavation and disposed at the ERDF. No anomalies were encountered during the remedial action activities.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	120-N-1	**Classification:**	Accepted
Names:	120-N-1; 1324-NA Percolation Pond	**Reclassification**	None
Type:	Pond	**Start Date:**	1/1/1977
Status:	Inactive	**End Date:**	1/1/1991

Description: The site was remediated in September/October 2000. The remedial activity for sites 100-N-58, 120-N-1 and 100-N-2 was documented in CVP-2001-00021. A Reclassification form was completed for 100-N-58. However for 120-N-1 and 120-N-2, Washington State Department of Ecology rejected the certification of closure from DOE. A post-closure groundwater plan must be submitted to Ecology and approved prior to approval of the Certification of Closure documentation.

Location: The 120-N-1 site was co-located with 100-N-58, 120-N-2 sites in the 100-N Area in the 100-NR-1 Operable Unit. These sites are about 100 m (328 ft) southeast of the 163-N Demineralization Plant Building, and are approximately 400 m (1,312 ft) from the Columbia River.

Release Description: The site has been remediated. This site received intermittent releases of corrosive liquids from the 163-N Demineralized Water Treatment Plant prior to May 1986. The alkaline Hanford soils acted as a buffer to neutralize acidic wastes.

Related Sites/ Structures: The 163-N Building, 183-N Building, 120-N-2 (1324-N) Surface Impoundment, and 100-N-58 (1324-N South Settling Pond) are associated with this site.

Process Description: In 1977 the 120-N-1, 120-N-2, and 100-N-58 sites were initially constructed as the East Percolation Pond and North and South Settling Ponds, respectively. These unlined ponds received 163-N anion/cation regeneration effluent as well as the 183-N Filtered Water Plant filter backwash effluent. In 1982, because of pond percolation problems, the 183-N filter

backwash was rerouted to an effluent disposal pond (130-N-1). During this time period the 100-N-58 site was backfilled.

Liquid wastes were transferred to the north and south settling ponds where particulates were allowed to settle out. After the solids, primarily from the filter backwash effluent, had settled the contents of the settling ponds were transferred to the percolation pond. Between 1983 and 1986, the settling ponds were closed and the percolation pond was enlarged. The regeneration effluent was then discharged directly to the percolation pond through a 20-centimeter (8-inch) diameter PVC valved pipeline. The filter backwash effluent was then discharged to the 130-N-1 Filter Backwash Disposal Pond through a rerouted 40-centimeter (16-inch) diameter PVC pipeline that ran under the 100-N-58 South Settling Pond. The south settling pond was backfilled. Effluent was treated in the percolation pond by the alternate addition of acidic (cation) column regeneration effluent and alkaline anion column regeneration effluent. This alternate addition of low and high pH effluent served to neutralize the effluents. The percolation pond also made use of the buffering capacity and calcareous nature of the soil underlying it to neutralize these corrosive wastes.

Waste Type: Process Effluent

Waste Description: Until 1983, the percolation pond received corrosive wastes from the regeneration of the demineralizer column in the 163-N Demineralizer Plant and filter backwash water. It also received nonregulated neutralized waste from the 1324-N Surface Impoundment and non-regulated process and cooling water from the 163-N Plant. Discharge of dangerous wastes was discontinued in April 1986. After November 1988, the percolation pond received neutralized waste water with a pH range between 4 and 11. The percolation pond no longer receives wastes. Sampling and analysis data of surface soils and sediment are listed in DOE/RL-90-22.

Closure Info: Interim: The site was remediated in September/October 2000. A Reclassification form was completed for 100-N-58. However for 120-N-1 and 120-N-2, Washington State Department of Ecology rejected the certification of closure from DOE. A post-closure groundwater plan must be submitted to Ecology and approved prior to approval of the Certification of Closure documentation.

Remedial/corrective action field activities at the 120-N-1, 120-N-2, and 100-N-58 sites were conducted in September 2000, and included the removal and disposal of miscellaneous structural debris-type items. A total of about 120 cubic meters (4,238 cu ft) of material was removed from the sites. The material consisted of about 15 cubic meters (530 cu ft) of concrete, 96 cubic meters (3,390 cu ft) of high-density polyethylene (HDPE) liner, 4 cubic meters (141.3 cu ft) of polyvinyl chloride (PVC) piping, and 0.5 cubic meters (17.7 cu ft) of steel fencing material. The material was disposed of in the inert demolition landfill in the 100-H Area. Waste designation and disposal documentation is kept in project files. The two 20.3-cm (8-in.) diameter influent pipelines were sampled and remain in place.

Closure performance standards were established by the Washington State Department of Ecology, in concurrence with the U.S. Department of Energy, Richland Operations Office. These performance standards are documented in the 100-NR-1 Treatment, Storage, and Disposal Units Corrective Measures Study/Closure Plan (CMS/CP) (DOE-RL-90-22) and the Remedial Design Report/Remedial Action Work Plan for the 100-NR-1 Treatment, Storage, and Disposal Units (RDR/RAWP) (DOE/RL-2000-16). Permit conditions were established in the Hanford Facility Dangerous Waste Permit (Ecology 1994). While sites 120-N-1, 120-N-2, and 100-N-58 are not included in a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) record of decision (ROD) corrective action activities have been documented in CVP-2001-00021 (CVP).

The soil investigation conducted at these sites in 1992 and 1993 for the CMS/CP indicated that the site did not require soil remediation. Therefore, the selected remedial/corrective action

included the removal and disposal of the miscellaneous site structures, including the 120-N-2 liner system, a small sampling shed, fencing, and other miscellaneous debris. The CMS/CP soil investigation indicated that there generally are no contaminants of concern (COCs) for these waste sites. However, because a former overflow area and the waste site influent pipelines required additional sampling (as specified by the CMS/CP), these sites were included in the Sampling and Analysis Plan for the 100-NR-1 Treatment, Storage, and Disposal Units During Remediation and Closeout (SAP) (DOE-RL-2000-07). The verification samples collected under the sampling and analysis plan were analyzed for generally the same inorganic metals and wet chemical anions listed in the CMS/CP soil investigation. The samples were also analyzed for pH. The analytical results from the additional soil sampling and the pipeline scale sampling are presented in Appendix A of the CVP. The analytical results of the soil samples are consistent with the findings of the CMS/CP: soil concentrations are at or below Hanford Site or Washington State background concentrations.

Code:	120-N-2	**Classification:**	Accepted
Names:	120-N-2; 1324-N Surface Impoundment	**Reclassification**	None
Type:	Surface Impoundment	**Start Date:**	1/1/1986
Status:	Inactive	**End Date:**	1/1/1988

Description: The site was remediated in September/October 2000. The remedial activity for sites 100-N-58, 120-N-1 and 120-N-2 was documented in CVP-2001-00021. A Reclassification form was completed for 100-N-58. However for 120-N-1 and 120-N-2, Washington State Department of Ecology rejected the certification of closure from DOE. A post-closure groundwater plan must be submitted to Ecology and approved prior to approval of the Certification of Closure documentation.

Location: The 120-N-2 site was co-located with 120-N-1 and 100-N-58 sites in the 100-N Area in the 100-NR-1 Operable Unit of the Hanford Site in southeastern Washington State. These sites are about 100 meters (328 ft) southeast of the 163-N Demineralization Plant Building, and are approximately 400 meters (1,312 ft) from the Columbia River.

Related Sites/ Structures: The 163-N Building, 183-N Building, 100-N-58 (1324-N) South Settling Pond and 120-N-1 (1324-NA) Percolation Pond are associated with this site.

Process Description: In 1977 the 120-N-1, 120-N-2, and 100-N-58 sites were initially constructed as the East Percolation Pond and North and South Settling Ponds, respectively. These unlined ponds received 163-N anion/cation regeneration effluent as well as the 183-N Filtered Water Plant filter backwash effluent. In 1982, because of pond percolation problems, the 183-N filter backwash was rerouted to an effluent disposal pond (130-N-1). During this time period the 100-N-58 site was backfilled. Prior to 1982, approximately 1.63E+06 liters/day (4.3E+05 gallons/day) of acidic and caustic effluents were transferred by underground lines to the 120-N-2 Surface Impoundment to be neutralized. Caustic anion regeneration effluent was generally neutralized in the facility by the addition of acidic cation regeneration effluent. Acid cation regeneration effluent was similarly neutralized by the addition of caustic anion regeneration effluent. Once neutralization was complete, the neutralized effluent was discharged to the 120-N-1 Percolation Pond via a 30-centimeter (12-inch) polyvinyl chloride (PVC) drainline and/or a 30-centimeter (12-inch) PVC overflow line.

Waste Type: Process Effluent

Waste Description: The 1324-N Surface Impoundment received corrosive regeneration effluent and process and cooling water from the 163-N Demineralization Plant. Analytical results from surface soils and sediment test pit sampling are reported in DOE/RL-90-22.

Closure Info: Interim: The site was remediated in September/October 2000. A Reclassification form was

completed for 100-N-58. However for 120-N-1 and 120-N-2, Washington State Department of Ecology rejected the certification of closure from DOE. A post-closure groundwater plan must be submitted to Ecology and approved prior to approval of the Certification of Closure documentation.

Remedial/corrective action field activities at the 120-N-1, 120-N-2, and 100-N-58 sites were conducted in September 2000, and included the removal and disposal of miscellaneous structural debris-type items. A total of about 120 cubic meters (4,238 cu ft) of material was removed from the sites. The material consisted of about 15 cubic meters (530 cu ft) of concrete, 96 cubic meters (3,390 cu ft) of high-density polyethylene (HDPE) liner, 4 cubic meters (141.3 cu ft) of polyvinyl chloride (PVC) piping, and 0.5 cubic meters (17.7 cu ft) of steel fencing material. The material was disposed of in the inert demolition landfill in the 100-H Area. Waste designation and disposal documentation is kept in project files. The two 20.3-cm (8-in.) diameter influent pipelines were sampled and remain in place.

Closure performance standards were established by the Washington State Department of Ecology, in concurrence with the U.S. Department of Energy, Richland Operations Office. These performance standards are documented in the 100-NR-1 Treatment, Storage, and Disposal Units Corrective Measures Study/Closure Plan (CMS/CP) (DOE-RL-90-22) and the Remedial Design Report/Remedial Action Work Plan for the 100-NR-1 Treatment, Storage, and Disposal Units (RDR/RAWP) (DOE/RL-2000-16). Permit conditions were established in the Hanford Facility Dangerous Waste Permit (Ecology 1994). While sites 120-N-1, 120-N-2, and 100-N-58 are not included in a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) record of decision (ROD) corrective action activities have been documented in CVP-2001-00021 (CVP).

The soil investigation conducted at these sites in 1992 and 1993 for the CMS/CP indicated that the site did not require soil remediation. Therefore, the selected remedial/corrective action included the removal and disposal of the miscellaneous site structures, including the 120-N-2 liner system, a small sampling shed, fencing, and other miscellaneous debris. The CMS/CP soil investigation indicated that there generally are no contaminants of concern (COCs) for these waste sites. However, because a former overflow area and the waste site influent pipelines required additional sampling (as specified by the CMS/CP), these sites were included in the Sampling and Analysis Plan for the 100-NR-1 Treatment, Storage, and Disposal Units During Remediation and Closeout (SAP) (DOE-RL-2000-07). The verification samples collected under the sampling and analysis plan were analyzed for generally the same inorganic metals and wet chemical anions listed in the CMS/CP soil investigation. The samples were also analyzed for pH. The analytical results from the additional soil sampling and the pipeline scale sampling are presented in Appendix A of the CVP. The analytical results of the soil samples are consistent with the findings of the CMS/CP: soil concentrations are at or below Hanford Site or Washington State background concentrations.

Code:	120-N-3	**Classification:**	Accepted
Names:	120-N-3; 163-N Neutralization Pit and French Drain	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	French Drain	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1988

Description: The waste site has been remediated and Interim Closed Out. It was a concrete walled pit that measured 10.2 meters (33.3 feet) by 2.8 meters (9 feet) and is 2.4 meters (8 feet) deep. The drain structure was inside the concrete pit. The pit and the drain structure discharged to the soil (per H-1-37249).

Location: The site is located west of the 163-N Building.

Release Description: Intermittent small releases of sulfuric acid and sodium hydroxide from the 163-N Demineralized Water Treatment Plant day-storage tanks were disposed to the soil at this location. The alkaline Hanford soils acted as a buffer to neutralize acidic wastes.

Process Description: Intermittent, small releases of sulfuric acid and sodium hydroxide were discharged from 163-N De-mineralized Water Treatment day storage tanks to the site. Two pipelines from the 163-N facility day storage tanks entered the neutralization pit and french drain. The caustic material was released directly to the pit via the western-most pipe. The acid was released to the limestone filled french drain via the eastern most pipe. The french drain was located wholly within the concrete-walled pit.

Waste Type: Chemicals

Waste Description: The unit received unknown amounts of corrosive liquids, such as sodium hydroxide and sulfuric acid.

Closure Info: Interim (3/20/2013): Remedial action at the 120-N-3 waste site was performed August 10, 2011, through January 31, 2012. The excavation continued to a depth of 5 meters (16.4 ft) below ground surface resulting in approximately 3,917 bank cubic meters (5,123 bank cubic yards) of contaminated soil and debris removed for disposal at the Environmental Restoration Disposal Facility (ERDF). All material was direct-loaded from the excavation. No waste staging pile areas are associated with the site.

The waste material removed from the 120-N-3 waste site consisted of soil, concrete, and rebar. No anomalous materials were encountered during the excavation. There are no overburden piles or waste staging pile areas associated with the 120-N-3 waste site.

During remediation of the 120-N-3 waste site, suspect oil-stained soil was observed on the east sidewall of the excavation. This staining was determined not related to the 120-N-3 waste site, but informational in-process soil samples were collected from the stained area. This stained area will be addressed with 100-N-106.

Code:	120-N-4	**Classification:**	Accepted
Names:	120-N-4; 1310-N Hazardous Waste Storage Area; 1310-N Non-Hazardous Waste Pad; 1310-N Waste Oil Storage Pad	**Reclassification**	Interim Closed Out (5/27/2014)
Type:	Storage Pad (<90 day)	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	1/1/1989

Description: The waste site was remediated and Interim Closed Out. The 1310-N Hazardous Waste Storage Area was a concrete pad approximately 20 by 25 meters (70 by 80 feet), surrounded with a concrete berm (curb) and locked chain-link fence. Outside the pad the ground surface is gravel. A small open shed is in the southwest corner of the pad. The site was posted as a Radioactive Materials Area, and is also posted "Contaminated Lead Storage Area (For Re-Use)." In April 2000, the area contained several wrapped objects marked with radioactive warning signs.

Location: The site is located immediately south of the 1310-N Facility.

Release Description: Waste sites 100-N-26 and 120-N-4 were impacted by a raw water pipeline break on December 11, 2008. The regulators and tribes have requested that this release information be noted in WIDS.

During the removal of the concrete pad at the 1524-N Hazardous waste storage facility on

December 11, 2008 a 1.5 inch feed line from the export water line was inadvertently contacted during the excavation of the concrete pad. A rupture of the 12 inch export water line and a release of at least 50,000 gallons of raw water onto the surrounding area resulted. A temporary berm was constructed around the area using excess clean 100 Area Borrow Pit material to contain the release and control potential spread of radiological contamination associated with the 1524-N pad. Once the water line was turned off the water in the area immediately percolated into the ground.

In-process and post-event surface soil radiological field survey results did not find any contamination spread as a result of the water release. A follow-up review of nearby monitoring wells as well as the standard waste site confirmatory sampling will be used to ascertain potential impacts/conditions.

Process Description: The unit stored waste held in drums and containers from 1985 to 1989. The waste oil drums have been removed. The pad is (in April 12, 2000) was used to store lead lined burial casks and radioactive materials.

Closure Info: Interim (5/27/2014): The concrete pad comprising the 120-N-4 waste site was removed and disposed to the Environmental Restoration Disposal Facility (ERDF) between December 2008 and February 2009. During the removal of the concrete pad on December 11, 2008, a 1.5 inch feed line from the export water line was inadvertently contacted during the excavation of the concrete pad. A rupture of the 12 inch export water line and a release of at least 50,000 gallons of raw water onto the surrounding area resulted. A temporary berm was constructed around the area to contain the release and control potential spread of radiological contamination associated with the 1524-N pad. Once the water line was turned off the water in the area immediately percolated into the ground. The soil underlying the concrete pad was evaluated for residual contamination.

Between October 8 and October 10, 2013, 956 bank cubic meters (BCM) of material from the 120-N-4 site was directly loaded out for disposal at ERDF. Along with this, approximately 1 BCM of wire and concrete debris were removed. This excavation was approximately 1 meter (3.3 ft) deep. No anomalies were discovered.

Code:	120-N-7	**Classification:**	Accepted
Names:	120-N-7; 108-N Acid Unloading Facility French Drain	**Reclassification**	Interim Closed Out (7/2/2013)
Type:	French Drain	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: The site has been remediated and Interim Closed Out. It had been a vertical broken vitrified clay pipe extending above grade on a discolored soil mound. Limestone was visible inside the broken pipe. The overhead lead pipe dripped acid from the boom hose funnel to the french drain. It was visible at grade level, just north of the french drain.

Location: The 120-N-7 French Drain was located at the Railroad Car Unloading Facility, approximately 31 meters (100 feet) east of the 108-N Building.

Release Description: The french drain received unknown amounts of sulfuric acid in intermittent discharges. The average amount released is believed to be less than 3.8 liters (1 gallon).

Process Description: The 120-N-7 french drain was used for containment of small releases of sulfuric acid from an overhead transfer boom, which offloaded sulfuric acid from railroad cars or tank trucks. A lead funnel and pipe directed the small releases to the french drain. Prior to remediation the site appeared as a broken vertical vitrified clay pipe extending above grade on a discolored soil mound. The clay pipe was 1.22 meters (4.0 ft) deep, 0.9 meters (3 ft) in diameter, and filled

with limestone. The lead pipe delivered the acid drips from the boom hose funnel to the french drain. This site was operational from 1963 to 1987.

Waste Type: Chemical Release

Waste Description: The unit received unknown amounts of sulfuric acid in intermittent discharges. Each discharge is estimated to have averaged less than 3.8 liters (1 gallon) of liquid. The concentrated acid may have etched lead from the funnel and pipe as it discharged to the french drain.

Closure Info: Interim (7/2/2013): The 120-N-7 waste site was remediated between December 20 and December 27, 2012. Approximately 145 bank cubic meters (190 cubic yards) of potentially contaminated material was removed and disposed to the Environmental Restoration Disposal Facility. The removed material consisted of stained soil, railroad ties, and lead-cored communication cable.

Code: 124-N-1 **Classification:** Accepted

Names: 124-N-1; 124-N-1 Septic Tank; 1607-N1; 100-N Sanitary Sewer System No. 1 **Reclassification** Interim Closed Out (7/2/2013)

Type: Septic Tank **Start Date:** 1/1/1963

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. The cesspool structure and underlying soils were excavated in 2012. The septic tank had been previously demolished in 2009. The upper surface of the 124-N-1 Septic Tank was visible and measured 1.5 by 1 meters (58 by 40 inches) and stood 36 centimeters (14 inches) above grade. The circular seepage pit had 18.4 square meters (200 square feet) of infiltration area and 8,700 liters (2,300 gallons) of capacity. Sanitary wastes entered the septic tank through a 10-centimeter (4-inch) vitrified clay pipe connecting the septic tank to the cesspool.

Location: The septic tank and seepage pit were located about 14 meters (15 yards) south of the south wall of the 163-N Water Treatment Building.

Related Sites/ Structures: This site supported the 163-N Water Treatment Building.

Waste Type: Sanitary Sewage

Waste Description: This unit receives approximately 5,300 liters per day (1,400 gallons per day) of sanitary sewage.

Closure Info: Interim (7/2/2013): The 124-N-1 Sanitary Sewer System consisted of a septic tank and a cesspool. The septic tank was removed by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project in June and September 2009 and disposed at the Environmental Restoration Disposal Facility (ERDF). Removal of the cesspool structure and excavation of underlying soils associated with the entire septic system was performed on November 28, 2012 and continued through February 8, 2013. In addition, the portion of the 100-N-84:5 sanitary pipeline that connected the septic tank with the cesspool was removed.

Red-stained soil observed during the initial excavation was sampled on December 6, 2012, and additional soil was removed from the excavation. Approximately 721 bank cubic meters of contaminated soil and debris was directly loaded out for disposal to ERDF.

One anomaly was encountered during the remedial action activities. The anomaly was a 1.2 meter by 1.2 meter by 2.1 meter (4 ft by 4 ft by 7 ft) concrete box that was found to be empty and was disposed to ERDF.

Code:	124-N-2	**Classification:**	Accepted
Names:	124-N-2; 124-N-2 Septic Tank; 1607-N2; 100-N Sanitary Sewer System No. 2	**Reclassification**	Interim Closed Out (8/21/2013)
Type:	Septic Tank	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1987

Description: The waste site has been remediated and Interim Closed Out. It was a septic tank and seepage pit. The seepage pit provided approximately 18.4 square meters (200 square feet) of infiltration surface area and 8,700 liters (2,300 gallons) of fluid storage.

Location: The site was located southeast of the 182-N Building.

Process Description: This unit received sanitary sewage from the 182-N Building. The seepage pit provided approximately 18.4 square meters (200 sq. ft.) of infiltration surface area and 8,700 liters (2,300 gal) of fluid storage. During the period of operation, the septic tank received an estimated 757 liters/day (200 gal/day) of sanitary sewage from the 182-N Building.

Waste Type: Sanitary Sewage

Waste Description: During the period of operation, this unit received an estimated 757 liters/day (200 gallons/day) of sanitary sewage from the 182-N Building.

Closure Info: Interim (8/21/2013): The 124-N-2 waste site was remediated between April 12, 2012, and April 18, 2012, along with the remediation of the 182-N Building by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project. The septic tank excavation extended approximately 1.7 meters (5.6 ft) below the original ground surface. Materials from the 124-N-2 waste site could not be physically separated from the 182-N Building materials. Therefore, an accurate total volume excavated from the 124-N-2 waste site is unknown. A volume of approximately 240 BCM (314 BCY) of material is estimated to have been excavated from the 124-N-2 waste site by the D4 Project. Materials removed from the excavation included the demolished seepage pit, concrete, soil, and rocks. Additional remediation of the 124-N-2 waste site was performed by the Field Remediation (FR) Project between January 21 and 30, 2013. Approximately 371 BCM (485 BCY) of material was excavated from the 124-N-2 waste site for direct disposal at the ERDF.

On March 28, 2013, remediation at the 124-N-2 waste site resumed to further excavate the entire footprint of the 124-N-2 waste site. The excavation was expanded to the east to remove the adjacent 100-N-84:4 pipelines and to allow the 124-N-2 excavation to proceed to a greater depth. The 124-N-2 excavation was completed on April 25, 2013, and final depth of the excavation is approximately 4.9 to 5.1 meters (16 to 17 ft below ground surface), with some locations extending deeper. The 100-N-84:5, 100-N Area Sanitary Pipeline segments were partially removed within the 124-N-2 excavation area during the remediation effort and were addressed with the 124-N-2 waste site verification sampling.

Approximately 1,185 BCM (1,550 BCY) of additional material was removed from the 124-N-2 excavation. All excavated materials and pipelines were removed for direct disposal at the ERDF.

Code:	124-N-3	**Classification:**	Accepted
Names:	124-N-3; 124-N-3 Septic Tank; 1607-N3; 100-N Sanitary Sewer System No. 3	**Reclassification**	Interim Closed Out (7/18/2013)
Type:	Septic Tank	**Start Date:**	1/1/1982
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. It was an underground 1900 liter (500 gallon) precast concrete perforated pipe.

Location: The unit was located adjacent to the north side of the 107-N Building at coordinates N149584.6 E571121.2.

Process Description: The unit is a cesspool consisting of a 1,900-liter (500-gallon) precast concrete perforated pipe with a solid cover, resting on a 0.61-meter (2-foot) thick pad of crushed stone. There are no surface indications of the cesspool's location since there is no above-ground access port to the pit.

Waste Type: Sanitary Sewage

Waste Description: When operational, this unit received approximately 170 liters/day (45 gallons/day) of sanitary sewage.

Closure Info: Interim (7/18/2013): Remedial action at the 124-N-3 waste site was performed in August 2012 by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the adjacent 107-N Basin Recirculation Facility. The cesspool structure was completely removed during remediation of the 124-N-3 waste site and the adjoining 107-N Basin Recirculation Facility. A Global Positioning Environmental Radiological Surveyor (GPERS) survey was conducted on December 14, 2012, within the 107-N Building footprint and the 124-N-3 excavation footprint. Radiological contamination remained within the footprint. Therefore, the area was deferred to the Field Remediation project for final cleanup.

The 124-N-3 waste site underwent additional remediation to remove contaminated soil and debris in January 2013. An additional 14 bank cubic meters (18 bank cubic yards) of soil was removed at the 124-N-3 waste site by the Field Remediation Project. The original grade at the 124-N-3 waste site prior to remediation activities was 140 meters (459 ft) above mean sea level. The final grade at the completion of remedial action activities is 135 meters (443 ft) above mean sea level resulting in a 5 meter (16 ft) deep excavation. The assumed maximum depth of the cesspool structure was 4.3 meter (14 ft), based on the available records and typical design.

Code: 124-N-4 **Classification:** Accepted

Names: 124-N-4; 124-N-4 Septic Tank; 1607-N4; 100-N Sanitary Sewer System No. 4 **Reclassification** Interim Closed Out (7/9/2012)

Type: Septic Tank **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1987

Description: The 124-N waste site has been remediated and Interim Closed Out. It consisted of two septic tanks and an associated tile field, which served as the primary septic system for the majority of the 100-N Area buildings. Multiple 8-inch diameter cast iron sewer lines connected the two septic tanks to the tile field. They are segments of 100-N-84:5 miscellaneous piping.

Location: The unit was located in the northeast corner of 100-N Area, outside the fence, directly south of 1301-N Crib (116-N-1) and east of 1310-N. Part of the 1310-N shield berm was immediately west of the 124-N-4 waste site and borders the septic tank excavation. The site was located inside a posted Contamination Area/Radiation Area.

Related Sites/ Structures: The sanitary sewer lines associated with the 124-N-4 septic system are segments of 100-N-84:5 miscellaneous piping.

Process Description: The unit included a large drain field and two septic tanks, each having a capacity of 63,644 liters (14,000 gallons). The total infiltration surface area of the drain field was 826.8 square

meters (8,900 square feet). The 124-N-4 waste site operated from 1963 to 1987, at which point the 105-N Reactor was put on standby before being permanently shut down in 1991.

Waste Type: Sanitary Sewage

Waste Description: The unit received approximately 136,400 liters/day (30,000 gallons/day) of sanitary sewage.

Closure Info: Interim (7/9/2012): Remedial action at the 124-N-4 waste site was performed between October 28, 2010, and February 16, 2011. Approximately 8,713 bank cubic meters (BCM) (11,396 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 124-N-4 excavation and direct loaded or staged in staging piles prior to being disposed at the Environmental Restoration Disposal Facility (ERDF). Excavation continued until all debris and contamination associated with the waste site had been removed. No radiologically contaminated material was discovered during remediation activities.

The two 124-N-4 septic tanks were sampled on October 13, 2010, to estimate the amount of lime and Water Works absorbent needed to treat and solidify the tank contents prior to remediation. Remedial actions at the 124-N-4 waste site started on October 28, 2010. The tanks were treated and solidified on November 8 and 9, 2010. Once the contents were solidified, the septic tanks were rubblized in place and loaded out for disposal at the Environmental Restoration Disposal Facility (ERDF). Loadout of the 124-N-4 excavation was completed on February 16, 2011.

The 124-N-4 excavation reached a maximum depth of 8 meters (26 ft) below the surrounding ground surface. The septic tank excavations extended approximately 4 meters (13 ft) below the original surface, and the tile field was excavated to approximately 3 meters (10 ft) below the original tile field surface. The remedial action included removal of the four diversion boxes, the 100-N-84:5 pipelines that connected the septic tank to the diversion boxes, and those pipelines from the septic tanks up to the manhole located by the southernmost septic tank. Active power lines extended above the tile field's eastern side between two power poles located near the northeast and southeast corners of the waste site boundary. Due to a need to stabilize the power poles, an estimated 9-meters (30-ft) area surrounding the poles was left in place at the edge of the excavation.

Code:	124-N-9	**Classification:**	Accepted
Names:	124-N-9; 124-N-9 Septic Tank; 1607-N9; 100-N Sanitary Sewer System No. 9	**Reclassification**	Interim Closed Out (8/5/2013)
Type:	Septic Tank	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	

Description: The septic system has been remediated and Interim Closed Out. It consisted of two septic tanks and one drainfield that received sanitary waste from the 1120N building. They were located inside an area that was delineated by light posts and chain.

Location: The unit was located approximately 46 meters (150 feet) northeast of the 1120-N Building.

Process Description: The site consisted of 2 septic tanks and a drain field. Each tank has a volume of 11,360 liters (3,000 gallons), and the drain field has an infiltration surface area of 325 square meters (3,500 square feet). The 1120-N Building housed training facilities and offices and also served as a warehouse. For a brief period of time a radiological counting facility was housed in the building. Storage in the warehouse section included janitorial supplies, pest control supplies, sign shop supplies, and radioactive sources. The radioactive sources were calibration standards used to calibrate the equipment used in the radiological counting facility. Floor drains in the

1120-N facility emptied into a 10 cm (4 in.) polyvinyl chloride (PVC) sewer that bypassed the septic tanks and emptied directly to the drain field. Effluent from the restroom drained into a 10 cm (4 in.) PVC sewer that drained into the septic tanks before being discharged to the drain field.

Waste Type: Sanitary Sewage

Waste Description: This unit receives approximately 8,300 liters/day (2,200 gallons/day) of sanitary sewage.

Closure Info: Interim (8/5/2013): Remedial action at the 124-N-9 waste site was performed between August 15 and August 23, 2012. Approximately 975 bank cubic meters (BCM) (1,275 bank cubic yards [BCY]) of soil, rock, concrete, and piping were removed and disposed at the Environmental Restoration Disposal Facility (ERDF). The removed sections of piping between the septic tanks and the drain field are part of the 100-N-84:5 and the 100-N-84:6 waste sites. The excavation was performed to approximately 0.3 meters (1 ft) below the structure of the septic tanks and drain field and is a maximum of approximately 2.8 meters (9.2 ft) deep in the area of the septic tanks and a minimum of 1 meter (3.3 ft) deep in the area of the drain field.

Code: 124-N-10 **Classification:** Accepted

Names: 124-N-10; 124-N-10 Sanitary Sewer System; 1607-N10; 1904-N 100-N Central Sewer System No. 10; 1904-NA Sanitary Lift Sation No.1; Project H-677; 100-N Sewage Lagoon **Reclassification** Interim Closed Out (1/15/2014)

Type: Sewage Lagoon **Start Date:** 2/1/1987

Status: Inactive **End Date:**

Description: The 124-N-10 site has been remediated and Interim Closed Out. It encompassed the footprints of the 1904-N lagoons and the 1904-NA lift stations. 124-N-10 consisted of a three pond sewage lagoon facility (1904-N), a server trunk pipeline and other pipelines, two lift stations (1904-NA), new manholes and associated sewer system instrumentation. The sewer system was deactivated. Demolition began in December 2012 and continued through April 2013. It serviced a minimum of 27 buildings.

Location: The site was located 1 mile northwest of the intersection of N Avenue and Route 4 North cutoff. The sanitary sewer system was parallel with and north of the railroad tracks that intersect N Avenue.

Process Description: This system processed domestic human sewage. Three sewer ponds (or lagoons), identified in the drawings, included a lined aeration pond, a lined stabilization pond, and an unlined infiltration pond, had a total combined length of 822.75 ft by 220 ft wide. The system was designed for a maximum of 2,500 employees and a maximum design flow of 789,000 L (50,000 gal) per day. It began operation in February 1987.

Waste Type: Sanitary Sewage

Waste Description: The maximum design flow for this septic system is 50,000 gallons per day. It is designed for a maximum of 2,500 employees. The site has received domestic wastewater sewage from the 100-N Area and domestic sewage pumped from septic tanks throughout the Hanford Site. Incidental solids (rags, scum, and other debris) are removed from the system and disposed of as solid waste at an approved disposal site. The discharge from the infiltration pond percolates down to the groundwater.

Closure Info: Interim (1/15/2014): Demolition of the 1904-N and 1904-NA facilities was performed from December 2012 through April 2013 by the Deactivation, Decontamination, Decommissioning,

and Demolition (D4) project. The depth of the excavation ranged from approximately 1 meter (3 ft) to 3 meters (9.8 ft) below ground surface. Approximately 18,000 bank cubic meters (23,500 bank cubic yards) of soil and debris was disposed at the Environmental Restoration Disposal Facility (ERDF). All physical components of the 1904-N and the 1904-NA facilities have been removed. Waste characterization samples and in-process soil samples were collected prior to and during the removal of the facilities and the underlying soil. Hexavalent chromium was detected in an in-process soil sample above a remedial action goal (RAG). Therefore, additional soil was removed from the soil sample location.

Following D4 activities, the Field Remediation (FR) project collected in-process soil samples to determine if additional soil remediation was necessary from the 124-N-10 waste site prior to initiating verification sampling activities. The sample results indicated that the waste removal conducted by D4 was sufficient. Therefore, no additional material was removed by the FR project. No anomalies or stained soil were encountered during demolition and removal of the facilities and underlying soil. All material removed from the waste site was direct loaded for disposal at the ERDF. No staging pile areas were associated with the 124-N-10 waste site remediation.

Code:	128-N-1	**Classification:**	Accepted
Names:	128-N-1; 128-N-1 Burning Pit; 100-N Burning Pit	**Reclassification**	Interim Closed Out (4/10/2013)
Type:	Burn Pit	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	1/1/1989

Description: The waste site has been remediated and Interim Closed Out. The site was an area with evidence of burning, in the form of burnt trash and cans. Most of the site had been backfilled.

Location: The site was located approximately 460 meters (1,500 feet) northeast of the 1120-N Building, and was southeast of 116-N-3.

Related Sites/ Structures: 128-N-1 is associated with 100-N-6 and 100-N-16.

Process Description: Combustible materials, such as nuisance vegetation and combustible wastes (office waste, tools and hardware, and potentially paints and solvents), have been burned at this site. After the establishment of the Hanford Central Landfill in the early 1973, the pit was used only for burning nuisance vegetation.

Waste Type: Misc. Trash and Debris

Waste Description: Combustible materials, such as nuisance vegetation and combustible wastes (office waste, tools and hardware, and potentially paints and solvents), have been burned at this site. The quantity of material burned at the site is unknown. Since the establishment of the Hanford Central Landfill (in the early 1970's), this unit has been used for burning nuisance vegetation only.

Closure Info: Interim (4/10/2013): Remediation of 100-N-6, 100-N-16, 100-N-98 area 1, and 128-N-1 waste sites began on August 2, 2010, and was completed on November 28, 2011. A total of approximately 20,334 bank cubic meters (BCM) (26,596 bank cubic yards [BCY]) were excavated and staged for removal to the Environmental Restoration Disposal Facility (ERDF). Between April 16 and 19, 2012, the excavation was expanded to the west to include stained soil Area 2 of the 100-N-98 waste site. Approximately 476 BCM (623 BCY) of soil was removed from 100-N-98 Area 2 and direct loaded for disposal at ERDF. The additional remediation of the spoil pile area (SPA) and the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site excavation generated an additional volume of 5,446 BCM (7,123 BCY) of material for direct load out to ERDF. A total volume of 26,256 BCM (34,342 BCY) was disposed at ERDF, to complete the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste site remediation.

The materials removed from the 100-N-6, 100-N-16, 100-N-98, and 128-N-1 waste sites consisted of abandoned wiring, transite pipe, metallic and wood debris, burnt wood, ash, tar, roofing felt, stained soil, a bucket of grout, an open glass bottle, green fibrous material, purple sandy material, a paint ball, drums containing bunker and amber oil, and miscellaneous demolition debris. Anomalous material discovered during remediation included six 208-L (55-gal) drums, small white ceramic balls used as filtering media, and soil with a strong solvent odor.

Code:	130-N-1	**Classification:**	Accepted
Names:	130-N-1; 183-N Backwash Discharge Pond; 183-N Filter Backwash Pond; 126-N-1	**Reclassification**	Interim Closed Out (9/12/2013)
Type:	Pond	**Start Date:**	1/1/1983
Status:	Inactive	**End Date:**	6/27/2000

Description: 130-N-1 was divided into two subsites: 130-N-1:1, 183-N Northeastern Backwash Discharge Pond and 130-N-1:2, 183-N Southwestern Backwash Discharge Pond. Both subsites have been evaluated. Subsite 1 was remediated and Interim Closed Out. Subsite 2 was evaluated and determined to require No Action. Since both subsites have been reclassified, the parent site is also considered Interim Closed Out.

The site consisted of an irregularly shaped natural marsh-like pond that received filter backwash water from the 183-N Filtration Plant. The pond was originally constructed in 1982, utilizing a natural depression and was known as the Backwash Lake. The construction activities included building a dike to protect a railroad spur that ran along the southern end of the depression and excavating channels to facilitate drainage. The Backwash Lake was put into operation in 1983. It was later referred to as the 183-N Backwash Discharge Pond. The effluent discharge pipe was capped on June 27, 2000.

Location: The site is located approximately 0.4 kilometers (0.25 miles) southeast of the 1324-N Facility.

Related Sites/ Structures: 130-N-1 received waste via the 100-N-58 pipeline.

Process Description: The 183-N Water Treatment Plant was constructed in 1963 to support operations of the 100-N Reactor. The water filtration plant provided treated water for cooling purposes, water for auxiliary support systems, and potable water for administrative buildings and offices. The filter backwash was originally discharged to the River via the 1908-N Outfall until September 2, 1977 when it was diverted to the 163/183N facility discharge pond area (100-N-58, 120-N-1 and 120-N-2). The settling ponds were small unlined basins which were used mainly to settle out solids from the filter backwash. By late 1981 it was apparent that annual dredging of the settling ponds was not sufficient to prevent flooding. 130-N-1 was constructed in 1982 to receive the filter backwash waste stream to reduce the particulate loading on the settling ponds. It began receiving effluent in 1983.

When the pond was active, the State Waste Discharge permit application, (1994), identified four wastewater streams that were routed to the 183-N Backwash Discharge Pond (DOE/RL-94-23).

1 - The Coagulator Drains Wastewater stream, derived from the annual draining and washing of the coagulator basins.

2 - The Filter Backwash Wastewater stream, consisting of backwash from the multimedia gravity filters.

3 - The Non-Contact Cooling Water stream, from an air compressor in the 184-N Building and a fire pump in the 182-N Building.

4 - The Stormwater from the 163-N Demineralizer Sump stream, from the 163-N Trench Sump and the 108-N Neutralizing Sump.

The 183-N Backwash Discharge Pond was became inactive after the 183-N Potable Water Plant was shutdown. The effluent discharge pipe was capped on June 27, 2000.

Waste Type: Water

Waste Description: The unit receives filter backwash containing polyacrylamide and aluminum sulfate.

This Site has the Following SubSites:

Code: 130-N-1:1
Names: 130-N-1:1; 183-N Northeastern Backwash Discharge Pond

Code: 130-N-1:2
Names: 130-N-1:2; 183-N Southwestern Backwash Discharge Pond

Code:	130-N-1:1	**Classification:**	Accepted
Names:	130-N-1:1; 183-N Northeastern Backwash Discharge Pond	**Reclassification**	Interim Closed Out (9/12/2013)
Type:	Pond	**Start Date:**	
Status:	Inactive	**End Date:**	6/27/2000

Description: 130-N-1 Subsite 1 has been remediated and Interim Closed Out. It was the northeastern half of the 183-N Backwash Discharge Pond. The northeastern half was described in the original discharge permit application as having three adjoining portions; a rectangular portion, a neck, and a dry pond. The effluent discharge pipe was capped on June 27, 2000.

Location: The site is located approximately 0.4 kilometers (0.25 miles) southeast of the 1324-N Facility.

Related Sites/ Structures: 130-N-1 received waste via the 100-N-58 pipeline.

Process Description: The 183-N Water Treatment Plant was constructed in 1963 to support operations of the 100-N Reactor. The water filtration plant provided treated water for cooling purposes, water for auxiliary support systems, and potable water for administrative buildings and offices. The filter backwash was originally discharged to the River via the 1908-N Outfall until September 2, 1977 when it was diverted to the 163/183N facility discharge pond area (100-N-58, 120-N-1 and 120-N-2). The settling ponds were small unlined basins which were used mainly to settle out solids from the filter backwash. By late 1981 it was apparent that annual dredging of the settling ponds was not sufficient to prevent flooding. 130-N-1 was constructed in 1982 to receive the filter backwash waste stream to reduce the particulate loading on the settling ponds. It began receiving effluent in 1983. When the pond was active, the State Waste Discharge permit application, (1994), identified four wastewater streams that were routed to the 183-N Backwash Discharge Pond (DOE/RL-94-23).

Closure Info: Interim (9/12/2013): Excavation of the soils associated with the entire 130-N-1:1 subsite was performed by the Field Remediation Project beginning on January 15, 2013, and finishing on April 8, 2013. Approximately 1.7 meters (5 ft) of soil was removed from the excavation and disposed at the Environmental Restoration Disposal Facility (ERDF). Approximately 12,217

bank cubic meters was direct loaded to ERDF. No anomalies were encountered during the excavation and the effluent discharge pipe was cut below grade and buried during this time. Any remaining effluent discharge pipe below grade is related to the 100-N-58 waste site. According to the closure document for the 100-N-58 waste site (CVP-2001-00021), all remaining pipelines were closed out and left in place.

The SubSite is Part Of:

Code: 130-N-1

Names: 130-N-1; 183-N Backwash Discharge Pond; 183-N Filter Backwash Pond; 126-N-1

Code: 130-N-1:2

Classification: Accepted

Names: 130-N-1:2; 183-N Southwestern Backwash Discharge Pond

Reclassification Interim No Action (5/17/2013)

Type: Pond

Start Date:

Status: Inactive

End Date:

Description: 130-N-1 Subsite 2 has been evaluated and determined to require No Action. It was a natural depression in the southwestern portion of the 130-N-1 discharge pond with little vegetation. There is no evidence that this lobe of the pond ever received a significant amount of waste water.

Location: Subsite 2 is the southern half of the 183-N Backwash Discharge Pond. It is located approximately 0.4 kilometers (0.25 miles) southeast of the 1324-N Facility.

Related Sites/ Structures: 130-N-1 received waste via the 100-N-58 pipeline.

Process Description: The pond was originally constructed in 1982 by utilizing a natural depression and was known as the Backwash Lake. The construction activities included building a dike to protect a railroad spur that ran along the southern end of the depression and excavating channels to facilitate drainage. The Backwash Lake was put into operation in 1983. It was later referred to as the 183-N Backwash Discharge Pond, presumably because the area that received water was significantly smaller than originally designed.

The southwestern half of the 183-N Backwash Discharge Pond received little (if any) effluent. The 130-N-1 pond began receiving effluent in 1983 via the 100-N-58 pipeline, which discharged to the northern end of the pond area.

The State Waste Discharge permit application, submitted in June 1994, identified four wastewater streams routed to the 183-N Backwash Discharge Pond (DOE/RL-94-23).

1 - Coagulator Drains Wastewater, derived from the annual draining and washing of the coagulator basins.

2 - Filter Backwash Wastewater, consisting of backwash from the multimedia gravity filters.

3 - Non-Contact Cooling Water, from an air compressor in the 184-N Building and a fire pump in the 182-N Building.

4 - Collection of Stormwater from the 163-N Demineralizer Sump, 163-N Trench Sump, and 108-N Neutralizing Sump.

Closure Info: Interim (5/17/2013): Three in-process samples were collected in the 130-N-1:2 southwestern pond on October 22, 2012. The samples were collected in the lowest elevation (140 meters

[459.3 ft] above sea level), near the effluent entry point of the subsite 2 area, where contamination was most likely to occur. The sample results indicated that no excavation was required.

The SubSite is Part Of:

Code: 130-N-1

Names: 130-N-1; 183-N Backwash Discharge Pond; 183-N Filter Backwash Pond; 126-N-1

Code:	1908-N	**Classification:**	Accepted
Names:	1908-N; 1908-N Outfall	**Reclassification**	Interim Closed Out (9/6/2012)
Type:	Outfall	**Start Date:**	1/1/1963
Status:	Inactive	**End Date:**	

Description: The waste site structure has been demolished and Interim Closed Out. It consisted of an open-topped, compartmentalized, reinforced concrete outfall structure. A 260 centimeter (102 inch) line discharged into the southeast face of the structure. A 260 centimeter (102 inch) pipeline exited the northwest side of the structure and discharged to the Columbia River. The 1908-N above and below grade structure was removed except for a section of the north wall, that was encased in the concrete monolith.

Location: The 1908-N Sealwell (Outfall) was located west of the 109-N Building, west of the 1300-N Emergency Dump Basin and south of the 1301-N Emergency Dump Tank on a steep bank which leads to the river.

Related Sites/ Structures: The outfall structure is associated with 100-N-77 (a 259-centimeter (102-inch) River Effluent pipeline), 100-N-79 (an emergency outfall flume) and the 1300-N Emergency Dump Basin 76-centimeter (30 inch) overflow line.

Process Description: The site was an outfall structure (seal well) that was used as a sump for several discharge lines and to drop the liquid discharge level for overflow to the river. The outfall also discharged to a flume which was used as an alternative to the river pipelines. An unknown level of radioactive contamination exists within the structure because the discharge lines were associated with the reactor secondary steam system.

The outfall received more than 2 million cubic meters per day of single pass raw river water from the Circulating Raw Water (CRW) System, and discharged it to the river. The CRW supplied once-through untreated river water to 16 dump condensers and 7 surface condensers.

Waste Type: Construction Debris

Waste Description: The 1908-N Sealwell received raw river water used to cool the secondary cooling water for the N Reactor. An unknown level of radioactive contamination exists within the structure because the discharge lines were associated with the reactor's secondary steam system. Therefore, while no specific COPCs have been identified, the outfall structure has potential radioactive contamination.

Closure Info: Interim (9/6/2012): Radiological scoping surveys were performed on the 1908-N facility prior to and during demolition. These surveys did not identify contamination. A certified asbestos inspection was conducted on June 19, 2006. No samples were taken, but a visual inspection of 1908-N was conducted and no Potential ACM was visible during the inspection. There were no samples taken of the 1908-N for waste characterization/designation purposes. Two samples were taken of the lean concrete monolith to identify whether or not the monolith could be left in place.

Demolition of the 1908-N Outfall was performed March 2012 through June 2012. The entire

above and below grade structure was removed, including the concrete floor, with the exception of a below-grade portion of the north wall that was encased within a lean concrete monolith. The concrete monolith remaining after demolition of the structure was sampled on April 26, 1012, to support a decision for leaving this concrete monolith in place. An evaluation of the results of this sampling indicated that residual contaminant concentrations in the concrete do not preclude any future uses (as bounded by the rural-residential scenario) and allow for unrestricted use of the site. The results also demonstrate that residual contaminant concentrations in the concrete are protective of groundwater and the Columbia River. The Sampling Determination Form included with the Facility Status Change Form documents that there is no indication that any portion of the 1908-N facility or the underlying soil was ever contaminated and that analytical results for the sample collected from the concrete monolith is sufficient to support closeout of this waste site. The removal action was performed in accordance with the Removal Action Work Plan (RAWP) for 100-N Area Ancillary Facilities (DOE-RL-2002-70, Rev. 3) and included removal and disposal of demolition debris at the ERDF.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	1908-NE	**Classification:**	Accepted
Names:	1908-NE; 1908-NE Building; HGP Outfall; HGP SWMU #7	**Reclassification**	Interim Closed Out (11/5/2012)
Type:	Outfall	**Start Date:**	1/1/1966
Status:	Inactive	**End Date:**	1/1/1988

Description: The site has been Interim Closed Out. The unit consisted of a an open-topped, compartmentalized, reinforced concrete outfall structure. It received effluent from the 100-N-1 settling Pond (SWMU #6) and discharged to the river via an effluent pipeline (see 100-N-80).

Although 1908-NE was Reclassified to Interim Closed Out in 2004, the structure still remained and required Institutional Controls to monitor the structure. Demolition of the structure in 2012 eliminated the requirement for the monitoring Institutional Control.

Location: The unit was located in the 100-N Area, approximately 61 meters (200 feet) downstream from the 181-NE River Pumphouse Building on the Columbia River at river mile 379.6.

Related Sites/ Structures: The site was associated with the 100-N-1 Settling Basin, and the 100-N-80 River Effluent Pipeline.

Process Description: The outfall received single pass raw river water which had passed through the Hanford Generating Plant (HGP) condensers, as well as waste water from the 100-N-1 Settling Basin.

Waste Type: Construction Debris

Waste Description: The unit was designed to provide controlled waste water releases from the Hanford Generating Plant (HGP) facility. The unit was permitted under the National Pollutant Discharge Elimination System (NPDES). Releases to the outfall included coolant water, any releases from the HGP building sump prior to the late 1960s, and discharges from the HGP Settling Pond. The contaminants of potential concern include strontium-90, cobalt-60, cesium-137, arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and PCBs.

Closure Info: Interim (6/15/2004): The 100-N Reactor provided fuel rods to the plutonium production process at Hanford, but also operated two 430 megawatt turbine generators for the generation of electricity. The Washington Public Supply System, later named Energy Northwest, was responsible for the Hanford Generating Plant located at 100-N Reactor. The Cleanup

Verification Package (HGP-CVP-SWMUs 5, 6, 7, 8, 9, & 10) for the Hanford Generating Plant Solid Waste Management units was prepared by Energy Northwest in 2004. Some remedial actions at HGP began in 1992. Other characterization and remediation was completed in 2004. Remedial action activity descriptions include:

100-N-1 Settling Pond (SWMU#6) - Remediation activities conducted in 2001 removed approximately 0.9 meters (3 ft) of soil and settled solids material from the 100-N-1 Settling Pond (SWMU #6). The excavated material was disposed of at the Environmental Restoration Disposal Facility (ERDF).

100-N-3 Maintenance Garage French Drain, 100-N-41 Gate House Septic Tank and 100-N-45 Office Building Septic Tank make up SWMU #9. Remediation was determined not to be necessary for the 100-N-3 site and the 100-N-41 and 100-N-45 septic sites. The below grade structures of the drain and septic sites were demolished in place and backfilled with soil in 2004.

100-N-4 Tile Field (SWMU#5) - Confirmatory sampling activities and data evaluation determined that remediation was not necessary for the 100-N-4 Tile Field.

100-N-5 Bone Yard (SWMU #10) - Remediation and removal activities for the 100-N-5 Bone Yard (SWMU #10) were primarily conducted in 2001 with the removal of the miscellaneous equipment, metal scrap, and general debris. The limited number of areas with sand blast media, ion exchange resin-like media and areas with soil staining and/or distressed vegetation were remediated in 2003 and 2004. The sand blast, ion exchange resin, and contaminated soil wastes were disposed of at the RABANCO landfill facility in Roosevelt, Washington.

The 100-N-46 Diesel under ground storage tank (UST) was excavated and removed in 2001. Soil contaminated with diesel was also excavated from the UST excavation. Contaminated soil was spread over the demolished 1703-N Office Building concrete slab foundation for attenuation. Upon completion of the remedial excavation, the bottom of the excavation was approximately 6. 7 meters (22 ft) below the ground surface at the deepest location (southwest corner of excavation).

100-N-52 Gasoline underground storage tank (UST) was excavated and removed in 1992.

1908-NE Outfall (SWMU#7) - The original preferred remedy for the 1908-NE Outfall was Institutional Controls (continued monitoring). A radiological survey of the Outfall seal well and samples of water and sediment were collected from the Outfall seal well in 2001 to assess potential contamination associated with the Outfall. The outfall structure was demolished by the Washington Closure Hanford D&D organization in 2012, eliminating the Institutional Control requirement.

The 1716-NE Maintenance Garage building (SWMU #8), including the building slab and associated floor drain pipelines, were removed in their entirety during the 2003 and 2004 removal action activities. Prior to the removal action all chemical products were removed from the building and either properly disposed of or transferred to another facility for use. The building debris was used as fill for the 185-N Building basement.

Interim (11/5/2012): An additional Waste Site Reclassification Form (#2012-088) was approved in November 2012.

The outfall was interim closed in 2004; however, no remedial or demolition activities were performed at the outfall and an institutional control to preclude unauthorized human entry into the structure was applied. Subsequently, decontamination, demolition, and disposal was performed in 2011 through 2012 that included removal of contaminated sediment and demolition and removal of the upper portion of the outfall structure to a depth of 0.9 m (3 ft)

below grade. The remaining structure was then backfilled to grade with clean fill material. Sediment and concrete removed from the structure was disposed at the Environmental Restoration and Disposal Facility (ERDF).

The concrete sample results supported a decision to demolish and remove the outfall to a depth of 0.9 meters (3 ft) below grade, with subsequent backfill of the structure with clean fill material. The removal action also allows for removal of the Institutional Control requirement, since unauthorized human entry into the structure is no longer possible due to backfill of the remaining below-grade structure with clean fill material.

Code:	2607-FSM	**Classification:**	Accepted
Names:	2607-FSM; 609 Building Septic Tank 2607-FSM; 6607-FSM; 100 Area Fire Station Septic Tank; 1607-FSM	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	1/1/1960
Status:	Active	**End Date:**	

Description: The 6607-FSM Septic Tank is a single-chamber, reinforced concrete tank. This unit includes a drainfield.

Location: The septic system lies at the southwest corner of the 609 Building (100N Fire Station) and northwest of the intersection of Route 1 and Route 4 North in the 600 Area.

Related Sites/ Structures: The 6607-FSM septic system is associated with the 609 Building (100N Fire Station).

Process Description: The 6607-FSM septic tank receives sanitary effluent from the 609 Building and disposes of it through a sub-surface soil absorption system.

Waste Type: Sanitary Sewage

Waste Description: The 2607-FSM septic system receives sanitary wastewater at a rate of approximately 550 gallons (2,082 liters) per week.

Code:	600-35	**Classification:**	Accepted
Names:	600-35; Debris Area Between 100-N and 100-D Areas	**Reclassification**	Interim Closed Out (2/1/2012)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This waste site has been remediated. It consisted of relatively flat ground covered with fine gravel chips with little or no vegetation. The 600-35 waste site was a non-radiologically contaminated waste site that consisted of a 15-meter (50-ft)-diameter area of wood and metal debris, including a partially crushed topless drum laying on its side and a discarded 12 volt lead-acid battery. A well-head (number 87-55) and the 100-N export water line were noted on the southern edge and along the east-west line of the site, respectively. On May 8, 2008, a field evaluation of the site was made by the Orphan Sites Evaluation team. The team described the site as a 15 meter (50 ft) diameter area of wood and metal debris, including a T-handled valve and vent pipe.

Location: The 600-35 waste site is located outside the 100-N industrial area in a depression just west of Route 4 N between the 100-N and 100-D Areas. The center of the 600-35 waste site is at

Washington State Plane coordinates N149940, E572956. The unit is located in a depression just west of Route 4 N between 100-N and 100-D, about 610 meters (2,000 feet) south of junction of the Route 2 N and Route 4 N.

Process Description: This site appears to be a former rock crushing/screening operation area and borrow pit (on the northern edge) with evidence of some dumping.

Waste Type: Misc. Trash and Debris

Waste Description: Miscellaneous surface debris was the only waste identified at this site. This debris includes a ladder, an 20-centimeter (8-inch) diameter steel pipe, metal scrap wire rope, miscellaneous wood debris, pieces of aluminum, and a container lid (no markings). A deteriorated 12 volt lead-acid battery of the type used in heavy equipment. A 208-liter (55-gallon) drum (no marking) was observed approximately 76 meters (250 feet) west of the site.

Closure Info: Interim (2/1/2012): Remedial action at the 600-35 waste site was performed between August 2 and 29, 2010. The debris removed from the 600-35 waste site consisted of miscellaneous metal and wood debris. Excavation continued until all debris and contamination associated with the waste site had been removed. Excavated material was stockpiled and transported to ERDF in December 2010. A 12-volt lead-acid battery and a crushed drum, previously identified, were not found during remediation. It is assumed the battery and drum were removed after the orphan sites evaluation in May 2008. No indications of previous spills or releases were detected during remediation at the 600-35 waste site. Six in-process soil samples were collected at various locations from the excavator bucket, for waste designation purposes, as soil was being removed.

Code: 600-339 **Classification:** Accepted

Names: 600-339; 100 Area Fire Station Dry Well **Reclassification** None

Type: French Drain **Start Date:**

Status: Inactive **End Date:**

Description: This site consists of a 1.83 meter (six foot) diameter dry well and associated inlet piping, which was part of the original 1960 construction, located west of the 609 Building. The dry well is located 0.61 meters (2 ft) below grade. It is constructed of concrete blocks laid on their sides with 1.3 cm (0.5 in) minimum openings between joints. The open bottom contains a 0.3 meters (1 ft) coarse gravel fill. The opening at the top is secured by a cast iron manhole cover. The 10 cm (4 in) inlet pipe enters the dry well 3 meters (10 ft) above its bottom elevation. The dry well is believed to still be in use, but has been paved over with an asphalt parking lot.

Location: The underground drywell (site is covered with asphalt parking lot) is approximately 6 meters (19.7 ft) west of the center of the 609 Building's west wall at approximately E572202.54 N145349.19.

Process Description: The dry well was designed to collect rain water draining from the roof, as well as floor drain waste from the entire building. All liquid wastes originating from the routine use and maintenance of the fire station vehicles were flushed to this dry well.

Code: 600-340 **Classification:** Accepted

Names: 600-340; 100 area Fire Station Soil Stained Areas **Reclassification** Interim Closed Out (6/18/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site was remediated and Interim Closed Out. It consisted of two locations, one with discolored top soil and the other with a white granular stain surface area.

Location: The two areas were located at coordinates E572161.02 N145395.78 and E572213.75 N145447.13, approximately 16 meters (52.5 ft) northwest of the 100 Area Fire Station.

Closure Info: Interim (6/18/2014): Ground penetrating radar and electromagnetic induction data were collected over the two stained locations. The entire area surveyed contained scattered surface and near surface debris. Confirmatory sampling was performed at the 600-340 waste site on January 19, 2011.

The staining and debris was observed and excavated well beyond the Waste Information Data System (WIDS) and Stewardship Information System mapped waste site boundaries. The excavation was extended to the southeast to encompass additional burned material and stained soil observed during site remediation. The remediation continued until all visible burned debris and stained soil was removed.

The 600-340 waste site was remediated between June 19 and September 10, 2013, based on the results of confirmatory sampling. The debris removed from the 600-340 waste site consisted of stained soil, broken glass, burned construction debris, asbestos-containing materials, wire, metal, and other debris. Approximately 1,472 bank cubic meters (BCM) (1,925 bank cubic yards [BCY]) of soil and debris were direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). There is no staging pile area or overburden soil stockpile associated with the 600-340 waste site excavation. No anomalous material was encountered during excavation.

Code: 600-347 **Classification:** Accepted

Names: 600-347; 100 Area Fire Station Burn Pit **Reclassification** Interim No Action (11/21/2011)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of an engineered burn pit. The dimensions of the burn pit are 6 meters (20 ft) by 3 meters (10 ft) by 1 meter (0.9 ft) deep. The site was used to dispose various flammable liquids and petroleum products from approximately 1959 to 1984.

Location: The 600-347 waste site is located 47.6 meters (156 ft) northeast of the northeast corner of the 609 Building (100 Area Central Fire Station).

The burn pit is at coordinates E572244.99 N145399.31.

Closure Info: Interim (11/21/2011): Remedial action was determined to be unnecessary. The confirmatory sampling data, collected on January 9, 2011, has been used to document this waste site reclassification as a No Action site.

Code: 600-348 **Classification:** Accepted

Names: 600-348; 100 Area Fire Station Underground Storage Tanks **Reclassification** None

Type: Storage Tank **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of two locations. The first site is the underlying soil from the original 1894 L

(500 gallon) fire station gasoline tank removed in late 1987. The second site is a 7571 L (2000 gallon) diesel fuel oil tank and underlying soil used to supply the 609 Building hot water boiler.

Location: E572205.40 N145329.93
E572208.86 N145356.60

Code:	628-2	**Classification:**	Accepted
Names:	628-2; 100 Area Fire Station Burn Pit	**Reclassification**	Interim Closed Out (4/2/2014)
Type:	Burn Pit	**Start Date:**	
Status:	Inactive	**End Date:**	1/1/1985

Description: This site has been remediated and Interim Closed Out. It was an unmarked pit composed of sand and dirt with sparse vegetation showing signs of stress. The site had ash, debris, and soil discoloration.

Location: This site was located 130 meters (426.5 feet) north of the 100 Area Fire Station.

Process Description: The original information indicates that mainly motor oil and diesel fuel contaminated with water or deemed unusable was burned here. However, there is no supporting written documentation.

Waste Type: Chemicals

Waste Description: The waste site contains motor oil, diesel fuel, and toluene. Other chemicals were potentially burned at the site.

Closure Info: Interim (4/2/2014): A geophysical investigation was conducted on September 22, 2011. An area measuring 12 by 14 meters (39 by 46 ft) had a significant amount of concentrated debris.

The 628-2 waste site was remediated between June 24 and July 9, 2013. The debris removed from the 628-2 waste site consisted of broken glass, burned construction debris, asbestos-containing materials, wire, metal, and other debris. The estimated volume of excavated materials was approximately 709 bank cubic meters (927 bank cubic yards). Materials were temporarily staged within the 628-2 excavation, prior to removal to the Environmental Restoration Disposal Facility. There were no staging pile areas or overburden piles associated with the 628-2 waste site excavation. No anomalous material was encountered during excavation.

Code:	UPR-100-N-1	**Classification:**	Accepted
Names:	UPR-100-N-1; 100-N 1304-N Dump Tank; Emergency Dump Tank Inlet Valve Box Leak; UN-100-N-1	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	Unplanned Release	**Start Date:**	3/27/1974
Status:	Inactive	**End Date:**	3/27/1974

Description: The Unplanned Release has been remediated and Interim Closed Out. The site was an unplanned release covering an area of ground estimated at 20,000 square feet (1,858 square meters).

Location: The site extended from the 1304-N Emergency Dump Tank to the front of the 181-N River Water Pump House, approximately 45 meters (147 feet) from the Columbia River.

Release Description: On March 27, 1974 an estimated 113,550 liters (30,000 gallons) of radioactive water leaked onto the ground due to a line leak from the inlet valve box near the 1304-N Emergency Dump Tank. The water flowed down the bank from the Emergency Dump Tank, covered the roadway below the tank, and extended to the front of the 181-N Building. An estimated 139 square meters (1,500 square feet) was contaminated outside the 100-N area security fence. The security fence is considered the site boundary.

Related Sites/ Structures: The site is associated with 1322-N Valve Pit, 105-N Lift Station, 1301-N Crib, a 91 centimeter (36 inch) underground pipeline, 1304-N Emergency Dump Tank, and a 76 centimeter (30 inch) underground pipeline.

Waste Type: Process Effluent

Waste Description: The leak consisted of filtered water in the estimated amount of 113,550 liters (30,000 gallons) containing 0.2 Curies of radioactive constituents.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-2	**Classification:**	Accepted
Names:	UPR-100-N-2; 100-N FLV-858 Valve Leak; UN-100-N-2	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	Unplanned Release	**Start Date:**	2/19/1980
Status:	Inactive	**End Date:**	2/19/1980

Description: The Unplanned Release has been remediated and Interim Closed Out. The site was an area of ground covering estimated at 28 square meters (300 square feet).

Location: The release was located in the 100 N Area, on the northeast corner of Emergency Dump Basin (116-N-4), below grade.

Release Description: The release occurred on February 19, 1980, with an estimated 113,550 L (30,000 gal) of contaminated reactor effluent being leaked to a crack in a 2.5 cm (1 in.) relief drain line. The FLV858 valve leaked mildly contaminated reactor effluent from a point 3 meters (10 feet) below grade. The leak rate was estimated at 38 liters/minute (10 gallons/minute) and was determined to be due to corrosion of the valve. Estimated surface area affected is 28 square meters (300 square feet).

Related Sites/ Structures: The site is associated with the 105-N Building.

Waste Type: Process Effluent

Waste Description: The release consisted of primary coolant water containing less than 1 curie of beta/gamma.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: UPR-100-N-3 **Classification:** Accepted

Names: UPR-100-N-3; Dummy Fuel Transfer Line; Spacer Disposal System Transport Line Leak; UN-100-N-3; UN-116-N-3 **Reclassification** Interim Closed Out (9/6/2013)

Type: Unplanned Release **Start Date:** 3/1/1978

Status: Inactive **End Date:** 3/8/1978

Description: The release site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

The release was first discovered as a 1.2 meter (4-foot) diameter and 0.8 meter (2.5 foot) deep sink hole within a radiation control zone, caused by a pipe leak.

Location: The release occurred in the 100-N Area near the north side of the 105-N Lift Station. It was about 4.7 meters (15.4 feet) northeast of the 1722-N Decontamination Hot Shop. This is same the location where the UPR-100-N-10 and UPR-100-N-12 releases occurred.

Release Description: A leak developed in the dummy fuel spacer transfer line, a 7.6-centimeter (3-inch) reinforced plastic pipe extending from the 100-N Fuel Storage Basin to the dummy disposal pit. The leak rate was estimated to be 74.6 liters (25 gallons) per minute. It was not known how long the leak

had been occurring. However, due to the size of the sink hole, it was judged to have occurred within the week prior to identification. The volume of water that leaked to the soil was estimated to be approximately 1,362,744 liters (350,000 gal).

Related Sites/ Structures: The site is associated with the 100-N Area Spacer Silos (118-N), the 105-N Fuel Storage Basin, 100-N-31 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39.

Waste Type: Water

Waste Description: The release consisted of storage basin water with an estimated radionuclide release of 0.07 curies of cobalt-60, 0.8 curies of strontium-90, 0.25 curies of cesium-137, 0.14 curies of cerium/praseodymium-144, 0.0004 curies of plutonium-239, and 1.0 curies of tritium (assumed).

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed

from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-4	**Classification:**	Accepted
Names:	UPR-100-N-4; 1322-A Sump Overflow; UN-100-N-4	**Reclassification**	Interim Closed Out (8/31/2013)
Type:	Unplanned Release	**Start Date:**	5/7/1977
Status:	Inactive	**End Date:**	5/7/1977

Description: The waste site has been remediated and Interim Closed Out. It was an overflow of contaminated water at the 1322-NA (Effluent Water Pilot Plant) that affected the floor inside the building and ground near the front and rear doors outside the building. The site also includes the drainage tank in Building 1322-N (Waste Treatment Pilot Plant Facility).

Location: The 1322 Buildings are about 195 meters (640 feet) northeast of the 105-N (Reactor Facility).

Release Description: The 1322-N Drainage Tank top vent sprayed low-level radioactive water. The 1322-NA sink drain backed up and flowed over the 15-centimeter (6-inch) curb and onto the ground in the front and back of the building. The release occurred on May 7, 1977.

Related Sites/ Structures: The site is associated with UPR-100-N-8, UPR-100-N-31 and Buildings 105-N, 1322-N, and 1322-NA.

Waste Type: Water

Waste Description: The site received low-level radioactive water. The total activity was 0.5 millicuries.

Closure Info: Interim (8/13/2013): The 1322N, 1322NA, 1322NB, and 1322NC above-ground buildings and slabs in the vicinity of the unplanned releases were removed during the 100-N deactivation, decommission, decontamination, and demolition (D4) activities. The removal included an excavation that measured approximately 3.7 meters (12 ft) deep. The UPR-100-N-4 and UPR-100-N-8 waste sites are associated with the 1322-N/NA Buildings. The UPR-100-N-31 waste site is associated with the 116-N-1 (1301-N) Crib and Trench. Because the locations of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 unplanned release sites were in close proximity to each other and no information was available to delineate the boundary of each release, the three sites were combined into one excavation. The excavation for remediation of the combined unplanned release sites was immediately adjacent to the former 116-N-1 (1301-N) remediation site. Further remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste site soils was performed between December 13, 2011 and March 19, 2012, resulting in a combined excavation approximately 7 meters (23 ft) deep.

Approximately 5,683 bank cubic meters (BCM) (7,433 bank cubic yards [BCY]) of additional contaminated soil, rocks, and concrete was removed for disposal at the Environmental Restoration Disposal Facility (ERDF). Additional contaminated soil was removed from areas SZ-6, SZ-8, and SZ-9 between January 30, 2013 and February 4, 2013, resulting in an

additional 189 BCM (247 BCY) of contaminated soil removed for disposal at ERDF. Areas of stained soil remained in the deep zone (more than 4.6 meters [15 ft] below ground surface [bgs]) following the completion of the remedial action activities. All material was direct loaded from the excavation for disposal at ERDF. No overburden piles or anomalies were associated with the remediation.

During remediation of the unplanned release sites, increasing radiological activity was observed with depth approaching soils underlying the former 116-N-1 crib. Deep zone sample results from the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 remediation are also consistent with residual contamination in the 116-N-1 deep zone. This suggests that the contamination encountered was residual from 116-N-1 left in place in the deep zone, and that deep zone remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste sites is considered complete. The liquid waste effluents associated with the UPR-100-N-31 and 116-N-1 waste sites are the same.

Code:	UPR-100-N-5	**Classification:**	Accepted
Names:	UPR-100-N-5; 116-N-2 Radioactive Chemical Waste Treatment Storage Facility; 1310-N Chemical Waste Storage Tank Leak; UN-100-N-5	**Reclassification**	Interim Closed Out (5/7/2013)
Type:	Unplanned Release	**Start Date:**	1/1/1972
Status:	Inactive	**End Date:**	1/1/1972

Description: The waste site has been remediated and Interim Closed Out. The release occurred in the 1310-N Radioactive Chemical Waste Handling Facility on the recirculation pump discharge line.

Location: The site was located in the 100N Area, northeast of the center of the 105-N (Reactor Facility). It was approximately 10.4 meters (134 feet) northwest of the 1310-N Chemical Waste Storage Tank and 233 meters (833 feet) from the bank of the Columbia River. The spill site was within a radiation control zone.

Release Description: A leak occurred in the piping at the Radioactive Chemical Waste Handling Facility, between the recirculation pump and the 116-N-2 Tank, and radioactive waste was discharged to the ground. The start date was June 16, 1972 and the end date was June 27, 1972.

Related Sites/ Structures: The site is associated with the 105-N Reactor Facility and the 1310-N Chemical Waste Storage Tank.

Waste Type: Water

Waste Description: The leak consisted of 340,650 liters (90,000 gallons) of radioactive wastewater containing decontaminated chemicals. The waste contained approximately 35 curies of activity, of which 26 curies were cobalt-60. The solution had a pH of approximately 9.

Closure Info: Interim (5/7/2013): Remedial action of the 116-N-2 (Golf Ball) waste site was performed between March 1, 2011 and April 26, 2012. Equipment decontamination was conducted within the southeast corner of the waste site excavation, and that area was remediated May 7 and 8, 2012. The maximum depth of the excavation was 13 meters (42.7 ft) bgs and resulted in the removal of approximately 11,144 bank cubic meters (BCM) (14,576 bank cubic yards [BCY]) of soil and debris. The debris consisted of rock, sand, and piping material. The contaminated soil and debris were directly loaded out for disposal at the Environmental Restoration Disposal Facility (ERDF). Also removed with the 116-N-2 excavation were the UPR-100-N-5 and UPR-100-N-25 waste sites, as well as portions of the 100-N-84 and 100-N-63 pipelines. A section of the 100-N-63:2 pipeline remained on a side slope in the northern part of the excavation until it was remediated between March 22, and 25, 2013. No anomalous material was found during remediation. No in-process samples were collected for the 116-N-2 grouping of waste sites.

Clean padding material (soil and gravel) had been previously placed on the ground surface south of the excavation to cover radiological contamination that resulted from the previous D4 activities to remove the golf ball and silo structures. The padding material and approximately 2 meters (6.5 ft) of soil below the padding was scraped and removed for disposal at ERDF.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-6	**Classification:**	Accepted
Names:	UPR-100-N-6; 1 1/2 Inch Chemical Decontam. Waste Drain Line Leaks; Chemical Decontamination Waste Drain Line Leak; UN-100-N-6; UN-116-N-6	**Reclassification**	Interim Closed Out (1/2/2013)
Type:	Unplanned Release	**Start Date:**	9/10/1985
Status:	Inactive	**End Date:**	9/10/1985

Description: The waste site has been remediated and Interim Closed Out. It was a release from a 1.5 inch diameter, chemical decontamination waste drain line. The release leaked radiologically contaminated water into the surrounding soil. The line was 0.9 meters (3 feet) below grade.

Location: The release site was located between the north wall of the 1714-NB building and the 1310-N tank.

Release Description: The buried 3.8-centimeter (1.5 inch) line leaked radiologically contaminated water in the general area between buildings 1714-N and 1310-N. The release occurred on September 10, 1985. The release consisted of approximately 6,813 liters (1,800 gal) of radiologically contaminated water containing an estimated 0.2 Ci of cobalt-60, 0.04 Ci of manganese-54, 0.003 Ci of ruthenium-103, and 0.003 Ci of cesium-137. Approximately 16.7 cubic meters (590 cubic feet) of contaminated soil reading 7,000 to 25,000 counts per minute was removed from four locations along the line. The excavations were backfilled with clean soil.

Related Sites/ Structures: This drain line interconnects with 105-N and 1310-N (Chemical Waste Storage Tank) and 100-N-62:2.

Process Description: This site is a 3.8 centimeter (1.5 inch) waste line, buried 0.9 meters (3 feet) below grade. This chemical decontamination waste drain line runs between the 105-N reactor building and the 1310-N (Chemical Waste Storage Tank).

Waste Type: Process Effluent

Waste Description: The release consisted of approximately 6,813 liters (1,800 gallons) of radiologically contaminated water containing an estimated 0.2 curies cobalt-60, 0.04 curies manganese-54, 0.003 curies ruthenium-103, and 0.003 curies of cesium-137.

Closure Info: Interim (1/2/2013): Remedial action at the UPR-100-N-6 waste site to remove the pipeline and associated contaminated soil was performed between September 20, 2011, and April 18, 2012. All excavated materials were direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Excavation continued until all debris and contamination associated with collocated waste sites had been removed. The depth of the excavation was approximately 2.4 to 3.7 meters (8 to 12 ft) below ground surface. All excavated materials were direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF).

Because the UPR-100-N-6 waste site originated from 100-N-63:2 pipeline leaks and the excavation was performed to remediate both waste sites simultaneously. The volume of material removed for the UPR-100-N-6 waste site alone was not calculated. The volumes

disposed from this excavation are included in the 100-N-63:2 waste site closeout documents.

Code:	UPR-100-N-7	**Classification:**	Accepted
Names:	UPR-100-N-7; Ten-Inch Radioactive Drain Return Line Leak; UN-100-N-7; UN-116-N-7	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	4/29/1985
Status:	Inactive	**End Date:**	5/1/1985

Description: The release site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

It was a leak that occurred in a buried 25.4-centimeter (10-inch) drain line between the 109-N Building and the 1909-N Valve Pit. The release occurred on April 29, 1985.

Location: The site is located near the northwest corner of the 109-N Building. The leak occurred in a section of 25.4 centimeter (10-inch) diameter radioactive drain return pipe located between the 109-N Building and the 1909-N Valve Pit.

Release Description: Adjacent groundwater monitoring wells detected increased levels of iodine-131, indicating a nearby leak to the water table. Approximately 1,907,842 liters (504,000 gallons) had leaked. The release occurred on April 29, 1985.

Related Sites/ Structures: The 25.4 centimeter (10 inch) Radioactive Drain Return (RDR) line connected to the 109-N Building and the 1909 Valve Pit. The release site is associated with 100-N-31, 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39.

Waste Type: Process Effluent

Waste Description: The release consisted of approximately 1,907,042 liters (504,053 gallons) of radiologically contaminated N-Reactor cooling water containing an estimated 1.0 curies sodium-24, 0.5 curies cobalt-60, 0.09 curies ruthenium-103, 0.4 curies chromium-51, 0.2 curies zirconium-95, 0.3 curies tellurium-132, 0.30 curies manganese-54, 0.1 curies niobium-95, 0.5 curies iodine-131, 1.2 curies iron-59, 0.2 curies cerium-141, 0.2 curies cerium-144, and 0.8 curies technecium-99.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were

removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-8	**Classification:**	Accepted
Names:	UPR-100-N-8; 1322-A Sump Overflow; UN-100-N-8	**Reclassification**	Interim Closed Out (8/31/2013)
Type:	Unplanned Release	**Start Date:**	5/11/1975
Status:	Inactive	**End Date:**	5/11/1975

Description: The waste site has been remediated and Interim Closed Out. It was an overflow of contaminated water at the 1322-NA (Effluent Water Pilot Plant) that affected the area (approximately 2.3 square meters [25 sq. ft]) surrounding the sump, floor, various pieces of equipment, and the ground just outside the rear door (south door).

Location: The 1322-NA Building was located approximately 195 meters (640 feet) northeast of the 105-N Reactor Facility. The release took place in the soil immediately outside the south door of 1322-

NA Effluent Water Pilot Plant. This is partly on the same location as UPR-100-N-4.

Release Description: The 0.3-centimeter (1/8-inch) tygon sample tube came off the 91-centimeter (36-inch) radioactive drain return line sampler sample line and up to 379 liters (100 gallons) of radioactive water was released to the soil.

Related Sites/ Structures: The site is associated with UPR-100-N-4, UPR-100-N-31 and Buildings 105-N, 1322-N, and 1322-NA.

Waste Type: Water

Waste Description: The release contained up to 379 liters (100 gallons) of radioactive water contaminated with mixed fission and activation products to a level of 1,000,000 picocuries/liter. The total activity was 0.5 millicuries.

Closure Info: Interim (8/13/2013): The 1322N, 1322NA, 1322NB, and 1322NC above-ground buildings and slabs in the vicinity of the unplanned releases were removed during the 100-N deactivation, decommission, decontamination, and demolition (D4) activities. The removal included an excavation that measured approximately 3.7 meters (12 ft) deep. The UPR-100-N-4 and UPR-100-N-8 waste sites are associated with the 1322-N/NA Buildings. The UPR-100-N-31 waste site is associated with the 116-N-1 (1301-N) Crib and Trench. Because the locations of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 unplanned release sites were in close proximity to each other and no information was available to delineate the boundary of each release, the three sites were combined into one excavation. The excavation for remediation of the combined unplanned release sites was immediately adjacent to the former 116-N-1 (1301-N) remediation site. Further remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste site soils was performed between December 13, 2011 and March 19, 2012, resulting in a combined excavation approximately 7 meters (23 ft) deep.

Approximately 5,683 bank cubic meters (BCM) (7,433 bank cubic yards [BCY]) of additional contaminated soil, rocks, and concrete was removed for disposal at the Environmental Restoration Disposal Facility (ERDF). Additional contaminated soil was removed from areas SZ-6, SZ-8, and SZ-9 between January 30, 2013 and February 4, 2013, resulting in an additional 189 BCM (247 BCY) of contaminated soil removed for disposal at ERDF. Areas of stained soil remained in the deep zone (more than 4.6 meters [15 ft] below ground surface [bgs]) following the completion of the remedial action activities. All material was direct loaded from the excavation for disposal at ERDF. No overburden piles or anomalies were associated with the remediation.

During remediation of the unplanned release sites, increasing radiological activity was observed with depth approaching soils underlying the former 116-N-1 crib. Deep zone sample results from the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 remediation are also consistent with residual contamination in the 116-N-1 deep zone. This suggests that the contamination encountered was residual from 116-N-1 left in place in the deep zone, and that deep zone remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste sites is considered complete. The liquid waste effluents associated with the UPR-100-N-31 and 116-N-1 waste sites are the same.

Code:	UPR-100-N-9	**Classification:**	Accepted
Names:	UPR-100-N-9; 119-N Cooling Water Drain Line Leak; UN-100-N-9	**Reclassification**	Interim Closed Out (7/2/2013)
Type:	Unplanned Release	**Start Date:**	10/14/1974
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The Unplanned Release was the area where a backhoe ruptured a cooling water drain valve during an excavation activity in 1974. The excavation depth was greater than 1.2 meters (4 feet) below grade and included a 5-centimeter (2-inch) valve on a drain line. The event resulted in radioactively contaminated water flowing into the open excavation.

Location: The site is located in the 100N Area, north of 105-N (Reactor Facility) and about 26 meters (85 feet) northwest of 119-N (Air Sample Monitoring Stack Sampler).

Release Description: This site was documented on Unusual Occurrence Report Number 74-29. A backhoe accidentally ruptured a buried 5-centimeter (2-inch) diameter cooling water drain valve during exploratory digging. Contaminated water immediately flowed into the excavation hole around the valve at approximately 19 liters (5 gallons) per minute and maintained a water level 1.2 meters (4 feet) below grade. The release occurred on October 14, 1974.

Related Sites/ Structures: The site is associated with the 105-N (Lift Station), the 116-N-1 Crib and Trench, and the 119-N (Air Sample Monitoring Stack Sampler).

Waste Type: Water

Waste Description: The release of 8,327 liters (2,200 gallons) of low-level radioactive contaminated water contained about 500,000 picocuries. The water was released from the 119-N cooling water drain line.

Closure Info: Interim (7/2/2013): Remedial action at the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 waste sites was performed during January and February 2011. Remediation involved removal of the foundations of the 116-N stack, the 119-N and 119-NA structures, and the underlying soil. Excavation continued until the french drain, associated piping, and contaminated soil and debris were removed. This excavation exceeded the depth that would be required to remove the 100-N-102:1, UPR-100-N-9, and UPR-100-N-14 waste sites. According to drawing H-1-46389, the depth of the 100-N-102:1 subsite, and therefore the unplanned release waste sites UPR-100-N-9 and UPR-100-N-14, was at 0.76 meters (2.5 ft) bgs. The final excavation depth was approximately 8.5 meters (28 ft) bgs. Because the excavation and removal of the 116-N stack foundation was previously performed by the D4 Project, the exact volume of material removed is unknown.

The debris removed included soil, concrete, piping, and other debris associated with the 116-N, 119-N, and 119-NA structures and french drain. All material from these waste sites was disposed at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation.

In March 2012, the D4 Project constructed a ramp across the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation to provide access and to support remediation activities at 1303-N (118-N-1) waste site. The ramp material was excavated on September 28, 2012, and also disposed of at ERDF. A walk around the site boundary confirmed that all fill material used to build the ramp had been removed. After the excavation of the ramp material, a gamma survey was performed on October 3, 2012, within the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation. The gamma survey results indicated readings above background at two locations. Additional remediation was performed to address areas where the GPERS survey results indicated elevated radiological results. Follow up surveys on October 17, 2012 and October 19, 2012 indicated no elevated readings above background.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: UPR-100-N-10 **Classification:** Accepted

Names:	UPR-100-N-10; 100-N Area 105-N Check Valve; Lift Station Gravity Drain Line Leak; UN-100-N-10	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	5/13/1975
Status:	Inactive	**End Date:**	5/13/1975

Description: The waste site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

UPR-100-N-10 was a release of contaminated water from a drain line to the ground. The leak occurred in an area previously marked as a radiation zone.

Location: The leak occurred in the 100-N Area near the north side of the 105-N Lift Station, about 4.7 meters (15.4 feet) northeast of the 1722-N Decontamination Hot Shop, and about 160 meters (530 ft) from the Columbia River. This was the same the location as the UPR-100-N-3 and UPR-100-N-12 releases.

Release Description: Approximately 379 liters (100 gallons) of contaminated water leaked to the ground during preparations for the removal of a check valve in the gravity drain line to the lift station on May 13, 1975.

Related Sites/ Structures: The leak is associated with the 105-N Reactor Facility, UPR-100-N-3 and UPR-100-N-12.

Waste Type: Water

Waste Description: The release contained 0.001 curies of mixed fission and activation products.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N)

Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-11	**Classification:**	Accepted
Names:	UPR-100-N-11; 100-N Area Valve Bonnet; Five Hundred Pound Valve Bonnet Contamination in Uncontrolled Area; UN-100-N-11	**Reclassification**	Interim Closed Out (1/26/2012)
Type:	Unplanned Release	**Start Date:**	10/2/1975
Status:	Inactive	**End Date:**	10/3/1975

Description: The waste site has been remediated. The contaminated site consisted of asphalt road, shoulder/roadside, and field area.

Location: The site was located on the east side of Highway 4 North, approximately 45.7 meters (150 feet) southeast of the center line of 100-N access road.

Release Description: A contaminated 227-kilogram (500-pound) valve bonnet, wooden box, and plastic wrapping fell from a truck onto the road and into a field adjacent to the roadway. The wooden box broke open spreading spot contamination on the roadway and in the field. Contamination levels on roadway blacktop at the point of impact was 1,000 mrads/hr (1 rad/hr). Contamination on roadway adjacent to where valve hit was 20,000 to 50,000 counts per minute. The area where valve came to rest measured 5 rads to 10 rads per hour. The area adjacent to where valve came to rest measured 25,000 to 50,000 counts per minute.

Related Sites/ Structures: The release is associated with the 105-N Reactor Facility.

Waste Type: Equipment

Waste Description: Five to 10 rads per hour were measured where the valve bonnet came to rest in the field. Measurements of 1,000 millirads per hour were taken where it hit the road; 20,000 to 5,000 counts per minute on 18.6 square meters (200 square feet) of road; and 25,000 to 50,000 on the surface of the field adjacent to the valve bonnet.

Closure Info: Interim (1/26/2012): Remediation of the UPR-100-N-11 waste site was completed on November 16, 2010, to a depth of approximately 0.5 meters (1.6 ft). The field area and part of the roadside ditch were the target of remedial actions for the UPR-100-N-11 waste site, which excavated an area approximately 11 by 5 meters (36 by 16 ft). The contaminated soil was direct loaded from the excavation. Radiological surveys were conducted during remediation using hand-held radiological detection instruments. Additionally, a Global Positioning Environmental Radiological Surveyor (GPERS) survey was conducted within the UPR-100-N-11 excavation upon completion of remedial activities. No elevated radiological activity was detected by either of the survey methods. None of the current, existing roadway was removed, because the 1975 occurrence report provided a large amount of detail on removal of the roadway contamination. No stains or other anomalies were observed during field activities.

Code: UPR-100-N-12 **Classification:** Accepted

Names: UPR-100-N-12; Spacer Transport Line Leak; UN-100-N-12 **Reclassification** Interim Closed Out (9/6/2013)

Type: Unplanned Release **Start Date:** 1/1/1979

Status: Inactive **End Date:** 3/13/1979

Description: The release site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

UPR-100-N-12 was first identified as a 0.6 by 0.9 meter (2 by 3 foot) diameter and 0.46 meter (1.5 foot) deep sink hole cause by a pipe leak.

Location: The site is located in the 100-N Area near the north side of the 105-N Lift Station, about 5 meters (15 feet) west of the 1722-N Decontamination Hot Shop, and about 160 meters (530 ft.) from the Columbia River. This was also the same location as the UPR-100-N-3 and UPR-100-N-10 releases.

Release Description: The dummy fuel spacer transfer line, (7.6 centimeter (3 inch) reinforced Bonstrand plastic pipe) extended from the 100-N Fuel Storage Basin to the dummy disposal pit. The maximum leak rate was estimated to be 284 liters (75 gallons) per minute. It is not known how long the leak had been occurring. The approximate maximum time the valve could have been open was 55 hours. The estimated release was 946,000 liters (250,000 gal) of fuel storage basin water. The water was originally from the fuel storage basin and had been used to help transport fuel spacers through the spacer transport line. Dummy spacers were transferred December 4,5,10,11,12,13,14, and January 8. The release was reported March 13, 1979.

Related Sites/ Structures: The release is associated with the 100-N Area Spacer Silos (118-N) and 105-N Fuel Storage Basin, UPR-100-N-3 and UPR-100-N-10.

Waste Type: Water

Waste Description: The release consisted of 946,000 liters (250,000 gallons) of storage basin water containing 0.19 curies of cobalt-60, 0.4 curies of cesium-137, and 0.00057 curies of plutonium-239/240. The water was originally from the fuel storage basin and had been used to help dislodge fuel spacers through the spacer transport line. Excavated soil was checked for radioactivity and read 50 to 100 millirem per hour.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and

100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-13	**Classification:**	Accepted
Names:	UPR-100-N-13; 1314-N Drywell Overflow; 1314-N Loading Station; UN-100-N-13	**Reclassification**	Interim Closed Out (3/28/2013)
Type:	Unplanned Release	**Start Date:**	9/24/1973
Status:	Inactive	**End Date:**	9/24/1973

Description: The Unplanned Release has been remediated and Interim Closed Out. It consisted of a release of liquid, radioactively contaminated, spent decontamination solution.

Location: The release was located near the northeast corner of the 1314-N building, inside the posted radiation zone at the 1314-N Liquid Waste Loadout Station.

Release Description: This release was documented on Unusual Occurrence Report number 73-39. The release occurred on September 24, 1973 and was reported on October 3, 1973. The solution began overflowing from the tank car fittings after approximately 26,500 liters (7,000 gal) had been pumped into the 75,700 liters (20,000 gal) tank car during filling operations. The tank car loading pump was turned off, but the solution began to back flow through the drain in the catch basin beneath the tank car. The catch basin then began to overflow into the adjacent drywell, the capacity of which was also exceeded. The resulting drywell overflow caused the solution to cover a 1.9 square meters (20 ft2) of ground inside the radiation zone at the loading station. Approximately 380 liters (100 gal) of solution was released to the ground with a total activity on the ground surface estimated at 0.015 curies. Evaluation revealed that approximately 280 liters (75 gal) of solution containing 0.011 curies was discharged to the ground through the drywell. An unknown amount of contaminated soil was removed, packaged, and shipped to the 200 Area burial ground for disposal. Clean fill material was used to cover a portion of the contaminated soil that remained.

Related Sites/ Structures: This release is associated with the 116-N-2 Radioactive Chemical Treatment and Storage Facility, 107-N Spent Fuel Basin Recirculation Facility and the 100-N-60 french drain.

Process Description: The 1314-N Liquid Waste Loadout Station was a 9 meter (30 ft) by 18 meter (60 ft) single story, metal-frame building supported on a reinforced concrete slab foundation. It began to operate in 1972. The facility was a transfer station consisting of numerous valves, pumps, underground and overhead piping and couplings, and underground tanks It was located approximately 100 meters (300 ft) from the Columbia River. This facility was used to loadout radioactive liquid waste from the 116-N-2 and 107-N facilities into railroad tank cars for shipment to the 200 Areas for processing and disposal. The loadout facility contained a tank car wash station with a sump to collect the wash water. The water drained into a 3,780 liters (1,000 gal) overflow tank. During the filling operation, excess liquid waste was designed to overflow through a closed piping system from the tank car to the overflow tank, which initiated pump shutdown. A 756 liters (200 gal) catch tank was installed to hold liquids that exceeded the capacity of the car wash sump.

Waste Type: Water

Waste Description: The release consisted of 289 liters (75 gallons) of spent decontamination solution containing 0.011 curies.

Closure Info: Interim (3/28/2013): The 1314-N building was demolished in 2006. 100-N-60 and UPR-100-N-

26 were located within the building footprint. UPR-100-N-13 was located near the 1314-N building, but outside the building footprint.

Remedial action for 100-N-60, UPR-100-N-13 and UPR-100-N-26 was performed between September 21 and November 14, 2011. Approximately 2,459.0 bank cubic meters (BCM) (3,216.3 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-60 group of waste sites excavation and direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Excavation continued until all debris and contamination associated with the waste site had been removed. No anomalous material was discovered during remediation activities.

The stained soil location was evaluated for TPH and PAH with a focused sample (FS-2), but the sample results were used to support a greater effort to identify the extent of the TPH and PAH contamination in the 100-N Area and were not included in the evaluation of the 100-N-60, UPR-100-N-13, UPR-100-N-26 group of waste sites.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-14	**Classification:**	Accepted
Names:	UPR-100-N-14; 119-N Drain System Leak; UN-100-N-14	**Reclassification**	Interim Closed Out (7/2/2013)
Type:	Unplanned Release	**Start Date:**	8/5/1974
Status:	Inactive	**End Date:**	

Description: The site has been remediated and Interim Closed Out. The waste site is the soil near the 119-N Sample Building that was affected during a release of radioactively contaminated water.

Location: This site is on the north and east sides of the 116-N Air Stack, and approximately 100 meters (330 feet) north of the 105-N Reactor Building.

Release Description: While maintenance personnel were working on the 119-N drain system, to correct loss of coolant flow in a condensate collection sampler, backflow from the drain occurred. Effluent water was discharged to the ground near the building. This release occurred on August 5, 1974 and is documented on Unusual Occurrence Report number 74-24.

Waste Type: Process Effluent

Waste Description: The release consisted of effluent water containing 0.0008 curies of beta/gamma activity.

Closure Info: Interim (7/2/2013): Remedial action at the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 waste sites was performed during January and February 2011. Remediation involved removal of the foundations of the 116-N stack, the 119-N and 119-NA structures, and the underlying soil. Excavation continued until the french drain, associated piping, and contaminated soil and debris were removed. This excavation exceeded the depth that would be required to remove the 100-N-102:1, UPR-100-N-9, and UPR-100-N-14 waste sites. According to drawing H-1-46389, the depth of the 100-N-102:1 subsite, and therefore the unplanned release waste sites UPR-100-N-9 and UPR-100-N-14, was at 0.76 meters (2.5 ft) bgs. The final excavation depth was approximately 8.5 meters (28 ft) bgs. Because the excavation and removal of the 116-N stack foundation was previously performed by the D4 Project, the exact volume of material removed is unknown.

The debris removed included soil, concrete, piping, and other debris associated with the 116-N, 119-N, and 119-NA structures and french drain. All material from these waste sites was

disposed at the Environmental Restoration Disposal Facility (ERDF). No anomalous material was encountered during the excavation.

In March 2012, the D4 Project constructed a ramp across the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation to provide access and to support remediation activities at 1303-N (118-N-1) waste site. The ramp material was excavated on September 28, 2012, and also disposed of at ERDF. A walk around the site boundary confirmed that all fill material used to build the ramp had been removed. After the excavation of the ramp material, a gamma survey was performed on October 3, 2012, within the 100-N-87, 100-N-102:1, UPR-100-N-14, and UPR-100-N-9 excavation. The gamma survey results indicated readings above background at two locations. Additional remediation was performed to address areas where the GPERS survey results indicated elevated radiological results. Follow up surveys on October 17, 2012 and October 19, 2012 indicated no elevated readings above background.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-17	**Classification:**	Accepted
Names:	UPR-100-N-17; 166-N Diesel Oil Supply Line Leak; UN-100-N-17	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	8/1/1966
Status:	Inactive	**End Date:**	8/1/1966

Description: The site is an unplanned release of diesel oil that occurred at the 166-N Tank Farm. Number 2 and number 6 diesel oil was introduced into the soil over time. In August 1966, approximately 302,833 kiloliters (80,000 gallons) of diesel oil was released from a transfer valve.

Location: The 166-N Tank Farm is located between the 116-N Air Stack and the 116-N-2 Facility (Golf Ball).

Release Description: External corrosion of a 10.2 centimeter (4 inch) diesel oil supply line, between the oil storage tank and the west dike, caused the line to leak and release diesel oil to the soil in August 1966. The oil drained through the soil to groundwater, where it migrated toward the Columbia River.

Related Sites/ Structures: 100-N-106, 100-N-107

Waste Type: Oil

Waste Description: The leak consisted of 80,000 gallons of diesel oil.

Code:	UPR-100-N-18	**Classification:**	Accepted
Names:	UPR-100-N-18; 166-N Four-Inch Diesel Oil Supply Line to 184-N Leak and Affected French Drain; UN-100-N-18	**Reclassification**	Interim Closed Out (8/21/2013)
Type:	Unplanned Release	**Start Date:**	8/1/1973
Status:	Inactive	**End Date:**	8/1/1973

Description: The waste site has been remediated and Interim Closed Out. It was the area where diesel oil leaked into the soil in 1973 (per PNL-6456) and affected a french drain.

Location: The release occurred between the 166-N Tank Farm and the 184-N Diesel Oil Day Tank.

Release Description: External corrosion caused leakage in the 10.2 centimeter (4-inch) diesel oil supply line in August 1973.

Related Sites/ Structures: Contamination below 4.6 meters (15 feet) is considered to be part of waste site UPR-100-N-17.

Waste Type: Oil

Waste Description: The leak consisted of diesel oil.

Closure Info: Interim (8/21/2013): Remediation of the UPR-100-N-18, UPR-100-N-20 and UPR-100-N-24 waste sites was combined in a single excavation. Excavation of the Unplanned Release waste sites was performed between June 27, 2011, and March 26, 2013, resulting in a combined excavation approximately 4.6 meters (15 ft) deep. Approximately 12,062 bank cubic meters (15,777 bank cubic yards) of contaminated soil and debris was removed and disposed to ERDF.

The materials removed and disposed to ERDF included those that had been staged at the ex-situ bioremediation Spoil Pile Area (SPA). During removal of materials from the SPA area it was discovered that debris from the previously demolished 1723-N Warehouse was located in the subsurface. The 1723-N debris included asphaltic materials related to a parking lot at that location. The analysis of samples collected after the removal of materials from the ex-situ SPA would have been problematic due to the presence of the 1723-N related asphalt. Therefore an agreement was reached with EPA and DOE to close the ex-situ SPA based on a visual inspection of the area, verifying the UPR-100-N-18/20/24 materials had all been removed. The SPA area is therefore closed.

The UPR-N-18/20/24 waste sites excavation removed the contaminated soil to a depth of 4.6 meters (15 ft) below ground surface. Potentially contaminated soils remaining below 4.6 meters (15 ft) are considered part of the UPR-100-N-17 waste site and will be evaluated separately. A portion of the UPR-100-N-18/20/24 waste site on the northern side of the excavation remains in place to provide protection for the in situ bioremediation wells associated with the UPR-100-N-17 waste site. This area is referred to as the "well island" and will be addressed separately.

Code: UPR-100-N-19 **Classification:** Accepted

Names: UPR-100-N-19; 184-N Day Tank Fuel Oil Spill; UN-100-N-19; UN-116-N-19 **Reclassification** Interim Closed Out (5/31/2013)

Type: Unplanned Release **Start Date:** 4/1/1984

Status: Inactive **End Date:**

Description: The waste site has been remediated and Interim Closed Out. It was oil contaminated soil. 100-N-103:1 French Drains 6 was located in this area and was addressed with UPR-100-N-19.

Location: The release occurred at the 184-N Fuel Oil Day Tank.

Release Description: The day tank was overfilled, and fuel oil spilled onto the ground in April 1984.

Related Sites/ Structures: These releases are also associated with UPR-100-N-42.

Waste Type: Oil

Waste Description: The release consisted of No. 6 fuel oil.

Closure Info: Interim (5/31/2013): Remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites was performed between June and December 2011, resulting in a combined excavation approximately 5 meters (16.4 ft) deep. Approximately 4,577 bank cubic meters (5,986 bank cubic yards) of contaminated soil and debris was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). French drain #6 formerly associated with the 100-N-103:1 subsite was removed during the remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites and disposed at ERDF. French drain #6 was administratively removed from the 100-N-103:1 subsite and included as part of the UPR-100-N-19 waste site. The unplanned release sites are collectively referred to as the UPR-100-N-19 waste site grouping. The excavation removed the contaminated soil to a depth of 5 meters (16.4 ft) below ground surface. Potentially contaminated soil remains below 5 meters (16.4 ft) and is considered part of the UPR-100-N-42 waste site. This will be evaluated separately and is excluded from the UPR-100-N-19 scope.

Additional remediation was conducted following initial verification sampling because elevated total petroleum hydrocarbons (TPH) were detected above the RAG in part of the site. Well 199-N-16 was decommissioned and removed as part of the additional soil remediation.

Code:	UPR-100-N-20	**Classification:**	Accepted
Names:	UPR-100-N-20; 166-N Two-Inch Diesel Oil Return Line Leak; UN-100-N-20; UN-116-N-20	**Reclassification**	Interim Closed Out (8/21/2013)
Type:	Unplanned Release	**Start Date:**	6/1/1985
Status:	Inactive	**End Date:**	6/1/1985

Description: This waste site has been remediated and Interim Closed Out. It was approximately 757 liters of diesel oil that drained to the soil. In 1985. the contaminated soil was removed and properly disposed (per WHC-SD-EN-TI-251).

Location: The release site was located near Tank 1 in the 166-N Tank Farm.

Release Description: External corrosion caused the 5-centimeter (2-inch) diesel oil return line to leak in June 1985.

Related Sites/ Structures: Contamination below 4.6 meters (15 feet) is considered to be part of waste site UPR-100-N-17.

Waste Type: Oil

Waste Description: The release consisted of Number 2 diesel oil.

Closure Info: Interim (8/21/2013): Remediation of the UPR-100-N-18, UPR-100-N-20 and UPR-100-N-24 waste sites was combined in a single excavation. Excavation of the Unplanned Release waste sites was performed between June 27, 2011, and March 26, 2013, resulting in a combined excavation approximately 4.6 meters (15 ft) deep. Approximately 12,062 bank cubic meters (15,777 bank cubic yards) of contaminated soil and debris was removed and disposed to ERDF.

The materials removed and disposed to ERDF included those that had been staged at the ex-situ bioremediation Spoil Pile Area (SPA). During removal of materials from the SPA area it was discovered that debris from the previously demolished 1723-N Warehouse was located in the subsurface. The 1723-N debris included asphaltic materials related to a parking lot at that location. The analysis of samples collected after the removal of materials from the ex-situ SPA would have been problematic due to the presence of the 1723-N related asphalt. Therefore an agreement was reached with EPA and DOE to close the ex-situ SPA based on a visual inspection of the area, verifying the UPR-100-N-18/20/24 materials had all been removed. The

SPA area is therefore closed.

The UPR-N-18/20/24 waste sites excavation removed the contaminated soil to a depth of 4.6 meters (15 ft) below ground surface. Potentially contaminated soils remaining below 4.6 meters (15 ft) are considered part of the UPR-100-N-17 waste site and will be evaluated separately. A portion of the UPR-100-N-18/20/24 waste site on the northern side of the excavation remains in place to provide protection for the in situ bioremediation wells associated with the UPR-100-N-17 waste site. This area is referred to as the "well island" and will be addressed separately.

Code:	UPR-100-N-21	**Classification:**	Accepted
Names:	UPR-100-N-21; 184-N Diesel Oil Day Tank Overflow; UN-100-N-21; UN-116-N-21	**Reclassification**	Interim Closed Out (5/31/2013)
Type:	Unplanned Release	**Start Date:**	4/25/1986
Status:	Inactive	**End Date:**	4/25/1986

Description: The waste site has been remediated and Interim Closed Out. The Day Tanks have been removed. The tank foundations were located inside a chained area marked 184-ND.

Location: The site was located at the 184-N Diesel Oil Day Tank.

Release Description: Failure of the tank-level annunciator caused overfilling of the day tank during an oil transfer on April 25, 1986.

Waste Type: Oil

Waste Description: The release consisted of Number 2 diesel oil.

Closure Info: Interim (5/31/2013): Remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites was performed between June and December 2011, resulting in a combined excavation approximately 5 meters (16.4 ft) deep. Approximately 4,577 bank cubic meters (5,986 bank cubic yards) of contaminated soil and debris was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). French drain #6 formerly associated with the 100-N-103:1 subsite was removed during the remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites and disposed at ERDF. French drain #6 was administratively removed from the 100-N-103:1 subsite and included as part of the UPR-100-N-19 waste site. The unplanned release sites are collectively referred to as the UPR-100-N-19 waste site grouping. The excavation removed the contaminated soil to a depth of 5 meters (16.4 ft) below ground surface. Potentially contaminated soil remains below 5 meters (16.4 ft) and is considered part of the UPR-100-N-42 waste site. This will be evaluated separately and is excluded from the UPR-100-N-19 scope.

Additional remediation was conducted following initial verification sampling because elevated total petroleum hydrocarbons (TPH) were detected above the RAG in part of the site. Well 199-N-16 was decommissioned and removed as part of the additional soil remediation.

Code:	UPR-100-N-22	**Classification:**	Accepted
Names:	UPR-100-N-22; 184-N Diesel Oil Supply Line Leak No. 1; UN-100-N-22; UN-116-N-22	**Reclassification**	Interim Closed Out (5/31/2013)
Type:	Unplanned Release	**Start Date:**	1/1/1986
Status:	Inactive	**End Date:**	1/1/1986

Description: The waste site has been remediated and Interim Closed Out. Approximately 3,785 liters of diesel oil was released to the soil in 1986 (per WCH-SD-EN-TI-251).

Location: The site was located just outside the 184-N Power House.

Release Description: External corrosion caused the diesel oil supply line to leak. The release occurred on June 23, 1986.

Waste Type: Oil

Waste Description: The release consisted of Number 2 diesel oil.

Closure Info: Interim (5/31/2013): Remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites was performed between June and December 2011, resulting in a combined excavation approximately 5 meters (16.4 ft) deep. Approximately 4,577 bank cubic meters (5,986 bank cubic yards) of contaminated soil and debris was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). French drain #6 formerly associated with the 100-N-103:1 subsite was removed during the remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites and disposed at ERDF. French drain #6 was administratively removed from the 100-N-103:1 subsite and included as part of the UPR-100-N-19 waste site. The unplanned release sites are collectively referred to as the UPR-100-N-19 waste site grouping. The excavation removed the contaminated soil to a depth of 5 meters (16.4 ft) below ground surface. Potentially contaminated soil remains below 5 meters (16.4 ft) and is considered part of the UPR-100-N-42 waste site. This will be evaluated separately and is excluded from the UPR-100-N-19 scope.

Additional remediation was conducted following initial verification sampling because elevated total petroleum hydrocarbons (TPH) were detected above the RAG in part of the site. Well 199-N-16 was decommissioned and removed as part of the additional soil remediation.

Code: UPR-100-N-23 **Classification:** Accepted

Names: UPR-100-N-23; 184-N Diesel Oil Supply Line Leak No. 2; UN-100-N-23; UN-116-N-23 **Reclassification** Interim Closed Out (5/31/2013)

Type: Unplanned Release **Start Date:** 1/1/1987

Status: Inactive **End Date:** 1/1/1987

Description: The waste site has been remediated and Interim Closed Out. Approximately 757 liters of diesel oil released to the soil in 1987 (per WHC-SD-EN-TI-251).

Location: The site was located near the Diesel Oil Day Tank for the 184-N Power House.

Release Description: External corrosion of the piping system was the cause of the leak on January 10, 1987. The leak was detected through inventory discrepancy.

Waste Type: Oil

Waste Description: The release consisted of Number 2 diesel oil.

Closure Info: Interim (5/31/2013): Remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites was performed between June and December 2011, resulting in a combined excavation approximately 5 meters (16.4 ft) deep. Approximately 4,577 bank cubic meters (5,986 bank cubic yards) of contaminated soil and debris was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). French drain #6 formerly associated with the 100-N-103:1 subsite was removed during the remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites and

disposed at ERDF. French drain #6 was administratively removed from the 100-N-103:1 subsite and included as part of the UPR-100-N-19 waste site. The unplanned release sites are collectively referred to as the UPR-100-N-19 waste site grouping. The excavation removed the contaminated soil to a depth of 5 meters (16.4 ft) below ground surface. Potentially contaminated soil remains below 5 meters (16.4 ft) and is considered part of the UPR-100-N-42 waste site. This will be evaluated separately and is excluded from the UPR-100-N-19 scope.

Additional remediation was conducted following initial verification sampling because elevated total petroleum hydrocarbons (TPH) were detected above the RAG in part of the site. Well 199-N-16 was decommissioned and removed as part of the additional soil remediation.

Code:	UPR-100-N-24	**Classification:**	Accepted
Names:	UPR-100-N-24; 166-N Fuel Oil Supply Line Leak; UN-100-N-24; UN-116-N-24	**Reclassification**	Interim Closed Out (8/21/2013)
Type:	Unplanned Release	**Start Date:**	2/1/1987
Status:	Inactive	**End Date:**	2/1/1987

Description: The waste site has been remediated and Interim Closed Out. It was in an area where an unknown amount of fuel oil was released to the soil due to corrosion of the fuel supply line (per WHC-SD-EN-TI-251).

Location: The site was located near the 166-N Tank Farm, on the west side of the No. 6 fuel oil tank.

Release Description: The leak in the 4 inch diameter external supply line was caused by external corrosion caused from a heat trace line. Leakage occurred during routine oil transfer, and waste oil was periodically removed. The release occurred on February 1, 1987.

Related Sites/ Structures: Contamination below 4.6 meters (15 feet) is considered to be part of waste site UPR-100-N-17.

Process Description: The leak occurred during routine oil transfer.

Waste Type: Oil

Waste Description: An unknown amount of Number 6 fuel oil.

Closure Info: Interim (8/21/2013): Remediation of the UPR-100-N-18, UPR-100-N-20 and UPR-100-N-24 waste sites was combined in a single excavation. Excavation of the Unplanned Release waste sites was performed between June 27, 2011, and March 26, 2013, resulting in a combined excavation approximately 4.6 meters (15 ft) deep. Approximately 12,062 bank cubic meters (15,777 bank cubic yards) of contaminated soil and debris was removed and disposed to ERDF.

The materials removed and disposed to ERDF included those that had been staged at the ex-situ bioremediation Spoil Pile Area (SPA). During removal of materials from the SPA area it was discovered that debris from the previously demolished 1723-N Warehouse was located in the subsurface. The 1723-N debris included asphaltic materials related to a parking lot at that location. The analysis of samples collected after the removal of materials from the ex-situ SPA would have been problematic due to the presence of the 1723-N related asphalt. Therefore an agreement was reached with EPA and DOE to close the ex-situ SPA based on a visual inspection of the area, verifying the UPR-100-N-18/20/24 materials had all been removed. The SPA area is therefore closed.

The UPR-N-18/20/24 waste sites excavation removed the contaminated soil to a depth of 4.6

meters (15 ft) below ground surface. Potentially contaminated soils remaining below 4.6 meters (15 ft) are considered part of the UPR-100-N-17 waste site and will be evaluated separately. A portion of the UPR-100-N-18/20/24 waste site on the northern side of the excavation remains in place to provide protection for the in situ bioremediation wells associated with the UPR-100-N-17 waste site. This area is referred to as the "well island" and will be addressed separately.

Code:	UPR-100-N-25	**Classification:**	Accepted
Names:	UPR-100-N-25; UN-100-N-25; Uncontrolled Venting of 1310-N Tank	**Reclassification**	Interim Closed Out (5/7/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been remediated and Interim Closed Out. There was no visual evidence of this release.

Location: The site was located adjacent to the 1310-N Chemical Waste Tank, 366 meters (1,200 feet) northeast of the 105-N Building.

Release Description: On May 15, 1975, the annual chemical decontamination of the N Reactor primary piping was initiated. During this process, radioactive material is flushed from the primary system to the 1301-N storage tank. An operator was stationed at an open manhole (on top of the tank) to confirm that water was entering the tank. Upon observing water flow, the manhole cover was supposed to be replaced to prevent the release of unfiltered air from the tank. As the operator was beginning to replace the manhole cover, a forceful spray of water came out of the manhole. The surge lasted approximately one minute. An estimated 378 to 1900 liters (100 to 500 gallons) of contaminated water was released to the ground inside the posted Radiation Zone. Smearable contamination up to 20,000 counts per minute was found.

Related Sites/ Structures: The release is associated with the 1310-N tank (116-N-2).

Waste Type: Chemicals

Waste Description: The release consisted of primary loop water and decontamination solution containing phosphoric acid and diethylthiourea. Radiological surveys found a maximum of 20,000 counts per minute after the release.

Closure Info: Interim (5/7/2013): Remedial action of the 116-N-2 (Golf Ball) waste site was performed between March 1, 2011 and April 26, 2012. Equipment decontamination was conducted within the southeast corner of the waste site excavation, and that area was remediated May 7 and 8, 2012. The maximum depth of the excavation was 13 meters (42.7 ft) bgs and resulted in the removal of approximately 11,144 bank cubic meters (BCM) (14,576 bank cubic yards [BCY]) of soil and debris. The debris consisted of rock, sand, and piping material. The contaminated soil and debris were directly loaded out for disposal at the Environmental Restoration Disposal Facility (ERDF). Also removed with the 116-N-2 excavation were the UPR-100-N-5 and UPR-100-N-25 waste sites, as well as portions of the 100-N-84 and 100-N-63 pipelines. A section of the 100-N-63:2 pipeline remained on a side slope in the northern part of the excavation until it was remediated between March 22, and 25, 2013. No anomalous material was found during remediation. No in-process samples were collected for the 116-N-2 grouping of waste sites.

Clean padding material (soil and gravel) had been previously placed on the ground surface south of the excavation to cover radiological contamination that resulted from the previous D4 activities to remove the golf ball and silo structures. The padding material and approximately 2 meters (6.5 ft) of soil below the padding was scraped and removed for disposal at ERDF.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-26	**Classification:**	Accepted
Names:	UPR-100-N-26; Backflow of Radioactive Waste in 1314-N Facility; UN-100-N-26	**Reclassification**	Interim Closed Out (3/28/2013)
Type:	Unplanned Release	**Start Date:**	1/1/1978
Status:	Inactive	**End Date:**	1/1/1978

Description: The Unplanned Release has been remediated and Interim Closed Out. The release approximately 3,785 liters of reactor decontamination solution (phosphoric acid and diethylthiourea) that was released to the valve pit with a dirt floor. Most of the solution was pumped back into a tank car. The remaining solution was absorbed and sent to the 200 Area for disposal.

Location: The release occurred in the 1314-N Liquid Waste Loadout Station, in the northeast portion of 100-N Area.

Release Description: Reactor decontamination solution backflowed while being pumped into a tank car, contaminating the dirt floor of the valve pit at the 1314-N Radioactive Liquid Waste Load-Out Facility on December 7, 1978.

Related Sites/ Structures: The Unplanned Release is associated with the 100-N-60 French Drain.

Process Description: The 1314-N Liquid Waste Loadout Station was a 9 meter (30 ft) by 18 meter (60 ft) single story, metal-frame building supported on a reinforced concrete slab foundation. It began to operate in 1972. The facility was a transfer station consisting of numerous valves, pumps, underground and overhead piping and couplings, and underground tanks It was located approximately 100 meters (300 ft) from the Columbia River. This facility was used to loadout radioactive liquid waste from the 116-N-2 and 107-N facilities into railroad tank cars for shipment to the 200 Areas for processing and disposal. The loadout facility contained a tank car wash station with a sump to collect the wash water. The water drained into a 3,780 liters (1,000 gal) overflow tank. During the filling operation, excess liquid waste was designed to overflow through a closed piping system from the tank car to the overflow tank, which initiated pump shutdown. A 756 liters (200 gal) catch tank was installed to hold liquids that exceeded the capacity of the car wash sump.

Waste Type: Chemicals

Waste Description: The release consisted of reactor decontamination solution containing phosphoric acid and diethylthiourea.

Closure Info: Interim (3/28/2013): The 1314-N building was demolished in 2006. 100-N-60 and UPR-100-N-26 were located within the building footprint. UPR-100-N-13 was located near the 1314-N building, but outside the building footprint.

Remedial action for 100-N-60, UPR-100-N-13 and UPR-100-N-26 was performed between September 21 and November 14, 2011. Approximately 2,459.0 bank cubic meters (BCM) (3,216.3 bank cubic yards [BCY]) of contaminated soil and debris were removed from the 100-N-60 group of waste sites excavation and direct loaded for disposal at the Environmental Restoration Disposal Facility (ERDF). Excavation continued until all debris and contamination associated with the waste site had been removed. No anomalous material was discovered during remediation activities.

The stained soil location was evaluated for TPH and PAH with a focused sample (FS-2), but the sample results were used to support a greater effort to identify the extent of the TPH and PAH contamination in the 100-N Area and were not included in the evaluation of the 100-N-60, UPR-100-N-13, UPR-100-N-26 group of waste sites.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-29	**Classification:**	Accepted
Names:	UPR-100-N-29; 1304-N Dump Tank; Emergency Dump Tank Bypass Line Leak; UN-100-N-29	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	Unplanned Release	**Start Date:**	4/23/1974
Status:	Inactive	**End Date:**	4/23/1974

Description: The Unplanned Release has been remediated and Interim Closed Out. The site was approximately 378 liters (100 gallons) of primary reactor coolant water that was released to the soil in 1974. The contaminated soil was removed and sent to the 200 Area burial ground for disposal. The excavation was then backfilled with clean fill.

Location: The release occurred on the east side of the 1304-N Emergency Dump Tank.

Release Description: A leaking check valve caused a release of primary coolant water on April 23, 1974. An estimated 378 L (100 gal) of contaminated primary coolant water was released from a leaking check valve. An area approximately 10.8 square meters (120 sq ft) was contaminated by the release. The contaminated soil was removed and shipped to a 200 Area burial ground for disposal. Following soil disposal, the site was covered with clean fill material.

Waste Type: Water

Waste Description: The leak consisted of primary coolant water containing radioactive fission and activation products, mostly manganese-56 and sodium-24.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-30	**Classification:**	Accepted

Names: UPR-100-N-30; 1304-N Dump Tank; Emergency Dump Tank Overflow; UN-100-N-30
Reclassification Interim Closed Out (3/20/2013)

Type: Unplanned Release
Start Date: 7/22/1974

Status: Inactive
End Date: 7/22/1974

Description: The Unplanned Release has been remediated and Interim Closed Out. The site includes the ground surrounding the 1304-N Emergency Dump Tank. There is no visual evidence of this release.

Location: The release occurred adjacent to the 1304-N Emergency Dump Tank.

Release Description: During a drawdown test, the 1304-N Emergency Dump Tank overflowed, spilling approximately 9,463 liters (2500 gallons) of primary coolant water. No water reached the river. The release affected an area measuring approximately 232 square meters (2500 sq. ft.). The contamination levels were 500 counts per minute. The release occurred on July 22, 1974.

Related Sites/ Structures: The site is associated with the 1304-N tank (100-N-57).

Waste Type: Water

Waste Description: The release consisted of primary coolant water containing fission and activation products contaminating the area to a maximum of 500 counts/minute.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: UPR-100-N-31
Classification: Accepted

Names: UPR-100-N-31; Radioactive Effluent Water Spill Near 116-N-1 (1301-N); UN-100-N-31
Reclassification Interim Closed Out (8/31/2013)

Type: Unplanned Release
Start Date: 7/22/1974

Status: Inactive
End Date:

Description: The waste site has been remediated and Interim Closed Out. It was a release of radioactively contaminated water to the soil on the west side of the 116-N-1 crib.

Location: The release occurred on the west side of the berm just west of the 1301-N (116-N-1) Liquid

Waste Disposal Facility.

Release Description: While sample lines were being installed in a 15-centimeter (6-inch) steel casing through the berm on the west side of the 1301-N Crib, the water level in the crib was raised 38 to 46 centimeters (15 to 18 inches) as a result of an Emergency Dump Tank drawdown test. De to the increased water level, approximately 3785 liters (1000 gallons) of effluent was released, contaminating 186 square meters (2,025 square feet) of soil.

Related Sites/ Structures: The 116-N-1 Crib and Trench was the originator of the liquid. Also related was 100-N-63, UPR-100-N-4, UPR-100-N-8 and the 100-N Reactor (1314-N, 116-N-1 and 116-N-3) TSD Underground Pipelines.

Waste Type: Water

Waste Description: The release consisted of radioactive effluent containing fission and activation products. The gross beta/gamma concentration of the spilled water was 700 disintegrations/minute/milliliter.

Closure Info: Interim (8/13/2013): The 1322N, 1322NA, 1322NB, and 1322NC above-ground buildings and slabs in the vicinity of the unplanned releases were removed during the 100-N deactivation, decommission, decontamination, and demolition (D4) activities. The removal included an excavation that measured approximately 3.7 meters (12 ft) deep. The UPR-100-N-4 and UPR-100-N-8 waste sites are associated with the 1322-N/NA Buildings. The UPR-100-N-31 waste site is associated with the 116-N-1 (1301-N) Crib and Trench. Because the locations of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 unplanned release sites were in close proximity to each other and no information was available to delineate the boundary of each release, the three sites were combined into one excavation. The excavation for remediation of the combined unplanned release sites was immediately adjacent to the former 116-N-1 (1301-N) remediation site. Further remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste site soils was performed between December 13, 2011 and March 19, 2012, resulting in a combined excavation approximately 7 meters (23 ft) deep.

Approximately 5,683 bank cubic meters (BCM) (7,433 bank cubic yards [BCY]) of additional contaminated soil, rocks, and concrete was removed for disposal at the Environmental Restoration Disposal Facility (ERDF). Additional contaminated soil was removed from areas SZ-6, SZ-8, and SZ-9 between January 30, 2013 and February 4, 2013, resulting in an additional 189 BCM (247 BCY) of contaminated soil removed for disposal at ERDF. Areas of stained soil remained in the deep zone (more than 4.6 meters [15 ft] below ground surface [bgs]) following the completion of the remedial action activities. All material was direct loaded from the excavation for disposal at ERDF. No overburden piles or anomalies were associated with the remediation.

During remediation of the unplanned release sites, increasing radiological activity was observed with depth approaching soils underlying the former 116-N-1 crib. Deep zone sample results from the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 remediation are also consistent with residual contamination in the 116-N-1 deep zone. This suggests that the contamination encountered was residual from 116-N-1 left in place in the deep zone, and that deep zone remediation of the UPR-100-N-4, UPR-100-N-8, and UPR-100-N-31 waste sites is considered complete. The liquid waste effluents associated with the UPR-100-N-31 and 116-N-1 waste sites are the same.

Code:	UPR-100-N-32	**Classification:**	Accepted
Names:	UPR-100-N-32; 1304-N Dump Tank; Emergency Dump Tank Bypass Line Leak; UN-100-N-32	**Reclassification**	Interim Closed Out (3/20/2013)
Type:	Unplanned Release	**Start Date:**	9/16/1974

Status: Inactive **End Date:** 9/16/1974

Description: The Unplanned Release has been remediated and Interim Closed Out. Approximately 3,785 liters of effluent water was released to the soil in 1974. Most of the contaminated soil was removed in 1974. The remaining contamination was covered with clean fill.

Location: The release occurred on the southeast side of the 1304-N Emergency Dump Tank.

Release Description: A leaking check valve in the Emergency Dump Tank bypass line released radioactive effluent water to the ground. An estimated 3,785 liters (1,000 gal) of contaminated effluent being released. A majority of the contaminated soil was removed and disposed at a 200 Area burial ground. The remaining soil that had been contaminated by the release was left in place and covered with clean fill material. The effluent water was analyzed at the release location to provide an estimate of the activity of the release. It was estimated that the radioactive material had an activity of less than 10 micro curies. A mud sample reading was 20,000 counts/minute. The release occurred on September 16, 1974.

Waste Type: Water

Waste Description: The release consisted of radioactive effluent water containing fission and activation products. A mud sample read 20,000 counts/minute. The water was analyzed for gross activity. It was estimated that less than 10 millicuries of radioactive material remained on the ground.

Closure Info: Interim (2/20/2013): The above ground 1304 Emergency Dump Tank and associated piping were removed in 2004.

Remedial action at the 100-N-57, UPR-100-N-1, UPR-100-N-2, UPR-100-N-29, UPR-100-N-30, and UPR-100-N-32 waste sites was performed between February 21 and May 31, 2011. Excavation continued until all debris and contamination associated with the waste sites had been removed. Contaminated soil, concrete, pipeline segments and debris removed during excavation were staged within the South Staging Pile Area 1 (SSP Area 1) prior to shipment to the ERDF. Approximately 1,848 bank cubic meters (2,417 bank cubic yards) of contaminated soil and debris were removed from the site and disposed at the ERDF. No stained soil or anomalous material was found during the remediation activities.

The debris removed from the waste sites consisted of miscellaneous noncombustible debris and soil. Portions of the 100-N-63:2, 100-N-64, 100-N-84:2, 100-N-84:3, 100-N-84:4, and 100-N-84:5 pipelines waste sites were also removed during 100-N-57 group of waste sites remediation activities. The remaining portions of these pipeline waste sites will be remediated and separate closure documents prepared at a later date.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code: UPR-100-N-35 **Classification:** Accepted

Names: UPR-100-N-35; 100-N Fuel Basin Drainage System Leak; 105-N Fuel Storage Basin Drainage System Leak; UN-100-N-35; UN-116-N-35 **Reclassification** Consolidated (4/10/2013)

Type: Unplanned Release **Start Date:** 2/28/1986

Status: Inactive **End Date:** 11/1/1986

Description: This Unplanned Release has been consolidated with 100-N-66 (105N/109N Complex). The release occurred in a crack in the south concrete wall of the lift station pipe tunnel at the 105-N Reactor Building. The pipe tunnel and lift station will remain in place when the 105-N reactor

building is placed in the Safe Storage Enclosure (SSE).

Location: This leak occurred on the south side of the pipe tunnel (north side of the Fuel Storage Basin). It affected the western end of the 105-N Reactor core.

Release Description: Routine sampling of the 100-N Area groundwater wells detected slightly elevated levels of iodine-131. Drawdown tests on the basin determined that the leak was not from the basin. Further tests and investigations determined the intermittent leak to be coming from a sub-basin drain line approximately 8.5 meters (28 feet) below the ground. The leak, estimated to be less than 11 liters (3 gallons) per minute, occurred only during feed and bleed (addition of water) of the 100-N Fuel Basin.

Waste Type: Water

Waste Description: The release consisted of radioactively contaminated water containing an estimated 1.6 curies manganese-5, 0.4 curies cobalt-60, 0.3 curies niobium-95, 0.1 curies iodine-131, 0.4 curies cesium-137 and 0.3 curies cerium-144.

This Site Was Consolidated With:

Code: 100-N-66
Names: 100-N-66; 105-N/109-N Reactor Building Complex

Code: UPR-100-N-36
Classification: Accepted

Names: UPR-100-N-36; 184N; 184N Annex; Diesel Generator Area Unplanned Release
Reclassification Interim Closed Out (2/26/2013)

Type: Unplanned Release
Start Date:

Status: Inactive
End Date:

Description: The waste site has been remediated and Interim Closed Out. It was a diesel release in a graveled area previously affected by a history of spills.

Location: The site is located between Buildings 153N and 184N.

Release Description: Numerous spills of diesel fuel and motor oil used for normal operation and maintenance occurred over a 13 year period. During this period, the site was used as a diesel air compressor staging area.

Related Sites/ Structures: French drain 100-N-55 was located within the remediation footprint of UPR-100-N-36.A separate closure document was prepared to address the 100-N-55 french drain.

Waste Type: Oil

Waste Description: Evidence of spills include stained gravel and a strong smell of petroleum products in the soil beneath (noted during an excavation).

Closure Info: Interim (2/26/2013): Remedial action at the UPR-100-N-36 waste site was performed between May 23, 2011, and November 15, 2011, resulting in an excavation approximately 4.5 meters (14.8 ft) below ground surface. Approximately 8,400 bank cubic meters (BCM) (10,987 bank cubic yards [BCY]) of contaminated soil and debris were removed for disposal at the ERDF. Initially, the soil and debris were placed in a staging pile area to be evaluated for bioremediation. However, based on sampling results and the debris present (concrete, piping, and chunks of hard black material), the material was disposed. The staging pile area is currently in use by multiple waste sites. Therefore, the staging pile area will not be addressed in this closure document but rather will be closed with the UPR-100-N-18 waste site. All soil and debris from remediation of UPR-100-N-36 was disposed at the ERDF. Therefore, no overburden pile is associated with the site. No anomalous materials were encountered during the remediation.

Code:	UPR-100-N-37	**Classification:**	Accepted
Names:	UPR-100-N-37; HGP Transformer Yard Oil Stained Gravel; SWMU #1	**Reclassification**	Interim Closed Out (6/15/2004)
Type:	Unplanned Release	**Start Date:**	1/1/1966
Status:	Inactive	**End Date:**	1/1/1986

Description: The site has been remediated and Interim Closed Out. The nine transformers were arranged in a row along the side of the 185-N Building. Each transformer was approximately 6.1 meters (20 ft) tall and 2.4 meters (8 ft) square and was situated on a 3 meter (10 ft) square concrete pad.

Location: The transformer yard was located northwest of the 185-N Building, west of the 100-N operation area.

Process Description: The former HGP was located in the 185-N Building and consisted of two 430-megawatt turbine generators that operated from 1966 until 1986 using steam from the adjacent 100-N production reactor for generation of electricity. Mineral oil containing polychlorinated biphenyls (PCB's) and solvents was used routinely during equipment maintenance. Washington Public Power Supply System personnel indicated that dielectric fluid was used in the transformer that did not contain PCB's.

Waste Type: Oil

Waste Description: Dielectric fluid consisting of mineral oil has seeped onto the ground. Washington Public Power Supply System (WPPSS) personnel have verbally stated that polychlorinated biphenyls (PCBs) have never been used in the transformers. However, the RCRA Facility assessment report states that, based on the dates of operation, the presence of PCB's is suspect.

Closure Info: Interim: The Hanford Generating Plant (HGP) solid waste management unit (SWMU) removal actions included in this CVP began in 2001 and were completed in 2004. The majority of the removal action activities were completed in 2003 and 2004. The remediation and report were done by Energy Northwest.

The entire 185-N Building aboveground structure was demolished during the 2003 and 2004 activities. The debris from demolition of the building as well as from demolition of other HGP structures was used as fill for the 185-N Building basement. The debris was placed into the building basement from the bottom (15.2 meters [50 ft] below ground surface) to within 7.6 meters (25 ft) of the ground surface. The remaining void spaces among the debris fill were filled using a cement grout controlled density fill. The remaining below grade portion of the basement was backfilled with clean soil. The reinforced concrete turbine pedestals that extend from the basement floor to approximately the ground surface were left in place. Based on agreement with the Washington State Department of Ecology, the portions of the turbine pedestals at the ground surface were covered with 0.9 meter (3 ft) of soil consistent with requirements for other 100 Area facilities. The Removal Action Workplan (DOE-RL 1999) specified removal of structures to a minimum of 0.3 meter (1 ft) below the surrounding grade and other 100 Area action memorandums generally require that a structure be demolished to a minimum of 0.9 meters (3 ft) below the surrounding grade. However, in the case of the turbine pedestals, because of their mass and the amount of steel reinforcement, demolition was deemed impractical. The 0.9 meters (3 ft) of cover for the pedestals was placed to blend in with, and to gently slope with, the surrounding grade.

The 185-N Building is not a SWMU. However, SWMUs #2, 3, and 4 are located within the building. To provide a complete description of the removal action activities for SWMUs #2, 3, and 4, a summary description of the removal action activities conducted for the 185-N Building is below.

UPR-100-N-37 Transformer Yard (SWMU #1): Eight of the nine transformers located in the transformer yard were removed prior to the Action Memorandum (EPA 1999). The ninth, smaller, operating transformer, was drained of oil and scrapped during the most recent 2003 and 2004 activities. The oil and transformer were disposed of based on historical data indicating that the transformer oil did not contain PCBs. During removal action activities conducted in 2001, minor areas of soil contaminated with oil were excavated from around each transformer pad and properly disposed. During the more recent 2003 and 2004 activities, the concrete pads were demolished, excavated and the concrete rubble used as fill for the demolished 185-N Building basement.

100-N-51 Oil Storage Area (SWMU #2): All stored oil and waste containers were previously removed from the oil storage area and properly disposed of or appropriately used. Miscellaneous concrete stained areas including the sump were cleaned. Cleaning of concrete surfaces included the use of concrete scabbling and water and detergents during the 2001 activities. The 100-N-51 Oil Storage Area (SWMU #2) was located at the bottom of the 185-N Building basement. It has been covered and filled with building debris, a cement grout controlled density fill, and borrow soil.

185-N Building Drains and Sumps (SWMU #3): The 185-N Building basement drains and sumps were emptied and cleaned during the 2001 removal action activities. Cleaning activities involved removal and proper disposal of sludges and liquids. Following removal of the sludges and liquids, the sump concrete and metal surfaces were hand cleaned, pressure washed, and scabbled as needed. During the recent 2003 and 2004 activities three of the sumps contained water. The water was characterized, removed from the sump, and properly disposed. All of the miscellaneous drains were filled with a cement grout controlled density fill during the 2003 and 2004 activities. The sumps were filled with borrow soil and capped with a minimum of 15 cm (6 in.) of cement grout during the 2003 and 2004 activities. Also, the sumps and drains have been covered with building debris fill, cement grout controlled density fill, and borrow soil.

100-N-50 Turbine Oil Filter Unit (SWMU #4): During the 2001 removal action activities, the two steel tank oil filtration units including the internal metal oil filtration screens were drained and cleaned. Residual oil from the units was removed and properly disposed. In addition, the two concrete sumps associated with the filter units were cleaned. Stained concrete was removed from the sumps through chipping and scabbling. These units were located at the bottom of the 185-N Building basement and have been filled and covered with the cement grout controlled density fill.

Code:	UPR-100-N-39	**Classification:**	Accepted
Names:	UPR-100-N-39; Corridor 22 Suspect Liquid Unplanned Release (Cleaned Up)	**Reclassification**	Interim Closed Out (9/6/2013)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The release site has been remediated and Interim Closed Out. The 100-N-31 waste site was located on the west side of the 105-N/109-N Reactor Buildings and adjacent to the 100-N-32, 100-N-38, 100-N-61 :3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39 waste sites. These waste sites are collectively referred to as the waste sites west of the 105-N/109-N Reactor. The remediation of these waste sites resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. The eleven sites were Interim Closed out in a single document.

UPR-100-N-39 consisted of contaminated soil and concrete from an unplanned release of

contaminated water outside the Corridor 22 doorway of the 105-N Reactor.

Location: The release site was located outside the Corridor 22 doorway, on the west side of the 105-N Reactor Building. Corridor 22 doorway was located near the helium low pressure storage tanks and the 105-NE Fission Product Filter Trap.

Release Description: In 1983 or 1984, several hundred liters of radioactively contaminated water was spilled outside Corridor 22. Scrub water from the Fission Product Filter Trap overflowed and discharged to the ground and concrete. The concrete was painted to fix the contamination and an indeterminate amount of the contaminated soil was removed.

Related Sites/ Structures: The 105-N Fission Product Filter Trap is associated with the site.

Waste Type: Water

Waste Description: Several hundred liters of radioactively contaminated water from the Fission Product Filter Trap overflowed and discharged to the ground.

Closure Info: Interim (9/6/2013): Eleven waste sites located west of the 105-N/109-N Reactor Building were remediated as a group. The eleven waste sites included 100-N-31, 100-N-32, 100-N-38, 100-N-61:3, 100-N-64:3, 100-N-68, UPR-100-N-3, UPR-100-N-7, UPR-100-N-10, UPR-100-N-12, and UPR-100-N-39. This group of waste sites was referred to as the waste sites west of the 105-N/109-N Reactor. The footprints of the 1909-N Waste Disposal Valve Pit, the 107-N facility and the pipe trench between 105-N and 107-N were also located within the boundary of the group.

The eleven collocated waste sites located west of the 105-N/109-N Reactor Building were remediated, either partially or completely, by the Deactivation, Decontamination, Decommissioning, and Demolition (D4) Project during the demolition and removal of the portions of the 105-N/109-N Buildings, located outside of the safe storage enclosure (SSE).

The Field Remediation (FR) Project resumed remedial action activities west of the 105-N/109-N Reactor in November 2012. Contaminated soil, structural concrete and rebar, and piping were removed from the collocated waste sites west of the 105-N/109-N Reactor and disposed at the Environmental Restoration Disposal Facility (ERDF). The remediation continued through March 2013 to an approximate maximum depth of 9.5 meters (31 ft) below surface grade. No anomalous materials were encountered during remediation. The remediation resulted in one large excavation with no demarcation of the individual sites, with the exception of the UPR-100-N-39 waste site. Some segments of the 100-N-61:3 and 100-N-64:3 pipelines were removed with remedial action at the 100-N-57, (1304-N) Emergency Dump Tank and 116-N-4, (1300-N) Emergency Dump Basin waste sites.

After the remediation, Global Positioning Environmental Radiological Surveyor (GPERS) surveys were performed in March 2013. Some beta and gamma contamination was detected above background. However, the area with the highest detected activity is associated with residual structures and soils for the 105-N/109-N SSE and is considered part of the 100-N-66, 105-N/109-N Reactor Building Complex waste site. A small area with elevated beta and gamma contamination was detected within the waste sites west of the 105-N/109-N Reactor boundary. Additional soil was removed from this area and disposed at the ERDF. An environmental radiological survey of the area using hand-held instruments verified that the contaminated soils have been removed.

The 1909-N Waste Disposal Valve Pit was removed during general facility demolition in this area by the D4 Project. Due to the proximity and general configuration of demolition and remediation activities on the west side of the reactor, closure of the facility footprint was deferred until nearby waste site remediation by the FR Project occurred. The residual

contaminated soil that remained beneath the location of the former 1909-N facility was then removed.

The 107-N basin structure was completely removed by the D4 Project. However, closure of the basin footprint was deferred to the UPR-100-N-12 waste site. Additional soil was removed from the footprint during general waste site remediation in the area. Surveys found no elevated residual radiological activity.

Several segments of the 100-N-84 pipeline subsites were partially located within the remediation boundary. All of the segments of the 100-N-84:2, 100-N-84:4, 100-N-84:5, and 100-N-84:6 pipeline subsites that were within the excavation boundary were removed and disposed at the ERDF. Reclassification of the total 100-N-84:2, 100-N-84:4, 100-N-84:5 and 100-N-84:6 pipeline subsites will be addressed in separate closure documents.

Following remediation, the radiological postings were removed - per WCH Internal Memos (CCN 176583 and 175935).

Code:	UPR-100-N-42	**Classification:**	Accepted
Names:	UPR-100-N-42; 184-N; 184-N Day Tank Area Liquid Unplanned Release; Day Tank Diesel Oil Spill	**Reclassification**	Interim Closed Out (1/29/2014)
Type:	Unplanned Release	**Start Date:**	10/9/1987
Status:	Inactive	**End Date:**	10/9/1987

Description: The unplanned release site has been remediated and Interim Closed Out. Several documented and undocumented spills of fuel oil and diesel oil occurred within the Day Tank area over the life of the facility. The UPR-100-N-42 waste site addresses potential petroleum contamination associated with these releases that may be present in the deep vadose zone, at a depth below 4.6 meters (15 ft). The 184-N Day Tank Area was surrounded by a 1.5-meter (4.8-foot) concrete wall that is 25 meters (85 feet) long by 12.8 meters (42 feet) wide, has a sand floor, and contained two 130,000 liters (35,000 gallons) Number 6 fuel oil tanks and one 30,000 liter (8,000 gallon) diesel oil tank.

Location: The 184-N Day Tank area was located north of the 184-N Power House.

Release Description: On October 9, 1987, an unknown amount of diesel oil was spilled.

Related Sites/ Structures: Associated releases include UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23 and UPR-100-N-43. These spill occurred from 1984 through 1987.

Waste Type: Oil

Waste Description: The site received diesel oil.

Closure Info: Interim (1/29/2014): The UPR-100-N-42 waste site addresses potential petroleum contamination that may be present in the deep vadose zone, at a depth below 4.6 meters (15 ft). Associated shallow releases included UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23 and UPR-100-N-43. Verification sampling of the associated shallow zone releases was conducted on June 14, 2012 and documented in the Remaining Sites Verification Package for the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites (RSVP-2013-025 through 029). The results indicated that remediation of the petroleum-contaminated soil in the shallow zone was complete with the exception of some residual petroleum contamination exceeding soil remedial action goals (RAGs) located on the

north excavation sidewall near the 199-N-16 groundwater monitoring well. Remediation of the associated shallow zone petroleum waste sites, that overlie the UPR-100-N-42 deep zone waste site (UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43), was performed from June 7 through October 10, 2011. Additional remediation on the north excavation sidewall was performed in January 2013, resulting in a combined excavation approximately 5 meters (16.4 ft) deep.

Well 199-N-16 (total depth 80 ft) was decommissioned on December 18, 2012. Groundwater samples were collected on November 6, 2012, prior to decommissioning the well. Petroleum contamination was not detected in the groundwater samples.

Verification sampling to support closure of the UPR-100-N-42 waste site was performed in three phases. Phase I sampling was performed on September 19, 2012, and consisted of sampling the floor of the excavation remaining after remediation of overlying shallow zone petroleum remediated waste sites to support evaluation of the lateral distribution of potential residual petroleum contamination at the UPR-100-N-42 waste site. The results of Phase I verification sampling were then used to establish the location of a test pit for Phase II verification sampling near sample locations showing elevated concentrations of petroleum contamination. Phase II sampling was performed on February 13, 2013, to evaluate the vertical distribution of potential petroleum contamination below the floor of the excavation. The test pit was excavated to a final depth of approximately 5 meters (16.4 ft) below the excavation floor. Phase III verification sampling was performed from September 25 through October 1, 2013, and consisted of installing two vertical push probes to provide additional information concerning potential petroleum contamination below the excavation floor. The results of the verification sampling indicate the UPR-100-N-42 waste site meets remedial action objectives and remedial action goals (RAGs) established by the 100-N Area ROD (EPA 1999) and that in-situ bioremediation of the deep zone (greater than 4.6 meters [15 ft]) was not required.

The selected action involved (1) excavating the shallow zone petroleum unplanned release sites waste sites (UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43), (2) disposing of contaminated excavation materials at ERDF, (3) demonstrating through verification sampling that cleanup goals have been achieved, and (4) proposing the site for reclassification as Interim Closed Out.

Code:	UPR-100-N-43	**Classification:**	Accepted
Names:	UPR-100-N-43; 166-N / 184-N Pipelines Liquid Unplanned Release 2 (4/26/89; Cleaned Up)	**Reclassification**	Interim Closed Out (5/31/2013)
Type:	Unplanned Release	**Start Date:**	4/26/1989
Status:	Inactive	**End Date:**	4/26/1989

Description: The waste site has been remediated and Interim Closed Out. The release site occurred in 1989 at the oil supply pipe from the 166-N to 184-N Buildings. The diesel oil day tank was connected to the 166-N Storage tanks by a 10 centimeter (4 inch) underground supply line.

Location: The leak occurred at three locations along the pipeline, but the three locations were not provided in the historical documentation. The WIDS site is mapped as one data point, about 49 meters (160 feet) southeast of the 105-N Reactor Building, between the 184-N Building and the 184-N Day Tank Area.

Release Description: A diesel oil leak occurred at three locations along the pipeline from 166-N to 184-N Buildings at three different flange joints. The exact location of these flange joints is not given in the referenced descriptions. The release was reported on April 26, 1989.

Waste Type: Oil

Waste Description: The spill was diesel oil from the diesel oil supply line to the 184-N Day Tank.

Closure Info: Interim (5/31/2013): Remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites was performed between June and December 2011, resulting in a combined excavation approximately 5 meters (16.4 ft) deep. Approximately 4,577 bank cubic meters (5,986 bank cubic yards) of contaminated soil and debris was removed and disposed at the Environmental Restoration Disposal Facility (ERDF). French drain #6 formerly associated with the 100-N-103:1 subsite was removed during the remediation of the UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, and UPR-100-N-43 waste sites and disposed at ERDF. French drain #6 was administratively removed from the 100-N-103:1 subsite and included as part of the UPR-100-N-19 waste site. The unplanned release sites are collectively referred to as the UPR-100-N-19 waste site grouping. The excavation removed the contaminated soil to a depth of 5 meters (16.4 ft) below ground surface. Potentially contaminated soil remains below 5 meters (16.4 ft) and is considered part of the UPR-100-N-42 waste site. This will be evaluated separately and is excluded from the UPR-100-N-19 scope.

Additional remediation was conducted following initial verification sampling because elevated total petroleum hydrocarbons (TPH) were detected above the RAG in part of the site. Well 199-N-16 was decommissioned and removed as part of the additional soil remediation.

200-BC-1

Code:	216-B-14	**Classification:**	Accepted
Names:	216-B-14; 216-BC-1 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1956

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs and the 216-BC-201 siphon tank were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank, 200-E-222-PL, and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches. The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building during uranium recovery operations. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-15	**Classification:**	Accepted
Names:	216-B-15; 216-BC-2 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1957

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank, 200-E-222-PL and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches. The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building during uranium recovery operations. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-16 **Classification:** Accepted

Names: 216-B-16; 216-BC-3 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank, 200-E-222-PL and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches. The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-17 **Classification:** Accepted

Names: 216-B-17; 216-BC-4 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank, 200-E-222-PL and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches. The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate. Curren (1972) states that the 216-B-17 crib received tank farm first cycle scavenged waste in January 1956.

Code: 216-B-18 **Classification:** Accepted

Names: 216-B-18; 216-BC-5 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank, 200-E-222-PL and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches. The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant from 221-U Building. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-19 **Classification:** Accepted

Names: 216-B-19; 216-BC-6 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. The area has been covered with clean soil and posted as an Underground Radioactive Material area. There are concrete AC 540 markers to identify the site.

Location: The crib is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The site is associated with the 216-BC-201 Siphon Tank and UPR-200-E-83.

Process Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs received tri-butyl phosphate waste from the U-Plant Uranium Recovery operations and scavenged tank farm waste via underground pipelines. From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U Plant to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was precipitated by adding ferrocyanide. The addition of ferrocyanide to the waste was called "scavenging". The supernate liquor was released to the ground in the BC Cribs and Trenches via underground pipelines and above ground pipe extensions.

The unit is a dispersion structure, 3.0 by 3.0 by 0.9 meters (10 by 10 by 3 feet) high, made of wood, cinder block, and steel, over a 1.5-meter (5-foot) bed of 7.6-centimeter (3-inch) gravel, with a 35.6-centimeter (14-inch) inlet pipe located 1.8 meters (6 feet) below grade. The bottom dimensions of the excavation are 12.2 by 12.2 meters (40 by 40 feet) and 3.96 meters (13 feet) deep. The side slope is 2:1.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate. Curren (1972) states that the 216-B-19 crib received both U Plant and Tank Farm scavenged waste.

Code: 216-B-20 **Classification:** Accepted

Names: 216-B-20; 216-B-20 Trench; 216-BC-7 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations.

Location: The trench is located south of the 200 East Area in the BC Crib Area (across Route 4S). The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced through precipitation by adding ferrocyanide. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

The trench was divided into 19-meter (62.5-foot) sections by 0.6-meter (2-foot) high earthen dams. The side slope is 1:1.5. The depth was designed to be 3 meters (10 feet) but is often documented as 1.8 meters (6 feet).

Waste Type: Process Effluent

Waste Description: The site received scavenged waste from uranium recovery (tributyl phosphate [TBP] solvent extraction from the 221-U Building). The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-21 **Classification:** Accepted

Names: 216-B-21; 216-B-21 Trench; 216-BC-8 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations.

Location: The unit is located on the west side of the 216-B-20 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC

Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with 221-U and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. The waste includes inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-22 **Classification:** Accepted

Names: 216-B-22; 216-B-22 Trench; 216-BC-9 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench was divided into 19 meters (62.5 foot) sections by 0.6-meter (2 foot) high earth dams. The side slope is 1:1.5. The depth was designed to be 3.7 meters (12 feet), but some documents report approximately 1.8 meters (6 feet).

Location: The unit is located on the west side of the 216-B-21 Trench, south of the 200 East Area (across Route 4S). The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is related to 221-U and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 received and 216-B-52 waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds

such as ferrocyanide, nitrate and phosphate.

Code:	216-B-23	**Classification:**	Accepted
Names:	216-B-23; 216-B-23 Trench; 216-BC-10 Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is divided into eight 19-meter (62.5-foot) sections by 1.2-meter (4-foot) high earth dams. The unit has a 1:1.5 side slope.

Location: The unit is south of the 200 East Area (across Route 4S). The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-24	**Classification:**	Accepted
Names:	216-B-24; 216-B-24 Trench; 216-BC-11 Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is divided into eight 19-meter (62.5-foot) sections by 1.2-meter (4-foot) high earthen dams. It has a 1.5:1 side slope.

Location: The unit is directly south of the 216-B-23 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-25 **Classification:** Accepted

Names: 216-B-25; 216-B-25 Trench; 216-BC-12 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1956

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is divided into eight 19-meter (62.5-foot) sections by 1.2-meter (4-foot) high earthen dams. It has a 1.5:1 side slope.

Location: The site is directly south of the 216-B-24 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-26 **Classification:** Accepted

Names: 216-B-26; 216-B-26 Trench; 216-BC-13 Trench
Reclassification None
Type: Trench
Start Date: 1/1/1956
Status: Inactive
End Date: 1/1/1957

Description: A portion of this trench was excavated in 2008. The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations.

Location: The site is directly south of the 216-B-25 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area. Although some documentation states the trench is divided into eight 19-meter (62.5-foot) sections by 1.2-meter (4-foot) high earthen dams with a of 1.5:1 side slope, a 1956 photograph shows the trench was divided into only three sections by earth dams.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, phosphate and nitrate.

Code: 216-B-27
Classification: Accepted
Names: 216-B-27; 216-B-27 Trench; 216-BC-14 Trench
Reclassification None
Type: Trench
Start Date: 1/1/1957
Status: Inactive
End Date: 1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is divided into eight 19-meter (62.5-foot) sections, separated by 1.2-meter (4-foot) high earthen dams. It has a 1.5:1 side slope.

Location: The site is directly south of the 216-B-26 Trench, south of the 200 East Area (across Route 4S). The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-28 **Classification:** Accepted

Names: 216-B-28; 216-B-28 Trench; 216-BC-15 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench construction divided it into eight 19-meter (62.5-foot) sections, separated by 1.2-meter (4-foot) high earthen dams. It has a 1.5:1 side slope.

Location: The unit is directly south of the 216-B-27 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: This trench is related to UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area. The following are related to the unit: eight 7.62-centimeter (3-inch) Schedule 40 pipes, approximately 6.7 meters (22 feet) long, placed along the side slope, 19.2 meters (63 feet) apart; eight 7.62-centimeter (3-inch) gate valves for the above pipes, at ground level; wooden cover composed of three 2 by 4s, spaced 3 meters (10 feet) apart, running the length of the unit, with 1 by 6s crossing the width, 1.2 meters (4 feet) apart; 4 by 4 support stakes, 0.76 meters (2 feet 6 inches) long, spaced 2.4 meters (8 feet) apart to secure the wooden cover to the unit.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. The waste contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-29	**Classification:**	Accepted
Names:	216-B-29; 216-BC-16 Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A 10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Location: The trench is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The trench is associated with 221-U uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-30	**Classification:**	Accepted
Names:	216-B-30; 216-B-30 Trench; 216-BC-17 Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A

10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Location: The unit is directly south of the 216-B-29 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-31 **Classification:** Accepted

Names: 216-B-31; 216-B-31 Trench; 216-BC-18 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A 10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Location: The unit is directly south of the 216-B-30 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-32	**Classification:**	Accepted
Names:	216-B-32; 216-B-32 Trench; 216-BC-19 Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A 10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Location: The unit is directly south of the 216-B-31 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-33 **Classification:** Accepted

Names: 216-B-33; 216-B-33 Trench; 216-BC-20 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized.

Location: The unit is directly south of the 216-B-32 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A 10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-34 **Classification:** Accepted

Names: 216-B-34; 216-BC-21 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers

outline the area where the trenches are located, but do not identify specific trench locations. The site is a trench that was used for disposal of medium-activity liquid waste. The trench has been backfilled and the area has been surface stabilized.

Location: The unit is directly south of the 216-B-33 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area. The BC Cribs and Trenches are located inside the BC Controlled Area.

Related Sites/ Structures: The trench is associated with the U Plant uranium recovery process and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from 300 Area. The trench was a long narrow excavation with a 1:1.75 side slope. It was divided crosswise into two equal sections by an earthen dam. The dam was 1.5 meters (5 feet) high and 1.5 meters (5 feet) wide at the top. A 10.2 centimeter (4 inch) Schedule 40 pipe ran along the top edge of the trench. Four 7.62-centimeter (3-inch) Schedule 40 pipe sections extended laterally from the 10.2-centimeter (4-inch) pipe, down the side slope into the trench. Liquid discharge into the trench was controlled by gate valves located at the top of the lateral lines. A cover, constructed of 1 by 6 and 2 by 4 wood framing and sisalkraft paper, extended the length of the trench. The vertical distance from the cover to the trench bottom was a minimum of 1.5 meters (5 feet).

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building. The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code:	216-B-52	**Classification:**	Accepted
Names:	216-B-52; 216-B-52 Trench; 216-BC-22	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1958

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations.

Location: The unit is immediately north of the 216-B-23 Trench, south of the 200 East Area (across Route 4S) in the BC Crib Area.

Related Sites/ Structures: The site is associated with 221-U and UPR-200-E-83.

Process Description: From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were removed from underground storage tanks and reprocessed at 221-U to recover the uranium from the waste. After the uranium was removed, the cesium and strontium content of the effluent was reduced by precipitation. The supernate liquor was released to the ground in the BC Cribs and Trenches. A total of 16 unlined trenches, 216-B-20 through 216-B-34 and 216-B-52 received waste from the Uranium Recovery Process. Trenches 216-B-53A, 216-B-53B, 216-B-54 and 216-B-58 received laboratory and PRTR waste from

300 Area. The unit is divided in half by an earthen dam at the center. The dam is 1.5 meters (5 foot) high and 1.5 meters (5 foot) wide at the top. The side slope of the trench is 1.25:1.

Waste Type: Process Effluent

Waste Description: The site received scavenged waste from the uranium recovery process in 221-U (tributyl phosphate [TBP] solvent extraction). The waste is high in salt and is neutral to basic. It contained inorganic compounds such as ferrocyanide, nitrate and phosphate.

Code: 216-B-53A **Classification:** Accepted

Names: 216-B-53A; 216-B-53A Trench; PRTR Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1965

Status: Inactive **End Date:** 1/1/1965

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations.

Location: The trench is located south of the 200 East Area (across Route 4S) in the BC Crib Area. It is located inside the BC Controlled Area.

Release Description: On September 29, 1965, an accident occurred in the 300 Area when some test fuel at the Plutonium Recycle Test Reactor (PRTR) in the 309 building failed, causing failure of the process tube which contaminated the 309 reactor's moderator coolant system. The Rupture Loop Ion Exchange (RLIX) test loop and the PRTR main cleanup system were both contaminated with residual plutonium fuel and fission products. Nearly 3.8 million liters (1 million gallons) of light water was initially contaminated. However additional cooling water was added over many days following the accident and the contaminated water volume rose to nearly 53 million liters (14 million gallons). The contaminated effluent was transferred to the 340 facility and then transported by tanker trucks to the 200 Area. The trucking of contaminated liquid continued on an around the clock basis though October 1965. Some contaminated equipment was transported to the 200 North Area and stored in 212-N.

Related Sites/ Structures: The trench is related to the 309 building, the 340 facility and an incident that occurred in the 309 building ion exchange column (sitecode 309-WS-2). It is located inside the BC Radiologically controlled area UPR-200-E-83.

Process Description: The trench was active during October and November 1965. The site received waste from a liquid release at the Plutonium Recycle Test Reactor (PRTR) in the 300 Area. Contaminated liquid was transported to the 200 Area via tanker trucks. Use of the trench discontinued when specific retention capacity was reached. Of all the specific retention trenches at this location, only 216-B-53A is considered to be a TRU waste site, containing 100 grams of plutonium. The trench was divided into two sections by an earthen dam at the center. The dam was 1.5 meters (5 feet) high and 12.7 centimeter (5 inches) wide at the top. The side slope of the open trench was 1.75:1.

Waste Type: Process Effluent

Waste Description: The site received waste from the Plutonium Recycle Test Reactor in the 300 Area. The waste is neutral to basic. This trench received 100 grams of plutonium.

Code: 216-B-53B **Classification:** Accepted

Names: 216-B-53B; 216-B-53B Trench; 216-B-53 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1962

Status: Inactive **End Date:** 1/1/1963

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The BC Cribs and Trenches are located inside the radiologically controlled area known as the BC Controlled Area (UPR-200-E-83).

The trench is divided into two sections by an earthen dam at the center. The dam is 1.5 meters (5 feet) high and 12.7 centimeter (5 inch) wide at the top. The side slope is 1.75:1.

Location: The trench is located south of the 200 East Area (across Route 4S) in the BC Crib Area. The trench is inside the BC Controlled Area.

Release Description: See UPR-200-E-83

Related Sites/ Structures: The trench is associated with 300 Area laboratory waste and the 340 facility.

Process Description: Liquid waste from the 300 Area laboratory facilities was sent to the 340 facility via the process sewer. Waste that was above the release limits for the 300 Area Process Ponds was sent by tanker truck to the 200 Area for disposal.

Waste Type: Process Effluent

Waste Description: The site received liquid waste from the 300 Area Hanford Laboratory Operations. The waste is low in salt and is neutral to basic.

Code: 216-B-54 **Classification:** Accepted

Names: 216-B-54; 216-B-54 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1963

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is located inside the Radiologically Controlled Area boundaries known as the BC Controlled Area (UPR-200-E-83).

Location: The trench is located south of the 200 East Area (across Route 4S). The trench is within the BC Controlled Area.

Release Description: In 1969, contaminated Russian thistles were found growing on trenches 216-B-53A, 216-B-53B and 216-B-54. The weeds had a maximum dose rate of 1500 millirem per hour. The contaminated weeds were removed and buried. Action was taken to inhibit weed growth on the trenches.

Related Sites/ Structures: The trench is associated with the 300 Area laboratory facilities and the 340 facility.

Process Description: Liquid waste from the 300 Area laboratory facilities was sent to the 340 facility via the process sewer. Waste that was above the release limits for the 300 Area Process Ponds was sent by tanker truck to the 200 Area for disposal. Although some reference documents state the trench was active from 1963 to 1965, ARH-947 and ARH-2806 state the trench was activated in March 1963 and removed from service in October 1963. The trench was divided into two sections by an earthen dam at the center. The dam was 1.5 meters (5 feet) high and 12.7

centimeter (5 inches) wide at the top. The side slope of the open trench was 1.75:1.

Waste Type: Process Effluent

Waste Description: The site received waste from the Hanford Laboratory Operations (BNWL) in the 300 Area. The waste is low in salt and is neutral to basic.

Code: 216-B-58 **Classification:** Accepted

Names: 216-B-58; 216-B-58 Trench; 216-B-59 Crib **Reclassification** None

Type: Trench **Start Date:** 1/1/1965

Status: Inactive **End Date:** 1/1/1967

Description: The BC trenches were surface stabilized as a unit. The backfilled trenches have been covered with clean soil and posted as Underground Radioactive Material. Concrete AC 540 markers outline the area where the trenches are located, but do not identify specific trench locations. The trench is within the posted Radiologically Controlled Area known as the BC Controlled Area (UPR-200-E-83). The trench was divided into 7.6-meter (25-foot) sections by 1.2-meter (4-foot) high earthen dams. Each section had a wooden cover. A 1.22-meter (48-inch) diameter pipe was placed along the bottom. The pipe was corrugated with five 10.16-centimeter (4-inch) diameter holes around the bottom half.

Location: The trench is located south of the 200 East Area (across Route 4S) in the BC Crib Area.

Related Sites/ Structures: The trench is associated with 300 Area laboratory facilities and the 340 facility.

Process Description: Liquid waste from the 300 Area laboratory facilities was sent to the 340 facility via the process sewer. Waste that was above the release limits for the 300 Area Process Ponds was sent by tanker truck to the 200 Area for disposal. The trench was covered with 8 wooden cover frames, 5.5 meter (18 feet) wide by 8.5 meter (28 feet) long a 7.62-centimeter (3-inch) schedule 40, carbon steel pipe, approximately 7 meters (23 feet) long placed along a side of the structure.

Waste Type: Process Effluent

Waste Description: The site received Battelle Northwest laboratory (BNWL) waste from the 300 Area. The waste is low in salt and is neutral to basic.

Code: 200-E-14 **Classification:** Accepted

Names: 200-E-14; 216-B-201; 216-BC-201 Siphon Tank **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1957

Description: The 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs and the 216-BC-201 siphon tank were surface stabilized as a single area. All the surface structures (risers and vents) have been removed. There are concrete AC 540 markers to identify the site. The vents were visible until 1981 when the area was surface stabilized. The vent risers were removed at ground level and the area was covered with at least 0.6 meters (2 feet) of additional top soil. The area is posted as Underground Radioactive Material.

Location: The siphon tank is located south of Route 4S, south of the 200 East Area. The tank is north of and adjacent to the 216-B-14 through 216-B-19 Cribs. The tank is 18 meters (60 feet) north of the center line between the 216-B-14 and 216-B-15 Cribs.

Related Sites/ Structures: The tank is associated with the 2805-E-3 and 2805-E-4, 200-E-222-PL pipelines, the 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs, 241-BY Tank Farm and 221-U.

Process Description: The 216-BC-201 siphon tank was used to discharge waste to the 216-B-14, 216-B-15, 216-B-16, 216-B-17, 216-B-18 and 216-B-19 cribs. The siphon tank would receive and hold the waste until the tank level reached 1.6 meters (5.5 feet). When this level was reached, the siphon action would begin and the tank contents would discharge to the designated crib. The siphon action would stop when the tank level reached 0.07 meters (6 inches). The siphon action was intended to flood the crib area with a significant amount of liquid, resulting in a uniform spread of contaminants throughout the crib, instead of a large amount of contaminants concentrating near the discharge point.

Waste Type: Process Effluent

Waste Description: Most of the liquid waste dispersed through this tank originated from the Uranium Recovery Process in 221-U (U-Plant). The process reclaimed the uranium metal from the tank farm waste derived from the bismuth phosphate fuel processing activities. Curren (1972) states that 216-B-17 and 216-B-19 also received scavenged tank farm waste. The waste includes ferrocyanide, phosphate, cesium, strontium, uranium, cobalt and ruthenium. The total effluent to the six cribs that passed through the 216-BC-201 Siphon Tank was 3.896E+07 liters (1.032E+07 gallons). At the time of discharge (1956), the total radionuclide activity for all six cribs equaled 26 curies of cobalt-60, 1,840 curies of cesium-137, 1,850 curies of strontium-90, 70 grams of plutonium and 1,410 kilograms (640 pounds) of uranium.

200-CB-1

Code:	216-B-4	**Classification:**	Accepted
Names:	216-B-4; 216-B-4 Dry Well; 216-B-4 French Drain; 216-B-4 Reverse Well	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1949

Description: The site is marked with a single concrete AC-540 marker post, with an Underground Radioactive Material sign attached to the post. The top of the well extends 0.6 meters (2 feet) above ground.

Location: The french drain is located south of the 221-B Building, east of the 222-B building and north of the 292-B Building.

Related Sites/ Structures: The french drain is related to the 291-B Stack and the 292-B building. The pipeline associated with this waste site is 200-E-230-PL.

Waste Type: Water

Waste Description: Before August 1947, the site received 291-B Stack drainage. After August 1947, the site received floor drainage from the 292-B Building. The waste is neutral to basic and low salt with less than one curie of total beta contaminants. The B Plant AAMS Report also mentions transuranic fission products.

Code:	216-B-13	**Classification:**	Accepted
Names:	216-B-13; 216-B-13 Crib; 216-B-13 French Drain; 216-B-B; 291-B Crib	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1976

Description: A single, concrete AC-540 marker is the only site identifier. There an Underground Radioactive Material sign attached to the concrete post.

Location: The french drain is located south of 221-B and northeast of the 291-B-1 Stack.

Related Sites/ Structures: The french drain is associated with the 291-B stack. The pipeline that fed the french drain is sitecode 200-E-243-PL.

Process Description: Many documents state the unit operated from August 1947 to June 1976. In June 1976, the stack drainage was rerouted to a cell drainage sample tank. The french drain is constructed of two 1.22 meter (4 feet) diameter by 1.53 meter (5 feet) long tile pipes, stacked vertically and filled with crushed limestone. The unit has a plywood cover, located 2.44 meters (8 feet) below grade. Two and a half tons (2,270 kilograms) of limestone were used as a base and to fill the tile pipes. The bottom of the drain is 5.5 meters (18 feet) below ground surface. However, an Atlantic Richfield Hanford Company memo, created on October 3, 1974, states the drain line to the french drain was cut and capped in June 1974.

Waste Type: Process Effluent

Waste Description: The site received the 291-B-1 Stack drainage. In 6/76, the stack drainage was rerouted to a catch tank, jetted to the wind tunnel, drained to a sump, and then pumped to a cell drainage sample tank. The waste is low in salt and is neutral to basic.

Code:	216-B-60	**Classification:**	Accepted
Names:	216-B-60; 216-B-60 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1967
Status:	Inactive	**End Date:**	1/1/1967

Description: The crib is not visible because the 225-B Building was built on top of the crib site in 1975. There is a sign posted on the south wall of the 225-B building indicating where the 216-B-60 crib is located.

Location: The crib is located at the west end of the 221-B Building. The southeast portion of the 225-B Encapsulation Facility was built over the crib site.

Related Sites/ Structures: The crib is associated with the 221-B facility operations.

Process Description: The 216-B-60 crib was a single use, specific retention crib. The crib was constructed of two steel caissons positioned side by side (standing on end) that were 2.4 meters (8 feet) in diameter and 4.2 meters (14 feet) tall. The two caissons were installed in November 1967 to receive waste from the cleanout of the 0.6 meter (24 inch) 221-B cell drain header. The cleanout process was completed in December 1967. The first caisson received 18, 499 liters (4887 gallons) of sludge solids and was capped with concrete. The second caisson received a small volume of flush water. The 0.6 meter (24 inch) line was plugged after cleanout and the caissons were backfilled to grade.

Waste Type: Process Effluent

Waste Description: The site received the cell cleanout solid and liquid waste from the 61 centimeter (24 inch) 221-B Building cell cleanout drain line. The waste was low in salt and was neutral to basic. Composite sample results indicated 715.5 kilograms of uranium, 0.08 grams of plutonium, 777 curies of Ce-144, 8 curies of Cs-137 and 5 curies of Eu-154.

Code:	221-B	**Classification:**	Accepted
Names:	221-B; B Plant Canyon; B Plant Facility	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	

Description: The B Plant facility is one of the original Hanford chemical processing buildings. The 221-B Process Canyon is a large, reinforced concrete building. It consists of twenty sections (two cells per section) with expansion joints between each section. The building is divided lengthwise into the gallery side and the canyon chemical processing side by a thick, concrete shielding wall running the full length of the building.

Location: The facility is located inside 200 East Area, on Atlanta Ave.

Code:	200-E-6	**Classification:**	Accepted
Names:	200-E-6; Sanitary Sewer Repair and Replacement 2607-E4; Septic Tank	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	1/1/1981
Status:	Inactive	**End Date:**	1/1/1998

Description: The septic tank is surrounded by chain with four steel posts painted yellow. The tank is posted with a septic tank sign. The tank has two 10 centimeter (4-inch) PVC pipes which protrude vertically from the ground. The sanitary tile field is surrounded with a steel post and chain barricade and is posted with Caution Underground Radioactive Material signs.

Location: The site is located just east of the 221-B Building and south of the inactive 2607-E4 septic tank.

Process Description: The septic system received waste from the 221-B Building.

Waste Type: Sanitary Sewage

Waste Description: The site received sewage from lavatory facilities within the 221-B Building.

Code: 200-E-55 **Classification:** Accepted

Names: 200-E-55; Effluent Drain East of 291-B Sand Filter; Miscellaneous Stream #322 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1948

Status: Inactive **End Date:** 1/1/1997

Description: There are no visual surface features for this drain. It has been marked with a single steel post. The drain is below grade and east of the B-Plant Sand Filter. The french drain consists of a hole 1.83 meters (6 feet) in diameter, 0.9 meters (3 feet) deep backfilled with gravel.

Location: The french drain is located 3.6 meters (12 feet) east of the east end of the 291-B Sand Filter (WIDS Site Code 200-E-30).

Related Sites/ Structures: The drain is associated with the 291-B Sand Filter (200-E-30). The pipeline to this french drain is sitecode 200-E-214-PL.

Process Description: Sand Filters were added to the B Plant exhaust system in 1948. Condensate from the sand filter drained to a pipe in the bottom of the east end of the sand filter that dispersed the effluent to a gravel filled hole adjacent to the sand filter.

Waste Type: Process Effluent

Waste Description: The drain received condensate from the B-Plant canyon sand filter and rain water that leaked through the sand filter roof. An auger drill sample of the sand filter french drain was collected in September 1994. A spilt spoon sample was collected at 4.8 meters (16 feet) below ground surface. Maximum contamination levels in the soil read 20,000 disintegrations per minute beta/gamma and 2100 disintegrations per minute alpha with hand held instruments. The sample was shipped to a mobile laboratory for analysis.

Code: 2607-E4 **Classification:** Accepted

Names: 2607-E4; 2607-E4 Septic Tank and Tile Field **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1998

Description: The septic tank and tile field are marked with a Sanitary Sewer/Drain Field sign and lie with a posted Underground Radioactive Material area. The 2607-E4 Septic Tank is constructed of reinforced concrete that drains to an adjacent tile field.

Location: The 2607-E4 Septic Tank is located northeast of the 221-B Building. The tile field is northeast

of the tank.

Related Sites/ Structures: The 2607-E4 Septic Tank is associated with the 2607-E4 Tile Field and B-Plant Facilities.

Process Description: The 2607-E4 Septic Tank and associated tile field were designed to accept and treat sanitary sewer effluent from B-Plant facilities.

Waste Type: Sanitary Sewage

Waste Description: This septic tank received sanitary wastewater and sewage from B Plant facilities at an estimated rate of 0.24 cubic meters (8.5 cubic feet) per day. The tank was abandoned in 1998. No information was provided related to sampling.

Code: UPR-200-E-1 **Classification:** Accepted

Names: UPR-200-E-1; Waste Line Failure on South Side of 221-B **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1946

Status: Inactive **End Date:** 1/1/1946

Description: The unplanned release is not separately marked or posted. The contamination was assumed to have migrated from the source, which was a pipeline leak that occurred four months earlier.

Location: The release occurred on the south side of the 221-B Building.

Release Description: Soil contamination was detected approximately 24.4 meters (80 feet) from the location of a waste line rupture location that was identified on June 17, 1946. The additional contamination was assumed to be migration from the first line failure. Following the discovery of the additional contamination, test holes were dug to determine the extent of the contamination.

Related Sites/ Structures: This unplanned release is associated with UPR-200-E-80 and 200-E-226-PL.

Waste Type: Process Effluent

Waste Description: The original line break (metal waste line) had dose rates up to 400 rad per hour.

Code: UPR-200-E-2 **Classification:** Accepted

Names: UPR-200-E-2; Spotty Contamination Around the B and T Plant Stacks; UN-200-E-2 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1947

Status: Inactive **End Date:**

Description: This unplanned release is not physically posted or marked.

Location: In 1947, document indicated radioactive particulate contamination was identified in a 300 meter (1000 foot) radius around the B and T Plant stacks.

Release Description: A document written on 11/18/1947 states radioactive particulate matter was found within a 305 meters (1,000 feet) radius around the B Plant and T Plant stacks. A study of the ground contamination found that mist-like particles were released over a larger area and that the particulate matter had magnetic properties.

Waste Type: Chemicals

Waste Description: Spotty ground contamination around the B Plant stack. Most stack releases consisted of ruthenium.

Code: UPR-200-E-44 **Classification:** Accepted

Names: UPR-200-E-44; BCS Waste Line Leak South of 221-B; UN-200-E-44 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:**

Description: The release site is not separately marked or posted. There is no visual evidence of the area that caved in.

Location: The unplanned release occurred south of 221-B, near the R-17 Change House. north of 7th Street. The Change House no longer exists.

Release Description: A small cave-in was discovered south of the R-17 change house next, to the black-top road (7th Street). There was no radiological reading identified in the cave-in at the time of discovery. An excavation was done after lunch that identified a leak in the 15 centimeter (6 inch) BCS crib line. Soil removed from the excavation was contaminated from 10,000 to 20,000 counts per minute. The dose rate on the pipe was 20 millirad per hour. There was no contamination spread from the excavation.

Related Sites/ Structures: This site is associated with B Plant and UPR-200-E-103.

Waste Type: Process Effluent

Waste Description: The leaking effluent from the BCS crib line caused the ground to cave in. The dirt was contaminated with readings of 10,000 to 20,000 counts per minute. The pipe was contaminated with readings up to 20 millirem per hour.

Code: UPR-200-E-52 **Classification:** Accepted

Names: UPR-200-E-52; Contamination Spread Outside the North Side of 221-B; UN-200-E-52 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1975

Status: Inactive **End Date:**

Description: In 2008, an area approximately 4 meters (13 feet) wide by 9 meters (30 feet) was posted with a WIDS sign and Underground Radioactive Material Area signs (see photos).

Location: The unplanned release occurred on the north side of 221-B, near the steps that cross the railroad tunnel. Soil contamination occurred under the drain of the steam pressure relief pipe discharge from the E-5-2 Strontium Concentrator.

Release Description: On August 1, 1975, soil contamination ranging to 20,000 counts per minute was detected under the drain of the steam pressure relief pipe discharge from the E-5-2 Strontium Concentrator, and an area about 0.91 meters (3 feet) wide and 2.74 meters (9 feet) high on the north side of the 221-B Building was contaminated to 100,000 counts per minute outdoors. Soil on the western berm adjacent to the railroad cut was also contaminated. The apparent cause was that contamination migrated from the leaking tube bundle of the recently replaced E-5-2 strontium concentrator to the pipe gallery piping. It was then forced outside by operation of the relief valve when the operating steam pressure was increased to 35 pounds per square inch while the relief valve setting remained at 32 pounds per square inch.

Waste Type: Process Effluent

Waste Description: Beta/gamma with readings up to 20,000 counts per minute were found in the soil under the steam pressure relief discharge pipe from the E-5-2 Strontium Concentrator. Another area on the north side of 221-B was contaminated up to 100,000 counts per minute.

Code: UPR-200-E-54 **Classification:** Accepted

Names: UPR-200-E-54; Contamination Outside 225-B Doorway; UN-200-E-54 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1977

Status: Inactive **End Date:**

Description: There is a sign posted on the south wall of 225-B, next to Door 130, that reads UPR-200-E-54. There is no radiological posting around the doorway or in the soil adjacent to the concrete door pad.

Location: The site is located adjacent to exit door #130 on the south side of the 225-B Building.

Release Description: On July 20, 1977, water used for decontaminating a manipulator seeped under an exit door of the 225-B Building spreading low-level contamination onto the concrete door pad and adjacent soil. Radiation readings on the pad were 25 millirads per hour direct and 20,000 counts per minute smearable. While decontaminating the manipulator, the water spray wand was accidentally directed toward the corridor door by the operator. Water was forced under the door into the corridor. The water trickled down the corridor to a drain in the Service Gallery. As water passed the exit door about 1.89 liters (0.5 gallons) seeped under the unsealed threshold onto the pad and soil.

Waste Type: Water

Waste Description: Water seeping under an exit door caused beta/gamma with readings of 25 millirads/hour direct and 20,000 counts per minute smearable on the concrete pad outside the door at 225-B. Contamination readings in the soil were 10,000 counts per minute. The contaminated liquid was from a manipulator decontamination activity.

Code: UPR-200-E-55 **Classification:** Accepted

Names: UPR-200-E-55; Contamination Spread South of B Plant; UN-200-E-55 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1979

Status: Inactive **End Date:**

Description: A single post with a sign that reads UPR-200-E-55 is currently located under an aboveground line. The area is not radiologically posted. It marks the approximate location of the release.

Location: The release occurred on the south side of B-Plant, at the 212-B building. Smearable contamination was found around the K-3 filter area, that is located on the roof of the 212-B Building, on the roadway southwest of the K-3 filter area, and the gravel area southwest of the 212-B Building.

Release Description: On April 27, 1979, wind spread contamination from a plastic sheeting in a radiation zone near the 212-B Building to an adjacent area. The incident occurred after the K-3 east filter was changed out. During the changeout plastic was laid down for contamination control within a radiation zone. The wind whipped the contamination plastic as it was being packaged for burial. The general area was surveyed and spots of contamination ranging from 5,000 counts per minute to 30,000 counts per minute were found outside the radiation zone.

Waste Type: Chemicals

Waste Description: While changing the K-3 filter, wind blew beta/gamma contamination (particles), with readings of 5,000 to 30,000 counts per minute, outside the radiation zone.

Code: UPR-200-E-80 **Classification:** Accepted

Names: UPR-200-E-80; 221-B R-3 Line Break; R-3 Radiation Zone; UN-200-E-80; UN-216-E-8 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1946

Status: Inactive **End Date:** 1/1/1946

Description: The unplanned release is not separately marked or posted.

Location: The release occurred in and underground pipeline, located on the south side of the 221-B Canyon Building, near the R-3 stairwell. The leak resulted in a contaminated area measuring 30 meters (100 feet) wide by 152 meters (500 feet) in length, along the south side of the 221-B building.

Release Description: On June 17, 1946, an underground metal waste line failure was detected near section R-3 on the south side of the 221-B building. ARH-780 says the dose rate at ground surface level was 400 rad per hour. The leak was confirmed by hydrostatic testing. A 1946 letter report states the dose rate at the cave-in location was greater than 4000 R/hr. (4000 Rep/hr with a Victoreen probe). Operations were halted for six days to change the waste routing and cover the area with several feet of gravel. A portion of the area had caved in to a depth of approximately 1 meter (3 feet). The excavated contaminated soil was taken to the Dry Waste Burial Ground. The excavation was backfilled. After covering the contamination, the dose rate was reduced to 100 millirad per hour.

Related Sites/ Structures: UPR-200-E-80 is associated with an underground metal waste line from the 221-B Canyon Building and UPR-200-E-1. It is likely associated with 200-E-226-PL pipeline (line V743).

Waste Type: Process Effluent

Waste Description: The release consisted of approximately of 10 curies of fission products from the "metal waste" pipe line.

Code: UPR-200-E-85 **Classification:** Accepted

Names: UPR-200-E-85; Line Leak at 221-B Stairwell R-13; UN-200-E-41; UN-200-E-85; UN-216-E-13; UPR-200-E-41 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:** 1/1/1972

Description: The R-13 Utility Pit is covered with a steel lid. The site was stabilized in 1984 and posted with Underground Radioactive Material signs.

Location: UPR-200-E-85 occurred south of the center of the 221-B Building, near the R-13 Utility Pit.

Release Description: During a routine survey, it was discovered that an unencased transfer line leading from the ion exchange tank 18-1 in the 221-B building to the 241-BX-154 Diversion Box had leaked process waste near the R-13 Utility Pit. The contaminated waste apparently seeped through a wall joint and ran into the electric utility pit. Radiation measurements were taken near the bottom of the pit. The measurements read 15 rad per hour at a distance of 5 centimeters (2 inches) from the

source.

Related Sites/ Structures: UPR-200-E-85 is associated with the 18-1 Tank in the 221-B Building, the 241-BX-154 Diversion Box and the R-13 Utility Pit. This occurrence was also given the number UPR-200-E-41.

Waste Type: Process Effluent

Waste Description: The waste line contained ion exchange waste from tank 18-1, located inside the B Plant canyon. Soil samples collected in 1972 found the release was predominantly cesium-137. Approximately 30 curies of cesium was released, but half of the release was removed with the soil excavated to expose the line leak.

Code: UPR-200-E-87 **Classification:** Accepted

Names: UPR-200-E-87; 216-E-15; 224-B South Side Plutonium Ground Contamination; UN-200-E-87; UN-216-E-15 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1953

Description: Some areas on the south side of 224-B are posted with Underground Radioactive Material signs. The release site is not specifically marked.

Location: The UPR-200-E-87 site is located on the south side of the 224-B Building in the 200 East Area.

Release Description: Plutonium-239 is believed to have leaked into the soil from underground pipelines located on south side of the 224-B Building because of the large amount of plutonium contaminated soil found while excavating near pipelines at 224-T in 1972. Because 224-T and 224-B were built exactly alike, alpha-laden moisture may also have seeped into the soil from underground pipeline joints at 224-B Building.

Related Sites/ Structures: UPR-200-E-87 is associated with the underground pipelines at the 224-B Building and UPR-200-W-102.

Waste Type: Process Effluent

Waste Description: Approximately 75 grams (3 ounces) of plutonium-239 may have leaked into the soil at 224-B, based on an actual excavation that found contaminated soil at 224-T in 200 West Area.

Code: UPR-200-E-103 **Classification:** Accepted

Names: UPR-200-E-103; BCS Line Leak South of R-17 at 221-B; UN-200-E-103 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:** 1/1/1972

Description: The release site is not marked or posted. The change house structure has been removed.

Location: UPR-200-E-103 occurred in the soil surrounding a process transfer line south of the R-17 Change House and adjacent to Seventh Street. The change house structure has been removed.

Release Description: A 0.3 meter (1 foot) diameter depression was noted in the blacktop near 7th Street, just south of the R-17 construction change house. The maximum radiation reading in the depression was 1500 counts per minute. The hole was sealed with a filter and barricaded as a radiation area until the line could be valved off and repaired. The blacktop and dirt were excavated down to the BCS line. Maximum contamination in the dirt was 100,000 counts per minute. The

	contaminated dirt was taken to the burial ground. The line was found to have several openings in it. The leaking section of pipe was removed and replaced. There was no spread of contamination or personnel contamination noted during the line repair.
Related Sites/ Structures:	UPR-200-E-103 was associated with the 221-B Building, the BCS transfer line south of the R-17 Change House, and UPR-200-E-44. It may be associated with pipelines 200-E-161-PL or 200-E-162-PL.
Waste Type:	Process Effluent
Waste Description:	The release consisted of contaminated liquid from the BCS crib line, with radiation levels up to 1,500 counts per minute at the surface of the depression and 100,000 counts per minute inside the excavation.

200-CP-1

Code:	202-A	**Classification:**	Accepted
Names:	202-A; PUREX Canyon; PUREX Facility	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	

Description: The 202-A facility is a large, reinforced concrete structure that includes a concrete canyon with below grade cells that contain the equipment used for chemical separation.

Location: The PUREX facility is located inside 200 East Area, on 4th Street.

Process Description: The PUREX plant was constructed for the purpose of extracting plutonium, uranium and neptunium from irradiated fuel rods discharged from Hanford reactors. The PUREX (Plutonium/Uranium Extraction) chemical separation process was based on decladding the fuel rods with nitric acid and conducting multiple purification processes of the resultant aqueous solution. These operations occurred inside the canyon cells.

Code:	216-A-11	**Classification:**	Accepted
Names:	216-A-11; 216-A-11 French Drain; Miscellaneous Stream #465	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1972

Description: The site is inside a small area delineated by steel posts and chain. It is posted as an Underground Radioactive Material area. A 0.76 meter (2.5 foot) diameter, circular metal cover is visible. One concrete AC-540 marker identifies the site.

The unit is composed of two reinforced concrete pipes placed vertically end to end. The excavation is 3.0 meters (10 feet) in diameter and extends to a depth of 1.5 meters (5 feet) below the bottom. Both the drain and the excavation are filled with 8-centimeter (3-inch) rock to the top and are backfilled over.

Location: The site is located near the southeast corner of the 202-A Building, south of Trap Pit #1.

Related Sites/ Structures: The site is associated with the PUREX Trap Pit #1 and pipeline 200-E-266-PL.

Process Description: A sump in the bottom of Trap Pit #1 collected steam condensate and equipment leakage that drained into 216-A-11.

Waste Type: Steam Condensate

Waste Description: The site received the Trap Pit #1 drainage from the 202-A Building. The waste was low in salt and was neutral to basic. The site contains less than 50 curies total beta activity.

Code:	216-A-12	**Classification:**	Accepted
Names:	216-A-12; Miscellaneous Stream #463	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1972

Description: The site is not marked or posted. There are no visible surface features for this drain. The wall of the trap pit includes a "French Drain" label. The unit is composed of two reinforced concrete tile pipes placed vertically end to end. The excavation is 3.0 meters (10 feet) in diameter and extends 1.5 meters (5 feet) below the bottom. Both the drain and the excavation are filled with gravel to the top of the unit and backfilled over. This site cannot be visually located.

Location: The site is located at the center of the south side of the 202-A Building, approximately 23 meters (75 feet) from the building.

Related Sites/ Structures: The site is associated with PUREX Trap #3 and pipeline 200-E-267-PL.

Process Description: A sump in the bottom of Trap Pit #3 collected steam condensate, rain water and equipment leakage and drained it to 216-A-12.

Waste Type: Steam Condensate

Waste Description: The site received the Steam Trap Pit #3 drainage from the 202-A Building. The waste was low in salt and was neutral to basic. The site contains less than 50 curies total beta activity. It is possible that more than one Trap Pit drained to this french drain.

Code: 216-A-13 **Classification:** Accepted

Names: 216-A-13; 216-A-13 French Drain; Miscellaneous Stream #460 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1962

Description: The site is not marked or posted. A 1.2 meter (45 inch) diameter metal cover is visible over the drain. The drain is constructed of two lengths of concrete pipe placed vertically end to end. The unit is filled to a depth of 0.9 meters (3 feet) with 5 to 8 centimeters (2 to 3 inches) of rock. This unit has a bed of gravel around the lower section of pipe extending a minimum of 0.3 meters (1 foot) away from the pipe in all directions.

Location: The site is located approximately 6 meters (20 feet) west and 6 meters (20 feet) south of the southwest corner of the 202-A Building.

Related Sites/ Structures: The site is associated with PUREX, the 216-A-35 French Drain and pipeline 200-E-273-PL.

Process Description: The site received the seal water from the air sampler vacuum pumps in the 202-A Building.

Waste Type: Water

Waste Description: The site received the seal water from the air sampler vacuum pumps in the 202-A Building. The waste is low in salt, neutral to basic, and contains less than 1 curie total beta activity. The 1993 PUREX AAMS Report lists the total volume released as 100,000 liters (30,000 gallons), but does not give the reference for this discrepancy from the original Stenner report. It is assumed that the original number is correct, and the AAMS report added an extra "0" in error.

Code: 216-A-14 **Classification:** Accepted

Names: 216-A-14; French Drain - Vacuum Cleaner Filter Pit; Miscellaneous Stream #462 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1972

Description: The drain is not marked or posted. There are no visible surface features for this french drain. The Vacuum Cleaner Filter Pit is a concrete box with approximately 0.6 meters (2 feet) above grade. The sump is inside the pit and drains through an underground pipe to the buried french drain. The drain is composed of two reinforced concrete pipes placed vertically end to end. The excavation is 3.0 meters (10 feet) in diameter and extends to a depth of 1.5 meters (5 feet) below the bottom. Both the drain and the excavation are filled with 8-centimeter (3-inch) rock to the top and backfilled over. The filter pit access is labeled Contamination Area, Radiation Area, Airborne Contamination and Confined Space. A 10 centimeter (4 inch) M23b-UD inlet pipe, approximately 1.5 meters (5 feet) long, extends horizontally into the unit, 7.9 meters (26 feet) below grade. The site has a 1.3 centimeter (0.5 inch) thick steel cover.

Location: The site is located south of the center of the 202-A Building, 5.5 meters (18 feet) east of the Filter Pit.

Related Sites/ Structures: The site is associated with the Vacuum Cleaner Filter Pit and pipeline 200-E-268-PL.

Process Description: A sump in the bottom of Filter Pit collected steam condensate, stormwater and equipment leakage that drained to 216-A-14.

Waste Type: Steam Condensate

Waste Description: The site received the vacuum cleaner filter and blower pit drainage from the 202-A Building. The waste was low in salt, neutral to basic, and contains less than 1 curie total beta activity.

Code: 216-A-32 **Classification:** Accepted

Names: 216-A-32; 216-A-32 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1959

Status: Inactive **End Date:** 1/1/1972

Description: The site is currently surrounded with cement posts with Underground Radioactive Material signs. There had been an inner area marked with steel posts, chains and Surface Contamination signs. The area was surface stabilized in 2001 and is now covered with clean gravel.

Location: The crib is located northeast of 202-A, inside the PUREX exclusion fence.

Related Sites/ Structures: The site is associated with 202-A and the 200-E-107 stabilized area. The pipeline associated with this crib is sitecode 200-E-194-PL.

Process Description: Perforated vitrified clay pipe was placed horizontally on the fill 1.5 meters (5 feet) above the bottom of the excavation. Two layers of sisalkraft paper separate the crib gravel from the overlying earthen backfill.

Waste Type: Water

Waste Description: The site received the 202-A canyon crane maintenance facility floor, sink, and shower drainage. The site contains less than 1 curie total beta activity. In a letter (Walsar 1966), Isochem Corporation indicates the intent to dispose of 24,600 liters (6,500 gallons) of approximately 50% Soltrol (a brand of purified kerosene) diluent in this crib. BHI-00178 (1995) reports that investigators were unable to verify if the proposed disposal took place.

Code: 216-A-35 **Classification:** Accepted

Names: 216-A-35; 216-A-35 Dry Well; 216-A-35 French Drain
Reclassification None

Type: French Drain
Start Date: 1/1/1963

Status: Inactive
End Date: 1/1/1966

Description: The drain is a raised cement structure, painted yellow and surrounded with Underground Radioactive Material signs. The top cover is marked Confined Space.

Location: The site is located approximately 9 meters (30 feet) south of the west end of the 202-A PUREX Building, south of the 216-A-13 French Drain.

Related Sites/ Structures: The site is associated with PUREX, the 216-A-13 French Drain and pipeline 200-E-272-PL.

Process Description: The site is a french drain that was a replacement for the 216-A-13 French Drain. The inlet pipe enters the french drain 3.2 meters (10.5 feet) below grade. Disposal to the site was terminated when the effluent flow rate exceeded the infiltration capacity of the soil. The site was deactivated by capping the effluent pipeline to the unit and rerouting the effluent to the 216-A-29 Ditch via the 202-A Chemical Sewer.

Waste Type: Water

Waste Description: The site received the seal cooling water from the air sampler vacuum pumps in the 202-A Building. The waste is low in salt, neutral to basic, and contains less than 1 curie of total beta activity.

Code: 241-A-151
Classification: Accepted

Names: 241-A-151; 241-A-151 Diversion Box
Reclassification None

Type: Diversion Box
Start Date: 1/1/1956

Status: Inactive
End Date:

Description: The site is a reinforced concrete structure with cover blocks. Most of the structure is below grade. It is marked and radiologically posted.

Location: The diversion box is located south of the east end of the 202-A Building.

Release Description: Multiple documented Unplanned Releases are associated with this diversion box.

Related Sites/ Structures: The site is associated with 241-A-302-A Catch Tank, drain line V028, 241-A and 241-A X Tank Farms, UPR-200-E-25, 200-E-183-PL, 200-E-207-PL, 200-E-218-PL, UPR-200-E-26 and UPR-200-E-65.

Process Description: The 241-A-151 diversion box began transferring waste from PUREX to the 241-A Tank Farms in 1956. The diversion box routed waste from the 202-A building to the 241-A-A and 241-A-B valve pits and later to the 241-AW-A and 241-AW-B valve pits. Excess solution drained to the 241-A-302A catch tank. The system is equipped with a leak detector alarm.

Waste Type: Process Effluent

Waste Description: The unit transferred process effluents from the PUREX facility to the tank farms. Lead shielding may also be contained inside the diversion box.

Code: 241-A-302A
Classification: Accepted

Names: 241-A-302A; 241-A-302-A Catch Tank; Line V028
Reclassification None

Type: Catch Tank
Start Date: 1/1/1956

Status: Inactive
End Date: 1/1/2005

Description: The unit is an underground, cylindrical vessel made of carbon steel. It sits inside a pump pit with a riser extending to the surface. It is surrounded with posts and chain and marked with radiological signs.

Location: The catch tank is located south of the east end of the 202-A building and west of the 241-A-151 Diversion Box. It is located inside the PUREX security fence.

Related Sites/ Structures: The site is associated with the 241-A-151 Diversion Box. The drain line to this catch tank is V028.

Process Description: The tank received excess process effluent and leaks from the 241-A-151 Diversion Box.

Waste Type: Process Effluent

Waste Description: This unit I collected drainage from the 241-A-151 diversion box. Volumes varied according to specific plant operation. Prior to being pumped out in 1992, the tank contained 13,626 liters (3,605 gallons) of waste. In 1994, it was reported to contain 5984 liters (1583 gallons) of effluent. The 1996 report said it contained 6418 liters (1698 gallons) of waste.

Code: 200-E-65
Classification: Accepted

Names: 200-E-65; 202A Building Steam Condensate; Miscellaneous Stream #466 Injection Well (R)
Reclassification None

Type: Injection/Reverse Well
Start Date:

Status: Inactive
End Date: 1/1/1996

Description: The site is a 1.2 meter (4 foot) diameter concrete drain with a metal plate cover. It is flush with the ground surface. On October 15, 1998, the inside of the drain was dry.

Location: The site is located on the southeast corner of 202-A, east of railroad tunnel #1 (218-E-14). It is located inside posted boundaries sitecode 200-E-107, that has been recently stabilized and downposted to an Underground Radioactive Material area.

Related Sites/ Structures: The site is associated with the PUREX facility and 200-E-107.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The site received non-contaminated steam condensate. However, the drain is located within an area that had been posted as a Radiological Contamination Area (see sitecode 200-E-107). A radiation survey done in October 1998 did not detect any contamination.

Code: 200-E-67 **Classification:** Accepted

Names: 200-E-67; 202A Building Steam Condensate; Miscellaneous Stream #494 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1996

Description: The drain is located inside a dome shaped caisson. The dome shaped caisson is surrounded by post and chain and posted with Contamination Area signs. The dome is labeled 202-A-417.

Location: The site is located adjacent to the south wall of 202-A.

Related Sites/ Structures: The site is associated with the 202-A-417 Catch tank.

Waste Type: Steam Condensate

Waste Description: The drain is located inside a caisson that is posted as a Contamination Area.

Code: 200-E-70 **Classification:** Accepted

Names: 200-E-70; Injection Well (Q); Line #8801 Steam Condensate; Miscellaneous Stream #64 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site is a 0.9 meter (3 foot) diameter drain with four holes in the cover located 2.1 meters (7 feet) east of the steam line. There are several open-ended, cut pipes. It is assumed these pipes once were connected to the drain cover. The cover is posted with Confined Space signs. On May 18, 2000, it was located inside a posted Contamination Area.

Location: The site is located south of 202A, on the east side of the railroad tunnel #1 (218-E-14).

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The drain received non-contaminated steam condensate. However, the drain had been located within a large Soil Contamination Area (200-E-107). During a site walkdown in 1998, the RCT found 10,000 disintegration per minute beta/gamma on the steam pipes and in the gravel using a hand held instrument.

Code: 200-E-71 **Classification:** Accepted

Names: 200-E-71; Injection Well (O); Line #8801 Steam Condensate; Miscellaneous Stream #63 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site is a man-made hole under the steam line. It is approximately 0.9 meters (3 feet) deep and 0.61 meters (2 feet) wide. There is no drain structure. The steam vented directly into the soil.

Location: The site is located south of 202-A, on the west side of the 218-E-14 Tunnel. It is adjacent to the southeast side of 216-A-11.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The site received non-contaminated steam condensate. However, it had been located inside a larger area that was posted as a Soil Contamination Area (see sitecode 200-E-103).

Code: 200-E-73 **Classification:** Accepted

Names: 200-E-73; Injection Well (M); Line #8801 Steam Condensate; Miscellaneous Stream #61 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1996

Description: The site is a 0.9 meter (3 foot) diameter concrete structure with a rusty metal cover.

Location: The site is located near the south wall of 202A, between 202A and the 291AH Ammonia Off-gas filter building, adjacent to the south side of 291-AD.

Related Sites/ Structures: The site is associated with 200-E-103.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The drain received non-contaminated steam condensate, but the drain is located within the boundaries 200-E-103. This area had been a Soil Contamination Area prior to being surface stabilized in 1999.

Code: 200-E-74 **Classification:** Accepted

Names: 200-E-74; Injection Well (N); Line #8801 Steam Condensate; Miscellaneous Stream #62 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site is a 0.9 meter (3 foot) diameter drain with a rusty metal cover. On October 15, 1998,

the inside of the covered drain was inspected. The drain was dry, but rust stained.

Location: The site is located southeast of 202A, on the west side of the 218-E-14 tunnel.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The site received non-contaminated steam condensate, but is located within an area that had been posted as a Soil Contamination Area (200-E-103).

Code: 200-E-77 **Classification:** Accepted

Names: 200-E-77; Injection Well (S); Line #8801 Steam Condensate; Miscellaneous Stream #65 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site is a 1.2 meter (4 foot) diameter concrete structure with a metal cover. The structure is slightly above grade and is filled with rocks. On October 15, 1998, the inside of drain was dry.

Location: The site is located on the northeast corner of 202-A. It is located inside a posted Contamination Area (see 200-E-107).

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The site received non-contaminated steam condensate, but is located within an area that had been posted as a Contamination Area (200-E-107).

Code: 200-E-79 **Classification:** Accepted

Names: 200-E-79; Injection Well (T); Line #8801 Steam Condensate; Miscellaneous Stream #66 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1997

Description: The site is a 0.9 meter (3 foot) diameter concrete drain under a steam line with a metal cover. There is a rusty pipe going into the drain. On October 15, 1998, the inside of the drain was dry. It was inside a posted Contamination Area.

Location: The site is located on the southeast corner of the PUREX Railroad Cut. It is inside a posted radiologically posted area known as 200-E-107.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: Although the drain received non-contaminated steam condensate, it is located inside and area that had been a posted Contamination Area (200-E-107).

Code: 200-E-84 **Classification:** Accepted

Names: 200-E-84; 202A Building Steam Condensate; Injection Well (C); Miscellaneous Stream #58 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:** 1/1/1996

Description: The site is a 0.9 meter (3 foot) diameter, gravel filled french drain that received steam condensate. The drain is flush with the surrounding gravel surface except for a small lip on one side. A steel drain pipe extends over the french drain.

Location: The drain is located on the west end of 202-A, under the filter banks. It is located inside a Radiological Buffer Area.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion. The silver pipe above this drain is a pressure relief valve associated with PUREX the building steam system.

Waste Type: Steam Condensate

Waste Description: The drain was installed to receive steam condensate. The Inventory of Miscellaneous Streams Report states the steam source has been eliminated and that it is a gravel filled french drain with no cover, that has a potential to receive stormwater runoff. A site walkdown in 1998 determined the pipe above the drain is a pressure relief valve associated with the PUREX building steam system. The walkdown team believes the drain is not physically located in a location that would collect stormwater run off.

Code: 200-E-107 **Classification:** Accepted

Names: 200-E-107; Contamination Area East of PUREX; PUREX E Field **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was a large, irregularly shaped, posted Contamination Area. The posted contamination east of the tunnels (218-E-14 and 218-E-15) extended into the double security fence. The area east of the Railroad Cut included the 216-A-32 Crib and the 2607-EE Sanitary Septic Tank and Tile Field, but ended at the inner security fence. In May 2000, a narrow corridor was

considered a Radiological Buffer Area and separated the northern portion of the Contamination Area from the southern portion. Both sections are considered to be one waste site. The entire area was stabilized and reposted an Underground Radioactive Material Area in 2001.

Location: The site was the posted Contamination Areas located on the east side of the PUREX tunnels and east of the RR Cut, inside the PUREX facility fence. The area was stabilized and reposted as an Underground Radioactive Material area.

Related Sites/ Structures: The site is associated with the 202-A facility, the 2607-EE septic system and the 216-A-32 crib.

Process Description: Residual surface contamination exists from years of PUREX facility operations. It is not attributed to a single contamination event.

Waste Type: Soil

Waste Description: The ground around the PUREX facility was contaminated from various sources during years of operation activities.

Code: 2607-EE
Classification: Accepted
Names: 2607-EE; 2607-EE Septic System
Reclassification None
Type: Septic Tank
Start Date: 1/1/1956
Status: Inactive
End Date:

Description: The site is a septic tank with a drain field extending northeast of the septic tank. The area is surrounded with light duty posts and chain. One riser pipe is visible.

Location: The septic tank is located northeast of 202-A, east of the railroad cut, inside the PUREX exclusion fence.

Related Sites/ Structures: The site is associated with the 202-A facility and the 200-E-107 stabilized area.

Waste Type: Sanitary Sewage

Waste Description: The unit received sanitary wastewater and sewage from the PUREX facility. The source area is in a potentially contaminated zone; therefore, the waste has the potential of being contaminated.

Code: UPR-200-E-28
Classification: Accepted
Names: UPR-200-E-28; Contamination Release Inside the PUREX Exclusion Area; UN-200-E-28
Reclassification None
Type: Unplanned Release
Start Date: 1/1/1961
Status: Inactive
End Date:

Description: This release occurred in the eastern half of the PUREX exclusion area. The exclusion area is posted as a Contamination Area. The release can not be individually distinguished within the zone.

Location: Contamination spread to the eastern half of the PUREX exclusion area.

Release Description: On November 30, 1961, a general spread of low-level contamination to the eastern half of the PUREX exclusion area occurred. Fission products escaped from a trap pit because of failures in a process vessel steam coil and in the trap pit piping.

Related Sites/ Structures: The surface contaminated areas inside the PUREX facility fence were surface stabilized in 1999 and 2001. See WIDS sitecodes 200-E-103 and 200-E-107.

Waste Type: Process Effluent

Waste Description: Fission product specks were released from a PUREX trap pit due to process vessel steam coil failures.

Code: UPR-200-E-39 **Classification:** Accepted

Names: UPR-200-E-39; Release from 216-A-36B Crib Sampler (295-A); UN-200-E-39 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1968

Status: Inactive **End Date:**

Description: The release site is not separately marked or posted. It is located inside a large surface stabilized area known as 200-E-103 that is posted as an Underground Radioactive Material area.

Location: The site release occurred on the ground and blacktop area outside the 216-A-36B Crib Sampler Shack (#295-A). The sample shack is located inside the PUREX Exclusion fence, south of 202-A, adjacent to the west side of the PUREX Storage Tunnel.

Release Description: On February 6, 1968, pressurized ammonia scrubber liquid was found to be spewing from the vent filter at the 216-A-36B Crib Sampling Shack (295-A). The contaminated ammonia scrubber water erupted through the vent and filter and onto the ground around the outside of the sample shack. Approximately 60.4 square meters (650 square feet) of ground and blacktop was affected. Contamination levels ranged from 20 to 450 millirad/hour. The cause was determined to be that the export pressure was too high, resulting in back-pressure through the vent.

Related Sites/ Structures: The site is associated with 216-A-36 Crib, the 295-A Sample Shack and 200-E-103.

Waste Type: Process Effluent

Waste Description: The site received pressurized PUREX ammonia scrubber waste containing fission products. The readings were 20 to 450 millirad/hour.

Code: UPR-200-E-96 **Classification:** Accepted

Names: UPR-200-E-96; Ground Contamination SE of PUREX; UN-200-E-96; UN-216-E-24 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was described in 1980 as an area measuring approximately 1.0 hectare (2.5 acres) located adjacent to the east and south sides of 202-A (PUREX). These areas are now covered with gravel and posted as Underground Radioactive Material areas.

Location: The release site include contaminated areas on the south and east sides of PUREX.

Release Description: From a conversation with Harold Maxfield on October 8, 1981, it was determined the area had became contaminated by residual specks from the operation of the 291-A Stack and work activities in the 241-A-151 diversion box during the operational years of the PUREX Plant.

Related Sites/ Structures: The release site is associated with 200-E-103, 200-E-107, the 291-A Stack and the 241-A-151 Diversion Box.

Waste Type: Process Effluent

Waste Description: The release consisted of low-level radioactive particles resulting from PUREX operations, most likely fall out from the 291-A stack and diversion box activities.

200-CR-1

Code:	202-S	**Classification:**	Accepted
Names:	202-S; 202-S REDOX; S Plant	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1967

Description: The 202-S Building is one of the five canyon buildings. The inactive waste management unit is a large reinforced concrete structure. The canyon's processing areas and equipment are contained in small rooms called cells. The nine cells are arranged in rows that are spanned by a large crane. Each cell is topped by a thick, concrete cover. This cover is removed by the crane, allowing access to the underlying cells. The gallery above the cell cover is the same height as the cell, allowing process equipment to be manipulated during maintenance and operations.

Location: The 202-S Building is located in the southern portion of the 200 West area just north of the 222-S Laboratory.

Related Sites/ Structures: Structures associated with this facility include the 200 West Tank Farms, 202-S process equipment, 211-S Tank Farms, the S-Plant (216-S) Cribs, Ditches, and Trenches, and multiple underground waste transfer lines and process sewers.

Process Description: The Reduction Oxidation (REDOX) Facility was used to extract plutonium and uranium from fuel rods irradiated at the Hanford Site reactors. The REDOX process employed an organic solvent extraction process that used methyl isobutyl ketone to separate uranium and plutonium from each other and the fission products in the fuel rod.

Waste Type: Equipment

Waste Description: The unit contains solid radioactive waste.

This Site has the Following SubSites:

Code: 202-S:1
Names: 202-S:1; 211-S Tank Farm

Code:	202-S:1	**Classification:**	Accepted
Names:	202-S:1; 211-S Tank Farm	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The 211-S Tank Farm is located west of the 202-S canyon building. It was a liquid chemical storage area. The tank farm consists of eight above ground steel storage tanks ranging from 16,430 liters (4300 gallons) to 186,200 liters (49,000 gallons). The tanks held nitric nonahydrate, nitric acid, sodium dichromate and sodium hydroxide. All of the tanks, pumps and piping were flushed and emptied when the REDOX facility was deactivated. The area had been posted as a Contamination Area due to migration of contamination from nearby contaminated processes and Surface Contamination Areas. The 211-S Tank Farm was covered with a minimum of 15.24 centimeters of clean gravel in November 2002. The area was downposted as an Underground Radioactive Material Area.

The SubSite is Part Of:

Code: 202-S
Names: 202-S; 202-S REDOX; S Plant

Code:	2904-S-170	**Classification:**	Accepted
Names:	2904-S-170; 2904-S-170 Control Structure; 2904-S-170 Weir Box	**Reclassification**	None
Type:	Control Structure	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1976

Description: The 2904-S-170 Control Structure is an inactive, below grade concrete structure. From the surface it can be identified by four metal posts surrounding the site. It is posted with Underground Radioactive Material signs. Two 76 centimeter (30 inch) diameter vitrified clay pipes provided inlet and outlet underground access to the structure. The 2904-SA sample building is located over the south end of the weir structure. A manhole and a riser are visible adjacent to the 2904-SA building.

Location: The site is located southwest of the 202-S canyon facility, near the southwest corner of the 211-S tank farm.

Related Sites/ Structures: The weir is associated with the 200-W-152-PL pipeline, the 2904-SA sample building, the 202-S facility and the liquid effluent disposal sites.

Process Description: The unit was built to regulate and measure the process waste flow from the REDOX facility before routing the effluent to liquid waste disposal sites.

Waste Type: Process Effluent

Waste Description: This unit contains low-level contaminated concrete and piping. The quantity of contaminated waste has not been determined. There is beta/gamma smearable contamination and penetrating radiation present. Contamination was derived from the effluents traveling through the unit.

Code:	218-W-7	**Classification:**	Accepted
Names:	218-W-7; 222-S Vault	**Reclassification**	None
Type:	Burial Vault	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1960

Description: The waste site is a carbon steel burial vault. The outer surface of the vault is coated with a layer of hot coal tar enamel to prevent corrosion, 4.3 meters (14 feet) deep, resting on a 0.3-meter (1-foot) concrete foundation. The vault has a dome and vent structure that extends 3.2 meters (10.5 feet) to the surface. The ground surface is graveled, and the vent is protected by yellow metal poles and a chain with radiation zone signs.

Location: The unit is located southeast of the 222-S Building.

Related Sites/ Structures: Site UPR-200-W-137 is the contamination inside this vault, and is (in effect) a duplicate site.

Process Description: The site received dry, packaged laboratory and sampler wastes from the 222-S Building.

Waste Type: Misc. Trash and Debris

Waste Description: This vault received dry, packaged laboratory and sampler waste from the 222-S Laboratory.

Code:	UPR-200-W-43	**Classification:**	Accepted
Names:	UPR-200-W-43; Contaminated Blacktop East of 233-S; UN-200-W-43	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	

Description: The release site is no longer marked or posted. The 233-S building was demolished in 2003 and 2004.

Location: The area of contamination was located east of the 233-S building.

Release Description: A radiation zone was originally established in this area in January 1957, but was surveyed and found to be free of contamination. On February 12, 1957, a small roped area at the corner of the electrical substation east of 233-S was being surveyed for release after being decontaminated. An area of blacktop beyond the posted area was found to be contaminated with levels up to 2,000 disintegrations per minute. The Records Management Officer (RMO) day supervisor, who was observing the survey, contaminated his shoes to 1,000 disintegrations per minute. The contaminated shoes were cleaned to less then 500 disintegrations per minute and released. The cause of the contamination spread could not be determined. However, it is presumed that the contamination from inside the posted area blew out during a wind storm. In 1957, the area was posted as a Radiation Zone pending clean up.

Waste Type: Soil

Waste Description: Alpha with readings up to 2,000 disintegrations per minute was found on the black top north of REDOX and east of 233-S.

Code:	UPR-200-W-56	**Classification:**	Accepted
Names:	UPR-200-W-56; Contamination at the REDOX Column Carrier Trench; UN-200-W-56	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1961
Status:	Inactive	**End Date:**	

Description: The site is located inside the REDOX facility fence. It is not separately marked or posted.

Location: The contamination occurred at the REDOX Column Carrier trench (outlet) west of the 233-S Building and north of REDOX.

Release Description: On February 6, 1961, a sudden heavy rainstorm washed contamination from a papered area of an outside radiation zone into a ground recess adjacent to the zone. A grossly contaminated steel cable was being decontaminated and contamination was spread out of the radiation zone across the sloping terrain. Contamination to 30,000 counts per minute was detected over about 19 square meters (200 square feet) of the graveled surface and 4.7 square meters (50 square feet) of black top directly beneath the paper. The black top was contaminated to 80,000 counts per minute by the rainwater soaking through the seams of the paper.

Waste Type: Chemicals

Waste Description: Beta/gamma contamination was measured at the site with readings at 30,000 counts/minute on the gravel and 80,000 counts/minute on the blacktop.

Code:	UPR-200-W-57	**Classification:**	Accepted

Names: UPR-200-W-57; 233-S Fire; UN-200-W-57; UPR-200-E-120 (error in area number assignment)
Reclassification None
Type: Unplanned Release
Start Date: 1/1/1963
Status: Inactive
End Date:

Description: A fire, which started in the 233-S Building, spread plutonium contamination throughout the building and to a small degree outside of the building. The release site is not physically marked or posted.

Location: The 233-S building had been located in 200 West Area, north of the 202-S building. The building was demolished in 2004.

Release Description: On November 6, 1963, a fire started in the 233-S Building. The underlying cause of the incident was not positively identified. Plutonium contamination was spread within and outside the building by smoke and firefighting operations. It took about 1.5 hours to put out the fire with dry chemical extinguishers (sodium bicarbonate). Alpha radiation levels after the fire were greater than 5 million disintegrations per minute from plutonium-contaminated materials in the soot, ashes, and in the air.

Waste Type: Ash

Waste Description: Alpha radiation levels in plutonium-contaminated materials in the soot, ashes, and in the air greater than 5 million disintegrations per minute.

Code: UPR-200-W-61
Classification: Accepted
Names: UPR-200-W-61; REDOX Ground Contamination; UN-200-W-61
Reclassification None
Type: Unplanned Release
Start Date: 1/1/1966
Status: Inactive
End Date:

Description: The area is not currently marked or posted.

Location: The incident occurred outside of the REDOX Building near the southwest corner.

Release Description: On April 24, 1966, a fire hose ruptured while flushing the H-10 to 241-SX transfer line. Back flow from the transfer line contaminated an outside ground area. Readings were from 4,000 to 100,000 counts per minute over an area of about 19 square meters (200 square feet).

Waste Type: Process Effluent

Waste Description: Beta/gamma with readings from 4,000 to 100,000 counts/minute was measured at the site.

Code: UPR-200-W-96
Classification: Accepted
Names: UPR-200-W-96; 233-S Floor Overflow; 233-SA Floor Overflow; UN-216-W-4
Reclassification None
Type: Unplanned Release
Start Date: 1/1/1969
Status: Inactive
End Date: 1/1/1969

Description: The release effected the floor of the 233-SA Filter Exhaust Building, the concrete pad outside the north door of the filter exhaust building, the electric motor pad, and the ground surface on the north side of the 233-SA filter exhaust building. The 233-S facility was demolished in 2003

and 2004. The release site is not specifically marked or posted.

Location: UPR-200-W-96 occurred adjacent to and directly north of the 233-S Filter House (233-SA Filter Exhaust Building).

Release Description: On January 9, 1969, plutonium-contaminated water backed up in the 233-SA Filter House drain and overflowed to a low spot on the ground directly north of the 233-S Building. Because the ground was frozen, the water could not percolate, so a pool formed. The area effected was reported as 150 square yards, which equals 125.42 square meters.

Related Sites/ Structures: UPR-200-W-96 was associated with the 233-SA Filter Exhaust Building.

Waste Type: Process Effluent

Waste Description: The release consisted of water from the filter house drain line that contained 0.1 grams (0.004 ounces) of plutonium-239. Smear samples taken of the water and surfaces involved were as follows: 1) water on the floor of the 233-SA Filter Exhaust Building was greater than 40,000 disintegrations per minute; 2) smears of the concrete pad outside the door of the filter building were 10,000 disintegrations per minute; 3) smears of the electric motor pad were 10,000 disintegrations per minute; and 4) water in the overflow pool was 600 disintegrations per minute.

200-CU-1

Code:	221-U	**Classification:**	Accepted
Names:	221-U; 221-U Building; 221-U Canyon Building; 276-U; U Plant	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1958

Description: The 221-U Process Canyon is a large, reinforced concrete building. It consists of twenty sections (two cells per section) with expansion joints between each section. The building is divided lengthwise into the gallery side and the canyon chemical processing side by a thick, concrete shielding wall running the full length of the building. The building contains processing equipment and tanks that supported the uranium recovery process. The canyon deck currently is used to store radioactively contaminated surplus/spare equipment. The 221-U facility is accessed through the 271-U annex, which is attached to the west side of the 221-U building.

From 2009 through 2011, the facility was prepared for decommissioning. The interior of the facility was emptied. The canyon cells were filled with grout. Ancillary equipment and structures were removed. The Interim Completion Report (DOE/RL-2011-80) provides project details.

Location: The 221-U building is located in the central portion of the 200 West Area, near the corner of 16th Street and Beloit Ave.

Related Sites/ Structures: Structures associated with 221-U Building include the 271-U Operations Services Building, the 211 tanks, 276 tanks, 222-U laboratory, 291-U stack and the 224-U Building. The URMA where 211-U and 211-UA had been located is sitecode 200-W-239.

Process Description: 221-U was used for the Uranium Recovery Process. This process extracted relatively pure uranium from the liquid waste from the bismuth phosphate plutonium separation process that was stored in the tank farm tanks. The Uranium Recover process transformed the recovered uranium into uranium trioxide powder. The bismuth phosphate process, used in T Plant and B Plant, isolated only the plutonium from the dissolved, irradiated fuel rods. The bismuth phosphate "Metal Waste" stream, containing uranium and associated the fission products, was transferred to the underground storage tanks in the tank farms. The metal waste stream contained approximately 0.5 pounds of uranium per gallon of liquid waste. The uranium bearing waste in the tank farms was recovered from the underground tanks by sluicing and transferred to 221-U for processing. Tributyl Phosphate (TBP) solvent was used to extract and decontaminate the recovered uranium from the fission products and residual plutonium. The Uranium Trioxide Plant (224-U) was used to the purified uranyl nitrate solutions and calcine into uranium trioxide powder. The operation in 224-U continued after the completion of the Uranium Recovery process ended in 1958. Different chemical separation processes were used in REDOX and PUREX that separated the uranium from the waste stream, in the form of Uranyl Nitrate, before the waste was sent to the tank farms. The Uranyl Nitrate stream from the Redox facility was sufficiently decontaminated from the fission products to permit a direct feed to the 224-U calcination facility via an aboveground pipeline. Uranyl Nitrate from PUREX was delivered to 224-U via tanker trucks. After the Uranium Recovery process ended in 1958, the U Plant canyon was used to decontaminate large pieces of process equipment. This activity was transferred to 221-T in 1961.

Waste Type: Process Effluent

Waste Description: Processing areas and equipment are contaminated with uranium and fission products. Residual chemicals remain from the uranium recovery and equipment decontamination activities.

This Site has the Following SubSites:

Code: 221-U:1
Names: 221-U:1; Chemical Storage Tanks; 211-U Tank Farm

Code: 221-U:2
Names: 221-U:2; Chemical Storage Tanks; 211-AU Tank Farm; 211-UA

Code: 221-U:3
Names: 221-U:3; 276-U Tank Farm; Solvent Storage Tanks

Code: 221-U:1 **Classification:** Accepted

Names: 221-U:1; Chemical Storage Tanks; 211-U Tank Farm **Reclassification** None

Type: Process Unit/Plant **Start Date:**

Status: Inactive **End Date:**

Description: The aboveground features of the 211-U Tank Farm were removed in 2009. It was a bulk liquid storage area, consisting of nine aboveground storage tanks. The tanks were located on the west side of the 221-U building. Six tanks were horizontal tanks, 2.7 meter diameter, 11 meters long (9 foot diameter, 36 feet long). Three of the horizontal tanks were sodium hydroxide storage tanks, one was a demineralized water storage tank and two were considered spare tanks. Three tanks were vertical tanks, 3 meter diameter, 4.2 meters high (10 foot diameter, 14 feet high). One was a demineralized water storage tank and two were chemical make-up tanks. The bulk liquid was transferred to the 211-U tanks from rail cars or trucks. The remaining posted Underground Material Area is sitecode 200-W-239.

In 2002, only four horizontal tanks and one vertical tank remained. The area had been posted with Radiological Buffer Area/Radioactive Material Area signs. The area around the tanks was covered with clean gravel and reposted with Underground Radioactive Material signs. The remaining posted Underground Radioactive Material Area is sitecode 200-W-239.

Related Sites/ Structures: The remaining posted Underground Radioactive Material Area is sitecode 200-W-239.

The SubSite is Part Of:

Code: 221-U
Names: 221-U; 221-U Building; 221-U Canyon Building; 276-U; U Plant

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Code: 221-U:2 **Classification:** Accepted

Names: 221-U:2; Chemical Storage Tanks; 211-AU Tank Farm; 211-UA **Reclassification** None

Type: Process Unit/Plant **Start Date:**

Status: Inactive **End Date:**

Description: The aboveground features of the 211-UA (alias 211-AU) Tank Farm were removed in 2009. It consisted of sixteen aboveground storage tanks. Thirteen tanks had a capacity of 380,000 liters (100,000 gallons) each. The tanks were located on the west side of the 221-U building. Nine of these tanks were nitric acid storage tanks and four were sodium hydroxide storage tanks. Three smaller tanks 2.7 meters in diameter and 2.7 meters tall (9 feet diameter, 9 feet tall) were nitric acid sample tanks. The bulk liquid was transported to the tanks in railcars or trucks. The remaining posted Underground Radioactive Material Area is sitecode 200-W-239.

The Uranium Recovery Process at 224-U received uranyl nitrate from REDOX and PUREX. After the uranium was removed, the "reclaimed" nitric acid was stored in the 211-UA tanks. It was transferred from 224-U to 211-UA via overhead lines. The slightly radioactive nitric acid was recycled back to REDOX and PUREX. In the 1960's and 1970's it was returned to the separations facilities in railcars. It was pumped out of the 211-UA tanks into the railcars via underground lined and a pump pit. Some leakage was associated with the pumping process and caused low level radioactive contamination around the area.

The reclaimed nitric acid storage was moved from 211-UA to a holding tank within the 224-U facility in the 1980's and the railcar unloading platform was abandoned. Some residual acid and waste water, contaminated above crib release limits, continued to be stored in the 211-UA tanks. All the acid and waste water was removed from the tanks prior to being transitioned to the new Environmental Restoration Contractor in 1994. Although the tanks were emptied, the acid pump pit and underground lines had not been flushed. Leaking valves and seals and residual contamination in the pump pit caused low level radioactive contamination to spread around the tanks and railcar unloading platform. The area was posted as a Contamination Area again in the early 1990's. The lines and pump pit were flushed in 1998 and the surface contamination was covered with gravel. The area was changed to an Underground Radioactive Material Area.

In 2002, only ten tanks remained. They had been posted with Contamination Area signs. The area surrounding the tanks was covered with clean gravel and reposted with Underground Radioactive Material signs.

Related Sites/ Structures: The remaining posted Underground Radioactive Material Area is sitecode 200-W-239.

The SubSite is Part Of:

Code: 221-U

Names: 221-U; 221-U Building; 221-U Canyon Building; 276-U; U Plant

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Code: 221-U:3

Names: 221-U:3; 276-U Tank Farm; Solvent Storage Tanks

Type: Process Unit/Plant

Status: Inactive

Classification: Accepted

Reclassification None

Start Date:

End Date:

Description: The 276-U Solvent storage area consists of six tanks mounted inside a cement basin, located on the south end of the 221-U building. Tank leakage was collected in a sump that could be returned to the tanks, sent to a drum out facility of discharged to cribs. The 276-U tanks are connected to the 221-U building by the hot pipe trench in the 221-U pipe gallery. Organic make-up solutions of tributyl phosphate and dilutent were stored and treated and routed to the 221-U vessels via the pipe gallery. The dilutent storage tank has a (29,000 gallon) capacity. The tributyl phosphate storage tank has a (6,000 gallon) capacity. The organic receiver storage tank has a (10,000 gallon) capacity. The organic treatment storage tank has a (10,000 gallon) capacity. The organic treatment sample storage tank has a (1,300 gallon) capacity. The RAX feed storage tank has a (10,000 gallon) capacity.

Related Sites/ Structures: This area was also documented in Sitecode 276-U. 276-U is considered a duplicate of 221-U:3.

The SubSite is Part Of:

Code: 221-U
Names: 221-U; 221-U Building; 221-U Canyon Building; 276-U; U Plant

Code:	271-U	**Classification:**	Accepted
Names:	271-U; 271-U Building; 271-U Office Building	**Reclassification**	None
Type:	Office	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	

Description: The 271-U Office Building was the office/service building constructed of a reinforced concrete foundation, floors, and pillars with pumice block walls. The four story structure (including the basement) is physically attached to the gallery side of the 221-U Canyon.

Location: The building is attached to the northern gallery side of 221-U.

Related Sites/ Structures: Structures associated with 271-U include the 221-U Canyon, other U Plant Facilities, and the shops, maintenance, and ventilation equipment in the 271-U basement.

Process Description: The building is had been used primarily for office space. Previously, the building has been used for storing contaminated equipment, craft services, process support functions and training. The third floor of the building was used for preparing chemicals and plutonium storage.

Waste Type: Chemicals

Waste Description: Residual chemicals and radionuclides may be present in some portions of this building. The contamination may be related to vermin intrusion or from processes that were conducted in this unit.

Code:	291-U	**Classification:**	Accepted
Names:	291-U; 291-U Fan Control House	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	

Description: The building is constructed of reinforced concrete foundation and floor, concrete and block walls, and a concrete slab roof covered with asphalt and gravel, trimmed in wood. It is a one-story, one-room building with wooden doors containing the ventilation system instrumentation. Two electric fans are located outside, adjacent to the building. The fan control house is located within a larger, posted Underground Radioactive Material area, although the 291-U building and exhaust fans remain posted as Contamination Areas.

Location: The building is located east of 221-U.

Related Sites/ Structures: The 291-U-1 Stack, 291-U Stack Sand Filter (200-W-44), and 221-U Vessel Vent Pit (216-U-7) are associated with the exhaust system.

Process Description: The 291-U Complex was originally built in 1944-1945 to provide exhaust ventilation for the 221-U Canyon Building. The 221-U Building is retired, but the 291-U exhaust ventilation system still serves its original purpose and is planned to remain in operation until the 221-U Building is decommissioned.

Waste Type: Equipment

Waste Description: The instrument house has likely become contaminated from exhaust from 221-U.

Code:	291-U-1	**Classification:**	Accepted
Names:	291-U-1; 291-U-1 Stack, 221-U Stack; 291-U Stack	**Reclassification**	None
Type:	Stack	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	

Description: The unit consists of a reinforced concrete stack, lined with acid-resistant brick resting on an octagonal, two-tiered foundation of brick and concrete. The stack is 61 meters (200 feet) high and 4.3 meters (14 feet) in diameter at the base. The stack is located within a larger Underground Radioactive Material area, although the 291-U building and exhaust fans remain posted as Contamination Areas.

Location: The stack is located east of 221-U.

Related Sites/ Structures: The 291-U Fan House, 291-U Stack Sand Filter (200-W-44), and 221-U Vessel Vent Pit (216-U-7) are associated with the exhaust system.

Process Description: The ventilation system for U-Plant was taken off line on September 15,2011. The system was completely deactivated and final effluent samples were obtained. The stack is considered to be inactive.

The 291-U Complex was originally built in 1944-1945 to provide exhaust ventilation for the 221-U Canyon Building. The 221-U Building is retired, but the 291-U exhaust ventilation system still serves its original purpose and is planned to remain in operation until the 221-U Building is decommissioned. In April 2005, the drainage valve from the 291-U-1 stack to the 241-UX-302A catch tank was closed.

Waste Type: Chemicals

Waste Description: The air exhaust system was contaminated with radioactive particulates.

Code:	292-U	**Classification:**	Accepted
Names:	292-U; 292-U Stack Monitoring Station; 291-U Stack Exhaust Monitoring Building	**Reclassification**	None
Type:	Process Unit/Plant	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The 292-U building is a cement block structure.

Location: The 292-U building is located west of Beloit Ave. and south of the 291-U-1 exhaust stack.

Related Sites/ Structures: The 292-U building is associated with the 291-U-1 exhaust stack.

200-CW-1

Code:	216-A-25	**Classification:**	Accepted
Names:	216-A-25; 216-A-25 Swamp; Gable Mountain Pond; Gable Mountain Swamp; Gable Pond	**Reclassification**	None
Type:	Pond	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1987

Description: The site was a large, water-filled pond that received cooling water from the Plutonium Uranium Extraction (PUREX) and B-Plant operations. The pond had a total surface area of 32 hectares (82 acres), 28 hectares (71 acres) in the main pond and a 4.4-hectare (11-acre) overflow pond. The average depth of the unit was 1.5 meters (5 feet), with a maximum depth of 3 meters (9 feet). The pond has been backfilled and surface stabilized. The backfilled pond is delineated with concrete markers and posted as Underground Radioactive Material. An additional area of soil contamination was identified in 1996, north of the west end of the overflow pond. This area was given the Waste Information Data System (WIDS) Site Code number 600-118. In 1997, the area was surface stabilized and reposted as Underground Radioactive Material, adding 3.3 hectares (8.2 acres) to the total radiologically posted area.

Location: The site is located south of Gable Mountain, north of Route 11A.

Release Description: Radiation surveys done following the F-15 Tank coil leak in June 1964 found dose rates up to 22 rads/hour at 5 centimeters (2 inches) over the inlet, and 500 millirem per hour at 5 centimeters (2 inches) along the shoreline.

Water samples ranged from 48,000 picocuries per cubic centimeter (collected in June 1964) to 12 picocuries per cubic centimeter (collected in October 1964). A task force was formed consisting of operations management personnel, process engineers, a chemist, a geologist/hydrologist, a biologist, a health physicist and a waste disposal engineer. A follow up report written in 1965 (Radiation Control of Accidentally Contaminated Seepage Ponds, RL-SA-15) determined that of the 10,000 curies of fission products released, the highest percentage of significant contaminants was niobium-95, zirconium-95, yttrium-91, strontium-89, cerium-144 and praseodymium-144. Water fowl were periodically harvested following the incident to determine the amount of external and internal contamination. External contamination on waterfowl collected at Gable Pond ranged from 100 millirem per hour (collected on June 22, 1964) to 500 counts per minute (collected on November 3, 1964). The internal strontium and cesium concentration ranged from 180,000 picocuries per gram of cesium-137 and 370 picocuries per gram of strontium (analyzed in June 1964) to 1 picocuries per gram of cesium-137 and less than detectable strontium (analyzed in November 1964).

Copper sulfate was added on two occasions to Gable Pond to eliminate algae and invertebrates following the 1964 incident in order to eliminate water fowl food sources. Three parts per billion of copper sulfate was the desired concentration.

Most of the contamination was absorbed into the pond bottom sediments. An effort was made to coat the pond bottom with bentonite clay to reduce the percolation rate and raise the liquid level of the pond one foot. Applying a uniform layer of clay was a problem. After adding six and a half tons of clay non uniformly by various methods, other solutions were sought.

In 1964, ground water samples in the vicinity (north/northeast) of Gable Pond were sampled. Analysis ranged from 49 picocuries per cubic centimeter in August 1964 to 11 picocuries per gram in October 1964. The contaminants were mostly ruthenium-103, ruthenium-106 and zirconium-niobium-95. Down gradient wells were at background levels. It was determined that groundwater contamination was not a significant problem. However, groundwater samples

collected in 1984 showed an elevated concentration of strontium-90. An Unusual Occurrence Report (#84-27) was issued and lead to the deactivation and stabilization of the pond.

Related Sites/ Structures: An outfall structure was located at the southeast corner of the unit (see H-2-3332). The pond is also associated with an overflow area known as 600-118.

Waste Type: Water

Waste Description: Until May 1958, the unit received the process cooling water from 202-A Building (Plutonium Uranium Extraction [PUREX] Plant). From May 1958 to 1960, the unit received the above plus cooling water from the contact condenser in the 241-A-431 Building. In 1960, the unit received the above plus the surface condensator cooling water in the 241-A-401 Building (A Tank Farm). From November 1967 to January 1968, the unit received the above plus the wastewater from the 284-E Powerhouse. From January 1968 to March 1969, the unit received the above plus the cooling water and steam condensate from the 244-AR Vault. In March 1969, the pipeline to the contact condenser cooling system from the 241-A-431 Building Vault was valved out. After March 1977, the unit received the above plus the 242-A Evaporator steam condensate cooling water. RHO-CD-798 shows a valve at the east end of the 216-B-2-3 Ditch connecting to PUREX Cooling Water Line to Gable Pond. The graphic is labeled "Effluent Pipelines and Transfer Capabilities for Gable Mountain and B Ponds". The B-Plant Aggregate Area Management Study Report [AAMSR] does not list B-Plant as a contributor to the Gable Pond inventory. However, WHC-SD-DD-TI-036 states that Gable Pond later served B-Plant.

Code: 216-B-3 **Classification:** Accepted

Names: 216-B-3; 216-B-3 Main Pond; 216-B-3 Swamp; B Plant Swamp; B Pond; B Swamp; B-3 Pond; West Side Overflow Pond **Reclassification** None

Type: Pond **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1994

Description: The 216-B-3 Pond has been backfilled and surface stabilized. It is marked and posted with Underground Radioactive Material Area signs and Danger - Do Not Enter signs. The main pond was roughly rectangular, with a surface area of 14 hectares (35 acres). The pond was expanded to include three additional lobes, 216-B-3A, 216-B-3B, and 216-B-3C, with areas of 4 hectares (10 acres), 4 hectares (10 acres), and 17 hectares (41 acres), respectively. The three expansion lobes are considered three separate waste sites. The expansion ponds were separate RCRA treatment, storage and disposal (TSD) units.

Location: The pond is located east of the 200 East Area perimeter fence, northeast of the 202-A Building.

Release Description: In addition to routine flows, the following process upsets have added to the inventory of the pond: UPR-200-E-32: In November 1963, a coil leak developed in the 221-B Building 6-1 Tank; UPR-200-E-34: In June 1964, a cooling coil leak developed in the F-15 process waste tank in the Plutonium Uranium Extraction (PUREX) facility; UPR-200-E-51: On 5-18-77 fifteen kilograms of cadmium was released to B Pond via the ditches; UPR-200-E-138: In March 1970, a leaking manometer sensing line from the 221-B Building 8-1 Tank.

Related Sites/ Structures: The site is associated with B Plant and PUREX operations, the 216-B-3 ditches, the 216-A-29 Ditch, 216-B-3A, 216-B-3B, 216-B-3C and the 200-E-126-PL pipeline system.

Process Description: The site received waste between April 1945 and May 1994. Prior to the construction of the 216-B-3A and 216-B-3B Expansion Ponds in 1983, an area directly west of the Main Pond served as an overflow area. The 216-B-3A and 216-B-3B Expansion Ponds were constructed to receive the increased effluent discharge from the restart of the PUREX Facility. The 216-B-3C Expansion Lobe was constructed to received the increased effluent due to the closure of Gable

Mountain Pond.

Waste Type: Process Effluent

Waste Description: Waste streams flowed from the 216-A-29 and 216-B-3-3 Ditches into the 216-B-3 Pond. Discharges to 216-B-3 via 216-B-3-3 included: 221-B Building steam condensate and process cooling water; 284-E Powerhouse water; 244-CR Vault cooling water; 244-AR Vault and 242-A Evaporator cooling water; 202-A process cooling water, condenser cooling water, and air sampler vacuum pumps seal cooling water; 241-BY Tank Farm condenser cooling water; and Waste Encapsulation Storage Facility cooling water. Discharges to 216-B-3 via 216-A-29 included 202-A chemical sewer and acid fractionator condensate. The main pond received corrosive and toxic dangerous waste from two primary sources: the regeneration of the Plutonium Uranium Extraction (PUREX) plant demineralizer columns and from spills of dangerous or mixed waste from PUREX. The spills included hydrazine, cadmium nitrate, and ammonium fluoride/ ammonium nitrate. The backwash from the regeneration of the demineralizer columns included nitric acid, sulfuric acid, sodium hydroxide, and potassium hydroxide.

Code: 216-B-3A RAD
Classification: Accepted

Names: 216-B-3A RAD; West Expansion Lobe; 216-B-3 1st Overflow Pond; 216-B-3A Expansion Lobe Residual Radioactive Waste
Reclassification None

Type: Pond
Start Date: 1/1/1983

Status: Inactive
End Date: 1/1/1984

Description: This site is the residual radioactive contamination that remains in the 216-B-3A Pond. The RCRA Treatment, Storage and Disposal Unit associated with this pond was Clean Closed following cleanup of chemical contamination. The unit is roughly rectangular with approximately 4.5 hectares (11 acres) of surface area. It is inactive and dry. It was sampled and released from radiological controls with the exception of the percolation trench that is posted as a Soil Contamination Area. The pond was approximately 5.5 meters (18 feet) lower than the 216-B-3 Main Pond elevation. 8-millimeter (0.3-inch) plastic was placed along the slope of the pond banks and covered with gravel.

Location: The pond is located east of 200 East Area, east of the 216-B-3 Main Pond.

Release Description: In 1958, the dike on the east side of the 216-B-3 Pond broke and flooded into a ravine on the east side of the pond. The area was released from radiological controls in 1970. The area where the release occurred was later used to create the 216-B-3A Lobe of B Pond. Later, in 1984, a break in the barrier between 216-B-3A and 216-B-3B (West and East Expansion Lobes) was noted.

Related Sites/ Structures: The overflow pond is associated with UPR-200-E-14, 216-B-3, 216-B-3B and 216-B-351 Spillway.

Process Description: The 216-B-3A was constructed to receive overflow from the 216-B-3 Main Pond due to increased effluent discharge from the restart of the Plutonium Uranium Extraction (PUREX) plant. The 216-B-3A Overflow Pond was connected to the 216-B-3 Main Pond by the 216-B-351 Spillway. The spillway was designed with a manually operated slide gate in the headwall. The water flowed from the main pond, through the culvert, down a 0.61-meter (2-foot) wide, concrete-lined ditch, to a fiberglass reinforced 0.3-meter (1-foot) flume, to the overflow pond. The pond operated from October 1983 to January 1984, when the dike between the 216-B-3A and 216-B-3B ponds failed (Occurrence Report #84-02). Prior to the dike failure, the 216-B-3B Pond had never been used. All the discharge from the failed dike was contained in the 216-B-3B Pond. In response to the incident, the 216-B-3A and 216-B-3B Ponds were isolated.

Effluent flow to the 216-B-3 Main Pond was reduced. A trench was dug in the 216-B-3A Pond to increase its infiltration rate. The trench measured 182 meters (600 feet) by 9 meters (30 feet) and was 2 meters (6 feet) deep. The debris from the dike failure was removed from the 216-B-3B Pond and a series of trenches were dug to increase its infiltration rate. Both 216-B-3A and 216-B-3B Ponds were fully operational by June 1984.

Waste Type: Process Effluent

Waste Description: 216-B-3A received overflow from the 216-B-3 Main Pond. Potential sources include 221-B steam condensate and process cooling water, 284-E Powerhouse water, 244-CR, 244-AR and 242-A cooling water, 202-A process, condenser, and air sampler vacuum pump cooling water, 202-A chemical sewer, fractionator condensate, and WESF cooling water.

Code: 216-B-3B RAD
Classification: Accepted

Names: 216-B-3B RAD; East Expansion Lobe; 216-B-3B Expansion Lobe Residual Radioactive Waste
Reclassification None

Type: Pond
Start Date: 1/1/1984

Status: Inactive
End Date: 1/1/1985

Description: The unit is roughly rectangular with approximately 4.4 hectares (11 acres) of surface area. It is dry with a small radiologically posted area (Surface Contamination) in the northwest corner of the pond. The 216-3A, 3B and 3C Expansion ponds make up a separate RCRA TSD Unit.

Location: The pond is located east of the 200 East Area perimeter fence and east of the 216-B-3 Main Pond.

Release Description: In January 1984, the dike between 216-B-3A and 216-B-3B was found to be breached in the vicinity of the overflow channel. (Unusual Occurrence Report 84-02). The channel and the supporting area were washed away. There was no effluent released beyond the pond boundaries. At the time of the release, radiological surveys of the area found it to be clean and the area was released for the repair crews. There is currently (July 1999) a small Surface Contamination Area posted in the northwest corner of the pond at a rip rap inlet. This inlet may be the "overflow channel" mentioned in the 1984 Unusual Occurrence Report, but no sketch of the release area was included with the occurrence report.

Related Sites/ Structures: The overflow pond is associated with 216-B-3, 216-B-3A and the 216-B-351 Spillway.

Process Description: The 216-B-3A and 216-B-3B were constructed to receive overflow from the 216-B-3 Main Pond due to the increased effluent discharge from the restart of the Plutonium Uranium Extraction (PUREX) plant. In January 1984, the dike between the 216-B-3A and 216-B-3B ponds failed. Prior to the dike failure, the 216-B-3B Pond had never been used. All the discharge from the failed dike was contained in the 216-B-3B Pond. In response to the incident, the 216-B-3A and 216-B-3B Ponds were isolated. Effluent flow to the 216-B-3 Main Pond was reduced. A trench was dug in the 216-B-3A Pond to increase its infiltration rate. The trench measured 182 meters (600 feet) by 9 meters (30 feet) and was 2 meters (6 feet) deep. The debris from the dike failure was removed from the 216-B-3B Pond and a series of trenches were dug to increase its infiltration rate. Both 216-B-3A and 216-B-3B Ponds were declared fully operational by June 1984. Although 216-B-3B was considered an active pond, it never received any effluent with the exception of the 216-B-3A dike failure incident. The spillway between 216-B-3A and 216-B-3b is know as 216-B-351. It consists of a 1 meter (36 inch) diameter corrugated steel culvert.

Waste Type: Process Effluent

Waste Description: With the exception of the 216-B-3A dike failure incident, the 216-B-3B Pond Lobe was never used. In 1991, a characterization borehole was drilled through the 216-B-3B Pond (well # 699-42-41B). It was drilled to a depth of 124 feet with a cable tool rig and split tube sampling. The casing was later pulled and the well was abandoned. Twenty six samples were analyzed for radionuclides (Sample numbers B00GV6 - B00GV9, B00GW0 -B00GW9, B00GX2 -B00GX8, B00GY0- B00GY2, B00GY9, B00GZ2-B00GZ8). No radioactive field readings were noted. Aliquots submitted to the onsite laboratory found no evidence of radioactive contamination. Samples were taken at intervals from depths of 1.5 to 37 meters (5 to 122 feet).

Code: 216-B-3C RAD
Classification: Accepted

Names: 216-B-3C RAD; 216-B-3C Expansion Lobe Residual Radioactive Waste
Reclassification None

Type: Pond
Start Date: 1/1/1985

Status: Active
End Date: 1/1/1997

Description: The unit is rectangular pond with approximately 17 hectares (41 acres) of surface area. It was excavated into a very coarse gravel layer with a very high percolation rate. The pond was constructed with eight parallel north-south trenches and one east-west trench at the spillway.

Location: The site is located east of the 200 East Area Perimeter fence and southeast of the 216-B-3 Main Pond.

Related Sites/ Structures: The site is associated with the PUREX facility, 216-B-3 Main Pond and the 200 East Powerhouse Ditch.

Process Description: The 216-B-3C Pond was constructed in 1985 to accommodate the increased effluent flow that resulted from the decommissioning of Gable Mountain Pond. In 1994, when the 216-B-3-3 Ditch and the 216-B-3 Main Pond sites were decommissioned, effluent was routed directly to the 216-B-3C Pond via a pipeline. A spillway (216-B-354) consisting of two 0.76-meter (30-inch) corrugated metal pipes was designed for a maximum flow of 74,000 liters (20,000 gallons) per minute. Later, the pond was considered a contingency pond for the Treated Effluent Disposal Facility (TEDF) effluent could be diverted to 216-B-3C in the event that Pump Station 3 fails.

Waste Type: Process Effluent

Waste Description: The 216-B-3C received effluent from the 216-B-3A Overflow Pond from 1985 to 1994. In 1994, the effluent from the 216-B-3-3 Ditch was routed directly to the 216-B-3C. Effluent included water from the 200 East Powerhouse Ditch. The flow to 216-B-3C was permanently isolated on August 18, 1997.

Code: 216-S-16P
Classification: Accepted

Names: 216-S-16P; REDOX Pond #2; 202-S Swamp #1; 202-S Swamp and Ditch
Reclassification None

Type: Pond
Start Date: 1/1/1957

Status: Inactive
End Date: 1/1/1975

Description: The pond has been backfilled and surface stabilized. It is surrounded by concrete markers and posted with Underground Radioactive Material signs. The pond consisted of four lobes separated by dikes and a leach trench that extended east from Lobe #2 toward the 216-S-17 Pond.

Location: The unit is located outside the southwest corner of the 200 West Area perimeter fence.

Release Description: UPR-200-W-47 and UPR-200-W-59 are associated with the 216-S-16 Pond.

Related Sites/ Structures: The site is associated with the 216-S-16 Ditch, the 216-U-10 Pond, 216-U-9 Ditch, UPR-200-W-47 and UPR-200-W-59.

Process Description: The pond received cooling water and steam condensate discharge from the REDOX facility via the 216-S-16 Ditch and also overflow from the 216-U-10 Pond via the 216-U-9 Ditch. The 216-S-16 Pond was constructed to replace the 216-S-17 Pond and the 216-S-5 Crib.

Waste Type: Process Effluent

Waste Description: The site received process cooling water and steam condensate from the 202-S Building until June 1967. Only lobe #1 received REDOX process effluent. The 202-S Building process (REDOX) was put on standby in July 1967. After July 1967, the site received condenser and vessel cooling water from concentrator boil-down operations in the 202-S Building via the 216-S-16 Ditch and overflow from the 216-U-10 Pond via the 216-U-9 Ditch.

Code: 216-S-17 **Classification:** Accepted

Names: 216-S-17; REDOX Swamp; 202-S REDOX Swamp; 202-S Swamp; 216-S-1; 216-S-1 REDOX Pond No. 1 **Reclassification** None

Type: Pond **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a 6.9 to 8.5 hectare (17 to 21 acre) pond. The site was interim stabilized in 1984 and posted as "Underground Radioactive Material". The original pond site was formed by creating an earthen dike approximately one meter (3.3 feet) high on the north and west sides of the site. The designated use area was approximately 23 hectares (57 acres), but photographs indicated that only 8 hectares (20 acres) were inundated at any time. The pond averaged about 0.3 meters (1 foot) deep with a maximum depth of 0.6 meters (2 feet).

Location: This site is southwest of the 202-S Building and west of the 216-S-10 Pond.

Release Description: The pond was contaminated with multiple unplanned releases of fission product contaminants from the 202-S operation. A radiological survey map (hand drawn on 10/7/52) indicated dose rates around the pond perimeter ranging from 10 to 470 millirem per hour. High dose rates were observed in the vegetation growing in the pond. In December 1952, wild water fowl were observed feeding in the grossly contaminated swamp. A duck was killed and found to have a dose rate of 100 millirem per hour. Balloons and noise makers were placed around the pond to keep the birds off the pond. In 1953, naphtha and copper sulfate were added to the pond to kill the vegetation. By February 1954, dose rates at the edge of the pond were as high as 1500 millirem per hour. CAUTIONARY NOTE: Historical radiation survey data indicates that the radioactive inventory data in this site may be larger than the estimated inventories. Do not base safety limits for any intrusive or soil-disturbing activities on estimated inventories without confirmation from site sampling or current survey readings.

Related Sites/ Structures: The associated structures are the 202-S Building and the 207-S Retention Basin. The pipeline associated with the 216-S-17 pond is sitecode 200-W-152-PL.

Process Description: The site provided ground disposal of process effluent from the 202-S facility via the 207-S Retention Basin and overflow from the 216-U-10 Pond via the 216-U-9 Ditch.

Waste Type: Process Effluent

Waste Description: Until January 1953, the site received process cooling water and steam condensate from the 202-S Building. After January 1953, the site received the 202-S Building effluent and the overflow from the 216-U-10 Pond via the 216-U-9 Ditch. During April and May of 1953, solvent naphtha was utilized to kill the vegetation, but it did not work. During July 1953, copper sulfate, 2-4-D, and sodium chlorate were also used to kill vegetation. In October 1952, a steam coil failure (UPR-200-W-15) in the REDOX D-12 Waste Concentrator caused gross contamination of process cooling water, the 207-S Retention Basin and the 216-S-17 Swamp. During November 1952, another unplanned release (UPR-200-W-13) caused further contamination at the 207-S Retention Basin and the 216-S-17 Swamp. The major potential radiological contaminants of concern are cesium-137, strontium-90, and uranium-238.

Code: 216-U-9 **Classification:** Accepted

Names: 216-U-9; U Swamp-S Swamp Ditch; 216-U-6 **Reclassification** None

Type: Ditch **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1975

Description: The site currently appears as a dry, V shaped depression. It is not marked or radiologically posted. It appears on drawing H-2-44510 as a "Y" shaped ditch. The east fork lead to 216-S-17 Pond and the west fork lead to 216-S-16 Pond. Although historical documentation indicates the fork to the 216-S-17 pond was backfilled, a 1999 site visit noted that both forks of the ditch appear to be dry, "V" shaped excavation.

Location: The north end of the ditch begins at the southwest corner of 216-U-10 Pond and originally terminated at 216-S-17 Pond. Later, the west fork of the 216-U-9 Ditch was dug and connected to the 216-S-16 Ditch. The 216-S-16 Ditch emptied into the 216-S-16 Pond.

Release Description: UPR-200-W-139. It was documented in HW-60807 that the ditch became contaminated in September 1953.

Related Sites/ Structures: The 216-U-9 Ditch is associated with 216-U-10, 216-U-16 and 216-U-17.

Process Description: The 216-U-9 Ditch received overflow from the 216-U-10 Pond through a metal culvert under 13th Street. The overflow was originally directed to the 216-S-17 Pond via the 216-U-9 Ditch. The original ditch became contaminated in 1953, and was backfilled in 1954. The 216-S-17 Pond was also deactivated in 1954.

In 1973, the ditch was reopened and connected to 216-S-16 Pond via the 216-S-16 ditch. This is known as the 216-U-9 west fork. The new ditch utilized approximately 500 feet of the original ditch. No contamination was identified in the reopened portion of the original ditch.

Waste Type: Process Effluent

Waste Description: The site received the overflow from the 216-U-10 Pond.

Code: 216-U-10 **Classification:** Accepted

Names: 216-U-10; 216-U-10 Pond; 231 Swamp; U Swamp; 216-U-1 **Reclassification** None

Type: Pond **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1985

Description: This site is a 12 hectare (30 acre), backfilled, surface stabilized pond. It is posted with Underground Radioactive Material signs.

Location: This site is located south of 16th Street and east of Dayton Avenue. It is west of the 241-S Tank Farm.

Related Sites/ Structures: The site is associated with the 284-W Powerhouse, 231-Z Building, 234-5Z Building, 2723-W Building, 2724-W Building, 221-U Building, 224-U Building, 231-Z Building, 241-U-110 Tank Condenser, 231-Z Laboratory, and the 242-S Evaporator facilities and UPR-200-W-104, UPR-200-W-105, UPR-200-W-106 and UPR-200-W-107. It is also associated with the 216-U-9, 216-U-14, 216-Z-1 D, 216-Z-11, and 216-Z-19 Ditches. The pipeline to the 216-U-11 trench is sitecode 200-W-169-PL.

Process Description: The site received effluents from various facilities at various times. It received steam condensate from 231-Z, 234-5Z Buildings and 231-Z Laboratory wastes via 216-Z-1, 216-Z-11 and 216-Z-19 Ditches. It received 284-W Powerhouse process cooling water, waste water from 2723-W Original Laundry/Mask Cleaning Station and the 2724-W (new) Laundry, chemical sewer wastes from 221-U Building, cooling water from 224-U Building, 241-U-110 Tank condenser and 242-S Evaporator steam condensate water via 216-U-14 Ditch. At first, the pond received effluents only from the 284-W Powerhouse and the original Laundry/Mask Cleaning facility (2723-W). No elevated levels of radioactivity were recorded during this time. When 234-5 (Plutonium Finishing Plant) began adding effluent to the pond in 1949, elevated levels of radioactivity in the pond were noted. In 1966, ARCHO reported an estimated 8 kilograms of plutonium had been released through the Z ditches, but that only an estimated 1.5 kilograms of the plutonium may have reached the 216-U-10 Pond. U Plant began to operate the Uranium Metal Recovery program in 1952. Process waste from U Plant was released to the pond through the 216-U-14 ditch. Several significant releases of cesium and strontium are known to have been released via this route during 1956 and 1957. The Uranium Oxide Facility (224-U) also began adding cooling water to the effluent in the 216-U-14 ditch. An estimated 1,500 kilograms of depleted uranium were released from this facility over 21 years of operation. Small amounts of cesium and strontium was added to the 216-U-14 ditch from the 241-SX farm condenser cooling water effluent.

Waste Type: Process Effluent

Waste Description: The large volumes of low-level wastewater and occasional isolated releases of considerably higher level, non-routine discharges have resulted in the accumulation of transuranic, fission product and activation product inventories. It is estimated that 90% of the plutonium introduced to the waste stream from Z Plant was retained in the ditches (216-Z-1, 216-Z-11 and 216-Z-19).

Code: 216-U-11 **Classification:** Accepted

Names: 216-U-11; 216-U-11 (New Ditch); 216-U-11 (Old Ditch); 216-U-11 Ditch; 216-U-11 Trench; 216-U-12; U Swamp Extension Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1957

Description: This site consists of a backfilled, interim stabilized ditch that is posted with "Underground Radioactive Material" signs.

Location: This site is located on the west side of 216-U-10 Pond outside the west perimeter fence of 200 West Area.

Related Sites/ Structures: The associated trench is the 216-U-10 Pond. The pipeline between the pond and trench is sitecode 200-W-169-PL.

Process Description: This site received overflow from the 216-U-10 Pond via a metal culvert under Dayton Ave. The original ditch was between 573 and 597 meters (1,880 and 1,960 feet) long with a 1.5-meter (5-foot) wide bottom and operated from 1944 to 1955. The ditch was expanded in August 1955. The expansion was a total of 1,048 meters (3,440 feet) long and included 247 meters (810 feet) of the original ditch. The new ditch was roughly U-shaped (in plan view). A pond sometimes formed in the center of the U when significant amounts of water overflowed from the 216-U-10 Pond. The unit received the 216-U-10 Pond overflow until it was retired in 1957.

Waste Type: Process Effluent

Waste Description: The ditch received overflow from the 216-U-10 Pond. A limited field investigation of high-priority waste units was conducted from August 1993 through August 1994. This investigation included the 216-U-11 Ditch. A special surface radiation survey was done with the MSCM II tractor and two surface soil samples were collected near the two outlet lines. Approximately 6% of the ditch surveyed with the tractor showed readings elevated above background. However, a recheck of these areas with hand-held instruments did not show elevated readings, so it is assumed the elevated readings were due to sub-surface contamination. The surface soil sample results were insignificant.

Code:	UPR-200-W-124	**Classification:**	Accepted
Names:	UPR-200-W-124; Dike Break at the REDOX Pond; UN-200-W-124	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1959
Status:	Inactive	**End Date:**	

Description: The historical documentation for this release is vague. It most likely occurred at the 216-S-17 Pond. The Sketch G in HW-60807 points to 216-S-17 but the location description text in HW-60807 could also indicate the 216-S-19 Pond.

Location: PNL-6464 states UPR-200-W-124 occurred in a southwest direction from the REDOX Pond. This description is vague because there is more than one pond associated with REDOX. The Sketch (G) in HW-60807 points to 216-S-17 Pond as the release location.

Release Description: A dike break caused the contamination of an area extending southwest of the REDOX Pond.

Related Sites/ Structures: UPR-200-W-124 was associated with the REDOX Pond.

Waste Type: Process Effluent

Waste Description: The waste was contaminated cooling water from the process tanks at the 202-S Building.

200-CW-3

Code:	200-N-3	**Classification:**	Accepted
Names:	200-N-3; Ballast Pits	**Reclassification**	Interim No Action (3/17/2010)
Type:	Depression/Pit (nonspecific)	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The remedial action chosen for this waste site is No Action. Several open pits are located southwest of the (demolished) 212-P building. Each pit is approximately 12 meters across. The soil contains large amounts of gravel sized rock. Debris in the form of metal pipes, wood, electrical insulators, metal cans and rusted drums were noted inside the pit during a site visit in May 2004.

Location: The pits are located southwest of the (demolished) 212-P building. They are northwest of the intersection of two gravel roads, Deer Street and Delridge Avenue.

Waste Type: Misc. Trash and Debris

Waste Description: A 1992 site visit indicated electrical conduit and mechanical parts were visible in the bottom of the pits. A 1996 site visit found only a small amount of metallic debris in the bottom of one pit. In 2004, metal piping, electrical insulators, wood, rusted 5 gallon cans and small rusted drums were identified in the pit. It is possible there were less tumbleweeds in the pit during this visits that may have obscured some of the debris during other site visits.

Closure Info: Interim: In July 2009, focused and discrete confirmatory soil samples were collected from the 200-N-3 waste site. The analytical results were compared to the Deep and Shallow Zone Look Up Values to determine whether further remediation was required. The analytical results from the soil samples are below the applicable Look Up Values.

The sampling approach included using Radiological field screening surveys of the ground surface as a guide for focused sampling. Test pit sampling or other comparable techniques were used to sample to a depth of 15 feet. A radiological field survey was performed in each test pit (sample location) or direct push at every foot in depth. Cesium-137 or Strontium-90 was used (as appropriate) as an indicator for each sample. Based on the sampling design, the combination of the radiological surveys and samples taken from the most likely candidate locations for contamination, the characteristics of the 200-N-3 are consistent with a surface-level non-radiological debris dump site. No source of contamination or contributor exists or remains in the surrounding media. The findings from these sampling activities are considered representative of the waste site and are adequate to conclusively support a decision of no action.

Soil cleanup levels were established in the Remaining Sites ROD (EPA 1999) based on a limited ecological risk assessment. These soil cleanup levels are referred to as Look Up Values. A baseline risk assessment for the outer area will include a more complete quantitative ecological risk assessment. When complete, this risk assessment will be used to support a future final closeout decision for the 200-N-3 waste site as part of final closure of the outer area.

Code:	216-N-1	**Classification:**	Accepted
Names:	216-N-1; 216-N-1 Covered Pond; 216-N-1 Swamp; 212-N Swamp	**Reclassification**	Interim Closed Out (6/3/2011)
Type:	Pond	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site has been remediated and Interim Closed Out. A portion of the north end of this pond was excavated during remediation. No chains or barriers delineated the boundaries of this site. All radiological postings were removed in 2010, following remediation of the pond. A single permanent concrete monument had marked the north end of the pond site. The concrete marker had one Underground Radioactive Material sign on it.

Location: The site is located approximately 274 meters (900 feet) south, southeast of the demolished 212-N Building.

Related Sites/ Structures: The site is associated with 212-N. The pipeline that fed the pond is sitecode 600-285-PL.

Process Description: The pond received basin overflow cooling water from the 212-N Fuel Storage Facility via an underground 46-centimeter (18-inch) diameter vitrified clay pipe (see sitecode 600-285-PL). The pond consisted of a natural depression in the natural terrain and the discharged water was dispersed by evaporation and percolation into the ground.

Waste Type: Process Effluent

Waste Description: The site received the basin overflow from the 212-N Building. The waste type is low level radioactivity.

Closure Info: Interim (6/3/2011): The selected remedy of Remove Treat and Dispose (RTD) commenced at 216-N-1 waste site on November 5, 2009 and was completed on December 29, 2009. RTD activities involved the removal and disposal of contaminated soil from the 216-N-1 waste site at the Environmental Restoration Disposal Facility (ERDF). The excavation activity was planned to occur in stages with the area of highest contaminant concentration in the center being removed first with the vertical excavation depth set at 3.1 meters (10 ft) below ground surface. Soil removal, followed by verification sampling, was planned to be performed repeatedly until the analytical data showed residual contaminant concentrations in the excavated area were below RAGs; thereby demonstrating that RAOs were attained. With the investigative sample results showing the extent of the contaminated area bounded at sample locations 2, 7 and 8, a maximum of two iterations was anticipated to be required. Ultimately, RAOs were met after only one phase of excavation followed by verification sampling. The final excavation area was 460 square meters (4,740 square feet), measured at ground surface with a slope of 1.5 to 1, to a depth of 3.1 meters (10 feet).

Radiological field screening was performed over the entire surface of the remediated area. Radiological field screening of the remediated surface and the samples collected indicated no detectable dose rates above background. Once the waste site has been backfilled and/or contoured, native plant species will be seeded in the area, as applicable.

Code: 216-N-2 **Classification:** Accepted

Names: 216-N-2; 216-N-2 Trench; 212-N #1 Trench; 212-N Storage Basin Crib #1; 216-N-1 Trench **Reclassification** Interim No Action (7/30/2007)

Type: Trench **Start Date:** 1/1/1947

Status: Inactive **End Date:** 1/1/1947

Description: The site has been evaluated and reclassified to "No Action". The site was surrounded by a light weight chain barrier and concrete markers. It was posted with "Underground Radioactive Material" warning signs. A single chain enclosed both the 216-N-2 and 216-N-3 Waste Sites.

Location: The site was located approximately 15 to 30 meters (50 to 100 feet) northwest of the 212-N Building. The trench was adjacent and parallel to the 216-N-3 Trench.

Related Sites/ Structures: The site was associated with the 216-N-3 and 212-N facility.

Process Description: The 216-N-2 Trench was constructed in 1947 to accommodate water from the fuel basin when it was drained for undefined "special testing." Per documentation, in 1952 when activities in 200-N facilities ceased, the trench was taken out of service, the overground pipeline was placed into the trench, then backfilled with clean soil.

Waste Type: Process Effluent

Waste Description: The site received the basin water and sludge from the 212-N Fuel Storage Basin when it was drained for special tests. The site was deactivated by removing the overground piping and backfilling the unit with 1.8 meters (6 feet) of clean soil. Typically practice was to place the aboveground piping in the trench prior to backfilling. The waste type is low activity.

Closure Info: Interim (7/30/2007): Due to the rocky backfill material that had previously been placed in the trench, focused, discrete samples were collected from four test pits on March 7, 2007. The samples were collected from four specific test pits [2 samples at 3 meters (10 feet) depths and 2 samples at 4.6 meters (15 feet) depths].

The site was investigated through field observations, radiological screening, and focused sampling and analysis for the purpose of determining if hazardous or radiological contaminants were present. To confirm the conceptual model of removal, treatment and disposal or No Action, an investigation of the site was performed.

During the excavation and sampling of the test pits, radiological field surveys were conducted on each excavator bucket of soil utilizing a cesium 137 tracer (i.e., indicator) to determine the presence of radiological contamination. The contaminants of concern (COCs) for the site were identified based on existing information for the site and the COCs listed in the Remaining Sites ROD. The COC list included: americium 241, cobalt 60, cesium 137, europium 152, europium 154, europium 155, tritium, strontium 90, plutonium 238, plutonium 239/240, nickel 63, thorium 232, technetium 99, uranium 233/234, uranium 235, uranium 238, hexavalent chromium, mercury, lead, barium, trivalent chromium, cadmium, antimony, arsenic, manganese, zinc, and polychlorinated biphenyls.

The analytical results from the test pit soil sampling were shown to be below the Look Up Values, the RAGs and the RAOs and met the cleanup objectives for direct exposure, groundwater protection, and river protection. The RSVP does not discuss the status of the pipeline that was thought to have been disposed in the trench. All analytical data were found acceptable for decision making purposes and were stored in the Hanford Environmental Information System. The data was also summarized in Appendix E of the RSVP.

These results show that residual soil concentrations support future land uses that can be represented (or bounded) by a rural residential scenario. The results also demonstrated that residual contaminant concentrations support unrestricted future use of shallow zone soil [i.e., surface to 4.6 meters (15 feet)] and that contaminant levels remaining in the soil were protective of groundwater and the Columbia River. There was no deep zone for the site therefore, no institutional controls were required.

In accordance with this evaluation, the sampling results support a reclassification of the site to "No Action", as recorded on Waste Site Reclassification Form 2007-016. According to the RSVP the site will be revegetated with native grasses and regraded in accordance with the RD/RAWP.

Code: 216-N-3 **Classification:** Accepted

Names: 216-N-3; 216-N-3 Trench; 212-N #2 Grave; 212-N #2 Trench; 212-N Storage Basin Crib #2; 212-N-2 Trench

Reclassification Interim No Action (7/30/2007)

Type: Trench

Start Date: 1/1/1952

Status: Inactive

End Date: 1/1/1952

Description: The site has been evaluated and reclassified to "No Acton". The site was surrounded by a light weight chain barrier and concrete markers. It was posted with Underground Radioactive Material signs. Both the 216-N-2 and 216-N-3 trenches were located within the chained barrier.

Location: The site was located approximately 15 to 30 meters (50 to 100 feet) northwest of the 212-N Building. The trench was adjacent and parallel to the 216-N-2 Trench. A single lightweight chain barrier enclosed both trenches.

Related Sites/ Structures: The site was associated with the 212-N Fuel Storage Facility and co-located with the 216-N-2 trench.

Process Description: In 1952 when activities in the 200-N facilities ceased, the fuel storage basins of each of the 212 Buildings were rinsed clean to remove sludge and residual water. About 7.6 x 106 Liters of sludge/water was pumped into the 216-N-3, 216-N-5, and 216-N-7 Trenches located northwest of each facility via temporary pipelines. The trenches were 3 to 6 meters (10 to 20 feet) wide and 15 to 24 meters (50 to 80 feet) long. When the trenches were taken out of service, the overground pipelines were placed into the trench and the units were backfilled with clean soil. Each building has been used since for storage of contaminated waste or materials, but no additional liquid wastes have been discharged.

A limited radiological characterization of the Annual surface radiological surveys have not detected any surface contamination. Four trenches (216-N-2, 216-N-3, 216-N-5, and 216-N-7) were reported to have received minute quantities of cesium-137 and strontium-90 but no plutonium or uranium. No inventory of organic or inorganic compounds is available for these sites. HW-28471 states that the fuel storage basin at 212-N was drained in 1947 to prepare the facility for special tests that were to be conducted in the basin. There is no documentation that describes the type of special tests done at this site.

Waste Type: Process Effluent

Waste Description: The site received fuel storage basin water and sludge from the 212-N Building when the facility was shut down in 1952. The site was deactivated by removing the overground piping and backfilling the unit with 1.8 meters (6 feet) of clean soil. Typically, the above ground pipe was placed into the trench prior to backfilling. The waste type is low activity.

Closure Info: Interim (7/30/2007): Due to the rocky backfill material that had previously been placed in the trench, focused, discrete samples were collected from four test pits on March 1, 2007. The samples were collected from four specific test pits [2 samples at 3 meters (10 feet) depths and 2 samples at 4.6 meters (15 feet) depths]. An additional sample was collected at the less than 3 meter (10 foot) level that represented an elevated radiological reading (527 counts per minute with a 350 counts per minute background). No hose or piping was found during the test pit excavations.

The current site conditions as documented in the Remaining Sites Verification Package (RSVP) for the site have achieved the Remedial Action Objectives (RAOs) and the corresponding Remedial Action Goals (RAGs) as established in the Remedial Design/Remedial Action Work Plan for Select 200 North Area Waste Sites (216-N-2, -3, -5, & -7) in the 200-CW-3 Operable Unit (RD/RAWP) and the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units (Remaining Sites ROD).

In accordance with this evaluation, the sampling results support a reclassification of the site to "No Action", as recorded on Waste Site Reclassification Form 2007-017. According to the RSVP the site will be re-vegetated with native grasses and re-graded in accordance with the RD/RAWP.

Code:	216-N-4	**Classification:**	Accepted
Names:	216-N-4; 216-N-4 Swamp; 212-P Swamp; 216-N-2	**Reclassification**	Interim Closed Out (6/3/2011)
Type:	Pond	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site has been remediated and Interim Closed Out. The site had been marked by "Underground Radioactive Material" warning signs attached to concrete AC-540 marker posts that surround the site. The radiological postings were removed in September 2010.

Location: The site was located approximately 274 meters (900 feet) south-southeast of the demolished 212-P Building.

Related Sites/ Structures: The pond received basin overflow cooling water from the 212-P Storage Facility via an underground 46 centimeter (18-inch) diameter vitrified clay pipe (sitecode 600-286-PL).

Process Description: The pond consisted of a natural depression in the terrain and the discharged water was dispersed by evaporation and percolation into the ground. Except for an occasional berm, no excavation or other effort was made to define or enhance the pond formation.

Waste Type: Process Effluent

Waste Description: The site received the basin overflow waste from the 212-P Building. The waste is low activity.

Closure Info: Interim (6/3/2011): Investigative sampling was performed May 22 through June 2, 2009. Twenty sample locations were identified. Sample locations 1, 2, 3, 9, 12, 15, and 20 were targeted because they are located in the influent stream portion of the pond (lowest elevation) to define the extent of downgradient contamination from the point source. Sample locations 4 through 8, 10, 11, 17, and 19 were targeted to define the lateral extent of contamination from the influent stream area. Radiological indicators (dose rate readings above background) were found at seven locations: sample locations 1, 3, 2, 9, 12, 15, and 20. Contaminants at all other sample locations were below Look-Up Values. The results from the first phase of investigative sampling effectively identified and bounded the extent of the contaminated area to be subject to Remove, Treat, Dispose (RTD). This reduced the excavation area to an area of 8,011 square meters (86,229.68 square feet). RTD commenced at 216-N-4 waste site in December 2009 and was completed in July 2010. RTD activities involved the removal of contaminated soil from the 216-N-4 waste site and disposal at the Environmental Restoration Disposal Facility (ERDF). The final excavation footprint was 7,430 square meters (79,975.85 square feet) measured at ground surface with a slope of 1.5 to 1.0.

Code:	216-N-5	**Classification:**	Accepted
Names:	216-N-5; 216-N-5 Trench; 212-P Grave; 212-P Storage Basin Crib; 212-P Trench	**Reclassification**	Interim Closed Out (7/19/2007)
Type:	Trench	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1952

Description: The site has been remediated and "Interim Closed Out". Prior to remediation the site was surrounded by a light weight chain barrier and concrete markers. It was posted with "Underground Radioactive Material" warning signs.

Location: The site was located approximately 30 meters (100 feet) northwest of the 212-P Building.

Related Sites/ Structures: The site was associated with the 216-N-2 Trench, 216-N-3 Trench and 212-N facility.

Process Description: In 1952 when activities in the 200-N facilities ceased, the fuel storage basins of each of the 212 Buildings were rinsed clean to remove sludge and residual water. About 7.6 x 106 Liters of sludge/water was pumped into the 216-N-3, 216-N-5, and 216-N-7 Trenches located northwest of each facility via temporary pipelines. The trench was 3 to 6 meters (10 to 20 feet) wide and 15 to 24 meters (50 to 80 feet) long. When the trench was taken out of service, the overground pipeline was placed into the trench and the units were backfilled with clean soil. Each building has been used since for storage of contaminated waste or materials, but no additional liquid wastes have been discharged.

A limited radiological characterization of the Annual surface radiological surveys have not detected any surface contamination. Four trenches (216-N-2, 216-N-3, 216-N-5, and 216-N-7) were reported to have received minute quantities of cesium-137 and strontium-90 but no plutonium or uranium. No inventory of organic or inorganic compounds was available for these sites. The HW-28471 document states that the fuel storage basin at 212-N was drained in 1947 to prepare the facility for special tests that were to be conducted in the basin. There was no documentation that described the type of special tests done at this site.

Waste Type: Process Effluent

Waste Description: The site received the basin water and sludge cleanout from the 212-P Basin during shutdown of the area. Typically, the above ground piping was placed in the trench prior to backfilling. The waste type is low activity.

Closure Info: Interim: The site was investigated through field observations, radiological screening, and focused sampling and analysis for the purpose of determining if hazardous or radiological contaminants were present. Although not required by the Remaining Sites ROD, a comparison against ecological risk screening levels was made for the site contaminants of concern. Screening levels were not exceeded for the site constituents. A baseline risk assessment for the river corridor portion of Hanford began in 2004, which included a more complete quantitative ecological risk assessment. That baseline risk assessment will be used to support a future final closeout decision for the site.

Geophysical survey data indicated a northwest southeast trending feature that had the characteristics typically associated with soil that has been disturbed by excavation or trenching. The disturbed area was roughly six meters (20 feet) wide, 22 meters (72 feet) long, and two meters deep. The northwest end of the area was not distinct but appeared to be slightly outside of the monuments surrounding the trench. There were no concentrations of buried debris or piping identified in the disturbed area. A very large boulder that could not be moved or broken up was identified as the only notable anomaly within the trench boundaries. While awaiting the analytical results, all soil was placed back into the excavated trench, and the area was stabilized.

Remediation of the site began on April 30, 2007 and was completed on May 11, 2007. A total of approximately 1,288 metric tons (1,420 tons) of contaminated material was excavated and disposed at the Environmental Remediation Disposal Facility. The excavation was approximately 316 square meters (3,360 square feet) in area at the top of the excavation with a 1.5 to 1 slope down to 4.6 meters (15 feet).

For the sampling effort, field screening was used to establish site radiological contamination

levels. In addition, field screening for radiological contamination (cesium-137) was used as a "tracer" (i.e., indicator) to locate areas of chemical contamination. When field screening results indicated the presence of radiological contamination, the areas were further characterized with laboratory analytical samples. The post remediation sampling and analysis results indicated achievement of compliance with the RAOs and the RAGs identified in the Remaining Sites ROD and the RD/RAWP. After remediation the waste site was radiologically screened and sampled on May 16, 2007. Laboratory analysis was performed to verify that remediation was complete.

Code:	216-N-6	**Classification:**	Accepted
Names:	216-N-6; 216-N-6 Swamp; 212-R Swamp	**Reclassification**	Interim Closed Out (6/3/2011)
Type:	Pond	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site has been remediated and Interim Closed Out. The site had been marked with "Underground Radioactive Material" warning signs attached to concrete AC-540 marker posts. The postings were removed after remedial activities were completed.

Location: The site was located in the 200 North Area, north of Route 11A. It was approximately 274 meters (900 feet) southeast of the 212-R Building.

Related Sites/ Structures: The site is associated with the 212-R building and its connecting underground pipeline (sitecode 600-287).

Process Description: The site received contaminated fuel basin overflow cooling water from the 212-R Storage Facility via an underground 46-centimeter (18-inch) diameter vitrified clay pipe. The pond consisted of a natural depression in the terrain. Water discharged from the 212-R building was dispersed by evaporation and percolation into the ground. Except for an occasional berm, no excavation or other effort was made to define or enhance the pond formation. A report issued in 1953 documents contamination with a maximum dose rate of 50 mr/hr was observed in this swamp prior to being backfilled.

Waste Type: Process Effluent

Waste Description: The site received the normal overflow from the 212-R Fuel Storage Basin. The waste is low activity.

Closure Info: Interim (6/3/2011): The selected remedy of Remove, Treat, Dispose (RTD) commenced at 216-N-6 Waste Site in July 2010 and was completed in August 2011. RTD activities involved the removal of contaminated soil from the 216-N-6 Waste Site and disposal at the Environmental Restoration Disposal Facility (ERDF). The final excavation area was 2,584 square meters (26,625.8 square feet) measured at ground surface. Additionally, the excavation was finished with a slope of 1.5 to 1.0, to a range of depths with the base (floor) of the excavation varying from roughly 1.21 meters (4 feet) to 2.43 meters (8 feet).

Radiological field screening was performed over the entire surface of the remediated area. Due to process knowledge of comingled radiological and chemical constituents, field screening for radiological contamination was used as an indicator to locate areas of chemical contamination. The survey was performed using standard radiological survey instruments in accordance with approved practices and procedures to obtain dose and contamination measurements with sufficient sensitivity to meet cleanup levels. Radiological screening was also performed on the samples themselves during the collection of verification samples. Radiological field screening of the remediated surface and the samples collected indicated no detectable dose rates above background.

Code:	216-N-7	**Classification:**	Accepted
Names:	216-N-7; 216-N-7 Trench; 212-R Grave; 212-R Storage Basin Crib; 212-R Trench	**Reclassification**	Interim Closed Out (9/11/2007)
Type:	Trench	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1952

Description: This trench has been remediated and Interim Closed Out. The trench was excavated and backfilled. It will be revegetated with native grasses. Prior to remediation, the site had been delineated with light weight chain and concrete marker posts and posted with Underground Radioactive Material signs.

Location: The remediated site was located approximately 30 meters (100 feet) northwest of the 212-R Building.

Related Sites/ Structures: The site is associated with the 212-R building.

Process Description: The site received radioactively contaminated water and sludge from the 212-R Fuel Storage Basin cleanout in 1952.

Waste Type: Process Effluent

Waste Description: The site received the water and sludge from 212-R Fuel Storage Basin clean out. The site was retired when 212-R was shut down. The waste type is low activity.

Closure Info: Interim: The 216-N-7 Waste Site was initially investigated through field observations and focused sampling and analysis for the purpose of determining if hazardous or radiological contaminants were present. The results of the focused sampling of test pits identified levels of contaminants of concern above the Remedial Action Goals (RAGs). Consequently, the trench was excavated to a depth of 4.6 meters (15 feet) to remove contaminated soil and debris for remediation of the waste site. No aboveground piping was found during the remediation activity. Remediation began on May 21, 2007 and was completed on June 21, 2007. The excavation was approximately 713 square meters (7,680 square feet) in area at the top of the excavation with a 1.5 to 1 slope down to 4.6 meters (15 feet). Approximately 2,631 metric tons (2,900 tons) of material from the site were disposed at ERDF.

Once the excavation and disposal of the contaminated soil and debris was completed, radiological field surveys were conducted utilizing a cesium-137 tracer (i.e., indicator) to confirm the removal of detectable contamination, and waste site sampling and analysis were conducted using a multi-incremental sampling design. Multi-incremental sampling was implemented on June 26, 2007. The sample results indicated that the site achieved compliance with the RAOs and the RAGs. A summary of the cleanup evaluation for the soil results against the applicable criteria was presented in Table 1 of RSVP.

Soil cleanup levels were established in the Remaining Sites ROD based on a limited ecological risk assessment. These soil cleanup levels are referred to as Look-Up Values. Although not required by the Remaining Sites ROD, a comparison against ecological risk screening levels has been made for the site contaminants of concern. Screening levels were not exceeded for the site constituents. A baseline risk assessment for the river corridor portion of Hanford began in 2004, which includes a more complete quantitative ecological risk assessment. That baseline risk assessment will be used to support a future final closeout decision for the site.

Code:	2607-N	**Classification:**	Accepted

Names: 2607-N; 2743-N Guard House Septic Tank and Tile Field
Reclassification Rejected (3/17/2010)

Type: Septic Tank
Start Date: 1/1/1944

Status: Inactive
End Date: 1/1/1952

Description: The site has been evaluated and reclassified to Rejected per form 2010-016. It is a septic tank and drain field. The tank is a rectangular, open-topped, concrete tank buried to grade level.

Location: The unit is located 6 meter (20 feet) south of the 2743-N Guard House foundation and south of the 212-N Building. The drain field lies south of the septic tank system.

Related Sites/ Structures: The 2743-N Guard House was serviced by the 2607-N Septic Tank. Only the guard house foundation remains.

Process Description: The 2607-N septic tank is constructed of reinforced concrete. The tank is 1.2 meters (4 feet) long, 0.6 meters (2 feet) wide and 2.5 meters (8.25 feet) deep (inner dimensions). The tank had a design capacity of 795 liters (210 gallons) based on a user capacity of 6 persons, a flow of 132 liters (35 gallons) of sewage per capita per day, and an average detention time of 1 day. The top of the tank is at the ground surface and the tank is accessible through a 0.9-meter (3-foot) manhole.

Waste Type: Sanitary Sewage

Waste Description: The site received sanitary waste from the 2743-N Guard House.

Code: 2607-P
Classification: Accepted

Names: 2607-P; 2743-P Guard House Septic Tank and Tile Field
Reclassification Rejected (3/17/2010)

Type: Septic Tank
Start Date: 1/1/1944

Status: Inactive
End Date: 1/1/1952

Description: The site has been evaluated and reclassified to Rejected per form 2010-017. It is a septic tank and drain field. The tank is a rectangular, open-topped, soil filled concrete tank buried to grade level.

Location: The site is located south of the 2743-P Guard House foundation and south the 212-P Building. The drain field lies south of the septic tank.

Related Sites/ Structures: The 2743-P Guard House was serviced by the 2607-P Septic Tank. Only the building foundation remains.

Process Description: The 2607-N septic tank is constructed of reinforced concrete. The tank is 1.2 meters (4 feet) long, 0.6 meters (2 feet) wide and 2.5 meters (8.25 feet) deep (inner dimensions). The tank had a design capacity of 795 liters (210 gallons) based on a user capacity of 6 persons, a flow of 132 liters (35 gallons) of sewage per capita per day, and an average detention time of 1 day. The top of the tank is at the ground surface and the tank is accessible through a 0.9-meter (3-foot) manhole.

Waste Type: Sanitary Sewage

Waste Description: The site received sanitary waste from the 2743-P Guard House. The 910-liter (240-gallon) septic tank appears to have been filled with soil.

Code:	2607-R	**Classification:**	Accepted
Names:	2607-R; 2743-R Guard House Septic Tank and Tile Field	**Reclassification**	Rejected (3/17/2010)
Type:	Septic Tank	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1952

Description: The site has been evaluated and reclassified to Rejected per form 2010-018. It is a septic tank and drain field. The tank is a rectangular, open-topped, concrete tank buried to grade level. A field surveillance done in 1998 found the tank to be mostly filled in with soil.

Location: The unit is located south of the 2743-R Guard House foundation and south of the 212-R Building. The drain field lies south of the septic tank.

Related Sites/ Structures: The 2743-R Guard House was serviced by the 2607-R Septic Tank. Only the building foundation remains.

Process Description: The 2607-N septic tank is constructed of reinforced concrete. The tank is 1.2 meters (4 feet) long, 0.6 meters (2 feet) wide and 2.5 meters (8.25 feet) deep (inner dimensions). The tank had a design capacity of 795 liters (210 gallons) based on a user capacity of 6 persons, a flow of 132 liters (35 gallons) of sewage per capita per day, and an average detention time of 1 day. The top of the tank is at the ground surface and the tank is accessible through a 0.9-meter (3-foot) manhole.

Waste Type: Sanitary Sewage

Waste Description: The site received sanitary waste from the 2607-R Guard House. The 910-liter (240-gallon) septic tank appears to have been filled with soil. An associated drain field exists.

Code:	600-285-PL	**Classification:**	Accepted
Names:	600-285-PL; Pipeline from 212-N to 216-N-1 Pond	**Reclassification**	Interim No Action (10/27/2009)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site is an underground, 46 centimeter (18 inch) diameter, vitrified clay pipe that fed the 216-N-1 pond. A site visit in July 2010 observed the pipeline was posted with Underground Radioactive Material Pipeline signs. The Confirmatory Sampling/No Action remediation alternative was selected for this pipeline. Only a small portion of the clay pipeline was removed and pulverized for sampling. The remainder of the pipeline was left in place and the radiological postings were removed in November 2010.

Location: The pipeline is located in the 200 North Area. It extends south from the 212-N building to the 216-N-1 Pond.

Related Sites/ Structures: The pipeline is associated with the 212-N building and the 216-N-1 Pond.

Process Description: The pond received basin overflow cooling water from the 212-N Fuel Storage Facility via an underground 46-centimeter (18-inch) diameter vitrified clay pipe.

Waste Type: Process Effluent

Waste Description: The contaminants of potential concern (COPCs) for the 600-285-PL, 600-286-PL and 600-287-PL waste sites were identified based on existing information for the site and the COPCs listed

in the Remaining Sites ROD. The COPC list identified in the Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites located in the 200-CW-3 Operable Unit (SAP) (DOE/RL-2007-54) includes americium-241, cobalt-60, cesium-I37, europium-152, europium-154, europium-155, tritium, strontium-90, plutonium-238, plutonium-239 and 240, nickel-63, thorium-232, technetium-99, uranium-233/234, uranium-235, uranium-238, hexavalent chromium, mercury, lead, barium, trivalent chromium, cadmium, antimony, arsenic, manganese, zinc, and polychlorinated biphenyls.

Closure Info: Interim (10/27/2009): On June 3 and 9, 2009, focused, discrete samples were collected from 600-285-PL, 600-286-PL and 600-287-PL waste site outfalls. The clay pipe samples were pulverized and divided into two samples (duplicate samples). As described in the SAP, radiological screening was performed prior to and during sampling. Surveys were performed near the origins of the pipelines located at the building each pipeline serviced via a manhole and at the discharge point of the pipelines into the ponds. The culvert and pipelines radiological survey readings did not exceed background. A portion of each pipeline was removed and pulverized before analysis.

Although the Confirmatory Sampling/No Action remediation alternative was selected for pipelines in 2009 for 600-286-PL and 600-287-PL, these two clay pipelines were removed in 2010. The 600-285-PL clay pipe was not removed.

The results of the focused sampling performed per DOE/RL-2007-54, Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit, identified no contaminants above the Remedial Action Goals (RAGs) and are in compliance with the Remedial Action Objectives (RAOs). The waste site confirmatory sampling results, reported in DOE/RL-2009-84, support a reclassification of this site to No Action. The waste site confirmatory sampling results indicate current site conditions are in compliance with the RAOs and RAGs for pipeline 600-285-PL. It was left in place.

Code:	600-286-PL	**Classification:**	Accepted
Names:	600-286-PL; Pipeline from 212-P to 216-N-4 Pond	**Reclassification**	Interim No Action (10/27/2009)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site had been an underground, 46 centimeter (18 inch) diameter, vitrified clay pipe that fed the 216-N-4 pond. A site visit in July 2010 observed the pipeline was posted with Underground Radioactive Material Pipeline signs. Although the Confirmatory Sampling/No Action remediation alternative was selected for this pipeline, the clay pipeline was removed in 2010. The radiological posting was removed in January 2011.

Location: The pipeline is located in the 200 North Area. It extends south from the 212-P building to the 216-N-4 Pond.

Related Sites/ Structures: The pipeline is associated with the 212-P building and the 216-N-4 Pond.

Process Description: The pond received basin overflow cooling water from the 212-P Fuel Storage Facility via an underground 46 centimeter (18-inch) diameter vitrified clay pipe.

Waste Type: Process Effluent

Waste Description: The contaminants of potential concern (COPCs) for the 600-285-PL, 600-286-PL and 600-287-PL waste sites were identified based on existing information for the site and the COPCs listed in the Remaining Sites ROD. The COPC list identified in the Sampling and Analysis Plan for

Remediation of 200 North Area Waste Sites located in the 200-CW-3 Operable Unit (SAP) (DOE/RL-2007-54) includes americium-241, cobalt-60, cesium-I37, europium-152, europium-154, europium-155, tritium, strontium-90, plutonium-238, plutonium-239 and 240, nickel-63, thorium-232, technetium-99, uranium-233/234, uranium-235, uranium-238, hexavalent chromium, mercury, lead, barium, trivalent chromium, cadmium, antimony, arsenic, manganese, zinc, and polychlorinated biphenyls.

Closure Info: Interim (10/27/2009): On June 3 and 9, 2009, focused, discrete samples were collected from 600-285-PL, 600-286-PL and 600-287-PL waste site outfalls. The clay pipe samples were pulverized and divided into two samples (duplicate samples). As described in the SAP, radiological screening was performed prior to and during sampling. Surveys were performed near the origins of the pipelines located at the building each pipeline serviced via a manhole and at the discharge point of the pipelines into the ponds. The culvert and pipelines radiological survey readings did not exceed background. A portion of each pipeline was removed and pulverized before analysis.

Although the Confirmatory Sampling/No Action remediation alternative was selected for pipelines in 2009 for 600-286-PL and 600-287-PL, these two clay pipelines were removed in 2010. The 600-285-PL clay pipe was not removed.

The results of the focused sampling performed per DOE/RL-2007-54, Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit, identified no contaminants above the Remedial Action Goals (RAGs) and are in compliance with the Remedial Action Objectives (RAOs). The waste site confirmatory sampling results, reported in DOE/RL-2009-84, support a reclassification of this site to No Action. The waste site confirmatory sampling results indicate current site conditions are in compliance with the RAOs and RAGs for pipeline 600-285-PL. It was left in place.

Code:	600-287-PL	**Classification:**	Accepted
Names:	600-287-PL; Pipeline from 212-R to 216-N-6 Pond	**Reclassification**	Interim No Action (10/27/2009)
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1952

Description: The waste site had been an underground, 46 centimeter (18 inch) diameter, vitrified clay pipe that fed the 216-N-6 pond. A site visit in July 2010 observed the pipeline was posted with Underground Radioactive Material Pipeline signs. Although the Confirmatory Sampling/No Action remediation alternative was selected for this pipeline, the clay pipeline was removed in 2010. The radiological posting was removed in January 2011.

Location: The pipeline is located in the 200 North Area. It extends south from the 212-R building to the 216-N-6 Pond.

Related Sites/ Structures: The pipeline is associated with the 212-R building and the 216-N-6 Pond.

Process Description: The pond received basin overflow cooling water from the 212-R Fuel Storage Facility via an underground 46-centimeter (18-inch) diameter vitrified clay pipe.

Waste Type: Process Effluent

Waste Description: The contaminants of potential concern (COPCs) for the 600-285-PL, 600-286-PL and 600-287-PL waste sites were identified based on existing information for the site and the COPCs listed in the Remaining Sites ROD. The COPC list identified in the Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites located in the 200-CW-3 Operable Unit (SAP)

(DOE/RL-2007-54) includes americium-241, cobalt-60, cesium-I37, europium-152, europium-154, europium-155, tritium, strontium-90, plutonium-238, plutonium-239 and 240, nickel-63, thorium-232, technetium-99, uranium-233/234, uranium-235, uranium-238, hexavalent chromium, mercury, lead, barium, trivalent chromium, cadmium, antimony, arsenic, manganese, zinc, and polychlorinated biphenyls.

Closure Info: Interim (10/27/2009): On June 3 and 9, 2009, focused, discrete samples were collected from 600-285-PL, 600-286-PL and 600-287-PL waste site outfalls. The clay pipe samples were pulverized and divided into two samples (duplicate samples). As described in the SAP, radiological screening was performed prior to and during sampling. Surveys were performed near the origins of the pipelines located at the building each pipeline serviced via a manhole and at the discharge point of the pipelines into the ponds. The culvert and pipelines radiological survey readings did not exceed background. A portion of each pipeline was removed and pulverized before analysis.

Although the Confirmatory Sampling/No Action remediation alternative was selected for pipelines in 2009 for 600-286-PL and 600-287-PL, these two clay pipelines were removed in 2010. The 600-285-PL clay pipe was not removed.

The results of the focused sampling performed per DOE/RL-2007-54, Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit, identified no contaminants above the Remedial Action Goals (RAGs) and are in compliance with the Remedial Action Objectives (RAOs). The waste site confirmatory sampling results, reported in DOE/RL-2009-84, support a reclassification of this site to No Action. The waste site confirmatory sampling results indicate current site conditions are in compliance with the RAOs and RAGs for pipeline 600-285-PL. It was left in place.

Code:	UPR-200-N-1	**Classification:**	Accepted
Names:	UPR-200-N-1; Unplanned Release at the 212-R Railroad Spur	**Reclassification**	Interim No Action (3/17/2010)
Type:	Unplanned Release	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The remediation alternative selected for this site was Confirmatory Sampling/No Action. In 2009, the only postings at UPR-200-N-1 were Contamination Area and Radiation Area postings immediately around the rail cars that remain on the rail spur.

In 1992, the railroad track was delineated with light weight chain and posted with Surface Contamination signs and measured 91 meters (300 feet) in length. UPR-200-N-1 was the portion of the railroad track extending south from the demolished 212-R building.

Location: The site is located in 200 North Area, northwest of the intersection of Route 4 North and Route 11A. The site is adjacent to the 212-R building.

Process Description: From 1944 to 1952, irradiated fuel rods were transported to 212-R from the 100 Area reactors by train in water filled cask cars. The fuel rods were transferred from the rail cars to water filled storage basins inside the building. The short lived radionuclides were allowed to decay before transporting the fuel rods to the 200 Areas for processing. From 1982 to 1986, the 212-R facility was used as a maintenance facility for radiologically contaminated rail cars in need of brake and wheel maintenance. Over time, movement and repair of contaminated rail cars caused the track to become contaminated. In 1998, two locomotives and five cask cars were being stored at this location within the Surface Contamination Area.

Waste Type: Equipment

Waste Description: Contaminated rail cars are stored on this railroad spur.

Closure Info: Interim (3/17/2010): In July 2009, the UPR-200-N-1 waste site was investigated using field observations and focused sampling and analysis for the purpose of determining if hazardous or radiological contaminants were present. This investigative activity was performed in accordance with Sampling and Analysis Plan (DOE/RL-2007-54) and Remedial Design/Remedial Action Work Plan for 200 North Area Waste Sites located in the 200-CW-3 Operable Unit (DOE/RL 2007-55). When the current sampling evolution began, the only postings within or near UPR-200-N-1 were Contamination Area and Radiation Area postings immediately around the rail cars that remain on the rail spur. In July 2009, the UPR-200-N-1 waste site was investigated using field observations and focused sampling and analysis for the purpose of determining if hazardous or radiological contaminants were present. This investigative activity was performed in accordance with Sampling and Analysis Plan (DOE/RL-2007-54) and Remedial Design/Remedial Action Work Plan for 200 North Area Waste Sites located in the 200-CW-3 Operable Unit (DOE/RL 2007-55). When the current sampling evolution began, the only postings within or near UPR-200-N-1 were Contamination Area and Radiation Area postings immediately around the rail cars that remain on the rail spur.

In July 2009, focused and discrete samples were collected from the UPR-200-N-1 waste site from three boreholes. The decision logic associated with judgment/focused methodology includes identifying discrete sample locations based on radiological surveys of the area. Radiological surveys in accordance with COPCs identified for this site, is an indicator of the potential presence of COPCs. Radiological surveys of greater than 90% of the surface area of the waste site (including the tracks beneath the rail cars) showed no radiation levels above background and no detectable contamination. Visual inspection showed discoloration in one location, on the east side of the rail road tracks, approximately mid way down the length of the waste site. Based on the radiological surveys, process knowledge and the visual inspection of the site, three discrete borehole samples were collected. One was collected at the north end of the waste site closest to 21 2-R, the location with the most potential for the presence contamination based on process knowledge. One was collected in roughly the middle on the east side, where discolored soil was identified and one was collected at the south end of the waste site, bounding the furthest extent of the waste site to ensure that the waste site.

Radiological surveys were conducted on the borehole contents after removal from the sample equipment to determine potential locations for obtaining discrete samples. The survey results indicated that the soil sample was below radiological background levels and based upon visual inspections, no evidence existed to support the identification of discrete sample locations. As a result, discrete samples were obtained at each borehole at the approximate midpoint (5 to 7 feet below surface) and at the 15-foot depth in accordance with the SAP.

Code: UPR-200-N-2 **Classification:** Accepted

Names: UPR-200-N-2; Well Pumphouse East of 212-R; 200-N-2; Unplanned Release Near Well Pumphouse No. 2 **Reclassification** Interim No Action (3/17/2010)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The remedial alternative selected for this waste site was Confirmatory Sampling/No Action. The waste site was a 6.1 by 6.1-meter (20 by 20-foot) area surrounded by a lightweight chain barrier and Underground Radioactive Material warning signs. There were two open, wood lined holes with valves inside the posted area. They measured approximately 1 meter square and were approximately 1 meter deep. A site visit in July 2010 observed the area adjacent to the

pump house foundation posted with chain and Underground Radioactive Material (URMA) signs. Another area nearby contained debris and was posted with Soil Contamination Area (SCA) signs.

In March 2011 the surface debris inside the Soil Contamination Area was removed. A Walking Stick radiological survey was done on both posted areas and found to be free of contamination. The 2009 sample results were reviewed. All the post, chains and radiological postings were removed on March 7, 2011.

Location: The site is adjacent to the northern Well Pump House (Well House No. 2) foundation located east of the demolished 212-R Building. The well house building was demolished in September 2004.

Release Description: There is no information available to explain the nature or cause of the contamination. However, on a site walkdown, done in April 2000, a Radiological Control Technician used her instrumentation to do an informal survey of the posted area. No contamination was evident on the surface of the posted area.

Related Sites/ Structures: The two valve boxes are associated with the well water supply system located within the barrier.

Process Description: The valve boxes appear to have been related to the pump house operation.

Waste Type: Soil

Waste Description: The contaminants of potential concern (COPCs) for the UPR-200-N-2 waste site were identified based on existing information for the site. COPCs are listed in the Remaining Sites ROD and carried forward to the Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites located in the 200 CW 3 Operable Unit (SAP) (DOE/RL 2007-54) and include americium 241, cobalt 60, cesium 137, europium 152, europium 154, europium 155, tritium, strontium 90, plutonium 238, plutonium 239/240, nickel 63, thorium 232, technetium 99, uranium 233/234, uranium 235, uranium 238, hexavalent chromium, mercury, lead, barium, trivalent chromium, cadmium, antimony, arsenic, manganese, zinc, and polychlorinated biphenyls.

Closure Info: Interim: In June 2009, soil samples were collected and radiological surveys were performed on soil removed with a backhoe to a depth of 15 feet. Radiological survey readings did not exceed background levels.

The analytical results from the soil samples meet the remedial action objectives for direct exposure, groundwater protection, and river protection as specified in the Remaining Sites Record of Decision. In accordance with this evaluation, the sampling results support a reclassification of the UPR-200-N-2 waste site to No Action status, as recorded on the Waste Site Reclassification Form included with this report. Per TPA MP-14, No Action status indicates that a waste site does not require any further remedial action under RCRA Corrective Action, CERCLA, or other cleanup standards based on an assessment of quantitative data collected for the waste site as evaluated under this interim Record of Decision. This waste site and the data obtained from the subject sampling evolution will be included in the risk assessment and remedial investigation and feasibility study for final closure of this area.

200-CW-5

Code:	216-Z-1D	**Classification:**	Accepted
Names:	216-Z-1D; Drainage Ditch to U Swamp; Z Plant Ditch; 216-Z-1	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1959

Description: The 216-Z-1D Ditch is a backfilled, surface stabilized ditch that runs from a point east of the 231-Z Building, curving southward to the 216-U-10 Pond. In 1949, the northern portion of the ditch was backfilled. The backfilled portion of the ditch was replaced with an underground pipeline (see sitecode 200-W-125-PL) to transport 231-Z effluent. The southern portion of the ditch is co-located within a large Underground Radioactive Material area that also includes the 216-Z-11 and 216-Z-19 ditches.

Location: The unit is east of 231-Z Building and runs south to the 216-U-10 Pond. The northern portion of the ditch, which had been converted to a pipeline, was shifted to the east of the original ditch.

Release Description: When the 216-Z-19 Ditch was being excavated in 1971, approximately 130 meters (425 feet) of the backfilled 216-Z-1 Ditch near the pipeline outfall was accidently exhumed (UPR-200-W-110).

Related Sites/ Structures: The 216-Z-1D Ditch is associated with 200-W-125-PL, 200-W-207-PL, the 216-Z-11 and 216-Z-19 Ditches, the stabilized 216-U-10 Pond, and the 231-Z Building outfall.

Process Description: The 216-Z-1D Ditch was used to transfer liquid waste from 231-Z, 234-5Z, and 291-Z Buildings to the 216-U-10 Pond.

The 216-Z-1D Ditch operated from 1944 to 1959. It was 1,295 meters (4,249 ft) long and 0.6 meters (2 ft) deep, with a bottom width of 1.2 meters (4 ft). The side slopes were 2.5:1. Originally, the ditch flowed from a headwall located approximately 60 meters (196 ft) east of Building 231-Z before turning south to connect to the 216-U-10 pond.

In 1949, after approximately 4 years of operations and as part of Building 234-5Z (Z Plant) construction, the north 526 meters (1,725 ft) section of this ditch was abandoned, backfilled, and replaced with process sewer piping (see WIDS 200-W-125-PL) that was routed around 234-5Z facility security fencing. A new headwall was constructed approximately 457 meters (1,500 ft) downstream where the new pipeline emptied into the remaining south portion of the ditch.

The Record of Decision - Hanford 200 Area Superfund Site 200-CW-5 and 200-PW-1, 200-PW-3 and 200-PW-6 Operable Units (ROD) states the north portion of the 216-Z-1D Ditch did not contain significant contamination when it was abandoned in 1949. The early plutonium purification process in the 231-Z Plutonium Isolation Plant that produced the 216-Z-1D Ditch waste stream was a tightly controlled process due to the high value of the concentrated plutonium product being processed. At that time, process waste streams were segregated with regard to their potential to contain plutonium. Waste streams containing a significant amount of plutonium were recycled directly back to the 224-T Concentration Facility. All other secondary waste streams having a potential to contain plutonium were sent to the 231-W-151 Sump where they were analyzed, neutralized, and either recycled back to the 224-T Concentration Facility for reprocessing. If the plutonium was not considered recoverable, it was disposed to the 216-Z-4 Trench, 216-Z-5 Crib, 216-Z-6 Crib, and/or 216-Z-10 Injection/Reverse Well. Waste containing plutonium was not expected to have been disposed to the 216-Z-1D Ditch before 1949.

The coil failures that were the major source of cooling water waste stream contamination

occurred after 1949. No reports of process-upset discharges to the 216-Z-1D (prior to 1949) have been identified. According to sample data gathered in 1981, the north portion of 216-Z-1D is significantly less contaminated than the south portion of the 216-Z-1D Ditch. Samples collected at the north end of the 216-Z-1D Ditch identified a maximum plutonium concentration of less than 70 pCi/g.

The south portion of 216-Z-1D continued to operate until 1959. It had the potential to receive cooling water waste containing constituents associated with the additional processes that occurred at the 231-Z Plutonium Isolation Plant after 1949. Open ditches were routinely surveyed for radiological contamination to control the potential spread of windblown contamination. The cooling water waste streams were not recognized as having a potential to contain plutonium.

Waste Type: Process Effluent

Waste Description: The 216-Z-1D Ditch received process cooling water, steam condensate, and pump sealant waters from the 231-Z, 234-5Z, and 291-Z Buildings. It is classified as a transuranic contaminated soil site. Plutonium and americium are the dominant radionuclides present in the ditch. The majority of the plutonium was retained in the ditch sediments and did not flow into the 216-U-10 Pond. A comparison of annual plutonium discharges for the dates when the 216-Z-1 Ditch was active indicates that at least 1.4 kilograms (3 pounds) of plutonium was released to the 216-Z-1 Ditch. The contamination burden includes 137 curies of Pu-239 and 37 curies of Pu-240. Previously, in 1959, when the entire ditch was open from its original inlet from the 234-5Z Building (before the upper 526 meters were replaced with a pipeline), a mud sampling project took three samples of the ditch sediment every 100 feet from the inlet pipe to the outlet into 216-U-10 Pond (81 samples from the Z-1D ditch, plus others from 216-U-10 Pond shoreline). The levels of plutonium ranged up to 27.1 micrograms per gram plutonium (almost all plutonium 239) at 800 feet from the inlet. The levels at 485 meters (1600 feet) from the inlet were still at 1.7 micrograms per gram plutonium. The 1959 report concluded that there was between 3 and 10 kilograms of plutonium in the ditch.

Code:	216-Z-11	**Classification:**	Accepted
Names:	216-Z-11; 216-Z-11 Ditch; Z Plant Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1959
Status:	Inactive	**End Date:**	1/1/1971

Description: The 216-Z-11 ditch is a backfilled, surface stabilized ditch that ran from the east side of the 234-5Z facility southward to the 216-U-10 Pond. The ditch is currently co-located within a large, posted Underground Radioactive Material area that also includes the 216-Z-1D and 216-Z-19 ditches. When active, the unit was a long narrow ditch with 2.5:1 sloped sides and a 0.05% grade.

Location: The ditch began at a point southeast of the 241-Z tanks and ran south to the 216-U-10 Pond. The first 37 meters (120 feet) of the ditch and last 203 meters (665 feet) of the ditch reused portions of the 216-Z-1D Ditch.

Related Sites/ Structures: Structures associated with this unit include the remnants of the 216-Z-1D and 216-Z-19 Ditches, UPR-200-W-110, the 216-U-10 Pond, and the culvert beneath Sixteenth street. The pipeline from 231-Z to the ditches is sitecode 200-W-125-PL. The pipeline from 234-5Z to the ditch is sitecode 200-W-207-PL.

Process Description: The 216-Z-11 Ditch was installed to replace the 216-Z-1D ditch. The 216-Z-11 ditch received liquid waste from Plutonium Finishing Plant process sewer, 291-Z and 231-Z until it was deactivated in 1971. The 216-Z-11 was replaced by the 216-Z-19 Ditch. During the 1960's, a

special Space Nuclear Auxiliary Power program was operating in Z-Plant. The program isolated plutonium-238 and released an unknown amount of plutonium 239/240 to the 216-Z-11 ditch as waste.

Waste Type: Process Effluent

Waste Description: The total volume discharged to this ditch is unknown. The ditch received process cooling water and steam condensate from the 234-5Z Building, cooling and seal water from the 291-Z Stack, and laboratory waste from 231-Z. It also received storm water from an elevated tank located south to 234-5Z. The site is a transuranic contaminated soil site. During the 1960's, a special Space Nuclear Auxiliary Power program was operating in Z-Plant. The program isolated plutonium-238 and released plutonium 239/240 to the 216-Z-11 ditch as waste. Plutonium and americium were the dominant radionuclides in the effluent discharge. The ditch has been reported to contain 137 curies of plutonium 239 and 37 curies of plutonium 240.

Code:	216-Z-19	**Classification:**	Accepted
Names:	216-Z-19; 216-Z-19 Ditch; Z Plant Ditch; 216-U-10 Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1971
Status:	Inactive	**End Date:**	1/1/1981

Description: The 216-Z-19 Ditch is a backfilled, surface stabilized site. The ditch is currently co-located within a large Underground Radioactive Material area that also includes the 216-Z-1D and 216-Z-11 ditches.

Location: The ditch is an irregular site positioned in a north-south configuration. The head end is located east of the 216-Z-1A Tile Field and extends southward to the 216-U-10 Pond.

Release Description: In March of 1976, an estimated 30 to 60 grams of plutonium was accidentally released to the 216-Z-19 ditch. Soil samples collected from the ditch in March and April 1976 identified large amounts of plutonium and americium. In an effort to keep the contamination contained within the ditch, three earth dams were constructed across the ditch at intervals to impound the water and allow the contaminants to settle to the bottom. A sprinkler system was installed to keep the downstream portions of the ditch from drying and allowing contamination to spread in the wind. The dams were removed in June 1978.

Related Sites/ Structures: Structures associated with this site include the remnants of the 216-Z-1D and the 216-Z-11 Ditches, the 216-U-10 Pond, the stormwater and process sewer outfalls from the Plutonium Finishing Plant, and the pipeline from 231-Z. The pipeline from 231-Z is sitecode 200-W-125-PL. The pipeline from 234-5Z to the ditch is sitecode 200-W-207-PL.

Process Description: The 216-Z-19 Ditch operated as a waste disposal/transfer line for various Plutonium Finishing Plant facilities. The ditch received effluent from the 234-5Z, the 291-Z stack, and the 231-Z Buildings. The ditch was fed by three underground process sewer pipelines that entered the head end of the ditch. The ditch was deactivated and backfilled when discharges transferred to the 216-Z-20 Crib.

Waste Type: Process Effluent

Waste Description: The unit is considered a transuranic contaminated soil site. The effluents received by this ditch include process cooling water, steam condensate, pump seal waste from Plutonium Finishing Plant, and cooling water from the 231-Z Buildings. The dominant radionuclides present include plutonium, americium, strontium, and cesium. Approximately 60 grams of plutonium was released to the ditch in March 1976.

Code:	216-Z-20	**Classification:**	Accepted
Names:	216-Z-20; Z-19 Ditch Replacement Tile Field	**Reclassification**	None
Type:	Crib	**Start Date:**	9/24/1981
Status:	Inactive	**End Date:**	7/19/1995

Description: The site is marked and posted as an Underground Radioactive Material area. The site was permanently isolated by filling the manhole at the head end of the crib with concrete on 6/1/95.

Location: The site is located northwest of the 241-U Tank Farm. It is west of and parallel to the backfilled 216-Z-19 Ditch.

Related Sites/ Structures: The crib is associated with the 234-5 and 236 facilities. The pipeline from 234-5Z to 216-Z-20 is sitecode 200-W-207-PL. Effluent from pipeline 200-W-125-PL was also diverted to 216-Z-20.

Process Description: The crib was build to receive effluent from the Plutonium Finishing Plant facilities and the 231-Z building. It was built to replace the 216-Z-19 ditch. Although drawing H-2-92061 indicates the crib structure has varied depths of 2.7 to 8.8 meters (9 to 29 feet) below ground surface, a recent engineering review determined this to be an error. Note 10 on this drawing states there was a soil mound at this station and other areas. Backfill soil was to be leveled to maintain uniform elevation after 216-Z-20 was constructed. The crib structure varied depths are now assumed to be 2.47 to 3.87 meters (8.09 to 12.69 feet) below ground surface. Three 6 inch (15 centimeter) perforated PVC distribution pipes run the length the crib to the south end, where the pipes are capped. A set of risers (three in a row across the width of the unit) rose to a height of 0.46 meters (1.5 feet) above grade at 4 locations along the length of the unit. The unit was filled with gravel and backfilled over with soil with a side slope of 1:2.

Waste Type: Steam Condensate

Waste Description: The site has received cooling water, steam condensate, storm sewer, building drains, Hanford Engineering and Development Laboratory Radioactive Acid Digestion Test Unit (HEDL RADTU) cooling water, and chemical drains waste from the 234-5Z Building; cooling water steam condensate and laboratory drains from the 231-Z Building; and miscellaneous drains waste from 291-Z, 232-Z, and 236-Z buildings. The unit also received wastes from 2736-Z Building, (Construction Project B-246). In 1987, 70 gallons per minute of non-radioactive, thermally warm (105 degrees F), water from Z Plant was permanently diverted from the 216-Z-20 to the 216-Z-21 Seepage Basin.

Code:	UPR-200-W-110	**Classification:**	Accepted
Names:	UPR-200-W-110; Contaminated Soil from 216-Z-1; UN-216-W-20 Spoil Trench	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1971
Status:	Inactive	**End Date:**	1/1/1971

Description: The site is a one-time use waste disposal trench. The trench is the location where backfill material from the north end of the 216-Z-1 Ditch was placed following excavation for a new ditch. During construction for the 216-Z-19 Replacement Ditch, workers placed the excavated material on a spoils pile. Later that material was found to be contaminated and it was moved to the disposal trench.

The ditches and the trench have been backfilled and are co-located within an "Underground Radioactive Material" (URM) zone. This area was surface stabilized in 1982. The area is marked with concrete posts and an intermittent light chain. The site is vegetated with crested

wheatgrass and Indian rice grass over very sandy soil. There is evidence of rodent burrowing on and adjacent to the URM area. An air monitor is on the site at the north end.

Location: The site is east of and parallel to the north end of the 216-Z-19 and 216-Z-11 ditches in the 200 West Area.

Release Description: On April 14, 1971, Plant Forces mistakenly dug into the contaminated backfill of the abandoned 216-Z-1 Ditch while excavating a new ditch. A portion of the abandoned 216-Z-1 ditch was uncovered before the error was discovered. An inch-thick decayed vegetation matting from the bottom of the old ditch was found to contain alpha contamination to a maximum of 100,000 disintegrations per minute. The matting was broken up during the excavation and scattered through the "spoil pile" of the new ditch. Only a trace of contamination was detected in the excavation. Work was discontinued until surveys could be completed for a proper routing of the new ditch. A sprinkler system was installed to prevent the wind from spreading contamination from the spoil pile. The new ditch (216-Z-19) was dug approximately 10.7 (35 feet) west of the original buried ditch. The 216-Z-19 was ready for water diversion as soon as the 16th Street culvert was cleaned of sludge and weeds. A 4.6 meter (15 foot) deep, 130 meters (425 feet) long burial trench was dug east of and adjacent to the 216-Z-11 ditch. A 2.1 meter (7 foot) layer of spoils material was placed in the trench and covered with 2.4 meters (8 feet) of clean soil overburden.

Related Sites/ Structures: UPR-200-W-110 was associated with the 216-Z-1 Ditch and the 216-Z-19 Ditch. The trench (UPR-200-W-110) is within a larger Underground Radioactive Material (URM) area.

Waste Type: Soil

Waste Description: Decayed vegetation matting from the bottom of the 216-Z-1 Ditch was found to contain alpha contamination to a maximum of 100,000 disintegrations per minute. The 216-Z-1 Ditch was contaminated with americium and plutonium originating from process leaks contaminating the Z Plant cooling water discharge system. The contamination subsequently settled out of the water or was absorbed by aquatic plant life growing on the sides and bottom of the ditch. Radioactivity computed from soil samples taken from the spoil pile showed an alpha concentration of 0.34 nanocuries per gram of soil. This was 30 times less than the minimum 10 nanocuries per gram standard that required "packaging for recovery" plutonium burials.

200-DV-1

Code:	216-B-5	**Classification:**	Accepted
Names:	216-B-5; 241-B-361 Dry Well; 241-B-361 Reverse Well; 241-B-5 Dry Well; 299-E28-29	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	4/1/1945
Status:	Inactive	**End Date:**	10/1/1947

Description: The site is delineated with concrete AC-540 markers. It is posted with Underground Radioactive Material signs. The surface is covered with coarse rock.

Location: The site is located east of Baltimore Avenue, south of 216-B-9 crib. The surveyed coordinates for this well are 573781.063 (Easting) and 136732.009 (Northing).

Related Sites/ Structures: The well was connected to the 241-B-361 settling tank by a 5-centimeter (2-inch) stainless-steel inlet pipe entering 3.7 meters (12 feet) below grade.

Process Description: The 216-B-5 reverse well is the deepest Hanford reverse well and the only one to discharge waste directly to the water table. The reverse well received approximately 30,600,000 liters (8,008,000 gallons) of B Plant and 224-B waste solutions. The waste overflowed into the reverse well from the 241-B-361 settling tank, which removed the particulates. A total of 4.7 kilograms (10.3 pounds) of plutonium was discharged to the settling tank and reverse well. Half of the plutonium was retained in the settling tank. An estimated 2.15 kilograms (4.7 pounds) of plutonium overflowed into the reverse well. A water sample collected from well 299-E33-18 in September 1947 revealed alpha contamination in the groundwater (<20 x 10-7 micro curies/liter). Eleven additional wells were drilled in 1947 and 1948 to evaluate the contamination plume. The zone of groundwater contamination extended laterally 600 meters (2000 feet) from the reverse well. The reverse well was characterized again in 1980.

The unit is 92 meters (302 feet) long, composed of vertical piping with various sizes in sections measuring 41-centimeter (16-inch) piping from ground level to 4 meters (13 feet); 0.3-meter (12-inch) piping placed inside 41-centimeter (16-inch) sections, extending to 31 meters (100 feet); 25-centimeter (10-inch) piping placed inside 0.3-meter (12-inch) sections, extending to 74 meters (242 feet); 20-centimeter (8-inch) piping placed inside 25-centimeter (10-inch) sections, extending to 92 meters (302 feet) below grade. The lowest 15-meter (50-foot) section of the 20-centimeter (8-inch) pipe is perforated.

Waste Type: Process Effluent

Waste Description: Until September 1946, the site received supernatant overflow from 241-B-361 Settling Tank waste via Tank 5-6 in 221-B Building and liquid waste from 224-B Building. From September 1946 to October 1947, the site received the cell drainage and other liquid waste via Tank 5-6 in 221-B. The 224-B effluent was rerouted to the new 216-B-7A Cribs. The waste was low in salt and was neutral to basic. Approximately 2.15 kilograms (4.7 pounds) of plutonium was discharged to the reverse well.

Code:	216-B-7A&B	**Classification:**	Accepted
Names:	216-B-7A&B; 216-B-7B Sump; 241-B-1 and 2 Cribs; 241-B-201 Crib; 216-B-7 Crib; 216-B-7A & B; 216-B-7A Sump	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1946
Status:	Inactive	**End Date:**	1/1/1967

Description: The cribs are located beneath a larger area of scraped contaminated soil from the UPR-200-E-144 stabilization. The contaminated soil from the unplanned release area and the cribs were covered with clean backfill and posted with Underground Radioactive Material signs. The crib locations are identified with light post and chain with Cave-in Potential signs.

Location: The site is located north of 241-B Tank Farm and east of Baltimore Avenue. The cribs are approximately 8.6 meters (28.2 feet) apart. 216-B-7B is the northwest crib, and 216-B-7A is the southeast crib.

Related Sites/ Structures: The cribs are associated with 221-B, 224-B, the 241-B Tank Farm, tanks 241-B-201 through 241-B-204, and UPR-200-E-144. The pipeline that fed the cribs is sitecode 200-E-281-PL.

Process Description: The 216-B-7A and 216-B-7B site consists of two wooden cribs, placed side by side, connected by underground piping. They were originally known as the 241-B-1 and 2 cribs. Effluent drained into 216-B-7A and 216-B-7B simultaneously through a T-fitting in the pipeline from the 201-B settling tanks (241-B-201, 241-B-202, 241-B-203 and 241-B-204) located inside the 241-B Tank Farm. Process effluent from 221-B and 224-B was routed to the settling tanks from 1946 through 1967 and dispersed to the cribs. In 1951, cell drainage from 221-B was diverted to the 216-B-9 Crib. In 1954, the 224-B waste stream was diverted to the 216-B-8 Crib when the cribs exceeded their infiltration capacity. The cribs were reactivated and used intermittently from December 1954 through May 1967 when it was determined that they had reached their radionuclide capacity.

A letter written by G.L. Hanson in September 1967 states that the cribs received approximately 49 million liters (13 million gallons) of process waste from 221-B and 224-B from 1946 through 1958. These wastes contained 4300 grams of plutonium and 5400 curies of beta/gamma emitters. After 1958, the cribs received an additional 752,000 liters (198,000 gallons) of B Plant waste containing 2100 curies of beta/gamma emitters that included 14 curies of Cesium-137 and 2080 curies of Strontium-90. Cesium, cobalt, tritium and alpha contamination was detected in groundwater samples taken from well 299-E33-18 in 1967, which monitors these cribs.

Waste Type: Process Effluent

Waste Description: The site received the liquid waste from 221-B and 224-B via overflow of 201-B Settling Tanks. From September 1946 through October 1947, the cribs received waste from 224-B. From October 1947 to August 1948, the site received the 224-B waste stream plus cell drainage (tank 5-6) and other liquid waste from 221-B. From August 1948 to July 1951, the site received liquid waste from 224-B. The tank 5-6 waste was diverted to the 216-B-9 Crib. From July 1951 through December 1954, the cribs continued to receive waste from 224-B. In December 1954 the cribs exceeded their infiltration capacity and the waste was diverted to the 216-B-8 Crib. From December 1954 to October 1961, the site received Cell 5-6 drainage and equipment cleanout waste from 224-B. From October 1961 to May 1967, the site received decontamination and construction waste from 221-B. In May 1967 it was determined that the cribs has reached their radionuclide capacity and were terminated. The B Plant effluent was rerouted to the 216-B-12 Crib. The waste is low in salt, neutral to basic, and contains transuranic (TRU) fission products.

Code:	216-B-8	**Classification:**	Accepted
Names:	216-B-8; 216-B-8TF; 241-B-3 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1948
Status:	Inactive	**End Date:**	1/1/1954

Description: The crib and tile field are identified with concrete AC-540 monuments and posted with

Underground Radioactive Material signs. The crib is delineated with light post and chain with Cave-In Potential signs. The surface is covered with gravel.

In 1992, the 216-B-8 Crib was covered with 0.45 to 0.61 meters (1.5 to 2 feet) of uncontaminated backfill during the UPR-200-E-144 cleanup activity.

Location: The site is located north of the 241-B Tank Farm, east of Baltimore Avenue. It is north of 216-B-7A and 216-B-7B Cribs.

Related Sites/ Structures: The site is associated with 221-B, 224-B, 241-B, 200-E-45 (Health Instrument Shaft) and UPR-200-E-144. The pipeline associated with this crib is sitecode 200-E-178-PL.

Process Description: B Plant operated from April 1945 through October 1952, separating plutonium from irradiated fuel rods using the bismuth phosphate process. The first separation step removed the metal coating from the fuel rods. Next the uranium was dissolved and the plutonium was extracted. The waste from this step was called Metal Waste. This waste stream contained all of the uranium and 90% of the fission products and was stored in the single shell tanks. The extracted plutonium went through two decontamination cycles to further purify it. The first cycle waste was combined with the coating waste. It contained 10% of the fission products and 1% of plutonium. The second decontamination cycle waste contained less than 0.1% of the fission products. The first and second cycle waste were originally discharged to the single shell tanks. In 1948, due to the lack of waste storage space in the tank farms, second cycle waste stored in the tank farms began to be released to cribs.

The 216-B-8 Crib received second cycle waste from B Plant via the 241-B-110, 241-B-111 and 241-B-112 cascading tanks, located in the 241-B Tank Farm.

Waste Type: Process Effluent

Waste Description: From February 1948 through July 1951, the site received second-cycle waste supernatant from 221-B Building. In August 1948, sludge from the 241-B-104 tank was inadvertently released to the crib and the crib became plugged. The sludge contained roughly 1000 times the amount of plutonium and 5000 times the fission products as would be found in the supernate usually discharged to cribs. Acid was added to the crib in an attempt to unplug the crib. The acid did not significantly improve the crib blockage so the tile field was added to receive crib overflow. From July 1951 to December 1951, the site received the second cycle waste plus cell drainage stored in Tank 5-6 and other liquid waste from in 221-B Building. From December 1951 to December 1952, the site received decontamination and cleanup waste generated during the shutdown of 221-B and 224-B. Some documents state the pipeline to the 216-B-8 Crib was blanked and the effluent routed to 216-B-7A in December 1954. However, H-2-2928 shows the effluent was rerouted to 216-B-11 A&B. The waste is high in salt, is neutral to basic, and contains transuranic (TRU) waste and fission products.

Code:	216-B-9	**Classification:**	Accepted
Names:	216-B-9; 216-B-9TF; 241-B-361 Crib; 5-6 Crib and Tile Field; 216-B-361 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	8/1/1948
Status:	Inactive	**End Date:**	7/1/1951

Description: The crib and tile field have been surface stabilized. It is marked and posted as an Underground Radioactive Material (URM) area. The crib is located in the south end of the posted URM area. It is separately marked and posted as a Radiologically Controlled Area, Cave-in Potential. The surface has been planted with wheat grass.

Location: The unit is south of 241-B Tank Farm, east of Baltimore Avenue.

Release Description: (UPR-200-E-7) On November 30, 1954, leakage from the waste line between 221-B and the 241-B-361 crib caused the ground to cave-in near the 241-B-361 crib. Approximately 19,000 liters (5000 gallons) of liquid was lost to the ground. The maximum dose rate observed was 1.7 rads/hour over an area covering 2.7 square meters (30 square feet). The contamination was covered and delineated with a chain fence. The area was posted with "Underground Contamination" signs.

Related Sites/ Structures: The crib is associated with 221-B and UPR-200-E-7. The pipeline associated with this crib is 200-E-195-PL and 200-E-199-PL.

Process Description: The 216-B-9 Crib and Tile Field were built to replace the 241-B-361 Settling Tank and the 216-B-5 Reverse well. The drainage waste from the B Plant 5-6W cells was rerouted directly to this crib, by-passing the 241-B-361 settling tank. The 216-B-9 crib carries an alias of 241-B-361 crib, even though the 241-B-361 tank was by-passed. A total of 18,400,000 liters of waste was discharged to the crib between August 1948 and January 1950. The waste contained approximately 95 grams (3.3 ounces) of plutonium and 2050 curies of fission products. Sludge in the waste plugged the crib and decreased its capacity. Acid was added to the crib to keep it in operation. The crib eventually became sealed with sludge and overflow into the tile field began in November 1948. Test holes were placed in the tile field to inspect its drainage. In April 1949, 7 inches of liquid was found in Test Hole #2. A sample of the liquid was analyzed and revealed 11.5 micro curies/liter of fission products and 9,000 disintegrations per minute per liter of alpha contamination. Test Hole #2 was found to be dry in October 1949. Sediment samples taken at that time revealed 152 micro curies per kilogram of fission products and 943,000 disintegrations per minute per kilogram of alpha contamination.

The unit is a wooden structure, 4.3 by 4.3 meters (14 by 14 feet) (bottom surface) by 2.4 meters (8 feet) high, located in an excavation. The timbers are 15.2 by 15.2 centimeters (6 by 6 inches). The tile field, 55.0 by 25.6 meters (180 by 84 feet), is 165 meters (540 linear feet) of 15.2-centimeter (6-inch) clay tile pipe, with each leg in a trench 1.2 meters (4 feet) wide at the bottom. Pipes are buried 3.7 meters (12 feet) deep at head and 1.8 meters (6 feet) at the other end. Above and below the pipes are 45.7 centimeters (18 inches) of gravel. Roofing felt covers the top side of the pipes. Three legs branch from each side of clay pipe, leaving at 45 degrees to the trunk. The side slope is 1:1.5.

Waste Type: Process Effluent

Waste Description: The site received cell drainage and other liquid waste via Tank 5-6 in 221-B Building. The waste is low in salt, neutral to basic, and contains transuranic (TRU) and fission products. A sample of the sediments collected in 1949 through a well casing revealed 1830 microcuries per kilogram of fission products and 14,800,000 disintegrations per minute per kilogram of alpha contamination.

Code:	216-B-11A&B	**Classification:**	Accepted
Names:	216-B-11A&B; 216-B-11B; 242-B-1 Crib; 216-B-11 Crib; 216-B-11A & B	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1951
Status:	Inactive	**End Date:**	1/1/1954

Description: The cribs are located beneath a larger area of scraped contaminated soil from the UPR-200-E-144 stabilization, completed in 1992. The consolidated contaminated soil was covered with clean backfill and reposted as Underground Radioactive Material. The crib locations are identified with light post and chain with Cave-in Potential signs. The cribs consists of two corrugated metal culverts that are buried vertically. The metal culverts are perforated with holes that begin 15.24 centimeters (6 inches) from the bottom of the culverts. The culverts are

9.15 meters (30 feet) long and 2.44 meters (8 feet) in diameter. They are filled with 32.13 cubic meters (42 cubic yards) of rock. The culverts are placed 18 meters (60 feet) apart and are connected with a 7.6 centimeter (3 inch) steel pipe.

Location: The cribs are located north of 241-B Tank Farm, and east of Baltimore Avenue, adjacent to the 216-B-7A&B Cribs. The 216-B-11A is the southern crib; 216-B-11B is the northern crib. The cribs are 16 meters (52.5 feet) apart.

Related Sites/ Structures: There are two pipelines associated with these cribs. See sitecodes 200-E-176-PL and 200-E-177-PL.

Process Description: The site originally received condensate waste from the 242-B Evaporator. Drawing H-2-2928 shows 216-B-8 crib waste being rerouted to 216-B-11 A&B in 1954.

Waste Type: Process Effluent

Waste Description: The site originally received condensate waste from the 242-B Evaporator. Drawing H-2-2928 shows 216-B-8 crib waste being rerouted to 216-B-11 A&B in 1954. The waste is low in salt and is neutral to basic.

Code: 216-B-35 **Classification:** Accepted

Names: 216-B-35; 216-B-35 Trench; 216-BX-1 Trench; 241-BX-1 Grave **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with 221-B and the 241-BX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the

242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received first-cycle supernatant waste from 221-B Building. The waste is high in salt and is neutral to basic.

Code: 216-B-36 **Classification:** Accepted

Names: 216-B-36; 216-B-36 Trench; 216-BX-2 Trench; 241-BX-2 Grave **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 221-B facility.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received first-cycle supernatant waste from 221-B Building. The waste is high in salt and is neutral to basic.

Code: 216-B-37 **Classification:** Accepted

Names: 216-B-37; 216-B-37 Trench; 216-BX-3 Trench; **Reclassification** None

241-BX-3 Grave

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 242-B Evaporator. It was filled via an overground pipeline.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received evaporator bottom waste from the 242-B Waste Evaporator after it had processed B Plant first cycle waste. The waste is high in salt and is neutral to basic.

Code: 216-B-38 **Classification:** Accepted

Names: 216-B-38; 216-B-38 Trench; 216-BX-4 Trench; 241-BX-4 Grave **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 221-B facility and 241-BX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received first-cycle supernatant waste from 221-B Building. The waste is high in salt and is neutral to basic.

Code:	216-B-39	**Classification:**	Accepted
Names:	216-B-39; 216-B-39 Trench; 216-BX-5 Trench; 241-BX-5 Grave	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 221-B facility.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The

next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received first-cycle supernatant waste from 221-B Building. The waste is high in salt and is neutral to basic.

Code: 216-B-40

Classification: Accepted

Names: 216-B-40; 216-B-40 Trench; 216-BX-6 Trench; 241-BX-6 Grave; 241-BX-6 Trench

Reclassification None

Type: Trench

Start Date: 1/1/1954

Status: Inactive

End Date: 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 221-B facility.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific

retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received first-cycle supernatant waste from the 221-B Building. The waste is high in salt and is neutral to basic.

Code: 216-B-41 **Classification:** Accepted

Names: 216-B-41; 216-B-41 Trench; 216-BX-7 Trench; 241-BX-7 Grave **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: The trench is associated with the 221-B facility.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received the first-cycle supernatant waste from the 221-B Building. The waste is high in salt and is neutral to basic.

Code: 216-B-42 **Classification:** Accepted

Names:	216-B-42; 216-B-42 Trench; 216-BX-8 Trench; 241-BX-8 Grave	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1955

Description: The 216-B-35 through 216-B-42 trenches were surface stabilized as a unit. The area is marked with concrete AC-540 posts and Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of B Plant and west of the 241-BX Tank Farm.

Related Sites/ Structures: This trench is associated with the Uranium Recovery operation done at the 221-U facility.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It was combined with the coating waste to form the waste stream known as first cycle waste. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through additional decontamination cycles to purify it, producing the second cycle waste stream. The liquid waste from these processes were initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tanks or tri-butyl phosphate waste from the Uranium Recovery process.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from the 221-U Building via the 241-BY tank farm. The waste is high in salt and is neutral to basic.

Code:	216-B-43	**Classification:**	Accepted
Names:	216-B-43; 216-BY-1 Cavern; 216-BY-1 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1954

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded concrete AC-540 markers and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with 216-B-44 through 216-B-50.

Release Description: See UPR-200-E-9 and UPR-200-E-89

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (active in November 1954)

Code: 216-B-44 **Classification:** Accepted

Names: 216-B-44; 216-BY-2 Cavern; 216-BY-2 Crib **Reclassification** None

Type: Crib **Start Date:** 12/1/1954

Status: Inactive **End Date:** 3/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is north of 241-BY Tank Farm and west of Baltimore Ave. in a common area with the 216-B-43 through 216-B-50 cribs.

Release Description: See UPR-200-E-89

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (active December 1954 - March 1955)

Code:	216-B-45	**Classification:**	Accepted
Names:	216-B-45; 216-BY-3 Cavern; 216-BY-3 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	4/1/1955
Status:	Inactive	**End Date:**	6/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-50 cribs.

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received the scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (active April - June 1955)

Code:	216-B-46	**Classification:**	Accepted
Names:	216-B-46; 216-BY-4 Cavern; 216-BY-4 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	9/1/1955
Status:	Inactive	**End Date:**	12/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-50 cribs.

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The

TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (active September - December 1955)

Code: 216-B-47 **Classification:** Accepted

Names: 216-B-47; 216-BY-5 Cavern; 216-BY-5 Crib **Reclassification** None

Type: Crib **Start Date:** 9/1/1955

Status: Inactive **End Date:** 9/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-50 cribs.

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (Active September 1955)

Code: 216-B-48 **Classification:** Accepted

Names: 216-B-48; 216-BY-6 Cavern; 216-BY-6 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-50 cribs.

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. The pipeline to the unit was valved out when specific retention capacity was reached. Crib service duration discrepancies appear in historical documentation. ARH-947, HW-55176 and HW-83718 show November 1955 to February 1957 as the service duration. RHO-CD-673 shows November 1955 to July 1957 as the service duration. ARH-2806 shows November 1955 to November 1955 as the service duration. The start and end dates for adjacent cribs was 1955. In 1956 when a nearby groundwater monitoring well found elevated levels of cobalt-60 and cesium 137, effluent release in this area was discontinued. So the 1957 end date is questionable.

Code: 216-B-49 **Classification:** Accepted

Names: 216-B-49; 216-BY-7 Cavern; 216-BY-7 Crib **Reclassification** None

Type: Crib **Start Date:** 11/1/1955

Status: Inactive **End Date:** 12/1/1955

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-50 cribs.

Related Sites/ Structures: The crib is associated with the 221-U Uranium Recovery process. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: From 1952 through 1958, Bismuth Phosphate process waste stored in 241-T, TX, 241-B, BX, BY, 241-C and 241-U tank farms was transferred to 221-U to recover the uranium from the waste after the tank sludge had been thinned with nitric acid. The uranium was extracted from the tank waste using Tri-butyl Phosphate (TPB) in a normal paraffin dilutent. The waste from the uranium recovery process was neutralized and transferred to the 241-BY tank farm. The TBP process waste was treated with potassium ferrocyanide to precipitate most of the cesium and strontium. The supernate was decanted first to the 216-B-43 through 49 cribs and later to the BC Cribs and trenches. Crib 216-B-50 was not used for TBP waste. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received scavenged tributyl phosphate (TBP) supernatant waste from 221-U Building. The waste is high in salt and is neutral to basic. It included inorganic compounds such as ferrocyanide, nitrate and phosphate. (Active November-December 1955)

Code: 216-B-50 **Classification:** Accepted

Names: 216-B-50; 216-BY-8 Cavern; 216-BY-8 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1965

Status: Inactive **End Date:** 1/1/1974

Description: The 216-B-43 through 216-B-50 cribs were stabilized as a unit with gravel. The group of cribs are surrounded with light chain and posted Underground Radioactive Material.

Location: The unit is located north of 241-BY Tank Farm and west of Baltimore Avenue in a common area with the 216-B-43 through 216-B-49 cribs.

Related Sites/ Structures: The crib is associated with the 241-BY tank farm and 216-B-57 crib. The pipeline that fed the BY cribs is discussed in sitecode 200-E-219-PL.

Process Description: The 216-B-50 crib received condensate from the 241-BY tank farm In-Tank Solidification system. The crib was originally constructed along with seven others in the same location (216-B-43 through 49) to receive scavenged tributyl phosphate (TBP) waste. The other seven were used for this purpose, but taken out of service when a cobalt-60 and cesium-137 breakthrough to groundwater occurred in 1956. The decision to use the 216-B-50 crib for ITS condensate was made about 8 or 9 years later when monitoring showed that the groundwater radioactivity levels were definitely decreasing. The crib was constructed of four 1.22-meter (4-foot) diameter by 1.22-meter (4 foot) long concrete culverts placed vertically, 2.14 meters (7 feet) below grade, on a 1.53-meter (5-foot) bed of 7.62-centimeter (3-inch) gravel (291 cubic meters [380 cubic yards]). Pipes are arranged in a square with the centers spaced 4.58 meters (15 feet) apart in a 9.15 by 9.15 by 4.58-meter (30 by 30 by 15-foot) deep excavation. Each culvert was fed by an 20.32-centimeter (8-inch) steel pipe coming from a main and forming a chevron pattern. Each culvert has a concrete cover.

Waste Type: Process Effluent

Waste Description: The site received the waste storage tank intermediate level process condensate from the In Tank Solidification (ITS) #1 unit in the 241-BY Tank Farm. Since startup of the #1 ITS in March, 1965, approximately five and one-half million gallons of condensate containing about 120 beta curies of activity, including about 70 curies of cesium-137, have been routed to the 216-B-50

crib (as of April 1968). The crib was originally constructed along with seven others in the same location to receive scavenged tributyl phosphate (TBP) waste. The other seven were used for this purpose, but the crib site was taken out of service when a cobalt-60 and cesium-137 breakthrough occurred. The decision to use the 216-B-50 crib for ITS condensate was made about 8 or 9 years later when it was known that the groundwater activity levels were definitely decreasing. It was recognized that the crib had limited use. 216-B-50 crib has a bottom area of 83.6 square meters (900 square feet), and its capacity had been adequate for the 5-6 gallons per minute flow of condensate. Now that the capacity of #1 ITS has been doubled (Project ICE-618), it is doubtful that the crib will have sufficient capacity without a significant rise in the level of water in the crib. This increase of water level could drive the condensate through the highly contaminated zone under the other seven cribs (216-B-43 through 49) that are located 15 to 76 meters (50 to 250 feet) from the 216-B-50 crib. Flow data obtained from the monitoring wells showed that condensate sent to the 216-B-50 crib tended to migrate under the highly contaminated cribs. To avoid potential flooding of 216-B-50, 216-B-61 crib was proposed. The #2 ITS Unit, also located in the 241-BY Tank Farm used crib 216-B-57, which was designed for receiving only the condensate flow from the #2 Unit. The 216-B-50 crib needed to be taken out of service because of its size limitations and because of the close proximity of the highly contaminated cribs (216-B-43 through 216-B-49) that had been used for scavenged TBP wastes. These seven cribs received over 400,000 curies of beta activity including about 13,000 and 4,000 curies of long lived strontium and cesium, respectively. The groundwater under these cribs still contains detectable concentrations of cesium-137 and cobalt-60 (April

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Code: 216-B-57 **Classification:** Accepted

Names: 216-B-57; 216-B-57 Enclosed Trench; Hanford Prototype Barrier; 200-BP-1 Prototype Barrier **Reclassification** None

Type: Crib **Start Date:** 2/1/1968

Status: Inactive **End Date:** 6/1/1973

Description: This crib was selected to be the site of the Hanford Prototype Barrier. The engineered barrier was constructed on top of the crib in 1994. The barrier is 105 meters (340 feet) long, 64 meters (210 feet) wide and 15 meters (49 feet) tall. It is posted Underground Radioactive Material.

Location: The unit is located west of Baltimore Avenue and south of 12th Street. It is northeast of 241-BY Tank Farm.

Related Sites/ Structures: The crib is associated with the In Tank Solidification (ITS #2) and the 241-BY Tank Farm.

Process Description: During construction, the crib was filled to 1.2 meters (4 feet) above the bottom with gravel (approximately 474 cubic meters [620 cubic yards]). A perforated, 30.5-centimeter (12-inch) corrugated pipe runs the length of the crib, 0.9 meters (3 feet) above the bottom. The side slope of the original crib construction is 1.5:1.

Waste Type: Storage Tank

Waste Description: The site received the waste storage tank condensate from the In Tank Solidification (ITS) #2 Unit in 241-BY Tank Farm.

Code: 200-E-45 **Classification:** Accepted

Names: 200-E-45; Contaminated Pump Run-in Caisson; Health Instrument Shaft; HI Shaft **Reclassification** None

Type: Silo **Start Date:** 1/1/1948

Status: Inactive **End Date:** 1/1/1973

Description: The site is a concrete shaft, 16.6 meters (55 feet) deep. It is constructed of prefabricated concrete sections, 2.4 meters (8 feet) in diameter and 1.9 meters (6 feet 2 inches) high. Steel pipes were installed laterally through holes in the side of the shaft at 3 meters (10 feet) and 6 meters (20 feet) from the surface toward the 216-B-8 Crib. The pipes were 15 centimeters (6 inches) in diameter, and 6.6 meters (22 feet) long. The site is topped with a large circular cover with a smaller manhole, a hatch and a vent pipe. The shaft lid is now covered with clean gravel, surrounded by light duty posts and chain and is posted as a an Underground Radioactive Material Area. The waste site is represented by two polygons in the mapping system. The smaller polygon represents the top of the shaft. A larger area, measuring approximately 130 feet by 100 feet represents an area of shallow, surface contamination that is posted as an Underground Radioactive Material Area. The source of the contamination was the 200-E-45 shaft.

Location: The shaft is located north of 241-B Tank Farm and west of the of the 216-B-8 Crib.

Related Sites/ Structures: The HI Shaft is associated with the 216-B-8 Crib.

Process Description: The Health Instrument Shaft is located adjacent to the west side of the 216-B-8 Crib. The Health Instrument Shaft was originally installed to allow Health Instrument technicians to descend a ladder and collect liquid and soil samples from a depth of approximately 3 meters (10 feet) and 6 meters (20 feet) below the bottom of the 216-B-8 Crib through openings in the shaft. Perforated lateral pipes extending beneath the crib allowed liquid waste from the crib to enter the pipes and collect in sample cups. Other holes were made in the side of the shaft facing the crib to collect sediment samples. Samples were collected for several years and ended on December 31, 1949. The shaft structure was later filled with water and used to test contaminated tank farm pumps. The last known pump test was done in 1973. In 1949, radiological readings up to 4 rad/hour were recorded at the bottom of the shaft. As of December 1949, 105 liquid samples, 4 sludge samples and 7 sediment samples had been collected and analyzed to characterize the operation of the 216-B-8 Crib. Liquid samples collected at the 3 meter (10 foot) level and the 6 meter (20 foot) level both contained an average of 0.5 microcuries per liter. In August 1948, sludge from the 104-B tank was inadvertently jetted to the 216-B-8 Crib. A sudden decrease in the crib capacity led to the discovery of approximately 37.5 centimeters (15 inches) of sludge in the crib. Some sludge washed to at least 6.1 meters (20 feet) below the crib bottom and was collected in the HI Shaft sample cups. The plutonium activity in the sludge samples was 900 microcuries per kilogram of sludge. This is 1000 times higher than the plutonium content of the supernate liquid usually discharged to cribs. The fission product activity in the sludge samples was 9,000 microcuries per kilogram of sludge. This is roughly 5,000 times greater that the fission product activity in supernate liquid. Liquid sample collected in the HI Shaft prior to the sludge discharge contained less than 1000 disintegrations per minute per liter of alpha contamination. Liquid samples collected after the sludge release contained an average of 17,500 disintegrations per minute per liter of alpha contamination. Sediment samples collected from approximately 5.5 meters (18 feet) below the crib through the HI Shaft prior to the sludge release contained beta-gamma activity of 0.13 microcuries per kilogram. After the sludge release the activity increased to 0.33 microcuries per kilogram. No alpha contamination was found in the sediment samples. This process ended in December 1949.

In the late 1950's, the vertical shaft was used to test contaminated tank farm pumps. It became known as the Contaminated Pump Run-in Caisson. Water was added to the vertical shaft and the contaminated pumps were placed inside and tested. This operation occurred intermittently through 1973.

Waste Type: Process Effluent

Waste Description: The shaft was used to obtain samples from the 216-B-8 Crib. The bottom of the shaft occasionally collected a significant amount of crib seepage that was pumped out of the shaft and back to the crib. Later the shaft was intermittently filled with water and used as a contaminated pump testing pit.

Code: 216-S-9 **Classification:** Accepted

Names: 216-S-9; 216-S-9 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1965

Status: Inactive **End Date:** 1/1/1969

Description: The unit is a gravel structure with a side slope of 1:1.5. Waste flowed into the unit through the distribution system, which consists of 177 meters (581 feet) of 15-centimeter (6-inch) Vitrified Clay Tile (VCT) perforated pipe in a U-shape, 4.6 meters (15 feet) by 89.9 meters (295 feet), and connected by 7.3 meters (24 feet) of 4.6-centimeter (3-inch) Schedule 10 pipe in a Y-shape. The entire distribution system is 6.4 meters (21 feet) below grade.

Location: The crib is located east of 241-S, SX, SY Tank Farms.

Related Sites/ Structures: The crib is associated with the 216-S-7 crib, 216-S-23 crib and the 200-W-138-PL and 200-W-139-PL pipelines.

Process Description: The following are related to the unit: two 20-centimeter (8-inch) diameter, 8.5-meter (28-foot) long V.C.T. gage wells, with the bottom 0.9 meters (3 feet) perforated; two 0.6-meter (2-foot) by 0.6-meter (2-foot) by 0.3-meter (1-foot) concrete pads for gage wells; one 30-centimeter (12-inch) diameter, 7.3-meter (24-foot) long, V.C.T. vent with filter; one 0.6-meter (2-foot) by 0.6-meter (2-foot) by 1.2-meter (4-foot) concrete pad for the vent; approximately 1,767 cubic meters (62,400 cubic feet) of gravel fill and 960.3 square meters (10,336 square feet) of plastic barrier; 12,690 cubic meters (448,000 cubic feet) of gravel backfill.

Waste Type: Process Effluent

Waste Description: The site received process condensate from the D-2 Receiver Tank in the 202-S Building. The waste is acidic.

Code: 216-S-13 **Classification:** Accepted

Names: 216-S-13; 216-S-6; 276-S Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1972

Description: The crib is surrounded with steel posts and chain. It is posted with Underground Radioactive Material and Cave-In Potential signs. The unit is a square wooden crib box, with open bottom enclosed on four sides with sheathing. The crib box sits in a partially backfilled hole. The unit was then backfilled to grade. The crib box has a riser vent, and one inlet pipe near the top of the box.

Location: The crib is located northwest of the 202-S Building and south of the 216-S-7 crib.

Related Sites/ Structures: The site is associated with the 203-S Decontaminated Storage Facility, 204-S Uranium Nitrate Hexahydrate Lag Storage Facility, and the 276-S Organic-Solvent Make-up Facility. The pipelines associated with 216-S-13 crib are discussed in sitecode 200-W-150-PL.

Process Description: From January 1952 to June 1967 the unit received liquid waste from the 203-S Decontaminated Metal Storage Facility, the 203-S Uranium Nitrate Hexahydrate (tank farm), 204-S; 204-S Tank

Farm & Pumphouse, 205-S Process Vault & Chemical Makeup Building and the 276-S Organic-Solvent Make-up Facility. From June 1967 to July 1972 the unit received occasional sump waste from the 204-S Facility.

Waste Type: Process Effluent

Waste Description: The site received mixed, organic waste containing nitrate, methyl isobutyl ketone, and sodium dichromate. Radionuclides include cobalt-60, strontium-90 and cesium-137. The waste was low in salt and is neutral to basic. A 1966 internal memo suggests that 25,000 gallons of hexone from the 276-S tanks 141 and 142 were discharged to the 216-S-13 crib over a three month time period.

Code: 216-S-21 **Classification:** Accepted

Names: 216-S-21; 216-SX-1; 216-SX-1 Cavern or Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1970

Description: The site was interim stabilized in 1991 and is posted "Underground Radioactive Material." The site consists of one wooden crib box with two vent risers and one test well going through the center of the box. This crib box sits in a gravel layer in the bottom of a square pit. The rest of the pit is backfilled.

Location: This site is west of the 241-S Tank Farm and north of 216-S-25.

Related Sites/ Structures: The crib is associated with the 241-SX-401 Condenser Facility. The pipeline associated with this crib is sitecode 200-W-160-PL.

Process Description: This site provided subsurface liquid disposal for the 241-SX-401 Condenser Facility.

Waste Type: Process Effluent

Waste Description: The site received 241-SX condensate from the condensers in the 401-SX Condenser Facility via the 241-SX-206 Tank. The waste is low in salt and is neutral to basic. The waste contained sodium and ammonium nitrate.

Code: 216-T-3 **Classification:** Accepted

Names: 216-T-3; 241-T-361-A Reverse Well; 361-T Reverse Well **Reclassification** None

Type: Injection/Reverse Well **Start Date:** 6/1/1945

Status: Inactive **End Date:** 8/1/1946

Description: The 216-T-3 identified with concrete AC-540 makers and Underground Radioactive Material signs. The reverse well is constructed of steel pipe extending deep into the ground. There are two wells inside the posted area. The one on the north side of the posted area has a cap with the remnants of a gauge. The one near the southwest side of the area has a plain well cap.

Location: This site is located northwest of the 241-T-361 Settling Tank and northeast of the 216-T-6 Crib.

Related Sites/ Structures: The associated structures are the 221-T Building and the 241-T-361 Settling Tank. The pipeline from 224-T that fed the reverse well is sitecode 200-W-226-PL.

Process Description: This reverse well received liquid disposal from the 221-T and the 224-T facilities via the 241-T-361 Settling Tank. Discharge to the reverse well was discontinued in 1946 and the effluent was

routed to the 216-T-6 crib. Some 224-T waste was diverted to the 241-T-252 Diversion box (per H-2-951).

Waste Type: Process Effluent

Waste Description: The reverse well received 221-T and 224-T liquid waste via the 241-T-361 settling tank. The waste included cell drainage from tank 5-6 in 221-T and 224-T waste. The chemical inventory includes nitrate, potassium, sodium, ammonium nitrate, sodium oxalate, fluoride, sulfate and phosphate. The radionuclide inventory includes 3350 grams of plutonium and 2800 curies of fission products.

Code: 216-T-5 **Classification:** Accepted

Names: 216-T-5; 216-T-5 Grave; 216-T-5 Trench; 241-T-5 Trench; 216-T-12 **Reclassification** None

Type: Trench **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1955

Description: The 216-T-5 trench is marked and posted with Underground Radioactive Material signs.

Location: This site is located west of the 241-T Tank Farm and northwest of the 216-T-32 Crib.

Related Sites/ Structures: The trench is associated with the 221-T Building and the 241-T Tank Farm.

Process Description: This trench received 221-T second cycle supernatant that had been stored in the 241-T-112 tank via an overground pipeline. The trench was active in May 1955. Due to the lack of waste storage space in the tank farms, second cycle waste from the bismuth phosphate fuel separation operations, which had been stored in the tank farms, began to be released to cribs and specific retention trenches in 1948. The extracted plutonium went through two decontamination cycles to further purify it. The first cycle waste was combined with the coating waste. It contained 10% of the fission products and 1% of plutonium. The second decontamination cycle waste contained less than 0.1% of the fission products.

Waste Type: Process Effluent

Waste Description: The site received second cycle supernate waste that contained nitrate, sodium silicate, sodium, ammonium nitrate, fluoride, sulfate, and phosphate. Second cycle waste contained less than 0.1% fission products.

Code: 216-T-6 **Classification:** Accepted

Names: 216-T-6; 241-T-361 (1&2 Cribs); 361-T-1&2 Cribs; 216-T-5 **Reclassification** None

Type: Crib **Start Date:** 1/1/1946

Status: Inactive **End Date:** 1/1/1951

Description: The 216-T-6 Cribs are delineated with light post and chain and Cave-in Potential signs. The area is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: The 216-T-6 Cribs are located north of 23rd Street, southwest of the 221-T Building. They are adjacent to the 216-T-3 Reverse Well and the 241-T-361 Tank.

Related Sites/ Structures: The associated structures are the 221-T and 224-T Facilities and the 241-T-361 Tank. The pipeline that fed the cribs is sitecode 200-W-227-PL.

Process Description: The cribs received liquid waste from the 221-T and 224-T Facilities via the 241-T-361 Settling Tank. The cribs were built to replace the 216-T-3 Reverse Well when it was abandoned in August 1946. From August 1946 to October 1946, the cribs received cell drainage from Tank 5-6 in the 221-T Building and waste from the 224-T Building via the overflow from 241-T-361 Settling Tank. From October 1946 to June 1951, the site received cell drainage from Tank 5-6 in the 221-T Building. In June 1951, the 241-T-361 Settling Tank was deactivated, and the 224-T Building effluent was rerouted to 216-T-32 Crib. In June 1951 the site was deactivated to evaluate the radionuclide disposal characteristics of the crib. The crib pipeline was blanked south of the 241-T-361 Settling Tank. The 221-T waste was rerouted to the 216-T-7 Crib.

Waste Type: Process Effluent

Waste Description: The cribs received waste from 221-T and 224-T that was low in salt, neutral to basic and contained nitrate, sodium, ammonium nitrate, sodium oxalate, fluoride, sulfate, and phosphate.

Code: 216-T-7 **Classification:** Accepted

Names: 216-T-7; 216-T-7 Tile Field; 216-T-7TF; 241-T-3 Tile Field **Reclassification** None

Type: Drain/Tile Field **Start Date:** 1/1/1948

Status: Inactive **End Date:** 1/1/1955

Description: The 216-T-7 Tile Field is delineated with concrete AC-540 markers and posted with Underground Radioactive Material signs.

Location: The 216-T-7 Tile Field is located adjacent to the west side of the 241-T Farm fence and north of 23rd Street. A portion of the tile field extends inside the tank farm fence.

Related Sites/ Structures: The 216-T-7 Tile Field is associated with the 216-T-7 Crib (site code 200-W-52), the 241-T-112, and the 221-T and 224-T facilities.

Process Description: The 216-T-7 crib (site code 200-W-52) received second cycle supernate from 221-T, 224-T waste and tank 5-6 waste after it cascaded through the 241-T-110, 241-T-111 and 241-T-112 tanks. The 216-T-7 Tile Field received overflow from the crib.

Waste Type: Process Effluent

Waste Description: The site received second-cycle supernatant waste from the 221-T Building until June 1951 via the 241-T-110, 241-T-111 and 241-T-112 tanks. From June 1951 to June 1952, the site received the 221-T Building effluent plus cell drainage from Tank 5-6 in the 221-T Building. From June 1952 to November 1955, the site received the 221-T Building effluent plus waste from the 224-T Building. The waste is high in salt and is neutral to basic and contains nitrate, potassium, sodium, ammonium nitrate, sodium oxalate, fluoride, sulfate, and phosphate.

Code: 216-T-14 **Classification:** Accepted

Names: 216-T-14; 241-T-1 Trench; 216-T-1 Grave; 216-T-13 **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-T-14, 216-T-15, 216-T-16 and 216-T-17 trenches were surface stabilized as a unit. The area is identified with concrete AC-540 markers and are posted with Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of 23rd Street and northeast of the 241-T Tank Farm.

Related Sites/ Structures: The trench is associated with 221-T, the 241-T Tank Farm and UPR-200-W-166.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste, that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches.

Waste Type: Process Effluent

Waste Description: The site received the first-cycle supernatant waste from the 221-T Building via the 241-T-104, 241-T-105 and 241-T-106 Tanks in the 241-T Tank Farm. The waste is high in salt and is neutral to basic.

Code: 216-T-15 **Classification:** Accepted

Names: 216-T-15; 216-T-15 Crib; 241-T-2 Grave; 241-T-2 Trench; 216-T-14 **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-T-14, 216-T-15, 216-T-16 and 216-T-17 trenches were surface stabilized as a unit. The area is identified with concrete AC-540 markers and are posted with Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of 23rd Street and northeast of the 241-T Tank Farm.

Related Sites/ Structures: The trench is associated with 221-T, the 241-T Tank Farm and UPR-200-W-166.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The

next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste, that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches.

Waste Type: Process Effluent

Waste Description: The site received the first-cycle supernatant waste from the 221-T Building via the 241-T-104, 241-T-105 and 241-T-106 Tanks in the 241-T Tank Farm. The waste is high in salt and is neutral to basic.

Code:	216-T-16	**Classification:**	Accepted
Names:	216-T-16; 216-T-16 Crib; 241-T-3 Grave; 241-T-3 Trench; 216-T-15	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1954

Description: The 216-T-14, 216-T-15, 216-T-16 and 216-T-17 trenches were surface stabilized as a unit. The area is identified with concrete AC-540 markers and are posted with Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of 23rd Street and northeast of the 241-T Tank Farm.

Related Sites/ Structures: The trench is associated with 221-T, the 241-T Tank Farm and UPR-200-W-166.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste, that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches.

Waste Type: Process Effluent

Waste Description: The site received the first-cycle supernatant waste from the 221-T Building via the 241-T-104, 241-T-105 and 241-T-106 Tanks in the 241-T Tank Farm. The waste is high in salt and is neutral to basic.

Code: 216-T-17 **Classification:** Accepted

Names: 216-T-17; 216-T-4 Grave; 241-T-4 Trench; 216-T-16 **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The 216-T-14, 216-T-15, 216-T-16 and 216-T-17 trenches were surface stabilized as a unit. The area is identified with concrete AC-540 markers and are posted with Underground Radioactive Material signs. The surface has been planted with wheat grass.

Location: The trench is located north of 23rd Street and northeast of the 241-T Tank Farm.

Related Sites/ Structures: The trench is associated with 221-T, the 241-T Tank Farm and UPR-200-W-166.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. B Plant and T Plant used the bismuth phosphate process to separate plutonium from irradiated fuel from 1944 through 1956. The first step in the process was to dissolve the metal coating from the fuel rods. The next step dissolved the uranium and extracted the plutonium. The uranium waste was known as the metal waste stream. It contained the bulk of the uranium and 90% of the cesium-137 and strontium-90. The plutonium stream went through two additional decontamination cycles to purify it, producing the first and second cycle waste streams. The first cycle waste stream contained approximately 10% of the long lived fission products and 1% of the plutonium. The coating waste was combined with the first cycle waste. The liquid waste from these processes was initially stored in the single shell tanks in tank farms. By 1948, limited space in the tank farms resulted in the decision to discharge the second cycle waste to cribs. In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste, that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches.

Waste Type: Process Effluent

Waste Description: The site received the first-cycle supernatant waste from the 221-T Building via the 241-T-104, 241-T-105 and 241-T-106 Tanks in the 241-T Tank Farm. The waste is high in salt and is neutral to basic.

Code: 216-T-18 **Classification:** Accepted

Names: 216-T-18; 241-T-17 Crib; Scavenged TBP Waste; Test Crib for 221-U Building; 216-T-17 **Reclassification** None

Type: Crib **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1953

Description: The site is marked with concrete AC-540 markers. The site is posted as an "Underground Radioactive Material" area. The surface is covered with gravel.

Location: This site is located northeast of 241-TY Farm and north of the 216-T-26 Crib.

Related Sites/ Structures: The site is associated with the uranium recovery process done at 221-U.

Process Description: Although many references state the crib received scavenged tri-butyl phosphate waste from 221-T (T Plant), it is believed that the reference to T Plant was a typographical error that was carried into subsequent documentation. It should have said 241-T Tank Farm. Document WHC-MR-0227, Tank Wastes Discharged Directly to the Soil at Hanford states that the ferrocyanide (TBP) scavenging process was tested in U Plant in October 1953. HW-33591 states the scavenged waste was pumped from the 241-T-101 tank to a hole in the ground located north of the 241-T-17 monitoring well. Ferrocyanide and nickel were added to the uranium recovery waste to remove cesium-137 from the waste stream so it could be discharged to the ground instead of requiring tank storage. The treated test waste was pumped to a single shell tank for settling (241-T-101) in October 1953. Because of poor pH control during the test, only half of the resultant scavenged waste was discharged to the 216-T-18 crib in December 1953. The other half remained stored in the single shell tank.

Waste Type: Process Effluent

Waste Description: There is a discrepancy in the historical documentation of the waste disposed to this crib. Some references state the site received a test batch of ferrocyanide scavenged tri-butyl phosphate waste from 221-U in December 1953. The waste was high in salt, neutral to basic, and contained nitrate, sodium silicate, sodium, sodium hydroxide, sodium aluminate, fluoride, sulfate, phosphate and nitrite. HW-33591 states that 256,000 gallons of waste was pumped from tank 241-T-101 to a hole in the ground located north of the 241-T-17 monitoring well. Maxfield (1979) states the crib received a million liters of first cycle waste from 221-T that included 1800 grams of plutonium.

Code: 216-T-19 **Classification:** Accepted

Names: 216-T-19; 216-T-19TF; 216-TX-1; 241-TX-153 Crib and Tile Field; 241-TX-3 **Reclassification** None

Type: Crib **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1980

Description: The crib and tile field are enclosed within a chain barricade. The crib is enclosed within a second chain barricade that is posted with Cave-In Potential signs. The outer chain is posted with "Underground Radioactive Material" signs. The site construction is wooden crib box with a riser, set into a square bottom pit with sloping sides. The crib has an inlet and outlet pipe. The outlet pipe connects to a tile field. The tile field consists of a central pipe running the length of a rectangular trench with sloping sides. Pipes branch off the main pipe over the length of the trench. After construction, the crib and tile field were backfilled to grade.

Location: This site is located southwest of the 241-TX Tank Farm and east of the 216-Z-7 Crib.

Related Sites/ Structures: The crib and tile field are associated with the 242-T Building, 221-T Building, the 224-T Building and the 241-TX-153 Diversion Box. The pipeline to the crib is 200-W-213-PL.

Process Description: The site provided subsurface liquid disposal for process condensate from the waste evaporator in 242-T, cell drainage from Tank 5-6, second-cycle supernatant waste from 221-T, and waste from the 224-T Building.

Waste Type: Process Effluent

Waste Description: The site received waste containing nitrate, sodium, ammonium nitrate, sulfate, and phosphate.

Code: 216-T-21 **Classification:** Accepted

Names: 216-T-21; 216-TX-1 Grave; 216-TX-3; 241-TX-1 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. It is one of five specific retention trenches (216-T-21, 216-T-22, 216-T-23, 216-T-24 and 216-T-25) that was surface stabilized as one unit. The group of trenches is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: This site is located west of the 241-TX Tank Farm and north of the 231-Z Building.

Related Sites/ Structures: The trench is associated with the 221-T Building and the 241-TX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. This trench provided subsurface liquid disposal for first-cycle supernatant waste from 221-T via the 241-TX-109, 241-TX-110, and 241-TX-111 Tanks. The site was deactivated when the specific retention capacity was reached. The overground piping was removed and the trench backfilled. The trench was active from June through August 1954.

Waste Type: Process Effluent

Waste Description: The trench received first cycle supernate from 221-T that was high in salt, neutral to basic, and contained fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.

Code: 216-T-22 **Classification:** Accepted

Names: 216-T-22; 216-TX-2 Grave; 216-TX-4; 241-TX-2 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. It is one of five specific retention trenches (216-T-21, 216-T-22, 216-T-23, 216-T-24 and 216-T-25) that was surface stabilized as one unit. The group of trenches is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: The site is located west of the 241-TX Tank Farm and north of the 231-Z Building.

Related Sites/ Structures: The trench is associated with the 221-T Building and the 241-TX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. This site was used for subsurface liquid disposal of first-cycle supernatant waste from 221-T via the 241-TX-109, 241-TX-110, and 241-TX-111 Tanks. The trench was active in July and August 1954. The trench was deactivated when the specific retention capacity was reached by removing the overground piping and backfilling the trench.

Waste Type: Process Effluent

Waste Description: The trench received first cycle supernate from 221-T that was high in salt, neutral to basic, and contained fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.

Code: 216-T-23 **Classification:** Accepted

Names: 216-T-23; 216-TX-3 Grave; 216-TX-5; 241-TX-3 Grave; 241-TX-3 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. It is one of five specific retention trenches (216-T-21, 216-T-22, 216-T-23, 216-T-24 and 216-T-25) that was surface stabilized as one unit. The group of trenches is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: This site is located west of the 241-TX Tank Farm and north of the 231-Z Building.

Related Sites/ Structures: The trench is associated with the 221-T Building and the 241-TX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. This site was used for subsurface liquid disposal of first cycle supernatant waste from 221-T via the 241-TX-109, 241-TX-110, and 241-TX-111 Tanks. The trench was active during July and August 1954. The trench was deactivated when the specific retention capacity was reached by removing the overground piping and backfilling the trench.

Waste Type: Process Effluent

Waste Description: The trench received first cycle supernate from 221-T that was high in salt, neutral to basic, and contained fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.

Code: 216-T-24 **Classification:** Accepted

Names: 216-T-24; 216-TX-4 Grave; 216-TX-6; 241-TX-4 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. It is one of five specific retention trenches (216-T-21, 216-T-22, 216-T-23, 216-T-24 and 216-T-25) that was surface stabilized as one unit. The group of trenches is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: The site is located west of the 241-TX Tank Farm and north of the 241-Z Building.

Related Sites/ Structures: The trench is associated with the 221-T Building and the 241-TX Tank Farm.

Process Description: In order to provide the tank space needed to support the fuel separations operations in 200 East and West Areas, first cycle supernate stored in the single shell tanks was intentionally discharged to specific retention trenches during 1953 and 1954. Specific retention disposal utilized the moisture retention capacity of the relatively dry soils above the regional ground water table. The volume of liquid disposed to each trench was limited to ten percent of the soil volume between the bottom of the trench and the groundwater table. This site was used for subsurface liquid disposal of first-cycle supernatant waste from 221-T via the 241-TX-109, 241-TX-110, and 241-TX-111 Tanks. The trench was active in August 1954. The trench was deactivated when the specific retention capacity was reached by removing the overground piping and backfilling the trench.

Waste Type: Process Effluent

Waste Description: The trench received first cycle supernate that was high in salt, neutral to basic, and contained fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.

Code: 216-T-25 **Classification:** Accepted

Names: 216-T-25; 216-TX-5 Grave; 216-TX-7; 241-TX-5 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. It is one of five specific retention trenches (216-T-21, 216-T-22, 216-T-23, 216-T-24 and 216-T-25) that was surface stabilized as one unit. The group of trenches is surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: This site is located west of the 241-TX Tank Farm and north of the 241-Z Building.

Related Sites/ Structures: The is associated with the 242-T Evaporator.

Process Description: In 1951, the 242-B and 242-T Evaporators began to concentrate the first cycle waste to reduce the volume of waste stored in the tank farms. By 1953, the need for tank space resulted in the first cycle waste, that was being stored in the single shell tanks, to be discharged via overground pipelines to specific retention trenches. Some specific retention trenches received the waste from the bottoms of the 242-B and 242-T Evaporator tank. This trench was used for subsurface liquid disposal of evaporator bottoms consisting of sludge from 242-T condensed first-cycle waste. The site was active in September 1954. The trench was deactivated when the specific activity capacity was reached by removing the aboveground piping and backfilling the

Waste Type: Process Effluent

Waste Description: The trench received evaporator bottom waste consisting of sludge from condensing first cycle waste in the 242-T Evaporator. It was high in salt, neutral to basic, and contained fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.

Code: 216-T-26 **Classification:** Accepted

Names: 216-T-26; 216-TX-1 Crib; 216-TY-1 Cavern; 216-TY-1 Crib; 241-TX-1 Cavern **Reclassification** None

Type: Crib **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1956

Description: The 216-T-26, 216-T-27 and 216-T-28 cribs are enclosed within a common steel post and chain barricade that is posted "Underground Radioactive Material". The 216-TY-201 flush tank is located in the northeast corner of the area. Two small concrete pads are located east of the crib area.

Location: This site is located inside 200 West Area, south of 23rd Street and east of Camden Ave.

Related Sites/ Structures: The associated structures are the 221-T Building, the 241-TY-101, 241-TY-103, and 241-TY-104 tanks and 241-T-112, the 216-TY-201 flush tank. The pipelines associated with this crib are 200-W-175-PL and 200-W-188-PL.

Process Description: The site provided subsurface liquid disposal for first-cycle scavenged supernatant waste from 221-T via an underground pipeline and the 216-TY-201 Flush Tank after cascading through the 241-TY-101, 241-TY-103, and 241-TY-104 tanks and later from 241-T-112 tank.

In 1955, in order to provide enough tank space in the tank farms required to continue to support fuel separation operations and plutonium production, T Plant began to scavenge newly generated first cycle waste before sending it to the tank farms. By adding ferrocyanide to the waste stream, the cesium-137 was precipitated, significantly reducing the quantity of long-lived radionuclides. This process allowed the first cycle waste to be discharged to the ground instead of to single shell tanks.

The unit consists of a steel inlet pipe reducing to a steel pipe, below grade. This pipe branches to four steel pipes, each one extending to a concrete open-end sewer pipe. These structures lie in an excavation with a side slope of 1:1.5. A gravel fill is covered by earth backfill.

Waste Type: Process Effluent

Waste Description: The site received first-cycle scavenged supernatant waste from T Plant containing ferrocyanide, fluoride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate and sulfate.

Code: 216-T-32 **Classification:** Accepted

Names: 216-T-32; 216-T-6; 241-T #1 & 2 Cribs **Reclassification** None

Type: Crib **Start Date:** 1/1/1946

Status: Inactive **End Date:** 1/1/1952

Description: The crib is located inside the 241-T Tank Farm fence. The fence is posted with Radiological Buffer Area/Underground Radioactive Material signs. The tank farm has a gravel surface. The

crib is not separately identified.

Location: This site is located on the west side of the 241-T Farm and north of 216-T-7 Crib. The fence on the west side of the 241-T Tank Farm transects the northwest corner of the crib. Most of the crib is located inside the tank farm fence.

Related Sites/ Structures: The crib is associated with the 241-T-201 tank, the 241-T-152 and 241-T-252 Diversion Boxes and the 224-T facility.

Process Description: The 216-T-32 Crib consists of two wooden crib boxes, each set into a square bottom pit with sloping sides. The pits contain backfill. The crib boxes are connected in series by a pipe, with one crib overflowing into the other. The cribs received liquid waste from the 224-T Building via the 241-T-201 Tank. Each box was constructed with a riser vent.

Waste Type: Process Effluent

Waste Description: The site received waste from 224-T via the 241-T-201 Tank. The waste was high in salt, neutral to basic, and contained nitrate, sodium, ammonium nitrate, sodium oxalate, fluoride, sulfate, and phosphate.

200-EA-1

Code:	207-A-NORTH	**Classification:**	Accepted
Names:	207-A-NORTH; 207-A-NORTH Retention Basin; 207-A; 207-A North; 207-A Retention Basin	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1977
Status:	Inactive	**End Date:**	1/1/1999

Description: The 207-A North basins consist of three Hypalon lined, concrete basins. The basins are surrounded with posts and chain. There is no radiological posting on the north basins.

Location: The 207-A-NORTH basins are located east of 242-A Evaporator building, adjacent to the 207-A-SOUTH basin.

Related Sites/ Structures: The basins are associated with the 242-A Evaporator facility, 216-A-25 Pond and 216-B-3 Pond. The pipelines from 242-A Evaporator to the 207-A basins are sitecode 200-E-234-PL. The basin distribution lines are sitecode 200-E-235-PL.

Process Description: The basins were alternately filled, sampled, and emptied when meeting specifications. The basins discharged via pipeline to the 216-B-3C pond. Discharge to the 216-B-3C pond was discontinued in early 1997 and the basin effluent was diverted to the 200 Area Treated Effluent Disposal Facility (TEDF). The basin was physically isolated in 1999. The isolation is documented in ECN-653675 and Work Package EL-98-00091.

A 4-in (10 cm) fill line enters each basin, approximately 2 ft (0.6 m) long (inside basin structure) and a 3-in (7.6 cm) drain line exits.

Waste Type: Steam Condensate

Waste Description: The basins have been receiving steam condensate from the 242-A Evaporator since 1977. Effluent was originally sent to the 216-A-25 (Gable Pond) and later to the B Pond system. When the B-Ponds became inactive, effluent was diverted to TEDF.

Code:	216-A-1	**Classification:**	Accepted
Names:	216-A-1; 216-A-1 Cavern; 216-A-1 Trench	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1955

Description: The 216-A-1 and 216-A-7 cribs had been located within the same radiologically posted area. They are marked and posted with Underground Radioactive Material signs.

Location: The site is located inside the 200 East Area perimeter fence extension, east of the 241-A Tank Farm, along Canton Avenue.

Related Sites/ Structures: The site is associated with the 202-A sample pit #3 and the 200-E-158-PL pipeline.

Process Description: The site received start up waste from PUREX during November and December 1955 via an overground pipeline from Sample Pit #3. When the specific retention capacity was reached, the site was deactivated by removing the overground piping and backfilling. The site is composed of 15-centimeter (6-inch) perforated Vitrified Clay Pipe (VCP), 9.1 meters (30 feet) long, running horizontally at 2.7 meters (9 feet) below grade, with two 9.1 meter (30-foot) lengths of

15-centimeter (6-inch) perforated VCP placed perpendicularly to the first length of pipe, forming an H pattern. There is approximately 1.8 meters (6 feet) or 310 cubic meters (11,000 cubic feet) of coarse rock in the excavation bottom. The side slope, surface to 2.1 meters (7 feet) deep, is 1:1.5, 2.1 meters (7 feet) to site bottom is 1:2.

Waste Type: Process Effluent

Waste Description: The site received the depleted uranium waste from the cold startup run in the 202-A Building. Some cesium-137, cobalt-60 and strontium-90 is also present.

Code: 216-A-2 **Classification:** Accepted

Names: 216-A-2; 216-A-2 Cavern; 216-A-2 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1963

Description: The crib is covered with gravel and marked with concrete AC-540 posts. The crib is located within a larger URM, known as 200-E-103.

The unit consists of 15-centimeter (6-inch) perforated vitrified clay pipe lines. Two 6.1-meter (20-foot) lengths form a cross pattern horizontally, 6.4 meters (21 feet) below grade. It has approximately 1.8 meters (6 feet) of coarse rock with a volume of 140 cubic meters (5,000 cubic feet) and is backfilled over. The side slope from grade to 6.4 meters (21 feet) is 1:1.5 and from 6.4 meters (21 feet) to 8.2 meters (27 feet) is 1:2.

Location: The 216-A-2 site is located south of the 202-A Building (PUREX), inside the facility exclusion area fence.

Related Sites/ Structures: The site is associated with the 202-A Building, the 241-A-151 Diversion Box and 200-E-103. The pipelines associated with the crib are sitecode 200-E-183-PL and 200-E-184-PL.

Process Description: The site received organic waste from the 202-A building via two 10 centimeter (4 inch) diameter vitrified clay pipes (see sitecode 200-E-184-PL).

Waste Type: Process Effluent

Waste Description: The site received organic wastes from the 202-A Building. The waste is low in salt and is neutral to basic.

Code: 216-A-3 **Classification:** Accepted

Names: 216-A-3; 216-A-3 Cavern; 216-A-3 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 4/1/1981

Description: The crib is marked and posted with Underground Radioactive Material signs.

Location: The unit is located directly south of the 275-EA Building, west of Canton Avenue and north of the 202-A Building.

Related Sites/ Structures: The crib is associated with 203-A. The 216-A-3 pipeline is sitecode 200-E-168-PL.

Process Description: From 1956 to 1967, the site received silica-gel regeneration waste and pump house drainage from 203-A and drainage from the UNH storage pit. The silica gel discharge was discontinued

in 1967. The site was taken out of service in April 1981. The waste was rerouted so that any low level radioactive waste was sent to the 216-A-29 Ditch. The unit contains a 10-centimeter (4-inch) Schedule 10 perforated 304 stainless steel pipe placed horizontally 2.4 meters (8 feet) below grade and two 6.1-meter (20-foot) lengths of this pipe placed perpendicularly to the first pipe, forming an H pattern. The site has approximately 2.4 meters (8 feet) of gravel fill with a volume of 280 cubic meters (10,000 cubic feet) and has been backfilled. The side slope surface to 2.1 meters (7 feet) deep is 1.5:1 and from 2.1 meters (7 feet) to the site bottom is 2:1.

Waste Type: Process Effluent

Waste Description: Until November 1967, the site received wastes from the silica-gel regeneration in the 203-A Building, the uranyl nitrate hexahydrate (UNH) storage pit drainage, and the liquid waste from the 203-A Pump House. After November 1967, the site received UNH Storage Pit drainage, liquid drainage, liquid waste from the 203-A Building enclosure sumps, and the heating coil condensate from the P1 through P4 UNH tanks. Between 1967 and 1970, the site discontinued receiving discharge from silica-gel regeneration wastes. The above wastes are reworked through the uranium cycle and any resulting waste with low radioactivity are sent to 216-A-29. The waste included uranium, cesium-137, strontium-90 and ruthenium-106.

Code: 216-A-4 **Classification:** Accepted

Names: 216-A-4; 216-A-4 Cavern **Reclassification** None

Type: Crib **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1958

Description: The site is located within a large gravel area, known as the PUREX Stabilized Area (sitecode 200-E-103). A large green vent riser extends above the surface.

Location: The site is located south of the 202-A Building and east of 216-A-2, inside the PUREX Exclusion Fence.

Release Description: UPR-200-E-15 documents the event that occurred in 1958, when the 216-A-4 Crib plugged and caused contaminated liquid to flood the ground surface. The contaminated soil was placed into a trench near the south border of the crib (see sitecode 200-E-102) and covered with 0.3 meters (1 foot) of soil.

Related Sites/ Structures: The 216-A-4 crib is associated with 216-A-2 Crib, 241-A-151, the PUREX laboratories, UPR-200-E-15 and 200-E-103. The site has also been identified as receiving drainage from the 291-A Stack (see Site Comment section). The pipelines associated with this site are 200-E-183-PL, 200-E-185-PL and 200-E-196-PL.

Process Description: The crib received laboratory cell drainage from the 202-A building, and possibly drainage from the 291-A stack. The unit consists of two 6.1-meter (20-foot) lengths of 15-centimeter (6-inch) perforated vitrified clay pipe, forming a cross pattern horizontally, 5.5 meters (18 feet) below grade. The excavation has 2.4 meters (8 feet) of coarse rock fill with a volume of 280 cubic meters (10,000 cubic feet) and has been backfilled. The side slope from the surface to 5.5 meters (18 feet) deep is 1:1.5 and from 5.5 meters (18 feet) to the site bottom, 1:2.

Waste Type: Process Effluent

Waste Description: The site received the laboratory cell drainage from the 202-A Building (the site was reported to have also received 291-A-1 Stack drainage, see the Site Comments section under the Summary tab). The waste is low in salt and is neutral to basic. The 216-A-4 Crib also received waste solution from the 216-A-2 waste collection tank, the U Cell U-3 and U-4 laboratory waste receiver tanks (located in the acid storage vault), the dissolver off-gas scrubbers and the 241-A-151 Diversion Box Catch Tank. 216-A-4 was intended to receive a maximum of (75 gallons per minute) low level radioactive liquid waste. Waste volume from the laboratory waste and

cell drain was 52,990 liters (14,000 gallons).

Code:	216-A-5	**Classification:**	Accepted
Names:	216-A-5; 216-A-5 Cavern	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1966

Description: The crib is marked and posted with Underground Radioactive Material signs.

Location: The crib is located south of the 202-A Building between the inner and outer PUREX exclusion area fences.

Related Sites/ Structures: The site is associated with the PUREX process, 200-E-58 and the 216-A-10 crib. The 216-A-5 crib pipeline is sitecode 200-E-239-PL.

Process Description: The crib received acidic process condensate from 202-A from December 1955 through November 1961. After 1961, the crib was used as a back up waste site for the 216-A-10 crib. It received additional waste in October 1966.

The unit consists of a 20-centimeter (8-inch) vitrified clay pipe (VCP) placed horizontally, 7.3 meters (24 feet) below grade and two 10.7-meter (35-foot) lengths of 20-centimeter (8-inch) VCP placed perpendicular to the first pipe, forming an H pattern. The site is backfilled with approximately 2.4 meters (8 feet) of coarse rock fill with a volume of 595 cubic meters (21,000 cubic feet). The side slope from the surface to 7.3 meters (24 feet) deep is 1:1.5 and from 7.3 meters (24 feet) to the bottom, 2:1.

Waste Type: Process Effluent

Waste Description: Until November 1961, the site received process condensate from the 202-A Building. From November 1961 to October 1966, the site was active but received no waste (backup for the 216-A-10 Crib). In October 1966, the site received process condensate from the 202-A Building. The waste is acidic.

Code:	216-A-6	**Classification:**	Accepted
Names:	216-A-6; 216-A-6 Cavern; 216-A-6 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	11/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: The site is marked with AC-540 markers and posted with Underground Radioactive Material signs. The unit was constructed with a 38-centimeter (15-inch) Vitrified Clay Pipe (VCP) placed horizontally 3.7 meters (12 feet) below grade the length of the unit. Five 31-meter (100-foot) lengths of perforated 15-centimeter (6-inch) VCP are placed perpendicularly to the first pipe at 6.1-meter (20-foot) intervals. The site contains approximately 2,580 cubic meters (91,000 cubic feet) of coarse gravel fill, backfilled over. The side slope from the surface to 2.1 meters (7 feet) is 1:1 and from 2.1 meters (7 feet) to the site bottom, 2:1.

Location: The site is located outside the 200 East Area perimeter fence, east of the Plutonium Uranium Extraction (PUREX) facility and south of 241-AP Tank Farm.

Release Description: UPR-200-E-19, UPR-200-E-21, UPR-200-E-29 are associated with 216-A-6.

Related Sites/ Structures: The crib is associated with the 216-A-30 crib and 200-E-113-PL.

Waste Type: Process Effluent

Waste Description: Until January 1961, the site received the steam condensate, the equipment disposal tunnel floor drainage, the water-filled door drainage and the slug storage basin overflow waste from the 202-A Building. From January 1961 to March 1966, the site was inactive. After March 1966, the site received the previously mentioned effluents again. The waste is low in salt and is neutral to basic.

Code: 216-A-9 **Classification:** Accepted

Names: 216-A-9; 216-A-9 Crib **Reclassification** None

Type: Crib **Start Date:** 3/1/1956

Status: Inactive **End Date:** 8/1/1969

Description: The crib is a surface stabilized area, marked with light post and chain. It is posted as an Underground Radioactive Material area.

Location: 216-A-9 Crib is located inside 200 East Area, north of 4th Street. The site is located 150 meters (500 feet) west of the 241-A Tank Farm and 275 meters (900 feet) north of 275-EA Building along Fourth Street.

Related Sites/ Structures: The site is associated with PUREX processes and N Reactor liquid waste. The pipeline associated with this crib is sitecode 200-E-238-PL.

Process Description: The site contains a 25 centimeter (10-inch) Schedule 30 steel perforated pipe, placed horizontally, 2.7 meters (9 feet) below grade. The site has 1,840 cubic meters (65,000 cubic feet) of gravel fill and has been backfilled. The side slope is 2:1. The crib was used for disposal of PUREX acid fractionator condensate and cooling water. The crib surpassed its capacity in 1958 and was taken out of service. In April 1966, the crib was approved for disposal of liquid N Reactor decontamination waste, that was to that was transported to the crib in tanker trucks. The waste was discharged into the Truck Unloading Station adjacent to the crib. This process continued until October 1966. The crib was inactive until August 1969, when PUREX acid fractionator waste was again sent to the 216-A-9 crib.

Waste Type: Process Effluent

Waste Description: Until February 1958, the site received the acid fractionator condensate and the condenser cooling water from the 202-A Building. From February 1958 to April 1966, the site was inactive. From April 1966 to October 1966, the site received N Reactor decontamination waste via a manhole at the truck unloading station. From October 1966 to August 1969, the site was inactive. In August 1969, the site received the acid fractionator condensate from the 202-A Building. The waste is acidic.

Code: 216-A-10 **Classification:** Accepted

Names: 216-A-10; 216-A-10 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1987

Description: The site is covered with gravel with no vegetation growing on it. It is surrounded with light posts and chain and posted as Underground Radioactive Material.

Location: The site is located south of the 202-A Building.

Related Sites/ Structures: The site is associated with 202-A, and 216-A-5 crib. The pipelines associated with the crib are documented in sitecode 200-E-192-PL. The pipeline to the 216-A-45 crib teed off of the 200-E-200-192-PL (see sitecode 200-E-231-PL).

Process Description: Although the crib was built in 1956, it did not receive contaminated waste until 1961. Early discharge reports list effluent volumes for the 216-A-10 crib that did not contain any plutonium or beta/gamma values. A 1980 telephone conference documentation sheet explained that the crib received water testing effluent in 1956. The crib was active until 1978. The crib was inactive until October 1981, when it again received acidic process condensate from 202-A. The crib was deactivated in March 1987.

The unit consists of a 20-centimeter (8-inch) SST pipe placed horizontally 9.1 meters (30 feet) below grade, 8.2 meters (27 feet) east of the centerline. The site has a wedge-shaped cross section and a side slope of 1:1.5. The excavation has 4.6 meters (15 feet) of rock fill with a volume of 11,700 cubic meters (414,000 cubic feet) of rock fill and has been backfilled over.

Waste Type: Process Effluent

Waste Description: During 1956, the site was used only for testing purposes using nonradioactive water. From 1956 to November 1961, the site was inactive. From November 1961 to January 1978, the site received process condensate from the 202-A Building. From January 1978 to October 1981, the site was again inactive. From October 1981 to 1986, the site received the process condensate from the 202-A Building. The crib received Process Distillate Discharge (PDD), a corrosive/mixed waste, at an average flow rate of 227 liters/minute (60 gallon/minute). The discharge was an acidic waste stream generated from two product concentrators in the Plutonium Uranium Extraction (PUREX) process. The pH of this waste ranged from 1.0 to 2.5 standard units which makes it a corrosive mixed waste. Approximately 62.6 million kilograms (138 million pounds) of waste were disposed of in the crib in 1986. Characterization holes placed through the crib in 2003 found cesium-137 at depths ranging from 48 to 84 feet below ground surface and europium-154 at approximated 84 feet below ground surface.

Code: 216-A-15 **Classification:** Accepted

Names: 216-A-15; Miscellaneous Stream #461 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1972

Description: The unit is composed of two, 1.2 meter (4 foot) diameter, 1.2 meter (4 foot) long bell-end, reinforced concrete sewer pipes placed vertically end to end. It is filled with 1.8 meters (6 feet) of stone. Approximately 11 meters (35 feet) of vent pipe extends from the grade surface to the concrete drain structure. 1.6 meters (5.5 feet) of vent pipe extends above grade.

Location: The site is located approximately 82 meters (270 feet) south of the center of the 202-A Building and east of the Sampler Pit #4.

Related Sites/ Structures: The site is associated with PUREX, the 216-A-10 crib and the 216-A-5 crib. The pipeline to this French drain is 200-E-242-PL.

Process Description: The drain received condensate and storm water that collected in the drain at the bottom of the Process Condensate Sample Pit #4. A leak in one of the fittings may have allowed radioactive liquid to be released to the french drain. A manhole cove on the top of the sample pit may have allowed stormwater to enter the pit.

Waste Type: Process Effluent

Waste Description: The site received the drainage from the 216-A-10 Process Condensate Sampler Pit #4. The waste is acidic. The site contains less than 50 curies total beta activity.

Code: 216-A-18 **Classification:** Accepted

Names: 216-A-18; 216-A-18 Crib; 216-A-18 Excavation; 216-A-18 Grave; 216-A-18 Sump **Reclassification** None

Type: Trench **Start Date:** 11/1/1955

Status: Inactive **End Date:** 1/1/1956

Description: The site is marked and posted with Underground Radioactive Material signs.

Location: The site is located outside of the 200 East Area perimeter fence, east of the 241-AX Tank Farm, along Canton Avenue.

Related Sites/ Structures: The site is associated with the 202-A facility.

Process Description: The trench received start up waste from PUREX via an aboveground pipeline. The site was an excavation with a side slope of 1:2. No crib structure was ever built.

Waste Type: Chemicals

Waste Description: The site received the depleted uranium waste from the cold start-up run at 202-A Building.

Code: 216-A-19 **Classification:** Accepted

Names: 216-A-19; 216-A-19 Crib; 216-A-19 Grave; 216-A-19 Sump; 216-A-19 Test Hole **Reclassification** None

Type: Trench **Start Date:** 11/1/1955

Status: Inactive **End Date:** 1/1/1956

Description: The site is marked and posted with Underground Radioactive Material signs. In February 2001, a narrow area posted with Soil Contamination Area signs extended between the 216-A-19 southern site boundary and northern boundary of 216-A-34.

Location: The site is located east of the 200 East Area perimeter fence, north of the 216-A-8 Crib.

Related Sites/ Structures: The site is associated with PUREX, 216-A-19, 216-A-20 and 216-A-34.

Process Description: The site received PUREX start up waste during November and December 1955. Several references state it also received condenser cooling water from the 241-A-431 building via the 216-A-34 Ditch. However, drawings do not show the 216-A-34 Ditch connecting to the 216-A-19 Grave. HW-40763 states that in December 1955, the ditch received PUREX waste from "C-203 and C-204 tanks". The ditch was also used fro disposing of depleted uranium from the cold start up of PUREX.

Waste Type: Water

Waste Description: The site received the 241-A-431 Building contact condenser cooling water via the 216-A-34 Ditch and the depleted uranium waste from the cold start-up run at the 202-A Building. HW-40763 states that in December 1955, the ditch received PUREX waste from "C-203 and C-204 tanks".

Code:	216-A-20	**Classification:**	Accepted
Names:	216-A-20; 216-A-20 Crib; 216-A-20 Grave; 216-A-20 Sump; 216-A-20 Test Hole	**Reclassification**	None
Type:	Trench	**Start Date:**	11/1/1955
Status:	Inactive	**End Date:**	12/1/1955

Description: The site is marked and posted with Underground Radioactive Material signs.

Location: The site is located east of the 200 East Area perimeter fence, north of the 216-A-8 Crib.

Release Description: HW-60807 includes a comment note, stating that 216-A-20 overflowed. The overflow covered an area measuring approximately 30 meters (100 feet) north and 60 meters (200 feet) east of the crib site. The overflow area was hand drawn onto H-2-56521.

Related Sites/ Structures: The site is associated with the 241-A-431 building, 202-A, and the 216-A-34 Ditch.

Process Description: 216-A-20 was originally a test hole excavated with a drag line and used for PUREX start-up waste. The site also received cooling water from the 241-A-431 building contact condenser via the 216-A-34 Ditch. The site was backfilled when the specific retention capacity was reached.

Waste Type: Water

Waste Description: The site received the 241-A-431 Building contact condenser cooling water via the 216-A-34 Ditch and the depleted uranium waste from the cold start-up run at the 202-A Building.

Code:	216-A-21	**Classification:**	Accepted
Names:	216-A-21; 216-A-21 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	10/1/1957
Status:	Inactive	**End Date:**	6/1/1965

Description: The crib is covered with gravel. It is marked and posted with Underground Radioactive Material signs. A 10-centimeter (4-inch) stainless steel distribution line runs horizontally through the length of the site, 2.1 meters (7 feet) below grade. Branching horizontally from this distribution line are four 1.2-meter (4-foot) sections of 10-centimeter (4-inch) tubing. Branching vertically at the same locations are four 2.4-meter (8-foot) sections of 10-centimeter (4-inch) schedule 40 perforated pipe running to the bottom of the site. The excavation is V-shaped in cross-section with a side slope of 1:1.5. The excavation has approximately 1.8 meters (6 feet) of gravel fill and is backfilled over.

Location: The site is located south of the 202-A Building inside the PUREX Exclusion Fence.

Related Sites/ Structures: The site is associated with the 202-A facility, 293-A, 291-A, 293-A and 200-E-103. The VCP pipeline associated with this crib is sitecode 200-E-193-PL. The stainless steel line is sitecode 200-E-196-PL.

Waste Type: Process Effluent

Waste Description: Until June 1958, the site received sump waste from 293-A Building. From June 1958 to December 1958, the site was inactive. From December 1958 to June 1965, the site received the above effluent, laboratory cell drainage from the 202-A Building, and the 291-A-1 Stack drainage. The waste is low in salt and is neutral to basic.

Code:	216-A-22	**Classification:**	Accepted
Names:	216-A-22; 216-A-22 Crib; 216-A-22 French Drain	**Reclassification**	None
Type:	Crib	**Start Date:**	11/1/1955
Status:	Inactive	**End Date:**	1/1/1958

Description: The crib is marked with a single cement AC-540 marker and Underground Radioactive Material signs.

Location: The site is located along the north wall of the 203-A Building, north of PUREX.

Release Description: UPR-200-E-17 is described as yellow, uranium contaminated soil on the 216-A-22 Crib. No date is provided for this event, but it was documented in a 1959 report. Another release occurred on April 20, 1961. A UNH tank truck overflowed on the loading apron at 203-A. One thousand three hundred and thirty five pounds of depleted uranium was lost to the ground. The solution drained through an open plug valve in the sump and then went into the 216-A-22 French Drain. No WIDS sitecode is associated with this event.

Related Sites/ Structures: The site is associated with the 203-A facility and UPR-200-E-17. The pipeline associated with this drain is sitecode 200-E-159-PL.

Process Description: The 203-A tank farm was used for storage and shipping of uranyl nitrate hexahydrate (UNH) product and concentration of UNH waste. It consisted of 460,000 liter (100,000 gallon) stain less steel tanks for UNH storage and three smaller nitric acid tanks. Two 10-centimeter (4-inch) effluent pipes are associated with the french drain. One pipe entered the crib 0.5 meters (1.5 feet) above original grade. This pipe is no longer visible as it was covered over to stabilize contamination. The pipe from the truck loadout apron enters the site horizontally, 2.4 meters (8 feet) below grade. The excavation is 4.9 meters (16 feet) in diameter at grade and 1.8 meters (6 feet) in diameter at the bottom, with a side slope of 3:1 (V:H). Approximately 3 meters (10 feet) of gravel fills the excavation bottom, and the site is backfilled.

Waste Type: Stormwater Runoff

Waste Description: The site received the drainage from the 203-A Building truck loadout apron, the sump waste from the 203-A Building enclosure, and the heating coil condensate from the P-1 through P-4 uranyl nitrate hexahydrate (UNH) tanks. The waste is low in salt, neutral to basic, and contains less than 1 curie total beta activity. The site received some uranium from the discharges. In 1961, a release from a UNH truck spilled 1335 pounds of uranium on the truck apron. Some of this drained into the 216-A-22 crib.

Code:	216-A-26	**Classification:**	Accepted
Names:	216-A-26; 216-A-26 French Drain; 216-A-26B; Miscellaneous Stream #464	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1965
Status:	Inactive	**End Date:**	1/1/1991

Description: There are no visible surface features for this drain. The unit is composed of three clay pipe (each 5 feet long) segments buried vertically. Some references state the clay pipe diameter is 3 feet and some state the diameter is 4 feet.

Location: The site is located inside the PUREX security fence, south of the 291-A Control House and approximately 4.57 meters (15 feet) south of 216-A-26A French Drain.

Related Sites/ Structures: This site is associated with the 291-A Fan Control Building, the 216-A-26A french drain and pipeline 200-E-270-PL.

Process Description: This french drain was installed to replace the 216-A-26A french drain. Both drains received effluent from floor drains inside the 291-A Fan House. 216-A-26 was removed from service in 1991.

Waste Type: Water

Waste Description: The site received the floor drainage from the 291-A Fan Control House. The waste was low in salt, neutral to basic, and contains less than 1 curie of total beta activity. The quantity of discharge is unknown.

Code: 216-A-26A **Classification:** Accepted

Names: 216-A-26A; 291-A French Drain; 216-A-25 Crib; 216-A-26 French Drain **Reclassification** None

Type: French Drain **Start Date:** 1/1/1959

Status: Inactive **End Date:** 1/1/1965

Description: There are no surface features for this drain. The unit is composed of three sections of clay pipe each 1.5 meters (5 feet) long, placed vertically end to end below grade. Some references state the pipe diameter was 0.9 meters (3 feet) and other references state the diameter as 1.2 meters (4 feet).

Location: The french drain is located inside the PUREX security fence, south of the 291-A Building.

Related Sites/ Structures: The site is associated with the 291-A stack, fan house, the 216-A-26 French Drain and pipeline 200-E-270-PL.

Waste Type: Water

Waste Description: The site received the floor drainage from the 291-A Fan Control Room. The waste is low in salt, neutral to basic, and contains less than 1 curie total beta activity.

Code: 216-A-27 **Classification:** Accepted

Names: 216-A-27; 216-A-27 Crib **Reclassification** None

Type: Crib **Start Date:** 6/1/1965

Status: Inactive **End Date:** 9/1/1970

Description: The crib is covered with gravel. It is marked and posted with Underground Radioactive Material signs. The crib is constructed of a 15-centimeter (6-inch) stainless steel perforated pipe is placed horizontally the length of the unit, 3 meters (10 feet) below grade. There is 680 cubic meters (24,000 cubic feet) of gravel fill in the excavation bottom. The site is backfilled over. The side slope is 1:1.5.

Location: The 216-A-27 Crib is located south of the PUREX facility, partially inside the double security fence.

Related Sites/ Structures: The site is associated with the 293-A, 202-A and 291-A buildings. The stainless steel pipeline that feeds this crib is sitecode 200-E-196-PL.

Waste Type: Process Effluent

Waste Description: The site received the sump waste from the 293-A Building, the lab cell drainage from the 202-A Building, and the 291-A-1 Stack drainage. The waste is low in salt and is neutral to basic.

Code:	216-A-28	**Classification:**	Accepted
Names:	216-A-28; 216-A-28 Crib; 216-A-28 French Drain	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1958
Status:	Inactive	**End Date:**	1/1/1967

Description: The site is not currently marked or posted.

Location: The site was located near the northwest corner of the 203-A Building, north of PUREX.

Related Sites/ Structures: The site is associated with 216-A-22, 216-A-3 and the 200-E-159-PL pipeline.

Process Description: The 203-A tank farm was used for storage and shipping of uranyl nitrate hexahydrate (UNH) product and concentration of UNH waste. It consisted of 460,000 liter (100,000 gallon) stain less steel tanks for UNH storage and three smaller nitric acid tanks. The french drain received liquid waste from the 203-A sumps and heating coil condensate from the uranyl nitrate tanks. The effluent piping to the site was blanked off in November 1976 when the flow rate exceeded the infiltration capacity. The excavation had a 6-meter (20-foot) diameter at grade and a 3-meter (10-foot) bottom diameter, with a truncated cone shape. The excavation contained approximately 2.7 meters (9 feet) of gravel fill and was backfilled to grade. The unit contained a 10-centimeter (4-inch) stainless steel 304 perforated pipe, 5.2 meters (17 feet) long, extending horizontally 1.2 meters (4 feet) below grade and a 5-centimeter (2-inch) diameter, schedule 40, perforated stainless steel liquid level riser pipe, 4 meters (13 feet) long.

Waste Type: Process Effluent

Waste Description: The site received the liquid waste from the 203-A Building enclosure sumps and the heating coil condensate from the P1 through P4 uranyl nitrate hexahydrate (UNH) tanks. The waste is low in salt and is neutral to basic. Uranium may have been discharged to the waste site.

Code:	216-A-29	**Classification:**	Accepted
Names:	216-A-29; 216-A-29 Ditch; A-29 Ditch; Snow's Canyon	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1991

Description: The ditch was backfilled and surface stabilized in 1991. It is posted as an Underground Radioactive Material area.

Location: The ditch originated southeast of the 241-A Tank Farm (east of 241-AP tank farm) outside of the 200 East Area perimeter fence. The ditch emptied into 216-B-3-3 Ditch which terminated at 216-B-3 Pond.

Related Sites/ Structures: The chemical sewer line that fed the ditch is sitecode 200-E-187-PL. The ditch had two earth dams with wooden gates structures to regulated water flow. They were located at N41150, W45500 and N41550, W45200. The ditch is also associated with the 216-B-3 Pond, the 216-B-3 ditches, 200-E-286 swamp (A Swamp) and UPR-200-E-51.

Process Description: From 1946 through 1953, a shallow depression, known as the Powerhouse Swamp and also the "A Swamp" (See sitecode 200-E-286) was located at W46600/N40400. This swamp area was located approximately in the same location as the head end of the 216-A-29 ditch. The head end of the 216-A-29 ditch was modified several times. The final relocation of the head end occurred 1983, during the construction of the 241-AP tank farm. From 1955 through 1991, the

216-A-29 ditch followed a natural depression, known as Snow's Canyon, toward the 216-B-3 ditch and pond area. The ditch received waste from the PUREX facility between November 1955 and September 1991.

Waste Type: Process Effluent

Waste Description: The unit received waste from 202-A Chemical Sewer, acid fractionator condensate and condenser cooling water that flow to 216-B-3 Pond. Until December 1957, the site received process cooling water and chemical sewer waste from 202-A. From December 1957 to February 1958, the site received all of the above, but the process cooling water was rerouted to 216-A-25 Pond. From February 1958 to December 1962, the ditch received the above plus acid fractionator condensate from 202-A. From December 1962 to December 1963, the ditch also received seal cooling water from air sampler vacuum pumps in 202-A. From December 1963 to January 1966 the vacuum pump cooling water was rerouted to 216-A-35 French Drain.

Code: 216-A-30 **Classification:** Accepted

Names: 216-A-30; 216-A-30 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1961

Status: Inactive **End Date:** 1/1/1992

Description: The crib is surrounded with concrete AC-540 markers and posted with Underground Radioactive Material signs.

Location: The crib is located outside the 200 East Area perimeter fence, east of the 202-A Building.

Related Sites/ Structures: The crib is associated with PUREX operations. Two 8-inch (20 cm) carbon steel gage wells extending from the bottom to 3 ft (0.9 m) above grade. A 15-inch (38 cm) diameter vent riser extending from the distribution pipe to 3 ft (0.9 m) above grade. Two 16-in (41 cm) by 16-inch (41 cm) by 8-inch (20 cm) concrete pads supporting the gage wells. 47,720 square feet (4430 square meters) of polyethylene sheets were added. The site is associated with the 216-A-6 Crib. The pipeline from PUREX associated with this crib is sitecode 200-E-113-PL and 200-E-260-PL. The pipeline from the 216-A-37-1 distribution box to the 216-A-30 crib distribution box is sitecode 200-E-232-PL. The pipeline from 216-A-30 to the 216-A-37-2 Distribution Box is 200-E-233-PL.

Process Description: The unit includes two distribution pipes: one 38 cm (15 inch) corrugated perforated pipe running approximately 1.2 meters (4 ft) below grade to the center of the unit, the other a 41 cm (16 inch) steel pipe running parallel to the other, 1.2 meters (4 ft) below grade to the center of the unit, then angling 45 degrees and changing to a 38 cm (15 inch) corrugated, perforated pipe running 2.1 to 2.4 meters (7 to 8 ft) below grade to the end of the unit. It is filled with 1.5 meters (5 ft) or a total of 3,480 cubic meters (123,000 cu ft) of gravel, and the site has been backfilled. The side slope is 1.5:1.

Waste Type: Process Effluent

Waste Description: Until 11/65, the site received the steam condensate, equipment disposal tunnel floor and water-filled door drainage, and the slug storage basin overflow waste from 202-A Building. From 11/65 to 1/70, the 216-A-6 Crib was restored to service to receive some of the above effluents because the effluent flow rate had exceeded the infiltration capacity of this unit. From 1/70 to 6/92, the site received the above effluent because the 216-A-6 Crib was deactivated. The waste was low in salt and is neutral to basic. TPA Milestone M-17-22A required that PUREX steam condensate discharge to 216-A-30 Crib be discontinued by June 1992. The fourth amendment to the TPA (89-10 Rev 3) documents that the steam condensate stream was shut down in June 1992 and that all discharges to this crib were discontinued. The unit was permanently isolated in 1995.

Code:	216-A-33	**Classification:**	Accepted
Names:	216-A-33; 216-A-33 Dry Well; 216-A-26B	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1964

Description: The 291-AE Filter Building has been built over top of the site where this drain was located. The stainless steel (M21-UD) inlet pipe entered the unit 1.5 meters (5 feet) below grade. The french drain had a carbon steel cover.

Location: The site is located inside the PUREX security fence, south of 202-A, and southwest of the 291-A stack.

Related Sites/ Structures: The french drain is associated with the 291-A Fan House and pipeline 200-E-269-PL.

Waste Type: Process Effluent

Waste Description: The site received the bearing coolant waste from the 291-A-1 Stack electrical exhaust fans. The waste is low in salt, neutral to basic, and contains less than 1 curie of total beta activity.

Code:	216-A-34	**Classification:**	Accepted
Names:	216-A-34; 216-A-34 Crib; 216-A-34 Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	11/1/1955
Status:	Inactive	**End Date:**	12/1/1957

Description: The site is marked and posted with Underground Radioactive Material signs. It has a small amount of bunch grass vegetation growing on it. In February 2001, a posted Soil Contamination Area extended northward from the edge of 216-A-34 to 216-A-19.

Location: The site is located east of the 200 East Area perimeter fence. It is north of the 216-A-8 crib.

Related Sites/ Structures: The site is associated with the 241-A-431 building, the 216-A-19 trench and the 216-A-20 trench. The pipeline to the 216-A-34 crib is discussed in sitecode 200-E-166-PL and UPR-200-E-145.

Process Description: The site received cooling water from the contact condenser in the 241-A-431 building. Drawings indicate a 38 centimeter (15 inch) diameter clay pipe fed 216-A-34 and was connected to the headwall. Ditch effluent was routed to the 216-A-19 and 216-A-20 trenches. Maxfield (1979) describes the site as two ditches; one ditch measuring 85 meters (280 feet) long and 9 meters (30 feet) wide and a second ditch measuring 39.6 meters (130 feet) long and 9 meters (30 feet wide). However, it is not clear if there were two ditches or actually a headwall structure and a ditch. The Maxfield ditch dimensions are similar to the headwall structure dimensions. Drawings show the headwall width was 3 meters (10 feet) wide at the west end fanning out to 12 meters (40 feet) wide at the east end. The headwall structure had 1:2 side slopes. The headwall structure was 39.6 meters long (130 feet). It tapered off into an open ditch. The ditch terminated in the 216-A-20 Grave. No documentation has been located to describe how the effluent was directed to the 216-A-19 Grave.

Waste Type: Water

Waste Description: The site received the cooling water from the contact condenser in the 241-A-431 Building in route to the 216-A-19 and 216-A-20 Trenches. The site contains less than 1 curie total beta activity.

Code:	216-A-36A	**Classification:**	Accepted
Names:	216-A-36A; 216-A-36 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	9/1/1965
Status:	Inactive	**End Date:**	3/1/1966

Description: The 216-A-36A and 216-A-36B cribs are located inside a common light post and chain area. The 216-A-36A is the at the north end of the chained area. The large chained area is posted with Underground Radioactive Material signs. The risers near the center of the cribs had been posted with Soil Contamination signs, but were surface stabilized in May 2010.

Location: The crib is located south of the 202-A Building and west of Canton Avenue, outside the security fence.

Related Sites/ Structures: The pipeline associated with this crib is 200-E-253-PL.

Process Description: The 216-A-36A portion of the crib was activated in September 1965 to receive ammonia scrubber waste from PUREX. A new annular dissolver was installed in A cell in October 1965. Shortly after the start up of the new dissolver system, it was noted that significant quantities of fission products were being flushed to the 216-A-36A Crib. Monthly discharge records estimated that approximately 135,000 curies of fission products, that included 610 curies of cesium-137 and 625 curies of strontium-90, had been release to the crib from October 1965 through January 1966. In December 1965, a test well was drilled into the crib to determine the extent of the fission products in the ground and to determine if the crib should continue to be used. On December 29, 1965, a soil sample was collected from the boring that read between 300 and 500 R/hour. Work was stopped and special procedures, including use of long handled tongs and exposure time monitoring, were required for handling and disposing of the excavated material. It was calculated that approximately 400,000 curies of contaminants had been discharged to the crib that included 1600 curies of cesium-137. The 216-A-36A portion of the crib was terminated in March 1966. The existing pipeline was extended to the 216-A-36B portion of the crib. A 29 meter (95 foot) concrete dam was placed between the 216-A-36A and 216-A-36B crib sections. The original excavation is 183 meters (600 feet) long by 3.4 meters (11 feet) wide by 6.7 meters (22 feet) deep with a 1:1.5 backslope. The excavation has 0.9 meters (3 feet) of gravel fill and a 15-centimeter (6-inch) M-8 (stainless steel) perforated pipe is placed horizontally. A plastic barrier separates the gravel from the overlying backfill and the site has been backfilled to original grade. The northernmost 30.5 meters (100 feet), now called 216-A-36A, was isolated and deactivated. The remaining 152 meters (500 feet) of the crib was renamed 216-A-36B and remained active during the majority of PUREX operation.

Waste Type: Process Effluent

Waste Description: The site received the ammonia scrubber waste from the 202-A Building. The waste is low in salt and is neutral to basic. The site was deactivated because of a large discharge of fission products. In December 1965, it was calculated (from bore hole soil samples) that approximately 400,000 curies of contaminants had been discharged to the crib that included 1600 curies of cesium-137.

Code:	216-A-36B	**Classification:**	Accepted
Names:	216-A-36B; Purex Ammonia Scrubber Distillate (ASD); 216-A-36 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	3/1/1966

Status: Inactive **End Date:** 9/6/1987

Description: The 216-A-36B portion of the crib is located inside the same light post and chain area as the 216-A-36A Crib. The 216-A-36B is the southern end of the chained area. The large chained area is posted with Underground Radioactive Material signs. The risers near the center of the cribs had been posted with Soil Contamination Area signs, but were surface stabilized in May 2010. The 216-A-36B portion of the chained area is considerably larger than the 216-A-36A portion.

Location: The crib is located south of the 202-A Building and west of Canton Avenue, outside the security fence.

Release Description: During the week of May 21 to May 28, 1970, an abnormally large quantity of radionuclides was discharged to the A36-B crib. A letter from C. W. Malody reports that the volume was 1.6 million liters (420,000 gallons), and the sample analysis showed 9.3 kilograms (20.5 pounds) of uranium; 82.3 grams (2.9 ounces) of plutonium; 15,900 Curies of total beta; 9,050 Curies of 95-zirconium; 4,390 Curies of 106-ruthenium; and 5,800 Curies of 144-cerium were released to the crib during those dates. For 1969, the 12 month total of waste to the crib was 10 kilograms (22 pounds) of uranium; 7.2 grams (2.5 ounces) of plutonium; 1790.8 Curies of beta; 6.6 Curies of cobalt-60; 99.1 Curies of strontium-90, 110.2 Curies of cesium-137, and 454.0 Curies of ruthenium-106 in 17.8 million liters (4.695 gallons) volume of liquid.

Related Sites/ Structures: The site is associated with 202-A facility and 216-A-36A Crib. The pipeline associated with this crib is 200-E-253-PL.

Process Description: The 216-A-36B Crib was built to replace the 216-A-36A Crib, that had been terminated due to the large amounts of fission products discharged to it. The 216-A-36B Crib was constructed by extending the pipeline from the 216-A-36A Crib in March of 1966. A concrete dam was placed between the two portions of the crib. The 216-A-36B crib received ammonia scrubber waste from the PUREX process. Fuel rods from the 100-N reactor were clad in zirconium. Removal of the zirconium cladding required using ammonium fluoride and ammonium nitrate solutions (AFAN). The dissolving process produced a large amount of ammonia offgasses. The offgas was scrubbed with water to reduce the amount of water released to the air. Spent ammonia scrubber waste was transferred to a concentrator where the waste was distilled. The crib received discharge condensate from the waste stream concentrator. The unit is a gravel structure with a 15-centimeter (6-inch) M-8 perforated pipe placed horizontally, 7 meters (23 feet) below grade. The excavation has 620 cubic meters (22,000 cubic feet) of gravel fill, and the site has been backfilled. The side slope is 1:1.5.

Waste Type: Process Effluent

Waste Description: Until October 1972, the site received the ammonia scrubber waste from the 202-A Building (Plutonium Uranium Extraction [PUREX]). The site was retired in October 1972 when the PUREX plant shut down. In November 1982, the site was reactivated to receive the above wastes when PUREX operations resumed. The waste is low in salt and is neutral to basic. The concentrations of ammonium hydroxide discharged to the crib resulted in the waste stream being classified as a dangerous waste. During the week of May 21 to May 28, 1970, an abnormally large quantity of radionuclides was discharged to the A36-B crib. A letter from C. W. Malody reports that the volume was 1.6 million liters (420,000 gallons). The sample analysis showed 9.3 kilograms (20.5 pounds) of uranium; 82.3 grams (2.9 ounces) of plutonium; 15,900 Curies of total beta; 9,050 Curies of 95-zirconium; 4,390 Curies of 106-ruthenium; and 5,800 Curies of 144-cerium were released to the crib during those dates. For 1969, the 12 month total of waste to the crib was 10 kilograms (22 pounds) of uranium; 7.2 grams (2.5 ounces) of plutonium; 1790.8 Curies of beta; 6.6 Curies of cobalt-60; 99.1 Curies of strontium-90, 110.2 Curies of cesium-137, and 454.0 Curies of ruthenium-106 in 17.8 million liters (4.695 gallons) volume of liquid.

Code:	216-A-37-1	**Classification:**	Accepted
Names:	216-A-37-1; 216-A-37 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1977
Status:	Inactive	**End Date:**	1/1/1989

Description: The crib is marked and surrounded with concrete AC-540 markers and Underground Radioactive Material signs.

Location: The unit is located outside of the 200 East Area perimeter fence, east of the 202-A Building.

Related Sites/ Structures: The site is associated with the 242-A Evaporator. The pipeline from 207-A to 216-A-37-1 is sitecode 200-E-232-PL.

Process Description: The crib received process condensate waste from the 242-A Evaporator facility. The unit is a gravel structure with a 25-centimeter (10-inch) corrugated, galvanized, perforated pipe located horizontally, 2.1 meters (7 feet) below grade. The excavation contains 1.5 meters (5 feet) of gravel fill with a volume of 150 cubic meters (5,300 cubic feet) and has been backfilled over. The side slope is 1:1.

Waste Type: Process Effluent

Waste Description: The site received process condensate from the 242-A Evaporator. The process condensate had been determined to be regulated as a mixed waste due to the presence of spent halogenated and nonhalogenated solvents and for the toxicity of ammonia. The estimated annual quantity of dangerous waste was 4.912E+07 kilograms (1.083E+08 pounds), representing the maximum annual output of evaporator process condensate during operating campaigns.

Code:	216-A-37-2	**Classification:**	Accepted
Names:	216-A-37-2; 216-A-37-2 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1983
Status:	Inactive	**End Date:**	1/1/1995

Description: The crib is marked with concrete AC-540 posts and Underground Radioactive Material signs.

Location: The crib is located outside the 200 East Area perimeter fence, east of the 216-A-37-1 Crib on the same centerline, directly north of the 216-A-30 Crib.

Related Sites/ Structures: The crib is associated with the 202-A (PUREX) facility and the 216-A-30 crib. The pipeline connecting the 216-A-30 crib to 216-A-37-2 is sitecode 200-E-233-PL.

Process Description: The crib was built as a replacement for the 216-A-30 crib. The crib received PUREX steam condensate waste. There are two steel drain pipes. One is perforated and runs the length of the unit, and the other is unperforated and runs from west to east only to the center of the unit, 1.5 meters (5 feet) above the bottom. Two vents are located at the center and at the east end. Two liquid-level gage wells are located 106 meters (350 feet) from the ends of the unit. A bed of gravel on the bottom has been covered with a 20 millimeter PVC barrier cover.

Waste Type: Steam Condensate

Waste Description: The site received steam condensate from PUREX (parallel operation of this unit and 216-A-30). The PUREX steam condensate stream was shut down in June 1992 (DOE/RL-82-28). TPA milestone M-17-22A required that PUREX steam condensate discharge to 216-A-37-2 Crib be discontinued by June 1992.

Code:	216-A-38-1	**Classification:**	Accepted
Names:	216-A-38-1; 216-A-38 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The crib is surrounded by light posts and a chain. It is posted with Underground Radioactive Material signs. There are no concrete AC-540 markers or signs to label the site.

Location: The crib is located southwest of 202-A Building north of 1st Street. It is located south of the PUREX security fence.

Related Sites/ Structures: The site is associated with the 216-A-10 crib. The pipeline to the 216-A-38-1 crib is sitecode 200-E-240-PL. There are two radiological test wells (one at each end of the crib).

Process Description: The crib was built to replace the 216-A-10 crib, but had not been activated when plans for modifying the PUREX head end process were begun. The planned building addition would have been constructed immediately adjacent to the crib. For this reason, the crib was activated. The site is identified in the project proposal (Project IAP-606) as the PUREX Process Condensate Crib - 216-A-38. It was intended to receive the PUREX process condensate waste that was being discharged to the 216-A-10 Crib. The 216-A-10 was showing signs of strontium-90 saturation. The replacement crib was required for continued disposal for the disposal of large volumes [1,040,000 to 1,230,000 liters (275,000 to 325,000 gallons per day)] of condensate waste. There was a potential for this process condensate to become grossly contaminated as a result of reduced vapor phase deentrainment or foaming in the concentrator. The location for the 216-A-38-1 Crib was chosen to shorten piping runs and take advantage of the high percolation rate [76 to 95 liters (20-25 gallons)] per day per square foot. The existing 216-A-10 crib could not be depended upon for continued disposal of process condensate. It had been in operation since June 1961 (five years), and had received about 1,800 million liters (475 million gallons) of condensate which contained about 115,000 curies of beta activity (as of June 1966). Strontium-90 had been verified to be in the groundwater under the crib. There is a 15-centimeter (6-inch) perforated stainless steel distribution pipe (from PUREX and running the length of the crib) reducing to 10-centimeter (4-inch) perforated pipe placed at 10 meters (33 feet) below grade. This pipe was isolated with the installation of a blind flange in 1989. There is 1.5 meters (5 feet) of gravel in the excavation with a membrane barrier between the gravel and the backfill. The excavation was backfilled with excavated material. The side slopes of the excavation were cut at 1:1.

Waste Type: Process Effluent

Waste Description: Although the crib was built to receive PUREX effluent, it was never used.

Code:	216-A-40	**Classification:**	Accepted
Names:	216-A-40; 216-A-40 Retention Basin; 216-A-39 Crib; 216-A-39 Trench	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1968
Status:	Inactive	**End Date:**	1/1/1979

Description: The waste site is a demolished retention basin that was Interim Stabilized. The reduced footprint of the structure was posted with Underground Radioactive Material signs. The corners are marked with concrete AC-540 markers. Some contaminated equipment is being stored on top of the backfilled basin. The stored equipment is posted Radioactive Material Area/Contamination Area.

Location: The site is located northwest of the 244-AR Vault. It is approximately 152 meters (500 feet) west of the 241-AX Tank Farm and approximately 152 meters (500 feet) south of 7th Avenue.

Related Sites/ Structures: The site is associated with the 244-AR Vault facility, UPR-200-E-143, UPR-200-E-100 and UPR-200-E-59. Pipelines associated with the basin are 200-E-274-PL and 200-E-275-PL.

Process Description: The 216-A-40 Basin was built to retain diverted contaminated water from 244-AR Vault. The basin was originally an open, rubber lined trench that was divided into 3 sections. A 0.3 meter (12 inch) diameter schedule 40 distribution pipe ran horizontally through the south end of the unit, 3.7 meters (12 feet) below grade. Collapsible rubber bladders (200,00 gallon capacity) were utilized to contain the contaminated cooling water and steam condensate. Contaminated cooling water and steam condensate from the 244-AR Vault were diverted to the 216-A-40 Retention Basin when the effluent was above standard release limits for the water to be sent to the 216-B-3 or 216-A-25 Ponds. The retention basin bladders failed in 1979 and the unit was removed from service. Although it was not being used, it remained an open basin until 1994. Contamination from inside the open basin affected the surrounding area via wind and animal related contamination migration.

The diverter (diversion box) was a two-compartment concrete structure with a motor driven diverter valve. Each bladder was equipped with a concrete sump and a 3 inch pipeline connected to the pump caisson (lines 321, 322 and 324). The pump pit caisson was connected to a pipeline (line 323 - see WIDS sitecode 216-E-274-PL) that routed contaminated water into the tank farm system, via the 244-A lift station. The cooling water diverter box was associated with WIDS sitecode 200-E-275-PL.

Waste Type: Steam Condensate

Waste Description: The site received and stored in rubber bladders, the diverted cooling water and steam condensate from the 244-AR Vault.

Code: 216-A-41 **Classification:** Accepted

Names: 216-A-41; 216-A-41 Crib; 291-AR Stack Drain; 296-A-13 Stack Drain **Reclassification** None

Type: Crib **Start Date:** 1/1/1968

Status: Inactive **End Date:** 1/1/1974

Description: The site is a small crib that is no longer marked or posted. The area where the crib is assumed to be located is covered with gravel.

Location: The crib is located northwest of the 296-A-13 stack, west of Buffalo Ave. and north of the 244-AR Vault facility.

Related Sites/ Structures: The crib is associated with the 296-A-13 Stack (291-AR Filter Building Stack) (WIDS Site 296-A-13) and the 291-AR Filter Building. The Filter Building is related to the 244-AR Vault Canyon. The pipeline to the crib is 200-E-276-PL.

Process Description: The crib received drainage from the 296-A-13 Stack (WIDS Site 296-A-13). The stack is connected to the 291-AR Filter Building. The bottom of the crib (elevation: 207 meters [678.5 feet]) is filled with 0.5 meters (1.5 feet) of 3.8 to 25.4-centimeter (1.5 to 10-inch) rock, then 20.3 centimeters (8 inches) of 1.9 to 3.8-centimeter (0.75 to 1.5-inch) gravel, and several centimeters of 1.9-centimeter (0.75-inch) gravel. This material is covered by a layer of 20 millimeter polyethylene and 10.2 centimeters (4 inches) of sand (elevation: 208 meters [681.0 feet]). The site was then backfilled with soil to a ground elevation of 209 meters (684.0 feet) (with the crown at 212 meters [696.0 feet]). The side slope is 1:1. A 10.2-centimeter (4-inch) vitrified clay pipe enters the crib (from the 296-A-13 Stack) at elevation 208 meters (681.0 feet)

and connects to the crib dispersion structure, constructed of 20.3 by 20.3 by 40.6-centimeter (8 by 8 by 16-inch) bond beam concrete blocks placed end-to-end. The pipeline from the stack (296-A-13) to the crib is approximately (15 feet) long and extends northwest (30 degrees west of true north) from the stack. The site is not marked in the field. The mapped center point location of the site is based on drawing coordinates from H-2-61975, "216-A-41 Crib, Plan and Profile". Drawing H-2-44501, "Area Map-200 East, A Plant Facilities", shows the crib at the same location.

Waste Type: Steam Condensate

Waste Description: The site received the 296-A-13 Stack condensate drainage. According to RHO-CD-673, the waste was potentially slightly acidic and contained less than 1 curie total beta activity. Potential contaminants of concern (Stenner) may be tritium, cobalt-60, strontium-90, and cesium-137.

Code:	216-A-42	**Classification:**	Accepted
Names:	216-A-42; 216-A-42 Retention Basin; 216-A-42 Trench; 207-AA Retention Basin	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1978
Status:	Inactive	**End Date:**	1/1/1997

Description: The site is surrounded with steel posts and chain. It is posted with Underground Radioactive Material signs. Concrete cover blocks are visible on the top of the basin. The chain link fence has been removed. The site consists of a rubber-lined trench divided into three holding basins by two internal berms. One end of the trench features the inlet structure for the 91-centimeter (36-inch) diameter cooling water line while the other end has the inlet structure for the 20.3-centimeter (8-inch) diameter steam condensate pipeline. Both lines enter at 2.9 meters (9.5 feet) below grade. Outlet drains are located at the low-points in each basin and connect to the 216-A-42A Pump Station. The capacity of the three basins is in excess of 6.1E+06 liters (1.6E+06 gallon). The trench is equipped with a float. Concrete cover blocks were installed over the basins in 1984.

Location: The retention basin is located outside the eastern 200 East Area security fence. It is east of the 202-A Building, directly east of the 216-A-6 Crib.

Related Sites/ Structures: The basin is associated with PUREX facility effluents, 216-A-30, 216-A-37-2, 216-B-3, 216-A-25 and UPR-200-E-66. The PUREX Recycle pipeline is 200-E-261-PL. Other pipelines associated with the basin operation are 200-E-113-PL, 200-E-262-PL and 200-E-263-PL.

Process Description: The 216-A-42 Retention Basin was built to hold cooling water or steam condensate that was contaminated above standard release limits and prevent its disposal to the Gable and B Pond systems or to cribs. After the retained effluent contents were analyzed, a built-in recovery system provided the capability of pumping solutions back into the PUREX facility for reprocessing (see sitecode 200-E-261-PL) or to cribs for disposal. Prior to the construction of the 241-AP Tank Farm (1983), the basin was connected to the 0.9 meter (36 inch) diameter corrugated metal pipeline (200-E-127-PL) that flowed to the Gable and B Ponds. A 0.3 meter (1 foot) diameter chemical sewer line (200-E-187-PL) tied the basin to the 216-A-29 ditch. Portions of the chemical sewer line and the corrugated metal pipe were removed during the 241- AP Tank Farm construction.

Waste Type: Process Effluent

Waste Description: The unit received chemically or radioactively contaminated diversions from the PUREX chemical sewer line, cooling water line, and steam condensate lines. Depending upon the treatment required for the contaminant, the waste was released from the unit to the 216-A-30, 216-A-37-1 and 216-A-37-2 Cribs, to PUREX process piping, or to the Tank Farms.

Code:	216-A-45	**Classification:**	Accepted
Names:	216-A-45; 216-A-45 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	3/4/1987
Status:	Inactive	**End Date:**	9/1/1991

Description: The crib is surrounded with light post and chain. It is posted as an Underground Radioactive Material area. There is a considerable amount of vegetation growing on the crib surface.

Location: The 216-A-45 Crib is located south of the PUREX facility, southwest of the 216-A-10 Crib.

Release Description: On April 2, 1987, more than 5 pounds of pure nitric acid in 6200 pounds of water was discharged to the 216-A-45 crib. The ph was greater than 2.0. The release was neutralized by adding additional carbonate to the A5 neutralization tank (sitecode 200-E-58).

Related Sites/ Structures: The crib is associated with the 202-A facility. The pipeline that fed this crib is sitecode 200-E-231-PL.

Process Description: The unit has an associated drain field consisting of five 10-centimeter (4 inch) diameter perforated, fiberglass-reinforced pipes evenly spaced across the width. At the bottom is 1.7 meters (5.5 feet) of clean rock, 8 to 13 centimeters (3 to 5 inches) in diameter. A layered cover consisting of a 15 centimeters (6 inches) layer of 8 to 13 centimeters (3 to 5-inch) diameter clean rock, a 15 centimeters (6-inch) layer of 1.9-centimeter (3/4-inch) gravel, a sheet of 10-mil polyethylene, and a 10-centimeter (4-inch) layer of sand are placed over the unit.

Waste Type: Process Effluent

Waste Description: The unit received process condensate from the 202-A Building (PUREX). Discharge to this crib was discontinued in mid-1989 and the waste stream was routed to storage tanks (WHC-EP-0367). TPA milestone M-17-20A required all discharge to the 216-A-45 Crib be ceased by September 1991. The Fourth Amendment to the TPA confirms that this milestone was met.

Code:	207-B	**Classification:**	Accepted
Names:	207-B; 207-B Retention Basin; B Plant Retention Basin	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1997

Description: The unit is a concrete-lined basin, divided into two equal sized sections. The basin is surrounded by a 2.4 meter (8 foot) chain link fence and posted with Contamination Area signs.

Location: The site is located inside 200 East Area, northeast of the 221-B Building and south of the 241-B Tank Farm. It is on the east side of Baltimore Ave.

Related Sites/ Structures: The basin has an inlet structure on the west and an outlet structure on the east side. There are two 0.9 square meter (3 square foot) sumps, one for each basin section. The basin is also associated with UPR-200-E-32. The 200-E-112-PL pipeline connects to the west side of the retention basin. The valve box on the east side of the retention basin tied into the pipeline that fed the 216-B-63 Ditch (sitecode 216-E-191-PL). The B Plant Chemical Sewer pipeline (200-E-188-PL), the pipeline to the 216-B-2-1 and 216-B-2-2 ditches (200-E-204-PL) and the pipeline to the 216-B-2-3 ditch (200-E-205-PL) are connected to the valve pit located east of the valve box. The pipeline from 242-B to the basin is sitecode 200-E-264-PL. The cooling water pipeline from 241-BY tank farm to the basin is 200-E-265-PL. In 1987, the entire 216-B-2 ditch system was replaced with a single pipeline (200-E-126-PL) that connected the 207-B retention basin to the 216-B-3 ditch and pond system.

Process Description: The retention basins served as settling basins, receiving B Plant process sewer effluent through an underground pipeline prior to being discharged to the 216-B-2-1, 216-B-2-2, 216-B-2-3 ditches. It was possible to divert effluent to the 216-B-63 ditch. The 216-B-2-1, 216-B-2-2 and 216-B-2-3 ditches were connected to the 216-B-3 ditches and ponds. The 242-B Evaporator also discharged to the 207-B Retention Basin.

Waste Type: Water

Waste Description: The unit received process cooling water from process equipment jackets in the 221-B Building. Normally, activity levels were low, and the water was discharged to the 216-B-3 Pond via the 216-B-2-1, 216-B-2-2, 216-B-2-3 and 216-B-3-1, 216-B-3-2 and 216-B-3-3 ditches. The valve box on the east side of the retention basin tied into the pipeline that fed the 216-B-63 Ditch (sitecode 216-E-191-PL). The B Plant Chemical Sewer pipeline, a pipeline from 242-B Evaporator building and a cooling water pipeline from 241-BX tank farm also fed the retention basin.

Code: 216-B-2-1 **Classification:** Accepted

Names: 216-B-2-1; 216-B-2W; B Ditch; B Swamp Ditch; 216-B-1; 216-B-2 **Reclassification** None

Type: Ditch **Start Date:** 4/1/1945

Status: Inactive **End Date:** 11/1/1963

Description: The ditch has been backfilled and surface stabilized. It is located within a larger Underground Radioactive Material area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 stabilized ditches. In 2015, an additional 28,000 square feet of bio-barrier material and gravel was added to the surface where growing contaminated tumbleweed had been found.

Location: The ditch is located in the northeast quadrant of 200 East Area. The head end of the unit is located near the east side of the 207-B Retention Basin. The ditch ran in an east-west direction until it connected to a section of underground pipeline near the northeast corner of 218-E-12A Burial Ground.

Release Description: The first 305 meters (1000 feet) became grossly contaminated in 1963 (See UPR-200-E-32).

Related Sites/ Structures: The ditch is associated with B-Plant, 207-B, 216-B-3-1, 216-B-3 and UPR-200-E-32. The pipelines associated with the ditch are WIDS sitecodes 200-E-112-PL, 200-E-188-PL and 200-E-204-PL.

Process Description: Process effluent from B-Plant was routed to the 207-B Retention Basin. Effluent was released from the 207-B Retention Basin to the 216-B-2-1 ditch that connected to the 216-B-3-1 ditch and terminated in the 216-B-3 Pond. The 216-B-2-1 ditch was closed after it was grossly contaminated by a coil leak effluent release from B-Plant in 1963 (UPR-200-E-32). It was replaced by the 216-B-2-2 ditch.

Waste Type: Process Effluent

Waste Description: Until March 1952, the site transported steam condensate, process cooling water, and chemical sewer from 221-B waste. After March 1952, the site transported the streams identified above in addition to the 241-CR Vault cooling water.

Code: 216-B-2-2 **Classification:** Accepted

Names: 216-B-2-2; 216-B-2-2W; 216-B-1 Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1970

Description: The ditch has been backfilled and surface stabilized. It is located within a large Underground Radioactive Material area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 backfilled ditches. The individual ditches are not marked. The head end of the ditch is located near the 207-B Retention Basin. The lower end terminated near the northeast corner of the 218-E-12A Burial Ground.

Location: The ditch is located northwest of the 207-B Retention Basin.

Release Description: In March 1970, approximately 1000 curies of strontium-90 was released to the ditch via the Chemical Sewer (see UPR-200-E-138).

Related Sites/ Structures: The following are related to the site: 207-B, 216-B-2-1, 216-B-2-3, 216-B-3-1, 216-B-3-2, and the 216-B-3 Pond. The pipelines associated with the ditch are WIDS sitecodes 200-E-112-PL, 200-E-188-PL, 200-E-203-PL and 200-E-204-PL.

Process Description: The site received chemical process sewer effluent from B Plant and its support facilities. The construction of the 216-B-2-2 ditch reused 762 meters (2500 feet) of the 216-B-2-1 ditch. Approximately 330 meters (1100 feet) of new ditch was dug. When active, the open ditch was 4.6 meters (15 feet) wide at the top with a side slope of 2.5:1.

Waste Type: Process Effluent

Waste Description: Until January 1965, the ditch transported and percolated 241-CR Vault cooling water, 221-B cooling water and steam condensate (replacing 216-B-2-1), and chemical sewer toward 216-B-3 Pond. From January 1965 to November 1967, the same effluents as those listed above in addition to 241-BY Tank Farm In Tank Solidification (ITS) Unit 1 cooling water were transported and percolated by the ditch. From November 1967 to February 1968, the same effluents as those listed above minus 284-E Powerhouse waste and steam condensate were released to the ditch. From February 1968 to April 1970, the same effluents as those listed above plus the 241-BY Tank Farm ITS Unit 2 were released to the ditch. An Unplanned Release on March 22, 1970 released approximately 1000 curies of strontium-90. After April 1970, the site received cleanup waste from 207-B Retention Basin.

Code: 216-B-2-3 **Classification:** Accepted

Names: 216-B-2-3; 216-B-2-3W; B Pond Ditch; B Swamp Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1970

Status: Inactive **End Date:** 1/1/1987

Description: The ditch is currently backfilled and surface stabilized. It is located inside a large Underground Radioactive Material area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 ditches.

Location: The head end of the ditch was located 180 meters (600 feet) southeast of 241-B Tank Farm. The ditch ran southeast and connected to an underground pipe near the northeast corner of 218-E-12A Burial Ground.

Related Sites/ Structures: The ditch is associated with the 207-B Retention Basin. The pipelines associated with the ditch are WIDS sitecodes 200-E-188-PL and 200-E-205-PL.

Process Description: The ditch was used to transport liquid waste from B-Plant to 216-B-3 Pond. It was built to replace the contaminated of 216-B-2-2 Ditch in 1970. The side slope is 2.5:1. The radionuclide inventory for the ditch is included with the 216-B-3 Pond.

Waste Type: Process Effluent

Waste Description: From April 1970 to July 1973, the site transported and percolated the 241-CR Vault cooling water, 221-B Plant cooling water, and condenser cooling water from 241-BY Tank Farm ITS (In Tank Solidification) Units 1 and 2. The waste flowed into the 216-B-3 Pond. After July 1973, the ditch received the above-listed effluents except from 241-BY Tank Farm ITS Units 1 and 2.

Code: 216-B-6 **Classification:** Accepted

Names: 216-B-6; 216-B-6 Crib; 216-B-6 Dry Well; 222-B-110 Dry Well; 222-B-110 Reverse Well **Reclassification** None

Type: Injection/Reverse Well **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1949

Description: A concrete AC-540 post marks the location of this site and is labeled as an Underground Radioactive Material site. The reverse well is a 15.25-centimeter (6-inch) diameter pipe extending 48 meters (160 feet) below ground surface. The lower 7.6 meters (25 feet) of casing is perforated. The vent pipe was cut below grade.

Location: The reverse well is located 3.6 meters (12 feet) west and 0.9 meters (3 feet) north of the 222-B Building.

Related Sites/ Structures: This reverse well is associated with the 222-B Laboratory.

Process Description: The reverse wells at 222-T and 222-B were installed to provide disposal for the laboratory hot sink and sample table. During the bismuth phosphate fuel separation process, batch samples were analyzed in the 222-T and 222-B laboratories. HW-4850, written in 1945, states that the 222-T laboratory was discharging approximately 2.6 curies of fission products and 600 milligrams of plutonium to the dry well per month. Since similar work was done at the 222-B Laboratory, similar waste inventory can be assumed.

Waste Type: Process Effluent

Waste Description: The site received decontamination sink and sample slurper waste from 222-B Building. The site contains not less than 10 curies total beta. HW-4850, written in 1945, states that the 222-T laboratory was discharging approximately 2.6 curies of fission products and 600 milligrams of plutonium to the dry well per month. Since similar work was done at the 222-B Laboratory, similar waste inventory can be assumed. The waste is acidic and contains transuranics and fission products.

Code: 216-B-10A **Classification:** Accepted

Names: 216-B-10A; 222-B-1 Crib; 292-B Drainage; 216-B-10 Crib **Reclassification** None

Type: Crib **Start Date:** 12/1/1949

Status: Inactive **End Date:** 1/1/1952

Description: The unit is a 3.7 by 3.7 by 1.1 meters (12 by 12 by 3.5 feet) wooden structure in an excavation. The side slope is 1:1. The bottom of the excavation is 6.1 meters (20 feet) below grade. The structure is not gravel-filled and has cave-in potential. The surface of the unit has subsided about 0.9 meters (3 feet) in the center, possibly indicating deterioration of the lumber. The site is marked and posted with Underground Radioactive Material and Cave-In-Potential signs.

Location: The unit is located south of the west end of 222-B Building.

Related Sites/ Structures: The pipelines associated with this crib are WIDS sitecodes 200-E-174-PL and 200-E-175-PL.

Waste Type: Process Effluent

Waste Description: Until December 1951, the site received the decontamination sink and sample slurper waste from 222-B Building and floor drainage from 292-B Building. After December 1951, the site received the same as above minus the 222-B Building waste. The waste is acidic and contains transuranics and fission products.

Code: 216-B-10B **Classification:** Accepted

Names: 216-B-10B; 222-B-2 Crib; 216-B-10 Crib **Reclassification** None

Type: Crib **Start Date:** 12/1/1949

Status: Inactive **End Date:** 10/1/1973

Description: The unit is a 3.7 by 3.7 by 1.1-meter (12 by 12 by 3.5-foot) wooden structure in an excavation. The side slope is 1:1. The bottom of the excavation is 6.1 meters (20 feet) below grade. The structure is not gravel-filled and has cave-in potential. The earth has subsided about 0.9 meters (3 feet) over the top of the unit. No site marker post is present.

Location: The unit is located south of the west end of 222-B Building.

Related Sites/ Structures: The pipeline associated with this crib is WIDS sitecode 200-E-174-PL.

Waste Type: Process Effluent

Waste Description: From December 1949 to December 1951 the site received the decontamination sink and sample slurper waste from the 222-B Building and the floor drainage from the 292-B Building. From December 1951 to May 1969 the site received only the floor drainage from the 292-B Building. From May 1969 to October 1973 the site received only the decontamination sink and shower waste from the 221-BC Building.

Code: 216-B-12 **Classification:** Accepted

Names: 216-B-12; 216-ER Crib; 216-ER-1,2,3 Cribs **Reclassification** None

Type: Crib **Start Date:** 11/1/1952

Status: Inactive **End Date:** 11/1/1973

Description: The crib is marked and posted with Underground Radioactive Material and Cave-in Potential signs.

Location: The unit is located northwest of the 221-B Building and north of 7th Street.

Related Sites/ Structures: The crib is associated with the 270-E-1 neutralization pit, 216-B-62 crib and the 200-E-160-PL and 200-E-162-PL pipelines.

Process Description: The 216-B-12 crib originally received 221-U and 224-U condensate waste, transported from 200 West Area via the Cross Site Transfer Line (line V219). The crib also received condensate waste from 221-B Plant via pipeline 200-E-160-PL and later via 200-E-162-PL. A lateral pipe extends to 216-B-12, crib #2, from the 200-E-162-PL pipeline, that also fed the 216-B-62 crib.

The crib received 221-U and 224-U condensate waste from November 1952 through December 1957. The crib was reactivated in May 1967 to receive condensate waste from 221-B until November 1973. A crib collapse was documented in 1973.

The unit consists of a series of 3 cascading, 4.9 by 4.9 by 3.0-meter (16 by 16 by 10-foot) high wooden boxes in an excavation. A 1.3-centimeter (0.5-inch) rock backfill lies in the bottom 3.7 meters (12 feet) of the excavation and beneath each box is approximately 1.2 meters (4 feet) of this rock. The lumber is primarily 15.2 by 20.3-centimeter (6 by 8-inch) Douglas fir. The site contains 2,900 cubic meters (3,800 cubic yards) of 1.3-centimeter (0.5-inch) gravel. The side slope is 1:1.

Waste Type: Process Effluent

Waste Description: From November 1952 to December 1957, the site received the process condensate waste from the tributyl phosphate uranium recovery processes at the 221-U and 224-U Buildings as well as B Plant condensate. From December 1957 to May 1967, the site was inactive. From May 1967 to November 1967, the site received construction waste from 221-B Building. After November 1967, the site received process condensate from 221-B Building. The waste is low in salt and is neutral to basic.

Code: 216-B-51 **Classification:** Accepted

Names: 216-B-51; 216-BY-9 Crib **Reclassification** None

Type: French Drain **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1958

Description: The site is a small Underground Radioactive Material area measuring approximately 3 meters by 3 meters (10 feet by 10 feet). The concrete drain structure extends approximately 0.3 meters (1 foot) above the ground surface. The structure is approximately 1.5 meters (5 feet) in diameter with a wooden lid. The structure is also posted with Fixed Contamination Area signs.

Location: The french drain is south of 12 Street and east of Baltimore Ave. It is north of the 241-B Tank Farm and northeast of the 216-B-8 Crib and Tile Field.

Release Description: See UPR-200-E-144

Related Sites/ Structures: The french drain is associated with 200-E-114-PL, 200-E-221-PL and UPR-200-E-144.

Process Description: The french drain received drainage from the pipeline that transferred tri-butyl phosphate waste from the 241-BY Tank Farm to the BC Cribs and Trenches. The drain was active from January 1956 to January 1958. The unit is constructed of sections of 1.5 meter (5 foot) diameter concrete pipe stacked vertically extending 30 centimeters (1 foot) above ground and 4.3 meters (14 feet) below ground. The pipe is filled with 4 meters (13 feet) of gravel. The french drain has a wood cover with vent holes.

Waste Type: Process Effluent

Waste Description: The site received drainage from the BC Crib pipeline. The pipeline carried high salt, neutral to basic scavenged tributyl phosphate waste via 241-BY tank farm to the BC Crib area. The site contains less than 10 curies total beta.

Code: 216-B-55 **Classification:** Accepted

Names: 216-B-55; 216-B-55 Crib; 216-B-55 Enclosed **Reclassification** None

Trench

Type: Crib **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1991

Description: The site is marked with concrete AC-540 markers and posted with Underground Radioactive Material signs. The unit is filled with approximately 1380 cubic meters (1,800 cubic yards) of gravel. A perforated 30 centimeter (30 inch) diameter galvanized pipe runs the length of the unit, 0.9 meters (3 feet) above the bottom. The site had two gage wells of 20 centimeter (8 inch) steel pipe with a galvanized sheet metal cap. Each well extended from the crib bottom to approximately 0.9 meters (3 feet) above grade. The crib was constructed with 19,500 square feet of membrane barrier.

Location: The site is located west of 225-B, and north of 7th Street.

Related Sites/ Structures: The site is associated with the 221-B facility. The pipeline to the 216-B-55 crib is discussed in sitecode 200-E-161-PL.

Process Description: The site has received steam condensate from 221-B Building. The waste was low in salt and neutral to basic pH. The steam condensate was sent to the 216-B-55 Crib from 1967 to 1990. (DOE/RL-89-28) TPA milestone M-17-25 required all discharge to the crib to be ceased by Sept. 1991.

Waste Type: Steam Condensate

Waste Description: The site has received steam condensate from 221-B Building. The waste is low in salt and is neutral to basic. The steam condensate was sent to the 216-B-55 Crib from 1967 to 1990. (DOE/RL-89-28) TPA milestone M-17-25 required all discharge to the crib to be ceased by Sept. 1991.

Code: 216-B-59 **Classification:** Accepted

Names: 216-B-59; 216-B-58 Ditch; 216-B-58 Trench **Reclassification** None

Type: Trench **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1974

Description: The original 216-B-59 was an unlined trench. The site was upgraded to a retention basin in 1974 (see 216-B-59B). The lined retention basin was constructed over top of the unlined 216-B-59 trench. There are currently no visual features remaining of the unlined trench. The concrete-lined basin is enclosed by a 2 meter (6 foot) chain link fence.

Location: The site is located northeast of 221-B. It is on the east side of Baltimore Ave. and north of 7th Street.

Related Sites/ Structures: This site is associated with 216-B-59B and the 221-B facility. The pipeline that fed the site is 200-E-277-PL.

Process Description: The original trench (216-B-59) was designed as an emergency cooling water diversion for 221-B cooling water with radionuclide concentrations above those allowed for the existing ponds. The site was activated in 1967 and received only a single discharge of approximately 477,000 liters (126,000 gal) of waste in March 1968. The trench was upgraded in 1974 to a retention basin by adding a hypalon liner and changing its identification number to 216-B-59B. It held diverted cooling water for subsequent reprocessing. It was later upgraded again (in 1983) by replacing the hypalon liner with a concrete liner and cover.

Waste Type: Process Effluent

Waste Description: The unlined trench received diverted cooling water from the 221-B Building. Only one diversion occurred (3/68) before the unit was lined and renamed the 216-B-59B Retention Basin.

Code: 216-B-59B
Classification: Accepted
Names: 216-B-59B; 216-B-59 Retention Basin
Reclassification None
Type: Retention Basin
Start Date: 1/1/1974
Status: Inactive
End Date: 1/1/1997

Description: The site is a concrete structure enclosed by a six foot (2 meter) chain link fence.

Location: The site is located inside 200 East Area, approximately 700 feet northeast of the 221-B Building. It is on the east side of Baltimore Ave. and north of 7th Street. The concrete basin structure and haplon liner were placed on top of the area previously known as the 216-B-59 trench.

Related Sites/ Structures: The 216-B-59B Retention Basin is associated with the 216-B-59 trench and the 221-B facility. The pipeline that fed the site is 200-E-277-PL.

Process Description: The 216-B-59B retention basin was designed to receive diverted 221-B Building cooling water that contained radionuclide concentrations above the limits allowed for disposal in the B Pond system. The diverted waste was pumped back into 221-B to be reprocessed. In 1974, the 216-B-59 unlined trench was upgraded to a Retention Basin by adding a hypalon liner and changing its identification number to 216-B-59B. The haplon liner was replaced, in 1983, with a concrete liner and cover.

Waste Type: Process Effluent

Waste Description: This unit received contaminated cooling water from the 221-B Building. The diverted effluent was pumped back into 221-B for reprocessing.

Code: 216-B-62
Classification: Accepted
Names: 216-B-62; 216-B-62 Crib; 216-B-62 Enclosed Trench
Reclassification None
Type: Crib
Start Date: 11/1/1973
Status: Inactive
End Date: 9/1/1991

Description: The crib is surrounded with cement AC-540 markers and posted with Underground Radioactive Material signs.

Location: The crib is located northwest of the 221-B building, west of Atlanta Ave.

Related Sites/ Structures: The pipeline to the 216-B-62 crib is discussed in sitecode 200-E-162-PL.

Process Description: The crib was constructed in 1969 and put on standby, to serve as the eventual replacement crib for the 216-B-12 crib. 216-B-62 was activated in 1973. The site received process condensate from the 221-B building. The crib has 4 feet (1.2 meters) of gravel fill on the bottom. A perforated, 6 inch (15 cm) diameter fiberglass, reinforced epoxy pipe runs the length of the unit, 3 feet (0.9 meters) above the bottom.

Waste Type: Process Effluent

Waste Description: The site has received process condensate from the 221-B Building Separations Facilities. TPA milestone M-17-26 required all discharge to the Crib to be ceased by Sept. 1991.

Code: 216-B-63 **Classification:** Accepted

Names: 216-B-63; 216-B-63 Ditch; 216-B-63 Trench; B Plant Chemical Sewer Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1970

Status: Inactive **End Date:** 1/1/1992

Description: The site is a ditch that has been backfilled and surface stabilized. It is posted as an Underground Radioactive Material area and has Danger - Keep Out signs. Prior to stabilization, the ditch had an earth shielding berm and a side slope of 1.5:1.

Location: The site is located inside the 200 East Area, east of the 241-B Tank Farm and northeast of the 207-B Retention Basin.

Related Sites/ Structures: The ditch was associated with 221-B, 225-B, and 271-B. The pipeline associated with the ditch is 200-E-191-PL. The B Plant chemical sewer pipeline is sitecode 200-E-188-PL. The chemical sewer and the pipeline to the ditch are connected to a valve pit east of the 207-B Retention Basin.

Process Description: From March 1970 to May 1970, the 216-B-63 ditch received ITS-2 cooling water. The 216-B-63 ditch began to receive B Plant chemical sewer waste in May 1970 and continued through February 1992. The ditch received chemical sewer effluent from 221-B, 225-B and 271-B. The ditch was not connected to the B Pond system. The ditch terminated south of the 218-E-12B Burial Ground. 216-B-63 was designed to also receive diverted contaminated cooling water from 207-B and prevent it from reaching the 216-B-3 Pond, but no cooling water was actually ever diverted to the 216-B-63 ditch (see DOE/RL-92-05). In August 1970, the bottom of the ditch was dredged. The dredged material was contaminated with beta/gamma levels up to 3000 counts per minute. In February 1992, Project W-003 rerouted and replaced the VCP pipeline south of 211-BA, thereby eliminating the use of the 216-B-63 ditch. The chemical sewer effluent was combined with the B Plant cooling water effluent and discharged directly to the 216-B-3 Pond.

Waste Type: Process Effluent

Waste Description: From March 1970 to May 1970, the 216-B-63 ditch received 241-BY tank farm In-Tank Solidification (ITS-2) cooling water. The site has received effluent from the 221-B, 225-B, and 271-B Building floor drains and chemical sewer wastes. Waste included corrosive (acidic and caustic) dangerous waste from the regeneration of demineralizer columns at B Plant. Radiological discharges were considered to be relatively low, with at total of approximately 8.7 curies of beta and 7.6 kilograms (16.7 pounds) of uranium. The unit has not received dangerous waste since September 1985. In 1987, two incidental acid releases occurred. In February 1992, the chemical sewer discharge to the 216-B-63 ditch was eliminated. Effluent was rerouted to 216-B-3 Ponds via underground pipelines. TPA milestone M-17-04B required the elimination of B-Plant Chemical Sewer effluent to the 216-B-63 Ditch by February 1992.

Code: 216-B-64 **Classification:** Accepted

Names: 216-B-64; 216-B-64 Crib; 216-B-64 Retention Basin; 216-B-64 Trench **Reclassification** Interim No Action (11/29/2004)

Type: Retention Basin **Start Date:** 1/1/1974

Status: Inactive **End Date:** 1/1/1997

Description: The waste site has been evaluated and determined to require No Action. The chain link fence that once surrounded the basin has been removed. It was surrounded with light post and chain and posted as an Underground Radioactive Material Area. The basin contains a rubber bladder with a 190,000 liter (50,000 gallon) capacity. The unit is divided into two 6.1 meter (20 feet) by 19.8 meter (65 feet) sections. A concrete roof covers the basin.

Location: The retention basin is located west of the 225-B building.

Related Sites/ Structures: The basin is associated with 221-B operations and UPR-200-E-64. The pipelines to the basin are discussed in sitecode 200-E-163-PL.

Process Description: The basin was built to serve as an emergency diversion basin for steam condensate that exceeded crib release limits. Under normal conditions the steam condensate stream flowed through the BCS diverter station located at the south end of the basin and was discharged to the 216-B-55 crib. Under emergency conditions, the effluent stream could be diverted to the 216-B-64 basin. The water collected in the basin could be routed through the pump pit, located on the east side of the basin, and pumped back to 221-B or routed to the 216-B-55 crib.

Waste Type: Steam Condensate

Waste Description: The unit was intended to receive steam condensate from the 221-B Building that exceeded release limits. A facility test was conducted, but the basin was never used.

Closure Info: Interim: No remediation was performed at this site. The No Action classification is documented on form 2004-111. The basin was built, but never received any waste.

Code: 241-B-361 **Classification:** Accepted

Names: 241-B-361; 241-B-361 Settling Tank **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1947

Description: The site is delineated with light post and chain. It is posted with Underground Radioactive Material and Inactive Miscellaneous Underground Storage Tank signs. The surface is covered with coarse rock.

Location: The site is located east of Baltimore Ave. and south of the 216-B-5 Reverse Well.

Related Sites/ Structures: The tank is associated with 221-B, 224-B and 216-B-5. The pipeline to the settling tank is sitecode 200-E-195-PL.

Process Description: The tank operated from April 1945 to September 1947, acting as a settling tank for waste originating in B Plant cells 5 and 6 and also low level concentrator condensate from the 224-B facility. The waste was routed first to the 241-B-154 Diversion Box before being transferred to the settling tank. After settling, the supernate from the tank was discharged to the 216-B-5 reverse well. During its period of service, 120 million gallons of waste passed through the tank. The waste contained approximately 4.3 kilograms of plutonium. It is estimated that half of the plutonium overflowed into the reverse well, leaving an estimated 2.4 kilograms of plutonium in the 241-B-361 tank. An estimated two million curies of strontium also remains in the tank. The tank sludge was sampled and analyzed in 1979. The sludge composition was consistent with the bismuth phosphate process.

The 241-B-361 tank is constructed of 15-centimeter (6-inch) reinforced, prestressed concrete. The top of the unit is 1.8 meters (6 feet) below grade. Eleven risers are visible above grade. One is equipped with a manual tape, a second contains two dip tubes, a third vents the unit, and the eight remaining are blanked off.

Waste Type: Sludge

Waste Description: The unit received low salt, alkaline radioactive liquid wastes from cell washings collected in the 5-6W Cells in 221-B and low level concentrator condensate from the 224-B facility. Although some reports estimate the quantity of waste in the tank as 121,000 liters (32,000 gallons), the unit is now estimated to contain 83,000 liters (22,000 gallons) of sludge containing 2.46 kilograms (5.42 pounds) of plutonium and 1,060 curies beta/gamma. The tank solids are primarily bismuth phosphate residue described as black in color with a pudding like consistency. The current volume is unknown and not monitored. The tank contents was sampled in 1979. The sludge contained 3.4 microcuries/gram of Pu-239, 1.4 microcuries/gram of Cs-137, and 23 microcuries/gram of SR-90. The liquid contained 6.1E-7 microcuries/ml of Pu-239, 2.5E-3 microcuries/ml of Cs-137, and 3.1E-5 microcuries/ml of Sr-90.

Code: 216-BY-201 **Classification:** Accepted

Names: 216-BY-201; 216-BY-47; 241-BY Flush Tank; Supernatant Disposal Flush Tank **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1955

Description: The unit is an underground tank that is not discernible from the surface. It is located within an Underground Radioactive Material area and has a sign stating "Restricted Access - 216-BY-201" and "IMUST" (Inactive Miscellaneous Underground Storage Tank). There is one metal covered manhole visible at the tank site and no visible risers or vents. A steel monitoring pit, located near the southeast corner of the tank, is visible and may be identified by a steel cover.

Location: The flush tank is located north of the 241-BY Tank Farm and south of the 216-B-43 though 216-B-50 cribs. It is south of 12th Street and west of Baltimore Ave.

Release Description: See UPR-200-E-9

Related Sites/ Structures: The site is related to 241-BY Tank Farm, the 216-B-43 through 49 cribs and UPR-200-E-9. Pipelines associated with the flush tank are 200-E-219-PL and 200-E-220-PL.

Process Description: The flush tank is a rectangular, reinforced concrete disposal structure. The tank received waste from the 241-BY Tank Farm and the TBP (tri-butyl phosphate) Waste Line. The unit was designed to scavenge the TBP waste and discharge the supernatant to the 216-B-43 through 216-B-49 cribs. The 216-B-50 crib did not receive Uranium Recovery waste via the 216-BY-201 tank. The referenced drawing (H-2-2604) shows a vent pipe 15 centimeters (6 inches) in diameter by 2.7 meters (9 feet) long that extends from the top of the tank to 1.2 meters (4 feet) above grade, and a 15 centimeters (6 inches) diameter by 2.1 meters (7 feet) long pipe that extends from the top of the tank to 0.61 meters (2 feet) above grade. The tank is constructed of concrete. A manhole is located at each end of the tank. A 10 centimeter (4 inch) diameter pipe from the 241-B-BY Tank Farm enters near the top of the tank. A "Miller Siphon" (manufactured by Pacific Flush Tank Company) is located at the bottom of the tank and drains waste through a 35 centimeter (14 inch) line to the 216-B-43 though 216-B-50 cribs. An overflow pipe is also connected to this line.

Waste Type: Process Effluent

Waste Description: The unit received radioactive waste from the 241-BY Tank Farm and the TBP Waste Line. Radiological constituents include strontium and cesium with their associated decay products, yttrium and barium. Chemical waste includes nitrate, sodium, aluminum, carbonate and hydroxide.

Code:	216-C-1	**Classification:**	Accepted
Names:	216-C-1; 216-C-1 Crib; 216-C Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	6/1/1957

Description: The site is marked and posted with Underground Radioactive Material signs. A yellow cement crib marker, labeled 216-C-1, is located inside the chained 241-CX-71 tank area.

Location: The site is located in 200 East Area, south of 7th Street. It is east of the 209-E Facility and southwest of where the 201-C building once stood.

Related Sites/ Structures: The site is associated with 201-C, 241-CX-71, 200-E-156-PL pipeline and 200-E-41.

Process Description: The crib received cold run waste and process condensate from the 201-C (Hot Semiworks) test facility. The 201-C building went through three operational modes. It was originally built in 1949 as a pilot plant for the Reduction Oxidation (REDOX) Process. In 1954, the building was used as a pilot plant for the Plutonium Uranium Extraction (PUREX) Process. The plant was converted to recover strontium from process wastes in 1961. Waste neutralized in the 241-CX-71 tank was discharged to this crib. The structure is 7.0 by 2.4 by 1.7 meters (23 by 8 by 5.5 feet), constructed of 2.4-meter by 20-centimeter by 20-centimeter (8-foot by 8-inch by 8-inch) concrete ties, 2.4-meter by 20-centimeter by 10-centimeter (8-foot by 8-inch by 4-inch) spacer blocks, and 1.1-meter by 2.4-meter by 15-centimeter (3.7-foot by 8-foot by 6-inch) roof slabs. The unit has 1.5 meters (5 feet) or 120 cubic meters (4,200 cubic feet) of gravel fill backfilled over with 0.6 meters (2 feet) of soil, leaving 1.5 meters (5 feet) of the excavation unfilled. The distance from the release point to the site bottom is 1.2 meters (4 feet). The side slope is 1:2.

Waste Type: Process Effluent

Waste Description: From January 1953 until September 1955, the site received high salt waste (HSW), cold-run waste, and the process condensate from the 201-C Building. From September 1955 to June 1957, the site received the HSW cold-run waste from the 201-C Building. Waste neutralized in the 241-CX-71 tank was discharged to this crib. The waste is high in salt and is neutral to basic.

Code:	216-C-2	**Classification:**	Accepted
Names:	216-C-2; 216-C-2 Dry Well; 216-C-2 Reverse Well; 291-C Dry Well	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	5/16/1988

Description: The reverse well is no longer visible. It is not separately marked or posted from the surrounding stabilized area (200-E-41) that is posted as Underground Radioactive Material.

Location: The unit is located inside the 200-E-41 Stabilized Area, south of 7th Street in 200 East Area. It is southeast of the former 291-C-1 Stack location, in the Hot Semiworks area.

Related Sites/ Structures: The dry well is related to the 291-C-1 Stack and the 291-C-1 Stank Ventilation Filter. The pipelines associated with 216-C-2 are sitecodes 200-E-251-PL and 200-E-252-PL.

Process Description: The dry well was a 30.5-centimeter (12-inch) diameter pipe that extended 0.3 meters (1 foot) above grade to 12 meters (40 feet) below the surface. The bottom 7.6 meters (25 feet) of the pipe was perforated. The drain is surrounded by a concrete collar at grade. A 10-centimeter (4-inch) stainless steel saran-lined inlet pipe connected the unit to the 291-C-1 Stack. A second inlet line constructed of 5.1-centimeter (2-inch) stainless steel pipe connected to the 291-C-1

Stack Ventilation Filter.

Waste Type: Water

Waste Description: The site received 291-C Stack drainage and the seal water drainage from the stack ventilation filters. The volume discharged to the unit is unknown. The waste is low in salt and is neutral to basic. The site contains less than 1 curie total beta activity.

Code: 216-C-3 **Classification:** Accepted

Names: 216-C-3; 216-C-3 Crib; 201-C Leaching Pit **Reclassification** None

Type: Crib **Start Date:** 1/1/1953

Status: Inactive **End Date:** 3/1/1954

Description: The crib is identified with a single AC-540 concrete marker post. The site is located inside a larger posted Underground Radioactive Material area known as 200-E-41 (Strontium Semi-works Stabilized Area).

The site consists of 10 centimeter (4 inch) pipes resting on a gravel bed creating a drain field type crib.

Location: The crib is located south of 7th Street, within the Strontium Semiworks stabilized area known as 200-E-41.

Related Sites/ Structures: The site is associated with the 201-C, 215-C and 271-C facility operations. The pipeline associated with this crib is sitecode 200-E-169-PL.

Process Description: The crib received acidic process waste from the 201-C, 215-C and 271-C buildings. The crib was deactivated by blanking the inlet pipeline and backfilling the excavation with sand and gravel. When the 216-C-3 leaching pit was blanked, the effluent was diverted to the 216-C-9 excavation.

Waste Type: Process Effluent

Waste Description: The site received waste from the 201-C, 215-C, and 271-C buildings. The waste is acidic.

Code: 216-C-4 **Classification:** Accepted

Names: 216-C-4; 216-C-4 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1965

Description: The crib has been surface stabilized. It is marked and posted with Underground Radioactive Material signs. An access area has been cut through the 209-E security fence.

Location: The crib is located south of 7th Street in the Hot Semiworks area. The crib is located in between the double security fences surrounding the 209-E Critical Mass Laboratory.

Related Sites/ Structures: The pipeline associated with this crib is sitecode 200-E-170-PL.

Process Description: The crib received waste from the 276-C building. The unit is constructed of a 15-centimeter (6-inch) diameter galvanized, corrugated, perforated piping placed horizontally at 3.5 meters (11.5 feet) below grade. Two 6.1 meter (20 foot) lengths are placed perpendicularly to the inlet pipe, forming an H pattern. The side slope is 1:1. The site contains 1.8 meters (6 feet) of gravel fill

[74 cubic meters (2,600 cubic feet)] and has been backfilled. The waste release point is 1.5 meters (5 feet) from the site bottom. The crib bottom is 4.8 meters (16 feet) below ground surface and measures 3 meters (10 feet) by 6 meters (20 feet).

Waste Type: Process Effluent

Waste Description: The site received contaminated organic waste from the 276-C Building. The waste is low in salt and is neutral to basic.

Code: 216-C-5 **Classification:** Accepted

Names: 216-C-5; 216-C-5 Crib **Reclassification** None

Type: Crib **Start Date:** 3/1/1955

Status: Inactive **End Date:** 6/1/1955

Description: The crib is marked with concrete AC-540 markers and Underground Radioactive Material signs. It is located within the larger, surface stabilized area known as 200-E-41.

Location: The crib is located south of 7th Street, within the Hot Semiworks stabilized area (200-E-41).

Related Sites/ Structures: The crib is associated with the 201-C facility, 241-CX-71 and 200-E-41. The pipeline associated with this crib is sitecode 200-E-173-PL.

Process Description: The crib received 201-C "high salt waste" cold run waste via a 15-centimeter (6-inch) diameter galvanized, corrugated, perforated piping placed horizontally at 3.4 meters (11 feet) below grade. Two 6.1-meter (20-foot) lengths are placed perpendicularly to the inlet pipe, forming an H pattern. The side slope is 1:1. The site contains approximately 1.8 meters (6 feet) or 74 cubic meters (2,600 cubic feet) of gravel fill and has been backfilled. The waste release point is 1.5 meters (5 feet) from the site bottom.

Waste Type: Process Effluent

Waste Description: The site received the high salt waste (HSW) cold run waste from the 201-C Building. It received some waste that had passed through the 241-CX-71 Neutralization Tank.

Code: 216-C-6 **Classification:** Accepted

Names: 216-C-6; 241-CX Crib **Reclassification** None

Type: Crib **Start Date:** 9/1/1955

Status: Inactive **End Date:** 9/1/1964

Description: The crib is covered with gravel and marked with cement posts on the four corners. It is posted with Underground Radioactive Material signs.

Location: The crib is located south of 7th Street, within the Hot Semiworks stabilized area (200-E-41). It is adjacent to the south side of the 241-CX Vault building.

Related Sites/ Structures: The site is associated with the 241-CX Vault and the 241-CX-72 crib. The pipeline associated with this crib is 200-E-171-PL.

Process Description: The unit is constructed of 15-centimeter (6-inch) diameter galvanized, corrugated, perforated piping placed horizontally at 3.4 meters (11 feet) below grade. Two 6.1-meter (20-foot) lengths are placed perpendicularly to the inlet pipe, forming an H pattern. The side slope is 1:1. The site contains approximately 1.8 meters (6 feet) or 74 cubic meters (2,600 cubic feet) of gravel fill and has been backfilled. The waste release point is 1.5 meters (5 feet) from the site bottom.

Waste Type: Process Effluent

Waste Description: The site received the process condensate from the 201-C Building and the 241-CX Vault floor drainage in the 241-CX area. The waste is acidic.

Code: 216-C-7 **Classification:** Accepted

Names: 216-C-7; 216-C-7 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1961

Status: Inactive **End Date:** 1/1/1983

Description: The site is surrounded by steel post and chain. It is posted with Underground Radioactive Material signs.

Location: The site is located southwest of the 209-E Building, inside the 209-E exclusion area fence.

Related Sites/ Structures: The crib is associated with 209-E-WS-3. The pipeline associated with this crib is sitecode 200-E-172-PL.

Process Description: The crib received radioactive liquid waste from the 209-E Critical Mass Laboratory via 5 centimeter (2 inch) diameter steel pipeline that connected to a 0.15 meter (6 inch) diameter, perforated vitrified clay distribution pipe, placed horizontally 3 meters (9 feet) below grade. Two lengths of clay pipe are placed perpendicularly to the first, forming an H pattern. The site contains 123 cubic meters (4,100 cubic feet) of gravel fill and has been backfilled.

Waste Type: Process Effluent

Waste Description: The 216-C-7 crib received liquid waste from the 209-E Building Critical Mass Laboratory. Small tanks held reflector water that contained nitric acid, plutonium, uranium and neutron poisons such as boron, cadmium and gadolinium. The crib was placed on standby in 1983.

Code: 216-C-10 **Classification:** Accepted

Names: 216-C-10; 216-C-10 Crib **Reclassification** None

Type: Crib **Start Date:** 11/1/1964

Status: Inactive **End Date:** 10/1/1969

Description: The site is marked with concrete AC-540 markers and Underground Radioactive Material signs. The surface is covered with gravel. In 2015, approximately 3000 square feet of additional gravel was added to prevent the growth of tumbleweeds.

Location: The site is located south of 7th Street and southeast of the 201-C Building core.

Related Sites/ Structures: The site is associated with the 201-C facility and the 200-E-157-PL pipeline.

Process Description: The crib received process condensate from 201-C via a 7.6-centimeter (3-inch) diameter stainless steel pipe, located horizontally, 1.2 meters (4 feet) below grade. The site slope is 1:1.5. The site contains 48 cubic meters (1,700 cubic feet) of gravel fill and has been backfilled with dirt.

Waste Type: Process Effluent

Waste Description: The site received process condensate and liquid waste from the 201-C Building. The waste was acidic.

Code:	291-C-1	**Classification:**	Accepted
Names:	291-C-1; 291-C-1 Stack; 291-C Stack Burial Trench	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1949
Status:	Inactive	**End Date:**	1/1/1987

Description: The 291-C Stack was a double-shell structure made of reinforced concrete, acid-resistant brick and mortar. The stack was demolished in 1988 and now lies in a trench south of where it stood. The area has been surface stabilized with an ash cover (sitecode 200-E-41). The stack burial trench is not marked and cannot be separately distinguished from the rest of the surface stabilized area.

Location: The stack was located east of the 201-C facility, south of 7th Street in 200 East Area.

Related Sites/ Structures: The site is associated with 201-C and the 200-E-41 surface stabilized area.

Process Description: The stack provided exhaust air ventilation for the 201-C cells and process vessels. Forty fiber glass filters were located in an underground concrete cell. An array of HEPA filters was contained in another below-grade enclosure.

Waste Type: Demolition and Inert Waste

Waste Description: The radioactively contaminated stack now lies in a trench south of where it stood. It was estimated to contain 100 curies of plutonium and 600 curies of beta contamination.

Code:	2704-C-WS-1	**Classification:**	Accepted
Names:	2704-C-WS-1; Gatehouse French Drain; 2704-C French Drain	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1949
Status:	Inactive	**End Date:**	1/1/1998

Description: The 2704-C Building was demolished in 1998. The area where the french drain was located is now within a larger gravel area that is posted Underground Radioactive Material (URM). The drain is no longer visible at the location described. The drain could be covered with gravel or by the two dumpsters located in the area. There is a possibility that this site is the same site as that identified in HW-22955 as a quench tank. The description follows. Steam condensate drained to a quench tank at the southwest corner of the building (2704C). Sanitary waste drains through a 10.2 centimeter (4 inch) cast iron line running beneath the floor slab from the toilet room to a point 1.5 meters (5 feet) west of the building where it connects to a 10.2 centimeter (4 inch) tile drain. The overflow from the quench tank also flows into this tile drain which runs to the sanitary waste disposal field. The sanitary waste disposal field is part of the 2607-E7 Septic System. (Drawings H-2-4033, H-2-4012, and H-2-4013 identify a quench tank. Drawing H-2-77665 identifies a french drain).

Location: This site is located in 200 East. It is located at the southwest corner of the 2704-C Building.

Related Sites/ Structures: The site was related to the 2704-C, Office and Gate House. The pipeline associated with this french drain is sitecode 200-E-250-PL. The Hot Semiworks surface stabilized area is known as 200-E-41. The demolished 2704-C building and drain are adjacent to the Hot Semiworks stabilized area.

Process Description: The 2704-C building was originally built in 1949 to support the Hot Semiworks operations. It was a one story wooden structure, on a cement slab foundation, that contained the security office (Gate House), a lunch room and a toilet. Building steam condensate drained to a quench tank located at the southwest corner of the building. During the 1980s, 2704C housed the 200 East Tank Farms Health Physics (HPT) Offices. Prior to demolition by Bechtel Hanford Inc. (BHI), the building was designated a contaminated facility.

Waste Type: Steam Condensate

Waste Description: Although the drain received building steam condensate, periodically the drain was labeled with radioactive postings.

Code: 200-E BP
Classification: Accepted
Names: 200-E BP; 200-E Burning Pit; 200 East Burn Pit
Reclassification None
Type: Burn Pit
Start Date: 1/1/1950
Status: Inactive
End Date: 1/1/1970

Description: The burn pit is a large depression. There is limited growing vegetation. The surface is mostly rock and gravel. In 2010, most of the burn pit was posted as a Soil Contamination Area, due to contaminated tumbleweed fragments accumulating within the pit.

Location: The burn pit is located in the northeast corner of 200 East Area, south of 12th Street and west of Canton Ave. It is a large excavation located east of the 218-E-8 Burial Ground.

Related Sites/ Structures: The site is associated with WIDS sitecode 200-E-8 BPDS, 200-E-109 and UPR-200-E-106.

Process Description: Burn pits were typically used for disposal of non radioactive construction and office wastes. Sometimes paint, solvents and chemicals were dumped there. The pit was also used to burn tumbleweed that were collected off the 200 East Area perimeter fences. In the late 1990's, miscellaneous, non-radioactive material began to be stored inside the burn pit. Many damaged load luggers and large Basin Disposal, Inc. trash containers accumulated in the pit. Some containers were empty, but some containers had material in them. In the spring of 2010, MSA began to remove the containers from the burn pit. The containers were radiological surveyed and released. The released containers were sent off site to Basin Disposal, Inc. One large roll off container may be sent to the Environmental Restoration Disposal Facility (ERDF).

Waste Type: Chemicals

Waste Description: This site received construction and office waste 1,500 cubic meters (1,960 cubic yards), paint wastes, and chemical solvents 1,000 cubic meters (1,300 cubic yards).

Waste Type: Asbestos (friable)

Waste Description: A site visit in 1991 noted an area within the pit posted with asbestos warning signs.

Code: 200-E PD
Classification: Accepted
Names: 200-E PD; 200-E Powerhouse Ditch; 200 East Powerhouse Pond
Reclassification None
Type: Ditch
Start Date: 1/1/1945
Status: Active
End Date:

Description: The site currently consists of an open ditch, measuring approximately 580 meters, running east to west. The eastern portion of the original ditch was backfilled in 1996, due to a contamination spread. This portion is currently posted with Underground Radioactive signs.

Location: The ditch is located north of 4th Street and south of the Hot Semi-Works area.

Related Sites/ Structures: The ditch is associated with the 284-E Powerhouse, 283-E, 282-E, 200-E-286 swamp, UPR-200-E-100 and UPR-200-E-143. The pipeline associated with the ditch is sitecode 200-E-237-PL.

Process Description: The ditch is fed from a 42 inch diameter underground pipeline connected to the 282-E, 283-E and 284-E facilities. The original, horse shoe shaped ditch emptied into a shallow depression east of the 200 East Area fence known as the Powerhouse Pond (see 200-E-286) from 1946 through 1953. In 1954, the powerhouse ditch effluent was redirected in a northeast direction, to connect to 216-B-3 Pond. The water was discharged from the ditch to a 24 inch diameter pipeline that led to the 216-B-3C Pond. In 1997, when discharges to the 216-B-3C Pond were discontinued, the effluent from the Powerhouse Ditch was diverted to the 200 Area Treated Effluent Disposal Facility (TEDF). The 284-E powerhouse was completely shut down in 1998. After the powerhouse was shutdown, a small amount of effluent continued to be discharged to the ditch from the 282-E and 283-E water treatment facility and reservoir. During 1997 and 1998, blowdown/boiler condensate from the Johnson Controls facility also discharged to the ditch. A very small amount of effluent continues to be discharged to the pipeline (200-E-237-PL) that feeds the ditch.

Waste Type: Process Effluent

Waste Description: The ditch received cooling water, boiler blowdown, floor drain discharge, softener regeneration effluents, filter backwash, and sedimentation basin cleanout from 282-E, 283-E and 284-E. During 1997 and 1998, a small amount of water from the Johnson Controls package boiler was discharged to the ditch. The volume of discharge has varied of the life of the ditch. Only a very small amount of water is currently discharged to the pipeline and ditch.

Code: 200-E-4 **Classification:** Accepted

Names: 200-E-4; 209-E North Dry Well; Critical Mass Laboratory Dry Well North; Miscellaneous Stream #730 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1958

Status: Inactive **End Date:** 1/1/1959

Description: The site is a 1.2 meter (4 foot) diameter dry well, covered with a yellow metal cover. In 2011, amended water was sprayed during the 209E building demolition activities. Post-demolition, three to six inches of surface material was removed from all areas affected by the amended water and prior to applying a gravel cap. The final gravel cap was expanded to cover all affected areas. The posted URMA was expanded to include the entire gravel cap. The gravel cap now covers several WIDS sites. The additional WIDS sites under the 209E gravel cap are 200-E-4, 200-E-35, 209-E-WS-1, 209-E-WS-2, 2718-E-WS-1 and 200-E-293 (2718E footprint). The 209-E-WS-3 (Tank 111), adjacent to the south side of the foundation, is within the URMA but was not covered or backfilled.

Location: The site is located approximately 7.6 meters (25 feet) north of the northwest corner of the 209-E Critical Mass Laboratory Service Building.

Related Sites/ Structures: The site is connected to 209-E Critical Mass Lab via underground piping (see sitecode 200-E-249-PL) and the 209E gravel cap (200-E-294).

Waste Type: Steam Condensate

Waste Description: The waste was steam condensate from the steam trap in the valve pit plus steam condensate from the equipment room.

Code: 200-E-13 **Classification:** Accepted

Names: 200-E-13; Rubble Piles from RCRA General Inspection #200EFY95 Item #7 **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: A 1995 site inspection identified this site and described it as numerous rubble piles. These piles contained inert construction debris, such as wood, asphalt, dirt, pipe and concrete. Another site visit occurred in February 1997. The following debris was identified: asphalt paving, concrete, steel pipe, rebar and PVC pipe. During a GPS survey on August 26, 1998, it was observed that debris was concentrated in piles south of an old borrow area. However, there were also isolated piles/berms of debris beyond this concentration, primarily to the west. Some scattered debris and half-buried towels or rags were observed in the borrow area. A site visit on July 26, 1999, confirmed the previous site conditions.

Location: The site is located inside 200 East Area, south of the PUREX facility. The site is north of First Street, off a dirt road approximately 220 meters (722 feet) west of the intersection of First Street and Canton Avenue.

Waste Type: Construction Debris

Waste Description: The waste contains inert construction debris that includes wood, asphalt, dirt, pipe, and concrete.

Code: 200-E-25 **Classification:** Accepted

Names: 200-E-25; 272-BB French Drain; Insulation Shop French Drain; Miscellaneous Stream #659 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1971

Status: Inactive **End Date:** 1/1/1991

Description: The french drain structure is not visible from the surface. The french drain's location is marked with an old sign, mounted on two support posts. The sign says "Asbestos Waste Disposal Site - Do No Excavate". A sign stating "200-E-25" has been attached to one of the support posts.

Location: The dry well is located approximately 6 meters (20 feet) north of the northeast corner of the 272-BB Insulation Shop.

Related Sites/ Structures: The site is associated with the 272-BB building and the 200-E-209-PL pipeline.

Process Description: The building sink and floor drain were connected to the dry well via a 5.1 centimeter (2 inch), schedule 40 carbon steel pipe. An 0.4 meter (1.5 foot) diameter, 36 inch tall grease trap with a removable cover is located on the east side of the 272-BB building.

Waste Type: Chemicals

Waste Description: Material used in the 272-BB Insulation Shop that possibly could have been flushed into the sink or floor drain include: Calcium Silicate, Fiberglass, Silicate, "Airball" (an insulation cover material) and latex paint. Prior to 1988, it is possible that organic chemicals, oils and grease

may have been introduced into the french drain. A sign posted at the site indicates the presence of asbestos, which is regulated as a hazardous substance under CERCLA.

Code: 200-E-26 **Classification:** Accepted

Names: 200-E-26; Diesel Fuel Contaminated Soil; Heavy Equipment Storage Area **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is an area that was used as an equipment staging area for trucks, backhoes, compressors, and other heavy equipment. As of October 2001, the site no longer shows visual evidence of oil contaminating the soil. In 1996, the soil had an odor like diesel fuel, but this was not reported in 2001. The contamination noted in 1996 appeared to be spotty. An electrical receptacle marks each end of the site.

Location: The site is located in the 200 East area, south of B Plant, within the former ICF Kaiser Construction Complex.

Release Description: Heavy equipment was stored in this area for several years. The contaminated soil is most probably due to equipment leakage.

Waste Type: Soil

Waste Description: The soil at the site is contaminated with oil and diesel fuel.

Code: 200-E-29 **Classification:** Accepted

Names: 200-E-29; Unplanned Release from 241-ER-152 Diversion Box **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is a large, irregular shaped, posted Underground Radioactive Material (URM) area. A smaller triangular shaped URM area is located adjacent to the east shoulder of Atlanta Ave., northwest of the larger, stabilized 200-E-29 area. Another small URM area is located adjacent to a row of conex boxes, east of the larger stabilized area.

Location: The site is located south of 221-B, south of 7th Street and east of Atlanta Ave. It surrounds the 241-ER-152 Diversion Box.

Related Sites/ Structures: The site is associated with the 241-ER-152 Diversion Box.

Waste Type: Animal Waste

Waste Description:

Code: 200-E-43 **Classification:** Accepted

Names: 200-E-43; Regulated Equipment Storage Area; Tank Car Storage Area; TC-4 Spur Tank Car Storage Area **Reclassification** None

Type: Storage **Start Date:**

Status: Inactive **End Date:**

Description: This site consists of a chain link fenced portion of the TC-4 Spur located northwest of the PUREX facility. The site was used to store railroad tank cars containing liquid radioactive material that require controls due to radiological dose rate conditions. The fence gate is locked. The area had been posted as a Radioactive Material Area (RMA) and an Underground Radioactive Material area (URM). However, in January 1999, it was only posted as an Underground Radioactive Material area. It is also posted with "Danger - Unauthorized Personnel Keep Out" signs. The ties between the rails are covered with gravel.

Location: The site is located inside 200 East Area, north of 4th Street.

Release Description: On December 17, 2010, approximately 576,000 gallons of potable water discharged to the ground during a construction water line tie in activity. The water flowed south, from the line break and flooded a portion of the TC-4 Spur Railcar Storage Area and the UPR-200-E-88 stabilized railroad track. Although no railcars are being stored here, the area is still fenced and radiologically posted.

Related Sites/ Structures: The site is associated with the TC-4 Railroad Spur and UPR-200-E-88.

Process Description: The fenced area was used to stage railroad tank cars that transported liquid waste to the 204-AR waste unloading facility.

Code: 200-E-53 **Classification:** Accepted

Names: 200-E-53; Above Ground Storage Area; Contaminated Zone Adjacent to 218-E-12B and 218-E-8; Overground Storage Area **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1980

Status: Inactive **End Date:**

Description: The waste site is an irregular shaped area in the bottom of a soil depression. Rockwell document RHO-CD-1048 and photographic documentation from 1982 indicate this area was used to store contaminated equipment. The size, shape and type of posting has varied over the years.

Location: The site is located adjacent to and east of 218-E-12B Burial Ground and adjacent to and south of 218-E-8 Burial Ground inside 200 East Area.

Related Sites/ Structures: This site is associated with 200-E-109, UPR-200-E-50 and UPR-200-E-62.

Waste Type: Soil

Waste Description: Contaminated soil specks, vegetation and animal feces have been identified in this area.

Code: 200-E-56 **Classification:** Accepted

Names: 200-E-56; 241-C Waste Line Leak Adjacent to 201-C; Waste Line Leak #1 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The area adjacent to the demolished 201-C Building has been surface stabilized with flyash. The stabilized area has been given the WIDS Site code 200-E-41 and is posted as an Underground Radioactive Material area. The release site is not separately marked or posted, and may be combined with 200-E-41.

Location: The waste line leak was adjacent to the east side of the 201-C Building.

Release Description: HW-52860 states that teflon flange gaskets on the stainless steel underground waste line from 201-C to 241-C Tank Farm developed leaks. The leaks caused the underground area next to the east side of the 201-C Building and an underground area near the east facility fence to become contaminated (see 200-E-57). Radiation readings in 1957 were greater than 100 rad per hour at a depth of 3.66 meters (12 feet) adjacent to the 201-C Building and near the fence. The underground waste line was abandoned and by pass sections installed. New sections of pipeline were installed south of the leaking sections.

Related Sites/ Structures: The site is associated with 200-E-57, surface stabilized area 200-E-41 and pipelines 200-E-149-PL and 200-E-257-PL.

Process Description: The Hot Semiworks Facility was constructed in 1949. The facility was a pilot plant for the testing of the REDOX and PUREX plutonium separation processes from 1952 through 1957. The facility pilot tests used irradiated fuels. The facility was placed in standby status in 1957. In 1961 the plant was converted for the strontium recovery process of waste stored in tank farms. The Hot Semiworks facility permanently shut down in 1967. Decommissioning began in 1983 and was completed in 1987.

Waste Type: Process Effluent

Waste Description: A leaking underground waste line caused the soil beneath the line to become contaminated. The pipeline carried waste from the 201-C Building to the 241-C Tank Farm. Maximum contamination levels in 1957 were greater than 100 rad per hour.

Code: 200-E-57 **Classification:** Accepted

Names: 200-E-57; 241-C Waste Line Leak East of 201-C; Waste Line Leak #2 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The area around the demolished 201-C (Hot Semiworks Facility) has been surface stabilized with flyash. The stabilized area is known as 200-E-41 and is posted with Underground Radioactive Material signs. This release site is separately not marked or posted, and may be combined with 200-E-41.

Location: This release occurred at an underground waste line, located east of the 201-C Building, adjacent to the east Semiworks fence. The fence no longer exists.

Release Description: HW-52680 states that teflon flanges on the 5-centimeter (2-inch) stainless steel underground waste line from 201-C to the 241-C Tank Farm leaked and caused the soil beneath the line to become contaminated. One leaking flange was located near the Semiworks fence. The attached sketch indicates an underground contaminated area measuring 9 meters (30 feet) long. Radiological readings in 1957 ranged from 6 rad per hour at a depth of 0.3 meters (1 foot) to greater than 100 rad per hour at a depth of 4.5 meters (15 feet) at this location. The document states the line also leaked in an area adjacent to the east side of the 201-C Building (see 200-E-56). The underground waste line was abandoned and bypass sections installed. New sections of pipeline were installed south of the leaking sections.

Related Sites/ Structures: The site is associated with 200-E-41 and 200-E-56.

Process Description: The Hot Semiworks Facility was constructed in 1949. The facility was a pilot plant for the testing of the REDOX and PUREX plutonium separation processes from 1952 through 1957. The facility pilot tests used irradiated fuels. The facility was placed in standby status in 1957. In 1961 the plant was converted for the strontium recovery process of waste stored in tank farms. The Hot Semiworks facility permanently shut down in 1967. Decommissioning began in 1983 and was completed in 1987.

Waste Type: Process Effluent

Waste Description: A leaking underground waste line caused the soil beneath the line to become contaminated. The pipeline carried waste from the 201-C Building to the 241-C Tank Farm. Maximum contamination levels in 1957 were greater than 100 rad per hour.

Code: 200-E-58 **Classification:** Accepted

Names: 200-E-58; 216-A-5 Neutralization Tank; 216-A-5 NU; 270A; Tank A5 **Reclassification** None

Type: Neutralization Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1987

Description: The site is an underground tank used to neutralize acidic waste prior to disposal. A 101-centimeter (40-inch) riser is visible at the surface. The cylindrical tank sits vertically on a concrete pad. The tank is constructed of welded stainless steel and has a capacity of approximately 28,400 liters (7,500 gallons). A 20-centimeter (8-inch) inlet pipe enters from the north near the base of the tank. The inlet connects into distribution piping constructed of 20-centimeter (8-inch) stainless steel pipe welded into a cross with 1.9-centimeter (3/4-inch) holes drilled at 23-centimeter (9-inch) intervals. A 20-centimeter (8-inch) outlet pipe exits to the south near the top of the tank. A 101-centimeter (40-inch) riser extends 30 centimeters (12 inches) above the surface. The "charging riser" is for adding limestone to the tank to act as a neutralizing agent.

Location: The tank is located south of PUREX, inside the security fence. It is located south of the 295-AB building, north of the 216-A-5 Crib and northwest of the 216-A-10 Crib.

Related Sites/ Structures: The site is related to the 202-A Building (PUREX Canyon), the 216-A-5 Crib, and the 216-A-10 Crib. The pipelines (lines 7717 and 7718) from PUREX to the neutralization tank and from the neutralization tank to the 216-A-5 Sample Pit #4 are described in sitecode 200-E-241-PL.

Process Description: Acidic liquid waste entered the tank from the bottom and was forced upward through a bed of limestone. Interaction with the limestone neutralized the waste prior to overflow through the outlet pipe. The neutralized waste was discharged to a crib.

Waste Type: Process Effluent

Waste Description: The tank was used to neutralize acid waste from PUREX prior to ground disposal. From 1955 to 1961, the neutralized waste was discharged to the 216-A-5 Crib. From 1961 to 1987 the neutralized waste was discharged to the 216-A-10 Crib.

Code: 200-E-68 **Classification:** Accepted

Names: 200-E-68; 291A Control House Steam Condensate; Injection Well (L); Miscellaneous Stream #59 **Reclassification** None

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:**

Description: The site is a 1.2 meter (4 foot) diameter drain with a metal cover. Several disconnected, asbestos covered steam lines hang above it.

Location: The site is located south of PUREX, between the 291-A stack exhaust fans and the 292-AB stack building. It is on the southeast corner of 291-A building. It is located inside a Contaminated Area, which surrounds the 291-A building and stack structures.

Related Sites/ Structures: The site is associated with the 291-A control house.

Process Description: Steam was produced from sanitary water that had been sent through a water softener system to remove minerals (calcium and magnesium). The treated water was introduced into boilers to produce steam. This steam was superheated before distribution to facilities for heating and process use. Disposal sites received steam condensate from the steam distribution lines. When used for heating purposes, this was a seasonal discharge. Non-regulated chemicals were added to dechlorinate the water, prevent scale, and control corrosion.

Waste Type: Steam Condensate

Waste Description: The site received non-contaminated steam condensate, but is located inside a posted Contamination Area.

Code: 200-E-103 **Classification:** Accepted

Names: 200-E-103; PUREX Stabilized Area; Radiologically Controlled Area - South Side of PUREX **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site area is covered with gravel and currently posted with Underground Radioactive Material signs.

Location: The site is located on the south side of the 202-A building, inside the security fence.

Related Sites/ Structures: The site is associated with 202-A, 291-A and the 241-A-151 Diversion Box. It is also associated with multiple Unplanned Releases that occurred in the area. Other sites inside this area stabilized with gravel include: 216-A-2, 216-A-4, 216-A-5, 216-A-21 and 216-A-31.

Process Description: The site is an area contaminated by many unplanned releases that occurred over time during facility operation.

Waste Type: Soil

Waste Description: The ground around the PUREX facility was contaminated from various sources during years of operation activities.

Code: 200-E-109 **Classification:** Accepted

Names: 200-E-109; Contaminated Tumbleweed Accumulation; Contamination Spread in Northeast Corner of 200 East Area **Reclassification** None

Type: Contamination Migration **Start Date:** 1/1/1998

Status: Inactive **End Date:**

Description: 200-E-109 is areas of contaminated tumbleweed accumulation located mostly in the northeast portion of 200 East Area. The contaminated vegetation is carried by the wind. When the site was originally added to the WIDS database, it consisted of numerous radiologically posted areas along 12th Street and Canton Avenue inside the 200 East Area as well as inside and around the Liquid Effluent Retention Facility, east of 200 East Area. Some areas were posted Contamination Area with a Radiological Buffer Area and others were posted High Contamination Area with a Radiological Buffer Area. The original posted areas were eventually cleaned up and the posting was removed. However, additional areas of accumulated tumbleweed fragments continue to be discovered and posted over the years. The number of posted areas, their size and shape vary with additional radiological surveys.

Location: The site includes numerous radiologically posted areas, located in the northeast portion of the 200 East Area and beyond the 200 East Area perimeter fence. Contaminated vegetation is often identified on the northern 200 East Area fence line along 12th Street, the eastern fence along Canton Avenue, near Gate 810 and outside the 200 East Area fence in and around the Liquid Effluent Retention Facility. The posted areas size and shape varies often, with additional radiological surveys.

Related Sites/ Structures: UPR-200-E-92 and UPR-200-E-93 reported contaminated tumbleweed fragments along the east perimeter fence of 200 East area in 1980. The tumbleweeds reported in both UPR-200-E-92 and UPR-200-E-93 were removed from the fenceline in 1981. It is also associated with burial ground 218-E-12b, which has been considered a major source of the contaminated

Waste Type: Vegetation

Waste Description: Most of the contamination identified is tumbleweed and tumbleweed fragments.

Code: 200-E-115 **Classification:** Accepted

Names: 200-E-115; Contamination Area East of 241-C Tank Farm **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site had been a posted Contamination Area surrounded with light posts and chains. Large weeds were growing inside the posted area and there are several radiation flags visible inside the posted area. In June 2004, the site was stabilized with a bio-barrier and gravel. The area was reposted as an Underground Radioactive Material area.

Location: The site is located east of the 241-C Tank Farm, south of 8th Street, across an unnamed gravel road.

Related Sites/ Structures: The site may be related to UPR-200-E-91.

Waste Type: Soil

Waste Description: The contamination consisted of contaminated soil specks and contaminated vegetation.

Code: 200-E-117 **Classification:** Accepted

Names: 200-E-117; Contamination Zone South of B Plant **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is a small, posted Contamination Area. Inside the chained area, two steel pipes extend approximately 0.6 meters (2 feet) above the ground surface. The pipes have valves on them.

Location: The site is located adjacent to the steam line, south of the 292-B Building and the 291-B Stack.

Process Description: According to H-2-44501, Sheet 85, a raw water line extends southward from the 292-B Building and connects to a 30 centimeter (12 inch) raw water line. The water line on the drawing is in the same location as the valves inside the Contamination Area.

Waste Type: Soil

Waste Description:

Code: 200-E-121 **Classification:** Accepted

Names: 200-E-121; Soil Contamination Area East and West of Baltimore Avenue **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is a long, narrow area along the east side of Baltimore Avenue marked with metal posts and chain with Soil Contamination Area signs and two smaller areas on the west side of Baltimore Ave., also posted with Soil Contamination Area signs. The power poles inside the posted area are marked with yellow Fixed Contamination signs.

Location: The site is located inside 200 East Area, south of 12th Street. One part is located east of Baltimore Avenue, north of 241-B Tank Farm. Two smaller areas are on the west side of Baltimore Avenue, on the east side of the 241-BY Tank Farm.

Waste Type: Soil

Waste Description:

Code: 200-E-123 **Classification:** Accepted

Names: 200-E-123; Contamination Area South of 216-B-2 Stabilized Ditches **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: In 2001, the area was covered with clean backfill material and downposted to an Underground Radioactive Material Area. The site had been surrounded with light duty steel posts and chain and was originally posted as a Soil Contaminated Area. No significant vegetation was observed on the site. In 2001, the area was covered with clean backfill material and downposted to an Underground Radioactive Material Area.

Location: The site is located just south of 216-B-2-3 ditch, on the gravel road where the power lines cross the road between 207-B and C Tank Farm.

Release Description: The source of the contamination is unknown.

Waste Type: Soil

Waste Description:

Code: 200-E-124 **Classification:** Accepted

Names: 200-E-124; URM on East Side of 275-EA **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is posted as an Underground Radioactive Material Area with steel posts. The site has been stabilized with approximately 0.3 meters of clean soil. A few tumbleweeds were observed growing on the site. Railroad tracks run through the site and are buried under the stabilization soil. The contamination area is where railroad cars were parked and offloaded into the 275-EA Building.

Location: The site is locate adjacent to the east side of the 275-EA building. The 275-EA building is located between PUREX and 4th Street.

Waste Type: Soil

Waste Description:

Code: 200-E-125 **Classification:** Accepted

Names: 200-E-125; Contamination Area Northwest of 244-AR Building **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is posted as a Contamination Area with light duty posts and chain. The surface is very sandy soil. No vegetation was observed.

Location: The site is located northwest of the 244-AR Building, northeast of the 200-E Carpenter Shop and South of the 2237-E Building (Electrical Shop).

Waste Type: Soil

Waste Description:

Code: 200-E-128 **Classification:** Accepted

Names: 200-E-128; Radioactive Contamination "Hot Spot" Under Gravel Road **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The area where the contamination is located is marked with two Underground Radioactive Material signs, on steel posts. The posts are located on the north and south sides of the road. The contamination is located between the signs, under the surface of the gravel road.

Location: The site is located on an unnamed gravel road east of the 207-B Retention Basin and south of the 216-B-2-3 Ditches.

Process Description: The roads inside 200 East and West Areas are routinely surveyed by a truck mounted with radiation detectors. The detectors are equipped with an alarm that makes an audible sound to alert the driver if radiation above a predetermined limit is detected.

Waste Type: Soil

Waste Description:

Code: 200-E-129 **Classification:** Accepted

Names: 200-E-129; Stabilized Area on East Side of B Plant Railroad Cut **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The area has been covered with gravel and posted with Underground Radioactive Material signs.

Location: The site is located east of the northern end of the B Plant railroad cut, south of Atlanta Ave.

Waste Type: Soil

Waste Description: Soil and rock were found radiologically contaminated with maximum readings of 12,000 disintegrations per minute per 100 centimeter probe area.

Code: 200-E-130 **Classification:** Accepted

Names: 200-E-130; Stabilized Area on West Side of B Plant Chemical Spur **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is covered with fine gravel and posted with Underground Radioactive Material (URM) signs.

Location: The site is located on the south side of Atlanta Ave., on the west side of the B Plant chemical spur railroad track.

Waste Type: Soil

Waste Description: There were no records found to determine the site conditions of the area prior it being posted as an Underground Radioactive Material area. However, additional radiation surveys done in August 2002 found contamination levels of 20,000 disintegrations per minute per 100 centimeters square on the edge of the previously posted area.

Code: 200-E-139 **Classification:** Accepted

Names: 200-E-139; Contamination Area North of C Farm
Reclassification None
Type: Unplanned Release
Start Date:
Status: Inactive
End Date:

Description: A large posted Underground Radioactive Material area is located on the north side of 8th Street. It contains growing vegetation (Rabbitbrush and tumbleweeds). A small posted Underground Radioactive Material area is located on the south side of 8th Street. The area on the south side of 8th Street has been covered with a bio-barrier and gravel.

Location: The site is two separately posted Underground Radioactive Material Areas, one located on the south side of 8th Street and one located on the north side of 8th Street. The areas are north of 241-C Tank Farm in 200 East Area.

Code: 209-E-WS-2
Classification: Accepted
Names: 209-E-WS-2; Critical Mass Lab French Drain
Reclassification None
Type: French Drain
Start Date:
Status: Inactive
End Date:

Description: The drain was a 1.2 meter (4 foot) diameter drain in a gravel area southeast of the building. It was painted with yellow paint and has a metal cover. In 2011, amended water was sprayed during the 209E building demolition activities. Post-demolition, three to six inches of surface material was removed from all areas affected by the amended water and prior to applying a gravel cap. The final gravel cap was expanded to cover all affected areas. The posted URMA was expanded to include the entire gravel cap. The gravel cap now covers several WIDS sites. The additional WIDS sites under the 209E gravel cap are 200-E-4, 200-E-35, 209-E-WS-1, 209-E-WS-2, 2718-E-WS-1 and 200-E-293 (2718E footprint). The 209-E-WS-3 (Tank 111), adjacent to the south side of the foundation, is within the URMA but was not covered or backfilled.

Location: The unit is located at the southeast corner of the Critical Mass Laboratory (laboratory wing).

Related Sites/ Structures: The site is associated with the 209-E Critical Mass Laboratory and 200-E-294. The pipelines to the french drain are described in sitecode 200-E-247-PL.

Process Description: The unit is a french drain that received condensate from the Critical Mass Lab HEPA filters and heat exchange system.

Waste Type: Steam Condensate

Waste Description: The waste at the unit includes steam condensate through a collapsed rusted pipe from the Heat Exchanger located in Room 11 of 209-E and a stainless steel pipe from the clean side of the HEPA filters.

Code: 209-E-WS-3
Classification: Accepted
Names: 209-E-WS-3; Critical Mass Laboratory Valve Pit and Hold Up Tank (209-E-TK-111)
Reclassification None
Type: Valve Pit
Start Date: 1/1/1960
Status: Inactive
End Date: 1/1/1989

Description: The Valve Pit has a steel lid and posted with Radioactive Material, Internally Contaminated Systems Located Within, and Confined Space, Dome Loading, Ignition Control and IMUST

warning signs. In December 2011, the 209-E facility was demolished. On 10/10/2011 the task of disconnecting, cutting and plugging five lines in the 209-E Valve Pit (209-E-WS-3) that isolated Tank-111 was completed. The Valve Pit metal lid will be placed back on it. The 209E facility slab is sitecode 200-E-294. The pit will not be covered or back-filled with gravel, because there are other lines still in the valve pit associated with the tank farms and not part of the facility demolition work scope.

In 2011, amended water was sprayed during the 209E building demolition activities. Post-demolition, three to six inches of surface material was removed from all areas affected by the amended water and prior to applying a gravel cap. The final gravel cap was expanded to cover all affected areas. The posted URMA was expanded to include the entire gravel cap. The gravel cap now covers several WIDS sites. The additional WIDS sites under the 209E gravel cap are 200-E-4, 200-E-35, 209-E-WS-1, 209-E-WS-2, 2718-E-WS-1 and 200-E-293 (2718E footprint). The 209-E-WS-3 (Tank 111), adjacent to the south side of the foundation, is within the URMA (200-E-294) but was not covered or backfilled.

Location: The tank is located underground, near the south end of the 209-E Facility. The north edge of the tank is about 3 ft (0.9 m) south of the south wall of the 209-E Building's Critical Assembly Room and abuts the east side of the exhaust equipment pad.

Related Sites/ Structures: There is a thin, cadmium-lined Hold-Up Tank, 209-E-TK-111, associated with and under the Valve Pit (subsite1). The pipelines to the valve pit are described in sitecode 200-E-248-PL. The 209E posted area is 200-E-294.

Process Description: A 189 liter (50 gallon) holding tank (209-E-TK-111) is located under the valve pit. The tank was used as a drain tank. The tank held the condensate prior to being released to the cribs. The tank was routinely sampled for plutonium content to determine that the contents were below crib discharge levels. Present contents of the tank are estimated to consist of residual water from condensate collection, containing only low levels of plutonium. After sampling, the contents was discharged to the 216-C-7 crib. The 216-C-7 crib was placed on standby in 1983.

Waste Type: Process Effluent

Waste Description: The Semi-Works Source Aggregate Area Management Study Report states that no wastes are present in the Critical Mass Laboratory Valve Pit. However, radioactive contamination is present in the valve pit sump, although no specific waste inventories for this unit were found. The Hold Up tank was routinely sampled to verify plutonium levels were below limits prior to discharging the contents to the crib.

This Site has the Following SubSites:

Code: 209-E-WS-3:1
Names: 209-E-WS-3:1; 209-E-TK-111 Hold Up Tank

Code: 209-E-WS-3:1 **Classification:** Accepted

Names: 209-E-WS-3:1; 209-E-TK-111 Hold Up Tank **Reclassification** None

Type: Valve Pit **Start Date:**

Status: Inactive **End Date:**

Description: The 209-E-TK-111 tank is inactive. It is a passively ventilated drain tank. A recent vapor sample did not identify any flammable gas within the vessel.

In December 2011, the 209-E facility was demolished. On 10/10/2011 the task of disconnecting, cutting and plugging five lines in the 209-E Valve Pit (209-E-WS-3) that isolated Tank-111 was completed. The tank was used to hold condensate from the facility. It was routinely sampled to determine that plutonium levels were below limits prior to discharging

the contents to the crib. Therefore, it is estimated to consist of residual water from condensate collection and low levels of plutonium. This tank meets the definition of an IMUST tank. It is a 189 liter (50 gallon) capacity tank lined with cadmium. It is located underground, adjacent to the Criticality Assembly Room (CAR) at the south end of the 209-E building. It is covered by a steel pit cover and posted with Radioactive Material, Contamination Area and Confined Space Entry signs.

In 2011, amended water was sprayed during the 209E building demolition activities. Post-demolition, three to six inches of surface material was removed from all areas affected by the amended water and prior to applying a gravel cap. The final gravel cap was expanded to cover all affected areas. The posted URMA was expanded to include the entire gravel cap. The gravel cap now covers several WIDS sites. The additional WIDS sites under the 209E gravel cap are 200-E-4, 200-E-35, 209-E-WS-1, 209-E-WS-2, 2718-E-WS-1 and 200-E-293 (2718E footprint). The 209-E-WS-3 (Tank 111), adjacent to the south side of the foundation, is within the URMA (200-E-294) but was not covered or backfilled.

Location: The tank is located underground, near the south end of the 209-E Facility.

Process Description: The tank supported operations inside the 209E Critical Mass Laboratory. A 189 liter (50 gallon) holding tank (209-E-TK-111) is located under the valve pit. The tank was used as a drain tank. The tank held the condensate prior to being released to the cribs. The tank was routinely sampled for plutonium content to determine that the contents were below crib discharge levels. Present contents of the tank are estimated to consist of residual water from condensate collection, containing only low levels of plutonium. After sampling, the contents was discharged to the 216-C-7 crib. The 216-C-7 crib was placed on standby in 1983.

The SubSite is Part Of:

Code: 209-E-WS-3

Names: 209-E-WS-3; Critical Mass Laboratory Valve Pit and Hold Up Tank (209-E-TK-111)

Code: 218-E-7 **Classification:** Accepted

Names: 218-E-7; 200 East 222-B Vaults **Reclassification** None

Type: Burial Vault **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1952

Description: The site consists of three underground vaults. Two were square, wood structures and one was a round, vertical pipe unit. All three vaults had been connected to the surface with waste disposal chutes. The chutes have been removed and the area has been surface stabilized.

Location: The vaults are located approximate 20 meters (66 feet) south of the 222-B Building, south of an above ground steam line.

Related Sites/ Structures: The vaults are associated with lab waste from the 222-B building.

Waste Type: Misc. Trash and Debris

Waste Description: This site received radioactive, mixed fission product/transuranic (MFP/TRU) wastes.

Code: 270-E-1 **Classification:** Accepted

Names: 270-E-1; 216-ER-1; 270-E CNT; 270-E Condensate Neutralization Tank **Reclassification** None

Type: Neutralization Tank **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1957

Description: The site is an underground steel tank. It is marked and posted with Restricted Access-Inactive Tank signs. It is located within a large Underground Radioactive Material Area that resulted from the stabilization of the adjacent 216-B-64 basin and UPR-200-E-64 sites.

Location: This tank is located west of the 221-B Building, near the southwest corner of the 216-B-64 Basin.

Related Sites/ Structures: It is associated with 270-E, the 221-B, 224-B Buildings, 200-E-160-PL and the 216-B-12 Crib. UPR-200-E-64 documents that ants brought contamination to the surface in the vicinity of the 270-E Tank and caused contamination to spread.

Process Description: The tank was used to neutralize acidic process condensate from the 221-B and the 224-B facilities, via the 241-ER-151 Diversion Box (lines V219, V225, 9719, 9653, 9808). Condensate entered the tank at the bottom and flowed upward through the limestone to an outlet pipe located 2.4 meters (8 feet) above the tank bottom. The tank contained a limestone bed through which the condensate percolated, reacted, and then overflowed to the 216-B-12 Crib. The tank had a 100 centimeter (40 inch) diameter chute and a 15 centimeter (6 inch) diameter riser extending to the surface from the stainless steel below grade tank.

Waste Type: Chemicals

Waste Description: A 1974 report indicated the surface of the sludge was located at 2.27 meters (7.58 feet). No liquid was visible at this time. Sludge volume was estimated to be 14,440 liters (3,800 gallons). Radiation readings were less than 100 counts per minute direct and smearable, and less than 0.5 millirad/hour at the risers. Waste in this tank should include: limestone, process condensate precipitates, salts and residual process condensates. The process condensate that passed through this tank contained an average of 0.015 grams per gallon of uranium, 2.6 E-7 grams per gallon of plutonium and 1.8 E-6 curies per gallon of beta emitters.

Code: 299-E24-111 **Classification:** Accepted

Names: 299-E24-111; Experimental Test Well Site; Lysimeter Test Site; Miscellaneous Stream #803 **Reclassification** None

Type: Injection/Reverse Well **Start Date:** 9/22/1980

Status: Active **End Date:** 1/1/2000

Description: The site is an injection well surrounded by 32 observation wells. The 299-E24-111 injection well head is located inside a small posted Underground Radioactive Material area. There is a small Soil Contamination Area (SCA) located southwest of the well. The SCA is where the 5,700 liter (1500 gallon) above ground solution tank (connected to the well) had been located.

Location: The site is located southwest of the PUREX facility and west of the 216-A-38-1 Crib.

Related Sites/ Structures: The injection well was connected to a 5,700-liter (1,500-gallon) above ground mixing tank. The injection well is surrounded by eight concentric rings of observation wells. There are a total of 32 observation wells. The observation wells are each 15-centimeter (6-inch) diameter steel casings, 19.8 meters (65 feet) long. These observation wells are identified as 299-E24-76 through 299-E24-107. The injection well is constructed of a 4.6-meter (15-foot) long, 2.5-centimeter (1-inch) diameter pipe inside a 4.6-meter (15-foot) casing that is welded together at the lower end. This assembly is cemented inside a 4.6-meter (15-foot), 15-centimeter (6-inch) diameter Schedule 40 steel well.

Process Description: In 1980, uniform solutions of calcium chloride, calcium nitrate, and selected tracers were placed into the above ground mixing tank on a weekly basis and injected into the well. The 32 observation wells monitored the injected material. The tracers included sorbing and nonsorbing ions. Calcium was added at a concentration of 0.01 normal as 0.005 normal calcium nitrate plus 0.005 normal calcium chloride to reduce permeability changes of the sediments during injection, and to provide the nonsorbing ions nitrate and chloride. Cesium-134 is a gamma emitter and undergoes strong sorption by the sediments. Strontium-85 was chosen because it is a gamma emitter and is moderately sorbed by sediments. Each injection consisted of filling the holding tank, adding the tracers, mixing the water and tracers, and then injecting the solution. Water for each of the 10 weekly injections was transported to the site from a nearby safety shower in 1900 liter (500 gallon) vinyl bags. From the bags, 3800 liters (1000 gallons) of water was metered into a 5700 liter (1500 gallon) tank. Calcium salts and additional sorbing tracers, barium and rubidium, were dissolved in two 50 liter (13 gallon) carboys at the injection site. The carboys were rinsed and the rinsate was added to the tank. The radiological tracers strontium-85 and cesium-134 were delivered for each weekly injection as a 20 milliliter solution. The glass vial containing the tracers arrived at the site in a lead container called a pig. The pig was placed in the tank on a rack before opening and removing the vial. The vial was handled with modified tongs. The cap was unscrewed from the vial, the vial contents poured into the calcium solution in tank, and the vial and cap rinsed using a polyethylene wash bottle. Washing continued until less than 300 counts per minute were observable with a handheld GM probe in contact with the vial and cap. For the first three tanks of solutions, the contents were circulated in tank until the solution was uniform, as evidenced by constant gamma activity at all points on the tank exterior. It was found that a uniform count rate was obtainable within 5 minutes after starting circulation, but mixing was continued for 2 hours. For the remaining injections, the tracer and calcium solutions were added after 1900 liters (500 gallons) of water was metered into the tank. Adding the final 1900 liters (500 gallons) induced enough mixing to obtain a uniform count rate at the tank surface. Both the circulation and partial filling method appeared to provide adequate mixing. In May and June 2000, a new injection well was placed near the original injection well, but outside the posted Underground Radioactive Material area. The new well was injected five times. The third injection contained a potassium bromide tracer. Four soil cores were collected around the new injection well. Each core sample was 18 meters (59 feet) deep.

Waste Type: Chemicals

Waste Description: Eleven 3,780-liter (1,000-gallon) injections of uniform solutions of calcium chloride, calcium nitrate were made into the injection well. Eight injections contained selected radioactive tracers (cesium-134 and strontium-85). Three injections did not contain tracers. In 1995 the injection well was surveyed with a Radiologic Logging System (RLS) down-hole logging probe. No Strontium-85 was identified. Residual cesium-134 peaks were identified at depths between 4.9 and 5 meters (16 and 16.5 feet). The fact that cesium-134 was detected 15 years after injection is an indication of the tracer's high sorption potential. The maximum activity was 0.04 picocuries per gram (pCi/g) at 5 to 5.2 meters (16.5 to 17 feet) below grade level. PNNL scheduled an additional injection experiment at this site in 2000 that added another injection well (10 meters [30 feet] deep) near the center of the cluster, injected a potassium bromide tracer and collected soil cores. Each of the five injections was equal to 4000 liters. Data were obtained by lowering sensors to the desired depth in observation wells. Sensors used included neutron-neutron moisture probes, geiger-Muller (GM) probes, gamma energy analysis (GEA) probes, and gamma-gamma probes.

Code: 2607-E3 **Classification:** Accepted

Names: 2607-E3; 2607-E3 Septic System; 2607-E3 Septic Tank and Drainfield; TFS of 218-E-4; Tile Field South of 218-E-4 **Reclassification** None

Type:	Septic Tank	**Start Date:**	1/1/1948
Status:	Inactive	**End Date:**	1/1/1997

Description: The site is a septic tank and drainfield. It is surrounded with a chain and marked with a sign that reads Sanitary Sewer/Drain Field. The septic tank is constructed of reinforced concrete. The tank is 8.7 meters (28 feet 8 inches) long, 2.7 meters (9 feet) wide, and 3.8 meters (12 feet 6 inches) deep (interior dimensions). The tank had a design capacity of 38,680 liters (10,220 gallons) based on a user capacity of 292 persons, a flow of 132 liters (35 gallons) of sewage per capita per day, and an average detention time of 1 day. The top of the tank is at the ground surface. The tank was accessed through three 0.9 meter (3 foot) manholes. The drainfield is comprised of at least 712 meters (2,336 feet) of vitrified clay pipe or drain tile (at least 2.4 meters [8 feet] per capita). The laterals are open jointed and are spaced 2.4 meters (8 feet) apart.

Location: This unit is located approximately 100 meters (400 feet) north of the 221-B Building. The drainfield is located north of the septic tank and south of the 218-E-4 Burial Ground.

Related Sites/ Structures: The 2607-E3 Septic System was associated with B-Plant facilities.

Process Description: The 2607-E3 Septic Tank and Drainfield were designed to accept, treat, and dispose of sanitary sewer effluent from the buildings in the B Plant complex.

Waste Type: Sanitary Sewage

Waste Description: This site received sanitary wastewater and sewage from B Plant facilities at an estimated rate of 509 cubic feet (14.4 cubic meters) per day. The septic tank was abandoned in 1997. No information was provided related to sampling of the tank contents. DOE/RL-92-05 states that the septic tank and tile field are not known to contain radioactive or hazardous waste.

Code:	2607-E5	**Classification:**	Accepted
Names:	2607-E5; 276-C, 209-E and 2718-E Septic Tank; 209-E Septic Tank	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: In July 2011, the septic tank was properly abandoned per WAC 246-272A-0300. This system included a single compartment tank with a dosing system and a leaching trench. An abandoned tile field, which was replaced by the sanitary leaching trench, is also included with this site. This septic system received sanitary wastewater and sewage from the Critical Mass facilities near 209-E.

Location: This unit lies north of the 209-E Building and east of the 2607-C Sanitary Crib.

Related Sites/ Structures: The 2607-E5 Septic Tank is associated with the 209-E, the 2704-C and the 2718-E Buildings. Original construction of the tank was for buildings 2704-C and 2707-C. Later modifications added two additional septic tanks, 2607-E7 (WIDS 2607-E7A), 2607-E (WIDS 2607-E7B), and the leaching trench. During the history of this system, mobile offices have been connected to the system. Two examples were the addition of MO-337 and MO-543. These mobile offices have since been moved.

Process Description: The connection to 2718E was investigated in 2010. After reviewing available drawings and Ground Penetrating Radar scan results, no sewer line from 2718-E to 2607-E5 could be found. Field walk downs verified there are no restrooms, showers, sinks or floor drains in 2718-E.

WHC-SD-LL-SP-001 indicated the 2607-E5 Septic Tank and associated leaching trench

received sanitary sewer effluent from the 209-E, the 2704-C, 276-C, and the 2718-E Buildings. It states that a construction design was approved in 1995 to add more facilities to the 2607-E5 system, but the project was cancelled. Other documentation and field investigations dispute the accuracy of the document, related to the facilities served by 2607-E5. Drawing M-2904-E, Sheet 27 does not show enough detail to make a determination. H-2-4033 shows that 276-C had no sanitary waste. All liquid waste from this facility went to the 216-C-3 crib. Revision 7 of H-2-4033 (1963) revised the drawing to include the abandoned tile field and the two small inline septic tanks (2607-E7 and 2607-E). (The WIDS numbers for these two tanks are 2607-E7A and 2607-E7B). The two smaller tanks were probably added when 209-E (Critical Mass Laboratory) was tied into the system.

Waste Type: Sanitary Sewage

Waste Description: WHC-SD-LL-SP-001 states this system received sanitary wastewater and sewage from the 209-E, the 2704-C, and the 2718-E Buildings at an estimated rate of 78 cubic feet (2.21 cubic meters) per day. Originally, the 2607-E5 tank serviced the 2707-C Change House. The change house had both a toilet and shower used by personnel working within the Hot Semiworks facilities. There may be a potential for radiological contamination within the 2607-E5, 2607-E7 (WIDS 2607-E7A), 2607-E (WIDS 2607-E7B), Sanitary Leaching Trench, or the Abandoned Tile Field. A 2010 drawing review and facility walkdown found no drains, sinks or toilet facilities in the 2718E building.

Code: 2607-E6 **Classification:** Accepted

Names: 2607-E6; 2607-E6 Septic Tank and Tile Field **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1997

Description: The site is a septic tank and drainfield. The drain field is surrounded by a wooden fence. The surface is vegetated with brush.

Location: This unit is located inside 200 East Area, north of 4th Street and northwest PUREX. It is between two railroad spurs.

Process Description: The unit received sanitary waste from MO405 and the PUREX facility.

Waste Type: Sanitary Sewage

Waste Description: The site received sanitary wastewater and sewage from MO-405 and the PUREX facility. The estimated rate of waste generation is 43.5 cubic meters per day.

Code: 2607-E7A **Classification:** Accepted

Names: 2607-E7A; 2607-E7 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1963

Status: Inactive **End Date:**

Description: In July 2011, the septic tank was properly abandoned per WAC 246-272A-0300. The septic tank received sanitary wastewater and sewage. This tank is a 1.7 meters (66 inches) by 2.7 meters (105 inches) precast concrete septic tank with a single 61 centimeters (24 inch) diameter cover. The tank is inline with the 2607-E5 septic tank and the 2607-E (WIDS 2607-E7B). The septic tank drained to the sanitary leaching trench.

Location: This system lies north of the 209-E Building and west of the 2607-E5 Septic Tank.

Related Sites/ Structures: The 2607-E7A Septic System is associated with the 209-E, 2704-C, 2718-E, MO-337 (moved) and the MO-543 (moved) Buildings. This system is in series with the 2607-E5, 2607-E7B septic tanks and a leaching trench.

Process Description: The 2607-E7A Septic System and the associated leaching trench were designed to accept and treat sanitary sewer effluent from the 209-E, 2704-C, 2718-C, MO-337 (moved to another location), and MO-543 (moved to another location).

Waste Type: Sanitary Sewage

Waste Description: The 2607-E7A Septic System receives sanitary wastewater and sewage at an estimated rate of 58 cubic feet (1.64 cubic meters) per day.

Code: 2607-E7B **Classification:** Accepted

Names: 2607-E7B; 2607-E7B Septic System; 2607-E7 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1963

Status: Inactive **End Date:**

Description: In July 2011, the septic tank was properly abandoned per WAC 246-272A-0300. This septic tank received sanitary wastewater and sewage. This tank is a 1.7 meters (66 inches) by 2.7 meters (105 inches) precast concrete septic tank with a single 61 centimeters (24 inch) diameter cover. The tank is inline with the 2607-E5 septic tank and the 2607-E7 (WIDS 2607-E7A). The septic tank drained to the sanitary leaching trench.

Location: This system lies north of the 209-E Building and west of the 2607-E5 Septic Tank.

Related Sites/ Structures: The 2607-E7B Septic System is associated with the 209-E, 2704-C, 2718-E, MO-337 (moved) and the MO-543 (moved) Buildings. This system is in series with the 2607-E5, 2607-E7A septic tanks and a leaching trench.

Process Description: The 2607-E7B Septic System and the associated leaching trench were designed to accept and treat sanitary sewer effluent from the 209-E, 2704-C, 2718-C, MO-337 (moved to another location), and MO-543 (moved to another location).

Waste Type: Sanitary Sewage

Waste Description: The 2607-E7B Septic System receives sanitary wastewater and sewage at an estimated rate of 58 cubic feet (1.64 cubic meters) per day.

Code: 2607-E9 **Classification:** Accepted

Names: 2607-E9; 2607-E9 Septic System; 242B/BL Septic Tank and Drain Field **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1951

Status: Inactive **End Date:**

Description: This 1,900-liter (500-gallon) septic tank received sanitary wastewater and sewage from the 242-B and the 242-BL Buildings. This system has an associated drain field. It was abandoned and the tank filled with sand. The site is in a contamination area. A brief visit was made to the site in February 2000 to find the drainfield and to try to improve the mapping of the site. A "Drainfield" sign was found on the ground on the eastern side of the contamination area that surrounds the site. The former extent of the drainfield can be approximated using fence posts inside the contamination area (some of which still have chain attached), fallen chain on the

ground plus the fence posts making up the eastern boundary of the contamination area. No access ports, lids or risers associated with the septic tank were visible. Evidence of the septic tank may have been obscured by tumbleweeds growing in the center of the contamination area near the drainfield.

Location: This unit lies north of the 207-B Retention Basin and east of the 242-B Building.

Related Sites/ Structures: The 2607-E9 Septic Tank is associated with a drain field and the 242-B and the 242-BL Buildings.

Process Description: The 2607-E9 Septic Tank and associated drain field were designed to accept sanitary sewer effluent from the 242-B and the 242-BL Buildings.

Waste Type: Sanitary Sewage

Waste Description: The 2607-E9 Septic Tank received sanitary wastewater and sewage at an estimated rate of 0.71 cubic feet (0.02 cubic meters) per day.

Code: 2607-E12 **Classification:** Accepted

Names: 2607-E12; 2607-E12 Septic System **Reclassification** None

Type: Septic Tank **Start Date:**

Status: Active **End Date:**

Description: The septic system consists of the original 242-A septic tank and seepage pit (see subsite 1), two newer septic tanks and two drain fields (see subsite 2) that service multiple buildings. The 5,000 gallon (18,927 liters) tank was converted to a dosing chamber when the new 10,000 gallon (37,854 liters) septic tank was installed approximately 45 feet (13.7 meters) to the south. The first drain field is located west of the 207-A Retention Basins. It was replaced with a trench-like drainfield located approximately 400 feet (122 meters) east of the septic tanks and east of the 207-A Retention Basins.

Location: The original 242-A septic tank and seepage pit is located on the 242-A building parking lot. Two newer septic tanks and two drainfields are located east of Canton Avenue, north of 4th Street. The first drainfield is located west of the 207-A South retention basins. The second drainfield is located east of the retention basins and has a barricade marker fence around the large depression.

Related Sites/ Structures: Buildings serviced by this system are: 272-AW, MO-266, MO-268, MO-267, MO-393, MO-996, 241-A Tank Farm, 241-AP, and 242-A.

Process Description: The settling chamber (the larger southern most tank) receives the effluent first. The effluent then goes to the dosing chamber (smaller northern tank) which is connected by underground pipeline to the trench-like drainfield.

Waste Type: Sanitary Sewage

Waste Description: Characteristics of the sanitary waste water from the 200 Areas are considered to be similar to residential sanitary waste. There are no known process or radioactive waste streams entering the sanitary waste system.

This Site has the Following SubSites:

Code: 2607-E12:1

Names: 2607-E12:1; Original Septic Tank and Seepage Pit

Code: 2607-E12:2
Names: 2607-E12:2; 2607-E12 Septic System

Code:	2607-E12:1	**Classification:**	Accepted
Names:	2607-E12:1; Original Septic Tank and Seepage Pit	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	
Status:	Active	**End Date:**	

Description: The original Septic Tank and Seepage Pit for the 242-A evaporator building is located beneath the building parking lot, east of 242-A. It is surrounded by yellow protective concrete posts. This portion is inactive.

The SubSite is Part Of:
Code: 2607-E12
Names: 2607-E12; 2607-E12 Septic System

Code:	2607-E12:2	**Classification:**	Accepted
Names:	2607-E12:2; 2607-E12 Septic System	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	
Status:	Active	**End Date:**	

Description: 2607-E12 septic tanks and drain filed are located east of Canton Avenue, north of 4th Street and west of the 207-A South retention basins. The drainfield is located east of the retention basins and has a barricade marker fence around the large depression.

The SubSite is Part Of:
Code: 2607-E12
Names: 2607-E12; 2607-E12 Septic System

Code:	2607-EA	**Classification:**	Accepted
Names:	2607-EA; 2607-EA Septic Tank and Drywell	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	1/1/1976
Status:	Inactive	**End Date:**	

Description: The 2607-EA Septic System is a small septic tank and an associated drywell (cesspool). The septic tank is approximately 3.0 meters (10 feet) long and 2.4 meters (8 feet) wide with rounded ends. The associated drywell is connected to the tank by a short (approximately 5 foot [1.5 meter] long) pipeline. The drywell is constructed of 8 courses of concrete blocks arranged in a circle. The alternating courses of blocks have staggered joints with no mortar. It is filled with 1.3 to 5.1 centimeter (0.5 to 2.0 inch) gravel and capped with a concrete lid with a vent in the middle. A vent pipe extends from the lid to 0.6 meters (2 feet) above grade.

Location: The septic tank is located west of the 241-A Tank Farm and directly south of the 244-AR Vault. The drywell is approximately 5 feet (1.5 meters) south of the tank.

Waste Type: Sanitary Sewage

Waste Description: The system received sanitary sewage. When in use, the system was estimated to receive waste at the rate of 60 liters/day (16 gallons/day). There is concern of possible rad contamination based on the facilities served.

Code: UPR-200-E-9 **Classification:** Accepted

Names: UPR-200-E-9; Liquid Overflow at 216-BY-201; UN-200-E-9 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1955

Status: Inactive **End Date:**

Description: The site has been surface stabilized with gravel and is posted as an Underground Radioactive Material area.

Location: The location of this unplanned liquid release is adjacent to the 216-BY-201 Flush Tank, north of the 241-BY Tank Farm. A large area of surface contamination north of 241-BY Tank Farm was later named UPR-200-E-89.

Release Description: On September 15, 1955 approximately 41,600 liters (11,000 gallons) of tri-butyl phosphate (TBP) supernate waste overflowed from the 216-BY-201 flush tank and ran over the ground toward the 216-B-43 crib. Most of the contamination was pushed into a shallow area southeast of the 216-B-43 crib and covered with 0.6 meters (2 feet) of clean dirt. The contamination left near the flush tank was covered with 3 meters (10 feet) of clean soil.

Related Sites/ Structures: UPR-200-E-9 is associated with 216-BY-201 and the 216-B-43 through 50 cribs.

Process Description: The 216-BY-201 flush tank received tri-butyl phosphate waste via the 241-BY tank farm and then released it to the 216-B-43 through 49 cribs. The 216-B-50 crib did not receive tri-butyl phosphate waste.

Waste Type: Process Effluent

Waste Description: The 216-BY-201 Flush Tank leaked supernatant waste from the tributyl phosphate (TBP) process to the ground.

Code: UPR-200-E-10 **Classification:** Accepted

Names: UPR-200-E-10; Contaminated Purex Railroad Spur; UN-200-E-10 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1957

Status: Inactive **End Date:**

Description: A contamination spread occurred along the railroad tracks while transporting tube bundles from PUREX to the burial ground. The release is not separately marked or posted.

Location: The site is along the PUREX railroad right-of-way, both inside and outside the PUREX exclusion fence. The contamination inside the fence is considered part of the Railroad Cut (WIDS site code 200-E-44).

Release Description: In September 1957, contamination ranging from 5 to 20 rads/hour was spread in the craneway, canyon, railroad tunnel, and on the remote crane and railroad right-of-way during transport of two failed waste concentrator tube bundles.

Related Sites/ Structures: The site is associated with 200-E-44 (PUREX Railroad Cut).

Waste Type: Soil

Waste Description: Loose contamination from concentrator tube bundles spread from the PUREX crane, into the tunnel and onto the railroad right-of-way.

Code: UPR-200-E-12 **Classification:** Accepted

Names: UPR-200-E-12; Contaminated Purex Railroad Spur; UN-200-E-12 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1957

Status: Inactive **End Date:**

Description: This unplanned release is no longer marked or posted. Portions of the TC-4 Spur (a.k.a. UPR-200-E-88) and a section of track south of the 218-E-5 Burial Ground (UPR-200-E-95) have been covered with dirt and posted with Underground Radioactive Material signs.

Location: The unplanned release effected the railroad track extending from the PUREX tunnel to an unnamed Burial Ground.

Release Description: On November 15, 1957, a burial box containing failed process jumpers dripped contaminated liquid while in transit to the burial ground. This resulted in spotty contamination of 40 to 1,700 millirads/hour to the railroad roadbed. Contamination also spread to the canyon deck, tunnel, and tunnel cut.

Related Sites/ Structures: This site is associated with UPR-200-E-11, UPR-200-E-88, 200-E-43 and 200-E-44.

Process Description: Some burial casks were shielded with water that was removed before placing the material into the burial ground. Sometimes railcars were washed down to remove loose contamination before transporting the load to the burial ground.

Waste Type: Water

Waste Description: Contaminated liquid with readings ranging from 40 to 1,700 millirads/hour dripped on the railroad track during transport of a burial box containing failed process jumpers. The dose rate on the burial box was 450 millirads/hour at 45.8 meters (150 feet).

Code: UPR-200-E-17 **Classification:** Accepted

Names: UPR-200-E-17; Overflow at 216-A-22; UN-200-E-17 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1958

Status: Inactive **End Date:**

Description: The 216-A-22 crib is marked with a single cement post and posted with Underground Radioactive Material signs. The unplanned release is not separately marked or posted. The release cannot be visually identified.

Location: The release effected the ground on top of the 216-A-22 Crib, located north of PUREX, north of the 203-A facility, near the 216-A-28 French Drain.

Release Description: Sufficient splashing occurred when the 216-A-22 Crib inlet failed, causing the ground on top of the crib to become yellow with uranium. No specific occurrence date is mentioned. HW-60807 was issued in July 1959, so it occurred prior to that date. The 216-A-22 french drain was active from 1955 through 1958.

Related Sites/ Structures: The site is associated with 216-A-22 and 203-A.

Process Description: The 203-A tank farm was used for storage and shipping of uranyl nitrate hexahydrate (UNH) product and concentration of UNH waste. It consisted of 460,000 liter (100,000 gallon) stain less steel tanks for UNH storage and three smaller nitric acid tanks.

Waste Type: Process Effluent

Waste Description: The release consisted of uranium (from UNH storage) contamination on the ground surface from the failed 216-A-22 Crib inlet.

Code: UPR-200-E-19 **Classification:** Accepted

Names: UPR-200-E-19; Contamination Release at 216-A-6 Sampler Pit; UN-200-E-19 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1959

Status: Inactive **End Date:**

Description: The Unplanned Release is not visually obvious, but a single T-Post with a WIDS number is placed near the 220A structure. The 220A area is posted Fixed Contamination/Underground Radioactive Material Area.

Location: The release occurred adjacent to the 220A structure. 220A is synonymous with the A-6 Proportional Sampler. It is located east of the 202-A Building.

Release Description: HW-60807 refers to the A-6 Proportional Sampler Pit on page 17. The report states that low-level fission product seeped into the ground around the edges of the concrete pad. The contamination was caused by moisture dripping from the vent pipe bonnet.

Related Sites/ Structures: The site is associated with the 216-A-6 Crib and 200-E-113-PL and structure 220A.

Process Description: Pipeline 200-E-113-PL passed through the Proportional Sampler before terminating in the 216-A-6 crib.

Waste Type: Process Effluent

Waste Description: The site received low-level fission products that dripped onto the ground from the vent pipe bonnet.

Code: UPR-200-E-20 **Classification:** Accepted

Names: UPR-200-E-20; Contaminated Purex Railroad Spur; UN-200-E-20 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1959

Status: Inactive **End Date:**

Description: The site is located at the PUREX railroad right-of-way. The release is not separately marked or posted.

Location: Contamination occurred on the PUREX railroad bed and right-of-way to the Burial Ground, both inside and outside the PUREX exclusion fence. The contamination inside the fence is considered part of the PUREX Railroad Cut (Waste Information Data System [WIDS] site code 200-E-44).

Release Description: On November 20, 1959, PUREX tube bundles in transit for burial provided some spotty ground contamination.

Waste Type: Process Effluent

Waste Description: While transporting PUREX tube bundles to the burial ground via railcar, spotty contamination was found on the railroad track.

Code: UPR-200-E-21 **Classification:** Accepted

Names: UPR-200-E-21; 216-A-6 Overflow; UN-200-E-21 **Reclassification** None

Type: Unplanned Release **Start Date:** 2/1/1959

Status: Inactive **End Date:**

Description: The unplanned release is not separately marked or posted. The 216-A-6 Crib area has been surface stabilized and is posted as "Underground Radioactive Material."

Location: Contamination occurred adjacent to the 216-A-6 Crib. The crib is located east of the PUREX facility, outside the 200 East Area perimeter fence.

Release Description: In February 1959, the 216-A-6 Crib overflowed and contaminated the adjacent area to 500 millirads/hour.

Related Sites/ Structures: The release is associated with the 216-A-6 crib.

Waste Type: Process Effluent

Waste Description: The release contaminated the crib surface with beta/gamma with readings to 500 millirads/hour.

Code: UPR-200-E-29 **Classification:** Accepted

Names: UPR-200-E-29; 216-A-6 Overflow; UN-200-E-29 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/20/1961

Status: Inactive **End Date:**

Description: The 216-A-6 Crib area has been surface stabilized and is posted as "Underground Radioactive Material."

Location: The release location is in the area of the 216-A-6 Crib.

Release Description: HW-67985, issued on January 20, 1961, reported the 216-A-6 Crib overflowed.

Related Sites/ Structures: The site is associated with 216-A-6 Crib.

Waste Type: Process Effluent

Waste Description: The release contaminated the crib surface with beta/gamma with readings to 30 rads/hour at a distance of 1.2 meters (4 feet).

Code: UPR-200-E-33 **Classification:** Accepted

Names: UPR-200-E-33; Contaminated Purex Railroad **Reclassification** None

Tracks; UN-200-E-33

Type: Unplanned Release **Start Date:** 1/1/1964

Status: Inactive **End Date:** 1/1/1964

Description: A contamination spread occurred on the PUREX railroad bed and right-of-way to the burial ground. The contamination was located both inside and outside the PUREX exclusion fence. The contamination inside the fence is considered part of the PUREX Railroad Cut (Waste Information Data System [WIDS] site code 200-E-44).

Location: The release site is located at the railroad right-of-way from PUREX to the 200 East Burial Ground, adjacent to the 216-A-9 crib.

Release Description: On March 20, 1964, a leaking tube bundle burial box in transit to the burial ground contaminated a portion of the railroad right-of-way and area adjacent to the 216-A-9 Crib. The contamination spread occurred in February 1964. The February Monthly Report for 1964 (HW-81078) was issued on 3-20-64. This report states that decontamination was successful, but does not give any details of the decontamination activity.

Waste Type: Chemicals

Waste Description: A description of the waste is not available from documents. Contamination resulted from a leaking tube bundle in a burial box on a railcar.

Code: UPR-200-E-35 **Classification:** Accepted

Names: UPR-200-E-35; 218-E-13; Buried Contaminated Pipe; UN-218-E-1 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1966

Description: The site is the location of a (1966) contaminated concrete pipe repair. The site is no longer marked or posted. It is inside the PUREX exclusion fence.

Location: The site is located west of the PUREX Patrol Gate House south of 4th Street.

Release Description: The release is from an underground concrete line repair in August 1966. This site received broken pieces of contaminated concrete from the pipe trench, which were left in the excavation hole and buried following repair to the piping at that location. The site contains less than 1 curie fission products. It was estimated to be located 107 meters (350 feet) west of the PUREX badge house.

Waste Type: Demolition and Inert Waste

Waste Description: This site received broken pieces of contaminated concrete from the pipe trench, which were left in the excavation hole and buried following repair to the piping at that location. The site contains less than 1 curie fission products.

Code: UPR-200-E-37 **Classification:** Accepted

Names: UPR-200-E-37; Contamination East of Hot Semi-Works; UN-200-E-37; UN-216-E-37; UN-216-E-39 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1989

Description: There is currently no physical evidence of the unplanned release site. It is no longer marked or posted.

Location: The release occurred east of the Hot Semi-Works facility, south of 7th Street.

Release Description: On July 31, 1967, a release from the Strontium Semi-Works (SSW) facility was documented on a Radiation Occurrence Report. At the time of the occurrence, a fence surrounded the facility. The original occurrence description stated that the contamination was confined to the east side of the Strontium Semi-Works, extending a length of 183 meters (200 yards) and also to a dirt road outside the facility fence. The area was roped off, roads were blocked and sprinklers were set up in the contaminated areas. The blacktop roads were cleaned.

Waste Type: Process Effluent

Waste Description: A contamination spread (particulate) was caused by the removal of two Semiworks A cell pumps, with a maximum beta/gamma reading of 200 millirad/hour.

Code: UPR-200-E-43 **Classification:** Accepted

Names: UPR-200-E-43; Road Contamination Near 241-BY Tank Farm; UN-200-E-43 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:**

Description: The location of this release is not marked or posted.

Location: The release occurred on a section of the roadway between the 241-BY Tank Farm and the burial ground. The exact location cannot be determined with existing documentation.

Release Description: On January 10, 1972, while in transit for burial, the 102-BY Pump contaminated a section of the road from the 241-BY Tank Farm to the burial ground. Contamination readings ranged from 1,000 to 100,000 counts per minute.

Waste Type: Process Effluent

Waste Description: The road contaminated with beta/gamma with readings of 1,000 to 100,000 counts per minute while transporting a pump from 241-BY-102 to the burial ground.

Code: UPR-200-E-50 **Classification:** Accepted

Names: UPR-200-E-50; Soil Contamination at the Overground Equipment Storage Yard; UN-200-E-50 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1974

Status: Inactive **End Date:**

Description: In 1974, an area of ground contamination was identified that measured from 15 to 30 meters (50 to 100 feet) wide and 137 meters (450 feet) long south southeast of the Overground Storage Area. The release is not currently marked or posted.

Location: The release location was southeast of the Overground Radioactive Equipment Storage Yard and north of 241-C Tank Farm.

Release Description: On September 24, 1974, ground contamination was identified outside the radiation zone at the Overground Radioactive Equipment Storage Yard, north of 241-C Tank Farm. A resulting swath of ground contamination was identified (approximately 75 feet wide and 450 feet long) extending southeast of the Overground Storage Yard with particle contamination ranging from

100,000 counts per minute to 3000 counts per minute, decreasing in intensity and frequency with distance from the source.

Follow-up surveys of the Overground Storage Area identified a possible source to be a 6 meter by 9 meter (20 foot by 30 foot) area of contaminated soil inside the radiation zone. Highly contaminated pumps (250 rad per hour) had been stored in that area with readings of 300 millirem per hour under the where pumps had been sitting. The pumps were moved to the burial ground on April 26, 1974. Due to climatic conditions when the pumps were moved, the soil beneath the pumps was not completely decontaminated. The contaminated ground beneath the pumps was covered with plastic and secured with dirt. On September 26, 1974, high winds blew the plastic cover loose, causing contamination to spread downwind (southeast) of the Overground Storage Yard. An additional survey in the Overground Storage Yard identified two empty capsules with smearable contamination of 30,000 counts per minute and more soil contamination beneath the capsules reading 1.5 rad per hour. A resulting contamination spread, measuring approximately 75 feet wide and 450 feet long was identified extending southeast of the Overground Storage Yard. Levels of contamination ranged from 100,000 counts per minute near the storage area and decreased to 3000 counts per minute. The capsules were taken to the burial ground to avoid further contamination spreads.

Related Sites/ Structures: This release is associated with 200-E-53.

Waste Type: Soil

Waste Description: Wind blew specks of contamination out of the Overground Storage Yard posted radiation zone. The source was from contaminated equipment being stored at the Overground Radioactive Equipment Storage Yard. Maximum beta/gamma readings of 3,000 to 100,000 counts/minute were found on a swath of ground south southeast of the storage area. The intensity of the radiological readings decreased with greater distance away from the source.

Code: UPR-200-E-62 **Classification:** Accepted

Names: UPR-200-E-62; Transportation Spill Near 200-E Burning Ground; UN-200-E-62; UN-216-E-62 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1982

Status: Inactive **End Date:** 1/1/1982

Description: The 1982 release site was an area approximately 5 centimeters (2 inches) wide and 30 meters (100 feet) long on a hill near the 200 East Overground Storage Area. The release was cleaned up within 3 days. The site is no longer marked or posted.

Location: The release occurred at the 200 East Burning Ground (also known as the 200 East Burn Pit), located south of 12th Street and west of Canton Ave.

Release Description: Radioactive liquid was spilled from a pressure test assembly while in transit. The release occurred on March 19, 1982. The ground contamination was picked up, placed in barrels, and removed to the burial ground. The release was cleaned up to background levels and was released from area posting on March 22, 1982.

Related Sites/ Structures: The release is associated with the Overground Storage Area, sitecode 200-E-53.

Waste Type: Process Effluent

Waste Description: While transporting a pressure test assembly, contaminated liquid dripped onto the dirt road. Contamination consisted of beta/gamma readings to 350 millirads/hour.

Code:	UPR-200-E-64	**Classification:**	Accepted
Names:	UPR-200-E-64; Radioactive Soil and Ant Hills; UN-200-E-64; UN-216-E-36	**Reclassification**	None
Type:	Contamination Migration	**Start Date:**	1/1/1984
Status:	Inactive	**End Date:**	

Description: The site is a large area posted with chain and Underground Radioactive Material Area signs. The size and shape of the posted area has changed periodically as a result of annual radiological surveys and clean up efforts.

Location: The site is inside 200 East Area, north of 7th Street, adjacent to the west side of the 216-B-64 Basin.

Release Description: The original unplanned release documentation states ants burrowed into contaminated soil that was caused by leakage from the 270-E-1 Tank and brought the contamination to the surface. Later documentation suggests the contamination source was the small diameter vertical pipe (swab riser) located west of 216-B-64 basin.

Waste Type: Soil

Waste Description: The contamination found in the soil and ant hills consisted predominantly of cesium-137 and strontium-90, with readings to 60,000 counts per minute. Several sources of contamination have been suggested. A swab riser on an underground pipeline appears to be the source.

Code:	UPR-200-E-66	**Classification:**	Accepted
Names:	UPR-200-E-66; 216-A-42 Basin Contamination Release; UN-200-E-66; UN-216-E-66	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1984
Status:	Inactive	**End Date:**	

Description: The release is not separately marked or posted. The 216-A-42 Basin had been surrounded by a wire fence and posted with Soil Contamination signs. In 2001, the fence was removed and the area was surface stabilized. It was covered with clean backfill and down posted to Underground Radioactive Material (URM). The release site is located within the URM area.

Location: The release site was located adjacent to the 216-A-42 Retention Basin, which is located outside of the eastern 200 East Area perimeter fence.

Release Description: A November 7, 1984, a radiation survey identified contamination both inside and outside of the area posted as a radiation zone around the perimeter of the 216-A-42 Basin. Contaminated liquid in the basin had evaporated allowing dried contamination specks to be spread by wind. At the time of this release, contamination levels were 40,000 counts per minute on the ground within the retention basin fence. Smears of the walls and bottom of the basin ranged from 200 to 100,000 counts per minute. The area outside the retention basin fence revealed specks with a maximum level of 3,000 counts per minute located between the road and the fence.

Related Sites/ Structures: The release is associated with the 216-A-42 Basin.

Waste Type: Process Effluent

Waste Description: The contamination consisted of beta/gamma particulates, with readings inside the area to 40,000 counts per minute and outside to 3,000 counts per minute. A routine surface radiation survey done in 1988 found spots of contamination on the south edge of the site with readings up to 200,000 disintegrations per minute (or 20,000 counts per minute). A radiation survey

done outside the 216-A-42 Basin perimeter fence done in 1998 did not identify any contamination outside the basin.

Code: UPR-200-E-69 **Classification:** Accepted

Names: UPR-200-E-69; Railroad Car Flush Water Radioactive Spill; UN-200-E-69; UN-216-E-69 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1984

Status: Inactive **End Date:**

Description: The railroad tunnel area has a 1.2 meter (4 foot) high fence along the side of the tracks. The area was posted with Radiologically Controlled Area signs. In 1998, the track from the tunnel door to Atlanta Ave. was covered with gravel and reposted as Underground Radioactive Material.

Location: The release effected the 221-B railroad cut, tunnel, and track.

Release Description: On 6-19-84, a concrete burial box (K-3 filter type) was removed from the 221-B railroad tunnel containing waste drums from 225-B and 221-B canyon waste. After loading, the burial string was bumped by the locomotive several times to remove the flush water from the lid of the burial box. No water was seen on the lid of the box or the deck of the flat car when the car left the tunnel. When the train stopped with the burial box about 180 meters (600 feet) from the tunnel door, contamination was noted on and near the west rail of the track. Contamination levels were 20,000 counts per minute with 4000 counts per minute smearable on the track. The water was not noted before the box was moved because high dose rates coming from the burial box (400 millirem/hour at a distance of 100 feet) prevented personnel from getting close enough to identify any liquid. After the contamination was identified, the train could not move back into the tunnel without contaminating the locomotive.

Waste Type: Water

Waste Description: Water dripped from a burial box containing waste was from 225-B and the 221-B canyon. The contamination consists of beta/gamma contamination, with readings to 4,000 to 20,000 counts per minute.

Code: UPR-200-E-88 **Classification:** Accepted

Names: UPR-200-E-88; TC-4 Spur Contaminated Railroad Track; UN-200-E-88. Ground Contamination Around the Western Purex Railroad Spur; UN-216-E-16; UN-216-E-88 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The unfenced portion of the spur was posted as a "Contamination Area." Additional posting on portions of the spur included "Soil Contamination Area" and "Buffer Area." The spur is tracked with the property number "F187418". The site was interim stabilized in December 1998. The stabilized area was posted as an Underground Radioactive Material area. A chain link fenced storage area is located on the north end of the spur (see site code 200-E-43).

Location: The site is located northwest of the 202-A Building at the TC-4 Railroad Spur.

Release Description: In 1981, Harold Maxfield stated that the large radiation zone associated with the TC-4 railroad spur has been incorrectly designated as an unplanned release site. The original perimeter of the zone was posted where the gamma dose rates from radioactive tank cars parked on the railroad

spur would be less than 1 millirads/hour. The site in question was properly known as a Regulated Equipment Storage Area (see 200-E-43). On December 17, 2010, approximately 576,000 gallons of potable water discharged to the ground during a construction water line tie in activity. The water flowed south, from the line break and flooded a portion of the TC-4 Spur Railcar Storage Area and the UPR-200-E-88 stabilized railroad track. Although no railcars are being stored here, the area is still fenced and radiologically posted.

Related Sites/ Structures: The site is associated with 200-E-43.

Waste Type: Process Effluent

Waste Description: The contamination spread consisted of radioactive particulates from contaminated railcars using the tracks. Surface radiological surveys performed in 1991 identified contamination of 20,000 to 60,000 disintegrations per minute on the railroad track near where the tank cars were being staged. South of the tank cars, along the railway, contaminated areas of 2,000 to 20,000 disintegrations/minute were also identified.

Code: UPR-200-E-89 **Classification:** Accepted

Names: UPR-200-E-89; Contamination Migration to the North, East & West of BX-BY Tank Farms; UN-200-E-89; UN-216-E-17 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1978

Status: Inactive **End Date:**

Description: The site is located north of the 241-BY Tank Farm. In 1991, the contaminated soil was consolidated on top of the 216-B-43 through 216-B-50 Cribs and stabilized with a layer of clean dirt. The site also includes an irregularly shaped drill pad area and a contaminated concrete pad that were also covered with clean dirt. All of the stabilized areas of UPR-200-E-89 were zoned off against casual entry and marked with "Underground Radioactive Material" signs.

Location: UPR-200-E-89 was originally identified in 1978 as an area of surface contamination east of the 241-BX Tank Farm. Wind blown contamination from tank farm operations spread the contamination to the north and northwest of the 241-BY Tank Farm. It eventually grew to be approximately 1.2 hectares (3 acres) in size.

Release Description: Airborne particulate matter contaminated the area bounding the north and northeast sides of the 241-BY Tank Farm. The airborne particulate matter was resuspended by wind from activities during the time of 241-BY Tank Farm operations. Airborne particulate matter from the 241-BX Tank Farm spread onto Baltimore Avenue roadway. Ground contamination was discovered at the 241-BX Tank Farm. The contamination was probably due to tank leakage.

Related Sites/ Structures: UPR-200-E-89 is associated with the 241-BX Tank Farm and the 241-BY Tank Farm.

Waste Type: Process Effluent

Waste Description: Airborne particulate matter contaminated an area near the 241-BY Tank Farm. The matter was resuspended by wind. Beta and gamma contamination with readings of 500 to 2,000 counts per minute were detected at the site.

Code: UPR-200-E-95 **Classification:** Accepted

Names: UPR-200-E-95; Ground Contamination Around **Reclassification** None

RR Spur Between 218-E-2A and 218-E-2; UN-200-E-95; UN-216-E-23

Type: Unplanned Release **Start Date:** 1/1/1980

Status: Inactive **End Date:**

Description: The site is a railroad spur located south of the 218-E-2 and 218-E-5 Burial Grounds and north of the 218-E-2A Burial Ground. It had been barricaded with steel chain and posted as a Contamination Area. In 1998, the track was covered with gravel and reposted as an Underground Radioactive Material area.

Location: UPR-200-E-95 occurred at the railroad spur north of the 221-B Facility, located between the 216-E-2A and 216-E-5 Burial Grounds.

Release Description: The railroad spur was used as an aboveground storage zone for low level contaminated equipment. Equipment from the B Plant and PUREX Plant operations were stored, for the most part, on the beds of railroad flat cars. UPR-200-E-95 is associated with this storage area. The contamination is possibly the result of the accumulation of many small releases over time.

Related Sites/ Structures: UPR-200-E-95 is associated with the 218-E-2A and the 218-E-5 Burial Grounds and B-Plant operations.

Waste Type: Soil

Waste Description: The material stored on the rail cars contained unknown beta and gamma contamination with a maximum reading of 100,000 counts per minute. The contamination on the rail bed is the result of contaminated equipment being stored on the tracks over an extended amount of time.

Code: UPR-200-E-98 **Classification:** Accepted

Names: UPR-200-E-98; Ground Contamination East of C Plant (Hot Semi Works); UN-200-E-98; UN-216-E-26 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1965

Description: The location of this site is currently within a large surface stabilized area known as 200-E-41. Much of the contamination was removed and placed into the 218-C-9 Burial Pit in 1992. The area has been surface stabilized with powerhouse ash. The covered area has "Underground Radioactive Material" warning signs posted.

Location: UPR-200-E-98 occurred on the east side of the Hot Semiworks Facility, near the base of the 291-C Stack and around the 216-C-2 Reverse Well. The 291-C Stack was demolished and currently lies in a burial trench adjacent to where it stood.

Release Description: Radioactive particulate matter from the "Hot Semiworks" operations (1955 to 1965) was inadvertently spread to the ground surface. It contaminated the ground near the base of the 291-C Stack and around the 216-C-2 Reverse Well.

Related Sites/ Structures: UPR-200-E-98 was associated with the C Plant (Hot Semiworks) Facility, the 291-C Stack and the 216-C-2 Reverse Well. The surface stabilized area is now known as 200-E-41.

Waste Type: Soil

Waste Description: The release consisted of radioactive particulate matter from the Hot Semiworks operation that was deposited onto the ground surface east of the facility. The contamination was primarily strontium-90.

Code:	UPR-200-E-101	**Classification:**	Accepted
Names:	UPR-200-E-101; Radioactive Spill Near 242-B Evaporator; UN-200-E-101; UN-216-E-101; UN-216-E-30	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	

Description: The site, adjacent to the B Tank Farm perimeter fence, is currently a posted as an Underground Radioactive Material area.

Location: The site is located between the 242-B Evaporator and the 241-B Tank Farm fence.

Release Description: Surface contamination was identified between the 241-B Tank Farm fence and the 242-B Evaporator building. It was assigned the Unplanned Release Site Number UN-216-E-30 in August 1985. Windblown particulates from the tank farm or spills from the 242-B Evaporator may have been the cause of the contamination, but an exact cause for this area of contamination has not been determined. A routine radiological survey done in September 1986 found tumbleweeds growing at the site that were reading 1,000 counts per minute beta-gamma.

Related Sites/ Structures: The site is associated with 241-B Tank Farm and 200-E-120.

Waste Type: Soil

Waste Description: The release consisted of an unknown amount of radioactive particulates from the 241-B Tank Farm.

Code:	UPR-200-E-112	**Classification:**	Accepted
Names:	UPR-200-E-112; Contaminated Railroad Track from B-Plant to the Burial Ground; UN-200-E-112	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1979
Status:	Inactive	**End Date:**	1/1/1979

Description: The contaminated section of track and the Atlantic Avenue crossing were cleaned by noon, February 12, 1979.

Location: UPR-200-E-112 occurred on the railroad track from the 221-B Building to the 200 East Area Burial Ground.

Release Description: During a canyon equipment burial transfer, some contaminated liquid spilled out of a cesium ion exchange column that was being loaded into a burial box atop a rail car. The liquid spilled onto the tracks inside the B Plant railroad tunnel and was carried outside by one wheels of the railroad car, contaminating the track from B Plant to the east boundary of the burial ground. Contamination levels ranged from 40,000 counts per minute to 80,000 counts per minute. Approximately 15 meters (50 feet) of track that crossed Atlanta Ave. was decontaminated immediately. Occurrence Report 79-24 also recommends an effort to continue to clean the contaminated track.

Related Sites/ Structures: UPR-200-E-112 was associated with the 221-B Building and the B Plant Aggregate Area Railroad Cut and Tunnel.

Waste Type: Process Effluent

Waste Description: The release consisted of a spill of liquid from a cesium ion exchange column with beta/gamma readings up to 80,000 counts per minute. The equipment was being transported to the burial ground on a railcar.

Code: UPR-200-E-143 **Classification:** Accepted

Names: UPR-200-E-143; Contamination Adjacent to 244-A Lift Station; UN-216-E-43 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1990

Status: Inactive **End Date:**

Description: Various radiological postings exist in this vicinity that are associated with the 244-A Lift Station and 241-C Tank Farm contamination migration. A WIDS sign has been placed at the approximate location of the release.

Location: Contamination was identified in a large area located south of the 244-A Lift Station and west of 216-A-40 Basin.

Release Description: In October 1990, radiologically contaminated rabbit feces, with a maximum dose of 900 millirem per hour, was found south of the 244-A Lift Station and west of the 216-A-40 Basin. An investigation was initiated to identify the contaminating source. The size and shape of the zone varied over the next few months as clean-up efforts continued and new contamination is identified.

Related Sites/ Structures: This release is associated with the 244-A Lift Station, 200-E Powerhouse Ditch and UPR-200-E-100.

Waste Type: Animal Waste

Waste Description: Contaminated rabbit feces and soil contamination were found in the area. Laboratory analysis of the feces found cesium-137 to be the most prevalent contaminant.

Code: UPR-200-E-144 **Classification:** Accepted

Names: UPR-200-E-144; Soil Contamination North of 241-B; UN-216-E-44 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is a large area posted as Underground Radioactive Material.

Location: The site is located north of the 241-B Tank Farm to 12th Street on the east side of Baltimore Ave, east of 241-BY Farm.

Waste Type: Soil

Waste Description: The site consisted of several acres of particulate surface contamination to the north and east of 241-B Tank Farm. The source is assumed to be activities in the 241-B and 241-BY Tank Farms.

200-IS-1

Code:	216-A-508	**Classification:**	Accepted
Names:	216-A-508; 216-A-8 Distribution Box; Control Structure for 216-A-8 Crib	**Reclassification**	None
Type:	Control Structure	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1995

Description: The structure is surrounded with radiological chain and posted with Contamination Area and Radiologically Controlled Area signs.

Location: The site is located east of 200 East Area, outside the 200 East Area fence. It is located adjacent to the west end of the 216-A-8 Crib.

Related Sites/ Structures: The control structure is associated with the 216-A-8 crib, the 200-E-164-PL pipeline, the 216-A-524 Control Structure and the 241-A Tank Farms.

Process Description: The 216-A-508 Control Structure, located west of the 216-A-8 Crib, controlled whether the effluent flow was diverted to the 216-A-8 or the 216-A-24 Crib.

Code:	216-A-524	**Classification:**	Accepted
Names:	216-A-524; 216-A-524 Control Structure; 216-A-524 Weir; 216-A-24 Control Structure	**Reclassification**	None
Type:	Control Structure	**Start Date:**	1/1/1958
Status:	Inactive	**End Date:**	1/1/1966

Description: The 216-A-524 Weir is an underground liquid effluent control structure. The weir is a concrete structure with the interior being divided vertically into three chambers. The outside dimensions are 4.9 meters (16 feet) by 2.4 meters (8 feet) and is 3.4 meters (11 feet) deep. The unit is covered with two removable concrete cover slabs. The aboveground features have been removed.

Location: The site is located on the west end of the 216-A-24 Crib.

Related Sites/ Structures: The site is associated with the 216-A-24 crib, the 200-E-165-PL pipeline and the 216-A-508 Control Structure.

Process Description: The weir controlled the effluent flow to the 216-A-24 crib.

Waste Type: Process Effluent

Waste Description: The unit is an underground liquid effluent control structure for the 216-A-24 Crib and contains radioactively contaminated piping and cement. The amounts of radionuclides present are not known. A document published in 1987 (K.H. Cramer) reported radiological readings of 500 counts per minute smearable contamination, 10,000 counts per minute direct beta/gamma on the surface structures.

Code:	241-B-154	**Classification:**	Accepted
Names:	241-B-154; 241-B-154 Diversion Box	**Reclassification**	None
Type:	Diversion Box	**Start Date:**	1/1/1945

Status: Inactive **End Date:** 1/1/1984

Description: The site is a diversion box that interconnects diversion boxes 241-B-151 and 241-B-152 with the 221-B Building. The unit is a rectangular, reinforced concrete structure. It was sprayed with gray, weatherizing foam. Later, a layer of shot-crete was placed over the diversion box, extending beyond the structure to include the surrounding ground surface.

Location: The unit is located east of 221-B, at the intersection of Baltimore Avenue and Seventh Street.

Related Sites/ Structures: The diversion box is associated with B Plant, 241-B-302 Catch Tank, 200-E-116-PL, 200-E-199-PL, 200-E-213-PL 241-B-151, 241-B-152, UPR-200-E-45 and UPR-200-E-77.

Process Description: This diversion box transferred waste solutions generated during fuel processing and decontamination activities from B Plant via 241-B-151 and 241-B-152 to the tank farms.

Waste Type: Process Effluent

Waste Description: The diversion box transferred process waste from B Plant to the tank farms. It is estimated that the diversion box also may contain approximately 23 kilograms (50 pounds) of lead shielding inside this unit.

Waste Type: Chemicals

Waste Description: This unit transferred waste from processing and decontamination operations. Volumes of waste present in the system varied with production operations. Contamination in this unit is estimated to include high alpha, beta, and gamma activity levels.

Code: 241-B-302B **Classification:** Accepted

Names: 241-B-302B; 241-B-302-B Catch Tank; Drain Lines V201 and V127; V217; 241-B-302 **Reclassification** None

Type: Catch Tank **Start Date:** 1/1/1945

Status: Inactive **End Date:** 5/16/1985

Description: This unit is an underground, horizontal carbon steel tank. The catch tank and the 241-B-154 Diversion Box are surrounded with post and chain. The surface of the area inside the chain has been covered with gravel and sprayed with gray weatherizing material. The site is marked with radiological and IMUST signs.

Location: This catch tank is located north of the 241-B-154 diversion box, adjacent to the corner of 7th Street and Baltimore Avenue.

Related Sites/ Structures: This catch tank is associated with 241-B Tank Farm and 241-B-154 Diversion Box and UPR-200-E-77. The drain lines are V201 and V127.

Process Description: This catch tank provided secondary containment for the 241-B-154 Diversion Box. Catch tanks are used to collect spills and leaks that occur in diversion boxes during waste transfer operations. From 1945 to 1952, the diversion box and catch tank were involved in the bismuth phosphate process which generated metal waste, coating wastes, and first and second cycle decontamination wastes. From 1968 to 1978 the diversion box and catch tank were involved in the waste fractionization processes for recovering cesium and strontium with other fissionable materials. Cesium, fissionable materials, and rare earth processing continued until 1985.

Waste Type: Process Effluent

Waste Description: This unit collected leaking and excess waste solutions from processing and decontamination operations that passed through the 241-B-154 Diversion Box. Volumes were variable according to specific plant operation. In 1985, the volume of liquid inside the tank was estimated to be

16,027 liters (4240 gallons). Sludge content was estimated to be 2608 liters (690 gallons). (Total 4930 gallons of sludge and liquid).

Code:	241-BX-154	**Classification:**	Accepted
Names:	241-BX-154; 241-BX-154 Diversion Box	**Reclassification**	None
Type:	Diversion Box	**Start Date:**	1/1/1948
Status:	Inactive	**End Date:**	1/1/1985

Description: This diversion box is a reinforced concrete structure.

Location: This diversion box is located south of the 221-B Building and east of the 241-BX-302B Catch Tank.

Related Sites/ Structures: This diversion box is associated with the 241-BX-302-B Catch Tank, 200-E-198-PL and the 241-BX Tank Farm. This unit interconnects the 241-B-252 and 241-BX-155 diversion boxes and the 221-B Building.

Process Description: This diversion box is designed to contain leaks from transfers and drainage from operations within the unit. This unit acts as a secondary containment for transfer line jumper connections.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solutions from processing and decontamination operations. Volumes were variable according to specific plant operation. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Waste Type: Equipment

Waste Description: It was estimated that approximately 50 pounds (23 kilograms) of waste lead was stored in this unit.

Code:	241-BX-155	**Classification:**	Accepted
Names:	241-BX-155; 241-BX-155 Diversion Box	**Reclassification**	None
Type:	Diversion Box	**Start Date:**	1/1/1948
Status:	Inactive	**End Date:**	1/1/1984

Description: This diversion box is a reinforced concrete structure. The diversion box has been isolated and covered with water proof foam sealant. The area around the diversion box has been surface stabilized with gravel and posted with Underground Radioactive Material signs, except for the surface area above the 241-B-302-C tank. This area does not have the additional layer of gravel and remains posted as a Contamination Area.

Location: This diversion box is located northeast of B Plant on the south side of Atlanta Avenue.

Related Sites/ Structures: This diversion box is associated with the 241-BX-302-C Catch Tank, 200-E-198-PL and the 241-BX Tank Farm.

Process Description: This diversion box transferred tank waste between B Plant and the 241-BX Tank Farm. The transfer system is designed to contain leaks from transfers and drainage from operations within the unit. This unit acts as secondary containment for transfer line jumper connections. The 241-B-302-C Catch Tank held the waste that leaked in this unit.

Waste Type: Equipment

Waste Description: It was estimated that approximately 50 pounds (23 kilograms) of waste lead was stored in this unit.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solutions from processing and decontamination operations. Volumes were variable according to specific plant operation. High levels of beta, gamma and alpha contamination are estimated to be inside this unit. Lead shielding material may also be present.

Code: 241-BX-302B
Classification: Accepted

Names: 241-BX-302B; 241-BX-302-B Catch Tank; Line V288
Reclassification None

Type: Catch Tank
Start Date: 1/1/1948

Status: Inactive
End Date: 1/1/1985

Description: The buried tank is covered with gravel. It is surrounded with post and chain. The tank is marked with radiological and IMUST signs.

Location: The 241-B-302B catch tank is located on the south side of the 221-B Building (near section 12), and northwest of 241-BX-154 Diversion Box.

Related Sites/ Structures: This catch tank is associated with 241-BX-154 Diversion Box and 241-BX Tank Farm. Line V288 is the drain line from the diversion box.

Process Description: The catch tank collected drainage and spills that occurred in diversion box during waste transfer operations.

Waste Type: Process Effluent

Waste Description: This unit collected drainage and spilled waste solutions that passed through the 241-BX-154 Diversion Box. Volumes were variable according to specific plant operation. Residual volume is estimated to be 3591 liters (950 gallons) of sludge and 355 liters (94 gallons) of supernate.

Code: 241-BX-302C
Classification: Accepted

Names: 241-BX-302C; 241-BX-302-C Catch Tank; Lines V322 and V323
Reclassification None

Type: Catch Tank
Start Date: 1/1/1948

Status: Inactive
End Date: 1/1/1985

Description: The catch tank is a direct buried carbon steel tank, positioned horizontally. It is located inside a recently graveled Underground Radioactive Material area, related to the 241-BX-155 Diversion Box surface stabilization. The tank was not covered with extra gravel and is separately posted as a Contamination Area. The tank is marked with radiological and IMUST signs. Pipelines V322 and V323 go to and from the 241-BX-155 diversion box.

Location: The 241-BX-302C catch tank is located southeast of 241-BX -155 Diversion Box, between Atlanta Avenue and Baltimore Avenue.

Related Sites/ Structures: This catch tank is associated with the 241-BX-155 Diversion Box, UPR-200-E-78 and 241-BX Tank Farm. Line V322 is the drain line from the diversion box to the catch tank. Line V323 is the return line from the catch tank to the diversion box.

Process Description: The 241-BX-302C catch tank collected drainage and spills that occurred during waste transfer operations at the 241-BX-155 diversion box.

Waste Type: Process Effluent

Waste Description: This unit collected processing and decontamination drainage from the 241-BX-155 Diversion Box. Volumes were variable according to specific plant operation. In 1984, the tank was estimated to contain 2400 liters (635 gallons) of sludge and 862 liters (228 gallons) of supernate. The tank was declared stabilized and isolated April 12, 1985, as part of Project B-231. When stabilized the tank contained 16 inches of waste and 13 inches of sludge. The solids volume is calculated to be approximately 619 gal of sludge and 224 gal of liquid.

Code: 241-C-154 **Classification:** Accepted

Names: 241-C-154; 241-C-154 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1946

Status: Inactive **End Date:** 1/1/1985

Description: The diversion box has been covered with clean backfill material (ash) and is no longer visible. It is located within the larger Hot Semiworks surface stabilized area (200-E-41). The diversion box is posted with Underground Radioactive Material Area signs.

Location: The diversion box is located south of 7th Street, southeast of the (demolished) 201-C building and northeast of the 216-C-1 crib. It is located within the larger Hot Semiworks surface stabilized area (200-E-41).

Related Sites/ Structures: The diversion box is associated with the 201-C C-Cell, 200-E-226-PL (B-Plant Promethium Transfer Line) and 200-E-41 stabilized area.

Process Description: This unit was used for transfer of radioactive solutions from (promethium) B Plant operations.

Waste Type: Equipment

Waste Description: The diversion boxes are estimated to contain approximately 50 pounds (23 kilograms) of waste lead.

Waste Type: Process Effluent

Waste Description: This unit was used to transfer radioactive waste solutions (promethium) from B Plant operations. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Code: 241-CX-70 **Classification:** Accepted

Names: 241-CX-70; 241-CX-TK-70 Tank; Strontium Hot Semi-Works **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1957

Description: The 241-CX-70 underground tank is surrounded with post and chain. It is posted with Hazardous Waste, Restricted Area-Inactive Tank signs.

Location: The tank is located south of 7th Street, within the Hot Semiworks stabilized area (200-E-41).

Related Sites/ Structures: Associated structures include 201-C, 276-C, 2704-C, 241-CX-71, and 241-CX-72. The pipeline to 241-CX-70 is sitecode 200-E-244-PL. It is inside the 200-E-41 stabilized area.

Process Description: The unit stored Semiworks Process waste. The 241-CX-70 Tank is constructed of concrete with a 2.5-centimeter (1-inch) thick stainless steel plate liner. The sides and top are 0.3 meters (1 foot) thick concrete and the bottom thickness varies from 0.6 meters (2 feet) at the edges to 23 centimeters (9 inches) at the center. The tank is located below grade, with several risers and vents visible above grade.

Waste Type: Process Effluent

Waste Description: The unit was used to store high-level process waste in support of the Semiworks process. Prior to sluicing, the unit contained approximately 1.45 meters (4.75 feet) of sludge, that is roughly equivalent to 39,000 liters (10,300 gallons) of waste. Contaminants included 20 curies of plutonium-239/240; 500 curies of cesium-137; 2,900 curies of strontium-90; 7,080 kilograms (7.8 tons) sodium nitrate; 1,000 kilograms (1.1 tons) sodium nitrite; 1,090 kilograms (1.2 tons) sodium fluoride; 450 kilograms (0.5 tons) aluminum sulfate; and 180 kilograms (0.2 tons) sodium chromate. After sluicing only a small quantity of solids and residual caustic/water remain. The estimated contamination levels for piping and equipment are 3 curies plutonium and 6,000 curies beta/gamma. The residual volume remaining after the tank was sluiced was estimated to be (500 gallons) of liquid and (250 gallons) of solids. Later more liquids and gravel-like solids were removed. The tank was dried and is considered to be empty.

Code: 241-CX-71 **Classification:** Accepted

Names: 241-CX-71; 241-CX-TK-71; Strontium Hot Semi-Works; 241-CX Neutralization Tank **Reclassification** None

Type: Neutralization Tank **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1957

Description: The underground tank is surrounded with steel posts and chain. It is posted with Hazardous Waste, Restricted Area-Inactive Tank signs.

Location: The tank is located south of 7th Street, within the Hot Semiworks stabilized area (200-E-41). It is near the northeast corner of the 216-C-1 Crib.

Related Sites/ Structures: Associated structures include: 201-C, 276-C, 2704-C, 216-C-1, 216-C-5, 241-CX-70, and 241-CX-72. The pipeline to 241-CX-71 is sitecode 200-E-245-PL. It is inside the 200-E-41 stabilized area.

Process Description: This tank provided acidic waste neutralization via a flow-through limestone layer for 201-C process condensate and the coil and condensate cooling water stream prior to discharge to the 216-C-1 and 216-C-5 cribs. It may have also received process condensates from REDOX and PUREX pilot plant operations, decontamination flushes, and hot shop sink waste. Replacement limestone was added as needed through a large central riser pipe. This tank is constructed of stainless steel and lies below grade, on a reinforced concrete foundation pad.

Waste Type: Process Effluent

Waste Description: The tank was used for neutralizing the 201-C process condensate and the coil and condenser cooling water via a limestone layer. It also received process condensates from the Reduction Oxidation (REDOX) and Plutonium Uranium Extraction (PUREX) pilot plant processes, which would include hexone and kerosene solvents. From November 1956 to June 1957, the unit received flush wastes during decontamination. This tank currently contains a bottom layer of sludge and the limestone layer. The remainder of the tank was filled with grout in 1986. In October 1990, a drill was used to collect samples from the bottom of the tank, through the grout. Low concentrations of methyl ethyl ketone, xylene and toluene were measured (7-54

parts per billion). Twenty one parts per million of cyanide was found.

Code:	241-CX-72	**Classification:**	Accepted
Names:	241-CX-72; 241-CX-72 Waste Self Concentrator; 241-CX-TK-72 Vault and Tank; Strontium Hot Semi-Works	**Reclassification**	None
Type:	Storage Tank	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1958

Description: The 241-CX-72 tank is located inside a small building. A cover has been placed over the tank with radiological postings and Keep Out signs.

Location: The tank is located south of 7th Street, within the Hot Semiworks stabilized area (200-E-41).

Release Description: In 1988, during construction of the 291-C stack demolition berm, a portion of an agitator rod was accidentally snagged by heavy equipment. A piece of rod approximately 4.5 meters (15 feet) long was pulled out of the tank. Since the rod was found to be radiologically contaminated, an investigation was begun to assess the situation. The tank had previously been reported to be empty of waste. Failure to identify waste during the 1978 inspection was assumed to be from inadvertently inspecting the drywell adjacent to the tank, which remains free of waste by design. Since the rod had a significant amount of contamination on it, core sampling through the grout layer was planned. An eleven foot layer of fission product and TRU residue was found to be on the bottom of the tank.

Related Sites/ Structures: Associated structures include: 201-C, 276-C, 2704-C, 241-CX-70, and 241-CX-71. The pipeline to 241-CX-72 is sitecode 200-E-246-PL. It is inside the 200-E-41 stabilized area.

Process Description: The 241-CX-72 Tank was an experimental tank used to study the characteristics of self-concentrating waste from the Plutonium Uranium Extraction (PUREX) process. The 241-CX-72 Tank is vertically oriented with welded steel construction. The tank rests on a concrete pad inside a steel caisson with the tank top below grade. A cylindrical heater is located just above each stiffening ring. A number of penetrations extend through the tank top, including an agitator. This tank was used for approximately one year, during 1957 through 1958. The 241-CX Vault is located below grade adjacent to the 241-CX-72 tank. The vault is constructed of reinforced concrete, divided into two sections. In 1961, the inlet piping was cut and capped.

Waste Type: Process Effluent

Waste Description: The tank was filled with grout in 1986. Original content information was based on process knowledge. Some solid salt cake, similar to that found in tank farm tanks containing PUREX waste, is believed to remain inside the tank as well as the grout. Smears taken from an agitator rod (accidentally pulled out of the tank by heavy equipment) found a maximum of 8000 disintegrations per minute alpha and 5800 picocuries of gamma. Core samples were obtained from the tank in 1989. An 3.3 meter (eleven foot) layer of fission products and TRU isotopes was found in the bottom of the tank. Estimated radionuclides present include approximately 200 grams of plutonium-239 (as a fluoride compound).

Code:	200-E-114-PL	**Classification:**	Accepted
Names:	200-E-114-PL; 216-BC-2805; 2805-E1, 2805-E2, 2805-E3 and 2805-E4; Pipeline from 216-BY-201 to 216-BC-201; Pipeline from 241-BY Tank Farm to 241-C Tank Farm and BC Cribs and Trenches	**Reclassification**	None

Type: Radioactive Process Sewer **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1954

Description: The two parallel underground pipelines are marked with metal posts and Underground Radioactive Material - Pipeline signs. (see subsites) Several areas above the pipeline have been surface stabilized due to growing contaminated vegetation. These areas are also posted as Underground Radioactive Material Areas.

Location: The pipeline begins north of the 241-BY Tank Farm at the 216-BY-201 Flush Tank. It extends eastward to a point between the 216-B-8 Crib and the 216-B-51 French Drain. The pipeline turns southward and connects to a valve pit (see sitecode 200-E-223). A portion of the line diverts from the valve pit to the 241-C Tank Farm. Another portion of pipeline continues south and connects to the 216-BC-201 Siphon Tank in the BC Cribs and Trenches area. The BC Cribs and Trenches are located south of 200 East Area, south of Route 4 South.

Release Description: The Dyncorp Integrated Soil, Vegetation and Animal control group submitted two posted Contamination Areas located on this pipeline to WIDS as a Discovery Sites. In February 2000, they found growing contaminated vegetation on the underground pipeline northeast of 241-B Tank Farm, approximately 27 meters (90 feet) southeast of the 216-B-51 French Drain. The maximum contamination levels identified was 2000 counts per minute beta/gamma. Although some of the contaminated vegetation was removed, the area remains posted as a Contamination Area. A second area with growing contaminated vegetation was identified in October 2000. This area is located north of the 241-B Tank Farm, between the 216-B-8 Tile Field and the 216-B-51 French Drain.

Related Sites/ Structures: The pipeline is associated with the 241-BY Tank Farm, 241-C Tank Farm, the BC Cribs and Trenches, 200-E-221-PL (to 216-B-51) and the 200-E-223 valve pit.

Process Description: The pipeline is constructed of two parallel, 10 centimeter (4 inch) diameter carbon steel pipes buried in the same soil trench. Encasements were constructed at areas where the pipeline crosses under roadways. During the Uranium Recovery project from 1952 through 1954, this pipeline was used to transfer waste from the 241-BY Tank Farm to the BC Cribs and Trenches area. The waste first cascaded through several tanks in the 241-BY Tank Farm to allow some contamination to settle inside the tank farm before being discharged to the cribs and trenches via the underground pipeline. The entire scavenging mission necessitated the construction of the transfer system using pipelines 2805-E1, 2805-E2, 2805-E3 and 2805-E4 (Sitecode 200-E-114-PL). The entire system can be traced on the series of H-2-2900 thru 2909. The valve box (Sitecode 200-E-223) allowed waste to move north to BY or south to BC cribs.

Waste Type: Soil

Waste Description: The waste is the pipeline and adjacent soil contaminated from pipeline leaks. The pipeline carried scavenged uranium recovery process waste (tri-butyl phosphate solvent extraction).

This Site has the Following SubSites:

Code: 200-E-114-PL:1
Names: 200-E-114-PL:1; North/South Pipeline

Code: 200-E-114-PL:2
Names: 200-E-114-PL:2; East/West Pipeline

Code: 200-E-114-PL:3
Names: 200-E-114-PL:3; Underground Steel Line from Gate Valve (North of 216-BC-201 Siphon Tank) to 216-B-20 Trench

Code: 200-E-114-PL:1 **Classification:** Accepted

Names: 200-E-114-PL:1; North/South Pipeline
Reclassification None
Type: Radioactive Process Sewer
Start Date:
Status: Inactive
End Date:

Description: Subsite 1 is the north-south portion of the pipeline that runs from 216-BY-201 Flush Tank to 216-BC-201 Flush Tank. It runs through the 200-E-223 Valve Pit. The pipeline is constructed of two parallel, 10 centimeter (4 inch) diameter pipes buried in the same soil trench. The two parallel underground pipelines are marked with metal posts and Underground Radioactive Material - Pipeline signs. (see subsites) Several areas above the pipeline have been surface stabilized due to growing contaminated vegetation. These areas are also posted as Underground Radioactive Material Areas.

Location: The north/south pipeline begins east of the 241-BY tank farm and extends south, east of Baltimore Ave. It exits the 200 East Area fence and continues under Route 4 South and connects to the 216-BC-201 flush tank.

Process Description: The entire scavenging mission necessitated the construction of the transfer system using pipelines 2805-E1, 2805-E2, 2805-E3 and 2805-E4. The entire system can be traced on the series of H-2-2900 thru 2909. The valve box allowed waste to move north to BY or south to BC cribs.

The SubSite is Part Of:

Code: 200-E-114-PL
Names: 200-E-114-PL; 216-BC-2805; 2805-E1, 2805-E2, 2805-E3 and 2805-E4; Pipeline from 216-BY-201 to 216-BC-201; Pipeline from 241-BY Tank Farm to 241-C Tank Farm and BC Cribs and Trenches

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Code: 200-E-114-PL:2
Classification: Accepted
Names: 200-E-114-PL:2; East/West Pipeline
Reclassification None
Type: Radioactive Process Sewer
Start Date:
Status: Inactive
End Date:

Description: Subsite 2 is the east-west portion of the pipeline that extends from the 200-E-223 Valve Pit to the 241-C Tank Farm. The pipeline is constructed of two parallel, 10 centimeter (4 inch) diameter pipes buried in the same soil trench.

Location: This segment is located inside 200 East Area, north of 7th Street. It extends from the 200-E-223 Valve Pit to the 241-C Tank Farm.

Process Description: The entire scavenging mission necessitated the construction of the transfer system using pipelines 2805-E1, 2805-E2, 2805-E3 and 2805-E4 (Sitecode 200-E-114-PL). The entire system can be traced on the series of H-2-2900 thru 2909. The valve box allowed waste to move north to BY or south to BC cribs.

The SubSite is Part Of:

Code: 200-E-114-PL
Names: 200-E-114-PL; 216-BC-2805; 2805-E1, 2805-E2, 2805-E3 and 2805-E4; Pipeline from 216-BY-201 to 216-BC-201; Pipeline from 241-BY Tank Farm to 241-C Tank Farm and BC Cribs and Trenches

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Code: 200-E-114-PL:3
Classification: Accepted
Names: 200-E-114-PL:3; Underground Steel Line from Gate Valve (North of 216-BC-201 Siphon Tank)
Reclassification None

to 216-B-20 Trench

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Four inch diameter underground steel line from gate valve (north of 216-BC-201 siphon tank) to 216-B-20 trench. A Notice of Radiological Problem was issued in January 2007. Wind had uncovered a portion of this old radioactive underground line. The maximum dose rate on the line was 60 mr/hr at contact. No removable contamination was identified.

Location: The BC Cribs and Trenches are located south of 200 East Area, south of Route 4 South. The pipeline is located east of the BC cribs.

Process Description: The pipeline subsite begins as an underground line connecting to the 216-BC-201 flush tank. It emerged as an aboveground line west of the encasement (H-2-3203) that diverted waste to the BC trenches.

The SubSite is Part Of:

Code: 200-E-114-PL

Names: 200-E-114-PL; 216-BC-2805; 2805-E1, 2805-E2, 2805-E3 and 2805-E4; Pipeline from 216-BY-201 to 216-BC-201; Pipeline from 241-BY Tank Farm to 241-C Tank Farm and BC Cribs and Trenches

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Code: 241-ER-151 **Classification:** Accepted

Names: 241-ER-151; 241-ER-151 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1945

Status: Inactive **End Date:**

Description: The diversion box is located inside a locked chain link fence. The fence is posted with "Caution - contact Radiological Control and Tank Farm Shift Office prior to entry" signs. The diversion box is surrounded with a metal safety barricade.

Location: The site is located southwest of the B Plant and near the corner of 7th Street and Atlanta Avenue.

Related Sites/ Structures: This site is associated with the 241-ER-311 Catch Tank, the Cross Site Transfer Line, 241-EW-151 Vent Station, the 241-BX Double Contained Receiver Tank, and the 241-ER-152, the 241-ER-153, and the 241-UX-154 Diversion Boxes and the 241-ER-311 Catch Tank. It is also associated with pipelines 200-E-111-PL, 200-E-145-PL, 200-E-215-PL, 200-E-217-PL.

Process Description: The 241-ER-151 diversion box distributed waste between locations inside 200 East Area or the waste could be transferred to 200 West Area, via the cross site transfer line. This unit received 200 West Area waste via the 241-UX-154 Diversion Box via transfer lines V360, V361, V362, V363, V364 and V366 and the 241-EW-151 Vent Station. The diversion box also received 200 East Area tank waste from the 241- B, BX, and BY Tank Farms via 244-BX Double Contained Receiver Tank. Drainage from the 241-ER-151 went to the 241-ER-311 Catch tank.

Waste Type: Process Effluent

Waste Description: The diversion distributes chemical process waste between facilities and tank farms. Quantities of waste vary according to specific plant operations. This diversion box facilitates the transfer of waste solutions between the 200 East Area to the 200 West Areas via the Cross Site Transfer Line. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Code:	241-ER-152	**Classification:**	Accepted
Names:	241-ER-152; 241-ER-152 Diversion Box	**Reclassification**	None
Type:	Diversion Box	**Start Date:**	1/1/1974
Status:	Inactive	**End Date:**	

Description: Most of the reinforced concrete diversion box structure is underground. The floor and lower portions of the walls are lined with stainless steel. Cover blocks with lifting hooks are visible from the surface. The 241-ER-152 Diversion Box is surrounded with radiation rope and Contamination Area signs.

Location: This 241-ER-152 Diversion Box is southeast of the 224-B Building, and east of 241-ER-151 Diversion Box, near the corner of Atlanta Ave. and 7th Street.

Release Description: In 1996, intrusion from mice and harvester ants caused a contamination spread over an area measuring approximately 0.5 hectares (1.2 acres) southeast of the diversion box. The contaminated area was surface stabilized with clean gravel and down posted from a Contamination Area/ Soil Contamination Area to an Underground Radioactive Material Area (URM) (see WIDS sitecode 200-E-29).

Related Sites/ Structures: The 241-ER-152 Diversion Box is associated with the 241-ER-151 and 241-ER-153 diversion boxes, the 241-ER-311 Catch Tank and transfer lines (sitecodes 200-E-145-PL and 200-E-215-PL). It is also associated with the stabilized Contamination Area know as 200-E-29. The sump drain line for this diversion box is DR311 (see sitecode 200-E-305-PL). The drain line extends to the 241-ER-311 catch tank, located adjacent to the 241-ER-151 diversion box.

Process Description: Diversion boxes contain jumper piping that routed waste from one transfer line to another. Waste leaks that occur during high-level waste transfers are contained in catch tanks. The diversion boxes generally drain by gravity to nearby catch tanks where any spilled waste is stored.

Waste Type: Process Effluent

Waste Description: The diversion box distributes radioactive waste solutions from between facilities and tank farms. Quantities are variable according to specific plant operations. This diversion box facilitates the transfer of low-level waste for the B Plant to the Double-Shell Tank Farms.

Code:	241-ER-311	**Classification:**	Accepted
Names:	241-ER-311; 241-ER-311 Catch Tank; 241-ER-311A Replacement Tank	**Reclassification**	None
Type:	Catch Tank	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	6/1/2005

Description: The 241-ER-311 underground catch tank is located inside the 241-ER-151 locked, chain link fence. The fence is posted as a Contamination Area and Underground Radioactive Material Area, and is labeled with IMUST signs. The placement of these structures within the fence is the 241-ER-311 Catch Tank is the furthest south, nearest the chain link fence. The 241-ER-311A Catch Tank (original catch tank) is located adjacent to the north side of the 241-ER-311 tank (between the diversion box and the replacement catch tank). The 241-ER-151 Diversion Box is north of the 241-ER-311A Catch Tank.

Location: The catch tank is located south of the B Plant and west of Atlanta Avenue, inside the 241-ER-151 diversion box fence. The centers of two catch tanks (241-ER-311 and 241-ER-311A) are located approximately 17 feet apart (per center coordinates).

Release Description: A leak was suspected beginning in October 2005. Samples were collected through the test risers. The samples identified Sodium, Nitrate, Nitrite, Fluorine, Chlorine, Sulfate, Phosphate, Strontium-90, and Cesium-137. In 2006 the volume of liquid in the tank was estimated to be 424 gallons, at a rate of roughly 0.4 gallons per day.

Related Sites/ Structures: The 241-ER-311 catch tank is associated with the 241-ER-311A Catch Tank, 241-ER-151, 241-ER-152, automatic liquid level sensors, leak detection, and a submersible pump. Pipelines associated with these structures are discussed in sitecodes 200-E-228-PL and 200-E-305-PL (drain line).

Process Description: The 241-ER-311 catch tank replaced the 241-ER-311A Catch Tank. The catch tank collected spills and leaks that occurred in the 241-ER-151, the 241-ER-152, diversion boxes during waste transfer operations. The drain line from 241-ER-152 is line DR-311 (see sitecode 200-E-305-PL). After 1980, the primary liquids received were rain and snow melt, line flushes and some leakage from transfers through the 241-ER-151 diversion box.

Waste Type: Process Effluent

Waste Description: The catch tank collected drainage and leaks from the 241-ER-151, 241-ER-152 and 241-ER-153 diversion boxes. Volumes were variable according to specific plant operation, when the tank was active. Decreasing tank volumes were noted in 2005. A tank leak investigation was done in late 2005 and early 2006. The tank is assumed to be leaking.

The 241-ER-311 Catch Tank received overflow process wastes from the 241-ER-151 and 241-ER-152 Diversion Boxes. These diversion boxes facilitated the transfer of PUREX Acid Sludge [PAS] and PUREX Supernate [PSN]) to B-Plant from 1964-1972 via 241-ER-151 and 241-ER-152. Tri-Butyl Phosphate waste from U-plant passed through 241-ER-151 from 1952-1958. MW1/MW2 Metals Waste and 1C1/1C2 first cycle wastes from B-Plant passed through 241-ER-151 from 1944 to 1956, via pipeline 200-E-217-PL.

Code: 241-ER-311A

Classification: Accepted

Names: 241-ER-311A; 241-ER-311A Catch Tank; Old 241-ER-311; Original 241-ER-311 Catch Tank

Reclassification None

Type: Catch Tank

Start Date: 1/1/1950

Status: Inactive

End Date: 1/1/1954

Description: 241-ER-311A is an underground tank. It is located within a chain link fence that is posted as a Contamination Area and Underground Radioactive Material Area, and is labeled with IMUST signs. The 241-ER-151 Diversion Box, the 241-ER-311 Catch Tank and the 241-ER-311A Catch Tank are all located inside this chain link fence. The placement of these structures within the fence is the 241-ER-311 Catch Tank is the furthest south, nearest the chain link fence. The 241-ER-311A Catch Tank is located adjacent to the north side of the 241-ER-311 tank (in the middle of the three structures). The 241-ER-151 Diversion Box is north of the 241-ER-311A Catch Tank.

Location: The tank is located southwest of the B Plant. It is south of 7th Street and west of Atlanta Avenue.

Release Description: In 1953, 6,500 liters (1700 gallons) of liquid containing 10 curies of fission product leaked from this tank (see UPR-200-E-84).

Related Sites/ Structures: The tank is associated with the 241-ER-151 Diversion Box and UPR-200-E-84.

Process Description: The catch tank received drainage and leaks from the 241-ER-151 diversion box. The tank is a horizontal, carbon steel underground tank.

Waste Type: Process Effluent

Waste Description: The tank received waste from the 241-ER-151 Diversion Box that was caused from leaks and decontamination activities. The tank was abandoned in place in 1954. Although no records have been found identifying its contents of to verify the tank was pumped, it is unlikely any significant amount of was remains in the tank.

Code: 216-S-172 **Classification:** Accepted

Names: 216-S-172; 216-S-172 Control Structure; 216-S-172 Weir Box and Control Structure; 2904-S-172 Weir **Reclassification** None

Type: Control Structure **Start Date:** 1/1/1956

Status: Inactive **End Date:** 1/1/1976

Description: This site is an underground concrete structure with interior hand operated sluice gates. Float wells were attached to the outside north and south walls. The structure has been covered with soil and posted with Underground Radioactive Material/Cave-In Potential signs.

Location: The unit is located outside the southwest corner of the 200 West Area perimeter fence and north of 216-S-5 Crib.

Related Sites/ Structures: The site is associated with the 202-S Building, 200-W-153-PL pipeline, and the 216-S-16 Ditch.

Process Description: The control structure was used to divert 202-S process vessel cooling water to 216-S-6 and steam condensate to the 216-S-16 Ditch.

Waste Type: Process Effluent

Waste Description: The unit contains unquantified amounts of low-level radioactive solid waste. In 1987, the Hanford Site Waste Management Units Report stated the maximum radiation reading on the structure was 25 millirads per hour.

Code: 240-S-151 **Classification:** Accepted

Names: 240-S-151; 240-S-151 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1950

Status: Inactive **End Date:** 1/1/1987

Description: This unit is constructed of reinforced concrete and is rectangular in shape. The 240-S-151 Diversion Box has been weather covered.

Location: The 240-S-151 Diversion Box is located north of the 202-S Canyon Building, west of the 240-S-302 catch tank.

Related Sites/ Structures: 200-W-153-PL, 200-W-187-PL, 200-W-190-PL, 200-W-212-PL, the 240-S-302 Catch Tank, UPR-200-W-82 and 241-S Tank Farm are associated with the 240-S-151 Diversion Box.

Process Description: This unit was used for the transfer of REDOX waste solutions from processing and product decontamination operations to the tank farms.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solutions from processing and product decontamination operations to the tank farms. Volumes were variable according to specific plant operations.

Waste Type: Equipment

Waste Description: Equipment associated with the diversion box includes transfer piping and nozzles. Waste lead is also stared in the diversion box.

Code: 240-S-152 **Classification:** Accepted

Names: 240-S-152; 240-S-152 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1977

Status: Inactive **End Date:** 1/1/1980

Description: This unit is constructed of reinforced concrete and is rectangular in shape. The 240-S-152 Diversion Box has been weather covered.

Location: The 240-S-152 Diversion Box is located north of the 202-S Canyon Building and north of 240-S-151 Diversion Box.

Related Sites/ Structures: 200-W-186-PL, 200-W-187-PL, 240-S-302 Catch Tank and 241-S Tank Farm are associated with the 240-S-152 Diversion Box.

Process Description: This unit was used for the transfer of waste solutions from 204-S to the 240-S-151 Diversion Box.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solutions from 204- S to the 240-S-152 Diversion Box.

Waste Type: Equipment

Waste Description: Equipment associated with the diversion box includes transfer piping and nozzles. Waste lead is also stored in the diversion box.

Code: 240-S-302 **Classification:** Accepted

Names: 240-S-302; 240-S-302 Catch Tank; Line V556 and V557 **Reclassification** None

Type: Catch Tank **Start Date:** 1/1/1950

Status: Inactive **End Date:** 1/1/1987

Description: This unit is a horizontal, cylindrical, steel tank. The 240-S-302 Catch Tank is buried underground to provide shielding from radiation. The tank is surrounded with posts and chain and posted with radiological and IMUST signs.

Location: This unit is located north of the 202-S Building and east of the 240-S-151 Diversion Box.

Related Sites/ Structures: The 240-S-302 Catch Tank is associated with the 240-S-151 Diversion Box. The drain lines to this catch tank are V556 and V557.

Process Description: The tank received leakage, spillage, line flushes, and drainage associated with waste transfers through Diversion Box 240-S-151.

Waste Type: Storage Tank

Waste Description: This unit received low-level, dilute laboratory waste and drainage from the 240-S-151 Diversion Box. In 1993, the tank was estimated to contain 8603 liters (2276 gallons) of sludge and liquid. Approximately 378 liters (100 gallons) is suspected to be liquid. In 1997, approximately 4900 gallons of rain and snow melt from the 240-S-151 diversion box overflowed into the catch tank. In 2008, approximately 2665 gallons of liquid was removed from the tank leaving approximately 6 gallons of free liquids and 1600 gallons of solid material (per letter CH2M-0802230).

Code: 276-S-141 **Classification:** Accepted

Names: 276-S-141; 276-S-141 Solvent Storage Tank; 276-S-306A; 276-S-TK-141; Hexone Storage Tank; Tank 276-141; 244-SX-15 **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1969

Description: The site is a below grade carbon steel tank enclosed in a chain line fenced area. The tank is the southernmost tank in a two tank network connected to the 276-S Solvent Handling Facility. The tank had an 89,000 liter (23,575 gallon) capacity. The tank has been filled with cement.

Location: The underground tank is north of 276-S Building and directly south of the 276-S-142 Tank. The tank is west of the REDOX railroad tracks.

Related Sites/ Structures: Structures associated with the tank include: solvent transfer lines, the 276-S-142 Tank, the Tank Car Unloading Station, and process equipment in the 276-S Building. The pipelines associated with the hexone tanks are sitecode 200-W-230-PL.

Process Description: The tank is currently being closed under interim status, containing small amounts of liquid mixed waste. The tank stored various liquid mixed wastes until 1992, when most of the waste was transferred to tank cars for off-site incineration. From 1951 to 1967 the tank was used to store reagent-grade hexone for makeup as a solvent at REDOX. The hexone was delivered to REDOX in rail cars that were unloaded into the 276-S-141 and 241-S-142 tanks via underground lines at the railcar unloading station.

Waste Type: Chemicals

Waste Description: The unit contained radiologically contaminated liquids made up of normal paraffin hydrocarbons, hexone, and phosphate tar. In 1992, the 276-S-141 and 276-S-142 each contained between 19 to 114 liters (5 to 30 gallons) of 93% normal paraffin hydrocarbons and 7% hexone. They also contained up to 950 liters (250 gallons) of phosphate tar. A nitrogen gas blanket and offgas filtration was implemented in 1990 during the distillation phase. In 2002, the nitrogen suppression system was shut off and the tanks were filled with grout. The remaining 19 to 114 liters (5 to 30 gallons) of liquid is expected to be removed by evaporation over time due to the nitrogen purge process.

Code: 276-S-142 **Classification:** Accepted

Names: 276-S-142; 276-S-142 Solvent Storage Tank; 276-S-306B; 276-S-TK-142; Hexone Storage Tank; Tank 276-142; 244-SX-15 **Reclassification** None

Type: Storage Tank **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1969

Description: The site is a below grade carbon steel tank. The tank is the northernmost tank in a two tank

network connected to the 276-S Solvent Handling Facility. The tank has a 89,000 liter (23,575 gallon) capacity.

Location: The underground tank is north of the 276-S Building and directly north of the 276-S-141 Tank. The system is west of the railroad tracks.

Related Sites/ Structures: Structures associated with the tank include: solvent transfer lines, the 276-S-141 Tank, the Tank Car Unloading Station, and process equipment in the 276-S Building. The pipelines associated with the hexone tanks are sitecode 200-W-230-PL.

Process Description: The tank is currently being closed under interim status and contains a small amount of liquid mixed waste. The tank stored various liquid mixed waste until 1992, when most of the liquid mixed waste was transferred to tank cars for off site incineration. From 1951 to 1967 the tank was used to store reagent-grade hexone for makeup as a solvent at REDOX. The hexone was delivered to REDOX in rail cars that were unloaded into the 276-S-141 and 241-S-142 tanks via underground lines at the railcar unloading station.

Waste Type: Chemicals

Waste Description: The unit contained radiologically contaminated liquids made up of normal paraffin hydrocarbons, hexone, and phosphate tar. In 1992, 276-S-141 and 216-S-142 contained between 19 to 114 liters (5 to 30 gallons) of 93% normal paraffin hydrocarbons and 7% hexone. They also contain up to 950 liters (250 gallons) of phosphate tar. A nitrogen blanket was added to the tank. In 2002, the nitrogen suppression system was shut off and the tanks were filled with grout. The remaining 19 to 114 liters (5 to 30 gallons) of liquid is expected to be removed by evaporation over time due to the nitrogen purge process.

Code: 2904-S-160 **Classification:** Accepted

Names: 2904-S-160; 2904-S-160 Control Structure; 2904-S-160 Weir **Reclassification** None

Type: Control Structure **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1976

Description: The unit is an inactive waste management unit consisting of a below grade pentagonal structure with reinforced concrete walls, floor, and roof. Sixty centimeter (24 inch) diameter vitrified clay pipes provided inlet and outlet flow for the structure. The site has been surface stabilized and is posted with Underground Radioactive Material/Cave-in Potential signs.

Location: The structure is located southwest of the southwest corner of the 200 West Area, outside the perimeter fence and north of the 216-S-5 crib.

Related Sites/ Structures: The site is associated with the 216-S-172 control structure, the 216-S-17 and 216-S-16 Ponds, the 216-S-6 Crib, 200-W-155-PL and 200-W-152-PL pipelines.

Process Description: The unit was built to divert process vessel cooling waste and steam condensate from 202-S Building to the 216-S-17 Pond, 216-S-6 Crib, and 216-S-16 Pond.

Waste Type: Process Effluent

Waste Description: The unit contains low-level contaminated concrete and piping. The quantity of contaminated waste has not been determined. There is beta/gamma contamination in the soil and smearable contamination on the surfaces of the box. Contamination originated from effluents traveling through the weir.

Code: 2904-S-171 **Classification:** Accepted

Names: 2904-S-171; 2904-S-171 Control Structure; 2904-S-171 Weir Box; 216-S-171
Reclassification None

Type: Control Structure
Start Date: 1/1/1954

Status: Inactive
End Date: 1/1/1976

Description: The 2904-S-171 Control Structure is a below grade, rectangular concrete weir structure. The inlet piping consisted of 46 centimeter (18 inch) diameter vitrified clay pipe. The outlet piping consisted of 46 centimeter (18 inch) diameter corrugated metal pipe. The site has been backfilled with clean material and is posted with Underground Radioactive Material signs.

Location: The site is located southwest of the 200 West Area, outside the perimeter fence, adjacent to the north side of the 216-S-6 Crib.

Related Sites/ Structures: The structure is associated with the 216-S-6 Crib and the 200-W-153-PL and 200-W-156-PL pipelines.

Process Description: The unit was built to measure and regulate flow of process waste being routed to the 216-S-6 Crib. Pipeline 200-W-156-PL entered the control structure from the north. Pipeline 200-W-153-PL entered the control structure from the east.

Waste Type: Process Effluent

Waste Description: This unit contains low-level contaminated concrete and piping. The quantity of contaminated waste has not been determined. There were beta/gamma smearable contamination and recordable radiation readings with a Cutie Pie (hand-held radiation monitor) on the above ground portions of the structure before it was surface stabilized.

Code: 241-TX-152
Classification: Accepted

Names: 241-TX-152; 241-TX-152 Diversion Box
Reclassification None

Type: Diversion Box
Start Date: 1/1/1949

Status: Inactive
End Date:

Description: The diversion box is a rectangular reinforced concrete structure. Most of the structure is below ground. A few inches of the structure that extends above ground is covered with a gray weather coating. It is surrounded with light posts and chain and is posted with various radiological postings.

Location: This unit is located east of the 241-TX Tank Farm. It is east of Camden Ave. and south of 23rd Street. It is north of the 200 West Area Powerhouse Pond.

Related Sites/ Structures: The 241-TX-152 Diversion Box is associated with the T-Plant, 241-SY Tank Farm, UPR-200-W-113, 200-W-182-PL and the 241-TX-154 Diversion Box.

Process Description: The Diversion Box was used to direct liquid waste to other tank farm locations in 200 East and West Areas via jumper connections and underground transfer lines.

Waste Type: Process Effluent

Waste Description: The unit transports waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operations. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Code: 241-TX-154
Classification: Accepted

Names: 241-TX-154; 241-TX-154 Diversion Box
Reclassification None
Type: Diversion Box
Start Date: 1/1/1949
Status: Inactive
End Date:

Description: The diversion box is a rectangular reinforced concrete structure. Most of the structure is below ground. The diversion box is surrounded with post and chain. It is labeled and radiologically posted. The adjacent area has been covered with shotcrete.

Location: This unit is located on the east side of the 221-T Building.

Release Description: Multiple unplanned releases and transfer line breaks are associated with this diversion box.

Related Sites/ Structures: The 241-TX-154 diversion Box is associated with T-Plant operations, 241-TX-152 Diversion Box, 241-TX-302C Catch Tank, 241-SY Tank Farm, UPR-200-W-21, UPR-200-W-40, UPR-200-W-38 and UPR-200-W-160. The encased pipeline between 241-TX-154 Diversion Box and 241-TX-155 Diversion Box is sitecode 200-W-143-PL.

Process Description: This unit was used to transfer of waste solutions from decontamination operations at T-Plant to various tank farm facilities via underground transfer lines.

Waste Type: Process Effluent

Waste Description: The unit transports radioactive waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operations. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Code: 241-TX-155
Classification: Accepted
Names: 241-TX-155; 241-TX-155 Diversion Box
Reclassification None
Type: Diversion Box
Start Date: 1/1/1949
Status: Inactive
End Date: 1/1/1980

Description: The diversion box is a rectangular reinforced concrete structure. Most of the structure is below ground. A few inches of the structure that extends above ground is covered with a gray weather coating. It is surrounded with light posts and chain and Contamination Area signs.

Location: This unit is located east of the 241-TX Tank Farm, south of 23rd Street and north of the 200 West Area Powerhouse Pond.

Release Description: Over the years, multiple releases associated with this diversion box and its pipelines have been documented. HW-60807, issued in 1959, states that contamination has spread from this diversion box to the surrounding ground on several occasions. Three sides of the diversion box were covered with black top in an effort to contain the contamination. In November 1952, contaminated nitric acid solution was pumped from the 241-TX-155 catch tank to an excavation nearby and covered with soil. The area was surrounded with a wooden fence and radiation signs in 1952, but is not currently marked. In 1954, a jumper leak in the diversion box caused an area measuring 9 meters by 30.5 meters (30 by 100 feet) to become contaminated. This area was also fenced and posted at the time of the occurrence, but the wooden fence is no longer present. In 1998, 1999 and 2000, several large areas of contamination was identified and posted around the diversion box and on its associated pipelines (See UPR-200-W-113).

Related Sites/ Structures: The 241-TX-155 Diversion Box is associated with the 241-TX-302B and 241-TX-302BR Catch Tanks, the 241-T, 241-TX, and 241-TY Tank Farms, UPR-200-W-113, UPR-200-W-5, UPR-200-W-28, UPR-200-W-135 and UPR-200-W-76. The encased pipeline between 241-TX-154 Diversion Box and 241-TX-155 Diversion Box is sitecode 200-W-143-PL. Other transfer lines are 200-W-176-PL, 200-W-177-PL, 200-W-182-PL, 200-W-191-PL.

Process Description: This unit was to transfer waste solutions from processing and decontamination operations to various tank farm facilities via underground transfer lines.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solutions from processing and decontamination operations. Volumes were variable according to specific plant operation. Lead shielding may also be contained inside the diversion box.

Waste Type: Equipment

Waste Description: Equipment associated with the diversion box includes transfer piping and nozzles. Waste lead is also stored in the diversion box.

Code: 241-TX-302B
Classification: Accepted

Names: 241-TX-302B; 241-TX-302-B Catch Tank; Lines V414 and V415
Reclassification None

Type: Catch Tank
Start Date: 1/1/1949

Status: Inactive
End Date: 1/1/1982

Description: This unit is an underground, cylindrical tank made of steel. The drain lines from 241-TX-155 are V414 and V415. The ground surface around the tank has been covered with gravel. The tank is surround with light posts and chain and posted with Contamination Area and IMUST signs.

Location: This tank is located east of the 241-TX Tank Farm, northeast of the 241-TX-155 Diversion Box. It is east of Camden Ave and south of 23rd St.

Related Sites/ Structures: The 241-TX-302B Catch Tank is associated with the 241-TX-155 Diversion Box, 241-TX-302BR Catch Tank, UPR-200-W-135 and UPR-200-W-131. The drain lines from 241-TX-155 are V414 and V415.

Process Description: The tank received overflow from the 241-TX-155 Diversion Box.

Waste Type: Process Effluent

Waste Description: This unit was used for containment of waste solution spills that occurred during transfers from processing and decontamination operations. Volumes collected were variable according to specific plant operations. In 1984, the volume was estimated to be 4989.6 liters (1320 gallons).The Stabilization Evaluation Form in Appendix B states that the tank had 14.75 inches of total waste and 14.5 inches of solid waste inside. Therefore, there were 1362 gallons of solid waste and 70 gallons of liquid waste in the tank. A sample from this tank was taken on March 6, 1984. It was reported to have a dose rate of 24 millirad per hour with a pH of 9.95.

Code: 241-TX-302BR
Classification: Accepted

Names: 241-TX-302BR; 241-TX-302BR Catch Tank; 241-TXR-302BR
Reclassification None

Type: Catch Tank
Start Date: 1/1/1950

Status: Inactive
End Date: 1/1/1954

Description: This unit is an underground, horizontal, cylindrical tank made of steel. The ground surface around the tank has been covered with gravel. The tank is surrounded with posts and chain and

labeled with IMUST signs.

Location: The 241-TX-302BR Catch Tank is located east of the 241-TX-155 Diversion Box. It is located east of Camden Ave. and south of 23rd Street.

Related Sites/ Structures: This tank is associated with UPR-200-W-131, 241-TX-155 Diversion Box, 241-TX-302B Catch Tank and 216-T-20 acid pit.

Process Description: This tank received drainage from Diversion Box 241-TX-155.

Waste Type: Process Effluent

Waste Description: The unit was used to transfer of waste solutions from processing and decontamination operations. No waste volume was available in 1994.

Code:	241-TX-302C	**Classification:**	Accepted
Names:	241-TX-302C; 241-TX-302-C Catch Tank; Lines V741 and V742	**Reclassification**	None
Type:	Catch Tank	**Start Date:**	1/1/1947
Status:	Inactive	**End Date:**	1/1/2005

Description: This unit is an underground horizontal, cylindrical tank made of carbon steel. The tank area has been sprayed with shotcrete to control surface contamination.

Location: The 241-TX-302 Catch tank is located southeast of the center of the 221-T Building.

Related Sites/ Structures: The 241-TX-302-C Catch Tank is associated with the 241-TX-154 Diversion Box and UPR-200-W-38. The diversion box drain lines are V741 and V742.

Process Description: This unit received overflow from the 241-TX-154 Diversion Box.

Waste Type: Process Effluent

Waste Description: This unit is used for transfer of radioactive waste solutions from processing and decontamination operations at T Plant. Volumes are variable according to specific plant operation. In 2007, the liquid content was estimated to be approximately 200 gallons (per RPP-RPT-31148, Rev. 2)

Code:	216-TY-201	**Classification:**	Accepted
Names:	216-TY-201; Supernatant Disposal Flush Tank	**Reclassification**	None
Type:	Settling Tank	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1966

Description: The 216-T-26, 216-T-27 and 216-T-28 cribs and the 216-TY-201 Tank are enclosed in a common area with steel post and chain barricade. The area is posted "Underground Radioactive Material". The 216-TY-201 flush tank is located in the northeast corner of the area. It has three risers protruding from a mound of earth. The 216-TY-201 tank is delineated with steel post and chain and marked with Inactive Miscellaneous Underground Storage Tank signs.

Location: The unit is located in the 200-West Area. It is east of Camden Ave and south of 23rd Street.

Related Sites/ Structures: The tank is associated with supernatant waste from tanks 241-TY-101, 241-TY-102, 241-TY-103 and 241-TY-104 in the 241-TY Tank Farm; tanks 241-T-110, 241-T-111 and 241-T-112 in the 241-T Tank Farm, 200-W-175-PL and the 216-T-26, 216-T-27 and 216-T-28 Cribs.

Process Description: HNF-2503 states the flush tank originally received supernate from the TY Tank Farm (1953-1955) and discharged the overflow to the 216-T-26 crib. The pipeline from 241-TY Farm was blanked near the 241-TY Tank Farm eastern fenceline in December 1955. After 1955, the flush tank received waste via another pipeline from tank 241-T-112 in the 241-T Tank Farm. Overflow from the flush tank was discharged to the 216-T-27 and 216-T-28 cribs. (see drawings H-2-2733 and H-2-3019)

Waste Type: Process Effluent

Waste Description: In 1955 and 1956, the 216-TY-201 Flush Tank received scavenged first cycle supernate from 221-T after it had cascaded through the 241-TY-101, 241-TY-103, and 241-TY-104 tanks in 241-TY Tank Farm. From 1960 through 1966 the 216-TY-201 Flush Tank received T Plant steam condensate and process decontamination waste via the 241-T-112 tank in the 241-T Tank Farm. In 1963, 2706-T equipment decontamination waste was added to the waste stream. In 1964, 300 Area laboratory waste was trucked to the 216-T-27 and 216-T-28 cribs and released to the cribs through a riser. The Authorization Basis Status Report (1998) assumes the solid and liquid composition to be the same as those found in tank 241-T-112. Solids are assumed to contain 5110 micrograms per gram (ug/g) aluminum, 28800 ug/g bismuth, 16400 ug/g iron, 41000 ug/g sodium, 395 ug/g lead, 313 ug/g strontium, 3100 ug/g uranium, and 36600 ug/g OH. Solid radionuclides are assumed to include 0.184 microcuries per gram (uCi/g) cesium-137, 6.0 uCi/g strontium-90, 5.71 E-04 uCi/g plutonium-138, 0.07 uCi/g plutonium-139 and 1.0 E-04 uCi/g americium-241. The Supernate is expected to contain 9.0 E-06 uCi/g americium-241.

Code: 241-U-151 **Classification:** Accepted

Names: 241-U-151; 241-U-151 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1946

Status: Inactive **End Date:**

Description: The diversion box is marked and radiologically posted. This unit is constructed of reinforced concrete with multiple encased liquid waste transfer lines. The diversion box structure is mostly below ground. It has three layers of cover blocks.

Location: The 241-U-151 Diversion Box is located northeast of the intersection of Camden Avenue and Sixteenth Street, east of the 241-U Tank Farm.

Related Sites/ Structures: The 241-U-151 Diversion Box is associated with the 241-U-301 Catch Tank and the 244-S and 244-TX Double Contained Receiver Tanks. The unit is also associated with Diversion Boxes 241-U-152, and 241-TX-152, UPR-200-W-6, 200-W-99-PL, 200-W-130-PL, 200-W-183-PL, 200-W-184-PL.

Process Description: This unit was used to transfer waste solutions from processing and decontamination operations.

Waste Type: Process Effluent

Waste Description: The unit transports waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operations. Lead shielding may also be contained inside the diversion box.

Code: 241-U-152 **Classification:** Accepted

Names: 241-U-152; 241-U-152 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1946

Status: Inactive **End Date:**

Description: The diversion box is marked and radiologically posted. The unit is constructed of reinforced concrete with multiple encased liquid waste transfer lines. The diversion box structure is mostly below ground. It has three layers of cover blocks.

Location: The 241-U-152 Diversion Box is located northeast of the intersection at Camden Avenue and Sixteenth Street, east of the 241-U Tank Farm.

Related Sites/ Structures: The 241-U-152 Diversion Box is associated with the 241-U-301 Catch Tank, the 241-U-153 Diversion Box, 200-W-181-PL, 200-W-182-PL, 200-W-183-PL, 200-W-184-PL and UPR-200-W-6.

Process Description: This unit was used to transfer waste solutions from processing and decontamination operations.

Waste Type: Process Effluent

Waste Description: The unit transports waste solutions from processing and decontamination operations. Quantities are variable according to specific plant operations. Lead shielding may also be contained inside the diversion box.

Code: 241-UX-154 **Classification:** Accepted

Names: 241-UX-154; 241-UX-154 Diversion Box **Reclassification** None

Type: Diversion Box **Start Date:** 1/1/1948

Status: Inactive **End Date:** 1/1/2003

Description: The diversion box is marked and radiologically posted. The unit is mostly below grade, constructed of reinforced concrete. Multiple encased liquid waste transfer lines enter the box through its southeast wall.

Location: The 241-UX-154 Diversion Box is located southeast of the 221-U Canyon Building.

Release Description:

Related Sites/ Structures: The 241-UX-154 Diversion Box is associated with the 221-U Canyon Building, 241-WR Vault, 291-U stack, 241-TX-155 Diversion Box, and 241-UX-302 Catch Tank. The 200-W-136 URMA posting was expanded and now includes the diversion box and catch tank.

Process Description: This unit was used to transfer waste solutions from processing and decontamination operations from U Plant to the various tank farms. The 241-UX-154 Diversion Box served as a waste transfer hub not only for the 200 West Area, but also for cross site waste transfers from 200 East Area to 200 West Area through the inter-area (cross-site) transfer line (see 600-284-PL). The diversion box also received drainage from the 291-U stack. The 241-UX-154 diversion box and associated pipelines supported U Plant operations from 1948 through 1958. From 1958 to January 2003, the diversion box received drainage from cross-site transfer line flushes and drainage from pipeline encasements. The U Plant exhaust stack drained to the diversion box from 1958 to 1985 when the stack drain line was re-routed directly to the 241-UX-302A catch tank. The nozzle pit portion of 241-UX-154 diversion box (northeast segment of structure) was weather sealed in 2003. The diversion box is connected to 25 (3 inch stainless steel) encased lines and has two drain lines to the 241-UX-302A catch tank.

Waste Type: Process Effluent

Waste Description: The unit transfers waste solutions from processing and decontamination operations via underground, encased waste lines. Quantities are variable according to specific plant operations. Lead shielding may also be contained within the structure.

Code: 241-UX-302A
Classification: Accepted
Names: 241-UX-302A; Lines V380 and V381; 241-U-302 Catch Tank; 241-UX-302; 241-UX-302 Catch Tank
Reclassification None
Type: Catch Tank
Start Date: 1/1/1947
Status: Inactive
End Date: 1/1/2005

Description: The 241-UX-302A waste site is a direct-buried, carbon steel tank that collected drainage from the 241-UX-154 Diversion Box. It is covered with gravel, marked and radiologically posted.

Location: The tank is located southeast of the 221-U Building and south of the 241-UX-154 Diversion Box.

Release Description: A leak assessment test was conducted in March 2006 and concluded the tank was assumed to be leaking, likely through a pin hole at the 10.5" level. ENRAF liquid gauge readings indicated ~ 1,700 gals of waste remained in the tank vs. the 877-gal estimate from video survey conducted as part of the leak assessment test. I

Related Sites/ Structures: The unit is associated with 241-UX-154 Diversion Box and U Plant. The drain lines are lines V380 and V381.

Process Description: The catch tank collected excess liquid from the 241-UX-154 Diversion Box and 291-U stack condensate drainage. From 1958 to January 2003, the catch tank received drainage from cross-site transfer line (600-284-PL) flushes, the U Plant exhaust stack drainage and infiltration of rain and snow melt from the 241-UX-154 Diversion Box and pipeline encasements.

Waste Type: Process Effluent

Waste Description: This unit was used for transfer of waste solution from processing and decontamination operations. Volumes were variable according to specific plant operation when it was active. In August 1995, it contained 4232 liters (1118 gallons) of waste. The tank was pumped down to the pump inlet level in January 2003. In March 2006, the tank was estimated to contain 6551 liters (1724 gallons). In October 2006, the more liquid was pumped out of the tank, leaving a residual of approximately 3.8 liters (one gallon).

Code: 200-W-7
Classification: Accepted
Names: 200-W-7; 241-S-TK-1; 243-S-TK1; 243S-TK-1; 246-L; 200-W Personnel Decontamination Facility Catch Tank
Reclassification None
Type: Catch Tank
Start Date: 1/1/1978
Status: Inactive
End Date: 1/1/1988

Description: The underground tank is inside a chained area that measures approximately 3 meters by 3 meters (9 feet by 9 feet), with three risers extending to the surface. The tank is posted with Inactive Miscellaneous Underground Storage Tank (IMUST) signs and radiological postings.

Location: The site is located northwest of 242-S Evaporator and just north of MO-326.

Related Sites/ Structures: The tank is associated with Trailer MO-0326. It was the Personnel Decontamination Facility for 200 West Tank Farms.

Process Description: The underground tank is a 2,082 liter (550 gallon) fiberglass catch tank was connected to trailer MO-0326. The trailer had been used as a personnel decontamination facility. The trailer had a sink and a shower. The trailer has been removed. The underground tank is covered with a minimum of 0.9 meters (3 feet) of overburden. The tank has three risers.

Waste Type: Storage Tank

Waste Description: The tank received effluent from the personnel decontamination sink and shower. The tank contents would include soap, water and low levels of radionuclides.

Code:	200-W-16	**Classification:**	Accepted
Names:	200-W-16; 292-T Underground Tanks; 292-TK-1; 292-TK-2	**Reclassification**	None
Type:	Storage Tank	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1970

Description: The site consists of two underground, stainless steel, 55-gallon drums, encased in a concrete block with lifting eyes. Two metal riser pipes extend about 0.5 meters (1.5 feet) above grade near the southeast corner of the 292-T building addition. Both are capped and one appears to have a pressure relief vent. These pipes extend from two buried tanks (292-TK-1 and 2). There is a chain link fence enclosing the area where the tanks are located. The fence is posted with Access Restricted signs. The site is within a chained area posted "Contamination Area".

Location: The underground tanks are near the southeast corner of the 292-T building addition. The 292-T building is south of the 291-T stack and north of 222-T.

Related Sites/ Structures: The site is associated with 291-T, 221-T, and the 292-T facility (200-W-40).

Process Description: The 292-T building originally housed the 291-T stack gas sampling system and supported the 221-T off gas monitoring operations. When T Plant was built, it was not known what material would escape during the reprocessing of the irradiated fuel. Accordingly the stack was equipped with state of the art monitoring equipment, including scrubbers containing 5% soda ash solutions that the stack effluent was passed through. The solution was dried using refrigeration, and then counted to determine Xenon-133 activity. Extensive reviews of documentation remaining from T Plant operations has not located any documents that quantify the amount of material that was placed in the tanks, but very little emphasis was placed on waste management at that time and it is doubtful that any documents were kept. In 1966, a building addition was added to the existing structure to house a fuel element testing facility, operated by Battelle Northwest. During the lab upgrade, the two underground storage tanks were relocated from southeast of the original 292-T building to their present position, southeast of the 292-T building addition. Fuel failure analysis of irradiated fuel rods was conducted in 292-T in the 1960's and early 1970's. Irradiated N Reactor fuel rods were heated in an induction furnace until rupture or failure occurred. After the rupture occurred, the fuel was transported to the 300 Area for further analysis. The fragments that remained in the oven were removed, and any material that remained on the oven surface was dissolved with nitric acid. It is doubtful that much if any of the aluminum clad was dissolved, since aluminum will not dissolve in nitric acid without the use of a catalyst. The solution of trace amounts of irradiated fuel and nitric acid was poured into the 292-T-TK-1 and 2 tanks through the risers. The solution in the tanks was then neutralized with sodium hydroxide. Neutralization caused the dissolved metals to precipitate and deposit in the tank bottoms.

Waste Type: Storage Tank

Waste Description: Liquid waste was sent to these underground tanks from the 292-T building. Early waste consisted of solutions from the off gas monitoring scrubbers. Later waste was associated with experiments involving failure analysis of irradiated fuel rods. Irradiated N Reactor fuel rods were heated in an induction furnace until rupture or failure occurred. The slag that remained in the furnace was dissolved in nitric acid. A solution of dissolved irradiated fuel and nitric acid was discharged to 292-TK-1 and 292-TK-2. The solution was then neutralized with sodium hydroxide. Neutralization likely caused the dissolved metals to precipitate and deposit in tank bottoms. Dose rate directly above tanks was 2 millirem per hour in 1995.

Code: 200-W-58 **Classification:** Accepted

Names: 200-W-58; Z-Plant Diversion Box #1 **Reclassification** None

Type: Valve Pit **Start Date:** 1/1/1958

Status: Inactive **End Date:**

Description: The Plutonium Finishing Plant had a gravel covered, fenced exclusion area. The concrete lid of the diversion box is visible above ground. The unit is buried to a depth of 2.7 meters (9 feet) with its upper surface (a thick concrete lid) being slightly above grade. A 20 foot long, 12 inch diameter VCP pipe, extends from the 200-W-58 diversion box to a small drain field.

Location: The site is located south of 234-5Z facility. It is directly south of the 241-Z-361 settling tank. It was between the two fences that made up the double enclosed exclusion area. Most of the fencing around 234-5Z has been removed.

Related Sites/ Structures: This structure is associated with pipelines 200-W-208-PL and 200-W-210-PL, 200-W-174-PL, 200-W-59, the 241-Z-361 settling tank, 216-Z-1, 216-Z-2, 216-Z-3, 216-Z-1A, 216-Z-12 and 216-Z-18.

Process Description: Pipeline 200-W-210-PL extends from 241-Z-361 to this diversion Box. The diversion box contains valves for routing liquid process waste to 216-Z-1, 216-Z-3, 216-Z-18 via 200-W-210-PL or to 216-Z-12 via 200-W-208-PL and diversion box number 2 (sitecode 200-W-59).

Waste Type: Process Effluent

Waste Description: The structure directed the flow of Z Plant process waste to cribs and tile fields located south of the Z Plant complex.

Code: 200-W-59 **Classification:** Accepted

Names: 200-W-59; Z-Plant Diversion Box #2 **Reclassification** None

Type: Valve Pit **Start Date:** 1/1/1958

Status: Inactive **End Date:**

Description: The Plutonium Finishing Plant had a gravel covered, fenced exclusion area. The concrete lid of the diversion box is visible above ground. The unit is buried to a depth of 2.7 meters (9 feet) with its upper surface (a thick concrete lid) being slightly above grade. A 20 foot long, 12 inch diameter VCP pipe, extends from the 200-W-58 diversion box to a small drain field.

Location: The site is located southwest of the 234-5Z building. It is west of the 216-Z-361 settling tank and directly north of the 216-Z-12 crib. It was between the two fences that made up the double enclosed exclusion area. Most of the fencing around 234-5Z has been removed.

Release Description: The pipe connecting the 200-W-59 diversion box to the 216-Z-12 perforated crib distributor pipe (200-W-208-PL) leaked and caused a thin layer of plutonium contamination between the crib and the diversion box. Four shallow wells were drilled in 1976 to evaluate the leak. Levels of plutonium activity detected were comparable to those found in the 216-Z-12 crib. (see RHO-ST-44 and SGW-39648)

Related Sites/ Structures: 200-W-59 is associated with pipeline 200-W-208-PL, 241-Z-361, 216-Z-12 and 200-W-58.

Process Description: The structure directed the flow of process waste via the 241-Z-361 settling tank to the 216-Z-12 crib, via diversion box number 1 (sitecode 200-W-58). The structure is also referred to as a Valve Pit.

Waste Type: Process Effluent

Waste Description: This diversion box directed the flow of process waste to the 216-Z-12 crib.

Code:	200-W-84-PL	**Classification:**	Accepted
Names:	200-W-84-PL; U Plant Chemical Process Sewer to 216-U-14 Ditch; VCP Process Sewer; 200-W-84	**Reclassification**	None
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	7/1/1984

Description: The majority of the waste site is an underground, 30 centimeter (12 inch) diameter and 46 centimeter (18 inch) diameter, vitrified clay pipeline. A 20 centimeter (8 inch) diameter process sewer line from 224-U and 222-U connects to the main process sewer line. It terminated at a timber headwall where the flow entered the 216-U-14 Ditch. The surface of the pipeline is marked with Underground Radioactive Material and Pipeline signs. At intervals along the pipeline, there are approximately thirteen, 1.2 meter, (4 foot) diameter manholes.

Location: The underground process sewer line extends from the northwest side of the 221-U Building to the 216-U-14 Ditch. The line runs south, under 16th Street, and turns west until it intersects with the south end of the ditch. A pipeline from 224-U and 222-U extends along the northwest side of these buildings and connects to the main process sewer line in a manhole north of 16th street.

Related Sites/ Structures: The pipeline is associated with the 221-U Plant, 271-U, 224-U, 222-U, 292-U, and the 216-U-14 Ditch. The 216-U-16 crib pipeline (200-W-170-PL) attaches to this process sewer line.

Process Description: The 221-U facility was reconfigured to support the Uranium Recovery process in 1952. The process sewer waste received effluent from 221-U, 271-U, 224-U, 222-U and 292-U and transported it to the 216-U-14 Ditch. This pipeline bypasses the 207-U Retention basin. Feed lines were constructed or removed from service at various times throughout the active service life of this sewer. The 222-U building was demolished in 2005. The 224-U and 224-UA facilities, along with other support structures, were demolished in 2010.

Waste Type: Process Effluent

Waste Description: The 216-U-14 Ditch received 221-U chemical sewer effluent (via this vitrified clay pipeline) From January 1952 through July 1984.

This Site has the Following SubSites:

Code: 200-W-84-PL:1
Names: 200-W-84-PL:1; 12-Inch VCP

Code: 200-W-84-PL:2
Names: 200-W-84-PL:2; 18-Inch VCP

Code: 200-W-84-PL:3
Names: 200-W-84-PL:3; 8-Inch VCP

Code: 200-W-84-PL:1 **Classification:** Accepted
Names: 200-W-84-PL:1; 12-Inch VCP **Reclassification** None
Type: Radioactive Process Sewer **Start Date:** 1/1/1952
Status: Inactive **End Date:** 7/1/1984

Description: The 12 inch diameter VCP line is located on the northwest side of 221-U. It ties to the 18 inch VCP portion of the process sewer at a manhole north of 16th Street.

Location: The majority of subsite 1 is located on the west side of 221-U.

The SubSite is Part Of:
Code: 200-W-84-PL
Names: 200-W-84-PL; U Plant Chemical Process Sewer to 216-U-14 Ditch; VCP Process Sewer; 200-W-84

Code: 200-W-84-PL:2 **Classification:** Accepted
Names: 200-W-84-PL:2; 18-Inch VCP **Reclassification** None
Type: Radioactive Process Sewer **Start Date:**
Status: Inactive **End Date:**

Description: The 18 inch portion of the process sewer begins at a manhole north of 16th Street and extends south and west to terminate in the 216-U-14 ditch. The portion of the sewer that passes under 16th Street is encased in concrete.

The SubSite is Part Of:
Code: 200-W-84-PL
Names: 200-W-84-PL; U Plant Chemical Process Sewer to 216-U-14 Ditch; VCP Process Sewer; 200-W-84

Code: 200-W-84-PL:3 **Classification:** Accepted
Names: 200-W-84-PL:3; 8-Inch VCP **Reclassification** None
Type: Radioactive Process Sewer **Start Date:**
Status: Inactive **End Date:**

Description: The 8 inch VCP line is located on the northwest side of 224-U and 222-U (extending to 292-U). It ties into the main process sewer line at a manhole north of 16th Street.

The SubSite is Part Of:
Code: 200-W-84-PL
Names: 200-W-84-PL; U Plant Chemical Process Sewer to 216-U-14 Ditch; VCP Process Sewer; 200-W-84

Code:	241-Z	**Classification:**	Accepted
Names:	241-Z; 241-Z Sump; 241-Z Tank Farm; 241-Z Tank Pit; 241-Z Treatment and Storage System; 241-Z Treatment and Storage Tanks; 241-Z-D-4; 241-Z-D-5; 241-Z-D-7; 241-Z-D-8	**Reclassification**	None
Type:	Neutralization Tank	**Start Date:**	11/24/1948
Status:	Inactive	**End Date:**	1/1/2004

Description: Site currently consists the building slab and below grade concrete vault containing four storage and treatment tanks. The above ground features were removed in 2005 through 2007. All of the buildings were removed to grade, leaving a grade level slab or an underground cell. The below grade cells and tanks were deactivated and decontaminated to the extent practicable. Residual contamination was fixed to the structures left in place. Pipe penetrations in the cell walls were verified to be empty and sealed. The hazards were removed. The D6 cell was partially filled with Controlled Density Fill due to structural and contamination control concerns. Approximately 0.6 meters (2 feet) of fill remains in the cell.

The RCRA TSD portion of this facility consists of the tanks (excluding D-6), the internal piping, the concrete vaults, ancillary equipment and the soil directly below the tanks. The external pipelines leading from buildings in 234-5Z to the 241-Z facility are not considered part of this site.

Location: The site is located inside the Z-Plant Security Fence, near the south end of the complex.

Release Description: See UPR-200-W-74, UPR-200-W-75 and UPR-200-W-79.
Over time, it is estimated that up to 40,000 gallons leaked from Tank D6, which may have contained up to 40 grams of plutonium. To stabilize the contamination below the D6 tank, approximately 24 inches of control density fill (CDF) was added to the cell after the final cell survey. The CDF will not only anchor the tank to inhibit moving in the event of a wall collapse but also encapsulate the material to prevent spread of contamination. Process liquid transfers from the 241-Z storage and treatment tanks to Tank Farms were routinely followed by flushing of the line and tank cleaning. Exit surveys were performed for each cell and contamination generally was above high contamination areas (HCA) levels (>2000 DPM/100 cm2) with some areas of up to approximately 100,000 DPM/100 cm2. Contamination may reach approximately 4 meters below the D6.
In March 2002, a leak in the system piping that resulted in liquid leaking into the D8 vault was identified. A portion of the Tank D8 ancillary piping was observed leaking. A cell entry was made and it was determined that a drain line had failed resulting in a minor release of liquids. The spill was cleaned up and the line was replaced. D8 cell was noted to have cracked and leaked. As part of the RCRA Closure of 241-Z tank system, samples were taken at three locations within the D8 Cell, as well as within the piping system. All results indicated the detection of only trace levels of constituents of concern.

Related Sites/ Structures: The site is related to 241-Z-D-4, 241-Z-D-5, 241-D-6, 241-Z-D-7, and 241-Z-D-8. Unplanned Releases UPR-200-W-74, UPR-200-W-75 and UPR-200-W-79 are also associated with 241-Z. The sample building (241-ZA) located on the southeast corner of the 241-Z is also part of this site. The pipelines to 241-Z is described in sitecodes 200-W-219-PL. The waste transfer line from 241-Z to 241-TX Tank Farm is 200-W-178-PL. The pipeline from 241-Z to 241-Z-361 settling tank is sitecode 200-W-220-PL. Pipelines that fed 241-Z include 200-W-219-PL, 200-W-224-PL, 200-W-228-PL, and 200-W-229-PL.

Process Description: The 241-Z tanks are a waste treatment, storage and collection system containing below grade tanks in covered concrete cells. The operating capacity of the tank system was 17,000 gallons (65,000 liters). Liquid wastes generated from Plutonium Finishing Plant operations were collected in tank 241-Z-D-8 for interim storage. The waste was transferred to 241-Z-D-5 for

treatment (pH adjustment) prior to discharge to the tank farms via 244-TX receiver tank. Tanks 241-Z-D-4 and 241-Z-D-7 were reserve waste accumulation tanks.

Waste Type: Process Effluent

Waste Description: The unit received waste from 234-5Z. Before treatment, the waste was corrosive (less than pH 2.0) containing predominately nitric acid. Additional constituents known to be present include chromium, lead, aluminum nitrate, aluminum fluoride, and lower concentrations of potassium hydroxide, potassium fluoride, magnesium nitrate, ferric nitrate, calcium nitrate, and other trace metal ions. Treatment occurred in a batch process consisting of the addition of sodium hydroxide, ferric nitrate and sodium nitrate. Batch discharges averaged 125 gallons per week from 1991 to 1994. No discharges were made during 1995.

From 1949 to 2004 the 241-Z storage and treatment tanks received approximately 740,000 gallons of waste from the PFP and transferred that to the Double Shell Tank System (DTS). These included high salt and low salt waste including sodium hydroxide, potassium hydroxide, sodium nitrite, ferric nitrate, carbon tetrachloride, metals, lead, mercury, and trace amounts of plutonium. Tank D4 collected low salt waste from PFP and transferred that to Tank D7. Tank D5 collected waste from Tanks D7 and D8 and treated the mixed waste with sodium hydroxide, ferric nitrate, and sodium nitrite. Sodium hydroxide raises the free hydroxide ion concentration to greater than 1.5 molar. Ferric nitrate is to provide stable solids and sodium nitrite is added to inhibit corrosion. Tank D5 was equipped with a pump and steam jet for waste transfers to the Double Shell Tank System.

Code: HSVP **Classification:** Accepted

Names: HSVP; Semiworks Valve Pit; 201-C Diversion Box; 201-C Valve Box; Hot Semiworks Valve Pit **Reclassification** None

Type: Valve Pit **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1986

Description: The site is a sealed, concrete-filled, vertically configured, stainless-steel cylinder that is buried beneath the ash barrier which was placed over the decommissioned 201-C Process Building (see 200-E-41). The surface stabilized area is posted with Underground Radioactive Material signs. The valve pit is not separately marked or posted.

Location: This valve pit is adjacent to the remains of the 201-C Building and southeast of the main canyon area. It is located within the surface stabilized area known as 200-E-41.

Related Sites/ Structures: Structures associated with the decommissioned valve pit include: the 201-C Building, valves, transfer lines, the 244-CR Vault, 241-C Tank Farm, and the 241-CX-70 Tank. It is also associated with 200-E-41 Stabilized Area and pipeline 200-E-150-PL.

Process Description: This valve pit connected sources within the 201-C Building with discharge locations at the 244-CR Vault, the 241-C Tank Farm, and the 241-CX-70 Storage Tank.

Waste Type: Process Effluent

Waste Description: This site has been decommissioned. During operation, this valve pit routed pilot REDOX wastes, pilot PUREX wastes, and wastes from strontium recovery efforts to tank farm facilities. It is estimated that approximately 23 kilograms (50 pounds) of lead shielding may be stored in each diversion box.

Code: UPR-200-E-3 **Classification:** Accepted

Names: UPR-200-E-3; Line Leak from 221-B to 241-BX- **Reclassification** None

154; UN-200-E-3

Type: Unplanned Release **Start Date:** 1/1/1951

Status: Inactive **End Date:**

Description: The release is not separately marked or posted.

Location: The release occurred on the south side of 221-B, between the 221-B Building and 241-BX-154.

Release Description: A failure of first-cycle waste line from the 221-B building to 241-BX-154 Diversion Box was identified. Efforts to excavate and inspect for the cause were abandoned when readings of 120 rads per hour were found with 46 centimeters (18 inches) of soil still remaining over the pipe.

Waste Type: Process Effluent

Waste Description: The release consisted of B Plant first cycle waste with dose rates up to 120 rad per hour at a distance of 0.4 meters (1.5 feet).

Code: UPR-200-E-7 **Classification:** Accepted

Names: UPR-200-E-7; Cave-In Near 216-B-9 (241-B-361 Crib); Pipeline Leak; UN-200-E-7 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1954

Status: Inactive **End Date:**

Description: The site is an unplanned release to the soil from a waste line break. A single metal post with a WIDS sign marks an estimated release location near the 216-B-9 crib.

Location: The Unplanned Release occurred on the east side of Baltimore Ave., near the 216-B-9 crib. The 216-B-9 Crib has an alias name of the 241-B-361 Crib. In 1954, a cave-in was noted over the underground line near the 241-B-361 crib.

Release Description: On November 30, 1954, leakage from the waste line between 221-B and the 241-B-361 crib (alias 216-B-9 crib) caused the ground to cave-in near the 241-B-361 crib. Approximately 19,000 liters (5000 gallons) of liquid was lost to the ground. The maximum dose rate observed was 1.7 rads/hour over an area covering 2.7 square meters (30 square feet). The contamination was covered and delineated with a chain fence. The area was posted with "Underground Contamination" signs.

Related Sites/ Structures: Based on HW-60807, this release is assumed to be associated with pipeline site 200-E-199-PL.

Waste Type: Process Effluent

Waste Description: The release consisted of 18,925 liters (5000 gallons) of B Plant cell wash water from the 5-9 tank. The maximum dose rate was 1.7 rads/hour. Approximately, 2.8 square meters (30 square feet) of soil was contaminated by this release.

Code: UPR-200-E-42 **Classification:** Accepted

Names: UPR-200-E-42; 241-AX-151 Release; UN-200-E-42 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:**

Description: A WIDS sign has been placed near the diversion box structure to document the release. The

release area is surrounded with posts and chain. It is posted with multiple radiological postings including Radiation Area, Underground Radioactive Material Area and Contamination Area.

Location: The 241-AX-151 Diversion Box is located near the corner of 4th Street and Buffalo Ave., adjacent to the 204-AR Unloading Station. The unplanned release site included a dirt bank east of the 241-AX-151 Diversion Box and weeds east of the established parking lot.

Release Description: Surveys made at the 241-AX-151 Diverter Station on November 6, 1972 revealed direct and smearable contamination of 200 to 300 millirad per hour with a few spots in excess of 5 rad per hour. The green tape sealing the cover block cracks was contaminated to 20 rad per hour. The blacktop east of the diversion box was contaminated up to 3000 counts per minute. The dirt bank east of the posted radiation zone had contaminated spots up to 2000 counts per minute and weeds contaminated from 300 to 800 counts per minute. Follow up surveys indicate the contamination spread to be a result of a steam jet being left on at 244-AR, resulting in the pressurization of the 241-AX-151 Diverter Tank.

Related Sites/ Structures: The release is associated with 241-AX-151 and 244-AR.

Process Description: 241-AX-151 routed waste from PUREX to the 244-AR Vault and to the 241-AY and 241-AZ Tank Farms.

Waste Type: Soil

Waste Description: The contamination spread consisted of specks with beta/gamma levels ranging 300 millirad per hour at the diversion box and from 300 to 3,000 counts per minute found on asphalt and soil surfaces in the vicinity of the 241-AX-151 diversion box. The 241-AX-151 diversion box routed waste from PUREX to the 244-AR Vault and to the 241-AY and 241-AZ Tank Farms.

Code:	UPR-200-E-45	**Classification:**	Accepted
Names:	UPR-200-E-45; Contamination Spread from the 241-B-154 Diversion Box; UN-200-E-45	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1974
Status:	Inactive	**End Date:**	1/1/1974

Description: A large area on the northeast corner of 7th Street and Baltimore Avenue is surrounded with post and chain and marked as an Underground Radioactive Material (URM) area. The URM surrounds the 241-B-154 Diversion Box, that has been covered with a coating of gray grout. The original Unplanned Release is not separately marked or posted.

Location: The 241-B-154 Diversion Box is located at the corner of 7th Street and Baltimore Ave. The release involved loose contamination spreading in a southeasterly direction from the 241-B-154 Diversion Box.

Release Description: During a "clean out" operation at the 241-B-154 Diversion Box, wind spread loose contaminated around the work area. The activity involved decontaminating the inside of the diversion box and removing jumpers. The wind caused the spread of loose contamination over an area approximately 91. 5 meters (300 feet) by 30.5 meters (100 feet). Five employees, a crane and a water truck were also contaminated. The ground surface between the diversion box and 7th Street levels of contamination ranged from 1,000 counts per minute to 40,000 counts per minute. The contamination on 7th Street (blacktop) ranged from 800 counts per minute to 30,000 counts per minute. An area of contamination on the south side of 7th Street was found to have contamination levels ranging from 300 to 3000 counts per minute.

Related Sites/ Structures: This release is related to the 241-B-154 Diversion Box and UPR-200-E-77.

Waste Type: Process Effluent

Waste Description: Loose, dried, contamination particles (specks) were spread from the inside of the diversion box to the ground in the vicinity of 7th and Baltimore. The contamination spread included beta/gamma readings up to 50,000 counts per minute on the soil surface.

Code: UPR-200-E-67 **Classification:** Accepted

Names: UPR-200-E-67; Excavation of Radioactively Contaminated Pipe Encasement (V004, V005, V006, V007,V008); UN-200-E-67; UN-216-E-67 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1984

Status: Inactive **End Date:** 1/1/1984

Description: The 1984 excavation has been backfilled. A WIDS sign has been placed at the approximate location of the excavation.

Location: This site was located in an excavation site, north of the 272-AW parking lot, near the corner of 4th Street and Canton Ave.

Release Description: The release occurred on May 7, 1984. An old, contaminated pipe encasement was encountered during the excavation. Contamination levels ranged from 1 to 1.5 milirad per hour.

Related Sites/ Structures: The release is associated with pipeline site 200-E-207-PL.

Process Description: An encased pipeline (containing lines V004, V005, V006, V007 and V008) extends between the 241-A-151 Diversion Box, south of PUREX, to the 241-A-152 Diversion box that is located inside the 241-A Tank Farm. (see sitecode 200-E-207-PL)

Waste Type: Misc. Trash and Debris

Waste Description: The contamination levels consisted of beta/gamma readings ranging from 1,000 to 1,500 milliard per hour on the excavated pipe.

Code: UPR-200-E-77 **Classification:** Accepted

Names: UPR-200-E-77; 241-B-154 Diversion Box Ground Contamination; UN-200-E-77; UN-216-E-5 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1946

Status: Inactive **End Date:**

Description: A large graveled area on the northeast corner of 7th Street and Baltimore Avenue is surrounded with post and chain and marked as an Underground Radioactive Material (URM) area. The URM surrounding the 241-B-154 Diversion Box has been covered with a coating of gray grout (shotcrete). The area appears to have been posted in stages. A large posted oval area (URM) extends north and east from the diversion box. Another posted area (URM) extends west to Baltimore Ave. and turns northward. In January 2000, a separate Contamination Area was posted around a power pole (adjacent to a manhole) within the larger URM. In 2002, the posting around the power pole was removed and a Fixed Contamination Area sign was attached to the pole.

Location: This site is located east of 221-B Building, at the northeast corner of Baltimore Avenue and Seventh Street. It surrounds the 241-B-154 Diversion Box.

Release Description: Metal waste solution contaminated the ground around the 241-B-154 Diversion Box as a result of work associated with a leaky jumper in the box.

Related Sites/ Structures: The site is associated with the 241-B-154 Diversion Box.

Process Description: The contamination surrounding the diversion box is associated with the use of the diversion box to transfer contaminated waste via underground pipelines. Leaks and contamination spreads occurred during diversion box activities over the years. The diversion box was actively used between 1948 and 1984. The size and shape of the radiological posting has varied over the years.

Waste Type: Process Effluent

Waste Description: The original release involved metal waste solution from 221-B with fission products measuring approximately 1 curie. A radiological survey of the area done in October 1975 found surface contamination up to 80,000 counts per minute.

Code: UPR-200-E-78 **Classification:** Accepted

Names: UPR-200-E-78; 241-BX-155 Diversion Box Ground Contamination; UN-200-E-78; UN-216-E-6 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1955

Status: Inactive **End Date:**

Description: The release affected the area around the 241-BX-155 diversion Box and the catch tank. The 241-BX-155 diversion box has been isolated and covered with gray grout. The area around the diversion box and the surface area above the 241-BX-302C tank have been surface stabilized with gravel and posted with Underground Radioactive Material signs.

Location: This site is located in the area around the 241-BX-155 Diversion Box, south of the 241-BX Tank Farm, northeast of B-Plant between Atlanta and Baltimore Avenues.

Release Description: During pressure testing of lines and jumpers in the 241-BX-155 Diversion Box, a spill occurred causing the ground to become contaminated. The release affected an 18 square meter (200 square foot) area. At the time of the release, the maximum dose rate was 22.6 rad per hour.

Waste Type: Process Effluent

Waste Description: The release included salt waste from B Plant containing approximately 10 curies of mixed fission product. The maximum dose rate was 22.6 rad per hour at the surface of the spill site (241-BX-155 Diversion Box) in 1955.

Code: UPR-200-E-84 **Classification:** Accepted

Names: UPR-200-E-84; 241-ER-151 Catch Tank Leak (241-ER-311A); UN-200-E-84; UN-216-E-12 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1953

Description: The 241-ER-151 Diversion Box and the 241-ER-311 and 241-ER-311A Catch Tanks are located inside a chain link fence that is radiologically posted. A WIDS sign has been placed at the approximate location of the release.

Location: The release occurred adjacent to the 241-ER-151 Diversion Box, southwest of the 221-B

Building.

Release Description: This release occurred in March 1953. Contaminated acid leaked to the ground from the 241-ER-311(A) Catch Tank. At the time of the event, no ground surface contamination was detected.

Related Sites/ Structures: The UPR-200-E-84 is associated with the 241-ER-311A Catch Tank and the 241-ER-151 Diversion Box.

Process Description: The original (241-ER-311) Catch Tank was replaced in 1953. The replacement tank was named 241-ER-311. The original catch tank was re-numbered as 241-ER-311A. Both catch tanks received drainage from the 241-ER-151 Diversion Box.

Waste Type: Process Effluent

Waste Description: The release consisted of contaminated acid with approximately 10 curies of fission products from the 241-ER-311(A) Catch Tank.

Code:	UPR-200-E-145	**Classification:**	Accepted
Names:	UPR-200-E-145; VCP Pipeline Leak; W049H Green Soil	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1993
Status:	Inactive	**End Date:**	

Description: The site currently is a flat, disturbed area, with no vegetation. The area is covered with sandy soil and some rocks and gravel. The release was identified in a pipeline excavation that was oriented north to south. The north end of the excavation was located at a power pole with a blue air sample cabinet. In December 2003, growing contaminated tumbleweeds were found on the surface of this underground pipeline. The weeds were removed and the surface was stabilized. An area measuring approximately 3 meters by 6 meters (10 feet by 20 feet) is posted with Underground Radioactive Material signs.

Location: The site is east of the 241-A Tank Farm entrance, northeast of the 242-A Evaporator Building, and east of Canton Avenue. The coordinates of the excavation were E575490, N136130 on the north end and E575490, N136118 on the south end. H-2-140342 shows a polygon called Deep Rad Zone that is most like the correct location for this release.

Release Description: In 1993, while excavating for the installation of a new pipeline (Project W-049H) and exposing existing utility lines, contaminated soil with a radiological reading of 300,000 disintegrations/minute beta-gamma was detected at a depth of 0.8 meter (2.5 feet). The contamination was found above an existing 38 centimeter (15 inch) vitrified clay pipe, which was suspected to be the source.

Related Sites/ Structures: The 38 centimeter (15 inch) vitrified clay pipe is 200-E-166-PL, feeding the 216-A-34 trench.

Process Description: Leakage from the 38 centimeter (15 inch) vitrified clay pipe is the suspected cause of soil contamination. A 38 centimeter (15 inch) pipe runs east to west at this location that was connected to the 216-A-34 crib.

Waste Type: Soil

Waste Description: Contaminated soil reading 300,000 disintegrations per minute of beta/gamma was found in an excavation, above a buried vitrified clay pipeline. The pipeline carried waste from the 216-A-8 Proportional Sample Pit #2 to the 216-A-34 crib. The contaminated soil read 300,000 disintegrations per minute with a GM/P-11 probe instrument. Sample results indicate the contamination was primarily due to uranium oxide from past practices on the Hanford site.

Code:	UPR-200-W-2	**Classification:**	Accepted
Names:	UPR-200-W-2; UN-200-W-2; Underground Waste Line Leak	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1947
Status:	Inactive	**End Date:**	

Description: The area around stairwell R-19 at the 221-T facility is currently paved with asphalt. A long, narrow Underground Radioactive Material area is posted around the R-19 area.

Location: The cave-in occurred on the southeast side of the 221-T facility, near stairwell R-19.

Release Description: On June 23, 1947, a minor ground cave-in occurred at the rear of the T-Plant Canyon Building opposite the R-19 stairwell and directly over one of the underground waste transfer lines. Gross soil contamination levels were found 3 to 3.3 meters (10 to 11 feet) beneath the surface confirming the presence of a leak in one or more of the underground process waste pipe lines. Plans were being formulated to establish the boundaries of the underground contamination at R-19 by the use of test holes. When this survey was completed (in 1947), temporary "danger zone" status was eliminated and a permanent danger zone was established similar to the zone established at B Plant door R-3.

Related Sites/ Structures: This site is associated with 221-T and UPR-200-W-98. The pipeline associated with this leak may have been 200-W-132-PL.

Process Description: The monthly report for June 1947 states that this is the third documented failure of underground metal waste lines. Operations were stopped as soon as practical and an excavation of the cave-in site was made under careful survey control of the Health Instruments group. Gross soil contamination was found 3 meters (10 feet) below the surface, confirming the presence of one or more leaks in the underground process piping.

Waste Type: Process Effluent

Waste Description: Hydrostatic tests showed that the 9-1 "metal waste line" had failed and discharged liquid waste to ground. No quantity or physical description of waste in references.

Code:	UPR-200-W-5	**Classification:**	Accepted
Names:	UPR-200-W-5; Overflow at 241-TX-155; UN-200-W-5	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1950
Status:	Inactive	**End Date:**	1/1/1950

Description: The release is marked with a single WIDS sign. In 2000 and 2001 multiple areas of soil and vegetation contamination were identified and all were posted. For consolidation purposes, all of the new Contamination Areas were recorded and mapped as UPR-200-W-113. A WIDS sign has been placed at the approximate location of the release.

Location: The site consists of the 241-TX-155 diversion box and the adjacent hillside to the west. The diversion box is located east of Camden Ave., east of the 241-TX Tank Farm.

Release Description: In 1950, the 241-TX-155 Diversion Box overflowed and ran down the hillside to the west, contaminating the soil. No information related of the approximate radioactive contamination levels that spilled to the ground is available.

Related Sites/ Structures: The site is associated with the 241-TX-155 diversion box, UPR-200-W-28, UPR-200-W-131 and UPR-200-W-113.

Process Description: The diversion box was constructed in 1949 and used to transfer waste solutions to and from various processing and decontamination facilities.

Waste Type: Process Effluent

Waste Description: The diversion box contained tank farm waste. No volume was recorded for the overflow.

Code: UPR-200-W-6 **Classification:** Accepted

Names: UPR-200-W-6; Contamination Spread from 241-U-151 and 241-U-152 Diversion Boxes; UN-200-W-6 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1950

Status: Inactive **End Date:**

Description: The ground around the 241-U-151 and the 241-U-152 Diversion Boxes has been covered with gravel. The diversion boxes are marked and posted. A WIDS sign has been placed at the approximate location of the release.

Location: The contamination spread occurred at the 241-U-151 and 241-U-152 Diversion Boxes, located east of the 241-U Tank Farm, near the corner of 16th and Camden.

Release Description: During the spring of 1950, work being done at the 241-U-151 and 241-U-152 Diversion Boxes resulted in contamination to the ground around the diversion boxes. The maximum dose rate was 20 millirad per hour on the surface of the soil.

Related Sites/ Structures: The release is associated with the 241-U-151 and 241-U-152 Diversion Boxes.

Waste Type: Process Effluent

Waste Description: While working in the 241-U-151 and 241-U-152 Diversion Boxes, loose particulate beta/gamma contamination, with a maximum dose rate of 20 millirads per hour, spread to the soil surrounding the diversion boxes.

Code: UPR-200-W-28 **Classification:** Accepted

Names: UPR-200-W-28; Release from 241-TX-155 Diversion Box; UN-200-W-28 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1954

Status: Inactive **End Date:**

Description: The release is marked with a single WIDS sign. The documented contaminated area occurred west of the 241-TX-155 diversion box. There is a large posted Underground Radioactive Material area west of the diversion box (UPR-200-W-113) and several smaller radiologically posted areas in this vicinity (see UPR-200-W-135). A WIDS sign has been placed at the approximate location of the release.

Location: The release site is located adjacent to the 241-TX-155 Diversion Box, approximately 244 meters (800 feet) east of the 241-TX tank farm and north of the 200 West Area Powerhouse Pond.

Release Description: Contamination has spread from the 241-TX-155 Diversion Box to the surrounding ground at various times in the 1950's. In the spring of 1954, a leak occurred from a one of the jumpers in 241-TX-155 Diversion Box causing the area to the west of the diversion box to become

contaminated (see UPR-200-W-135). The area was covered with clean soil and temporarily posted as a radiation zone. The original fence and signs from 1954 are no longer present.

Related Sites/ Structures: The release is associated with the 241-TX-155 Diversion Box and UPR-200-W-5, UPR-200-W-113, UPR-200-W-131 and UPR-200-W-135.

Process Description: The diversion box was constructed in 1949 and used to transfer waste solutions to and from various processing and decontamination facilities. Multiple releases have occurred at the diversion box and its related underground pipelines.

Waste Type: Process Effluent

Waste Description: Multiple releases from the 241-TX-155 Diversion Box and its associated underground pipelines has resulted in contamination being found in the soil in this vicinity. The contaminated area reference in HW-60807 was given an Unplanned Release number. However, the reference is describing an area where several release events occurred and not a particular event.

Code: UPR-200-W-29 **Classification:** Accepted

Names: UPR-200-W-29; 23rd and Camden Line Break; Transfer Line Leak; UN-200-W-27; UN-200-W-29; UN-216-W-5; UPR-200-W-27 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1954

Status: Inactive **End Date:**

Description: The area is currently surrounded with steel posts, covered with gravel and posted as an Underground Radioactive Material Area.

Location: The site is located at the southeast corner of the intersection of Camden Street and 23rd Street.

Release Description: On November 15, 1954, a broken, underground process line leading from the 241-T-152 Diversion Box to the 241-TX-153 Diversion Box caused a small cave-in (located 23 meters south of 23rd Street and 23 meters east of Camden Ave) over the pipeline. Run off from the release contaminated an area along the east side of Camden Street. An unencased, underground pipeline was being used to transport first cycle waste from the 241-T-105 tank to the 241-TX-118 tank for 242-T Evaporator processing. The waste transfer was begun around 2:45 pm on November 15, 1954, but was discontinued at 11:30 pm due to a leaking jumper. The cave in and waste runoff was not discovered until 10:00 am on November 16, 1954. A maximum dose rate of 11.5 rad per hour, at a distance of 5 centimeters (2 inches), was found over the run off area. It was calculated that less than 3,800 liters (1,000 gallons) of waste actually escaped from the line.

Related Sites/ Structures: The release is associated with the 241-T-152 Diversion Box, UPR-200-W-64 and UPR-200-W-97. Pipelines 200-W-79-PL, 200-W-130-PL and 200-W-167-PL cross inside the radiologically posted area.

Waste Type: Process Effluent

Waste Description: The release consisted of first-cycle supernatant containing rare earth metals plus yttrium, cesium, antimony, cerium, ruthenium, niobium, and tellurium. Dose rates up to 11.5 rad per hour at 5 centimeters (2 inches), including 3.5 rad per hour, was measured over the run-off and fields up to 4.5 rad per hour at a distance of 0.9 meters (3 feet) near the cave-in was found. Less than 3,800 liters (1,000 gallons) of waste were estimated to have escaped from the line.

Code: UPR-200-W-32 **Classification:** Accepted

Names: UPR-200-W-32; UN-200-W-32; UNH Transfer **Reclassification** None

Line Break

Type: Unplanned Release **Start Date:** 1/1/1954

Status: Inactive **End Date:**

Description: The release site is not currently marked or posted. The above ground pipeline has been removed.

Location: The release occurred near the northwest corner of the REDOX exclusion in 1954.

Release Description: During the summer of 1954, the above ground uranyl nitrate hexahydrate (UNH) transfer line connecting 224-U to REDOX broke, released an unknown amount of the UNH solution to the ground. The contaminated area was covered and marked as a radiation zone by use of magenta and yellow tape and radiation zone signs.

Related Sites/ Structures: The site is associated with the 204-S facility.

Waste Type: Chemicals

Waste Description: Soil contamination occurred when an unknown amount of uranyl nitrate hexahydrate (UNH) solution leaked from a leak in an above ground pipeline.

Code: UPR-200-W-35 **Classification:** Accepted

Names: UPR-200-W-35; Ground Contamination Near UNH Process Line; REDOX to 224-U UNH Line Leak; UN-200-W-35 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1955

Status: Inactive **End Date:**

Description: Much of the area north of REDOX has been surface stabilized. The unplanned release site is not marked or posted.

Location: The site was located along the above ground uranyl nitrate hexahydrate (UNH) process line, that ran from REDOX to U Plant, at a location just outside and to the north of the REDOX exclusion area.

Release Description: In September 1955, a leak occurred in the above ground uranyl nitrate hexahydrate (UNH) line from REDOX to U Plant. The area of surface contamination and the quantity or activity of contaminants were not mentioned in reference material.

Waste Type: Chemicals

Waste Description: The waste is described as an unknown amount and concentration/activity of uranyl nitrate hexahydrate (UNH) solution being routed from the Reduction Oxidation (REDOX) facility to the U Plant.

Code: UPR-200-W-38 **Classification:** Accepted

Names: UPR-200-W-38; UPR-200-W-40; 216-T-30; Line Break at 241-TX-302C; UN-200-W-38; UPR-200-W-160 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1955

Description: The area around the 241-TX-154 diversion box and the catch tank has been stabilized with sprayed concrete (shotcrete). The area is posted with Underground Radioactive Material signs. A WIDS sign has been placed at this location.

Location: The release occurred on the southeast side of T Plant (221-T), between the 241-TX-154 Diversion Box and the 241-TX-302 Catch Tank. The liquid release affected a large area between the 221-T and 222-T buildings.

Release Description: On December 30, 1955, a failure of an underground transfer line between the 241-TX-154 diversion box and the 241-TX-302 catch tank flooded an area approximately 139.35 square meters (1500 square feet) with radioactive metal waste solution. Contamination was spread during cleanup activities and increased the size of the contamination area to approximately 371.6 square meters (4,000 square feet). The incident report indicates that the volume of metal waste involved "appeared to be in the magnitude of several thousand gallons". Prior to this incident, the area had been covered with asphalt because of a previous contamination spread. The liquid was forced up through several feet of soil and pooled on top of this asphalt. An unreported thickness of soil was backfilled onto the area to prevent further contamination spread. It is reported that a hose with 33 rads/hour contamination was buried in the backfill. Additional asphalt was to be laid on top of the fill for contamination control.

Related Sites/ Structures: The release is associated with the 241-TX-154 Diversion Box and the 241-TX-302C Catch Tank. UPR-200-W-21 occurred in the same vicinity in 1953.

Process Description: The 241-TX-302C Catch Tank collects drainage from the 241-TX-154 Diversion Box.

Waste Type: Process Effluent

Waste Description: The 1955 release of liquid metal waste produced beta/gamma with a dose rate of 100 rad per hour at a distance of 1 foot (0.3 meters) above the contamination pool. Several thousand gallons of waste was lost to the ground. HW-60807 estimated the release to be 7520 liters (2000 gallons) RHO-CD-673 estimated 19,000 liters (5026 gallons). The waste was high in salt and is neutral to basic. The initial surface pool of liquid was estimated to be 9 meters (30 feet) by 4.5 meters (15 feet).

Code: UPR-200-W-64 **Classification:** Accepted

Names: UPR-200-W-64; Road Contamination at 23rd and Camden; UN-200-W-64 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1969

Status: Inactive **End Date:**

Description: The corner of 23rd and Camden has been stabilized with clean gravel due to two waste line leak events. The stabilized area is surrounded with chain and posted with Underground Radioactive Material signs. The road shoulders are not posted. A WIDS sign has been placed at the approximate location of the release.

Location: The release is located between the east shoulder of Camden Avenue and the posted Underground Radioactive Material area (UPR-200-W-29/UPR-200-W-97), near the corner of 23rd Street and Camden Ave.

Release Description: On February 13, 1969, contamination up to 600 counts per minute was found in mud samples next to Camden Avenue. The contamination was found to be on the shoulder of the roadway, but no detectable contamination was found on the road blacktop. It is believed that the contamination source was the adjacent radiation zone (UPR-200-W-29 and UPR-200-W-97) where two previous underground radioactive waste line leaks that occurred. Runoff from heavy snow may have caused the contamination movement. Dirt samples from the radiation zone to

the east and roadway shoulder samples showed cesium-137 to be the only detectable radioactive isotope.

Related Sites/ Structures: UPR-200-W-29 and UPR-200-W-97 are the apparent source of contamination for this release.

Waste Type: Process Effluent

Waste Description: Mud samples collected in 1969 contained mostly cesium-137, with readings up to 600 counts per minute. No volume estimate was provide. The contamination source appears to be rain water run off from the adjacent area where two process line leaks occurred (see UPR-200-W-29 and UPR-200-W-97). The line leaks included first-cycle supernatant containing rare earth metals plus yttrium, cesium, antimony, cerium, ruthenium, niobium, and tellurium.

Code: UPR-200-W-97 **Classification:** Accepted

Names: UPR-200-W-97; Transfer Line Leak; UN-200-W-97; UN-216-W-5 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1966

Description: The site is located at the corner of 23rd Street and Camden Ave. It is marked and posted as "Underground Radioactive Material". The release site was stabilized with clean soil, sand, ureabore herbicide, and crushed rock.

Location: The release occurred southeast of the 241-T Tank Farm at the corner of 23rd Street and Camden Avenue.

Release Description: In May 1966, liquid waste surfaced and ran to the edge of Camden Avenue. This is the same location of UPR-200-W-29, a waste transfer line break that occurred in 1954. This release occurred when the broken waste line was mistakenly tested, causing liquid waste to surface again.

Related Sites/ Structures: UPR-200-W-97 is associated with the underground pipeline connecting 241-T-152 Diversion Box and the 241-TX-153 Diversion Box. It occurred at the same location as UPR-200-W-29 and adjacent to UPR-200-W-64. The site is associated with UPR-200-W-29 because a repeat release from the same broken transfer line (documented in UPR-200-W-29 in 1954) occurred again in 1966.

Waste Type: Process Effluent

Waste Description: The waste released to the soil consisted of a high salt, neutral to basic liquid tank waste solution containing approximately 10 curies of fission products. The waste consisted of second cycle bismuth phosphate waste from the 241-T-107 tank. The maximum surface dose rate was 5 rad per hour beta/gamma with 3 rad per hour being gamma radiation.

Code: UPR-200-W-98 **Classification:** Accepted

Names: UPR-200-W-98; 221-T Waste Line Break at R-19; UN-200-W-98; UN-216-W-6 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1945

Description: The area around door R-19 is paved with asphalt and posted as an Underground Radioactive Material area. There is not a sign that specifically marks the area as an unplanned release site.

Location: The release site is located near the southeast corner of the 221-T Canyon Building, at door R-19.

Release Description: In the spring of 1945, a leak occurred in an underground metal waste transfer line. The liquid surfaced and spread mixed fission contamination over a small surface area of ground.

Related Sites/ Structures: UPR-200-W-98 was associated with underground pipelines near the R-19 section of the 221-T Canyon Building and UPR-200-W-2.

Process Description: Underground pipelines carried T Plant process material and waste to various destinations. More than one pipeline leak occurred in this area.

Waste Type: Process Effluent

Waste Description: A broken underground process transfer line caused contaminated liquid to surface near R-19 at 221-T. The "metal waste" line contained approximately 10 curies of high salt, neutral to basic fission products with a maximum dose rate of 20 rad per hour at 2 inches (5 centimeters).

Code: UPR-200-W-102 **Classification:** Accepted

Names: UPR-200-W-102; 224-T Underground Line Leak; UN-200-W-102; UN-216-W-12 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1972

Status: Inactive **End Date:** 1/1/1972

Description: The east and south sides of the 224-T Building are covered with gravel. The area along the east side of the 224-T building is posted as an Underground Radioactive Material area.

Location: UPR-200-W-102 occurred adjacent to the south and east sides of the 224-T Building.

Release Description: During the remodeling of the 224-T Building, gross alpha contamination was found in the soil on the back side of the building. This contamination is believed to have come from alpha-laden moisture that seeped through pipe joints from underground process tank vent lines during the years of process operation.

Related Sites/ Structures: UPR-200-W-102 is associated with underground process lines at the 224-T Building. See 200-W-226-PL.

Waste Type: Process Effluent

Waste Description: The release consisted of alpha-laden moisture from process tank lines that contaminated the soil around the pipeline. An estimated 72 grams of plutonium was contained in the contaminated soil that was removed when the leak was discovered.

Code: UPR-200-W-108 **Classification:** Accepted

Names: UPR-200-W-108; Line Leak at 216-S-9 Crib; UN-200-W-108; UN-216-W-18 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1969

Status: Inactive **End Date:** 1/1/1969

Description: The release site is posted as a "Surface Contamination Area". The excavation was filled after the work was completed.

Location: UPR-200-W-108 occurred at the junction of the 216-S-9 and 216-S-23 Crib Liners, south of the 216-S-9 Crib and approximately 61 meters (200 feet) north of Thirteenth Street.

Release Description: On January 8, 1969, during the tie-in of the 216-S-9 Crib waste line to the new 216-S-23 Crib, contaminated water was encountered coming from a break at the junction of the two crib lines. Further excavation disclosed a severe expansion buckle in the line at that point, and a similar buckle in the line near the 202-S Building. There is no way of determining how long the line had been leaking or how much waste was discharged to the ground.

Related Sites/ Structures: UPR-200-W-108 was associated with pipeline 200-W-139-PL, the 216-S-9 Crib, the REDOX D-2 Receiver Tank, the 240-S-151 Diversion Box, the 216-S-23 Crib and UPR-200-W-109.

Waste Type: Process Effluent

Waste Description: The waste was REDOX process condensate from the D-2 Receiver Tank in the 202-S Building with beta and gamma contamination and dose rate readings of 40 rads/hour at the bottom of the waste line.

Code: UPR-200-W-109 **Classification:** Accepted

Names: UPR-200-W-109; Waste Line Leak Near 218-W-9; UN-200-W-109; UN-216-W-19 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1969

Status: Inactive **End Date:** 1/1/1969

Description: The release was a transfer line break that occurred within the east chain barricade of the 218-W-9 Burial Ground. The 218-W-9 Area was interim stabilized in 1991 with 46 to 61 centimeters (18 to 24 inches) of uncontaminated backfill. The release site was covered with soil and revegetated along with 218-W-9.

Location: UPR-200-W-109 occurred just inside the east perimeter chain of the 218-W-9 Burial Ground, south of which is located north of the 216-S-7 Crib in 200 West Area.

Release Description: UPR-200-W-109 is related to the UPR-200-W-108 incident. After repairing the initial buckled portions of the waste line, a pressure test indicated another leak in the line at some point upstream toward the 202-S Building. Further excavation and pressure testing finally determined a leak to be somewhere between the first discovered leak and the northwest corner of the REDOX area fence. Additional hydrostatic testing finally forced water to bubble to the ground surface. Excavation of the bubble site disclosed a vertical buckling of the pipeline with a sizable break in the line. The buckled and broken waste transfer line was from the 240-S Diversion Box. Dose rates on the liquid were 450 millirads per hour, but as the liquid sank into the ground, the dose rate dropped to 20 millirem per hour.

Related Sites/ Structures: UPR-200-W-109 is associated with the 218-W-9 Burial Ground, UPR-200-W-108, 216-S-7, 216-S-23, the D-2 Receiver Tank in the 202-S Building, and the 240-S Diversion Box.

Waste Type: Process Effluent

Waste Description: The waste was process condensate containing acidic unknown beta and gamma contamination. It came from the D-2 Receiver Tank in the 202-S Building. Dose rates of the liquid were 450 millirads/hour at the surface. As the water sank back into the ground, surface dose rates dropped to 20 millirads/hour.

Code: UPR-200-W-113 **Classification:** Accepted

Names: UPR-200-W-113; Contamination Areas Around 241-TX-155 Diversion Box; Soil Contamination East of 241-TX; UN-200-W-113; UN-216-W-23 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1977

Status: Inactive **End Date:**

Description: The original contaminated area was surface stabilized in 1990. It is currently surrounded with concrete marker posts and posted as an Underground Radioactive Material area. In 1998, 1999 and 2000 additional surface contamination was identified in the vicinity of the original surface stabilized area. Smaller contamination areas on the north, south, east and west sides of the 241-TX-152 and 241-TX-155 diversion boxes. At that time, the additional contamination areas were considered extensions of UPR-200-W-113. Many of the contamination areas were found above underground transfer lines going into and out of the 241-TX-155 Diversion Box. They were originally labeled with UPR-200-W-113 signs. Some of the "UPR-200-W-113" signs are being replaced as more information is documented that ties posted contamination areas with other documented Unplanned Releases and pipeline sites that were added to WIDS in 2007.

Location: The site is an area east of the 241-TX Tank Farm, on the east side of Camden Ave. Several radiological posted, labeled UPR-200-W-113, areas are located north, south, west and east of the 241-TX-155 and 241-TX-152 Diversion Boxes.

Release Description: The original unplanned release description stated that during the spring and summer months of 1977, contaminated rabbit feces were found near the 241-TX-155 Diversion Box, prompting an extensive survey to determine the source of radioactive rabbit food. During this survey, low-level, beta/gamma ground surface contamination was found on the hillside below and to the west of the 241-TX-155 Diversion Box. As soil was removed in the attempt to decontaminate the site, radioactivity increased until it was evident that the source of contamination was subsurface, possibly an old leak from a nearby waste transfer line. In August 1977, Unusual Occurrence Report 77-180 was issued, documenting the contaminated rabbit feces problem. This discovery is also detailed in UPR-200-W-76.

Related Sites/ Structures: The site is associated with the 241-TX-155 Diversion Box, 241-TX-152, UPR-200-W-28, UPR-200-W-76, UPR-200-W-135 and associated underground pipelines going into and out of the 241-TX-152 and 241-TX-155 diversion boxes.

Process Description: Underground pipelines transferred tank waste between tank farms through diversion boxes. Many pipelines leaked, allowing plant and animal intrusion to spread contamination to the surface.

Waste Type: Animal Waste

Waste Description: Contaminated animal feces and growing contaminated vegetation have been found in this area. The biological uptake is the result of multiple releases in this area associated with the 241-TX-155 Diversion Box and its underground pipelines.

Code: UPR-200-W-114 **Classification:** Accepted

Names: UPR-200-W-114; Ground Contamination East of 241-SX Tank Farm; UN-200-W-114; UN-216-W-24 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: This site is no longer marked or posted. The release site had been a large area posted with a light chain and Surface Contamination Area signs. The 216-S-8, the 216-S-1, and the 216-S-2 cribs were located within this larger contamination zone. In 1992 through 1993, the surface contamination was scraped up and consolidated into other nearby waste sites (216-S-1 &2, 216-S-8 and 207-S).

Location: UPR-200-W-114 was located east of the 241-SX Tank Farm, south of the steam line.

Release Description: The site consisted of migrating radioactive particulate matter from operational activities at the 241-SX Tank Farm and the 241-SX-151 and 241-S-151 Diversion Boxes over many years. The contamination spread to the ground surface east of the 241-SX Tank Farm. The resulting large posted Surface Contamination Area (SCA) was assigned an unplanned release number in 1980. The area was expanded to approximately 11.9 acres.

Related Sites/ Structures: UPR-200-W-114 was associated with multiple releases from operation activities in the 241-SX Tank Farm, and the 241-SX-151 and 241-S-151 Diversion Boxes. Documented operational releases extending eastward from the tank farm include UPR-200-W-20, UPR-200-W-49, UPR-200-W-50, UPR-200-W-51, UPR-200-W-52, and UPR-200-W-82. It was remediated in conjunction with the adjacent UPR-200-W-165 site.

Waste Type: Soil

Waste Description: The waste consisted of radioactive particulate matter from operational activities in the adjacent 241-S/SX Tank Farms.

Code: UPR-200-W-115 **Classification:** Accepted

Names: UPR-200-W-115; Ground Contamination Above Transfer Line Along Cooper Street; UN-216-W-25 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site had been delineated with light chain barricade and Surface Contamination warning signs. A waste site inspection, done in February 1998, found the area has been covered with gravel and posted as an Underground Radioactive Material area.

Location: UPR-200-W-115 is located above the encased transfer line that runs along the east side of Cooper Street. The pipeline (sitecode 200-W-179-PL) extends between the 242-S Evaporator Facility and the 241-U Tank Farm.

Release Description: The release refers to the radiologically posted soil above the underground, encased transfer line that runs from the 242-S Evaporator Building to the 241-U Tank Farm. In 1981, Harold Maxfield stated that he believed the area was incorrectly designated as an unplanned release. He based his opinion on a radiation survey performed on October 7,1981. The survey report indicated the soil and the surface features of the pipeline (Clean Out Boxes) were free of removable contamination. The report stated the only radiation detected was a dose rate emitting from the Clean Out Boxes. There was no evidence of loss of radiological control at that time.

Related Sites/ Structures: The release site was associated with the encased transfer lines from the 242-S Evaporator Building to 241-U. The pipelines associated with this release are discussed in sitecode 200-W-179-PL.

Process Description: The site is considered to be the soil above an encased transfer line extending from the 242-S Evaporator to the 241-U Tank Farm. The pipeline is equipped with a series of Clean Out Boxes (COBs) along the length of the line to allow access into the pipeline.

Waste Type: Soil

Waste Description: The soil was contaminated with material from the transfer line Clean Out Boxes.

Code: UPR-200-W-130 **Classification:** Accepted

Names: UPR-200-W-130; Line Leak at 231-W-151 **Reclassification** None

Sump; UN-200-W-130

Type: Unplanned Release **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1967

Description: A WIDS sign has been placed at the approximate location of the release.

Location: UPR-200-W-130 occurred in the soil on the east side of the 231-W-151 Sump, near the 231-Z Building.

Release Description: While hand excavating to uncover a waste line adjacent to the 231-W-151 Diversion Box, contamination was detected in the soil. The soil adjacent to the waste line contained 40,000 disintegrations per minute alpha contamination, and 150 millirem per hour beta/gamma contamination. The release was due to a leaking flange. The dose rate on the waste line was 1.5 rad per hour.

Related Sites/ Structures: UP-200-W-130 was associated with a waste line, the 231-W-151 Sump and the 231-Z Building.

Waste Type: Process Effluent

Waste Description: The soil had alpha readings up to 40,000 disintegrations per minute, with dose rates of 100 millirem/hour of beta and 50 millirem/hour of gamma.

Code: UPR-200-W-131 **Classification:** Accepted

Names: UPR-200-W-131; Release from 241-TX-155 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1953

Description: The 241-TX-155 Diversion Box and 241-TX-302B Catch Tank are surrounded with post and chain. Clean gravel has been placed around the diversion box with Underground Radioactive Material and Bio Barrier signs. A single, UPR-200-W-131 WIDS sign is attached to the chain boundary.

Location: The release occurred near the 241-TX-155 Diversion Box, located east of Camden Ave. and east of the 241-TX Tank Farm.

Release Description: In 1953, a severe leak in the tri-butyl phosphate (TBP) feed jumper caused the catch tank to become full. It was necessary to pump the liquid out of the catch tank via an overground line to the diversion box in order to empty the tank. The liquid in the tank was acidic. The first attempt to pump the tank caused a failure of the black iron pump. A decision was made to neutralize the solution with soda ash to prevent another pump failure. Two hundred pounds of soda ash was carefully added to the catch tank. While flushing the soda ash with water, a fine stream of solution erupted out of the 2.5 centimeter (one inch) electrode riser, causing ground contamination with a dose rate of 6 rad per hour. After plugging the riser, another bag of soda ash was added to a 30 centimeter (12 inch) riser. A foamy solution percolated out this riser and a different (10 centimeter) riser, causing ground contamination with readings of 25 rad per hour at a distance of 0.6 meters (2 feet). No further attempts were made to continue neutralizing or to empty the catch tank. (The release occurred in March 1953. Information related to the Catch Tanks indicate 241-302BR was damaged by acid and replaced with 241-TX-302B)

Related Sites/ Structures: The release is associated with the 241-TX-155 Diversion Box, the 241-TX-302 Catch Tank and UPR-200-W-113.

Waste Type: Process Effluent

Waste Description: The release consisted of a dilute acidic waste solution. Ground contamination up to 25 rad per hour at 0.6 meters (2 feet) was observed.

Code: UPR-200-W-135 **Classification:** Accepted

Names: UPR-200-W-135; Release from 241-TX-155; UN-200-W-135 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: There are three major encased transfer lines associated with the 241-TX-155 Diversion Box. There have been many areas of contamination identified on these transfer lines during 1999, 2000 and 2001. UPR-200-W-135 is located on transfer line 200-W-191-PL, directly west of the 241-TX-155 Diversion Box. It is surrounded with concrete marker posts and Underground Radioactive Material signs. A single metal post, labeled UPR-200-W-135, has been placed adjacent to the Contamination Area. Other signs surrounding the area are labeled UPR-200-W-113.

Location: The oval, posted Underground Radioactive Material Area associated with UPR-200-W-135 is located approximately 46 meters (150 feet) northwest of the 241-TX-155 Diversion Box. The diversion box is located east of Camden Ave and east of the 241-TX Tank Farm.

Release Description: While preparing to begin the 241-TX-302B catch tank replacement job near the 241-TX-155 Diversion Box, elevated dose rates were noticed in the area. The dose rate increased as the investigator descended the hill, moving away from the diversion box. A cave-in, with a diameter of 0.61 meters (2 feet), was noted along the encased pipeline (200-W-191-PL) that connects the 241-TX-155 Diversion Box to the 241-TY Tank Farm. A jumper connection in the diversion box had apparently failed and allowed liquid collect inside the diversion box and drain to the catch tank. The catch tank had a known leak. The liquid leaked out of the catch tank and flowed along the pipeline encasement that caused a visual soil cave-in approximately 46 meters (150 feet) down hill from the diversion box. The cave-in area measured approximately 0.6 meters (2 feet) in diameter. A liquid run off path was noted that measured approximately 12 meters (40 feet) long. The dose rate from the leaking process effluent was 5 rad per hour at a distance of 1 meter (3 feet). It was estimated to be 300 rad per hour at a distance of 10 centimeters (4 inches).

Related Sites/ Structures: UPR-200-W-135 is associated with the 241-TX-155 Diversion Box, 241-TX-302B Catch Tank and pipeline 200-W-191-PL.

Waste Type: Process Effluent

Waste Description: The leaking connector (U-15) associated with this release was transferring blended metal waste supernatant from the 244-UR vault to the 241-WR vault when the leak occurred. The amount of liquid released is estimated, since the cave-in was discovered 10 days after the last transfer was made.

Code: UPR-200-W-161 **Classification:** Accepted

Names: UPR-200-W-161; Large Area East of 241-U Tank Farm; UN-200-W-161; UN-216-W-35 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1990

Status: Inactive **End Date:**

Description: The site is a large radiologically controlled area posted with Underground Radioactive Material

signs. A WIDS number sign has been posted at this location.

Location: The site is located east of 241-U Tank Farm, on the east side of Camden Ave. It extends northward from the corner of 16th Street and Camden Ave. and the 241-U-152 Diversion Box.

Release Description: During a January 12, 1990 radiation survey, an area of approximately 1.9 acres (0.77 hectares) east of the 241-U Tank Farm (and west of the 216-U-14 Ditch) was found to be contaminated. The general contamination was 250 to 450 counts per minute with spots of 600 to 800 counts per minute. One area, approximately 1.5 meters (5 feet) long by 1.5 meters (5 feet) wide, was contaminated up to 8,000 counts per minute. No Occurrence Report was issued, but the area was submitted to the WIDS database on 3-23-90 as an Unplanned Release Site and given the number UN-216-W-35.

Related Sites/ Structures: UPR-200-W-161 is associated with the 241-U Tank Farm. Two pipelines associated with tank farm operations are buried in this approximate location (see 200-W-130-PL and 200-W-182-PL).

Waste Type: Soil

Waste Description: Windblown contaminated particles effected the area east of 241-U tank farm. Soil sample results from 1990 indicate that the main radionuclide is strontium (2.93 E3 picocuries per gram). Other contaminates included 6.26 picocuries per gram of cesium-137, 3.27 picocuries per gram of plutonium and 2.6 E-07 grams per gram of uranium. Because this site is associated with the 241-U Tank Farm, the waste is assumed to be mixed waste.

Code: UPR-200-W-164 **Classification:** Accepted

Names: UPR-200-W-164; Overhead UNH Line Leak; UN-216-W-29 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The above ground UNH line has been removed. The Radiation Area signs that surrounded the pipeline were also removed. A portion of the site was interim stabilized in 1993. An area of contaminated soil found under the steam line, adjacent to the 216-S-9 crib, was covered with clean soil and posted with "Underground Radioactive Material" warning signs.

Location: UPR-200-W-164 effect the soil beneath the aboveground uranyl nitrate hexahydrate (UNH) pipeline that extended from 204-S to 224-U. The UNH line was attached to a steam line, located north of 204-S.

Release Description: The above ground uranyl nitrate hexahydrate transfer line that extended from the 204-S Storage Tanks to the 224-U Building (hung from an existing steam line) was posted as a radiation zone from 1952 to 1967. The zone was established because of a low-level gamma field (dose rate) emanating from the transfer line. The September 1981 correspondence from Harold Maxfield states he believes the area was incorrectly designated as an Unplanned Release, because the posting was necessary due to a dose rate condition and not a release. Later, a small area of soil contamination was identified under the steam line, adjacent to the 216-S-9 crib.

Related Sites/ Structures: UPR-200-W-164 was associated with the above ground UNH transfer line from the 204-S Storage Tanks to the 224-U Building.

Process Description: The unplanned release site was an area of soil beneath an above ground uranyl nitrate hexahydrate transfer line that was hung from existing steam pipes.

Waste Type: Soil

Waste Description: The original Unplanned Release was described as the gamma field (dose rate) emanating from the above ground uranyl nitrate hexahydrate (UNH) transfer line. Later, a small area of soil contamination was found under the steam line that the above ground line had been attached. Liquid UNH apparently had dripped onto the soil on an area located adjacent to the 216-S-9 crib.

Code:	UPR-200-W-167	**Classification:**	Accepted
Names:	UPR-200-W-167; Contamination Migration from 241-TY; UN-216-W-32	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	

Description: The original release site, identified in 1985, was a soil contamination area located adjacent to the east side of the 241-TY Tank Farm. After the contamination was scraped and removed in 1986, the site was no longer marked or posted. Later, in 2000, three areas on the east and northeast sides of the 241-TY Tank Farm (within the original boundaries of this Unplanned Release) were reposted as Contamination Areas (CA). Contaminated ant hills and growing contaminated vegetation was found on top of a tank farm transfer line located outside the eastern tank farm fence (also see WIDS sitecode 200-W-78). In November 2000, the CA's were covered with bio-barrier material and gravel. These areas were reposted with Underground Radioactive Material signs. The underground radioactive pipeline is marked with posts and "Radioactive Pipeline" signs. The pipeline runs through the recently stabilized areas.

Location: UPR-200-W-167 was located adjacent to the 241-TY Tank Farm fence, extending east and north from the fence.

Release Description: In 1985 the contamination associated with UPR-200-W-167 was assumed to be the result of migration of contamination from 241-TY Tank Farm operations over a period of time.

Related Sites/ Structures: UPR-200-W-167 was associated with the 241-TY Tank Farm operations and WIDS sitecode 200-W-78.

Waste Type: Soil

Waste Description: The waste consisted of radioactive contamination (specks) that migrated from the 241-TY Tank Farm. Later, contaminated ant hills and contaminated vegetation were also found in this area.

200-OA-1

Code:	200 CP	**Classification:**	Accepted
Names:	200 CP; Hanford Site Gravel Pit 29; 200 Area Construction Pit; 200 Area Construction Waste Site	**Reclassification**	None
Type:	Depression/Pit (nonspecific)	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1955

Description: The site is a large, open gravel area. The pit is no longer being used as a source of gravel. The 2704HV parking lot was placed over a portion of the original pit.

Location: The pit is located west of the west perimeter fence of 200 East Area and northwest of the 2704HV building.

Process Description: The pit has been used as a source of gravel for various Hanford projects. Several truck loads of nonhazardous solid waste, broken blocks of concrete foundation and other debris have been reported to have been placed in the pit over the years.

Waste Type: Construction Debris

Waste Description: Several truck loads of broken blocks of concrete foundations and other structures have been dumped into this gravel pit during the past several years. There have been no known chemicals dumped into this unit.

Code:	216-B-3-1	**Classification:**	Accepted
Names:	216-B-3-1; B Swamp Ditch; 216-B-2; 216-B-2E; 216-B-3 Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1964

Description: The head end is located outside the 200 East perimeter fence, east of 218-E12A Burial Ground. The ditch continues due east to the 216-B-3 Pond. The constructed ditch was approximately 1250 feet long. It widened into a swamp before entering the 216-B-3 Pond. The site is currently backfilled and surface stabilized. It is located within a large posted Underground Radioactive Material area that also includes the 216-B-3-2 backfilled ditch.

Location: The ditch is located east of the 200 East Area perimeter fence.

Related Sites/ Structures: The site is associated with B Plant and PUREX facilities, UPR-200-E-34 and 216-B-2-1. It was fed by the 200-E-126-PL pipeline.

Process Description: The ditch received B Plant effluent from the 216-B-2-1 ditch and Purex effluent via a diverter that divided the flow between Gable Pond and B Pond. The 216-A-29 Ditch entered the B Swamp near the east end of the 216-B-3-1 Ditch.

Waste Type: Process Effluent

Waste Description: Until March 1962, the site percolated and transported 221-B Plant steam condensate, process cooling water, chemical sewer waste, and 284-E Powerhouse waste. From March 1952 to November 1955, the site percolated and transported the above-listed streams plus 241-CR Vault cooling water. From November 1955 to December 1957, the site percolated and transported the above-listed streams plus effluent from 216-A-29 Ditch. Wastes include 202-A process cooling water and chemical sewer waste. From December 1957 to February 1958, the site percolated

and transported the above-listed streams minus 202-A process cooling water. From February 1958 to December 1962, the site percolated and transported the above-listed streams plus 202-A Acid Fractionator condensate. From December 1962 to December 1963, the site percolated and transported the above-listed streams plus 202-A seal cooling water from air sampler vacuum pumps. After December 1963, the site percolated and transported the above-listed streams minus 202-A seal cooling water.

Code:	216-B-3-2	**Classification:**	Accepted
Names:	216-B-3-2; B Swamp Ditch; 216-B Ditch; 216-B-1 Ditch; 216-B-2-2E	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1964
Status:	Inactive	**End Date:**	1/1/1970

Description: The ditch has been backfilled and surface stabilized. It is located within a large Underground Radioactive Material Area that includes the 216-B-3-1, 216-B-3-2 and 216-B-3-3 covered ditches. The unit was open from the diverter station to the 216-B-3 Pond and was approximately 1.2 to 2.4 meters (4 to 8 feet) deep. It was backfilled in July 1970 after a release of strontium-90 from 221-B Plant.

Location: The ditch is located east of the 200 East Area perimeter fence. The ditch began east of the eastern 200 East Area perimeter fence and continued eastward to 216-B-3 Pond.

Release Description: UPR-200-E-138: On March 22, 1970, an estimated 1,000 curies strontium-90 release occurred at B Plant during an attempted measurement of the liquid level in Tank 8-1.

Related Sites/ Structures: The site is associated with 216-B-2-2, 216-B-3 and UPR-200-E-138.

Process Description: The ditch received effluent from B Plant and PUREX and transported it to the 216-B-3 Main Pond.

Waste Type: Process Effluent

Waste Description: Until January 1965, the site transported 221-B Plant process cooling water, steam condensate, and chemical sewer; 241-CR Vault cooling water; 284-E Powerhouse water; and received and transported 202-A chemical sewer waste and fractionator condensate from 216-A-29 Ditch. From January 1965 to January 1966, the site transported the above mentioned streams plus 241-TY Tank Farm ITS Unit 1 condenser cooling water. From January 1966 to November 1967, the site transported the above mentioned streams plus condenser cooling water and air sampler vacuum pump seal cooling water from 202-A Building. From November 1967 to February 1968, the site transported the above mentioned streams minus 284-E Powerhouse wastewater. After February 1968, the site transported the above mentioned streams plus 241-BY Tank Farm ITS Unit 2 condenser cooling water.

Code:	216-B-3-3	**Classification:**	Accepted
Names:	216-B-3-3; 216-B-3-3 Ditch; B Swamp Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1970
Status:	Inactive	**End Date:**	1/1/1994

Description: The ditch has been backfilled and surface stabilized. It is posted as an Underground Radioactive Material area.

Location: The ditch is located east of the 200 East Area perimeter fence. It continued east to 216-B-3

Pond, south of the 216-B-3-2 Ditch.

Release Description: UPR-200-E-51 occurred in 1977.

Process Description: The ditch received effluent from the B Plant and PUREX facilities. The unit was an open ditch from the diverter station to the 216-B-3 Pond. The unit was 1.2 to 2.4 meters (4 to 8 feet) deep and 0.3 meters (3 feet) wide at the bottom. The 216-A-29 Ditch fed into this unit approximately 305 meters (1,000 feet) upstream of the 216-B-3 Pond outfall.

Waste Type: Process Effluent

Waste Description: Until July 1973, the site transported and percolated 221-B cooling water, 202-A chemical sewer from the 216-A-29 Ditch, 241-BY Tank Farm ITS Units 1 and 2 cooling water, and 244-CR Vault cooling water. From July 1973 to May 1978, the site received the same as above minus ITS Units 1 and 2 cooling water. From May 19/78, the site received 221-B cooling water and 202-A chemical sewer from the 216-A-29 Ditch.

Code: 200-E-1 **Classification:** Accepted

Names: 200-E-1; 284-E Landfill; Asbestos in Excavation **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: There is no visible evidence of a landfill at this location. A covered concrete pad had been built over the area where the landfill was supposed to be located. The 284E Powerhouse was demolished in 2011 (see sitecode 200-E-296). The area was covered with a gravel cap.

Location: The site is located west of 284-E building.

Related Sites/ Structures: The site is associated with the demolished 284-E Powerhouse and the gravel cap (sitecode 200-E-296).

Process Description: The unit consists of asbestos waste encountered during below grade trenching activities.

Waste Type: Asbestos (friable)

Waste Description: The waste at this unit consists of asbestos.

Code: 200-E-2 **Classification:** Accepted

Names: 200-E-2; MO-234 Parking Lot; Soil Stains at the 2101-M SW Parking Lot **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was originally described as a gravel covered parking lot that contained discolored soil. Two large dark circular stains were visible in front of the access ramp at the south end of MO-234.

Location: The site is at the northwest corner of the intersection of Baltimore and 2nd Street, in 200 East Area. The site is bound by MO-234 to the north and MO-413 and MO-021 to the west.

Process Description: The parking lot is actively being used for vehicle parking. Personnel that may have knowledge of past disposal in this unit were interviewed. Based on these interviews, the unit was used as a parking lot for the Telephone and Utilities Department. Used oil has been used for dust abatement; no other dumping is known to have occurred.

Waste Type: Oil

Waste Description: The unit waste includes used oil for dust abatement. BHI Regulatory Support (B. Vedder) had two concerns about the site. Polychlorinated biphenyls (PCBs) were the biggest concern and heavy metals of lessor concern. PCBs were common in high heat grade hydraulic fluids. Unless there is some strong evidence that only used vehicle motor oil was applied, this site will need to be sampled to verify that there is no PCB contamination. On August 24, 2006, sample number B1KHY0 was collected and analyzed at WSCF lab.

Code: 200-E-7 **Classification:** Accepted

Names: 200-E-7; 2607-EO Septic Tank & Tile Field **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1994

Status: Active **End Date:**

Description: The tank is part of the 2607-EP System. Current and proposed additions to this system bring its design daily flow to 20,440 liters (5400 gallons). The tank was pre-fabricated with a 1500 gallon first chamber and a 1000 gallon second chamber. The associated septic field has been abandoned.

Location: This septic tank/pump station is located west of the 2711-E building (Automotive Garage and Shop) and north of 4th Street.

Process Description: As of 1996, the tank serviced 2711-E, but is capable of supporting additional facilities.

Waste Type: Sanitary Sewage

Waste Description:

Code: 200-E-46 **Classification:** Accepted

Names: 200-E-46; Debris Southeast of 282-E; RCRA Permit General Inspection #200EFY96 Item #3 **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site appears to be an old lay down area. Scattered debris is visible over a large area.

Location: The site is located on both sides of the dirt road approximately 183 meters (600 feet) southeast of the 282-E Reservoir building and running along the south side of the railroad spur.

Waste Type: Misc. Trash and Debris

Waste Description: Materials observed at the site include wire rope, a steel railroad rail, a metal bar, wood, fiberglass insulation, aluminum cans coal, pipe, aluminum wire, copper wire, concrete, and glass. Most of the debris is in relatively small pieces. Large debris include the steel railroad rail, iron bar, wire rope, and concrete.

Code:	200-E-101	**Classification:**	Accepted
Names:	200-E-101; 200 East Deep Lysimeter Site	**Reclassification**	Rejected (9/16/2010)
Type:	Experiment/Test Site	**Start Date:**	1/1/1971
Status:	Inactive	**End Date:**	1/1/2009

Description: The site has been evaluated and reclassified to Rejected. It consists of three features, one open bottom pit, one closed bottom pit and an underground equipment storage room. The pits are located 34.6 meters (114 feet) apart. Both pits are constructed from corrugated steel cylinders that were buried and backfilled with soil. Instrument cables were weighted with lead bricks. In February 2001, the underground, equipment storage room access hatch and vents were found inside a chained area, just west of the dirt access road. The closed bottom pit is north of the equipment room, enclosed in a triangular shaped chained area. Lysimeter access pipes are protruding up through the soil and the rim of the closed bottom lysimeter caisson are visible.

The open bottom lysimeter has been decommissioned. The closed bottom lysimeter remained in a "Standby" mode. In 2007, it was still operational, but is not being used.

Location: The site is located southeast of 200 East Area, within the BC Radiologically Controlled Area, approximately one half mile south of Route 3. It is 91.5 meters (300 feet) northwest of well #699-32-49D.

Process Description: The lysimeter pits were used to collect soil information. The sensors in the pits were hard wired to the instrument recorders, located inside the underground equipment storage room. Three 4-centimeter (1.6-inch) diameter aluminum pipes were installed to a depth of 18.3 meters (60 feet) to allow access of a Neutron Moisture Probe. Other pipes contained soil temperature thermocouples and pressure sensor tubes. The closed bottom lysimeter has a 20-centimeter (8-inch) poured concrete slab at the bottom. Holes were bored through the cement slab so the instruments could access the soil below the caisson. The instrument room housed the recording and measurement instruments. The room was buried approximately 0.3 meters (1 foot) below ground level to eliminate climatological influences, such as wind and temperature that could interfere with readings. The room measures 4.5 meters (14.8 feet) by 4.8 meters (15.8 feet) and was located between the two lysimeter pits.

Waste Type: Equipment

Waste Description: In 1999, PNNL said the neutron probe has been left inside the closed bottom pit, but in 2008 PNNL said the probe had been removed. The cables were weighted with 500-gram (1.1 pound) lead bricks that were backfilled in place, inside the pits. This equipment could be considered hazardous.

Code:	200-E-110	**Classification:**	Accepted
Names:	200-E-110; Contaminated Tumbleweed Dump Site	**Reclassification**	Interim Closed Out (2/25/2011)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This waste site was reclassified to Interim Closed Out in 2011. The area was down posted to a non-controlled area In October 2003. The radiological posting signs were removed. The site had been surrounded with light duty steel chain and posts and posted as a Contamination Area. The Contamination Area was surrounded with light duty steel chain and posts and is posted as a Radiological Buffer Area. The area had also been posted as a Radiologically Controlled Area. The ground is sandy soil with rocks and chunks of concrete. The area is free of growing

vegetation and the tumbleweeds have been removed. Only tumbleweed fragments remained.

Location: The site is located just off the northeast corner of 200 East Area, east of Canton Avenue and northeast of Gate 810.

Waste Type: Vegetation

Waste Description: The waste consisted of dried, compacted tumbleweeds.

Closure Info: Interim: In July and August 2009, the 200-E-110 and UPR-600-21 waste sites were investigated through observation, field screening and radiological surveys for the purpose of determining if radiological contaminants were present above the removal action levels (RALs). The survey results analysis confirmed that soil contaminant concentrations are at or below the RALs and that no further action is required. Both 200-E-110 and UPR-600-21 waste sites achieved compliance with the removal action levels (RALs) and thus met the removal action objectives (RAOs). These results support reclassification to Interim Closed Out status.

Code: 200-E-126-PL-A **Classification:** Accepted

Names: 200-E-126-PL-A; Segments of 200-E-126-PL Pipeline Located in the Outer Area **Reclassification** None

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: Due to the restructuring of Operable Units, as described in the Agreement for Central Plateau Cleanup, the original pipeline site has been split into segments. 216-E-126-PL-A is the segments of pipeline located in the Outer Area. The segments of pipeline associated with 200-E-126-PL-A include the forty eight inch diameter corrugated metal pipes that could feed the lobes of the 216-E-28 Contingency Pond, the thirty inch diameter High Density Polyethylene pipe that fed the 216-B-3B pond lobe and the two thirty inch diameter corrugated metal pipes that connected the 216-B-3A pond lobe to the 216-B-3C pond lobe.

Location: The 200-E-126-PL-A pipeline segments are located east of the 200 East Area fence line, beyond the Inner/Outer Area boundary.

Related Sites/ Structures: This waste site is associated with the 200-E-126-PL-B, 216-E-28 Contingency Pond, 216-B-3A Lobe and 216-B-3B Lobe.

Process Description: The pipeline conveyed B Plant effluent to the 216-B-3 Pond and Ditch system. B Plant cooling water effluent was originally routed through the 207-B Retention Basin to the 216-B-2-1, 216-B-2-2 and 216-B-2-3 ditches. In 1987, the 216-B-2-3 ditch was closed and was replaced by this, 22 inch diameter plastic underground pipeline. It extended from the 207-B basin to Diverter Station #2. By 1994, all of the open ditches (216-B-2-1, 216-B-2-2, 216-B-2-3, 216-B-3-1, 216-B-3-2 and 216-B-3-3) had been backfilled and surface stabilized. After 1994, all the effluent was conveyed to the 216-B-3A and 216-B-3C pond lobes only through underground pipelines. In 1995 the ponds were closed. The remaining effluent was transferred the Treated Effluent Disposal Facility (TEDF). Parts of the pipelines east of 200 East Area, that had fed the ponds, were re-used to feed the TEDF disposal basin. The TEDF portion begins at Manhole #8 and extends to Pump Station #3. In the event of a failure at Pump Station #3, the effluent can be routed to 216-B-3C (C lobe). The section that connects the southeast corner of 216-B-3A to the northwest corner of 216-B-3C is constructed of 76 centimeter (30 inch) corrugated metal pipe.

Code: 200-E-127-PL-A **Classification:** Accepted

Names: 200-E-127-PL-A; Segments of Gable Mountain Pond Pipeline Located in the Outer Area
Reclassification None

Type: Radioactive Process Sewer
Start Date:

Status: Inactive
End Date:

Description: Due to the restructuring of Operable Units, as described in the Agreement for Central Plateau Cleanup, the original pipeline site (200-E-127-PL) has been split into segments. 200-E-127-PL-A is the segments of pipeline located in the Outer Area. The pipeline is marked with steel posts and Underground Radioactive Material - Pipeline signs. The majority of the pipeline is constructed of large diameter corrugated metal pipe. The 36 inch diameter corrugated metal pipe enlarges to 42 inch diameter corrugated metal pipe at Manhole #8 (north of the 600-118 diverter station). The pipeline divides into two sections (a Y shape) near where it crosses Route 11A. Two sections of pipe fed the pond. Near the 810 gate, an area of contaminated vegetation growing on and adjacent to the pipeline was stabilized with biobarrier and posted with Underground Radioactive Material Area signs. A portion of the pipeline is under the Liquid Effluent Retention Facility (LERF) berm and extends into the LERF/ETF facility boundary.

Location: 200-E-127-PL-A is located east and north of the 200 East Area. This segment extends northward from Manhole 5 to the 216-A-25 (Gable Mountain Pond).

Process Description: This portion of pipeline conveyed PUREX and B Plant effluent to the (216-A-25) Gable Pond. The effluent stream could be directed to Gable Mountain Pond or B Pond via Diverter Station #3. From Diverter Station # 3 northward to the 216-A-25 Pond, the pipeline is constructed of 107 centimeter (42 inch) diameter corrugated metal pipe.

Code: 2607-E1
Classification: Accepted

Names: 2607-E1; Septic Tank and Tile Field
Reclassification Closed Out (11/9/2004)

Type: Septic Tank
Start Date: 1/1/1948

Status: Inactive
End Date: 1/1/1997

Description: This septic tank was properly abandoned in 1997. It was constructed of reinforced concrete with walls and floors. The associated drain field is 778 square meters (8,376 square feet).

Location: This septic tank is located north of 4th Street and east of Baltimore Avenue. The tile field is north of the tank.

Related Sites/ Structures: The 2607-E1 Septic Tank is associated with the 2607-E1 Tile Field, the 200 East shops and 282-E.

Process Description: The 2607-E1 Septic Tank and associated drain field were designed to accept and treat sanitary sewer effluent from facilities in central 200 East Area.

Waste Type: Sanitary Sewage

Waste Description: This unit received sanitary wastewater and sewage at an estimate rate of 21,556 liters (5,695 gallons) per day. It service the 200 East Area shops and powerhouse.

Closure Info: Interim: The reclassification to Closed Out is documented on form 2004-116. The system was abandoned in 1997 in accordance with Washington Administrative Code 246-272-18501. This system was tied into 2607-E1A.

Code: 216-N-8
Classification: Accepted

Names: 216-N-8; 216-N-8 Pond; Honeyhill Pond;
Reclassification None

Seepage Pond; West Lake; West Pond

Type: Pond **Start Date:**

Status: Inactive **End Date:**

Description: The site is a pond of water surrounded by a white perimeter ring of dried alkali salt residue. The size and volume of the pond change with the seasons and groundwater levels.

Location: The site is located south of the western end of Gable Mountain and northwest of 216-A-25. It is east of Route 4 North. An unnamed dirt road leads to West Lake from Route 4 North.

Related Sites/ Structures: The Gable Mountain Pond (216-A-25) and 600-262 are associated with the unit.

Process Description: This unit did not receive effluent from any contaminated facilities, but may have received discharge from the 606 Central Mix cement plant (see drawing H-11-4327). This pipeline could also be part of the Export Water line (see HW-70186). Prior to construction of Gable Mountain Pond, it was an intermittent, seasonal pond, only appearing in the winter and spring when the water table was elevated. Early Hanford construction camps disposed of sanitary sewage sludge in this area. This practice is believed to have contributed to the high alkaline and phosphate levels and elevated pH levels in the pond. After Gable Mountain Pond (216-A-25) became active in 1958, West Lake enlarged as a result of the raised water table and became a permanent pond.

Waste Type: Water

Waste Description: Prior to the appearance of West Pond, this area was used as a disposal site for sewage sludge from the early Hanford construction camp. High alkaline and phosphate levels, as well as elevated pH values, may be attributed to this use of the pond area. Hanford drawing H-11-4327 shows a water line extending from the 606 Central Mix cement plant settling basins to Honeyhill. It implies the lake may have received water from the cement plant. However, this pipeline could also be part of the Export Water line (see HW-70186). Even though this unit never received direct discharges of contaminated effluents, it contains relatively high amounts of radionuclides (1,055 to 1,098 picocuries/liter in 1976), having the highest gross alpha (naturally occurring except for tritium) concentrations of all the 200 Area ponds. The actual source of existing activity is unknown. A possible main contributor is the leaching of naturally occurring radionuclides from the soil that has been concentrated by evaporation during the entire history of the unit.

Code: 216-S-10D **Classification:** Accepted

Names: 216-S-10D; 216-S-10D Ditch; Chemical Sewer Trench; Open Ditch to the Chemical Sewer Trench; 202 Chemical Sump #1 and Ditch; 216-S-10 Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1991

Description: The portion of the ditch nearest the 200 West Area perimeter fence is an open, unlined open ditch. Two thirds of the original ditch has been backfilled. The covered portion is posted with Underground Radioactive Material signs. The open portion is marked, but not radiologically posted.

Location: The 216-S-10 Ditch begins southwest of the 202-S Building and extends south of the 200 West Area perimeter fence.

Release Description: See UPR-200-W-34.

Related Sites/ Structures: The ditch is associated with the REDOX facility, the REDOX chemical sewer 200-W-157-PL, 216-S-11 and the 216-S-10 Pond.

Process Description: The site started receiving waste from 202-S in August 1951. In February 1954, it became apparent that the 216-S-10 Chemical Sewer (200-W-157-PL) needed a larger leaching area. Thus four leaching ponds (fingers) were dug southwest of the 216-S-10 Ditch, adding approximately 3 acres of leaching surface. By May 1954, the area became swamped again. Two more leach trenches were added that became known as 216-S-11. The May 1954 REDOX Monthly Report indicated contamination levels in the trench to be a maximum of 500 to 800 mrads/hour in spots with lower levels of 80,000 counts per minute in a one acre overflow area that resulted from a break in the east trench (southeast 216-S-11 per Maxfield); see UPR-200-W-34. ANN solution was inadvertently dumped into the Chemical sewer in 1954 and seriously plugged the soil at the terminus of the chemical sewer.

Waste Type: Process Effluent

Waste Description: In the past, 420 liters (110 gallons) of hazardous waste salts including sodium nitrite (NaNo2) and sodium hydroxide (NaOH) were discharged to the unit. Until 1965, the site received chemical sewer waste from 202-S and overflow from the high water tower. Since October 1991, the site no longer acted as a ditch because the 216-S-10 Pond was stabilized. No dangerous wastes have been discharged to this unit since February 1987. NOTE: The 216-S-11 Pond was credited with all the liquid effluent inventory for the 216-S-10 Pond and Ditch system for many years.

Code: 216-S-10P

Classification: Accepted

Names: 216-S-10P; 216-S-10P Pond; Chemical Sewer Trench; 202-S Chemical Sump #1 and Ditch

Reclassification None

Type: Pond

Start Date: 1/1/1952

Status: Inactive

End Date: 1/1/1984

Description: The pond was an irregular shape with four trenches known as fingers. The unit has been backfilled and stabilized and posted with Underground Radioactive Material signs.

Location: The unit is located outside the 200 West Area perimeter fence, southwest of the 202-S Building.

Release Description: The unit received one documented discharge of dangerous waste. This discharge consisted of simulated double-shell tank slurry which exhibited dangerous waste characteristics of ignitability, corrosivity, characteristic waste and toxic state-only waste. Approximately 450 kilograms (1,000 pounds) were discharged.

Related Sites/ Structures: The pond is associated with the REDOX facility, the 216-S-10 Ditch and UPR-200-W-34.

Process Description: In February 1954, it became apparent that the 216-S-10 Chemical Sewer need more leaching area, so four leaching ponds (fingers) were dug off the southwest end of the 216-S-10 Ditch. The fingers added approximately 3 acres of leaching surface. By May 1954, the area became swamped again. Two more leach trenches were added that became known as 216-S-11.

The May 1954 REDOX Monthly Report indicated contamination levels in the trench to be a maximum of 500 to 800 mrads/hour in spots with lower levels of 80,000 counts per minute in a one acre overflow area that resulted from a break in the east trench (southeast 216-S-11 per Maxfield).

Waste Type: Process Effluent

Waste Description: Until 1965, the site received the chemical sewer waste from 202-S and overflow from the high water tower via the 216-S-10 Ditch. From 1960's, the site received the bearing cooling water from 202-S. RHO-CD-673 documents two releases of radioactive liquid into the S-10 Disposal System. NOTE: The 216-S-11 Pond was credited with all the liquid effluent inventory for the 216-S-10 Pond and Ditch system for many years.

Code: 216-S-11 **Classification:** Accepted

Names: 216-S-11; 216-S-11 Swamp; Chemical Sewer Trenches; 202-S Chemical Sump #2 **Reclassification** None

Type: Pond **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1965

Description: A 1999 site visit found the area to be flat and covered with bunch grass. Neither of the 216-S-11 pond lobes are marked or posted.

Location: This unit is southwest of 202-S Building and just east of 216-S-10 Ponds.

Related Sites/ Structures: The site is associated with the 216-S-10 Ditch, UPR-200-W-34 and the 202-S Building.

Process Description: This site provided an additional leaching surface for the disposal of water from the 216-S-10 Ditch. The site consisted of two connecting pond lobes. The south lobe was backfilled in 1975, but there is no documentation of when the north lobe was backfilled.

Waste Type: Process Effluent

Waste Description: The site received the waste from air conditioning and drains in 202-S Building and the chemical sewer waste from the 202-S Building. NOTE: The 216-S-11 Pond was credited with all the liquid effluent inventory for the 216-S-10 Pond and Ditch system for many years.

Code: 216-S-16D **Classification:** Accepted

Names: 216-S-16D; 216-S-24 Ditch; REDOX Pond #2; 202-S Swamp #1; 202-S Swamp (New) and Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1975

Description: The site is a ditch that connected the 202-S Building to the 216-S-16 Pond. The side slope of the open ditch was 2:1. The ditch has been backfilled and surface stabilized. It is posted with Underground Radioactive Material signs.

Location: The open ditch began 835 meters (2736 feet) southwest of the southwest corner of the 200 West Area perimeter fence, terminating at the eastern edge of the 216-S-16 Pond.

Related Sites/ Structures: The site is associate with the REDOX facility, the 216-S-16 Pond, and the 216-U-9 Ditch. The pipeline to the 216-S-16 ditch is discussed in sitecode 200-W-155-PL.

Process Description: The ditch received effluent from the REDOX facility. Prior to reaching the open ditch, the effluent was transported via an underground, 60 centimeter (24 inch) vitrified clay pipeline.

Waste Type: Process Effluent

Waste Description: January 1957 is considered the most accurate start date for this waste unit. The site received process cooling water and steam condensate from 202-S Building until June 1967. After the 202-S Building (REDOX) was put on standby in July 1967, the site received condenser and vessel cooling water from concentrator boil-down operations in the 202-S Building. In 1973, the 216-U-9 ditch was connected to the 216-S-16 ditch to allow the 216-U-10 pond overflow to reach the 216-S-16 pond.

Code:	216-S-19	**Classification:**	Accepted
Names:	216-S-19; 216-S-19 Pond; 216-SL-1; 222-S Lab Swamp; REDOX Lab Swamp	**Reclassification**	Interim Closed Out (9/21/2011)
Type:	Pond	**Start Date:**	2/1/1952
Status:	Inactive	**End Date:**	10/1/1984

Description: This waste site has been evaluated under a removal action and Interim Closed Out. The pond is no longer marked or posted. The radiological postings were removed in August 2011.

Location: This unit was located south of the 200 West Area perimeter fence, southeast of the 216-S-14 Trench and the 2607-W7 Tile Field.

Release Description: Document HW-60807 states "The 222-S Swamp, located outside 200 West Area, about 1000 yards south of the 222-S laboratory, is used for disposal of drainage from lab sinks and wall drains. In December 1953, contamination up to 200 millirad per hour at the ground surface was discovered over an area measuring approximately 300 feet long and 3 feet wide." Reference 9 on sketch G of this document indicates the location to be the 216-S-19 pond.

Related Sites/ Structures: The associated structures are the 222-S Building, 207-SL Retention Basin, 216-S-26 crib and pipeline sitecode 200-W-147-PL.

Process Description: The pond was opened in February 1952 and closed in October 1984. Until December 1954, the site received effluent from the 222-S/SA Laboratory ventilation cooling water and miscellaneous wastes from laboratory hoods and decontamination sinks via the 207-SL Retention Basin. From December 1954 to October 1955, the site was inactive because the radionuclide concentration in the 207-SL Retention Basin liquid waste was above the prescribed disposal guidelines, and building effluents were rerouted to the 216-S-20 Crib. From October 1955 to October 1984, the site received ventilation cooling water and miscellaneous wastes from laboratory hoods and decontamination sinks in the 222-S Laboratory Building via the 207-SL Retention Basin.

Waste Type: Process Effluent

Waste Description: The site received ventilation cooling water, lab hood waste, and decontamination sink waste.

Closure Info: Interim (9/21/2011): The removal action at the 216-S-19 waste site was conducted from November 2010 through August 2011. Twelve focused confirmatory samples were collected from the north end of the pond, near the discharge pipe. The results of initial sampling indicated concentrations of uranium U-233/234, and U-238 in excess of their respective Removal Action Levels thus initiating RTD. Removal of impacted soils at the 216-S-19 was excavated to a depth of approximately 0.31 to 0.61 meters (1 to 2 ft) below the floor of the pond, at Focused Sample 6, in an attempt to spot clean the area of contamination. The area of excavation was later expanded laterally to encompass the entire floor of the pond. The vertical extent of excavation was refined by in process sampling, conducted during RTD activities. The depth of excavation ranged from approximately 3 to 4 meters (10 to 13 ft) below original grade.

Code:	216-S-26	**Classification:**	Accepted
Names:	216-S-26; 216-S-26 Crib; 216-S-19 Replacement Facility	**Reclassification**	Interim Closed Out (9/21/2011)
Type:	Crib	**Start Date:**	10/1/1984
Status:	Inactive	**End Date:**	6/1/1995

Description: This crib has been evaluated under a removal action and Interim Closed Out. The crib is no longer marked or posted. The crib had been surrounded with metal posts and chain and was posted with Underground Radioactive Material signs. A 15 centimeter (6 inch) vitrified clay, perforated distribution pipe runs the length of the unit, 46 centimeters (18 inches) above the bottom of the crib. Eight centimeters (4 inches) of gravel covered a membrane barrier. The crib had been filled with 2.9 meters (9.5 feet) of soil. One gage well with a liquid level indicator was located 30 meters (100 ft) from the west end, and a vent riser was located at the east end.

Location: The crib was located southeast of 222-S Building, outside the 200 West Area perimeter fence.

Release Description: During the week of 10/20/84, a spill occurred at the 222-S Lab resulting in the release of water contaminated with Sr-90 to the 207-SL Retention Basin. Concentrations averaged 2 to 3 times the Sr-90 guide but did not exceed RHO-MA-139 standards. The water was released to the new 216-S-26 Crib.

Related Sites/ Structures: The pipeline associated with this crib is WIDS pipeline sitecode 200-W-148-PL.

Process Description: The crib received waste from the 222-S laboratory via the 207-SL retention basin. In 1988, crib infiltration rate problems were noted due to caustic flush water being periodically disposed to the 207-SL basin.

Waste Type: Steam Condensate

Waste Description: The site received steam condensate and sink wastes, which are byproduct radioactive wastes, from the 222-S Laboratory via the 207-SL Retention Basin. The wastes contain a variety of chemicals, including acetone, nitric acid, and lesser amounts of sulfuric and hydrofluoric acids.

Closure Info: Interim (9/21/2011): The removal action at the 216-S-26 and 200-W-148-PL waste sites was conducted from March 2011 through August 2011 and included the removal of overburden soil, and the pipe itself, followed by collection of samples from locations within the excavation. Implementation of the selected Remove, Treat, Dispose (RTD) alternative was performed. Soil and piping were removed from the two waste sites. Direct visual inspection of the site surface was performed as a guide for visual cues such as staining, discoloration, absence of vegetation, presence of debris, and other anomalies. Radiological field screening was performed at the excavation surface of the waste site to provide an indication of the extent of radiological contaminants. Soil was removed to a depth of approximately 4.6 meters (15 ft) below ground surface. Characterization sampling was performed at depths of 4.6, 4.9, 5.5, and 6.1 meters (15, 16, 18, and 20 ft) and the analytical results evaluated to demonstrate achievement of Removal Action Objectives. Backfill of the 216-S-26 and 200-W-148-PL waste sites was completed on August 30, 2011.

Code:	216-T-1	**Classification:**	Accepted
Names:	216-T-1; 216-T-1 Trench; 221-T Ditch; 221-T Trench	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1995

Description: The ditch has been backfilled. It is currently marked and posted with Underground Radioactive Material signs.

Location: The ditch is located on the north side of 221-T Building, west of Beloit Avenue.

Related Sites/ Structures: The ditch was associated with the 221-T facility operations. The pipeline associated with the ditch is 200-W-180-PL.

Process Description: The ditch received cooling water and steam condensate discharge from 221-T and 271-T.

Waste Type: Steam Condensate

Waste Description: From 1944 until 6/56, the site received miscellaneous waste from pilot plant experimental work, intermittent decontamination waste, and waste from the head end of the 221-T Building. From 6/56 to 1/64 the ditch was inactive due to the production operations at T Plant being shut down. From 1/64 to 6/70, the site received cooling water from the blowdown vessel in the 271-T Building and miscellaneous waste from PNL head end operations in the 221-T Building. After 6/70, the site received condensate from steam-heated radiators at the head end of 221-T Building. During standdown of PNL operations, the discharge of 271-T and other 221-T head end waste was discontinued. The site also received sodium hydroxide wash water waste solution (less than 1,000 gal/month [3,800 L/month]) from the Sodium-Air-Water Reaction Emergency Air Cleaning Development-HEDL. This waste water was nonradioactive and generally wet only the bottom of the unit to approximately 150 ft (46 m) from the outfall.

Code: 200-W ADB
Classification: Accepted
Names: 200-W ADB; 200-W Ash Disposal Basin
Reclassification None
Type: Coal Ash Pit
Start Date: 1/1/1944
Status: Inactive
End Date: 1/1/2000

Description: The site is an area of dark soil with cheatgrass growing on the surface. A small depression can be seen in the middle of the site.

Location: The site is located inside 200 West Area, northeast of the 221-U Facility. It is on the east side of Beloit Ave. south of 20th Street.

Related Sites/ Structures: The site is associated with the 284-W Powerhouse operation the 200-W Ash Pit. The open pit adjacent to the south side of the 200-W ADB is known as the 200-W Burn Pit (200-W BP).

Process Description: The Ash Disposal Basin received coal ash slurry and ash from the operation of the coal fired 284-W Powerhouse. A 1954 drawing shows an underground ash slurry pipeline extending from the northeast corner of the 284-W Powerhouse to the northwest corner of the Ash Disposal Basin. Later, the site received trucked material, dredged from the 200 West Powerhouse Ash Pit, located south of the powerhouse, on the west side of Beloit Ave.

Waste Type: Ash

Waste Description: The site mainly received coal ash from the 200 West Area Powerhouse operation. However, the open pit was sometimes used for other purposes. The open ash disposal basin was sometimes used as a location for burning tumbleweeds that had collected along area fences during the 1980's. A Tiger Team finding for disposing of steam plant ash without a permit prompted sampling of wet flyash and bottom ash from the 200 Area power houses. Sample results determined the ash to be non-dangerous and non-corrosive and not regulated under Washington Administrative Codes.

Code:	200-W BP	**Classification:**	Accepted
Names:	200-W BP; 200-W Burning Pit; Gravel Pit 34; Pit 34	**Reclassification**	None
Type:	Burn Pit	**Start Date:**	1/1/1950
Status:	Active	**End Date:**	

Description: The site is a large open pit.

Location: The site is located within the 200 West Area Ash Disposal Basin, southeast of the 284-W Powerhouse, on the east side of Beloit Ave.

Release Description: UPR-200-W-37 and UPR-200-W-70 have been associated with the 200 West Burn Pit in some documents. It is possible that an early burn pit, located southeast of U Plant, was actually the site of these releases. See 200-W-71.

Related Sites/ Structures: The burn pit is associated with the 200-W Ash Disposal Basin (200-W ADB), 200-W ADS and 200-W-71.

Process Description: 200 Area office waste and non-radioactive construction debris and tumbleweeds have been brought to this site and burned. According to Dave Phipps in April 2002, this site is used as a staging area for uncontaminated tumbleweeds from the 200 Area fences. They are burned semiannually in the spring and the fall. The area is also used as a source of clean backfill (gravel) material.

In 1984, a one time chemical demolition event occurred inside the northern portion of the current 200-W Burn Pit. However, the title of the closure document is the 200 West Area Ashpit Demolition Site Closure Plan (DOE/RL-92-54). A review of this document confirms the location of the chemical demolition was inside the 200-W Burn Pit. Drawing H-2-1495 and historical photograph #3755 show another disposal pit/burn pit, located south of 16th Street, east of Beloit Ave. Early references to the 200 West Burn Pit could be referring to this location.

Waste Type: Demolition and Inert Waste

Waste Description: The unit is used to burn nonradioactive material and tumbleweeds PNL-6456 states the site received construction and office waste (15,000 cubic meters [19,600 cubic yards]), paint waste, and chemical solvents (1,000 liters [260 gallons]).

Code:	200-W-3	**Classification:**	Accepted
Names:	200-W-3; 220-W-1; 2713-W North Parking Lot	**Reclassification**	None
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site is the gravel parking lot, containing an area where discolored soil was identified in an excavation between 10 to 15 centimeters (4 to 6 inches) below the surface.

Location: The waste site is located east of Beloit Ave. and north of 20th Street. It is north of where the 2713-W garage had been located before it was demolished.

Related Sites/ Structures: Building 2713-W and a waste oil storage tank are associated with this unit.

Process Description: The 2713-W building had been a gas station and also contained an oil changing pit for government vehicle maintenance. Oil was often used on gravel areas for dust abatement.

Waste Type: Oil

Waste Description: The waste at the unit includes waste oil that was used for dust abatement. Two soil samples taken at the unit indicate that PCBs (maximum 3 parts per million), lead (maximum 2.1 milligrams per liter EP-TOX), xylene (maximum 1640 parts per billion), and total petroleum hydrocarbons (maximum 620 milligrams per kilograms) were present.

Code: 200-W-33
Classification: Accepted
Names: 200-W-33; Debris Near 609 Gate; Solid Waste Dumping Area
Reclassification Interim Closed Out (6/3/2011)
Type: Dumping Area
Start Date:
Status: Inactive
End Date:

Description: The waste site has been evaluated under a removal action and reclassified to Interim Closed Out. The site originally consisted of an area of debris covering approximately one acre in a stand of open sagebrush. A grass fire burned the area in 2007. Many more cans and drums became visible after the fire, increasing the size of the waste site significantly to approximately 12 acres.

Location: The site is located near the northwest corner of 200 West Area. It is outside the 609 Gate, west of Dayton Ave.

Waste Type: Misc. Trash and Debris

Waste Description: Numerous empty, rust cans and barrels were found. One five gallon can was found that contained an oil substance. Other types of miscellaneous debris included tires, bottles and oil cans. There is evidence of burning in the area.

Closure Info: Interim (6/3/2011): The selected alternative for the 200-W-33 waste site was confirmatory sampling/no further action (CS/NFA). The results of the confirmatory sampling indicated COPC concentrations greater than the RALs in two of the sampled areas. Per the provisions of the Action Memorandum, the removal action activities progressed to implementation of the RTD alternative for those areas, and for debris removal at the waste site. Upon completion of RTD activities, verification sampling was conducted to demonstrate that contaminant concentrations in soil at the 200-W-33 waste site were less than or equal to the RALs, thus demonstrating that the RAOs were met.

The removal action at the 200-W-33 waste site was conducted from February 2010 through March 2011 and included the collection of focused and random samples from locations within the waste site. Remedial activities included the collection of judgmental soil samples based on historical and process knowledge, and visual indicators; excavation of soil under the RTD alternative in zones of potential contamination (ZPCs) 5 and 9; removal of debris scattered throughout the waste site, along with underlying soil and collecting of random samples from ZPCs 5 and 9 for verification purposes.

No radiological postings were present at the waste site. Radiological field screening surveys were performed at the 200-W-33 waste site. No radiological readings greater than the measured background, and no radiological contamination was found.

Debris and approximately 0.3 meters (1 foot) of underlying soil was removed from the ZPCs and the remainder of the waste site during implementation of the RTD alternative.

Revegetation at the 200-W-33 waste site is not required, however, the 200-W-33 waste site has been reseeded.

Code:	200-W-64	**Classification:**	Accepted
Names:	200-W-64; 2724-W Contaminated Laundry Facility Building Foundation	**Reclassification**	None
Type:	Foundation	**Start Date:**	1/1/1950
Status:	Inactive	**End Date:**	1/1/1994

Description: The building foundation is posted with "Underground Radioactive Material" signs. There is also an area approximately 3 meters (10 feet) by 4.5 meters (15 feet) on the north side of the foundation that is posted as "Fixed Contamination". Several drains and pipes were observed on the concrete pad. All drains and pipes were either capped or grouted. There are three radiologically posted manholes adjacent to the northwest corner of the foundation. The manholes are likely to be a portion of the process sewer. Overtime, equipment items such as pipe, valves, flanges, fence posts have been observed being staged on the southeastern portion of the cement foundation. Some Radiological Material Areas have been noted.

Location: The building foundation is located in 200 West Area, at the corner of Beloit Ave. and 20th Street.

Related Sites/ Structures: The site is associated with the demolished contaminated laundry facility complex which included 2724-WA, 2724 WB Laundry facilities, and the MO-412 Mask Cleaning facility. It replaced the 2723-W (Old Laundry" Facility and mask cleaning station) which was located northeast of the 2724-W facility. Effluent was discharged via 200-W-102 to the U-14 Ditch until 1981 when it was diverted to the 216-W-LWC (Laundry Waste Crib).

Process Description: WHC-EP-0342 states the 2724-W building was built in 1952 and expanded several times. ARH-2155, however, indicates that the new laundry facility (2724-W) began discharging effluent in 1950. This building (2724-W) replaced the 2723-W "Old Laundry" facility which was then used as the mask washing facility. The laundry effluent was discharged via an underground pipeline (200-W-102) to the 216-U-14 Ditch, until it was diverted to the new Laundry Waste Crib (216-W-LWC) in 1981. By 1981, the Laundry Complex included the 2724-W, 2724-WA, 2724-WB and MO-406. MO-412 was placed adjacent to the Laundry Complex in 1984 and housed the Mask Cleaning and Maintenance Facility. Soiled protective work clothing (coveralls, gloves, hoods, canvas boots and rubber shoe covers) were sent to the laundry facility from all the Hanford work areas. Two thirds of the laundry received was radioactively contaminated. One third consisted of "blue" (non contaminated) coveralls and towels. The non-contaminated laundry was washed separately from the contaminated laundry. By 1981, approximately three million pounds of laundry was processed per year in 600 pound capacity washing machines and 400 pound capacity dryers. An average of 26,250,000 liters (691,000 gallons) of waste water was discharged to the 216-W-LWC crib each month.

Waste Type: Construction Debris

Waste Description: The site is the cement foundation of the contaminated laundry facility.

Code:	200-W-102-PL	**Classification:**	Accepted
Names:	200-W-102-PL; Pipeline from Laundry, Powerhouse and Shops to 216-U-14 Ditch; 200-W-102	**Reclassification**	None
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1981

Description: The waste site is various diameters of vitrified clay and concrete pipes that transferred waste to

the 216-U-14 ditch. The underground pipeline is not separately marked or posted. Several manholes are visible along the line that have Confined Space and Radiation Area postings.

Location: The pipeline is located in 200 West area, on the north and south sides of 20th Street. It extends westward on the north side of 20th Street until it terminates at the head end of the 216-U-14 Ditch.

Related Sites/ Structures: This pipeline discharged effluent from 2723-W (old laundry/mask cleaning), 2724-W Laundry and the 284-W Powerhouse. Additional pipelines from the 282-W water reservoir, 283-W filter plant and the 277-W fabrication shop also connect to the main pipeline. Portions of this pipeline are associated with the 2724-W building foundation (WIDS sitecode 200-W-64). This pipeline is also associated with 200-W-221-PL (Laundry Waste Crib Pipeline).

Process Description: The pipeline transported radioactive contaminated laundry and mask cleaning effluent to the 216-U-14 Ditch along with non-radioactive effluent from the powerhouse and shops. The waste originated from the 2723-W (Old Laundry) and 2724-W (New Laundry). 2724-W waste was rerouted to 216-W-LWC (laundry crib) in 1981. After 1984, water from the other buildings continued to use this pipeline, but the waste was collected in the Powerhouse Pond that was built on top of the head end of the 216-U-14 Ditch.

Soiled protective work clothing (coveralls, gloves, hoods, canvas boots and rubber shoe covers) were sent to the laundry facility from all the Hanford work areas. Two thirds of the laundry received was radioactively contaminated. One third consisted of non contaminated blue coveralls and towels. The non-contaminated laundry was washed separately from the contaminated laundry.

The masks were radiologically decontaminated at 2706-T prior to being washed and sanitized at the 2723-W mask cleaning station. Therefore, the radiological contamination in the 2723-W floor drains and pipeline should be minimal.

By 1981, when the effluent was rerouted to 216-W-LWC, approximately three million pounds of laundry was processed per year in 600 pound capacity washing machines and 400 pound capacity dryers. The combined average of 26,250,000 liters (691,000 gallons) of waste water was being discharged from the 2723-W and 2724-W facilities in 1981. It should be noted that portions of the existing pipeline were used to reroute effluent to the 216-W-LWC (see sitecode 200-W-221-PL).

Waste Type: Process Effluent

Waste Description: Detergents and radioactive contamination from laundry worn in radiation areas are included in the laundry effluent discharge. A 1945 letter indicates the detergent used at the original laundry facility was named Igepal CA. 3% acetic acid was added to remove beta contamination and 3% citric acid was added to remove alpha contamination. Non-radioactive effluent from the 277-W fabrication shop, the powerhouse and the 283-W filter building.

Code:	200-W-147-PL-A	**Classification:**	Accepted
Names:	200-W-147-PL-A; Portion of 200-W-147-PL Pipeline in the Central Plateau Outer Area	**Reclassification**	Interim Closed Out (8/11/2011)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been evaluated under a removal action and reclassified to Interim Closed Out. Due to the restructuring of Operable Units, as described in the Agreement for Central Plateau Cleanup, the original site (200-W-147-PL) has been split into separate WIDS sites. It

was an underground 20 centimeter (8 inch) diameter vitrified clay pipe, extending from the 207-SL retention basin to the 216-S-19 pond. 200-W-147-PL-A is the portion of pipeline that extends south of the manhole, south of 200 West Area in the Outer Area, terminating at the 216-S-19 pond. Subsites were created for the portions of pipeline to the north and to the south of the remediation haul road. Both subsite sections were remediated.

Location: This portion of the pipeline was located in the 600 Area, south of 200 West Area and the 222-S facility. It extends from the manhole located in the Outer Area boundary to the 216-S-19 Pond.

Related Sites/ Structures: This portion of pipeline is associated with the 222-S laboratory waste, the 216-S-19 pond and 200-W-147-PL-B portion of the pipeline that remains in the 200 West Inner Area. It is also associated with subsites 200-W-147-PL-A:1 and 200-W-147-PL-A:2.

Process Description: The pipeline carried waste from the 222-S and 202-S facilities to the 216-S-19 Pond via the 207-SL Retention Basin. In 1984, the 216-S-19 Pond was replaced with the 216-S-26 crib. The pipeline to the crib was connected to the 216-S-19 Pond pipeline at manhole #3 (see 200-W-148-PL). The portion of the pipeline from 207-SL to Manhole #3 continued to be used to feed the 216-S-26 crib until 1995. The portion of pipeline southward from Manhole #3 to the 216-S-19 Pond was abandoned in 1984.

Closure Info: Interim (8/11/2011): The removal action at the 200-W-147-PL-A waste site was conducted from November 2010 through June 2011. The activities included the removal of overburden soil, and the pipeline itself, followed by collection of soil samples from locations within the excavation trench, as prescribed in the SAP (DOE/RL-2009-60). During RTD activities, a portion of the 200-W-147-PL-A pipeline beneath an access road to sites 216-S-19 and 216-S-26, could not be excavated without compromising the integrity of the access road. As a result, the pipeline was split into two subsites in WIDS: 200-W-147-PL-A:1 and 200-W-147-PL-A:2. Both segments were eventually properly remediated. Direct visual inspection of the site surface was performed, using available site information as a guide for visual cues such as staining, discoloration, absence of vegetation, presence of debris, and other anomalies. Radiological field screening was performed at the surface of the waste site to provide an indication of the presence of radiological COPCs.

The removal of the 200-W-147-PL-A:1 and 200-W-147-PL-A:2 subsites of the pipeline, and adjacent soils, was completed using radiological field screening and visual indicators to determine the extent of excavation. Where radiological dose rates greater than background were found, excavation continued in the area. The vertical extent of excavation ranged from 3 to 4.6 m (10 to 15 ft) below ground surface. The lateral extent of excavation at the waste site was determined utilizing visual and radiological indicators.

The waste site was backfilled in July 2011.

This Site has the Following SubSites:

Code: 200-W-147-PL-A:1
Names: 200-W-147-PL-A:1; Southern Portion of the 200-W-147-PL-A Pipeline

Code: 200-W-147-PL-A:2
Names: 200-W-147-PL-A:2; Northern Portion of 200-W-147-PL-A

Code:	200-W-147-PL-A:1	**Classification:**	Accepted
Names:	200-W-147-PL-A:1; Southern Portion of the 200-W-147-PL-A Pipeline	**Reclassification**	Interim Closed Out (8/11/2011)
Type:	Radioactive Process Sewer	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: 200-W-147-PL-A:1 is the portion of the pipeline extending from the 216-S-19 pond to a point south of the remediation haul road. 200-W-147-PL-A:1 is approximately 460 meters (1513 feet) long. In April 2011, the open excavation and soil pile created while removing segments of pipeline was removed from radiological control.

Closure Info: Interim (8/11/2011): The removal action at the 200-W-147-PL-A waste site was conducted from November 2010 through June 2011. The activities included the removal of overburden soil, and the pipeline itself, followed by collection of soil samples from locations within the excavation trench, as prescribed in the SAP (DOE/RL-2009-60). During RTD activities, a portion of the 200-W-147-PL-A pipeline beneath an access road to sites 216-S-19 and 216-S-26, could not be excavated without compromising the integrity of the access road. As a result, the pipeline was split into two subsites in WIDS: 200-W-147-PL-A:1 and 200-W-147-PL-A:2. Both segments were eventually properly remediated. Direct visual inspection of the site surface was performed, using available site information as a guide for visual cues such as staining, discoloration, absence of vegetation, presence of debris, and other anomalies. Radiological field screening was performed at the surface of the waste site to provide an indication of the presence of radiological COPCs.

The removal of the 200-W-147-PL-A:1 and 200-W-147-PL-A:2 subsites of the pipeline, and adjacent soils, was completed using radiological field screening and visual indicators to determine the extent of excavation. Where radiological dose rates greater than background were found, excavation continued in the area. The vertical extent of excavation ranged from 3 to 4.6 m (10 to 15 ft) below ground surface. The lateral extent of excavation at the waste site was determined utilizing visual and radiological indicators.

The waste site was backfilled in July 2011.

The SubSite is Part Of:

Code: 200-W-147-PL-A

Names: 200-W-147-PL-A; Portion of 200-W-147-PL Pipeline in the Central Plateau Outer Area

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Code: 200-W-147-PL-A:2 **Classification:** Accepted

Names: 200-W-147-PL-A:2; Northern Portion of 200-W-147-PL-A **Reclassification** Interim Closed Out (8/11/2011)

Type: Radioactive Process Sewer **Start Date:**

Status: Inactive **End Date:**

Description: 200-W-147-PL-A:2 is the northern portion of this pipeline subsite. It is the portion extending (south) from the manhole to a point south of the remediation haul road, but is the north end of the majority of 200-W-147-PL-A. 200-W-147-PL-A:2 is approximately 26.4 meters (87 feet) long. In July 2011, the open excavation and soil pile created while removing segments of pipeline was removed from radiological control.

Closure Info: Interim (8/11/2011): The removal action at the 200-W-147-PL-A waste site was conducted from November 2010 through June 2011. The activities included the removal of overburden soil, and the pipeline itself, followed by collection of soil samples from locations within the excavation trench, as prescribed in the SAP (DOE/RL-2009-60). During RTD activities, a portion of the 200-W-147-PL-A pipeline beneath an access road to sites 216-S-19 and 216-S-26, could not be excavated without compromising the integrity of the access road. As a result, the pipeline was split into two subsites in WIDS: 200-W-147-PL-A:1 and 200-W-147-PL-A:2. Both segments were eventually properly remediated. Direct visual inspection of the site surface was performed, using available site information as a guide for visual cues such as staining, discoloration, absence of vegetation, presence of debris, and other anomalies. Radiological field

screening was performed at the surface of the waste site to provide an indication of the presence of radiological COPCs.

The removal of the 200-W-147-PL-A:1 and 200-W-147-PL-A:2 subsites of the pipeline, and adjacent soils, was completed using radiological field screening and visual indicators to determine the extent of excavation. Where radiological dose rates greater than background were found, excavation continued in the area. The vertical extent of excavation ranged from 3 to 4.6 m (10 to 15 ft) below ground surface. The lateral extent of excavation at the waste site was determined utilizing visual and radiological indicators.

The waste site was backfilled in July 2011.

The SubSite is Part Of:

Code: 200-W-147-PL-A

Names: 200-W-147-PL-A; Portion of 200-W-147-PL Pipeline in the Central Plateau Outer Area

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Code:	200-W-148-PL	**Classification:**	Accepted
Names:	200-W-148-PL; 216-S-26 Crib Pipeline	**Reclassification**	Interim Closed Out (9/21/2011)
Type:	Radioactive Process Sewer	**Start Date:**	10/1/1984
Status:	Inactive	**End Date:**	6/1/1995

Description: The waste site has been evaluated under a removal action and reclassified to Interim Closed Out. The site had been a 15.2 centimeter (6 inch) diameter vitrified clay pipe that connected the west end of the 216-S-26 crib to pipeline 200-W-147-PL (the original 20 centimeter [8 inch] diameter vitrified clay pipe at manhole #3).

The 200-W-147-PL extended from the 207-SL Retention Basin to 216-S-19 Pond. The 216-S-26 crib was built to replace the 216-S-19 Pond.

Location: The 216-S-26 crib and associated piping was located south of the 200 West Area perimeter fence, southeast of the 222-S building.

Related Sites/ Structures: This site is associated with the 216-S-26 crib and the 200-W-147-PL pipeline.

Closure Info: Interim (9/21/2011): The removal action at the 216-S-26 and 200-W-148-PL waste sites was conducted from March 2011 through August 2011 and included the removal of overburden soil, and the pipe itself, followed by collection of samples from locations within the excavation. Implementation of the selected Remove, Treat, Dispose (RTD) alternative was performed. Soil and piping were removed from the two waste sites. Direct visual inspection of the site surface was performed as a guide for visual cues such as staining, discoloration, absence of vegetation, presence of debris, and other anomalies. Radiological field screening was performed at the excavation surface of the waste site to provide an indication of the extent of radiological contaminants. Soil was removed to a depth of approximately 4.6 meters (15 ft) below ground surface. Characterization sampling was performed at depths of 4.6, 4.9, 5.5, and 6.1 meters (15, 16, 18, and 20 ft) and the analytical results evaluated to demonstrate achievement of Removal Action Objectives. Backfill of the 216-S-26 and 200-W-148-PL waste sites was completed on August 30, 2011.

Code:	216-W-LWC	**Classification:**	Accepted
Names:	216-W-LWC; 216-W-LWC Crib; Laundry Waste Crib; 216-W-1; 216-W-LC	**Reclassification**	None

Type: Crib **Start Date:** 1/1/1981

Status: Inactive **End Date:** 1/1/1994

Description: The crib is marked and posted with Underground Radioactive Material signs. The unit consists of two independent crib structures (drain fields) and associated underground pipelines connecting to the (sitecode 200-W-64) laundry facilities. The bottom dimension of each crib is 150 feet (47 meters) by 133 feet (40.5 meters). Each crib structure includes an 8-inch (20 centimeters) PVC, central distribution pipe that runs east-west, 14 feet (4.3 m) below grade. Six 4-inch (10 cm) PVC perforated drain lines extend the length of the unit on both sides (150 ft [47 m]). The drain lines run parallel to each other, 23 feet (7.0 m) apart. Beneath each lies a 5-ft (1.5 m) deep rock-filled trench, giving the bottom a serrated appearance. A 7-foot (2.1 m) layer of gravel fill (5,546 yards [4,243 m]) was backfilled over to grade. The side slope is 1.5:1.

Location: The site is located east of Beloit Ave., south of 20th Street.

Related Sites/ Structures: The crib received effluent from the 2724-W, 2724-WA, 2724-WB Laundry facilities, MO-412 Mask Cleaning facility and the 2723-W Old Laundry. The pipeline from the laundry facility to the Laundry Waste Crib is sitecode 200-W-221-PL.

Process Description: The site is constructed of two cribs, surrounded by a single Underground Material posted area. The Laundry Waste Crib began receiving effluent in 1981 from the Laundry Complex which included the 2724-W, 2724-WA, 2724-WB, MO-406 and 2723-W (Old Laundry). In 1984 mask washing was moved from 2723-W to MO-412, which was placed adjacent to the 2724-W Laundry Complex and became the Mask Cleaning and Maintenance Facility.

Soiled protective work clothing (coveralls, gloves, hoods, canvas boots and rubber shoe covers) were sent to the laundry facility from all the Hanford work areas. Two thirds of the laundry received was radioactively contaminated. One third consisted of blue (non contaminated) coveralls and towels. The non-contaminated laundry was washed separately from the contaminated laundry. By 1981, approximately three million pounds of laundry was processed per year in 600 pound capacity washing machines and 400 pound capacity dryers. An average of 2,615,435 liters (691,000 gallons) of waste water was discharged to the new crib each month.

Waste Type: Water

Waste Description: The site received all the process wastewater (averaging 2,615,435 liters per month) from the contaminated laundry facility (2724-W/WA) and mask cleaning station (MO-412). The waste included radioactive residue from the contaminated laundry and detergents. Bleach and flame retardant chemicals were added to some of the wash and rinse cycles. From 1981 to 1983, some waste oils, from a nearby fabrication shop, entered the waste stream through manhole B. The site became inactive in January 1994 when operations were initiated at an offsite contracted laundry facility. TPA M-17-34 required elimination of all discharge to the Crib by January 1995.

Code: 2607-W1 **Classification:** Accepted

Names: 2607-W1 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1944

Status: Active **End Date:**

Description: The 2607-W1 Septic Tank is constructed of reinforced concrete and receives sanitary wastewater and sewage. There is a drain field associated with the system. This system was reconstructed in 1994.

Location: This unit lies southeast and across Bridgeport Avenue from the associated drain field, and northeast of the 2713-WB Building.

Related Sites/ Structures: The 2607-W1 Septic Tank is associated with the 2607-W1 drain field, 2707-W, 2713-W, 283-W, 277-W, 275-W, 274-W, 284-W, 2723-W, 2704-W, 2719-WB, 272-W, MO-278, MO-279, MO-235, MO-406, MO-412, MO-215, MO-056, MO-204, MO-240, and MO-287.

Process Description: The 2607-W1 Septic Tank and associated drain field are designed to accept sanitary sewer effluent from connected facilities. In 1999, PFP waste was diverted to 2607-W1 when 2607-Z1 shut down. The additional volume was more than 2607-W1 could handle. A new septic system, 2607-W16, was built in 2001 to receive the PFP waste.

Waste Type: Sanitary Sewage

Waste Description: The 2607-W1 septic system received sanitary sewer effluent at an estimated rate of 646 cubic feet (18.3 cubic meters) per day in 1987.

Code: 2607-WL
Classification: Accepted
Names: 2607-WL; 2607-WL Septic System
Reclassification None
Type: Septic Tank
Start Date: 1/1/1962
Status: Inactive
End Date: 1/1/1999

Description: The 2607-WL Septic System is constructed of reinforced concrete. The septic system includes a trench-type drainfield. The septic tank and drainfield are surrounded by a chain barricade with a sign stating "Septic Tank" posted.

Location: This unit lies north of the 272-WA Building and west of the 2401-W Building.

Related Sites/ Structures: The 2607-WL Septic Tank is associated with a drain field and the 272-WA Building.

Site 200-W-34 was a duplicate of this site, and has been classified as Not Accepted because it is a duplicate entry. Site 2607-WWA may also be a duplicate of this site.

Process Description: The 2607-WL Septic Tank was designed to accept and treat sanitary sewer effluent from the associated facility, and discharge the effluent to the 2607-WL Drain Field. This drain field in turn, discharges the effluent into the ground.

Waste Type: Sanitary Sewage

Waste Description: The current flow rates for the 2607-WL septic system indicate that the drain field is substantially overloaded. In 1995, this unit received effluent from the associated structure at an estimated rate of 2,760 gallons (10,450 liters) per day. The drain field has a capacity of 628 gallons (2,380 liters) per day.

Code: 600 OCL
Classification: Accepted
Names: 600 OCL; Original CLF; 600 Area Original Central Landfill
Reclassification None
Type: Sanitary Landfill
Start Date: 1/1/1973
Status: Inactive
End Date: 1/1/1973

Description: This site is a backfilled trench that is posted "Underground Radioactive Material".

Location: This site is located 2.4 kilometers (1.5 miles) southeast of Army Loop Road and 30.5 meters (100 feet) north of Highway 4 South.

Process Description: The site received miscellaneous trash and debris from the Hanford Site.

Waste Type: Misc. Trash and Debris

Waste Description: This site contains general office wastes, some glass, electrical wastes, and minimal metal wastes. Radioactive contamination was found at this site in 1988 during investigative (test pit) activities.

Code: 600-36 **Classification:** Accepted

Names: 600-36; Ethel Railroad Siding (Burn Pit) **Reclassification** Interim Closed Out (5/20/2011)

Type: Burn Pit **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and Interim Closed Out. The site had been an area of scattered debris and some evidence of burning, adjacent to the Ethel railroad siding. Metal and wood debris were observed during the pre-remediation visual inspection performed in August 2009. The previously documented batteries and burn pit were also observed. Visual indicators of the burn pit included a circular area approximately 9.1 meters (30 ft) in diameter. Several discrete areas of surface discoloration and devegetation were observed in the eastern portion of the waste site. Historical information suggests the discolored areas may have been caused by a release of oil into the ground surface. Tar like deposits not previously identified were also encountered towards the western portion of the waste site.

Location: The site is approximately 1 mile (1.6 kilometers) northeast of the 200 West Area. It is located northwest of the 251 Electrical Substation, north of Route 11A.

Waste Type: Demolition and Inert Waste

Waste Description: The waste at the unit appears to be from burning activities. The current form of all waste material is solid. No evidence exists (historical or present) that chemical or radiological processes involving sustained releases of materials are associated with this waste site.

Waste Type: Oil

Waste Description: There is evidence of oil spills.

Closure Info: Interim (5/20/2011): The removal action at the 600-36 waste site was conducted between September 2009 and September 2010 and included the collection of focused and random samples from locations within the waste site. Radiological field screening was performed at the surface of the waste site to provide an indication of the presence of radiological COPCs. No radiological readings were greater than the measured background and no radiological contamination was found. The selected alternative for the 600-36 waste site was Confirmatory Sampling/No Further Action (CS/NFA). The results of the initial sampling indicated COPC concentrations greater than the RALs in the six sampled areas. The removal action activities progressed to implementation of the RTD alternative for those areas. As a result of analytical results exceeding the Remedial Action Limits, excavation of soil was done in zones of potential contamination (ZPCs) 2 (battery area) and 4 (burn pit), and focused sample (FS) locations FS 1, FS 2, FS 3 (stained and devegetated areas) and FS 5 (tar deposits). Excavation of soil at FS 4, which was considered analogous to FS 1, FS 2, and FS 3 based on visual indicators.

Code: 600-37 **Classification:** Accepted

Names: 600-37; Browns Wells; Johnson's Wells **Reclassification** Interim Closed Out (3/2/2011)

Type: Injection/Reverse Well **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and Interim Closed Out following sampling of the dry wells per SAP DOE/RL-2009-60. Analytical results were less than RALs, thus no action was required. The dry wells and above ground tanks at waste site 600-37 were left in place. The dry wells were not backfilled. They are listed on the UIC Master List as UU221.

The waste site consists of four steel tanks and dry wells. The tanks had been resting on railroad ties approximately 1.2 meters (4 feet) above ground. A range fire burned through the area in June 2000. The southern-most tank was untouched by the fire and the tank supports remain intact. The wooden support structures under the other three tanks were burned and the tanks are now sitting on the ground. The dry wells are double encased with pipe used to center the inner casing within the outer casing. Three of the dry wells have a inside diameter of 38 centimeters (15 inches) and are approximately 4.9 meters (16 feet) deep. The fourth dry well has a much larger diameter, differs from the others with an outside diameter of 2.18 meters (7 ft). It contains an internal substructure in the form of a separate pipe oriented the same as the outer casing. The upper ends of the outer and inner structures terminate at the outer French drain cover. The dry wells were unaffected by the fire in June 2000. There is a dirt road that runs through the unit that appears to be surfaced with used oil.

Location: The site is located southeast of 200 West at the southern boundary of the Environmental Restoration Disposal Facility (ERDF) land easement.

Process Description: The four steel tanks appear to be of military origin. The configuration of the wells and tanks appear appropriate for an infiltration test. Raw water was assumed to have been disposed of in the wells, however sample testing should be conducted in the unit.

Waste Type: Water

Waste Description: Raw water was assumed to have been disposed of in the dry wells, however sample testing is needed to confirm this theory.

Closure Info: Interim (3/2/2011): The 600-37 waste site was reclassified as interim closed out following sampling of the dry wells per SAP DOE/RL-2009-60. Analytical results were less than Removal Action Limits, thus no action was required. The dry wells and above ground tanks at waste site 600-37 were left in place and the dry wells not backfilled.

Soil sampling was conducted between May 18 and 26, 2010. Soil samples were collected from bottom surfaces inside each of the four french drains. The french drains were approximately at 4.9 meters (16 ft) deep. The soil media was a fine soil type collected from beneath the gravel layer in each French drain. One sample was collected from French drain 1, one sample was collected from French drain 2, and one sample was collected from French drain 4. Two samples were collected from the large diameter French drain, known as French drain 3. One sample was taken from the inside the drain structure and one from the annular space between the inner and outer structure.

No radiological postings were present at the waste site. Of the radiological surveys performed during removal action activities, all radiological dose readings were at or below the measured background and no radiological contamination was found.

Code: 600-38 **Classification:** Accepted

Names: 600-38; Railroad Siding Susie; Susie Junction; 600-25 **Reclassification** Interim Closed Out (2/25/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and reclassified to Interim Closed Out. The waste site was at the "Susie" railroad junction. The northeast corner of the junction had an excavated area that may have contained a siding for decontamination of railroad cars.

In 1996, an employee interview stated that debris had been "picked up" by unknown parties, but most of the railroad maintenance equipment was left at the site.

Location: The waste site was located at the southeast quarter of the southeast quarter of the southeast quarter of Section 24, Township 13 North, Range 25 East. "Susie" junction is southwest of Gable Butte. It is north of Route 11A and east of Route 6.

Related Sites/ Structures: The waste site is at the junction of two railroad tracks, known as Susie Junction.

Waste Type: Asbestos (friable)

Waste Description: The site waste potentially included asbestos.

Waste Type: Barrels/Drums/Buckets/Cans

Waste Description: The site waste included drums.

Waste Type: Equipment

Waste Description: The site contains railroad maintenance equipment.

Waste Type: Misc. Trash and Debris

Waste Description: The site contained miscellaneous trash.

Closure Info: Interim (2/25/2011): Waste Site 600-38 was investigated between December 2009 and March 2010 through field observations and sampling to determine the nature and extent of contaminants of potential concern (COPCs) present in the waste site soils as part of the selected removal action alternative of CS/NFA prescribed in the Action Memorandum. This investigation was performed in accordance with DOE/RL-2009-60, Sampling and Analysis Plan for Selected 200-MG-1 Operable Unit Waste Sites and DOE/RL-2009-53, Removal Action Work Plan for 11 Waste Sites in the 200-MG-1 Operable Unit (RAWP). Through the investigation summarized in this report, it was found that analytical results from confirmatory sampling demonstrated that soil conditions at the waste site did not meet removal action levels (RALs). Therefore, in accordance with the methodology prescribed in the Action Memorandum, the alternative was changed to removal, treatment, and disposal (RTD). The removal action at the 600-38 waste site was conducted between March and October 2010 and included the collection of focused and/or random samples from locations within the waste site.

Direct visual inspection of the site surface was performed, using available site information as a guide for visual cues such as staining, discoloration, absence of vegetation and other anomalies. Observations made during the site walk down included areas of devegetation, areas of darkened soil, and scattered debris consisting of rusted 18.9 liter (5 gallon) containers, metal, wood pallets, and refuse. Based on these observations, 16 individual zones of potential concern (ZPCs) were established at the 600-38 waste site to facilitate an organized removal action approach. Radiological field screening was performed at the surface of the waste site to provide

an indication of the presence of radiological COPCs. No radiological postings were present at the waste site. Of the radiological surveys performed during removal action activities, all radiological readings were at or below measured background, and no radiological contamination was found.

Backfill of the 600-38 Waste Site was completed on February 9, 2011.

Code:	600-40	**Classification:**	Accepted
Names:	600-40; West of West Lake Dumping Area	**Reclassification**	Interim Closed Out (7/21/2011)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: This waste site has been remediated. The site had been an old dumping area. The debris was mostly consolidated in one of two locations, either along the road or on the hillside. The waste site included concrete rubble, wood, roofing materials, and miscellaneous metal debris and containers. The area along the road was approximately 364 square meters (3918 square feet). The portion on the hillside was 123 square meters (1324 square feet) in area. The area listed in the dimensions field represents the total area of both dumping areas. Additionally, a few pieces of scattered debris was found on the hillside. The debris at 600-40 was removed and sent to ERDF.

Location: The site was located in the 600 Area, east of route 4 North and 105 meters (345 feet) west of West Lake. The debris was located on a dirt road at the T-intersection from 4 North to West Lake. Additional debris was found on the hillside that slopes down to West Lake.

Process Description: This area is a former waste dump site.

Waste Type: Misc. Trash and Debris

Waste Description: The waste along the dirt road includes chunks and slabs of concrete, lumber, miscellaneous metal debris, rusted cans approximately 30.5 centimeters in diameter and 40.6 centimeters tall (12 inches in diameter and 16 inches tall), and what appears to be roofing (black, tarry sheets with gravel) materials. On the hillside are 2 small wooden structures approximately 1.8 meters by 1.8 meters by 1.2 meters (6 feet by 6 feet by 4 feet), a pile of wooden posts with each post approximately 20.3 centimeters in diameter and 1.8 meters long (8 inches in diameter and 6 feet long), other wood debris, what appears to be a wheelbarrow, and 2 large rusted metal cans approximately 20.3 centimeters by 20.3 centimeters by 35.6 centimeters tall (8 inches by 8 inches by 14 inches tall) and 30.5 centimeters in diameter by 35.6 centimeters tall (12 inches in diameter by 14 inches tall).

Closure Info: Interim (7/21/2011): The waste site was comprised of two discrete debris dump sites. One was located adjacent to the gravel access road, at the T of the access road intersection, known as Zone of Potential Contamination (ZPC 1). The second area was located on the hillside that slopes down toward West Lake (known as ZPCs 2, 3a, and 3b). Initial sampling and analysis indicated that soil concentrations of COPCs were greater than the RALs, thus confirming the implementation of the RTD alternative. Activities involved in the RTD action including soil excavation and verification sampling to demonstrated that the remaining in situ COPC concentrations in soil are less than or equal to the established RALs, and that no additional removal action is required. No radiological dose readings were greater than the measured background, and no radiological contamination was found. Excavation at the four ZPCs commenced in March 2010. Soil removal occurred to a total depth of approximately 0.6 meters (2 ft) and was laterally bound by the areas of wood debris and areas void of surface vegetation. Additionally, three test pits, each evaluated to a total depth of approximately 4.7 meters (15 ft)

below ground surface, were dug east of ZPC 1 to verify that the extent of the 600-40 waste site was limited to the area of excavation. Backfill of the 600-40 waste site was completed on May 26, 2011.

Code:	600-49	**Classification:**	Accepted
Names:	600-49; H-42 Gun Site Building Foundations, Ammunition Storage and Small Arms Firing Range	**Reclassification**	Interim Closed Out (8/11/2011)
Type:	Foundation	**Start Date:**	
Status:	Inactive	**End Date:**	1/1/1958

Description: The waste site has been evaluated under a removal action and Interim Closed Out. It consisted of six concrete foundations, concrete footings and miscellaneous concrete and gravel walkways. Four circular ammunition storage berms, each measuring about 25 meters (80 feet) in diameter, were located in the eastern portion of the site. The wood and part of the sandbags were consumed in the July 2000 fire. The six concrete building foundations measured:

1. kitchen/mess hall with four floor drains, 12.4 meters by 10 meters (40.5 feet by 32.5 feet)
2. toilet/showers with five floor drains, ten toilet drains, 15.4 meters by 6.3 meters (50.5 feet by 20.5 feet)
3. concrete pad, 6.6 meters by 15.4 meters (21.5 feet by 50.5 feet)
4. concrete pad, 4 meters by 6 meters (13 feet by 20 feet)
5. concrete pad, 2.4 meters by 2.4 meters (8 feet by 8 feet)
6. concrete pad, 6 meters by 7.3 meters (20 feet by 24 feet).

A small arms firing range is located southeast of the revetment.

Location: The site was located 6.4 kilometers (4 miles) south of 200 East Area, on the south side of Army Loop Road and east of the powerline road to Rattlesnake Mountain.

Related Sites/ Structures: WIDS site 6607-2, Gun Site H-42 Septic Tank, received waste from the kitchen sinks, floor drains and the toilet/shower house. Site 600-226 is the dumping area for this base.

Process Description: This is the location of a former U. S. Army anti-aircraft gun site. Typically, Camp Hanford's anti-aircraft artillery sites were each roughly 20 acres in size and contained any number of buildings (typically around 20), various utility distribution systems, roads, and sidewalks. Each site consisted of emplacements protected by revetments made of sandbags and wood planking, wooden structures, prefabricated metal buildings, and, later, permanent, concrete block structures. The prefabricated buildings had aluminum walls and roofs with wooden or concrete floors set on concrete pier blocks and were the most commonly constructed. The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Each site typically had a small arms range, water storage cistern, sanitary, and sewage disposal facilities. Pathways, sidewalks, roadways, and parking lots connected the structures.

Waste Type: Demolition and Inert Waste

Waste Description: Concrete building foundations, pads and walkways, pipe, sandbags and sheetmetal remain.

Closure Info: Interim (8/11/2011): The removal action at the 600-49 waste site was conducted between May and June 2011. Activities included direct visual inspection of the site surface using available site information as a guide for visual cues such as staining, discoloration, absence of vegetation and other anomalies; the collection of random verification samples from locations within the shooting range backstop of the waste site and excavation of soil under the RTD alternative from

shooting range backstop to eliminate a source of contamination from lead slugs remaining in the soil. Observations made during previous site evaluations indicated the presence of six concrete foundations and footings, walkways, four artillery emplacements marked by revetments, and some sheet metal and pipe. Radiological field screening performed at the surface of the waste site to provide an indication of the presence of radiological COPCs. No chemical or radiological processes involving sustained releases of material are associated with this site. No radiological contamination was found. The available 600-49 waste site historical information and process knowledge was sufficient to proceed directly to implementation of the RTD alternative without requiring additional field observations or sampling to determine the nature and extent of contaminants of potential concern (COPCs) present in the waste site soil. The shooting range backstop consisted of soil mounded elevated greater than the general surface grade of the area. The mound was removed. No depression was created in the ground surface RTD activities, so backfilling was not required.

Code: 600-51 **Classification:** Accepted

Names: 600-51; Chemical Dump; Pile of White Powder **Reclassification** Interim Closed Out (2/9/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and Interim Closed Out. The site is an elliptical area with little or no vegetation.

Location: This site is located west of Route 4 North, between Route 1 and Route 11A. It is between the 1901-Z Building and well 699-64-62, just west of the export water line.

Waste Type: Chemicals

Waste Description: A sample of this material was analyzed with the HAZCAT field analysis kit. The bulk of this material appears to be a sodium compound.

Closure Info: Interim (2/9/2011): The waste site was first identified in 1994. Shortly after being discovered, a HAZCAT field sampling kit was used to determine to powder was a sodium substance. A site visit in October 1999 found the pile of material was no longer present. The 600-51 waste site was investigated again in October 2009 through field observations. The original alternative for 600-51 was anticipated to be Remove, Treat and Dispose (RTD). Historical photographs of the pile of white powder (when it was present on the site) defined conservative northern and southern boundaries of the piles footprint. The silty, sandy, and rocky soil matrix showed no signs of discoloration. Confirmatory sampling was done to determine the nature and extent of contaminants of potential concern (COPCs) present in the waste site soils. It was determined that site conditions met removal action levels (RALs) and removal action objectives (RAOs) without further removal action. In accordance with the methodology prescribed in the Action Memorandum, the alternative was changed from RTD to confirmatory sampling/no further action (CS/NFA).

Code: 600-65 **Classification:** Accepted

Names: 600-65; 607 Batch Plant Drum Site **Reclassification** Interim Closed Out (4/12/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: This waste site has been reclassified to Interim Closed Out. In 1995, two crushed and flattened 55-gal drums, one oil filter housing (approximately 2 quarts [1.9 liters]), a metal cable, one

large concrete block (0.5 cubic yards [0.4 cubic meters]), and indications of possible petroleum disposal were identified. In 2001, the items noted above could not be located, and the area is possibly being used for fill material. Further investigations were conducted between June 2010 and February 2011 through field observations and sampling to determine the nature and extent of contaminants of potential concern.

Location: The debris was located approximately 0.5 miles east of the 200 Area Fire Station. It is west of 200 East Area on the north side of Route 3, near Gravel Pit 30.

Related Sites/ Structures: 607 Batch Plant Gravel Pit

Waste Type: Oil

Waste Description: Two crushed and flattened 55-gal drums, one oil filter housing, one large concrete block, and indications of possible petroleum disposal. In October 2001 these items could not be located at the site.

Closure Info: Interim (4/12/2011): The removal action at the 600-65 waste site was conducted between June 2010 and February 2011. It included the collection of focused and random samples from locations both within the boundaries of the waste site and in surrounding areas. The original selected alternative for the subject waste site was Remove Treat and Dispose (RTD). This alternative was selected because, based on the types of debris present, concentrations of contaminants of potential concern (COPCs) had the potential to exceed the Removal Action Levels (RAL). Investigative sampling and analysis demonstrated that soil concentrations of contaminants were less than or equal to the Remedial Action Levels without the need for further action. As a result, in accordance with the Action Memorandum, the alternative was changed to Confirmatory Sampling/ No Further Action (CS/NFA). Field activities included ground penetrating radar (GPR) scanning, radiological surveys and soil sampling. The GPR scan and metal detector survey performed at the last known location of the drums and oil filter identified one anomaly within the WIDS boundary of the 600-65 waste site approximately 1 meter (3 ft) below ground surface and a second anomaly within a mound of overburden. No radiological readings were greater than the measured background, and no radiological contamination were found. Analytical results from the investigative sampling evolution at the 600-65 waste site showed that concentrations of COPCs were less than or equal to RALs, thereby demonstrating compliance with the established RAOs. Sample results determined excavation was not required at the 600-65 waste site. These results also support reclassification to Interim Closed Out status.

Code: 600-66 **Classification:** Accepted

Names: 600-66; 607 Batch Plant Orphan Drums **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of one rusted 55-gallon (208 L) drum laying on the ground surface on its side. No label or hazardous substance are evident.

Location: The drum is located north of Route 3, approximately 400 meters (1300 feet) east of the 607 Batch Plant.

Related Sites/ Structures: The abandoned drum may be associated with the Batch Plant.

Waste Type: Barrels/Drums/Buckets/Cans

Waste Description: The waste consists of two rusted drums, contents unknown.

Code:	600-71	**Classification:**	Accepted
Names:	600-71; 607 Batch Plant Burn Pit	**Reclassification**	None
Type:	Burn Pit	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site consists of an area of charred ground, a piece of rusted sheet metal and small pieces of debris. In June 2004, the expansion of Gravel Pit 30 pushed soil over the northern portion of the 600-71 Burn Pit.

Location: The site is located west of route 4, north of route 3. Precisely, on the batch plant entrance road turn east on the first dirt road; follow road for about 350 meters (1150 ft); walk north about 70 feet (23 meters) to the site.

Related Sites/ Structures: The 607 Batch Plant is adjacent to the Burn Pit.

Process Description: Although the Burn Pit is located adjacent to the Batch Plant, it does not seem to be associated with the Batch Plant operation.

Waste Type: Misc. Trash and Debris

Waste Description: Metal, wood, glass, and rubber debris. Charred remains of burned material. This material was still present during the 2002 site visit.

Code:	600-218	**Classification:**	Accepted
Names:	600-218; H-61-H Anti-Aircraft Artillery Site Dumping Area	**Reclassification**	Interim Closed Out (7/21/2011)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been evaluated under a removal action and Interim Closed Out. It consisted of demolition debris consisting of wood, pipe, barbed wire, metal fence posts, empty oil cans, empty paint cans, food cans, and sheet metal. The dumping area was irregularly shaped and was comprised of two distinct areas The larger area measured 20 meters by 74 meters (67 feet by 243 feet). The smaller area was approximately 48 meters (157 ft) northeast of the larger portion, and was rectangular in shape, measuring approximately 1.5 meters (5 ft) by 1.8 meters (6 ft).

Location: This site was located just southwest of the intersection of Route 11 and Route 6. It is 0.4 miles south of Route 11 and just west of Army Loop Road. The site is in the east half of the northeast quarter of Section 34, Township 13 north, Range 25 east. The dumping area is located in the SW portion of the site.

Related Sites/ Structures: This dumping area is related to the Anti-Aircraft site 600-216.

Waste Type: Demolition and Inert Waste

Waste Description: Wood waste from former buildings, concrete footings, pipe, sheet metal, barbed wire, steel fence posts.

Waste Type: Barrels/Drums/Buckets/Cans

Waste Description: Empty oil cans, paint cans with dried paint.

Closure Info: Interim (7/21/2011): The dumping area was irregularly shaped and was comprised of two distinct areas The larger area measured 20 meters by 74 meters (67 feet by 243 feet). The smaller area was approximately 48 meters (157 ft) northeast of the larger portion, and was rectangular in shape, measuring approximately 1.5 meters (5 ft) by 1.8 meters (6 ft). It consisted of demolition debris consisting of wood, pipe, barbed wire, metal fence posts, empty oil cans, empty paint cans, food cans, and sheet metal. The analytical results from initial sampling demonstrated that soil conditions at the waste site did not comply with established removal action levels (RALs). Therefore, the alternative was changed to removal, treatment, and disposal (RTD). The removal action at the 600-218 waste site was conducted between August 2009 and May 2011, and included the collection of statistically based random and focused samples from locations within the boundaries of the waste site. Nineteen random locations were selected. Locations R4, R9, R11 and R17 were sampled at depths of 4 feet and 8 feet. Soil excavation was required at location R3 and R14. Samples were collected from the excavated areas for remedial verification.

Radiological surveys performed for the 600-218 waste site resulted in no radiological dose readings greater than the measured background, and no radiological contamination was found.

Since RTD activities were limited in depth to less than 0.6 meters (2 ft) (i.e., surface debris removal at the waste site), backfill was not required at the 600-218 waste site.

Code: 600-220 **Classification:** Accepted

Names: 600-220; H-51 Anti-Aircraft Artillery Site Dumping Area **Reclassification** Interim Closed Out (8/11/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:** 1/1/1958

Description: The waste site has been evaluated under a removal action and Interim Closed Out. It consisted of three dumping areas. One area was surrounded with T-posts. Observations made during the 2010 site evaluation included an area covered with a white, granular material, an area containing burned material and other debris, a small area containing what appeared to be a tar-like substance, an area of visible debris such as partially buried containers, and a mound containing a wide variety of debris such as heavily corroded metal cans and containers, glass, and batteries. In addition, two mounds were observed that might have been used as a firing range containment berm. The debris at 600-220 was determined to be culturally significant and was not removed.

Location: The site was on Army Loop Road, approximately 2 miles southwest of 200 West Area and extends to the southwest near SR 240. This site is located in the southeast quarter of Section 15, Township 12 North, Range 25 East.

Related Sites/ Structures: This site is associated with 600-53, the site building foundations, and 6607-3, the site's septic system.

Process Description: The dumps are located in three general areas. The July 2000 fire burned off all flammable material, such as wood, that had remained at the site. The dump area with the T-posts around it contains metal, transite, fluorescent light bulbs, metal ducting, fiberglass insulation, an unknown white granular substance, pipe, and wire. The second area is mostly wood, little remains now. The third area is a relatively large area consisting of empty cans and empty food, oil, paint and bleach bottles. Several wooden ammunition boxes and cardboard canisters were observed before 2000, but are now gone. The area appears to have been scraped with a

bulldozer. Several waste materials are partially buried. The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Each site typically had a small arms range, water storage cistern, sanitary, and sewage disposal facilities. Pathways, sidewalks, roadways, and parking lots connected the structures.

Waste Type: Misc. Trash and Debris

Waste Description: Wood, metal, transite, fiberglass, piping, glass, fluorescent light tubes, a white granular substance, empty cans, buckets, and bottles, fence posts, barbed wire, and concrete.

Waste Type: Asbestos (non-friable)

Waste Description: Transite siding

Closure Info: Interim (8/11/2011): The analytical results from confirmatory sampling demonstrated that soil conditions at the waste site did not meet removal action levels (RALs). Therefore, the alternative was changed to removal, treatment, and disposal (RTD). Radiological surveys performed during sampling activities indicated no radiological readings greater than the measured background, and no radiological contamination was found.

Seven Zones of Potential Concern (ZPC) and three biased locations were established during site evaluation. Focused samples were collected from ZPCs 1 through 4 and biased samples at BS 1 through 3 based on historical and process knowledge and visual indicators from the surface, which is generally defined as 0 to 0.3 m (0 to 1 ft) below ground surface. Random samples were collected from ZPC 5 through 7 (using Visual Sample Plan (VSP) software as direct visual indicators were absent for these ZPCs). Analytical results from the initial sampling evolution indicated contaminants of potential concern (COPC) concentrations exceeded Removal Action Levels in three areas; ZPC 1 (white granular material), ZPC 2 and BS 1 (debris areas) and BS 2 (battery area) thus initiating RTD in those areas. The areas comprising ZPC 1, ZPC 2, and BS 1 were excavated to a vertical depth of approximately 0.9 to 1.2 meters (3 to 4 ft) below ground surface. In addition to the removal of the impacted soil from ZPC 1, ZPC 2, and BS 1, miscellaneous scattered debris, along with approximately 0.9 to 1.2 meters (3 to 4 ft) of underlying soil, was removed, thus enlarging the area of excavation beyond the three areas of impact identified during initial and in process sampling.

Code: 600-222 **Classification:** Accepted

Names: 600-222; H-60 Gun Site **Reclassification** Interim Closed Out (2/25/2011)

Type: Military Compound **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and Interim Closed Out. There was very little evidence of the former military gun site. A few trees, walkways, roads and an old "Underground Telephone - Contact Signal Officer before excavating" warning sign is present (a second "underground telephone" sign burned in the July 2000 fire). After the July 2000 fire, other material left at the site has become visible, including pieces of ceramic pipe, a dumpsite with two oil filters, coat hangers, and a few small pieces of transite siding. South of the access road are several small piles of decayed batteries or fuses.

Location: The H-60 Gun site was located approximately 1.2 miles west of 200 West Area and is just east of SR240.

Process Description: Several artillery were installed around the 100 and 200 Areas to protect the chemical separation plants and reactors from attack by air. Typically, the artillery sites consisted of residential and office buildings, with gun emplacements situated within semi-circular revetments made of

sandbags and wood planking, which were located separately from the residential and administrative facilities. Buildings at these sites were often prefabricated lumber, metal, and concrete block structures for residential and office use. The use of these gun sites ended in the mid to late 1950s, at which time the structures were removed or demolished.

Waste Type: Batteries

Waste Description: South of the main area and access road are several small piles of decayed batteries or fuses. In another pile are two oil filters, one whole and the other in parts.

Closure Info: Interim (2/25/2011): As a result of the field investigation, it was found that analytical results from confirmatory sampling demonstrated that soil conditions at the waste site did not meet removal action levels (RALs). Therefore the remedy was changed to removal, treatment, and disposal (RTD). The removal action at the 600-222 Waste Site was conducted between April and December 2010, and included the collection of focused samples. The key activities pertinent to the removal action included collecting soil samples based on visual indicators, excavating soil in the zone of potential contamination (ZPC) 3, and areas identified by focused sample locations FS 1, FS 2, FS 2b, and FS 4 as a result of analytical results exceeding the RALs and removing debris and underlying soil at FS 3, as a result of visual indicators. Random and focused samples were collected from the excavated areas for verification purposes, laboratory analysis for COPCs, and evaluation of analytical results to demonstrate compliance with the RALs.

The key activities pertinent to the removal action at the 600-222 Waste Site included the collection of judgmental soil samples based on visual indicators, excavation of soil, under the Remove, Treat, Dispose (RTD) alternative, in the zone of potential contamination (ZPC) 3, and areas identified by focused sample locations FS 1, FS 2, FS 2b, and FS 4 as a result of analytical results exceeding the RALs and the removal of debris and underlying soil at FS 3 as a result of visual indicators. Observations made during a site walkdown in 1997 found little evidence remained of the former artillery site. Features observed included roadways, a few trees, and a sign marking an underground telephone line. Miscellaneous debris included various metal items, small batteries or fuses, ceramic piping, oil filters, and transite siding. Batteries, oil filters, and miscellaneous debris were physically located outside the previously established waste site boundary. However, since these items are included in the site historical site description, the observed debris was considered part of the 600-222 Waste Site, and was included within the scope of this removal action.

Excavation at the 600-222 Waste Site commenced on October 14, 2010. The extent of excavation at the areas impacted was initially determined from the sampling data, using visual indicators to guide excavation depth during RTD. The initial depth of excavation in the impacted areas was determined to be approximately 0.6 meters (2 ft) bgs. In process sampling and chemical field screening were conducted during RTD activities in the areas of excavation at the 600-222 Waste Site. Analytical results of the in-process sampling indicated concentrations of lead (FS 2 only) and total petroleum hydrocarbon (TPH) diesel (FS 1 only) were still present at concentrations greater than the RALs. As a result, in conjunction with the chemical field screening, the excavation depth was further refined to approximately 1.5 meters (5 ft) bgs at FS 1 and FS 2b, and 0.9 meters (3 ft) at FS 2. Although analytical results indicated COPC concentrations were less than the RALs at FS 3, debris in that area was removed during RTD activities, along with underlying soil to a depth of approximately 0.6 meters (2 ft). Backfill activities were completed on February 9, 2011. In accordance with the ecological compliance review conducted for the 600-222 Waste Site, this area does not meet the requirements of a Level III or Level IV designation as described in DOE/RL-96-32, Hanford Site Biological Resources Management Plan; therefore, revegetation at the 600-222 Waste Site is not required.

Code: 600-226 **Classification:** Accepted

Names: 600-226; Gun Site H-42 Dumping Area
Type: Dumping Area
Status: Inactive
Reclassification Interim Closed Out (5/20/2011)
Start Date:
End Date: 1/1/1958

Description: The waste site has been evaluated under a removal action and Interim Closed Out. The site was an old dumping area for an anti-aircraft site. The surface of the site has scattered and decaying debris including pipe, glass, empty buckets, slightly rusted (not corroded) 55-gallon drum, dried paint, cans, transite, broken concrete, and dry cell batteries. Wood had formerly been present, but was burned in the June 2000 fire (see sitecode 600-281). The range fire in June 2000 exposed several additional areas of debris. This debris included material suspected to be asbestos, glass, metal pipes, gauges, military issue dishes, and other sundry items. Even though the additional exposed debris was presumed to be associated with the H-42 Gun Site (based on the type of debris) and was in close proximity to the 600-226 waste site, these areas were incorporated into the 600-281 waste site.

Location: The site is located 4 miles south of 200 East Area, on the south side of Army Loop Road and on both the east and west sides of the powerline road to Rattlesnake Mountain.

Related Sites/ Structures: This is a dumping area for 600-49, the H-42 Gun Site Building Foundation and Ammunition Storage location. The septic system is site 6607-2. More debris is documented in sitecode 600-281.

Process Description: Typically, Camp Hanford's anti-aircraft artillery sites were each roughly 20 acres in size and contained any number of buildings (typically around 20), various utility distribution systems, roads, and sidewalks. Each site consisted of emplacements protected by revetments made of sandbags and wood planking, wooden structures, prefabricated metal buildings, and, later, permanent, concrete block structures. The prefabricated buildings had aluminum walls and roofs with wooden or concrete floors set on concrete pier blocks and were the most commonly constructed.

The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Each site typically had a small arms range, water storage cistern, sanitary, and sewage disposal facilities. Pathways, sidewalks, roadways, and parking lots connected the structures.

Closure Info: Interim (5/20/2011): The Remove, Treat, Dispose (RTD) alternative was selected for 600-226 as the preferred alternative as documented in the Action Memorandum. The RTD action included excavation of contaminated soil and other materials. Direct visual inspection of the surface of the 600-226 waste site was conducted, using available information as a guide for visual cues such as staining, discoloration, absence of vegetation, and other anomalies. The visual inspection incorporated observational indicators and historical information to identify areas of concern, which included several rusted metal containers of various capacities (18.9 liters [5 gallon], 3.78 liters [1 gallon], and 0.94 liters [0.25 gallon]) scattered over an area approximately 3.71 square meters (40 square feet) in size. Radiological field screening was conducted at the surface of the waste site to provide an indication of the presence of radiological contaminants. Surface geophysical surveying (using ground penetrating radar) was conducted to identify subsurface features. Chemical field screening performed during RTD activities was used to verify the extent of contamination or, in conjunction with visual indicators, to identify areas of potential contamination that would require RTD. During RTD activities, a section of metal bar stock was observed projecting above the ground surface near the 600-226 waste site. As a result of operational safety concerns, the metal bar stock was removed, which led to the discovery of additional assorted metal debris. The unearthed metal was collected for disposal. Revegetation at the 600-226 waste site is not required, however, the 600-226 waste site has been reseeded.

The removal action at 600-226 was conducted between January and December 2010. Key activities were pertinent to the removal action at 600-226 included collecting investigative soil samples based on visual indicators, excavating impacted soil that, due to analytical results, exceeded the RALs, collecting bias samples from the area adjacent to the excavation to demonstrate that the extent of contamination has been mitigated by the excavation and is bounded by the verification samples and collecting random samples from excavated areas for verification purposes. Backfill and contouring was completed on March 3, 2011.

Code:	600-227	**Classification:**	Accepted
Names:	600-227; H-40 Gun Site Building Foundations	**Reclassification**	None
Type:	Foundation	**Start Date:**	
Status:	Inactive	**End Date:**	1/1/1958

Description: The site has eight building foundations, four ammunition storage structures and a valve pit remaining.

The foundations are: #1. Kitchen/mess hall foundation with four floor drains: 12.4 meters by 9.8 meters (40.5 feet by 32 feet) #2. Shower/toilet foundation with five floor drains and ten toilet drains: 6 meters by 16.5 meters (20 feet by 54 feet) #3. Concrete pad: 4 meters by 3.2 meters (13.5 feet by 10.5 feet) #4. Concrete pad: 15 meters by 7.3 meters (49.5 feet by 24 feet) #5. Concrete pad: 3.7 meters by 5.5 meters (12 feet by 18 feet) #6. Concrete pad: 1.8 meters by 2.4 meters (6 feet by 8 feet) #7. Concrete pad: 5.5 meters by 6.7 meters (18 feet by 22 feet) #8. Concrete pad: 3.7 meters by 6.4 meters (12 feet by 21 feet). The valve pit is a vertical steel culvert, 1.2 meters (4 feet) in diameter by 1.5 meters (5 feet) deep. The water main to the site is visible in the bottom of the pit, with a valve and pipes branching off toward to individual buildings.

The four ammunition storage structures on top of the hill are constructed of rock, soil, sandbags, wood, metal and tar paper. The ammunition storage bunkers are approximately 23 meters (75 feet) in diameter. On the south side of the site is a concrete-transite pipe 35 centimeters (14 inches) high, and 10 centimeters (5 inches) in outside diameter. At the base of the pipe are pebbles averaging 4 centimeters (1.5 inches) in diameter. Neither the pipe nor the pebbles are stained. An area surrounding the pebbles is evidence of boards that have burned away, about 1.8 meters (72 inches) by 2 meters.

Location: This site is located southeast of the 200 East Area, on the south side of Route 4 South. Trees viewed from Route 4 South aid in locating the site.

Related Sites/ Structures: The septic system for this area is 6607-1 and 600-228 is the associated dumping areas.

Process Description: Typically, Camp Hanford's anti-aircraft artillery sites were each roughly 20 acres in size and contained any number of buildings (typically around 20), various utility distribution systems, roads, and sidewalks. Each gun site consisted of emplacements protected by revetments made of sandbags and wood planking, wooden structures, prefabricated metal buildings, and later, permanent, concrete block structures. The prefabricated buildings had aluminum walls and roofs with wooden or concrete floors set on concrete pier blocks and were the most commonly constructed. The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Each site typically had a small arms range, water storage cistern, sanitary, and sewage disposal facilities. Pathways, sidewalks, roadways, and parking lots connected the structures.

Waste Type: Demolition and Inert Waste

Waste Description: Concrete foundations, pipe, wood and sandbags remain at the site.

Code:	600-228	**Classification:**	Accepted
Names:	600-228; H-40 Gun Site Dumping Area	**Reclassification**	Interim Closed Out (9/21/2011)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	1/1/1958

Description: The waste site has been evaluated under a removal action and Interim Closed Out. The site included four dumping areas, located in pits in the southern portion of the H-40 area. The pit located west of the main site measured about 12 meters (40 feet) in diameter and contains sheetrock, metal, transite, glass and empty paint cans. Two small pits, located south of the main site, were each about 4 meters (15 feet) in diameter. One pit was empty and the other contains steel fence posts and barbed wire. The largest pit was to the south-southeast, and on the topographic slope facing to the south. It contained a large quantity of metal objects, as well as some transite and glass. The July 2000 fire burned much of the wood debris in this pit and the western pit.

Location: This site is located southeast of the 200 East Area, on the south side of Route 4 South. Trees viewed from Route 4 South aid in locating the site. The dumping areas are located to the southeast and west of the H-40 Gun Site.

Related Sites/ Structures: This site is related to 600-227 (the building foundations), and 6607-1 (the septic tank).

Process Description: These pits received debris from several years of military operation of the anti-aircraft site. Typically, Camp Hanford's anti-aircraft artillery sites were each roughly 20 acres in size and contained any number of buildings (typically around 20), various utility distribution systems, roads, and sidewalks. Each site consisted of emplacements protected by revetments made of sandbags and wood planking, wooden structures, prefabricated metal buildings, and, later, permanent, concrete block structures. The prefabricated buildings had aluminum walls and roofs with wooden or concrete floors set on concrete pier blocks and were the most commonly constructed. The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Each site typically had a small arms range, water storage cistern, sanitary, and sewage disposal facilities. Pathways, sidewalks, roadways, and parking lots connected the structures.

Closure Info: Interim (9/21/2011): The analytical results from confirmatory sampling demonstrated that soil conditions at the waste site did not meet removal action levels Removal Action Levels (RALs). Therefore, the alternative was changed to removal, treatment, and disposal (RTD). The removal action at the 600-228 waste site was conducted from February 2010 through July 2011 and included the collection of focused and random samples from locations within the waste site.

Direct visual inspection of the site surface was performed for visual cues such as staining, discoloration, absence of vegetation, presence of debris and other anomalies. Due to the presence of empty paint cans and material that appears to be dried paint, the site is listed as having had a potential for liquid release. Radiological surveys were performed. No radiological dose readings above background nor radiological contamination was found.

Each of the four pits were considered zones of potential contamination (ZPCs). Random, focused soil samples were collected during the initial sampling, based on historical and process knowledge of the waste site as a dumping area, and visual indicators from ZPC 1, ZPC 2, ZPC 3 and ZPC 4. Analytical results of samples collected from ZPC 2 and ZPC 3 did not indicate any contaminant concentrations greater than RALs. Areas of scattered debris observed at ZPCs

2 and 3 were removed during the RTD activities at the 600-228 waste site. Initial samples collected from ZPC 1 and ZPC 4 indicated concentrations of antimony and lead were greater than the RALs, thus indicating RTD for those areas. The area comprising ZPC 1 was excavated to depths ranging from approximately 0.91 meters (3 ft) below original ground surface in the southeast corner to approximately 2.4 meters (8 ft) in the northwest corner. The area comprising ZPC 4 was excavated to a depth of approximately 0.61 meters (2 ft) below original ground surface.

Code:	600-262	**Classification:**	Accepted
Names:	600-262; Lysimeter Test Site; West Lake Test Crib	**Reclassification**	Interim Closed Out (3/2/2011)
Type:	Crib	**Start Date:**	1/1/1959
Status:	Inactive	**End Date:**	1/1/1962

Description: The waste site has been evaluated under a removal action and Interim Closed Out. It was investigated and sampled in 2010. Sample results were below regulatory concerns, so no excavation was required. The radiological posting was removed in April 2010. The site includes a test crib and twenty one monitoring wells, that were grouted in 2007. The entire test site area is surrounded by metal fence posts. In 1999, no warning signs or postings are visible at the site. The ground surface is gently rolling. Northeast of the test crib is a depressed area approximately the same size as the crib. The soil is sandy and no discoloration is apparent. Vegetation at the site is composed primarily of grasses but includes a few small shrubs.

Location: The site is located east of Route 4 North, southwest of West Lake.

Process Description: A model test crib was built in 1959 for a field experiment for predicting crib capacity and crib waste retention. The field experiment was designed to check the validity of laboratory results and allow the scientists to observe the behavior of solutions put into the ground in a field setting. The location near West Lake was chosen because the depth to groundwater was only 3.7 meters (12 feet).

In May 1959, 34,200 liters (9,000 gallons) of calcium nitrate solution spiked with strontium-85 was placed into the 0.36 square meter (4 square foot) crib. According to HW-61476, seven 5 centimeter (2 inch) diameter wells were placed around the crib to monitor the infiltration of the solution through the soil. HW-61476 refers to them as wells "A" through "G." All the wells were drilled vertically except for well "F", located 1.2 meters (4 feet) east of the crib. Well "F" was drilled at an angle that intersected the water table below the center of the crib.

For the first week of the experiment, samples were collected from the wells every four hours. Nitrate was detected after 4256 liters (1120 gallons) of solution had been added to the crib. Well "F" detected strontium-85 after 16,900 liters (4450 gallons) of solution had been added to the crib. Well "E", located (4 feet) northeast of the crib, detected strontium-85 after 21,660 liters (5700 gallons) of solution had been added to the crib. The total infiltration of strontium-85 had not reached completion by the time the experiment was terminated.

HW-71573, written in 1962, describes the test crib being used again for a similar experiment. Fifteen additional monitoring wells were placed in the area. The infiltrate solution was also calcium nitrate spiked with Strontium-85.

Waste Type: Water

Waste Description: A concentrated solution of calcium nitrate and strontium-85 was prepared in the laboratory. 900 milliliters of the concentrated solution was added to a 55 gallon drum containing sanitary water. The resulting solution contained 600 parts per million of calcium and 0.00013

microcuries per milliliter. During the month of May, 1959, 34,200 liters (9000 gallons) of this solution was discharged to the ground through the wooden crib box. In 1961, another test was done at this site. A total of 61,560 liters (16,200 gallons) of water spiked with calcium nitrate and strontium-85 was injected into the crib.

Closure Info: Interim (3/21/2011): The 600-262 Waste Site achieved the established Removal Action Objectives without implementation of the Remove, Treat, Dispose alternative. No excavation was done and no backfill and/or contouring activities were required at this waste site.

Sampling activities at the 600-262 waste site was conducted on February 2, 2010, and included the collection of focused samples from locations within the boundaries of the waste site. A total of six soil samples were collected from two locations. The upper layer of soil (surface depth of approximately 0.5 m [1.6 ft.]) found inside the test crib structure during site evaluation consisted of blown in sand. It was not involved in the experimentation, and was not targeted for sampling. Based on 1959 site historical documentation, an increase of radioactivity was found to be present at about 1 meter (3.3 ft.) below the bottom of the test crib. Therefore, the sampling depth at Sample Location 1 was set at 1.5 meters (5 ft.) below ground surface to target that area. Three samples were collected from Sample Location 1, at 0.5 m (1.6 ft.) below the original soil surface (the bottom of the crib), 1.5 m (5 ft.) below ground surface and at 2.4 m (8 ft.) below ground surface. Sample Location 2 was downgradient, approximately 2.9 meters (9.5 ft) from the test crib box in a northeast direction between capped Wells G and 8. Three samples were taken at this location at 0.3 meters (1 ft), 1.5 meters (5 ft.), and 2.4 meters (8 ft.) below ground surface.

Code:	600-275	**Classification:**	Accepted
Names:	600-275; Army Ammo Site; Igloo Site; Regulated Storage Area; 218-W-14	**Reclassification**	Interim Closed Out (5/20/2011)
Type:	Foundation	**Start Date:**	1/1/1964
Status:	Inactive	**End Date:**	

Description: The waste site has been evaluated under a removal action and Interim Closed Out. The original bunkers and guard house had been previously removed. The site was well defined by a perimeter fence. The access roads are visible bladed areas where the seven bunkers had been located. Rectangular mounds of soil, each approximately one meter (3 feet) high, where the igloo structures had been located, were removed.

Location: The site was located approximately one mile west of the 200 West Area, south of Route 11A.

Process Description: The seven army igloos were originally used for ammunition storage and Nike missile parts. Drilling equipment for the Basalt Waste Isolation Project was also stored in the igloos. Later, radioactive material (plutonium scrap waste) was stored in the igloos.

Drawing H-6-354 is the design plan for the storage units. It is dated 12/14/64. This is believed to be the approximate construction date.

Closure Info: Interim (5/20/2011): A successful completion of the removal action was conducted at the 600-275 waste site, also known as the former Igloo Army Ammo Storage Site. The alternative proposed in DOE/RL-2008-44, Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites (EE/CA) and selected in DOE/RL-2009-48, Action Memorandum for Non-Time Critical Removal Action for 11 Waste Sites in 200-MG-1 Operable Unit (Action Memorandum) was removal, treatment, and disposal (RTD). The 600-275 waste site was investigated in December 2009 through field observations and sampling to determine the nature and extent of contaminants of potential concern (COPCs) present in the waste site soils as part of the selected removal action alternative. In September 2010, the igloo foundations were

removed from the 600-275 waste site; visual inspections of the foundations and underlying soil were conducted, and soil samples were collected between September 2010 and February 2011. Analytical results from initial sampling demonstrated that soil conditions at the waste site did not comply with established removal action levels (RALs).

The removal action at the 600-275 waste site was conducted between December 2009 and February 2011. Activities included the collection of judgmental and random samples from locations within the boundaries of the waste site, removal of seven concrete igloo foundations, and approximately 0.3 meters (1 feet) of underlying soil. Collection of judgmental and random samples was based on historical and process knowledge, and visual indicators. Excavation of soil under the RTD alternative was done in zones of potential contamination (ZPCs) 1 and 2, identified as igloos T-101 and T-104, respectively. Random samples were collected from the excavated areas at ZPC 1 (T-101) and ZPC-2 (T-104) for verification purposes, laboratory analysis for COPCs, and evaluation of analytical results to demonstrate achievement of RALs.

In August 2010, the cover soil was removed from the igloo foundations. Visual inspections and radiological surveys were performed on all seven foundations, which were observed to be intact with only superficial hairline cracks, no visual indicators (i.e., staining or discoloration) were observed, and radiological screening did not indicate evidence of contamination or dose rates greater than background. Concrete patches were observed at the T-104 igloo, indicating that the foundation may have been altered after its original construction, suggesting a potential event may have occurred. All seven foundations were subsequently removed along with approximately 0.15 meters (0.5 feet) of underlying gravel. No soil discoloration was observed beneath the seven igloo foundations.

Excavation of impacted soils at ZPC 1 commenced in January 2011.

Code:	600-281	**Classification:**	Accepted
Names:	600-281; Scattered Debris South of Army Loop Road	**Reclassification**	Interim Closed Out (9/21/2011)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site has been evaluated under a removal action and Interim Closed Out. After the range fire in June 2000, additional areas of debris were visible. Five areas of concentrated debris were identified. The debris includes material suspected to be asbestos, charred wood, glass, metal pipes, gauges and green metal containers, 55 gallon drums and batteries.

Location: The waste site has been remediated. The areas of debris are located south of Army Loop Road, approximately 150 meters east of the H-42 Gun Site.

Related Sites/ Structures: The debris is associated with sitecode 600-49 and 600-226.

Waste Type: Demolition and Inert Waste

Waste Description: Five areas of concentrated debris were identified. The debris includes material suspected to be asbestos, charred wood, glass, metal pipes, gauges and green metal containers. Three compressed gas cylinders were found adjacent to well 699-16-51.

Closure Info: Interim (9/21/2011): Direct visual inspection of the site surface was performed for visual cues such as staining, discoloration, absence of vegetation, presence of debris and other anomalies. Radiological surveys were performed during sampling activities. No radiological readings greater than background, and no radiological contamination was found. The site was confirmed

to be a nonradiological site. Ten Zones of Potential Contamination (ZPC) were identified. Initial random samples were collected from each zone. The results of the initial, confirmatory sampling indicated contaminant concentrations greater than the Removal Action Levels (RAL) in five of the sampled areas (ZPC 1, ZPC 2, ZPC 5, ZPC 6 and ZPC 8), thus the Remove, Treat, Dispose (RTD) option was initiated in these areas. The removal action at the 600-281 waste site was conducted from March 2010 through July 2011 and included the collection of focused and random samples from locations within the waste site. The excavation depths ranged from 2 to 7 feet below ground surface. Two areas of transite debris were identified during site evaluation and were removed during RTD activities at the 600-281 waste site. Additional focused samples were collected from these areas. The excavated areas were contoured and backfilled in August 2011.

Code: 600-282 **Classification:** Accepted

Names: 600-282; Wood and Coal Debris Piles **Reclassification** Interim Closed Out (8/11/2011)

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site has been evaluated under a removal action and Interim Closed Out. It consisted of an area of scattered wood debris and a pile of coal. The southern portion of the 600-282 waste site contained an area of debris that appears to have been a structure, an earthen ramp, small coal pile, a portion of a drainage ditch, and what appeared to be a square well supplied by underground piping. A surface veneer of coal ash was strewn in the area between the northern and southern areas. The debris was generally concentrated in several piles in the southern area, as well as sparsely scattered over areas adjacent to the waste site. The debris generally consisted of lumber, metal debris, and cans.

Location: The site was located east of Route 4N and west of West Lake. It is approximately 412 meters (1,351 feet) west and slightly north of the 600-40 dump site.

Waste Type: Misc. Trash and Debris

Waste Description: Coal and wood debris were identified on a site walkdown in 2004.

Closure Info: Interim (8/11/2011): Sampling results from the confirmatory sampling demonstrated that the waste site did not achieve compliance with the removal action levels (RALs). Based on the analytical results, the alternative was changed to removal, treatment, and disposal (RTD).

The removal action at the 600-282 waste site was conducted from August 2010 through April 2011 and included the collection of focused and random soil samples. Based on the visual indicators and observations made during the site evaluation, eight Zones of Potential Contamination (ZPCs) were identified at the 600-282 waste site. Focused samples were collected from each ZPC, based on process knowledge and visual indicators for the initial sampling evolution. Visual indicators observed at ZPC 6 (which appeared to be a well with a rectangular wood frame) and ZPC 7 (an open drainage ditch) suggested a potential for contamination below the surface of the waste site in these areas. Therefore, in process sampling at a depth of approximately 1.2 meters (4 ft) below ground surface was conducted. The analytical results in those areas confirmed that they met the established RALs and did not require RTD.

Zone 2 (ZPC2) exceeded Removal Action Levels (RAL), resulting in the implementation of the RTD alternative. Removal of impacted soils in that area commenced on March 30, 2011, with the lateral extent of excavation at the ZPC determined utilizing visual indicators. Samples were collected at depths of 2.4 and 3.4 meters (8 and 11 ft) below ground surface to refine the

vertical extent of excavation to a total depth of approximately 2.4 meters (8 ft). In addition to excavation at ZPC 2, scattered debris from locations throughout the 600-282 waste site was removed, along with underlying soil to a depth of approximately 1 meter (0.3 ft) during RTD activities. Backfill of the 600-282 waste site was completed on May 26, 2011.

No radiological dose readings were greater than background was identified and no radiological contamination was found.

Code:	616-WS-1	**Classification:**	Accepted
Names:	616-WS-1; 616 NRDWSF French Drain	**Reclassification**	Closed Out (10/24/2001)
Type:	French Drain	**Start Date:**	1/1/1986
Status:	Inactive	**End Date:**	1/1/2001

Description: This french drain was sampled and Closed Out in 2001. It is a perforated concrete pipe set vertically into the ground. The ground surface is flush with the top of the pipe. The pipe has a layer of gravel at its bottom and a concrete cover over its top. The lid is 10.2 centimeters (4 inches) thick and 1.2 meters (3 feet 10 inches) in diameter. Two railroad ties lie on opposite sides of the lid.

Location: The site is located north of the northeast corner of the 616 Facility. The 616 Building is located on the north side of Route 3 between 200 East and 200 West Areas.

Related Sites/ Structures: The site is associated with the loading pads at the 616 Nonradioactive Dangerous Waste Storage Facility (616 NRDWSF).

Process Description: This french drain was designed to receive liquid collected from the east and north loading pads of the 616 Facility. It serviced both the north and the east loading dock trenches. The loading and unloading areas are provided with a sloped, curbed and plugged drainage trench. All liquid accumulations, including precipitation were sampled. Liquids with chemical concentrations above Ecology guidelines for unconditional release to the environment were recovered, processed, and shipped as regulated waste. Liquids with chemical concentrations below the Ecology guidelines were released to the french drain.

Waste Type: Stormwater Runoff

Waste Description: The unit received liquid from loading pad collection troughs. The water was sampled to ensure it met release criteria before being released to the drain.

Closure Info: Final: Because operating records did not demonstrate that early operations within the 616 facility met spill cleanup requirements, the building was considered potentially contaminated and underwent decontamination. Equipment used for waste handling was removed. The storage cell floors, sumps, trenches, and outdoor loading pads were cleaned using nonregulated detergents. The rinsates were collected, analyzed, designated and disposed of as nondangerous waste. Some minor residual staining/discoloration of coated surfaces remained after decontamination. This was allowed in the closure plan.

Completion of closure plan requirements was certified by a Professional Engineer on 6/13/2001. The RCRA permit Closure Certification was transmitted to the Washington Department of Ecology on 9/5/2001. Ecology accepted the Closure Certification on 10/24/2001.

Sampling of the french drain was required as part of the Closure Plan for the 616 facility. The gravel within the french drain was removed and stored pending sampling results. A single soil sample was taken from the center of the drain. The sample was analyzed for pH, volatile organic compounds, semi-volatile organic compounds, RCRA (Resource Conservation and Recovery Act) metals, PCBs (polychlorinated biphenyls), herbicides, pesticides, phosphorous

pesticides, cyanide, total organic halides, anions, phenols, and chrome VI. The sample met closure standards for all constituents.

Code: CTFN 2703-E
Classification: Accepted
Names: CTFN 2703-E; 200-E Chemical Drain Field; Chemical Tile Field North of 2703-E
Reclassification None
Type: Drain/Tile Field
Start Date:
Status: Inactive
End Date:

Description: The waste site consists of a trench and seepage basin. As of 1994, this unit had no free standing liquids nor any sign of natural vegetative growth. The seepage basin is referred to as the 200-E Chemical Drain Field. It has not been backfilled or filled with any materials that would facilitate drainage.

Location: This unit lies west of the 2607-E1 septic system, north of the 2703-E Building and northwest of the intersection of Fourth Street and Baltimore Avenue, in the 200 East Area.

Related Sites/ Structures: The CTFN of 2703-E is associated with the 272-E Building and the 2703-E Building. The pipeline associated with this tile field is sitecode 200-E-287-PL.

Process Description: The drain field was designed to receive non-hazardous liquid waste from the 272-E and 2703-E Buildings. Wastewater from the 272-E Building floor drain was discharged to a process sewer line which extends to the disposal site (see 200-E-287-PL). Wastewater from two floor sumps in the 2703-E Building was discharged to the same process sewer line and combined with the 272-E Building effluent before reaching the disposal site.

Waste Type: Process Effluent

Waste Description: The Chemical Tile Field North of 2703-E is currently inactive. The wastewater from the 272-E Building was hydrotesting wastewater which was not treated before being discharged to the floor drain. The wastewater discharged from the two sumps in the 2703-E Building included: floor wash, rinse water, cooling water, sinks, and steam condensate.

Code: OCSA
Classification: Accepted
Names: OCSA; Old Central Shop Area; Central Shop Area
Reclassification None
Type: Foundation
Start Date: 1/1/1945
Status: Inactive
End Date:

Description: The site consists of building foundations and scattered debris. The central shops had been surrounded by over 1.3 miles (2.1 kilometers) of fencing. The structures in the shop complex included offices, storage huts, boiler houses, warehouse and storage facilities as well as multiple shop facilities (automotive repair, sheet metal welding, paint, etc). There were also bulk fuel storage and a septic system. A site visit on 12/4/1997 observed pieces of lumber, corrugated metal, bricks, shingles, buckets, a barrel, office furniture, and wooden tables. There are two pits containing debris and nails.

Location: The site is located in the 600 Area approximately half way between 200 East and West areas, south of Route 11A and north of Route 4S.

Process Description: During Hanford construction the central shops were established as a staging area, repair shops, and specialized fabrications area. It was a central location for construction being conducted at 200 East, 200 West, 100-B, 100-D, and 100-F Areas. It included materials storage areas for

construction materials and fuel storage. All facilities in the central shops area were considered temporary construction facilities and were identified as TC-29 Buildings. The sanitary sewer system consisted of a gravity feed septic tank system open trench and open settling ponds.

There were three fuel storage areas: One was associated with a gas station, and had kerosene as well as diesel and gasoline in 3,000-gallon storage tanks (also "white" in a 2,000 gallon tank). The second was a fuel storage yard, with six 25,000 gallon tanks and two 12,000 gallon tanks; the drawings show this as both "Gasoline storage area" on one side and "Fuel Oil storage" on the other. The third is one 100,000-gallon storage tank that was connected to a Boiler, which was likely the heat source for the area buildings.

Waste Type: Sanitary Sewage

Waste Description: The site contained a sanitary sewer system consisting of a tank(s), open trench, and settling ponds.

Waste Type: Demolition and Inert Waste

Waste Description: The site contains miscellaneous demolition debris and several foundations can be seen. There is also evidence of burning.

Code: UPR-200-E-11 **Classification:** Accepted

Names: UPR-200-E-11; Railroad Track Contamination Spread; UN-200-E-11 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1957

Status: Inactive **End Date:**

Description: This unplanned release is no longer marked or posted. Portions of the TC-4 Spur (a.k.a. UPR-200-E-88) and a section of track south of the 218-E-5 Burial Ground (UPR-200-E-95) have been covered with dirt and posted with Underground Radioactive Material signs.

Location: The unplanned release effected the railroad track extending from the PUREX tunnel to the 218-E-5 Burial Ground.

Release Description: In 1957, fission product contamination spots dripped along the railroad track extending from Plutonium Uranium Extraction (PUREX) to the 218-E-5 Burial Ground. Contaminated tracks sections included the track from the PUREX tunnel entrance to the west exclusion area fence, the spur into the 218-E-5 Burial Ground, and the "TC" spur. Specific release details are unknown.

Related Sites/ Structures: The site is associated with UPR-200-E-88, UPR-200-E-95, 200-E-43 and 200-E-44.

Process Description: Some burial casks were shielded with water that was removed before placing the material into the burial ground. Sometimes railcars were washed down to remove loose contamination before transporting the load to the solid waste burial ground.

Waste Type: Water

Waste Description: The release consisted of fission products dripping from a railroad car transporting material from PUREX to the burial ground.

Code: UPR-200-E-83 **Classification:** Accepted

Names: UPR-200-E-83; Zone A, Zone B, Zone C; BC Controlled Area; BC Cribs Controlled Area; **Reclassification** None

BCCA; UN-200-E-83; UN-216-E-11

Type: Contamination Migration **Start Date:** 1/1/1958

Status: Inactive **End Date:**

Description: Periodic radiological surveys conducted between 1958 and 1998 (and beyond) have identified radiological contamination outside the boundaries of the engineered crib and trench structures. Each survey effort redefined the soil contamination boundaries. The size and shape of the posted area varied with each survey. Radiological surveys (1996-1998) identified contamination extending south from Route 4 South to Army Loop Road and extending east to the Central Landfill area. A soil remediation project began in 2009 and continued through 2011. For remediation purposes, the BC Controlled Area was re-defined and divided into two subsites; the Northern Area, that includes cleanup areas A and B, and the Southern Area that includes cleanup area C.

Location: The site is located south of 200 East Area, adjacent to the BC Cribs and Trenches.

Release Description: The source of the large contaminated area known as the BC Controlled Area has been determined to be due to the BC Cribs and trenches. The cribs and trenches received large amounts of liquid radioactive process waste from the Uranium Recovery project (1952 to 1956). In 1958, radioactive rabbit and coyote feces were found scattered over the ground surface. A radiation survey (#DS 01266 - May 7, 1958) states the maximum reading on rate on the crib vent was 200 millirad per hour with 40,000 counts per minute smearable contamination. The overground transfer line in 1958 was reading 250 millirem per hour at a distance of 5.1 centimeters (2 inches). The ground under the overground line was reading 10,000 counts per minute. Rabbit droppings found in 1958 were contaminated to levels from 2,000 counts per minute to 100,000 counts per minute. In one area, 80% of the rabbit droppings were contaminated from 5,000 to 100,000 counts per minute. It was determined that a badger or some other animal had burrowed into the 216-B-28 Trench and exposed a radioactive salt layer. Over time, rabbits ingested the contaminated salts and defecated over approximately 10 square kilometers (4 square miles) of undisturbed sagebrush covered land. The burrow was filled with asphalt in 1964. The asphalted area was visible and documented on a 1981 radiation survey (#T81-0930, July 1, 1981). In 1973, Battelle Northwest Laboratories collected data regarding the distribution and contamination levels of animal droppings in the BC Crib and Trench area. Their study attempted to correlate the data to animal behavior patterns, soil characteristics, vegetation, prevailing winds and other environmental influences. From a designated center point, field personnel walked a total of 29 radii. Radiological and biological data was collected at intervals equaling 20 human steps. (approximately 16 meter [52 feet] intervals). Most of the contamination was found south, southeast and southwest of the BC Cribs. The data collected to determine the contamination distribution was recorded in the report (BNWL-1794), but no conclusions were made. A series of radiological surveys done in 1978 showed the contamination had moved onto the roadways in the area. Contamination levels ranged from 300 counts per minute to greater than 100,000 counts per minute. A 1981 radiation survey identified nine highly contaminated areas. Several areas of highly contaminated soil were noted as well as contaminated tumbleweeds, tumbleweed roots and tumbleweed fragments. General contamination levels ranged from 200 to 100,000 counts per minute and areas of 50 to 150 millirem per hour. Other possible sources of contamination include the US Ecology disposal facility and PUREX operations. In October 1960 a significant contamination spread occurred at PUREX. A sketch attached to Radiation Occurrence Report 60-3 shows a large contamination spread from the 241-A-151 Diversion Box spread across Route 4S. The 241-A-151 Diversion Box is located on the south side of the PUREX plant (202-A). Sparsely spaced particles (less than 5 per 9.3 square meters [100 square feet]) are shown in the BC Crib and Trench Area (see UPR-200-E-26). In 1969, the BC Trenches were graded and covered with sand and gravel. In 1973, a Battelle Northwest Laboratory study attempted to define the distribution of the contaminated rabbit feces. A 1981 radiological survey identified a large amount of surface contamination, contaminated tumbleweeds and contaminated

tumbleweed fragments on the BC Cribs and Trenches.

Waste Type: Soil

Waste Description: The contamination spread consists of radioactive feces (and urine) from coyotes and rabbits. Strontium-90 (81 curies) and cesium-137 (14 curies) are the major contaminants in the feces. Specks of contamination found in the soil may be wind blown particulates from filling the open trenches with waste (1952-1958) and major contamination events in 200 East Area. In 1999, the cryptogamic layer and underlying soils were analyzed for a selected number of radionuclides based on the contaminant of concern list. Analysis included plutonium-239, americium-241, cesium-37 and strontium-90.

This Site has the Following SubSites:

Code: UPR-200-E-83:1
Names: UPR-200-E-83:1; Zone A and Zone B; Northern Area; Northern Portion of BC Controlled Area

Code: UPR-200-E-83:2
Names: UPR-200-E-83:2; Zone C; Southern Area; Southern portion of UPR-200-E-83

Code: UPR-200-E-83:1 **Classification:** Accepted

Names: UPR-200-E-83:1; Zone A and Zone B; Northern Area; Northern Portion of BC Controlled Area **Reclassification** None

Type: Contamination Migration **Start Date:**

Status: Inactive **End Date:**

Description: The northern portion of the UPR-200-E-83 waste site includes the soil remediation areas known as Zone A and Zone B. Zone A is approximately 140 acres of densely contaminated soil, south of the BC trenches. Zone B is the remaining (approximately 3600 acres) of spotty contaminated soil. During 2009 through 2011, a remediation activity removed approximately 140 acres of contaminated soil from Zones A and B. Zone A and isolated area within Zone B were downposted in August 2011 (per DOE/RL-2011-101).

A low level, high resolution aerial survey was conducted of the site in September 2009, resulting in approximately 1566 acres of Zone B being downposted over time, through September 2010.

The SubSite is Part Of:

Code: UPR-200-E-83
Names: UPR-200-E-83; Zone A, Zone B, Zone C; BC Controlled Area; BC Cribs Controlled Area; BCCA; UN-200-E-83; UN-216-E-11

Code: UPR-200-E-83:2 **Classification:** Accepted

Names: UPR-200-E-83:2; Zone C; Southern Area; Southern portion of UPR-200-E-83 **Reclassification** None

Type: Contamination Migration **Start Date:**

Status: Inactive **End Date:**

Description: The subsite is BC Controlled Area Zone C. It is the 4700 acre southern portion of UPR-200-E-83. The southern area includes the sand dunes and Zone C. Characterization of a number of small isolated spots of contamination in Zone C, identified by the 2009 aerial survey, have been investigated through field surveys.

Location: Zone C is the southern half of the BC Controlled Area. It extends south from the boundary that separates the northern and southern areas, to the Army loop road.

The SubSite is Part Of:

Code: UPR-200-E-83

Names: UPR-200-E-83; Zone A, Zone B, Zone C; BC Controlled Area; BC Cribs Controlled Area; BCCA; UN-200-E-83; UN-216-E-11

Code: UPR-200-W-8 **Classification:** Accepted

Names: UPR-200-W-8; 200-W-5; Old Burial/Burning Pit; UN-200-W-8; U-Plant Burning Pit/Burial Ground **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1950

Status: Inactive **End Date:**

Description: The site is posted as an Underground Radioactive Material area.

Location: The site is located in the old burning ground, east of the 221-U Building, adjacent to the corner of Beloit and 16th Street.

Release Description: Contamination was discovered in the spring of 1950 in the Old Burning Ground, located east of the U-Plant Facility. An area of approximately 13.9 square meters (150 square feet) was observed to be contaminated, with a maximum dose rate of 45 rads/hour at 5 centimeters (2 inches). The area was covered with 3 meters (10 feet) of clean dirt.

Related Sites/ Structures: This site is associated with 200-W-71.

Process Description: It was covered with 3 meters (10 feet) of soil and posted with Underground Contamination signs in 1950. An April 1966 aerial photograph shows the outline of a large polygon shaped area east of U-Plant. Drawing H-2-44510 identifies this area as "Burial Ground". It measures approximately 130 by 30 meters (425 by 100 feet). The area was removed from radiation zone status in August 1972, but was reposted as an "Underground Radioactive Material" Area in 1992.

Waste Type: Misc. Trash and Debris

Waste Description: Fission products were discovered at the site with approximately 1 curie and a maximum dose rate of 45 rads/hour at the surface.

Code: UPR-200-W-58 **Classification:** Accepted

Names: UPR-200-W-58; Railroad Track Contamination; UN-200-W-58 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1965

Status: Inactive **End Date:**

Description: The Unplanned Release is not separately marked or posted from other postings on the railroad track.

Location: In 1965 this release caused spotty contamination to spread along the railroad track from the T-Plant railroad cut to the 200 West Burial Ground.

Release Description: On April 26, 1965, a beta-gamma contamination spread occurred during the process of transporting 221-T Plant canyon cell blocks from the 221-T canyon and burying them in the

200 West Burial Ground. Two small spots approximately 15 centimeters (6 inches) in diameter with reading of 5 rads/hour were found on one end of the deck of flat car #19382. Railroad bed surfaces in the 221-T cut were found to have spotty contamination to a maximum of 100,000 counts per minute. The undercarriage of the locomotive used was contaminated generally to 20,000 counts per minute. A rigger and a train crew brakeman received contamination on their shoes and socks. The contamination spread from the underside of an improperly prepared cell block to the deck of the flat car. Further spread occurred when the radiation monitor failed to capture the train following detection of loss of radiological control in the 221-T cut.

Waste Type: Chemicals

Waste Description: The release consisted of beta/gamma contamination with levels ranging from 100,000 counts/minute to a maximum of 5 rads/hour.

Code: UPR-200-W-70 **Classification:** Accepted

Names: UPR-200-W-70; Contamination Found at the 200 West Burning Ground East of Beloit Ave. **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1973

Status: Inactive **End Date:**

Description: The release site is not marked or posted. A mapping data point (dot) estimates the location, placing it adjacent to the northwest access road into the 200-W ADB (ash disposal basin). The area is currently covered with several feet of ash.

Location: The 200 West Burning Pit is located south of the 216-W-LWC Crib and east of Beloit Ave. It is located within the 200 West Ash Disposal Basin.

Release Description: On January 22, 1973, a quarterly routine survey of the 200 West Area Burning Pit revealed several spots of beta-gamma contamination measuring 5,000 to 50,000 counts per minute along the bumper rails at the edge of the combustible trench. Additional surveys disclosed other contamination measuring from 20,000 counts per minute to 30 millirads/hour in the trench proper and a one-gallon bucket contaminated in excess of 100,000 counts per minute (250 millirads/hour). Samples of the contamination were obtained for laboratory analysis. A dump area on the south side of the combustible trench, about 3.7 by 6.7 meters (12 by 22 feet), was found to contain alpha contamination with readings ranging from 5,000 to 200,000 disintegrations per minute. The cause of the contamination was the unauthorized disposal of contaminated material in a non contaminated burning trench.

Related Sites/ Structures: The site is associated with the 200 West Burn Pit, and is within the 200-W ADB.

Process Description: The burning pits routinely received non-radioactive debris (construction debris, wood, paper, solvents and paint) to be burned as a means of disposal. Radiological waste was not supposed to be placed in burning pits.

Waste Type: Ash

Waste Description: Beta/gamma contamination measuring 5,000 to 50,000 counts/minute was found along the bumper rails at the edge of the combustible trench. Other area of contamination ranging from 20,000 counts/minute to 30 millirads/hour beta/gamma was identified inside the combustible trench. An area on the south side of the combustible trench was found to have contamination ranging from 5,000 to 200,000 disintegrations/minute alpha. A sample from the trench (a chunk of rusty debris) showed americium-plutonium contamination.

Code: UPR-600-12 **Classification:** Accepted

Names: UPR-600-12; UN-600-12; UNH Spill to Route 4S
Reclassification None
Type: Unplanned Release
Start Date: 12/30/1954
Status: Inactive
End Date: 12/30/1954

Description: The waste site is three radiologically posted areas. Two are located on the south shoulder of Route 4S, near the top of the hill, southeast of 200 East Area. All three areas are posted as Underground Radioactive Material Areas. One is on the opposite side of Route 4S.

Location: The release occurred on a portion of Route 4S, southeast of 200 East, in the 600 Area.

Two posted areas are on the south side of Rt 4S (one approximately 30 feet from the road and the other approximately 75 feet from the road). One posted area is on the north side of Rt. 4S, approximately 60 feet from the road.

Release Description: On December 30, 1954 a tractor-trailer overturned on the 200 East Hill, spilling 6,060 liters (1,600 gallons) of uranium nitrate hexahydrate solution onto the road and shoulder. General contamination levels of 60 millirad/hour were found on the road and the shoulder. Part of the contamination was removed and the balance was washed off the road. A thin layer of blacktop was added to the road to cover the spill area. The shoulder contamination was covered with dirt. The contamination levels were reduced to a maximum of 20,000 counts per minute.

Waste Type: Chemicals

Waste Description: The waste consisted of uranium nitrate hexahydrate solution spilled to the road and the soil. The soil was found to have less than 10 nanocuries/gram of contamination, and a maximum dose rate at the surface of 60 millirads/hour.

Code: UPR-600-20
Classification: Accepted
Names: UPR-600-20; Old Cross Site Transfer Line Surface Contamination; UN-216-E-41
Reclassification None
Type: Contamination Migration
Start Date: 1/1/1988
Status: Inactive
End Date: 1/1/1995

Description: The 600-284-PL underground transfer line extends from the 241-UX-154 diversion box, adjacent to U Plant in 200 West Area, to the 241-ER-151 Diversion Box in 200 East Area. The Unplanned Release waste site includes the contaminated soil and vegetation located on the surface of the cross site transfer line and surrounding the 241-ER-151 Diversion Box. The surface of the underground line has been stabilized and is currently posted with "Underground Radioactive Materials" signs. There is also a large mound of soil, located south of the 241-EW-151 Vent Station, that is associated with the original transfer line surface stabilization activities. The soil mound is posted with Underground Radioactive Material signs.

Location: The site extends from the 241-ER-151 Diversion Box in 200 East Area and to the 241-UX-154 Diversion Box in 200 West Area. The majority of the transfer line is located in the 600 Area, between 200 East and West Areas, south of Route 3. The pipeline is approximately 2.3 miles long.

Release Description: The surface of the buried waste transfer line became contaminated through biological transport of radioactive materials that leaked in the pipeline encasement and windblown particulates from the vent station. In March 1988, while conducting a radiological survey of the 241-EW-151 Vent Station (located approximately mid way between 200 East and 200 West Areas on the transfer line) contamination was identified approximately 100 meters (300 feet) outside the established radiation zone boundaries of the vent station above the transfer line. The Mobile Surface Contamination Monitor (MSCM) tractor was used to survey the entire surface of the

pipeline. Numerous spots of contamination were identified at various locations along the entire length of the transfer line. Contamination levels ranged from a few hundred counts per minute to 750 millirem per hour. To characterize the integrity of the pipeline, eight boreholes were drilled with an auger at four locations along the transfer line. Although no contamination was found to have leaked below the pipeline encasement, contamination was found in sagebrush growing next to the encasement. This indicated that the roots of the sagebrush had penetrated the encasement. The contamination was given an Unplanned Release number in 1989.

Related Sites/ Structures: UPR-600-20 is associated with the 600-284-PL pipeline, the 241-ER-151 Diversion Box (east end of the pipeline), the 241-EW-151 Vent Station (along middle of pipeline), and the 241-UX-154 Diversion Box (west end of the pipeline). Also see 600-296, Replacement Cross Site Transfer Pipeline.

Process Description: The original cross site transfer line was originally constructed in 1952 to support the Uranium Metal Recovery operations. Various process and tank farm waste has been transported between 200 East and 200 West areas through this concrete encased, underground pipeline. The original cross site transfer line (sitecode 600-284-PL) consists of six stainless steel pipelines (V360, V361, V362, V363, V364, V366) inside a concrete encasement. The encasement type is known as 6-59, indicating there are six lines inside a 59 inch wide encasement. The concrete encased stainless steel pipelines are buried at depths that range from 1.5 to 4.5 meters (5 to 15 feet). There are 58 encasement test risers (swab risers) spaced regularly along the pipeline that provided access to the encasement void space. The old original cross site line was replaced with a new pipeline in 1995 (see 600-269).

Waste Type: Process Effluent

Waste Description: The surface of the buried waste transfer line became contaminated through biological transport of radioactive materials that leaked in the pipeline encasement and windblown particulates from the vent station. The contaminated soil contained cesium-137, plutonium-239/240, strontium-90, and uranium from tank farm waste transferred between 200 East Area and 200 West Area through the underground line.

Code:	UPR-600-21	**Classification:**	Accepted
Names:	UPR-600-21; Contamination Found Northeast of 200 East Area; UN-216-E-31	**Reclassification**	Interim Closed Out (2/25/2011)
Type:	Unplanned Release	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	1/1/1991

Description: The remediation evaluation for this waste site was completed and the waste site reclassified to Interim Closed Out in 2011. The site had been a large radiologically posted area located northeast of 200 East Area. The area is no longer marked or posted. The site was originally posted with Radiological Controlled Area warning signs. In 1990, the Health Physics group changed the posting to Surface Contamination. In 1991, all radiological postings were removed.

Location: Radiological contamination was originally identified in an area located east and northeast of the 200 East Area fence, south of Route 11A.

Release Description: The release was a result of contaminated tumble weeds that migrated and decomposed in the area and possibly specks from the PUREX stack or a nearby burial ground.

Closure Info: Interim: In July and August 2009, the 200-E-110 and UPR-600-21 waste sites were investigated through observation, field screening and radiological surveys for the purpose of determining if radiological contaminants were present above the removal action levels (RALs). The survey results analysis confirmed that soil contaminant concentrations are at or below the RALs and that no further action is required. Both 200-E-110 and UPR-600-21 waste sites achieved compliance with the removal action levels (RALs) and thus met the removal action objectives

(RAOs). These results support reclassification to Interim Closed Out status.

200-PW-1

Code:	216-Z-1&2	**Classification:**	Accepted
Names:	216-Z-1&2; 216-Z-7; 234-5 No. 1 Crib; 234-5 No. 2 Crib; 216-Z-1 & 2TF; 216-Z-1 and 216-Z-2 Cribs	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1949
Status:	Inactive	**End Date:**	1/1/1969

Description: The 216-Z-1&2 Cribs consist of two wooden timber boxes connected by a central pipe. The 216-Z-2 crib overflowed into the 216-Z-1 crib which overflowed into the 216-Z-1A tile field. Each unit is set and backfilled in a deep, square excavation. Two risers were visible from the surface of each crib.

Location: The 216-Z-1 and 2 cribs are located south of 234-5Z (Z Plant) facility and west of the 216-Z-3 Crib. They are inside the 216-Z-1A fenced area.

Related Sites/ Structures: The cribs are associated with 234-5Z the transfer piping, local monitoring wells, the 241-Z-361 Settling Tank, the 216-Z-3 Crib and the 216-Z-1A Tile Field. The pipeline that fed the cribs is 200-W-210-PL.

Process Description: These cribs were designed to dispose of aqueous and organic wastes in the soil column. The unit received waste from the 234-5Z, the 236-Z, and the 242-Z Buildings.

Waste Type: Process Effluent

Waste Description: The 216-Z-1 and 2 Cribs received liquid process waste from the 234-5Z Building. The cribs received aqueous and organic wastes from the Plutonium Reclamation Facility, Americium Recovery Line wastes from the 236-Z and 242-Z Buildings, and uranium wastes from the 236-Z Building.

Code:	216-Z-1A	**Classification:**	Accepted
Names:	216-Z-1A; 216-Z-1A Tile Field; 216-Z-1AA; 216-Z-1AB; 216-Z-1AC; 216-Z-7; 234-5 Tile Field	**Reclassification**	None
Type:	Drain/Tile Field	**Start Date:**	1/1/1949
Status:	Inactive	**End Date:**	1/1/1969

Description: The tile field is located inside a chain link fence. It is a below grade trunk line orientated north to south with seven pairs of lateral pipes spaced in a herring bone pattern. The vitrified clay pipe lies on a gravel bed. The length of the tile field was expanded twice. The original section is known as 216-Z-1AA. The expanded sections are known as 216-Z-1AB, and 216-Z-1AC. The excavation was backfilled to grade. The fence is radiologically posted.

Location: The unit lies south of the 234-5Z facility perimeter fence and immediately south of the 216-Z-1&2 Cribs.

Related Sites/ Structures: The tile field is associated with the 216-Z-1&2 Cribs, the 216-Z-3 Crib, 241-Z-361 settling Tank and associated underground transfer lines. The replacement (2 inch) stainless steel lines are documented in sitecode 200-W-174-PL.

Process Description: The site received waste from the Z Plant 234-5Z, 236-Z and 242-Z facility operations. The tile field was originally constructed to receive liquid waste overflow from the 216-Z-1 and the 216-

Z-2 Cribs. Later the cribs were bypassed and the waste was routed directly into the tile field.

The 216-Z-1A Tile Field initially was taken out of service in March 1959 after low concentrations of plutonium were detected in 1958 in the soil at the bottom of a well 46 meters (150 ft) deep, and 15 meters (50 ft) above the water table, near the 216-Z-3 Crib (Well 299-W18-57). The 216-Z-1A Tile Field had been receiving overflow from the 216-Z-3 Crib during this time, and was taken out of service when the 216-Z-3 Crib was replaced. In 1964, the 216-Z-1A Tile Field was reactivated to receive plutonium reclamation operation waste liquids directly through the pipelines from the Plutonium Reclamation Facility, bypassing the 216-Z-1&2 and 216-Z-3 Cribs. Two groundwater wells (Wells 299-W18-6 and 299-W18-7) were drilled on the west and east sides of the tile field, respectively, to monitor the groundwater. From 1964 to 1969, the 216-Z-1A Tile Field was operated as a specific retention facility. The tile field was taken out of service in 1969 when it had received the prescribed liquid waste volume.

Waste Type: Process Effluent

Waste Description: The 216-Z-1A Tile Field originally received overflow from the 216-Z-1 and the 216-Z-2 Cribs. The cribs received aqueous and organic wastes from the Plutonium Reclamation Facility, americium recovery line wastes from the 236-Z and the 242-Z Buildings, and uranium wastes from the 236-Z Building.

Material discharged to the tile field reportedly included 57 kg (126 lb) of plutonium, 1 kg (2.2 lb) of Am-241, 270,000 kg (594,000 lb) of carbon tetrachloride, and 3,000 kg (6,600 lb) of nitrate. The carbon tetrachloride was discharged to the 216-Z-1A Tile Field in combination with other organics, as a small entrained fraction of process aqueous wastes, and as DNAPL.

Code:	216-Z-3	**Classification:**	Accepted
Names:	216-Z-3; 216-Z-3 Culvert; 216-Z-8; 234-5 No. 3 & 4 Cribs	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1959

Description: The crib is posted with identification signs. It is inside the locked and posted chain link fence surrounding the 216-Z-1A tile field. The 216-Z-3 Crib was constructed of three 1.2 meter (4 foot) long, perforated corrugated metal culverts that were laid horizontally, end to end, on a gravel filled excavation. Wire screens were welded on the ends of the pipes to prevent gravel from intruding into the pipe. 2.5 centimeter (1 inch) holes were drilled every 15 centimeters (6 inches) around the circumference of the pipe at 30 centimeter (1 foot) intervals. The culvert rests on a 5 meter (17 foot) bed of gravel, 2.4 meters (8 feet) below grade. Two layers of asphalt roofing paper were laid over the crib construction and the site was backfilled to grade.

Location: This crib is located south of the 234-5Z Building, and east of the 216-Z-1 and -2 Cribs. It is located inside the chain link fence that surrounds the 216-Z-1A Tile Field.

Related Sites/ Structures: Structures associated with this crib include the 241-Z-361 Settling Tank, 216-Z-1A tile field, the chemical sewer line from the 234-5Z, and vent risers. The pipeline that fed the cribs is 200-W-210-PL.

Process Description: The 216-Z-3 Crib received Plutonium Finishing Plant process liquid waste from 1952 to 1959. Waste from the Plutonium Finishing Plant and laboratory waste streams were routed through the 241-Z-361 Settling Tank, and then distributed to the 216-Z -3 Crib. Overflow from the crib went to the 216-Z-1A tile field.

Waste Type: Process Effluent

Waste Description: The site received process waste, analytical and development laboratory wastes from the 234-5Z Building via the 241-Z Settling Tank. The waste was neutral to basic. The waste includes approximately 5.7 kilograms (12.6 lbs) of plutonium.

Code:	216-Z-9	**Classification:**	Accepted
Names:	216-Z-9; 216-Z-9 Cavern; 216-Z-9 Covered Trench; 216-Z-9 Crib and Support Structures; 216-Z-9A; 216-Z-9B; 216-Z-9C; 234-5 Recuplex Cavern	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1962

Description: The 216-Z-9 trench is marked and posted with Underground Radioactive Material signs. In 1999, a gravel bio-barrier, measuring 6.1 meter (20 feet) by 4 meters (13 feet), was placed over an area of surface contamination. This area is also posted as Underground Radioactive Material.

The 216-Z-9 Crib is an inactive, below grade waste management unit. It is a rectangular structure, with a concrete cover supported by six concrete columns with a concrete cover. The trench walls and support columns are covered in an acid resistant brick. Two stainless steel pipes discharge effluent above the trench bottom. Three above grade structures (216-Z-9A, 216-Z-9B and 216-Z-9C) were constructed to support the crib soil mining operations.

Location: The trench is located south of Nineteenth Street and east of the 234-5Z Building.

Release Description: On November 16, 2010, the 299-W15-47 extraction well head failed, causing more than 95 liters (25 gallons) of groundwater to spill onto the ground. The ground water contained minor amounts of carbon tetrachloride, nitrates, technetium-99, chromium and tritium. The pump and treat process was halted and the area was assessed. The well is located northeast of 216-Z-9 crib.

Related Sites/ Structures: The site is associated with the Z Plant RECUPLEX process, the steel waste transfer lines, and the soil mining facility (216Z9A). A stormwater pond occurred near this crib in the 1960's. See sitecode 200-W-124. The pipeline that fed this crib is sitecode 200-W-206-PL.

Process Description: 216-Z-9 is an enclosed trench that received solvent and aqueous wastes from the Z Plant RECUPLEX process. The 216-Z-9 trench was the only waste site used for solvent disposal during the RECUPLEX operation. Solvents used in the process included carbon tetrachloride, dibutyl phosphate and dibutyl butyl phosphonate (DBBP). In 1976 and 1977 the trench floor was mined for plutonium using remotely operated equipment. Three above grade structures (216-Z-9A, 216-Z-9B and 216-Z-9C) were constructed to support the crib soil mining operations. 216-Z-9A received the excavated crib sediments into a glove box via a conveyor system. The sediments were packaged into 10 liter cans, assayed and removed from the glove box. The cans were placed into overpack drums for storage and transportation. 216-Z-9B contained the observation area (with a leaded glass window into the crib interior) and controls for conducting the remote sediment removal. 216-Z-9C contained the mechanical components of the sediment removal equipment. This structure was sealed at the interface of the cribs concrete slab roof. Removal equipment was suspended from two openings in the crib roof, allowing access to the crib from both the north and the south areas of the crib.

Waste Type: Process Effluent

Waste Description: The trench received aqueous process waste, and organic process waste. The aqueous process waste is characterized as an acidic, high salt, low level radioactive waste, and the organic process is considered slightly acidic, low salt, high organic, radioactive liquid waste with intermediate levels of plutonium and other transuranic components. Fabrication oil used as a

cutting and milling lubricant was estimated to be 50% carbon tetrachloride and 50% lard oil. The site received an estimated 270,000 to 460,000 liters of carbon tetrachloride as waste.

Code:	216-Z-12	**Classification:**	Accepted
Names:	216-Z-12; 241-Z-12 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1958
Status:	Inactive	**End Date:**	1/1/1973

Description: The site is an inactive, below-grade waste management unit. The site consists of a deep rectangular excavation with a vitrified, perforated, clay pipe running the length of the crib. A second six inch diameter steel pipe (bypass pipeline) was installed in 1968 and runs the length of the crib to the west of the original pipe. The bottom 1.5 meters (5 feet) of the excavation was backfilled with gravel and covered with a polyethylene barrier. In 1987, a soil vitrification test was performed at this crib, resulting in a large, subsurface monolith of vitrified soil. The remaining excavation was backfilled to grade. It is marked and posted with Underground Radioactive Material signs.

Location: This unit is located southwest of the 234-5Z Building, outside the security fence.

Related Sites/ Structures: Structures associated with this crib include 10 monitoring wells, diversion boxes No.1 and No.2 (200-W-58 and 200-W-59), transfer lines, and monitoring instrumentation. The pipeline that fed the crib is 200-W-208-PL.

Process Description: 216-Z-12 was constructed to replace the 216-Z-3 crib. It received Plutonium Finishing Plant liquid process waste and laboratory waste from the 234-5Z Building and support facilities, via the 241-Z tanks and the 241-Z-361 Settling Tank. The crib received 2.8 x 108 liters of low salt, aqueous waste containing 25.1 kg of plutonium. Americium activity was determined to be derived from the in situ decay of Pu-241 not from a separate waste source. No other transuranic elements were discharged to the crib in any significant amounts.

Waste Type: Process Effluent

Waste Description: The site received low salt process waste and analytical and development laboratory waste from the 234-5Z Building and support facilities via 241-Z tanks and the 241-Z-361 Settling Tank. The waste is slightly acidic. Low salt waste was adjusted to a pH of 8 to 10 before disposal. The waste disposed of to the crib included approximately 25 kilograms (55 lbs) of plutonium.

Code:	216-Z-18	**Classification:**	Accepted
Names:	216-Z-18; 216-Z-18 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1969
Status:	Inactive	**End Date:**	1/1/1973

Description: The 216-Z-18 Crib is a below grade inactive management unit. The crib consists of five parallel, north-south running trenches bisected by a steel distribution pipe. Near the center of each trench two perforated, fiberglass reinforced epoxy pipes exit each side of the distribution line. The distribution and trench piping lie on a 0.3-meter (1-foot) thick bed of gravel. The pipes were buried under an additional 0.3 meters (1 foot) of gravel, a membrane, and sand cover. The trenches were then backfilled to grade. The site is marked and posted with Underground Radioactive Material signs.

Location: This unit is southwest of the 216-Z-1A Tile Field and south of the 234-5Z Building.

Related Sites/ Structures: The crib is associated with 216-Z-1A, 241-Z-361 and UPR-200-W-103. The pipeline to the crib is 200-W-174-PL.

Process Description: 216-Z-18 crib replaced the 216-Z-1A tile field. The unit received wastes via the 241-Z-361 Settling Tank. The crib disposed of solvent and acidic aqueous waste from the Plutonium Reclamation Facility in the 236-Z Building and waste from the 242-Z Waste Treatment and Americium Recovery Facility.

Waste Type: Process Effluent

Waste Description: The crib received solvent and acidic aqueous waste from the Plutonium Reclamation Facility in the 236-Z Building. The crib received high salt, acidic, and organic liquid waste. Wastes disposed of at the site include carbon tetrachloride, tributyl phosphate, and plutonium.

Code: 241-Z-361 **Classification:** Accepted

Names: 241-Z-361; 241-Z-361 Settling Tank **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1949

Status: Inactive **End Date:** 1/1/1976

Description: The unit is an underground reinforced concrete structure with a 0.95 centimeter (3/8 inch) steel liner. The tank has inside dimensions of 7.9 by 4.0 meters (26 by 13 feet) with 0.3 meter (1 foot) thick walls. The bottom slopes, resulting in a internal height variation between 5.2 and 5.5 meters (17 and 18 feet). The top is 0.6 meters (2 feet) below grade. A 15 centimeter (6 inch) stainless steel inlet pipe from the 241-Z Tank Pit (WIDS SiteCode 241-Z) enters the tank from the north. A single 20 centimeter (8 inch) stainless steel pipe exits the tanks from the south. There are two manhole covers and frames and several risers visible above grade.

Location: The tank is located south of the 236-Z building and was inside the Z Plant security fence.

Related Sites/ Structures: The site is related to 216-Z-1, 216-Z-2, 216-Z-3, 216-Z-12, 216-Z-1A, 216-Z-18 and the 241-Z tank farm.

Process Description: The tank served as a settling tank for liquid waste from the 234-5Z, 242-Z and 236-Z buildings. The waste streams were routed through the 241-Z sump tanks for neutralization and then to the 241-Z-361 tank to settle out any solids. After passing through the settling tank, the waste was routed to 216-Z-1, 216-Z-2, 216-Z-3, 216-Z-1A, 216-Z-12 and 216-Z-18.

Waste Type: Process Effluent

Waste Description: The unit received radioactively contaminated liquid. The tank is estimated to contain a residual 30 to 75 kilograms (66 to 165 pounds) plutonium in the sludge. (See HNF-8735 for detailed sludge sample analysis)

200-PW-3

Code:	216-A-7	**Classification:**	Accepted
Names:	216-A-7; 216-A-7 Cavern	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1966

Description: The crib is marked and posted with Underground Radioactive Material (URM) signs. Both the 216-A-7 and 216-A-1 cribs are inside the same posted URM area.

Location: The site is located inside of the 200 East Area perimeter fence, east of 241-A Tank Farm and east of Canton Avenue.

Related Sites/ Structures: The site is associated with PUREX, the 241-A-152 Diversion Box and the 241-A-302B catch tank. The pipeline associated with this crib is Sitecode 200-E-182-PL.

Process Description: The crib began receiving catch tank and sump waste from the 241-A-152 Diversion Box in January 1956. The effluent pipeline between the 241-A-152 Diversion Box sump and the crib was blanked off in July 1959. The sump waste was rerouted to the catch tank. From July 1959 through November 1966, the crib received TBP-Soltrol from PUREX and pump pit/catch tank drainage from the 241-A-152 Diversion Box. A 15 centimeter (6 inch) perforated vitrified clay pipe is placed horizontally 3.0 meters (10 feet) below grade. A 3.0 meters (10 feet) length of 15 centimeter (6 inch) perforated vitrified clay pipe is perpendicular to the first pipe, forming a cross pattern. It is 4.9 meters (16 feet) deep and is filled with approximately 2.1 meters (7 feet) of coarse rock with a volume of 99 cubic meters (3,500 cubic feet). The site has been backfilled. The side slope from the surface to 3.0 meters (10 feet) is 1:1 and from 3.0 meters (10 feet) to the bottom, 2:1.

Waste Type: Process Effluent

Waste Description: From January 1956 through July 1959, the site received the catch tank overflow waste, the sump waste, and the pump pit drainage from the 241-A-152 Diversion Box. From July 1959 to November 1966, the site received the catch tank overflow waste and the pump pit drainage from the 241-A-152 Diversion Box. In November 1966, the site received the tri-butyl phosphate soltrol organic inventory from the 202-A Building. The waste is low in salt and is neutral to basic.

Code:	216-A-8	**Classification:**	Accepted
Names:	216-A-8; 216-A-8 Crib and Overflow Pond	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1991

Description: The crib and overflow area are surrounded by chain and concrete AC-540 markers. They are posted with Underground Radioactive Material signs. Crib overflow was accomplished through a 40.6 centimeter (16 inch) diameter pipe exiting to the north at the east end of the crib (see H-2-56157). The pipe emptied into a narrow ditch that flowed northward. A small overflow pond was excavated at the northeast end of the ditch to receive the excess waste water from the crib.

A 61 centimeter (24 inch) diameter, schedule 20, perforated distribution pipe is located 2.1 meters (7 feet) below grade along the length of the crib. The site contains approximately 5830 cubic meters (206,000 cubic feet) of gravel fill. The crib excavation side slope is 1:2. Four test

risers extended above grade. A 20 centimeter (8 inch) diameter vent riser extended from the distribution pipe had been located at the west end of the crib. The vent riser was removed in 1995. Two layers of sisalkraft paper separate the gravel fill from the backfill. The 216-A-508 control structure is located west of the crib (See drawing H-2-56157).

Location: The crib is located east of the 200 East Area perimeter fence, east of the 241-A Tank Farm.

Related Sites/ Structures: The site is associated with the 241-A, 241-AX, 241-AY, 241-AZ Tank Farms, the 200-E-164-PL pipeline, the 216-A-8 Control Structure (WIDS sitecode 200-E-285) and the 216-A-508 Control Structure.

Process Description: The crib was originally constructed in 1955 to receive condensate and cooling water discharge from the 241-A and 241-AX tank farms. In May 1958, it was determined that the crib had reached its radionuclide capacity. The effluent was routed to the 216-A-24 crib via the 216-A-508 control structure. The cooling water was routed to the 216-A-25 pond. However, the 216-A-8 crib was intermittently reactivated over the years (from 1966 until 1983) to receive additional tank farm condensate effluent.

Waste Type: Process Effluent

Waste Description: From 11/55 to 12/57, the site received condensate from the waste storage tanks in the 241-A and -AX farms. From 12/57 to 5/58, the site received the above effluents and cooling water from the contact condenser in the 241-A-431 Building. The site was inactive except for the following periods: 1/66-4/76, received condensate from 241-A and -AX farms; 1/78-4/78, received 241-A, -AX, & -AY farm condensate; 10/83, received 241-AY and -AZ farm condensate; 3/84, same as 10/83. In early 1985, flow was again diverted from the crib to double-shell tanks. Document RPP-7494 reports a total discharge of 1.18E+09 liters differing slightly from the WIDS total. Condensate has not been discharged to the crib since early 1985. The distribution box was filled with concrete in 1995 to permanently isolate the crib.

Code: 216-A-24 **Classification:** Accepted

Names: 216-A-24; 216-A-24 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1958

Status: Inactive **End Date:** 1/1/1966

Description: The site is surrounded with concrete AC-540 markers and posted with Underground Radioactive Material signs. The crib was built with four sections, each 107 meters (350 feet) long, separated by soil berms. The sections were installed at increasingly lower elevations, to allow the effluent to cascade from one section to the next. The crib was constructed with a 38 centimeter (15 inch) diameter (perforated bottom half), galvanized, corrugated pipe, placed horizontally 3 meters (10 feet) below grade. The crib excavation has 4100 cubic meters (1.46E+03 cubic feet) of gravel fill. There is 46,200 square feet of polyethylene barrier laid between the gravel and the soil backfill. The side slope is 1.5:1. Eight 20 centimeter (8 inch) diameter wells on concrete pads are located on this crib. The wells extend from the bottom of the crib to 0.9 meters (3 feet) above grade. Four 38 centimeter (15 inch) corrugated risers extend from the distributor pipe to grade with filter box assemblies on top of the risers.

Location: The crib is located east of the 200 East Area perimeter fence, and north of the 216-A-8 Crib.

Release Description: The crib was believed to have been valved out in January 1966. However, it was found to still be receiving liquid in 1979. In June 1979, it was reported that moisture was being encountered in an excavation north of the crib, where dirt was being taken for the construction of the 241-AN Tank Farm. Follow-up surveys found a maximum of 8000 counts per minute in the moist soil (JA Jones Occurrence Report 79-19). In October 1979, seepage was again encountered on the north side of the 216-A-24 Crib (Occurrence Report 79-113). An investigation revealed

that the source of the liquid was from the 216-A-508 Control Structure, located at the 216-A-8 Crib. The valve in the control structure was found to be in an open position, allowing an unknown amount of effluent to flow to the 216-A-24 Crib. The 216-A-24 Crib had been classified as inactive since January 1966. The fact that the open valve allowed effluent to flow to the 216-A-24 Crib for thirteen years warranted the situation to be classified as an Occurrence. The 216-A-508 Diverter Box was permanently isolated with concrete in 1995.

Related Sites/ Structures: The crib is associated with the 216-A-524 Diversion Box (control structure), located at the west end of the 216-A-24 Crib. The crib is also associated with the 216-A-508 Diversion Box (control structure), located west of the nearby 216-A-8 Crib. The pipeline between the two control structures is sitecode 200-E-165-PL. The Control Structures controlled whether the effluent flow was diverted to the 216-A-8 or the 216-A-24 Crib. This site is also associated with the PUREX process, the 241-A tank farms and UPR-200-E-56.

Process Description: The crib was built to receive condensate waste from the 241-A, 241-AX, 241-AY and 241-AZ tank farms. The installation of surface condensers greatly reduced the volume of liquid being discharged to the cribs.

Waste Type: Process Effluent

Waste Description: The site received condensed vapors from the waste storage tanks in the 241-A and 241-AX Tank Farms via the 241-E-411 and 241-E-412 Contact Condensers from 1958 through the early 1960's and until 1966, via the 241-A-401 and A-417 Tank. This crib was constructed to receive the condensate after the 216-A-8 Crib reached its radionuclide capacity. The waste is low in salt, neutral to basic and has a record of organic content. The crib was believed to have been valved out in January 1966. However, it was found to still be receiving liquid in 1979 (Occurrence Report #79-113). The valve has since been closed. Because of this inadvertent use, the radionuclide exact inventory and waste volume are unknown for 1967 through 1979. Document RPP-7494 reports a total discharge of 7.94E+08 liters differing slightly from the WIDS total.

Code: 216-A-31 **Classification:** Accepted

Names: 216-A-31; 216-A-31 Crib **Reclassification** None

Type: Crib **Start Date:** 7/1/1964

Status: Inactive **End Date:** 11/1/1966

Description: The crib is located inside a large Underground Radioactive Material area that has a WIDS sitecode of 200-E-103. The crib is marked with cement posts on four corners.

Location: The site is located approximately 152 meters (500 feet) south of the 202-A Building.

Release Description: Although no contamination was released, a dose rate incident report was written in August 1961. The report indicates that the 216-A-31 Crib tie-in was made on August 25, 1961. No final inspection of the welds was done at this time. On August 27, 1961, an attempt was made to jet solvent from the F-13 tank to the new crib. Some material was transferred, but it appeared that the line was plugged. The transfer effort resulted in radioactive material being trapped in an uncovered crib line. On August 28, 1961, two employees entered the crib excavation to inspect the welds. They were in the crib excavation for approximately 5 minutes. Later the inspectors were told that an attempt had been made over the week-end to use the new crib. Radiological surveys were made to clarify what the dose rate conditions were in the crib excavation. On August 29, 1961, the exposed crib line was reading a maximum of 500 R/hr. This condition resulted in an exposure of 2 R/hr for the two weld inspectors.

Related Sites/ Structures: The crib is associated with 202-A (L cell) and the 241-A-151 Diversion Box. The pipelines associated with this crib are sitecodes 200-E-183-PL and 200-E-186-PL.

Process Description: The crib received effluent from 202-A "L-Cell" via the 241-A-151 Diversion Box. L-Cell was the location of the final plutonium concentration step in the PUREX process. The site was deactivated in 1966 by blanking the L Cell nozzles to the 241-A-151 Diversion Box, which routed effluents to the unit. The unit consists of a 21 by 3.1 by 7.3 meters (70 by 10 by 24 feet) deep excavation that includes a 7.6-centimeter (3-inch) schedule 10 stainless steel perforated distribution pipe placed horizontally 6.4 meters (21 feet) below grade. The excavation has 1.8 meters (6 feet) of gravel fill and has been backfilled. The side slope is 1:1.5.

Waste Type: Process Effluent

Waste Description: The site received organic waste from 202-A Building (L Cell - Pu concentration waste). The waste was low in salt and is neutral to basic. Most documents state that 10,000 liters (3000 gallons) of organics were discharged to the unit since startup. However, ARH-231 states that a total of 30,545 liters (8070 gallons) were discharged to the crib from the date it was put into service (January 1963).

Code: UPR-200-E-56 **Classification:** Accepted

Names: UPR-200-E-56; 216-A-24 Crib Excavation; Excavated Contamination Adjacent to 216-A-24 Crib; UN-200-E-56; UN-216-E-33 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1979

Status: Inactive **End Date:**

Description: The site is currently a surface stabilized area located north of the west end of the 216-A-24 Crib. It is posted and marked as an "Underground Radioactive Material" area.

Location: The site is located adjacent to the north side of the 216-A-24 Crib.

Release Description: On June 13, 1979, Radiation Monitoring was informed that moisture was noticed in the excavation east of the 200 East Area perimeter fence where fill dirt was being obtained for the construction of 241-AN Tank Farm. The construction contractor backfilling around the new tanks in 241-AN Tank Farm had mistakenly selected a borrow area adjacent to the 216-A-24 Crib instead of the designated area, which was further north. Radiological surveys revealed beta contamination up to 8,000 counts per minute in the moist excavation, on the earthmoving equipment, and in the newly hauled-in soil around the new 241-AN Tanks. The source of the contamination was determined to be moisture from the 216-A-24 Crib that had migrated laterally over the surface of a 10.2-centimeter (4-inch) crust of hardpan. The hardpan was approximately 4.6 meters (15 feet) below normal ground surface. The excavation was dug sloping from 1.5 to 6.1 meters (5 to 20 feet) deep, 131.1 meters (430 feet) long, and an average of 33.5 meters (110 feet) wide. The size of the excavation was approximately 0.4 hectare (1 acre).

Related Sites/ Structures: The site is associated with the 216-A-24 and 216-A-8 Cribs. UPR-200-E-91, UPR-200-E-92 and UPR-200-E-93, UPR-200-E-100 were also scraped and placed into this excavation.

Waste Type: Process Effluent

Waste Description: The contamination found in the moist excavation included beta/gamma readings up to 8,000 counts per minute. When the mistakenly excavated soil was returned to the excavation area from 241-AN Tank Farm, there was not sufficient volume to fill the hole. It was decided to place contaminated soil and vegetation from several areas along the perimeter and tank farm fences to help fill the void before covering with a layer of clean dirt. Additional contaminated soil from around the 244-A Lift Station was also disposed in this location in 1985.

200-PW-6

Code:	216-Z-5	**Classification:**	Accepted
Names:	216-Z-5; 231-W Sumps; 231-W-1 & 2 Cribs	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1947

Description: The 216-Z-5 Crib is an inactive waste management unit located below grade. The crib is oriented in a north-south configuration with a transfer pipe connecting to two wooden sump boxes. Each box was placed at the bottom of a rectangular excavation. The two excavations were the backfilled to grade.

Location: The unit is located northeast of the 231-Z Building and north of the 231-W-151 Vault.

Related Sites/ Structures: The crib is associated with the vent risers, transfer lines, and the 231-W-151 Vault. The pipeline to the cribs is sitecode 200-W-202-PL.

Process Description: This crib received 231-Z Building plutonium contaminated process waste via the 231-W-151 Vault. The liquid process waste was discharged to the soil column via the crib. Over seven million gallons of waste was discharged to the cribs that contained approximately 3000 grams of plutonium.

Waste Type: Process Effluent

Waste Description: The site received process waste from the 231-Z Building via the 231-W-151 Vault. An estimated 3,000 grams of plutonium was discharged from 231-Z to these cribs. The cribs were plugged with sludge and abandoned. It is believed the plutonium is in the sludge or directly beneath the crib area.

Code:	216-Z-8	**Classification:**	Accepted
Names:	216-Z-8; 216-Z-8 Crib; 216-Z-9; 234-5 Recuplex French Drain	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1962

Description: The french drain is constructed of two sections of 0.9-meter (3-foot) high standard clay tile culverts, stacked vertically underground. The culverts are filled with gravel and rest on a 1.5-meter (5-foot) diameter by 0.9-meter (3-foot) deep bed of gravel with a slope of 2.5:1. There is a 10-centimeter (4-inch) thick concrete top that is 2.4 meter (8 feet) below grade. The bottom of the french drain is 5.57 meters (17 feet) below grade.

Location: The french drain is located east of the 234-5Z Building, west of Camden Avenue and south of 19th Street.

Related Sites/ Structures: The french drain is associated with the 241-Z-8 Silica Slurry Tank. There is a 0.46 square meters (5 square feet), 10-centimeter (4-inch) concrete collar around the base of the unit and a 10-centimeter (4-inch) steel effluent pipe leading from the silica storage tank to the top of the french drain (see sitecode 200-W-205-PL). The unit contains 2.8 cubic meters (100 cubic feet) of 2.5-centimeter (1-inch) to 7.6-centimeter (3-inch) gravel and 2.32 square meters (25 square feet) of 6.8-kilogram (15-pound) building paper over the gravel bed and beneath the top.

Process Description: The silica storage tank supernate overflowed into the 216-Z-8 French Drain from 1955 to 1962. Approximately 9,590 liters (2,530 gallons) of neutral-basic waste overflowed from the

tank during that time.

Waste Type: Process Effluent

Waste Description: The site received overflow from the Recuplex Silica Tank (neutral to basic Recuplex waste). As of June 30 1978 the calculated radionuclide content included 48.4 grams (0.1 pounds) of plutonium. The adjacent well (#299-W15-202) shows a maximum of 4,400 picocuries/gram of plutonium-239 and 440 picocuries/gram of americium-241 near the bottom of the french drain structure.

Code: 216-Z-10 **Classification:** Accepted

Names: 216-Z-10; 216-Z-2; 231-W Reverse Well; 231-W-150; 231-W-151 Dry Well or Reverse Well; 231-Z Well; 299-W15-51 **Reclassification** None

Type: Injection/Reverse Well **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1945

Description: This site is a reverse well that protruded approximately 0.31 meters (1 foot) above grade. The protruding end is capped with a flange. The well casing is constructed of steel pipe. The site was interim stabilized in 1990.

Location: The reverse well is east of the 231-Z Building and west of the 216-Z-17 Crib.

Related Sites/ Structures: Structures associated with this reverse well include a manometer, three inlet lines, the 231-Z-151 Sump, and three monitoring wells (299-W15-59, 299-W15-60 and 299-W15-61). The pipeline from 231-W-151 vault to 216-Z-10 is sitecode 200-W-204-PL. The pipeline to 216-Z-5 (200-W-202-PL) includes an overflow line connected to the 216-Z-10 pipeline.

Process Description: The 216-Z-10 Reverse Well received process and laboratory waste from the 231-Z Building via the 231-Z-151 Sump between February and June 1945.

Waste Type: Process Effluent

Waste Description: The site received process and laboratory waste from the 231-Z Building, via the 231-W-151 Sump. The transuranic contaminated process waste was discharged at a rate of 76 liters (20 gallons) per minute. HW-28471 states that the small diameter well became plugged with sludge in June 1945. Approximately 988,000 liters (260,000 gallons) of liquid containing approximately 50 grams of plutonium was discharged to this unit.

Code: 241-Z-8 **Classification:** Accepted

Names: 241-Z-8; 241-Z-TK-8; Silica Slurry Tank; 216-Z-8 **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1955

Status: Inactive **End Date:** 1/1/1962

Description: The tank is a horizontal cylindrical vessel located 1.8 meters (6 feet) below grade. The area above the tank is surrounded by a light weight chain barricade marked "Caution Underground Radioactive Material" and IMUST signs. Inside the barricade on the north end are two capped 10 centimeters (4 inches) steel vent pipes.

Location: This unit is located in 200 West Area, due east of the 234-5Z building. It is south of 19th Street and west of Camden Ave.

Release Description: In July 1959, records indicated that the tank was at its overflow capacity, which is 58,430 liters (15,435 gallons). The tank was deactivated in 1962, and no records were found that the tank had been pumped prior to that. Surveillance data from April 6, 1974, indicates a liquid content of 28,960 liters (7,650 gallons) and sludge content of 1,890 liters (500 gallons), for a total waste volume of 30,850 liters (8,150 gallons). This means that up to 27,580 liters (7,285 gallons) may have been lost between 1962 and 1974. This possible loss has not been accounted for and no records found explain the loss.

Related Sites/ Structures: The 216-Z-8 french drain received overflow from this unit. The pipeline to the tank is sitecode 200-W-205-PL.

Process Description: The tank was used as a solids settling tank for back flushes of the Recuplex feed filters. Silica gel was used as a settling agent. The solids and silica gel were flushed to the 241-Z-8 tank with nitric acid. Overflow from the tank went to the 216-Z-8 French Drain, located approximately 11 meters (36 feet) east of the settling tank.

Waste Type: Sludge

Waste Description: The tank was used as a solids settling tank for backflushes of the feed filter in the Recuplex. Silica gel was used as a settling agent on the dissolved solids. The solids and the silica gel were then flushed to this unit with nitric acid. In July 1959, records indicate the tank was filled to capacity 58,428 liters (15,435 gallons). No records were found to indicate the tank was pumped between 1959 and 1962. In 1974, a total waste volume of 30,850 liters (8,150 gallons) was reported. A total of 27,580 liters (7,285 gallons) has not been accounted for in historical records. The tank measures 2.4 meters (8 feet) diameter. by 12.2 meters (40 feet) length, constructed of 0.79 centimeters (5/16 inch) steel or wrought iron pate, buried horizontally about 1.8 meters (6 feet) below grade. There are two blanked inlet pipes on the west end and on overflow pipe on the east end of the tank, all three are 15 centimeters (6 inches) below tank top. In the east half of the top centerline of the tank, there are two 10 centimeters (4 inches) vent risers that extend above grade, a 0.3 meters (1 foot) diameter pump access opening, and a 0.6 meter (2 feet) diameter manhole; both bolted over.

200-SW-1

Code:	600 CL	**Classification:**	Accepted
Names:	600 CL; 671 Facility; Central Landfill; Central Waste Landfill; CWL; Solid Waste Landfill; SWL; 600 Area Central Landfill	**Reclassification**	None
Type:	Sanitary Landfill	**Start Date:**	1/1/1973
Status:	Inactive	**End Date:**	1/1/1996

Description: The landfill is approximately 15.4 hectares (38 acres) consisting of 39 unlined solid waste trenches and 5 unlined liquid disposal trenches. All trenches have been backfilled. The landfill had been enclosed by a 2.4 meter (8 foot) tall fence with lockable gates. Only the southern portion of the fence still remains, due to the 2000 range fire. The Nonradioactive Dangerous Waste Landfill (NRDWL) is located adjacent to the Phase I trenches, on the north end of the landfill.

Location: The landfill is located southeast of 200 East Area on Army Loop Road (south of Route 4S).

Related Sites/ Structures: The Non-Radioactive Dangerous Waste Landfill (NRDWL) is located adjacent to the Central Landfill property. The two landfills are separated by a fence. NRDWL was isolated from the Central Landfill in 2001, when the NRDWL was completely enclosed by a chain-link fence with a separate lockable gate.

Waste Type: Asbestos (friable)

Waste Description: Prior to 1982, detailed log books were not maintained. It is estimated that Phase I received approximately 179,000 cubic meters, (234,000 cubic yards) and Phase II received approximately 417,000 cubic meters (546,000 cubic yards) of solid waste. Forty percent of the solid waste is assumed to be office waste consisting mostly of paper products. Construction and demolition debris consists mostly of wood and wooden pallets. Asbestos waste accounts for approximately 10% (by volume) of the inventory. Trenches 36, 37, 38 and 40 contain asbestos. Miscellaneous wastes include empty containers, medical waste from the first-aide stations and inert materials. Large bulky items such as appliances and office furniture were also placed in the solid waste trenches. An estimated 3,800,000 to 5,700,000 liters (1,000,000 to 1,500,000 gallons) of sewage and 380,000 liters (100,000 gallons) of 1100 Area catch basin wastes were placed in the liquid trenches. Spot checks of items in the landfill found occasional low level radioactive material on SWP (special work permit) clothing. Remediation waste from the Sodium Dichromate Barrel Disposal Landfill (sitecode 600-105) included approximately 5000 crushed barrels that were transported to the Central Landfill in 1993.

Code:	600 NRDWL	**Classification:**	Accepted
Names:	600 NRDWL; Nonradioactive Dangerous Waste Landfill (Central Landfill); NRDW Landfill; NRDWL; 600 Area Nonradioactive Dangerous Waste Landfill	**Reclassification**	None
Type:	Sanitary Landfill	**Start Date:**	1/1/1975
Status:	Inactive	**End Date:**	1/1/1988

Description: This Nonradiological Dangerous Waste Landfill (NRDWL) consists of nineteen unlined trenches. Several trenches received asbestos containing material. The nineteen trenches are located adjacent to the Phase I trenches, on the north end of the Central Waste Landfill (CWL) (WIDS sitecode 600 CL). The Phase I trenches and the Phase II (CWL) trenches are separated

by a wire fence. Both the CWL trenches and the NRDWL trenches have been backfilled and covered with 1.8 to 3 meters (6 to 10 feet) of soil.

Location: This site is located on Army Loop Road, southwest of the intersection with Route 4 South and southeast of the 200 East Area.

Release Description: In February and March 2001, the average result of quadruplicate samples from downgradient wells 699-25-34A and 699-25-34B exceeded the critical mean value for specific conductance. A notification was reported to the DOE for transmittal to Ecology. The specific nonconductance is believed to be caused by nonhazardous constituents (sulfate, calcium, magnesium, and chloride) from the adjacent solid Waste Landfill.

Related Sites/ Structures: This site is adjacent to 600 CL, the Central Waste Landfill.

Process Description: This site provided disposal of dangerous waste generated from process operations, research and development laboratories, maintenance activities, and transportation functions throughout the Hanford Site. The permitted chemical trenches ceased to operate in 1985. One asbestos trench was active until 1988.

Waste Type: Abandoned Chemicals

Waste Description: This waste consisted of small quantity laboratory chemicals, bulk organic waste, solvent waste, battery acid, paints, paint thinners, waste oils and empty containers. Some small containers of liquid wastes were included. Trenches 2N, 20, 21, 22, 23, 25, 27,29 and 30 were used for disposal of asbestos waste from 1975 through 1988. Trenches 19N, 26, 28, 31, 33, and 34 were used for the above described chemicals.

Waste Type: Asbestos (friable)

Waste Description: The bulk of the waste asbestos material came from building demolition or renovation activities. This material was disposed of in Trenches 2N, 20, 21, 22, 23, 25, 27, 29, and 30. The asbestos waste was generally not containerized before disposal. It is probably a mix of friable and non-friable material.

Waste Type: Misc. Trash and Debris

Waste Description: This waste consisted largely of office and lunchroom waste and construction/demolition debris. Trench 1N received this waste.

Waste Type: Sludge

Waste Description: One instance occurred where Trench 34 received approximately 5,300 liters (1,400 gallons) of septic tank sludge.

200-SW-2

Code:	216-C-9	**Classification:**	Accepted
Names:	216-C-9; 216-C-9 C Canyon Excavation Semiworks Swamp; 216-C-9 Pond; 216-C-9 Swamp; Former 221-C Canyon Excavation; Semi-Works Swamp; 216-C-7 Swamp	**Reclassification**	None
Type:	Pond	**Start Date:**	6/1/1953
Status:	Inactive	**End Date:**	1/1/1985

Description: The entire site is currently backfilled and surface stabilized. It is posted as an Underground Radioactive Material area. The solid waste burial portion of the site is not separately marked or posted from the liquid waste portion of the site.

Location: The unit is located north of 7th Street and north of the Hot Semi Works Area.

Related Sites/ Structures: Pipelines that fed the 216-C-9 Pond are sitecodes 200-E-254-PL, 200-E-255-PL, 200-E-256-PL, 200-E-257-PL, 200-E-258-PL and 200-E-259-PL.

Process Description: The 221-C facility excavation was divided into sections with dikes. Piping was arranged to provide three discharge points, one to each section.

Waste Type: Water

Waste Description: Until August 1960, the site received process cooling water from the 201-C Building; 201-C, 215-C, 271-C, and 276-C Building floor drains; and miscellaneous water from the 209-E Building and the Hot Semiworks facilities. From August 1960 to October 1969, the site received the same effluents as above plus miscellaneous wastewater from the 209-E Building. From October 1969 to December 1985, the site received miscellaneous wastewater from the Hot Semiworks facilities and the 209-E Building.

Code:	218-C-9	**Classification:**	Accepted
Names:	218-C-9; 218-C-9 Burial Ground; 218EC9; Dry Waste No.0C9	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1985
Status:	Inactive	**End Date:**	1/1/1989

Description: The entire site has been backfilled and surface stabilized. It is posted as an Underground Radioactive Material area. The solid waste burial portion of this waste site is not separately marked or posted from the liquid waste portion of the site.

Location: The unit is located north of 7th Street and north of Hot Semiworks Area.

Process Description: The original burial pit portion was located at the east end of the dried 216-C-9 Pond excavation. The excavated area was originally intended to be the foundation for the 221-C Canyon Facility that was never built. In 1953 the facility excavation began to be used for disposal of cooling water and steam condensate from the Hot Semiworks facilities and the 209-E building. It was known as 216-C-9. Liquid discharges ceased in 1983 and the pond area began to dry. The dried pond area was covered with a layer of washed gravel. In 1985, a decision was made to use the open excavation to dispose of solid waste material from the Hot Semiworks deactivation activities. The waste site number was change to 218-C-9 to designate the area as a solid waste disposal site. A review of waste inventory records contained in the Solid Waste Inventory and Tracking System (SWITS) database found that solid waste

continued to be placed in the open excavation until September 1989. SWITS coordinates indicate truck loads of soil were placed in the excavation west of the area originally defined as 218-C-9. In 2007, the size and shape of 218-C-9 was modified to match the information found in the SWITS database.

Waste Type: Demolition and Inert Waste

Waste Description: The waste consists of radiologically contaminated concrete rubble, large equipment (pulsers), roofing material, metal scrap and other demolition debris from the decommissioning of the 201-C and other Hot Semiworks facilities. Contaminated soil from adjacent areas located east and southeast of 201-C (known as UN-216-E-37 and UN-216-E-39) was also placed into the pit.

Waste Type: Chemicals

Waste Description: Asbestos has been disposed to this burial ground, but the report does not specify if it was friable or non-friable.

Code: 218-E-1 **Classification:** Accepted

Names: 218-E-1; 200 East Dry Waste No. 001 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1953

Description: The burial ground consists of fifteen 61 meter (200-foot) long trenches running north and south, ranging from 5 to 6 meters (16 to 20 feet) wide. The site has been backfilled and surface stabilized. It is surrounded with concrete marker posts and Underground Radioactive Material signs.

Location: The unit is located west of PUREX (202-A) and south of 4th Street.

Process Description: The site received solid waste from facilities in 200 East Area.

Waste Type: Misc. Trash and Debris

Waste Description: This unit received mixed fission product/transuranic dry waste, mostly form B Plant that began operations in 1945.

Code: 218-E-2 **Classification:** Accepted

Names: 218-E-2; Equipment Burial Ground #2; 200 East Industrial Waste No. 002 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1953

Description: The site is a burial ground that consists of 9 industrial waste trenches. The area is posted with Underground Radioactive Material signs.

Location: The site is located north of B Plant and southeast of 241-BX Tank Farm. The site is co-located with Burial Grounds 218-E-5, 5A and 9.

Waste Type: Misc. Trash and Debris

Waste Description: This site received 0.0031 cubic meters (0.1 cubic feet) of mixed fission products/transuranic (MFP/TRU) dry wastes, which were backfilled over.

Code:	218-E-2A	**Classification:**	Accepted
Names:	218-E-2A; Burial Trench; Regulated Equipment Storage Site No. 02A	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1950

Description: The site contains a single east-west trench and was also used as an above-ground storage site for contaminated equipment. The trench is marked as an Underground Radioactive Material area.

Location: The site is located north of B Plant and south of 218-E-2. A railroad spur separates 218-E-2 from 218-E-2A.

Waste Type: Equipment

Waste Description: There are no burial records available for waste disposed of at this trench.

Code:	218-E-4	**Classification:**	Accepted
Names:	218-E-4; Equipment Burial Ground #4; 200 East Minor Construction No. 4	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1956

Description: It is marked and posted with "Underground Radioactive Material" signs.

Location: The site is located north of 221-B. It is an irregularly shaped polygon located between two railroad tracks.

Process Description: The site received repair and construction waste from the 221-B Building modifications. The number of trenches within this burial ground is unknown. The site was surface stabilized in 1980.

Waste Type: Construction Debris

Waste Description: This site received repair and construction wastes from the 221-B Building modifications.

Code:	218-E-5	**Classification:**	Accepted
Names:	218-E-5; Equipment Burial Ground #5; 200 East Industrial Waste No. 05	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1956

Description: The is site marked and posted with Underground Radioactive Material signs. It contains 2 trenches areas. One area is 104 meters (340.5 feet) long by 40 meters (131 feet) wide, containing multiple narrow trenches. The second area is a single trench 102 meters (334.5 feet) long by 19.5 meters (64 feet) wide. The trench is orientated in a north-south direction.

Location: The site is located north of B Plant and southeast of 241-BX Tank Farm, adjacent to 218-E-2 Burial Ground.

Waste Type: Equipment

Waste Description: The large area with multiple narrow trenches received industrial dry waste and small boxes. The north end of the long single trench contains railroad boxcars contaminated with uranyl nitrate hexahydrate (UNH).

Code: 218-E-5A
Classification: Accepted
Names: 218-E-5A; Equipment Burial Ground #5A; 200 East Industrial Waste No. 005A
Reclassification None
Type: Burial Ground
Start Date: 1/1/1956
Status: Inactive
End Date: 1/1/1959

Description: The 1980 Burial Ground Characterization Report indicates the site to be a single, large excavation measuring 30.5 by 36.6 meters (100 by 120 feet).

Location: The site is located north of B-Plant and southeast of 241-BX Tank Farm, adjacent to the 218-E-5 Burial Ground. The site is co-located with Burial Grounds 218-E-2, 5 and 9.

Waste Type: Equipment

Waste Description: The site received waste from PUREX L Cell, referred to as the 202-A Burial Package, in the form of 4 large boxes containing failed equipment and industrial wastes. One of the boxes was damaged during unloading. The contents were pushed into the trench. The D-2 Column from PUREX K Cell and a J-2 Pulse column were also buried in this site.

Code: 218-E-8
Classification: Accepted
Names: 218-E-8; 200 East Construction Burial Grounds
Reclassification None
Type: Burial Ground
Start Date: 1/1/1958
Status: Inactive
End Date: 1/1/1959

Description: The site consists of an unknown number of trenches. The trenches are backfilled.

Location: The site is located north of the 218-E-12A, on the hillside adjacent to the 218-E-12B Burial Ground.

Waste Type: Construction Debris

Waste Description: The site received mixed fission product/transuranic (MFP/TRU) waste, including repair and construction wastes from 293-A and the PUREX new crane addition.

Code: 218-E-9
Classification: Accepted
Names: 218-E-9; Burial Vault (HISS); 200 East Regulated Equipment Storage Site No. 009
Reclassification None
Type: Burial Ground
Start Date: 1/1/1953
Status: Inactive
End Date: 1/1/1958

Description: The site was used as an above-ground storage site, covering 62,000 square meters (74,000 square yards). The unit was never used as a burial ground.

Location: The site is located north of B Plant and east of the 218-E-2 Burial Ground.

Waste Type: Equipment

Waste Description: This unit was a storage site for fission product equipment that became contaminated in the uranium recovery program at the tank farm.

Code: 218-E-10 **Classification:** Accepted

Names: 218-E-10; Equipment Burial Ground #10; 200 East Industrial Waste No. 10 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1960

Status: Active **End Date:**

Description: The site consists of 18 trenches running north and south and 1 trench running east-west. Trench #1 is 7.3 meters (24 feet) deep with bottom dimensions of 400 meters (1,300 feet) long by 4.6 meters (15 feet) wide. Trenches #2 to #17 are 4.6 meters (15 feet) deep, 4.9 meters (16 feet) wide at the bottom, and vary in length from 245 meters (805 feet) to 350 meters (1,145 feet). The backfilled trench running east-west has bottom dimensions of 30 meters (100 feet) long by 4.6 meters (15 feet) wide.

Location: The site is located inside 200 East Area, northwest of B Plant and directly west of the 218-E-5A Burial Ground.

Release Description: On June 10, 1960, a partially covered burial box containing PUREX tube bundles caused an airborne contamination spread (UPR-200-E-23). UPR-200-E-24 documents the large plume of contamination discovered on June 12, 1960 that resulted from the burial box that collapsed it the 218-E-10 Burial Ground, identified several days after the box was buried. UPR-200-E-30 occurred on April 20,1961. A wooden burial box, containing highly contaminated process jumpers and other equipment was pivoted on the railroad car and pulled down the unloading ramp. The box collapsed as it was being covered over with soil in the burial trench. Contamination (maximum 500 millirad/hour) was spread over a 400,000 square foot area within the burial ground. The majority of the contamination was confined to the burial ground.

Related Sites/ Structures: The 218-E-10 Burial Ground is associated with the designated expansion area known as WIDS sitecode 200-E-20.

Process Description: The site has received failed equipment and mixed industrial wastes from PUREX, B-Plant and 100-N.

Waste Type: Equipment

Waste Description: The site has received failed equipment and mixed industrial wastes from PUREX, B-Plant and 100-N. The trench, running east to west, contains 69 PUREX cover blocks and 4 PUREX centrifuge blocks. Other waste includes concrete and wooden burial boxes containing tube bundles, jumper vessels, pumps, columns and filters. The trenches contain low level radiological waste, low level mixed waste, and unsegregated, remote handled waste. Trenches 9 and 12 contain some mixed-waste. Trench 9 specifically contains asbestos, di-n-octyl phthalate, and lead as mixed wastes. As of August 1995, this burial ground had received 21,764 cubic meters of waste.

Code: 218-E-12A **Classification:** Accepted

Names: 218-E-12A; 200 East Dry Waste No. 12A **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1967

Description: The site contains 28 burial trenches that have been backfilled and surface stabilized. The site is marked with concrete AC-540 markers and posted "Underground Radioactive Material." The area of the burial ground is 10.5 hectares (26 acres).

Location: The site is located northwest of the 241-C Tank Farm and south of 218-E-12B Burial Ground.

Waste Type: Misc. Trash and Debris

Waste Description: Trenches 1 through 3, 12 through 14, and 17 through 25 contain predominately dry waste packaged in cardboard boxes and plastic bags. Trenches 4 through 11, 15 through 16, and 26 through 28 contain predominantly acid-soaked material. Specific contents of Trench 28 are unlisted. A waste inventory logbook dated March 24, 1960 to February 16, 1961 documents burials of tank farm dip tubes, an impact wrench, contaminated cable, jumpers, animal carcasses from 108-F and an offsite shipment of depleted uranium.

Code: 218-E-12B
Classification: Accepted

Names: 218-E-12B; 218-E-12B Burial Ground; 200 East Dry Waste No. 12B
Reclassification None

Type: Burial Ground
Start Date: 1/1/1967

Status: Inactive
End Date:

Description: The burial ground is marked and radiologically posted. The original burial ground was designed to have 29 trenches. The expansion to the north and west enlarged the burial ground to include the potential for a total of 138 trenches running north and south. Only 38 of the proposed trenches received waste. The unused, expansion area became WIDS sitecode 218-E-12B ANNEX. In 2014, the active, naval reactor core component of 218-E-12B (Trench 94) was separated into a new WIDS waste site (see 200-E-304) and the 218-E-12B site was considered inactive.

Location: The burial ground is located inside 200 East Area, north of the 241-C Tank Farm and south of 12th Street.

Related Sites/ Structures: This burial ground is associated with WIDS sitecode 218-W-12B ANNEX and 200-E-304 (Trench 94).

Process Description: The burial ground received waste from 200 East Area facilities. It was designed to receive a variety of container types and a broad spectrum of waste types. Only thirty six trenches were filled completely and two trenches were partially filled (38 total). The first six trenches were 0.9 meters (3 feet) wide and 1.2 meters (4 feet) deep. The rest of the trenches were designed to be 4.8 meters (16 feet) deep. Two trenches contain retrievably stored TRU waste. A large portion of the property designated as 218-E-12B was never been used (see 218-E-12B ANNEX).

Waste Type: Equipment

Waste Description: All trenches are orientated in a north-south direction. This burial ground was used primarily for low-level waste generated mostly from facilities located in the 200 East Area. A special burial of Mixed Fission Product (MFP) was placed in Trench 28. Two trenches (trenches 17 and 27) contain 55-gallon drums, 30-gallon drums, fiberboard boxes, metal boxes, HEPA filters and equipment suspected of containing TRU waste. Coordinates for these drums were documented to allow them to be retrieved. Some waste included plutonium contaminated process piping, pumps and other equipment. As of 1995, the site had received 78,740 cubic meters of waste. Thirty six trenches were filled, two were partially filled, Trenches 38, 43, 48 and 53 was used for low-level mixed waste that included asbestos and copper. (Trench 94, used for the disposal of U.S. Navy vessel defueled reactor compartments, became WIDS sitecode 200-E-304)

Waste Type: Chemicals

Waste Description: From 1987 to 1990, asbestos and copper were disposed in Trenches 38, 43, 48 and 53.

Code: 216-T-4-2 **Classification:** Accepted

Names: 216-T-4-2; 216-T-4-2 Ditch **Reclassification** None

Type: Ditch **Start Date:** 1/1/1972

Status: Inactive **End Date:** 1/1/1995

Description: The ditch has been backfilled and surface stabilized. It is currently marked and posted with Underground Radioactive Material signs. It has a grass cover.

Location: The site is located north of 23rd Street and north of the 241-T Tank Farm. The first 15 meters (50 feet) from the fallout (head of unit) was part of the original 216-T-4-1 Ditch. At that point, it made a 90-degree turn to the north, paralleling the old 216-T-4-1 Ditch where it went through a culvert under the railroad tracks and continued to the 216-T-4B Pond.

Related Sites/ Structures: The site is associated with the 207-T Retention Basin and the 216-T-4B Pond. The pipeline from 207-T that fed the ditch is sitecode 200-W-164-PL.

Process Description: This unit was dug as a replacement for the 216-T-4-1 Ditch in May 1972. The first 15 meters (50 feet) of the new ditch is common with the original ditch. It received T Plant cooling water and condensate waste via the 207-T Retention Basin. A 1978 radiological survey found the first 15 meters (50 feet) to be contaminated, but the remainder of the ditch was not radiologically contaminated. The ditch was constructed with riprap at head end. A 76 centimeter (30 inch) diameter, 12-gauge corrugated galvanized inlet pipe was located 0.9 meters (3 feet) below grade.

Waste Type: Steam Condensate

Waste Description: The site received steam condensate and condenser cooling water from the 242-T Evaporator and nonradioactive wastewater from 221-T air conditioning filter units and floor drains.

An early WIDS citation titled "March & May Computer Listings Research and Engineering" by MW Gibson (no date) listed the 216-T-4-2 Ditch as having 1.41g of plutonium. This source cannot be located. However, the document "Hanford Defense Waste Environmental Impact Statement Engineering Data Package: Transuranic Contaminated Soil Sites" also by MW Gibson (SW-WM-DP-007, 9/30/1985) does not list the 216-T-4-2 Ditch in it's list of plutonium contaminated sites.

Code: 216-T-4A **Classification:** Accepted

Names: 216-T-4A; 216-T-4 Swamp; 216-T-4-1 (P); 216-T-4-1 Pond **Reclassification** None

Type: Pond **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1972

Description: The pond was located in a natural surface depression forming an L-shaped shallow pond covering approximately 6.5 hectares (16 acres). The pond is no longer visible. It was exhumed in 1972 to make room for the expansion of the 216-W-2A Burial Ground.

Location: The pond was located in northeast portion of the current of the 218-W-2A Burial Ground.

Release Description: A number of process vessel leaks in the 221-T Building released radioactivity to this unit over the ensuing years. At the shutdown of the 221-T process in 1957, Geiger-Mueller (GM)

radiation readings taken around the shoreline of the unit ranged from 2,000 to 15,000 counts/minute.

Related Sites/ Structures: The site is associated with the 216-T-4-1 Ditch and the 218-W-2A Burial Ground.

Process Description: The pond received cooling water and steam condensate from 221-T and 224-T via the 207-T Retention Basin and the 216-T-4-1 Ditch. The pond became active in November 1944 with the startup of the 221-T Chemical Separation Plant. The waste water in the ditch flowed through a culvert that went under the 218-W-2A Burial Ground railroad spur and then ran into a shallow ditch cut to a natural surface depression in the desert floor.

Waste Type: Steam Condensate

Waste Description: Until September 1951, the site received process cooling water from 221-T and 224-T Buildings via 207-T Retention Basin and steam condensate from 221-T Building. From September 1951 to July 1955, the site received same as above plus condenser cooling water and steam condensate from the 242-T Evaporator. From July 1955 to August 1956, same as November 1944 to September 1951. From August 1956 to June 1957, the site received steam condensate from 221-T Building. From June 1957 to July 1964, the site was on standby. From July 1964 to December 1965, the site received decontamination waste from 2706-T Building. From December 1965 to November 1970, same as above plus condenser cooling water from 242-T Building. After November 1970, the site received condenser cooling water from 242-T Building.

Code: 216-T-4B **Classification:** Accepted

Names: 216-T-4B; 216-T-4 New Pond; 216-T-4-2 (P); 216-T-4-2 Pond **Reclassification** None

Type: Pond **Start Date:** 1/1/1972

Status: Inactive **End Date:** 1/1/1995

Description: The pond is no longer visible. The a portion of the pond is located within the area designated as the 218-W-3AE burial ground. It is not separately marked or posted from the burial ground postings.

Location: The pond was located east of old the pond 216-T-4A, north of 23rd Street. A portion of the 218-W-3AE Burial Ground was built over the dry pond location. The pond's size has been estimated as 1.5 acres.

Related Sites/ Structures: The pond was associated with the 216-T-4-2 Ditch, 200-W-81 and the 218-W-3AE Burial Ground.

Process Description: The pond was a natural depression that received overflow run off from the 216-T-4-2 Ditch. The effluent was usually absorbed in the ditch, leaving the pond area dry.

Waste Type: Steam Condensate

Waste Description: The site received steam condensate and condenser cooling water from the 242-T Evaporator and nonradioactive wastewater from 221-T air conditioning filter units and floor drains.

Code: 218-W-1 **Classification:** Accepted

Names: 218-W-1; Solid Waste Burial Ground #1; 200-W Area Dry Waste No. 001 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1953

Description: The burial ground has been backfilled and surface stabilized. It is inside a 1.83 meter (6 foot) fence that encompasses this burial ground and also 218-W-4A, 218-W-11 and 218-W-2. The site contains 15 trenches that run east and west. Twelve of the trenches are "V" shaped 2.4 meters (8 feet) deep and 4.9 meters (16 feet) wide at ground level. The other 3 trenches are flat-bottom trenches 2.7 meters (9 feet) deep and 7.3 meters (24 feet) wide at the surface.

Location: The site is located northwest of the 234-5Z Building. It is east of Dayton Avenue, between the 218-W-2 and 218-W-11 Burial Grounds.

Release Description: UPR-200-W-16 is associated with the operation of this burial ground.

Waste Type: Misc. Trash and Debris

Waste Description: This site received unsegregated, pre-1970 transuranic (TRU) and miscellaneous dry waste. The radionuclide inventory is estimated to be 7E+05 grams of uranium, 9.4E+04 grams of plutonium, 3.9 curies of Sr-90 and 4.2 curies of Cs-137. The contaminated soil volume is approximately 1.6E+04 cubic meters.

Code: 218-W-1A **Classification:** Accepted

Names: 218-W-1A; Equipment Burial Ground #1; 200-W Area Industrial Waste Burial Ground #1 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1960

Description: The burial ground has been backfilled and surface stabilized. It is surrounded with cement marker posts and Underground Radioactive Material signs.

Location: The burial ground is located northwest of 221-T, between two railroad spurs.

Process Description: This site was the first burial site in the 200 West Area to receive large, contaminated equipment. The site contains approximately 10 burial areas. Some are typical trenches but several areas are described as burial holes. The exact locations of the burial holes are not known, but they are within the area designated as No. 3 on H-2-2516. A semi-circular railroad spur divided the area into north and south sections. The spur is no longer visible. Most of the equipment was buried in wooden boxes, which eventually rotted and settled, causing the surface to subside. Most of these sink holes were filled in 1975. Prior to stabilization, large 1.8-meter (6-foot) thick concrete cell blocks were stored above ground, south of the railroad tracks.

Waste Type: Equipment

Waste Description: The burial ground received failed contaminated equipment and industrial waste (per RHO-CD-673).

Code: 218-W-2 **Classification:** Accepted

Names: 218-W-2; Dry Waste Burial Ground No. 2; 200-W Area Dry Waste No. 002 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1956

Description: The site is a burial ground that contains 20 miscellaneous dry waste trenches, running east-

west. The site had been backfilled and stabilized. It is posted as Underground Radioactive Material.

Location: The site is northwest of the 234-5Z Building between 218-W-4B and 218-W-1.

Waste Type: Misc. Trash and Debris

Waste Description: This site received pre-1970 transuranic (TRU) and miscellaneous contaminated dry waste.

Code: 218-W-2A **Classification:** Accepted

Names: 218-W-2A; Equipment Burial Ground #2; Industrial Waste No. 02A **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1985

Description: The site has been backfilled and stabilized. It is posted as Underground Radioactive Material.

Location: The site is located west of the 221-T Building, north of 23rd Street and directly east of the 218-W-3 Burial Ground.

Process Description: The site is an industrial, solid waste burial site containing 19 trenches (numbered #1 to #11, and #20 to #27). Trenches #11 through #15 are considered a cell block burial area. They have a north-south orientation, located between Trenches #24 and #27. All trenches were dug with centerlines running northwest from the railroad tracks, except Trenches #1 to #3, which are shorter trenches, grouped in the extreme southwest corner of the site. Trench #16 is located east of Trench #24.

Waste Type: Equipment

Waste Description: The unit contains mostly miscellaneous radioactive solid waste from facilities located in the 200 West area. The solid waste consists mainly of tanks, concrete blocks, facility wastes, and process equipment. Sixteen trenches are filled with dry industrial waste. Trench #27 contains contaminated soil scraped from the 216-T-4-1 Pond. Waste buried since November 1980 does not contain hazardous materials. It is possible that wastes disposed of prior to this date may contain hazardous wastes. Of the 25,100 cubic meters (887,000 cubic feet) of waste contained in the unit, only 340 cubic meters (12,000 cubic feet) were disposed of after November 1980. The waste disposed of before November 1980 is both low-level and byproduct, while the waste disposed of since that date is strictly low-level. A waste burial logbook dated January 1958 through November 1963 specifically documents the burial of REDOX centrifuges, jumpers, pumps, filters and miscellaneous cell equipment and wastes. Many of the shipments were contained in large wooden or concrete boxes. One specific inventory sheet states that on October 10,1973 a large burial box (marked B-Plant 58526) was placed in Trench 21 and contained a PU glove box and miscellaneous scrap.

Code: 218-W-3 **Classification:** Accepted

Names: 218-W-3; Dry Waste No. 003 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1961

Description: This site is a burial ground that contains 20 dry waste trenches. The site has been backfilled and surface stabilized. It is posted as Underground Radioactive Material.

Location: The site is located west of the 221-T Building and directly west of the 218-W-2A Burial Ground.

Waste Type: Misc. Trash and Debris

Waste Description: This site received miscellaneous unsegregated mixed transuranic (TRU) and non-TRU wastes. A logbook dated February 1959 through June 1961 documents the burial of 109 drums of uranium scrap (depleted) from California and Oregon, placed in Trench 17, a vehicle (ID - 491) buried at the east end of Trench 14 and 49 barrels of depleted uranium from Colorado and Oregon placed in Trench 14. Waste from 221-T, 291-T, 222-U, 234-5Z, 231-Z, 202-S, 308 building and lab waste is also noted.

Code: 218-W-3A
Classification: Accepted
Names: 218-W-3A; Dry Waste No. 003A
Reclassification None
Type: Burial Ground
Start Date: 1/1/1970
Status: Active
End Date:

Description: The site is a burial ground that was designed to contain 61 dry and industrial waste trenches running in an east-west direction. Seven are 163 meters (535 feet) long, thirty-five are 284 meters (930 feet) long, and ten are 275 meters (900 feet) long. The remaining trenches range in length from 123 meters (403 feet) to 156 meters (512 feet). The side slopes are 1:1 or as required to match the natural angle of repose. Trench depths range from 3.7 to 5.8 meters (12 to 19 feet). Four trenches have not been dug.

Location: The site is located west of the 221-T Building and north of 218-W-3 Burial Ground.

Related Sites/ Structures: 218-W-3A is associated with UPR-200-W-134.

Waste Type: Soil

Waste Description: Trench #8 contains non-TRU and TRU waste. Trenches #17 and #5 contain TRU waste. Trench #40 contains industrial waste. Trench #14 contains 10 large concrete burial boxes of radioactive soil from the 241-S Tank Farm following a salt waste spill from the 102-S Tank transfer piping in 1973. Dose rates at the site of the spill before removal of the ground ranged to a maximum of 9 mR/h. Trench #17 contains fiberglass reinforced polyester (FRP) plywood boxes in various sizes. Trench #7 contains waste from the cleanup efforts at Three Mile Island Nuclear Plant (TMI-2). All remaining filled trenches contain dry and industrial waste. Additional waste information is available in the WIDS hardcopy file for 218-W-3A.

Waste Type: Chemicals

Waste Description: Wastes disposed to this burial ground since 1987 include: 1,2,4-trimethylbenzene, acetonitrile, aliquot 336, alloy with mercury, asbestos, barium, beryllium, butyl acetate, cadmium, chromium, cyclohexanone, dibutyl-n/n-diethylcarbomyl phosphate, dioxane, ethanol, ethanolamine, isopropyl alcohol, lead, mercury, methanol, naphthalene, normal paraffins, oil, silver, toluene, tri-butyl phosphate, trioctylphosphine oxide, and xylene.

Code: 218-W-3AE
Classification: Accepted
Names: 218-W-3AE; Dry Waste No. 3AE; Industrial Waste No. 3AE
Reclassification None
Type: Burial Ground
Start Date: 3/31/1981
Status: Active
End Date:

Description: The site was originally designed to consist of 24 trenches. To make the best use of available space, the site was redesigned to contain 12 trenches with deeper depths.

Location: This site is directly east and adjacent to the 218-W-3A Burial Ground in the 200 West Area.

Related Sites/ Structures: The site is related to the 216-T-4B Pond.

Waste Type: Misc. Trash and Debris

Waste Description: The site has been receiving miscellaneous wastes such as rags, paper, rubber gloves, disposable supplies, broken tools, etc. and industrial waste such as failed equipment, tanks, pumps, ovens, agitators, heaters, hoods, jumpers, and accessories. Trenches 2 and 3 have received remote-handled low-level waste. Trenches 5 and 10 are wide bottom stacking trenches. 218-W-3AE Trench 8 and 13 contain waste that has been encased in concrete monoliths (aka HIC or High Integrity Container). Some HICs are rectangular, measuring approximately 25 ft long by 10 ft wide and 13 feet tall. Some HICs are circular and vary in diameter. Most of the monoliths are placed together with only a cold joint separating them. Waste in the monoliths is typically category 3 waste and/or waste that requires stabilization because of mobile radionuclides. The HICs have concrete lids and are covered with a shallow layer of soil. Trench 26 was designed for disposal of contaminated railroad cars and large tanks.

Waste Type: Chemicals

Waste Description: Wastes disposed of to this site include: aluminum, asbestos, beryllium, bis(2-ethylhexyl)phthalate (DOP), calcium carbonate, cement, charcoal, clay, silicas, talc, copolymer of styrene, copper, di-n-octyl phthalate, graphite, hydrotreated heavy naphtha isopropyl alcohol, lead, mixed esters, phthalate, nylon, peroxydisulfuric acid, disodium salt, resin, sodium chloride, sodium nitrate, sodium phosphate dibasic, steel, tantalum, uranium, and yttrium oxide.

Code: 218-W-4A
Names: 218-W-4A; Dry Waste No. 04A
Type: Burial Ground
Status: Inactive
Classification: Accepted
Reclassification None
Start Date: 6/30/1961
End Date: 2/28/1968

Description: The site is a burial ground that has been backfilled and stabilized. It is inside a chain link fence and is posted as Underground Radioactive Material. The unit contains 21 miscellaneous dry waste trenches and six vertical storage units (dry wells). The trenches are oriented in an east to west direction with Trench #1 on the southern end of the site and Trench #21 on the northern end. The six 4.6 meter (15-foot) deep dry wells were installed near the east end of Trench #16. The wells were made by welding together 210 liter (55-gallon) steel drums with the ends cut out. The units were buried vertically and used for remote disposal of small, highly radioactive items. The site may also contain two larger caissons located at the extreme east end of the burial ground, between Trenches #17 and #18 and between Trenches #18 and #19. A Hanford drawing (H-2-32487) describes them 12 gage, 66 centimeter (26 inch) diameter well casings that extend 14.6 meters (48 feet) below grade.

Location: The site is located southeast of the intersection of 23rd Street and Dayton Avenue.

Waste Type: Equipment

Waste Description: This site received miscellaneous dry, unsegregated mixed transuranic (TRU) and non-TRU waste. Specific trench contents are mentioned on Drawing H-2-32487 and in the Burial Ground logbook. These sources document the burial of approximately 500 drums of depleted uranium from offsite contractors, pumps and equipment, laboratory hoods from 234-5 Z, 231-Z, 222-U

and REDOX, and plutonium contaminated 300 Area laboratory waste. On 5-7-65, ten concrete barrels of high level plutonium were placed in Trench 16. On February 2, 1966 a Special Burial of waste from 234-5Z was made in Trench 20. Drawing H-2-32487 indicates the east end of Trench 19 contains Recuplex waste. (additional information available in the WIDS library)

Code:	218-W-4B	**Classification:**	Accepted
Names:	218-W-4B; Dry Waste No. 04B	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1967
Status:	Active	**End Date:**	1/1/1990

Description: The site contains 13 trenches and one row of 12 caissons. Trenches 7 and 11 contain retrievable TRU waste. The other trenches contain unsegregated TRU and non TRU radioactive waste. The row of caissons include 5 alpha caissons, 6 mixed fission product (MFP) caissons and one silo type caisson used for high activity N-Reactor waste. The alpha caissons and 2 of the MFP caissons are 2.7-meter (8.75-foot) diameter, 3-meter (10-foot) high concrete containers with steel lifting lugs and a 91-centimeter (36-inch) diameter access chute. Two of the MFP caissons are constructed of corrugated steel instead of concrete. The silo type caisson is a 3-meter (10-foot) diameter, 9-meter (30-foot) tall container placed on a concrete foundation with a top concrete shielding slab. It has a 107-centimeter (42-inch) diameter access chute. All three caisson types are equipped with air filter systems.

Location: The site is northwest of the 234-5Z Building, directly west of 231-Z Building.

Waste Type: Misc. Trash and Debris

Waste Description: The site received miscellaneous radioactive solid waste from 100, 200 and 300 Areas as well as offsite shipments. Solid waste consists of rags, paper, cardboard, plastic, pumps, tanks, process equipment, and other miscellaneous high dose rate and TRU dry waste. The site contains 114,300 cubic feet of segregated (post-1970) TRU waste. Trenches 7 and 11 contain retrievable TRU waste. The other trenches contain unsegregated TRU and radioactive waste. There are twelve caissons that received remote handled high dose rate and TRU wastes. Five caissons were designated as alpha caissons, but only four were used. They were used from 1970 to 1979. Seven caissons were designated as beta/gamma caissons and were used from 1968 to 1979. The last shipment of waste was deposited into MFP caisson #6 in 1990. No additional waste is planned to be placed in the caissons. As of August 1995, the burial ground had received a total of 10,466 cubic meters of waste. (The WIDS Library has an original logbook for this burial ground)

Code:	218-W-4C	**Classification:**	Accepted
Names:	218-W-4C; Dry Waste No. 004C	**Reclassification**	None
Type:	Burial Ground	**Start Date:**	1/1/1978
Status:	Active	**End Date:**	

Description: The burial ground is located on the east side of Dayton Ave. The trenches are marked with Radiation Area, Radioactive Material Area and Underground Radioactive Material Area signs.

Location: This burial ground is located southwest of the 234-5Z Building, east of Dayton Ave.

Related Sites/ Structures: 218-W-4C burial Ground is associated with the unused portion known as WIDS sitecode 218-W-4C Annex.

Process Description: The burial ground and annex were designed to contain up to 65 trenches. The main burial ground was designed to include forty-eight trenches, orientated east to west. The burial ground annex was designed to include seventeen trenches, running north to south. The burial ground annex area has never been used. Only fifteen trenches in the main burial ground have been activated. The 218-W-4C activated trench numbers are NC, 1, 4, 7, 14, 19, 20, 23, 24, 28, 29, 33, 48, 53 and 58. The burial ground annex was never used.

Waste Type: Equipment

Waste Description: Trenches #1, 4, 7, 20, 24 and 29 contain retrievably stored, suspect TRU waste. Trench #19 contains one drum of CH-TRU that is mixed with LLW. Trench 19 is being evaluated for redefinition as a Low Level Waste trench. Trench #1 contains drums with plutonium-contaminated soil from the 216-Z-9 trench and noncombustible TRU waste. Trench #4 contains drums of assorted combustible TRU waste and one module of noncombustible TRU waste. The remaining trenches are proposed. Additional waste information is available in the WIDS hardcopy file for 218-W-4C.

Waste Type: Chemicals

Waste Description: Wastes disposed of to this site include: copper, bis(2-ethylhexyl)phthalate (DOP), lead, and nitrogen.

Code: 218-W-5 **Classification:** Accepted

Names: 218-W-5; Dry Waste Burial Ground; Low-Level Radioactive Burial Grounds **Reclassification** None

Type: Burial Ground **Start Date:** 8/29/1986

Status: Inactive **End Date:**

Description: The waste site is a large solid waste burial ground, backfilled with soil and cobbles. It is marked with radiological postings.

In 1979, a large area adjacent to the northwest corner of 200 West Area was annexed and designated the Central Waste Complex and 218-W-5 burial ground. The annexed area extended north from 16th Street to 27th Street and westward to coordinates E564176/N137630. Within the large annex, 84 acres were designated as Low Level Solid Waste Burial Grounds. 218-W-5 originally was designed to contain 18 low level solid waste trenches and 4 low level mixed waste trenches. Of the original trenches, only ten low level solid waste trenches and two low level mixed waste trenches were used. Later, line trenches 31 and 34 were constructed.

Location: The 218-W-5 Burial Ground is located in the northwest section of 200 West Area. It is west of Dayton Ave. and north of 23rd Street.

Related Sites/ Structures: The Active mixed waste trenches (trench 31 and trench 34) are described in sitecode 200-W-254.

Waste Type: Not Specified

Waste Description: This unit was originally designed to store non-TRU waste and retrievable TRU waste. There were five distinct storage and disposal areas within the expansion. However, it now includes only low level radiological solid waste. The mixed waste component is sitecode 200-W-254.

Code: 218-W-11 **Classification:** Accepted

Names: 218-W-11; Regulated Storage Site **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1960

Description: The unit consists of two burial trenches. Trench #1 is 77 meters (258 feet) long, and Trench #2 is 46 meters (150 feet) long.

Location: The unit is located northwest of the 234-5Z Building, and north of 218-W-1.

Waste Type: Equipment

Waste Description: This unit was used for burial of low-level, contaminated sluicing equipment that had been used in the uranium recovery program. Some of the equipment was later taken from the unit and used in the strontium/cesium recovery program.

200-WA-1

Code:	207-S	**Classification:**	Accepted
Names:	207-S; 207-S Retention Basin; REDOX Retention Basin	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1951
Status:	Inactive	**End Date:**	1/1/1954

Description: The basin has been backfilled to grade with dirt. It is surrounded with concrete marker posts and is currently posted with Underground Radioactive Material signs.

Location: The site is located west of the 222-S Laboratory buildings and north of 10th Street.

Release Description: A number of leaks in process vessel coils in the REDOX Plant released radionuclides into the unit from late 1952 until the unit was taken out of service. UPR-200-W-13, UPR-200-W-15, UPR-200-W-95 are associated with the site.

Related Sites/ Structures: The basin is associated with the 202-S facility, the 216-S-17 pond, UPR-200-W-13, UPR-200-W-15, UPR-200-W-95 and the 200-W-152-PL pipeline.

Process Description: The basin received process cooling water and steam condensate from the 202-S facility before it was discharged to the 216-S-17 or 216-S-16 ponds. The basin was removed from service in 1954 following a 202-S coil leak that contaminated the basin above permissible limits.

The basin was a 39.6 meter by 39.6 meter (130 foot by 130 foot) concrete structure with a volume of 3.23E+06 liters (8.53E+05 gallons). The walls are approximately 25 centimeters (10 inches) thick, and the floors are 20.3 centimeters (8 inches) thick. The system included approximately 610 meters (2,000 feet) of 61-centimeter (24-inch) diameter vitrified clay pipe used to convey the waste water into and out of the unit. There is an overflow tank located in the center of the north end, just inside the basin wall, composed of 0.48-centimeter (3/16-inch) steel walls, 1.7 meters (5.5 feet) high. The tank diameter was 6.1 meters (20 feet). There is also an outlet weir structure adjacent to the south wall, outside the basin.

Waste Type: Process Effluent

Waste Description: The site received process cooling water and steam condensate from the 202-S Building. The water was then discharged to the 216-S-17 Pond or the 216-S-16 Pond. Coil leaks inside the 202-S facility often caused contaminated effluent to be discharged to the retention basin.

Code:	216-S-1&2	**Classification:**	Accepted
Names:	216-S-1&2; 216-S-5 Crib; 216-S-1 & 2	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1956

Description: The cribs are located within a common radiologically posted area. The surface is free of vegetation. The area is marked and posted with Underground Radioactive Material and Cave-in Potential signs. There is an additional, small posted Underground Radioactive Material area adjacent to the south side of the cribs and the 299-W22-11 well. The Dyncorp Integrated Soil, Vegetation and Animal Control group has stated that growing, contaminated weeds were found inside this area in September 2000. The contaminated weeds were removed and disposed of properly. The site consists of two open-bottomed crib boxes made of timbers. The cribs are connected in series where overflow from the crib box S1 flows into crib box S2 via an underground pipe. The boxes were set in a gravel lined trench and backfilled.

Location: The cribs are located east of the 241-SX Tank Farm, and southeast of the 241-S-151 Diversion Box.

Release Description: In August 1955, process vapors and high dose rates were observed at the 207-S-11 Test Well (alias 299-W22-3), adjacent to the cribs. See UPR-200-W-36.

Related Sites/ Structures: The associated structure is the 241-S-151 Diversion Box, 200-W-137-PL pipeline and the 216-S-7 crib.

Process Description: This unit was used as a subsurface liquid distribution system that received cell drainage and process condensate from the REDOX facility. The waste had a pH of 2.1. The waste was discharged to the cribs in batches. Each batch was approximately 19,000 liters (4940 gallons). An average of 10 batches were discharged each day. When the crib was abandoned, it had received approximately 750,000 curies of mixed fission products. It was replaced by the 216-S-7 crib.

Waste Type: Process Effluent

Waste Description: The site received cell drainage from the D-1 Receiver Tank and process condensate from the D-2 Receiver Tank in the 202-S Building. The inorganics disposed of at the site were nitrate, aluminum nitrate, nitric acid, and sodium.

Code: 216-S-4 **Classification:** Accepted

Names: 216-S-4; 216-S-4 Sump or Crib; 216-S-7; UN-216-W-1 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1956

Description: The site is marked and posted with Underground Radioactive Materials signs. The site is constructed of two vertically buried metal culvert pipes.

Location: This unit is located to the east of the 216-U-10 Pond and northwest of the 216-S-21 Crib.

Related Sites/ Structures: The site is associated with the condensers on the 241-S-101 and 241-S-104 Tanks located inside the 241-S Tank Farm.

Process Description: The site is constructed of two rock-filled, 6.1 meter (20 foot) long metal culverts, connected in parallel. The site received liquid from the 241-S-101 and 241-S-104 tank condensers via an aboveground pipe. The site was deactivated by removing the aboveground piping.

Waste Type: Process Effluent

Waste Description: During August and September 1953, the site received condensate and cooling water from condensers on the 241-S-101 and 241-S-104 Tanks in the 241-S Tank Farm. After September 1953, the site received the cooling water but the condensate waste was routed to the 216-S-3 Crib. The chemical component of this waste was nitrate.

Code: 216-S-5 **Classification:** Accepted

Names: 216-S-5; 216-S-5 Cavern #1; 216-S-6 Crib; 216-S-9 **Reclassification** None

Type: Crib **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1957

Description: The site consists of a gravel-filled crib and an overflow trench. The crib was constructed of

two lengths of perforated, corrugated metal pipe that form a cross. The crib has been surface stabilized. It is marked and posted with Underground Radioactive Material signs. The overflow trench is located south of the crib structure (see subsites).

Location: This unit is outside of the 200 West Area perimeter fence, southwest of 207-S Retention Basin and west of the 216-S-10 Ditch.

Related Sites/ Structures: The site is associated with the 202-S Building, the 207-S Retention Basin, and 216-S-6. The pipelines to the 216-S-5 crib is discussed in sitecode 200-W-154-PL and 200-W-152-PL.

Process Description: This unit received subsurface liquid disposal for the 202-S Building process vessel cooling water and steam condensate via an underground clay pipeline. The crib was built to replace the 216-S-17 Pond.

Waste Type: Process Effluent

Waste Description: The site received process vessel cooling water and steam condensate from 202-S Building via the 207-S Retention Basin. The waste was acidic and contained nitrates.

This Site has the Following SubSites:

Code: 216-S-5:1
Names: 216-S-5:1; 216-S-5 Crib

Code: 216-S-5:2
Names: 216-S-5:2; 216-S-5 Overflow Pond; 216-S-5 Overflow Trench

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Code: 216-S-5:1 **Classification:** Accepted

Names: 216-S-5:1; 216-S-5 Crib **Reclassification** None

Type: Crib **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of a gravel-filled crib containing two lengths of perforated, corrugated metal pipe that form a cross. The crib has been surface stabilized.

The SubSite is Part Of:

Code: 216-S-5
Names: 216-S-5; 216-S-5 Cavern #1; 216-S-6 Crib; 216-S-9

Code: 216-S-5:2 **Classification:** Accepted

Names: 216-S-5:2; 216-S-5 Overflow Pond; 216-S-5 Overflow Trench **Reclassification** None

Type: Crib **Start Date:**

Status: Inactive **End Date:**

Description: In 1956, the large cooling water discharge volumes made it necessary to cut a hole along the top edge of the crib to discharge overflow cooling water to a trench immediately southwest of the crib structure rather than allowing the crib to flood (see drawing H-6-466). The overflow of 50 to 100 gallons per minute represented approximately 5% of the total flow to the 216-S-5 crib. The emergency overflow continued throughout the summer of 1956. In September 1956, the REDOX A-2 dissolver and H-4 coils failed. The dose rates along the edge of the crib overflow area increased from 100 millirad per hour to 350 millirad per hour with some spots reading up to 17 rad per hour. The emergency crib overflow pond was used until the 216-S-16 Pond was

completed in September 1957.

The SubSite is Part Of:

Code: 216-S-5
Names: 216-S-5; 216-S-5 Cavern #1; 216-S-6 Crib; 216-S-9

Code:	216-S-6	**Classification:**	Accepted
Names:	216-S-6; 216-S-6 Cavern #2; 216-S-13 Crib; 216-S-5 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1972

Description: This unit consists of a square pit filled with gravel with corrugated metal perforated pipe running down the center, and six pipes branching off perpendicular to the main pipe. The site is backfilled and marked with Underground Radioactive Material signs.

Location: This unit is located outside the 200 West Area perimeter fence, northwest of 216-S-5 crib and north of 216-S-17 Pond.

Related Sites/ Structures: The site is associated with the 202-S Building, the 207-S Retention Basin, the 2904-S-171 Control Structure and the 216-S-5 Crib. The pipeline to the 216-S-6 crib is discussed in sitecodes 200-W-153-PL and 200-W-156-PL.

Process Description: This unit received subsurface process cooling water and steam condensate from the 202-S Building waste via an underground pipelines (see sitecodes 200-W-153-PL, 200-W-155-PL and 200-W-156-PL). The 2904-S-171 Control Structure was built to measure and regulate flow of process waste being routed to the 216-S-6 Crib.

Waste Type: Process Effluent

Waste Description: From November 1954 until June 1967, the site received the process vessel cooling water and steam condensate from the 202-S Building. From June 1967 to July 1967, production operations were shut down and the 202-S Building was put on standby. After July 1967, the site received the steam condensate from the D-12 and D-14 Waste Concentrators in the 202-S Building. The waste is low in salt, neutral to basic, and contains nitrates.

Code:	216-S-7	**Classification:**	Accepted
Names:	216-S-7; 216-S-7 Crib; 216-S-15	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1956
Status:	Inactive	**End Date:**	1/1/1965

Description: The crib is marked and posted with Underground Radioactive Material and Cave-In Potential signs.

Location: The crib is located north of 10th Street, northwest of the 202-S Building.

Related Sites/ Structures: The associated structure is the 202-S Building, 240-S-151 Diversion Box and the 200-W-138-PL pipeline.

Process Description: The crib was built to replace the 216-S-1 & 2 cribs. It received REDOX cell drainage and process condensate waste. The unit consists of two wooden cribs measuring 4.9 meters (16.1 feet) square and 1.6 meters (5.2 feet). The crib boxes are set 15.3 meters (50 feet) apart, center to center, in one excavation. The cribs were set in gravel and covered with backfill. The two

cribs are connected in parallel by a pipe, allowing the flow to be equally distributed to both cribs. Each crib box had two risers that extended to the surface.

Waste Type: Process Effluent

Waste Description: From January 12, 1956 to April 12, 1959, the unit received REDOX cell drainage from the D-1 Receiver Tank, process condensate from the D-2 Receiver Tank, and condensate from the H-6 Condenser in 202-S Building. A buildup of beta activity in this crib prompted the rerouting of H-6 waste material. On April 12, 1959, jumper changes were completed that routed the H-6 liquid waste to the underground waste storage tanks. The crib continued to receive waste from D-1 and D-2 Vessels until July 1965. The chemicals disposed at the site included nitrate, aluminum nitrate, nitric acid, and sodium.

Code: 216-S-8 **Classification:** Accepted

Names: 216-S-8; Cold Aqueous Crib; Cold Aqueous Grave; Cold Aqueous Trench; Unirradiated Uranium Waste Trench; 216-S-3 **Reclassification** None

Type: Trench **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1952

Description: The site consists of one trench that has been backfilled to grade. It was fed with aboveground piping. It is marked and posted with Underground Radioactive Material signs.

Location: This unit is located on the east side of the 241-SX Tank Farm and southwest of the 216-S-1 & 2 Cribs.

Related Sites/ Structures: The associated structure is the 202-S Building.

Process Description: The site was a single use trench that received unirradiated uranium start-up waste from the 202-S Building.

Waste Type: Process Effluent

Waste Description: The site received unirradiated start-up waste from the 202-S Building. The Monthly Report for October 1951 stated approval had been given for the excavation of a trench to receive uranium test run waste. Waste concentrations were estimated to be 0.2 grams of uranium per liter. The estimated total volume was expected to be only 152,000 liters (40,000 gallons). HW-28471 states that the trench was used between October 1951 through January 1952. This document states that a total of 309,700 liters (81,500 gallons) containing 193 kilograms (430 pounds) of unirradiated uranium was discharged to this trench.

Code: 216-S-12 **Classification:** Accepted

Names: 216-S-12; 291-S Stack Wash Sump; REDOX Stack Flush Trench; UPR-200-W-30 **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of one, single-use liquid waste disposal trench. The site is surrounded with cement marker posts and chain, posted with "Underground Radioactive Material" signs. It labeled 216-S-12.

Location: The site is located northeast of the 202-S (REDOX) facility, north of the 291-S Stack.

Related Sites/ Structures: The site is associated with the 291-S Stack.

Process Description: This site was used for liquid disposal of 291-S Stack flush water. It was fed with an overground pipeline. In July 1954, the REDOX stack was flushed and approximately 68,100 liters (18,000 gallons) of flush water that was drained into this trench.

Waste Type: Water

Waste Description: The site received 68,100 liters (18,000 gallons) of flush water from the 291-S (REDOX) Stack. The water contained ammonium nitrate (600 kilograms). The material contained an estimated five curies of beta particle emitters and two to three curies of gamma particle emitters that were predominantly ruthenium and zirconium-niobium. Potential contaminants of concern include cobalt-60, cesium-137, strontium-90, plutonium-239/240, and uranium-238.

Code: 216-S-14 **Classification:** Accepted

Names: 216-S-14; 216-S-4 Burial Contaminated Hexone; Buried Contaminated Hexone; Cold Organic Trench or Grave **Reclassification** None

Type: Trench **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1952

Description: The trench is not marked or posted. Some areas of distressed vegetation and bare ground are in the vicinity of the location indicated in historical documentation.

Location: This unit is south of 222-S, and northwest of 216-S-19 Pond. The exact location cannot be determined. HW-60807 states it is approximately 46 meters (150 feet) southeast of the 222-S Sanitary Tile Field.

Related Sites/ Structures: The site is associated with the 202-S Building.

Process Description: This site consists of a backfilled trench that received hexone contaminated with trace amounts of unirradiated uranium from the initial test runs in the 202-S REDOX facility. The waste site was fed with and aboveground pipeline.

Waste Type: Chemicals

Waste Description: The site received approximately 76,000 liters (20,000 gallons) of hexone (methyl isobutyl ketone) contaminated with trace amounts of unirradiated uranium used in the initial testing of the 202-S Building (REDOX). The site was retired when discharge of hexone to the unit was completed. The radionuclide content is unknown, but it is assumed to be low-level contamination. In 1971 core drillings were taken at this site. There was a strong odor of hexone from each of the sample cores and core holes. No radioactivity was found and the site was released from radiation zone status.

Code: 216-S-18 **Classification:** Accepted

Names: 216-S-18; 241-SX Steam Cleaning Pit; 216-S-14 Steam Cleaning Pit **Reclassification** None

Type: Trench **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The site consists of one backfilled trench. The area has been surface stabilized. It is posted

with light weight chain and Underground Radioactive Material signs.

Location: The site is located north of 13th Street, east of 241-S Tank Farms and southwest of 216-S-9 Crib.

Related Sites/ Structures: The site is associated with UPR-200-W-114.

Process Description: This site was originally used as a steam cleaning pit for contaminated equipment. It was later used to consolidate contaminated soil from the surrounding area and backfilled to grade.

Waste Type: Water

Waste Description: The site was originally a vehicle decontamination pit. The pit was excavated in 1972. The contaminated material was taken to a 200 West Area burial ground. In 1995 and 1997, the open trench was used to consolidate nearby surface soil contamination. The contaminated soil was covered with 1.8 meters (6 feet) of clean dirt to bring the site up to grade. The area was posted as an "Underground Radioactive Material" area.

Code:	216-S-20	**Classification:**	Accepted
Names:	216-S-20; 216-SL-1&2 Crib; 216-SL-2	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1972

Description: The site is posted with Underground Radioactive Material (URM) signs at each corner. Two areas above the crib structures, inside the URM, are marked with post and chain and Cave-In Potential signs. An abandoned waste unloading station is located approximately 7.6 meters (25 feet) south of the posted crib. The unloading station was posted with Contamination Area signs, but later backfilled and changed to Underground Radioactive Material Area.

Location: The unit is located southeast of the 202-S (REDOX) facility and east of the 222-S Laboratory building.

Related Sites/ Structures: The site is associated with the 222-S Building, 219-S building, the 207-SL Retention Basin, and the "manhole" unloading station that received 300 Area Laboratory wastes via truck. The pipelines associated with 216-S-20 crib are discussed in sitecode 200-W-149-PL.

Process Description: The site received liquid waste from the 222-S Building and 300 Area laboratory waste via truck that was unloaded into the manhole. The manhole unloading structure is located approximately 7.6 meters (25 feet) south of the 216-S-20 radiologically posted area. The unit contains two 3.7 meter by 3.7 meter (12 foot by 12 foot) crib boxes that are 15 meters (50 feet) apart. The bottom of each wooden crib box is filled with 1.2 meters (4 feet) of gravel. Each wooden crib box has two risers extending from the top of the box to above ground. The crib boxes are connected in series with one box overflowing into another via a pipe. The cribs are backfilled to grade.

Waste Type: Process Effluent

Waste Description: From January 1952 to July 1953, the site received miscellaneous waste from lab hoods and decontamination sinks in the 222-S Building via the 219-S Retention Building. From July 1953 to September 1963, the site received the above effluent via the 207-SL Retention Basin, the 219-S Retention Building and 300 Area laboratory waste via truck, unloaded into the manhole. From September 1963 to January 1969, the site received miscellaneous waste from lab hoods and decontamination sinks in 222-S via the 219-S Retention Building. From January 1969 to November 1972, the crib was inactive due to surface subsidence on this unit. The 300 Area lab waste was rerouted to the 216-T-28 Crib.

Code:	216-S-22	**Classification:**	Accepted
Names:	216-S-22; 216-S-22 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1957
Status:	Inactive	**End Date:**	1/1/1967

Description: The crib is marked and posted with Underground Radioactive Material signs.

Location: The crib is located east of 202-S Building and northeast of 216-S-20 Crib.

Related Sites/ Structures: The structure is associated with the 293-S Building. The crib pipeline is WIDS sitecode 200-W-146 PL.

Process Description: The site provided subsurface liquid disposal for the 293-S Building waste. The crib is a gravel structure with a side slope of 1:1.5. A pipe enters the unit below grade, branches out at right angles downwards to the bottom, and runs along the bottom for the length of the unit. The section of pipe along the crib bottom has open joints. The rest of structure is filled with backfill. (see sitecode 200-W-146 PL)

Waste Type: Process Effluent

Waste Description: The site received liquid waste from the acid recovery facility in the 293-S Building. The chemicals disposed at the site were nitrate and sodium.

Code:	216-S-23	**Classification:**	Accepted
Names:	216-S-23; 216-S-23 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1969
Status:	Inactive	**End Date:**	1/1/1972

Description: The crib is marked with concrete AC-540 markers and posted with Underground Radioactive Material signs.

Location: This unit is located northeast of the 241-SY Tank Farm and north of the 216-S-9 crib.

Related Sites/ Structures: The crib is associated with the 202-S building, the 240-S-151 diversion box, 216-S-7 crib, 216-S-23 crib and the 200-W-138-PL, 200-W-139-PL and 200-W-141-PL pipelines.

Process Description: This unit provided subsurface liquid disposal for the 202-S Building. The unit is a crib with a perforated pipe set in a gravel layer, running the length of the crib. At one end of the crib a filter and gage well riser connects to the pipe. The rest of the crib contains backfill.

Waste Type: Process Effluent

Waste Description: The site received REDOX process condensate from D-2 Receiver Tank in the 202-S Building. The waste is low in salt and is neutral to basic.

Code:	216-S-25	**Classification:**	Accepted
Names:	216-S-25; 216-S-25 Crib	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1973
Status:	Inactive	**End Date:**	1/1/1992

Description: The site is marked with AC-540 markers and posted with Underground Radioactive Material

signs. A distribution pipe is located 2.1 meters (7 feet) below grade. The site contains approximately 1160 cubic meters (41,000 cubic feet) of gravel. Three gage wells and vent systems made of 20 centimeter (8 inch) SCH 40 PVC with a 15 centimeter (6 inch) SCH 40 PVC perforated distribution pipe.

Location: The crib is located south of 13th Street and west of the 241-SX Tank Farm; outside the 200 West perimeter fence, south and east of 216-U-10 Pond.

Release Description: The Groundwater Monitoring Compliance Report for August 1986 states that well #299-W23-09: contaminant alpha had been exceeding the U-238 concentration limit since July 1985. An increasing trend is evident due to either remedial action involving 216-U-1 & 2 cribs or to the deactivated U Pond. However, concentrations of all uranium isotopes are below their respective concentration limits. Contaminant H-3 continues to show an increasing trend even though discharge to the unit from U-1 and U-2 pumping has stopped. Well #299-W23-10: contaminant alpha has exceeded the U-238 concentration limit since June 1985. Uranium isotopic analysis of the October sample indicates U-238 exceeds the concentration limit. This report led to a groundwater pump and treat activity. The treated water was discharged to the 216-S-25 crib.

Related Sites/ Structures: The crib is associated with the 242-S Evaporator building. The pipeline associated with this crib is sitecode 200-W-161-PL.

Process Description: The crib received effluent from the 242-S Evaporator building via a ten centimeter (4 inch) diameter underground pipeline (sitecode 200-W-161-PL). In 1984, the pipeline from 241-SX-402 (sitecode 200-W-159-PL) was tied into the 216-S-25 crib pipeline.

Waste Type: Steam Condensate

Waste Description: Until 11/80, the site received the 242-S Evaporator process steam condensate. Since 11/80, the 242-S Evaporator has been in standby mode. In 1985, this crib received the effluent from the 216-U-1 & 2 groundwater pump and treat effort. The 241-SX Sludge Cooler Steam Heater was shut off in 1992 due to leaking tubes. A new steam heater unit was installed in 1993 and scheduled to start up in 1995. It was to operate for five months (through winter and early spring) producing approximately 15 to 30 liters (4-8 gallons) of condensate per hour that would be discharged to the 216-S-25 crib.

Code: 216-SX-2 **Classification:** Accepted

Names: 216-SX-2; 216-SX-2 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1965

Description: The crib is currently surrounded by light post and chain and posted with Underground Radioactive Material signs. It is labeled "216-SX-2" on three sides with old style black and white signs. It is a gravel filled crib topped with a subsurface layer of Sisalkraft paper.

Location: The crib is located on the east side of Cooper Ave. adjacent to the 241-SX tank Farm. It is approximately 7.6 meters (25 feet) south of the 241-SX-701 Compressor house and 23 meters (75 feet) west of the 241-SX Tank Farm fence.

Related Sites/ Structures: The crib is associated with the 241-SX-701 Compressor House. The pipeline associated with this crib is sitecode 200-W-162-PL.

Waste Type: Steam Condensate

Waste Description: The crib received waste from the 241-SX-701 Compressor House.

Code:	207-T	**Classification:**	Accepted
Names:	207-T; 207-T Retention Basin; T Plant Retention Basin	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1995

Description: The retention basin has been backfilled to grade. It is delineated with concrete AC-540 markers that define it as an Underground Radioactive Material area. There is a single WIDS sitecode sign that says 207-T.

Location: The site is located west of 221-T Building and north of 23rd Street.

Release Description: On September 12, 1985, 1900 liters (500 gallons) of aqueous 5% sodium hydroxide solution containing 100 kilograms (219 pounds) of sodium hydroxide was released from T Plant to the basins and subsequently to 214-T-4-2 Ditch. At the time of the release, pH was 12.5. No cleanup actions were undertaken. After 6 hours of dilution by continued condensate discharge, the pH was 7.67.

Related Sites/ Structures: The basin is associated with 221-T, 224-T, 216-T-12, 200-W-53 and 216-T-4-1 and 216-T-4-2 Ditches. The inlet pipelines associated with this basin are WIDS sitecodes 200-W-88-PL, 200-W-165-PL, 200-W-166-PL and 200-W-167-PL. The outlet pipeline that leads to the 216-T-4 ditch is WIDS sitecode 200-W-164-PL.

Process Description: The unit was a concrete structure, divided into two sections, with a 3,800,000 liters (1,000,000 gallon) capacity. The bottom dimensions for each basin are 106 by 106 feet (32.3 by 32.3 meters). The basin received cooling water effluent from 221-T and 224-T. The basin effluent was released to the 216-T-4-1 and 216-T-4-2 Ditches. There was an inlet structure on the east side and an outlet structure on the west side, adjacent to the outside walls of the basins. Two 40.6 centimeter (16 inch) diameter cast iron pipes connected to two 0.9 meter (3 foot) sumps, one for each basin. Approximately 1830 meter (6000 feet) of 61 centimeter (24 inch) diameter vitrified clay pipeline was used to convey waste water to and from the basin. H-2-3019 shows a black iron pipeline that exits the east side of the basin, traveling south, connecting to a pipeline that is associated with the 216-TY-201 flush tank.

Periodically the sludge that accumulated on the bottoms of the basins was cleaned out. The sludge was placed in holes located around the perimeter of the basin and covered with clean dirt. One of these holes is documented as 216-T-12. Additional holes were probably dug and filled with sludge, but not individually documented.

Waste Type: Steam Condensate

Waste Description: The unit received potentially low-level radioactive waste from T Plant process cooling and ventilation steam condensate, which was discharged to the 216-T-4-1 and 214-T-4-2 Ditches. From 11/44 to the 1950's, the site received process cooling water from process equipment jackets in 221-T and 224-T buildings. From early 1950's to 1955, the site received the same, plus 242-T Evaporator cooling water. From 1955 to 1965, the site received the same minus 242-T Evaporator cooling water. From 1965 to late 1960's, the site received the same plus 242-T Evaporator cooling water. From late 1960's to 1973, the site received the same minus 242-T Evaporator cooling water. From 1973 to 1976, the site received the same plus 242-T Evaporator cooling water. After 1976, the site received intermittent flow from 221-T, 221-TA, and 224-T buildings. The effluent discharge was rerouted to the 200 Area TEDF in 1995. The unit was backfilled with dirt in 1996.

Code:	216-T-2	**Classification:**	Accepted

Names:	216-T-2; 222-T Reverse Well; 222-T-110 Dry Well	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	5/1/1950

Description: The reverse well is a below grade 15.2 centimeter well casing with a 7.6-centimeter (3-inch) diameter vent pipe extending approximately 1.2 meters (4 feet) above grade. It has been capped and is surrounded with light post and chain. A single cement AC-540 marker identifies the site. It is posted as an Underground Radioactive Material Area.

Location: The site is located near the southwest corner of the 222-T Building.

Related Sites/ Structures: The reverse well is associated with activities in the 222-T laboratory.

Process Description: During the bismuth phosphate fuel separation process, batch samples were analyzed in the 222-T and 222-B laboratories. The reverse wells were installed to provide disposal for the laboratory "hot" sink and sample table. HW-4850 states that the 222-T laboratory was discharging approximately 2.6 curies of fission products and 600 milligrams of plutonium to the dry well per month.

The well consists of a pipe extending vertically 22.9 meter (75 feet) below grade, with the last 6.1 meter (20 foot) of the pipe perforated with 39 1.3-centimeter (1/2-inch) holes-per-meter (approximately 12 holes-per-foot).

Waste Type: Process Effluent

Waste Description: The site received decontamination sink waste and sample slurper waste from the 222-T Building. HW-4850, written in 1945, states that the 222-T laboratory was discharging approximately 2.6 curies of fission products and 600 milligrams of plutonium to the dry well per month. The waste is acidic.

Code:	216-T-4-1D	**Classification:**	Accepted
Names:	216-T-4-1D; 216-T-4 Ditch; 216-T-4 Swamp	**Reclassification**	None
Type:	Ditch	**Start Date:**	11/1/1944
Status:	Inactive	**End Date:**	5/1/1972

Description: The original ditch is not currently visible. The ditch was replaced by the 216-T-4-2 Ditch in 1972. The first 15 meters (50 feet) of the original (216-T-4-1D) ditch was reused in the replacement ditch construction. The 216-T-4-1 Ditch was surface stabilized along with the 216-T-4-2 replacement ditch in 1995. The area is posted as an Underground Radioactive Material area.

Location: The site was located north of 23rd Street, west of the 221-T Building and northwest of the 241-T Tank Farm.

Related Sites/ Structures: The ditch is associated with the 216-T-4A Pond and the 216-T-4-2 Ditch. Pipeline 200-W-163-PL connected to the ditch. The pipeline from 207-T that fed the ditch is sitecode 200-W-164-PL.

Process Description: The ditch received T Plant cooling water and condensate waste via the 207-T Retention Basin.

Waste Type: Steam Condensate

Waste Description: From 1944 to September 1951, the site received process cooling water from the 221-T and 224-T Buildings via the 207-T Retention Basin and steam condensate from 221-T Building. From September 1951 to July 1955, the site received the above listed streams plus condenser cooling water and steam condensate from 242-T Evaporator. From July 1955 to August 1956, the site received the same as November 1944 to September 1951. From August 1956 to June 1957, the site received steam condensate from 221-T. From June 1957 to July 1964, the site was on standby. From July 1964 to December 1965, the site received decontamination waste from 2706-T. From December 1965 to November 1970, the site received the above listed streams plus condenser cooling water from 242-T Building. After November 1970, the site received condenser cooling water from 242-T Building. The total plutonium is 1.41 grams (3.1E-3 pounds) according to Hanford Defense Waste Environmental Impact Statement data.

Code: 216-T-8 **Classification:** Accepted

Names: 216-T-8; 222-T-1 & 2 Cribs **Reclassification** None

Type: Crib **Start Date:** 1/1/1950

Status: Inactive **End Date:** 1/1/1951

Description: The site consists of two wood crib boxes, each set into a pit with sloped sides. Each crib pit has 4.3-meter (14-foot) by 4.3-meter (14-foot) bottom dimension, with a 1:1 side slope. The pits are 23 meters (75 feet) apart. The boxes have risers and are connected in series by a pipe. One box overflows into the other. The pits are backfilled.

Location: This site is located just on the east side of the 224-T Building.

Related Sites/ Structures: The associated structure is the 222-T and 292-T Facilities (see 200-W-40). The pipeline to 216-T-8 is sitecode 200-W-142-PL.

Process Description: This site provided subsurface liquid disposal for 222-T Decontamination Sink Waste and Sample Slurper waste. A pipeline from 292-T teed into the 216-T-8 waste line.

Waste Type: Process Effluent

Waste Description: The waste was neutral to basic, and contained sulfuric acid, nitric acid, and sodium dichromate.

Code: 216-T-9 **Classification:** Accepted

Names: 216-T-9; Decontamination Trenches; Equipment Decontamination Area **Reclassification** None

Type: Trench **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. The site is no longer marked or posted.

Location: This site is located west of the 221-T Building and southwest of the 216-T-33 Crib.

Related Sites/ Structures: The site is associated with trenches 216-T-10 and 216-T-11.

Process Description: This site was used for subsurface liquid disposal of vehicle decontamination waste from heavy equipment and other vehicles.

Waste Type: Water

Waste Description: The site received heavy equipment and vehicle decontamination waste. No radionuclide or chemical contamination has been documented for this site according to DOE/RL-91-61. However, ARH-2757 states that all contamination (maximum 3000 counts per minute) was buried in the 200 West Dry Waste Burial Ground. Although no cleaning agents are listed, the possibility of hazardous chemical contamination exists.

Code: 216-T-10 **Classification:** Accepted

Names: 216-T-10; Decontamination Trenches; Equipment Decontamination Area **Reclassification** None

Type: Trench **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. The site is no longer marked or posted.

Location: This site is located west of the 221-T Building and southwest of the 216-T-33 Crib.

Related Sites/ Structures: The site is associated with trenches 216-T-9 and 216-T-11.

Process Description: This site was used for subsurface liquid disposal of heavy equipment and vehicle decontamination waste.

Waste Type: Water

Waste Description: The site received heavy equipment and vehicle decontamination waste. No radionuclide or chemical contamination has been documented for this site according to DOE/RL-91-61. However, ARH-2757 states that all contamination (maximum 3000 counts per minute) was buried in the 200 West Dry Waste Burial Ground. Although no cleaning agents are listed, the possibility of hazardous chemical contamination exists.

Code: 216-T-11 **Classification:** Accepted

Names: 216-T-11; Decontamination Trenches; Equipment Decontamination Area **Reclassification** None

Type: Trench **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1954

Description: This site consists of a backfilled trench. The site is no longer marked or posted.

Location: This site is located west of 221-T and southwest of the 216-T-33 Crib.

Related Sites/ Structures: The site is associated with the 216-T-9 and 216-T-10 trenches.

Process Description: This site was used for subsurface liquid disposal of heavy equipment and vehicle decontamination waste.

Waste Type: Water

Waste Description: The site received heavy equipment and vehicle decontamination waste. No radionuclide or chemical contamination has been documented for this site according to DOE/RL-91-61. However, ARH-2757 states that all contamination (maximum 3000 counts per minute) was buried in the 200 West Dry Waste Burial Ground. Although no cleaning agents are listed, the possibility of hazardous chemical contamination exists.

Code:	216-T-12	**Classification:**	Accepted
Names:	216-T-12; 207-T Sludge Grave; 207-T Sludge Pit; 216-T-11	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1954

Description: There is no visible evidence of this waste site. The area around the 207-T Retention Basin, including the northeast corner where this pit was located, has been stabilized with clean backfill material and posted with Underground Radioactive Material signs. The sludge pit is not separately marked.

Location: This site is located at the northeast corner of the 207-T Retention Basin.

Related Sites/ Structures: The associated structure is the 207-T Retention Basin.

Process Description: The site was a small trench that was dug November 1954 with a backhoe at the northeast corner of the 207-T Retention Basin. Sludge dredged from the 207-T Retention Basin was put into the trench and covered.

Waste Type: Sludge

Waste Description: The site received contaminated sludge from the 207-T Retention Basin. The waste is low in salt and is neutral to basic.

Code:	216-T-13	**Classification:**	Accepted
Names:	216-T-13; 269-W Decontamination Pit or Trench; 269-W Regulated Garage; 269-W Regulated Garage Decontamination Pit; 216-T-12	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	1/1/1964

Description: The site consisted of a single open trench located west of the 269-W Regulated Garage. The garage has been demolished. Currently, there is a concrete ramp covered with 0.6 meters (2 feet) of gravel that is visible near the site of the garage. The trench is no longer marked or posted.

Location: This site is located on the north side of the 241-TY Farm, north of the tank farm perimeter fence. The site has been shown at two locations on different maps. Drawing H-2-1495 (originally made in 1952) shows the location of the trench adjacent to the 269-W garage and northwest of the 241-TY Tank Farm, while a later drawing (H-2-32526, 1967 Rev 3) shows the trench due north of the 241-TY Tank Farm. The mapped location in HGIS is due north of the Tank Farm as of December 2001.

Related Sites/ Structures: The site was associated with activities at the 269-W Regulated Garage, but the garage was not physically connected to the vehicle decontamination trench.

Process Description: This site was used to clean contaminated vehicles. A Tip Rack was located in the bottom of the open trench. Vehicles were driven into the trench and onto the rack. The vehicles were then sprayed with water or steam to remove the contamination. The decontamination was often required prior to vehicles being serviced at the 269-W Garage.

Waste Type: Water

Waste Description: The site received vehicle decontamination liquid waste. The inventory prior to the removal of 3.06 cubic meters (4 cubic yards) of soil was estimated through 1972 as follows. ARH-2757, part 3 states the volume was 0.98E+05 liters;<0.100E+00 grams - plutonium; 0.840E+02 curies - beta; 0.100E00 curies - strontium-90; 0.400E+02 curies - ruthenium-106; 0.100E+00 curies - cesium-137; > < 0.100E+00 curies - cobalt-60;<0.500E-01 kilograms - uranium. ARH-1608 states the volume was 0.026E+06 liters; ><0.100E+00 grams - plutonium; 60 curies - beta; 1.00E+00 curies - strontium-90; 40 curies - ruthenium-106; 1.00E+00 curies - cesium-137; > < 0.100E+00 curies - cobalt-60;<.1 pounds of uranium. Readings up to 1,500 counts per minute were measured in the excavated soil. Although no cleaning agents are listed, the possibility of hazardous chemical contamination.

Code: 216-T-20 **Classification:** Accepted

Names: 216-T-20; 216-T-20 Crib; 216-TX-2; 241-TX-155 Contaminated Acid Grave **Reclassification** None

Type: Trench **Start Date:** 11/1/1952

Status: Inactive **End Date:** 11/1/1952

Description: The site has a small concrete block structure on the surface with a metal lid labeled Confined Space and Potential Internal Contamination. There is a single concrete marker with an Underground Radioactive Material sign on it. The concrete block structure is surrounded with the same type of cobbles that surround the powerhouse pond.

Location: The unit is located east of Camden Avenue, adjacent to the north end of the 200 West Area Power House Pond.

Related Sites/ Structures: The site is associated with the 241-TX-155 Diversion Box.

Process Description: The historical documentation describes the site as an excavation, similar to a pit. It was a single use pit dug specifically to receive contaminated acid from the 241-TX-155 Diversion Box. There is no mention of the concrete block access structure currently located at the site.

Waste Type: Process Effluent

Waste Description: The site received contaminated nitric acid from 241-TX-155 Diversion Box Catch Tank.

Code: 216-T-27 **Classification:** Accepted

Names: 216-T-27; 216-TX-2 Cavern; 216-TX-2 Crib; 216-TY-2 Cavern; 216-TY-2 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1965

Status: Inactive **End Date:** 1/1/1965

Description: The 216-T-26, 216-T-27 and 216-T-28 cribs are enclosed within a common steel post and chain barricade that is posted "Underground Radioactive Material". The 216-TY-201 flush tank is located in the northeast corner of the area.

Location: This site is located inside 200 West Area, south of 23rd Street and east of Camden Ave.

Related Sites/ Structures: The crib is associated with 221-T, 2706-T, 216-TY-201 Flush Tank, 200-W-188-PL and 200-W-82 Truck Unloading Station. The pipelines associated with this crib are 200-W-175-PL and 200-W-188-PL.

Process Description: The underground pipeline from the 241-TY Tank Farm to the 216-T-26 crib was isolated with a blank flange in 1956. An underground pipeline from the 241-T Tank Farm was used to transfer waste from T Plant (after it cascaded through tanks 241-T-110, 241-T-111 and 241-T-112) to the 216-T-27 and 216-T-28 cribs. The tanks contained steam condensate and process decontamination waste from T Plant along with 2607-T equipment decontamination waste. In 1964, 300 Area laboratory waste was shipped from the 340 facility by truck to the 200 West Area. The 300 Area waste was combined with the T-Plant waste that was discharged to cribs 216-T-27 and 216-T-28. Lundgren (1971) mentions a crib riser being used for the disposal of 300 Area waste (see sitecode 200-W-82).

A letter written by G.L. Ritter (1966) stated that the 300 Area waste and the T Plant waste had been diverted from the 216-T-28 Crib to the 216-T-27 Crib in November 1965 due to an increase in the groundwater contamination levels below the 216-T-28 Crib. Only a limited amount of 300 Area waste had been expected and the 216-T-27 Crib was estimated to be used for approximately 18 months. However, information was collected that indicated the 300 Area waste discharged to the 216-T-27 Crib did not react favorably with the soil at this crib location. It was recommended that this crib be deactivated earlier than expected (see ISO-636).

Waste Type: Process Effluent

Waste Description: The site received 300 Area lab waste containing nitrates, 221-T steam condensate and process decontamination waste and equipment decontamination waste from 2706-T. A page of typed, unsigned notes was found that documents the transport of "round the clock" trucking of waste from the PRTR rupture incident in September 1965. The notes indicate that the waste would be discharged into the 216-T-27 crib. A different page of notes, also unsigned, states that more than 100 truck loads of liquid waste from the PRTR incident was discharged into the 216-T-28 crib during September and October 1965. Since the same truck unloading station would have been used for either crib, it is difficult to be sure how much waste was discharged to the 216-T-27 and how much was discharged to the 216-T-28 crib.

Code: 216-T-28 **Classification:** Accepted

Names: 216-T-28; 216-TX-3 Cavern; 216-TX-3 Crib; 216-TY-3 Cavern; 216-TY-3 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1966

Description: The 216-T-26, 216-T-27 and 216-T-28 cribs are enclosed within a common steel post and chain barricade that is posted "Underground Radioactive Material". The 216-TY-201 flush tank is located in the northeast corner of the area.

Location: This site is located inside 200 West Area, south of 23rd Street and east of Camden Ave.

Related Sites/ Structures: The associated structures are the 221-T Building, 2706-T Building, 216-TY-201 Flush Tank and 200-W-82 Truck Unloading Station. The pipelines associated with this crib are 200-W-175-PL and 200-W-188-PL.

Process Description: The underground pipeline from the 241-TY Tank Farm to the 216-T-26 crib was isolated in 1956. The 216-T-27 and 216-T-28 Cribs were active from February 1960 to December 1966. An underground pipeline from the 241-T Tank Farm was used to transfer waste from T Plant (after it cascaded through tanks 241-T-110, 241-T-111 and 241-T-112) to the 216-T-27 and 216-T-28 cribs. The tanks contained steam condensate and process decontamination waste from T Plant along with 2607-T equipment decontamination waste. In 1964, 300 Area laboratory waste was shipped from the 340 facility by truck to the 200 West Area. The 300 Area waste was combined with the T-Plant waste that was discharged to cribs 216-T-27 and 216-T-28.

Lundgren (1971) mentions a crib riser being used for the disposal of 300 Area waste (see sitecode 200-W-82 Truck Unloading Station). In May 1966, waste from the 2706-T Building was rerouted to the 216-T-4 Ditch. In December 1966, the pipeline to the crib and the 300 Area waste disposal riser were isolated. The 300 Area laboratory waste was sent to the 216-T-34 Crib. The T Plant effluent was rerouted to the 216-T-36 Crib.

Waste Type: Process Effluent

Waste Description: From February 1960 through February 1963, the crib received steam condensate and process decontamination waste via the 241-T-112 tank in the 241-T Tank Farm. In 1963, 2706-T equipment decontamination waste was added to the waste stream. In 1964, 300 Area laboratory waste was sent to this crib via tanker trucks from the 340 Waste Transfer Facility. A page of typed, unsigned notes dated October 26, 1965 indicated that 189 truck loads of liquid waste from 300 Area were discharged into the 216-T-28 crib between September 13, 1965 and October 25, 1965. The total volume during that time was 945,000 gallons. Most of the waste was from the PRTR rupture incident. The crib was deactivated in December 1966 when the prescribed radionuclide disposal limit was reached.

Code: 216-T-29 **Classification:** Accepted

Names: 216-T-29; 216-T-29 French Drain; 291-T Sand Filter Sewer **Reclassification** None

Type: French Drain **Start Date:** 1/1/1949

Status: Inactive **End Date:** 1/1/1964

Description: The 291-T Sand Filter is located northeast of the 221-T building. The 216-T-29 French Drain is part of the sand filter construction. The sand filter is marked and posted as a Contamination Area. There is a vent riser protruding through the roof of the northwest corner of the sand filter. This is assumed to be the location of the drain.

Location: The french drain is located adjacent to the north end of the 291-T Sand Filter and northeast of the 221-T Building.

Related Sites/ Structures: The associated structure is 200-W-45 (291-T Sand Filter).

Process Description: This site received canyon air condensate from the 291-T Sand Filter. In the 1950's, silver reactor filters, made of fiberglass soaked in silver nitrate, were added to the stack ducts.

Waste Type: Steam Condensate

Waste Description: The site waste was moisture condensed from canyon air and included 8000 kilograms of nitric acid. In the 1950"s, silver reactor filters were added to the stack ducts. They were made of fiberglass soaked in silver nitrate. The filters reacted with the radioiodine to form silver iodide.

Code: 216-T-31 **Classification:** Accepted

Names: 216-T-31; 216-T-31 French Drain **Reclassification** None

Type: French Drain **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1962

Description: The site consisted of a 0.9 meter (3 foot) diameter french drain. The drain was exhumed and left unmarked. A post with the WIDS Sitecode 216-T-31 now marks the approximate location of where the french drain had been.

Location: This site was located west of Camden Ave., near the southeast corner of the 241-TX Farm, on the east side of 241-TX Tank Farm fence.

Process Description: The unit was in operation in 1954 and abandoned in 1959 after it was contaminated by steam condensate from a steam line blowout during efforts to unplug a waste line (October 1959). A new steam line was installed in 1959 and a new steam condensate drain was made to replace the contaminated drain.

Waste Type: Steam Condensate

Waste Description: The drain was accidentally contaminated by contaminated steam condensate from a blowout through the steam line during efforts to unplug a waste line in October 1959.

Code: 216-T-33 **Classification:** Accepted

Names: 216-T-33; 216-T-33 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1963

Status: Inactive **End Date:** 1/1/1963

Description: The site is surrounded with light metal posts and chain. It is posted with Underground Radioactive Material signs. The site consists of a rectangular crib with perforated vitreous clay inlet pipe set into a gravel layer. A layer of plastic sheeting, clean sand, and backfill are above the pipe.

Location: This unit is located west of 221-T Canyon Building and southwest of 2706-T.

Related Sites/ Structures: The site is associated with the 2706-T Decontamination Building. The pipeline associated with this crib is 200-W-173-PL.

Process Description: This site provided subsurface liquid disposal for the 2706-T Building. After the line plugged, the 2706-T waste was routed to the 216-T-28 crib, via the 241-T-112 tank.

Waste Type: Water

Waste Description: The site received equipment decontamination waste from the 2706-T Building. The waste is low in salt, neutral to basic, and contains sodium hydroxide. There total effluent discharged to the crib is questionable, due to the fact that the discharge line plugged shortly after the crib became active.

Code: 216-T-34 **Classification:** Accepted

Names: 216-T-34; 216-T-34 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1967

Description: The site is a crib posted with "Underground Radioactive Material" signs. The crib's piping consists of perforated vitrified clay pipe rectangular loop, and a vitreous clay pipe extending into the center of the crib. The piping rests on a layer of gravel. Two gage well risers and one filter riser are visible from the surface.

Location: This site is located northwest of the 221-T Building, on the east side of the 216-T-35 Crib.

Related Sites/ Structures: The crib is associated with the 340 waste facility located in the 300 Area. This crib also had an associated railcar unloading station (200-W-21). The pipeline from the railcar unloading station to the 216-T-34 crib is sitecode 200-W-196-PL. The pipeline from the truck unloading

station to the crib is sitecode 200-W-198-PL.

Process Description: This site provided subsurface liquid disposal for waste from the 340 Building in the 300 Area. The waste was transported to 200 West Area in railroad tank cars and 5000 gallon tank trucks.

Waste Type: Process Effluent

Waste Description: The site received liquid 300 Area laboratory waste from the 340 Facility. The waste was low in salt, neutral to basic, and contained nitrate.

Code: 216-T-35 **Classification:** Accepted

Names: 216-T-35; 216-T-35 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1968

Description: The site is a surface stabilized crib that is marked and posted with Underground Radioactive Material signs. The crib was constructed with one perforated drain line, and one perforated crib waste distribution line, in parallel. Both lines were placed horizontally below grade and covered by gravel. The crib has two gage well risers and one vent riser visible from the surface.

Location: This site is located west of the 221-T Building and west of the 216-T-34 crib.

Related Sites/ Structures: The crib is associated with the 340 Building in the 300 Area, the railcar unloading station (200-W-21) and the 216-T-34 crib. The pipeline associated with this crib is 200-W-197-PL. The pipeline from the truck unloading station is 200-W-198-PL.

Process Description: This site provided subsurface liquid disposal for waste from the 340 Building in the 300 Area. The 216-T-35 crib replaced the 216-T-34 crib. The drain line from the unloading station (200-W-21) was extended to the 216-T-35 crib distributor pipe. The 216-T-34 crib drain line was blanked. Waste was transported from the 340 facility in railroad tanker cars and 19,000 liter (5,000 gallon) tank trucks.

Waste Type: Process Effluent

Waste Description: The crib received waste from the 300 Area laboratory facilities via railroad tank cars and tank trucks. The site waste contained nitrate.

Code: 216-T-36 **Classification:** Accepted

Names: 216-T-36; 216-T-36 Crib **Reclassification** None

Type: Crib **Start Date:** 5/1/1967

Status: Inactive **End Date:** 1/1/1973

Description: The site consists of a interim stabilized crib posted as "Underground Radioactive Material". The site consists of a single vitreous clay distribution pipe resting in a gravel layer that is in a rectangular trench. Backfill covers the pipe and gravel. The crib also has a gage well riser and a filter riser.

Location: The site is located southwest of the 241-T Tank Farm and south of the 216-T-7 Tile Field.

Release Description: The May 2000, the Dyncorp Integrated Site Vegetation and Animal Control (ISVAC) Priority List and the Contamination Zone map identified a long, narrow area of posted contamination adjacent to the east end of the 216-T-36 Crib (#12 on their list). The posted area appears to be located over the buried pipeline that fed the crib. (See WIDS 200-W-79-PL).

Related Sites/ Structures: The associated structures are the 221-T, 221-U, 2706-T Buildings and the 241-T-151 Diversion Box. The pipelines associated with this crib is 200-W-79-PL and 200-W-130-PL.

Process Description: This site provided subsurface liquid disposal for steam condensate, equipment decontamination waste, and miscellaneous waste from the 221-T and 221-U Buildings. It also received decontamination waste from the 2706-T Building.

Waste Type: Process Effluent

Waste Description: The site received steam condensate, equipment decontamination waste, and miscellaneous waste from the 221-T, 221-U and the 2706-T buildings. Some waste contained sodium hydroxide.

Code: 241-T-361 **Classification:** Accepted

Names: 241-T-361; 241-T-361 Settling Tank; 361-T-TANK **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1944

Status: Inactive **End Date:** 1/1/1951

Description: The 241-T-361 Tank is enclosed with light post and chain and concrete AC-540 markers. The underground tank is posted with Inactive Miscellaneous Underground Storage Tank and Underground Radioactive Material signs.

Location: The tank is located southwest of the 221-T Building and north of 23rd Street. It is adjacent to the 216-T-6 Cribs.

Related Sites/ Structures: The settling tank is associated with the 216-T-3 Reverse Well, 216-T-6 Cribs and the 221-Tand 224-T facilities. The pipeline from 224-T that fed the reverse well via the 241-T-361 tank is sitecode 200-W-226-PL.

Process Description: The 241-T-361 Settling Tank received radioactive contaminated liquid from the 221-T and 224-T Buildings. The tank discharged to the 216-T-3 Reverse Well during 1945 and 1946. When the reverse well was abandoned, the settling tank discharge was directed to the 216-T-6 Cribs. The 241-T-361 Settling Tank was deactivated in June 1951. Settling Tank 241-T-361 is cylindrical and is made of reinforced, pre-stressed concrete. The tank is located underground for shielding purposes.

Waste Type: Storage Tank

Waste Description: The tank received waste from 221-T and 224-T. Sludge samples taken in 1976 contained 23 micrograms of plutonium, 12 microcuries per gram of strontium-90 and 67.6 microcuries per gram of cesium-137. The liquid supernate contained 3.71 microcuries per gallon of cesium-137 and 14.5 milligrams per gallon of plutonium.

Code: 207-U **Classification:** Accepted

Names: 207-U; 207-U Retention Basin **Reclassification** None

Type: Retention Basin **Start Date:** 1/1/1952

Status: Inactive **End Date:**

Description: The basin is a concrete basin divided into two equal halves, with a capacity of 3.785E+06 liters (1E+06 gallons). One half of the basin is lined with plastic. The basin structure is posted as a Contamination Area.

Location: The site is located inside 200 West Area, near the corner of 16th St and Camden Ave. It is west

of 221-U Building, north of 16th Street, and east of the 241-U Tank Farm.

Release Description: Occurrence Report 86-46 states that on August 6, 1986, 2365 liters (625 gallons) of recovered nitric acid, containing 39 kilograms (86 pounds) of uranium was discharged though the chemical sewer to the 207-U retention Basin. Prior to the discovery of the release, the outlet valves on the retention basin were open to the 216-U-14 Ditch. The acid released to the ditch was greatly diluted with the 300 gallon per minute flow of cooling water from the 224-U facility being processed through the chemical sewer system. The Hanford Site Waste Management Units Report (1987) reported different release values. It states that approximately 3,000 liters (796 gallons) of 50% reprocessed nitric acid was released to the basin and subsequently to 216-U-14 Ditch. The total release to the environment consisted of approximately 102,000 kilograms (225,000 pounds) of corrosive solution (pH less than 2.0) and 45.4 kilograms (100 pounds) of uranium.

Related Sites/ Structures: There is an inlet structure on the east and an outlet structure on the west side, on the outside of the basins. Each basin has a 0.9 by 0.9-meter (3 by 3-foot) sump. There is also a sampler cabinet and a sample vault on the east side of the basins near the inlet structure. The chemical sewer pipeline that fed the basin is sitecode 200-W-192-PL. The outlet pipe to the 216-U-14 ditch is sitecode 200-W-222-PL.

Process Description: During the Uranium Trioxide (UO3) facility deactivation, the trench that runs between 224-UA and 224-U was tied into the 207-U retention basin pipeline to route the stormwater buildup from the contaminated zones on the backside of the facility to the 207-U Basins for solar evaporation. The basin outlets have been isolated with concrete. The stormwater accumulating in the basin is allowed to evaporate. The Hanford Operational Environmental Monitoring Program will continue to monitor the air and soil in the vicinity of the basins to meet requirements stated in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for monitoring of diffuse and fugitive sources. Originally, the basin received chemical sewer waste from the 221-U Building and cooling water from the 224-U Building. The water was held in the basin, sampled, and then discharged to the 216-U-10 Pond via the 216-U-14 Ditch. For several years, the basin receives stormwater runoff from the 224-U Building and grounds. The outlet was plugged so that the basins would serve as an evaporation pond for the stormwater it received. During the U Plant Deactivation Project, manholes in two process sewer pipelines (200-W-84-PL and 200-W-192-PL) were filled with grout to isolate U Plant and 224-U from the retention basin. This also eliminated the flow of stormwater to the basin.

Waste Type: Steam Condensate

Waste Description: Until 1972, the unit received steam condensate and cooling water from 224-U Building and chemical sewer waste from the 221-U Building. After 1972, the unit has received only cooling water from 224-U Building. The basin was temporarily replaced by 216-U-16 Crib (1984 through 1986) but was reactivated when 216-U-16 Crib was taken out of service. The effluent from the basin was discharged to the 216-U-10 Pond via the 216-U-14 Ditch until the basin outlet was plugged in 1994. The basin later received storm water run off from the 224-U building area. The water was directed to a plastic lined portion of the basin and allowed to evaporate.

Code:	216-U-1&2	**Classification:**	Accepted
Names:	216-U-1&2; 216-U-2; 216-U-3; 216-UR #1&2 Cribs; 361-WR (Crib 2); 216-U-1; 216-U-1 & 2	**Reclassification**	None
Type:	Crib	**Start Date:**	1/1/1951
Status:	Inactive	**End Date:**	1/1/1967

Description: The crib area has been surface stabilized with clean dirt. The wood timber cribs are co-located

in a common Underground Radioactive Material area. Each crib is delineated with posts and chain with Cave-In Potential signs.

Location: The site is north of 16th Street, west of 221-U and east of the 207-U Retention Basin.

Release Description: See UPR-200-W-19 and Unusual Occurrence 85-17.

Related Sites/ Structures: The cribs are associated with the 241-U-361 Settling Tank, UPR-200-W-19, the 224-U Building and 221-U Building. The pipeline associated with this crib is 200-W-194-PL.

Process Description: The cribs received overflow from the 241-U-361 Settling Tank. The tank received cell drainage from the 5-6 tank in 221-U and waste from the 224-U Building until the Uranium Recovery process operations shut down in 1957. From July 1957 through May 1967, the 216-U-1&2 Cribs received waste from the 224-U Facility and equipment decontamination waste and reclamation waste from the 221-U canyon. The cribs are two wooden structures that operated in series.

Waste Type: Process Effluent

Waste Description: From March 1952 to June 1957, the site received cell drainage from Tank 5-6 (221-U Building) and waste from the 224-U Building via the overflow from the 241-U-361 Settling Tank. From June 1957 to July 1957, the site received waste from the 224-U Building via the overflow from the 241-U-361 Settling Tank and contaminated solvent from the 276-U Settling Tank Solvent Storage area. The discharge of 221-U waste was discontinued during shutdown of production operations. From July 1957 to May 1967, the site received waste from the 224-U Building and equipment decontamination and reclamation wastes from Chemical Processing Division (CPD) Services Operations in the 221-U Building canyon. Crib 2 was deactivated in May 1967. The waste is low in salt and is neutral to basic.

Code: 216-U-3 **Classification:** Accepted

Names: 216-U-3; 216-U-3 French Drain; 216-U-11 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1955

Description: This site consists of a french drain with light steel posts and chain with "Underground Radioactive Material" signs. The drain is a 3.6 meter (12 foot) deep, 1.8 meter (6 foot) diameter, rock-filled excavation with sloping sides and a 10 centimeter (4 inch) diameter vent riser.

Location: This site is located south of the 241-U Tank Farm on the south side of 16th Street.

Related Sites/ Structures: The french drain is associated with the 241-U-104, 241-U-110 Tanks and the 200-W-169-PL pipeline.

Process Description: This site received condensate from the steam condensers on the 241-U-104 and 241-U-110 Tanks. Most reference documents mention this site receiving waste from 241-U-110, but drawing H-2-44004 also shows the 241-U-104 tank having a condenser that is attached to the same pipeline as the 241-U-110 tank.

Waste Type: Steam Condensate

Waste Description: This 216-U-3 crib received condensate from the steam condensers on the 241-U-104 and 241-U-110 tanks. The 241-U-104 and 241-U-110 tanks held REDOX boiling waste. The site waste contains nitrate. The closed loop cooling water for the condensers was discharged to the 216-U-14 ditch.

Code:	216-U-4	**Classification:**	Accepted
Names:	216-U-4; 216-U-4 Reverse Well; 222-U Dry Well; 222-U-110 Dry Well; 216-U-2	**Reclassification**	None
Type:	Injection/Reverse Well	**Start Date:**	3/1/1947
Status:	Inactive	**End Date:**	7/1/1955

Description: This site consists of a deactivated reverse well. The well consists of as three inch diameter pipe sunk into the ground to a depth of 75 feet. The bottom 25 feet of pipe is perforated. The end of the pipe is nearly closed by flattening. The site was marked with a small cement cover and a bronze medallion. It is posted as "Underground Radioactive Material".

Location: This site is located at the southwest corner of the 222-U Building.

Related Sites/ Structures: The site is associated with the 222-U Building.

Process Description: The site received acidic decontamination waste containing fission products from the 222-U Laboratory hood sinks.

Waste Type: Process Effluent

Waste Description: RHO-CD-673 states that both plutonium and fission products were discharged to the site from laboratory hoods and sinks. (U Plant did not process plutonium. It is not clear what the 222-U laboratory may have tested) The site waste contains nitrate. A limited field investigation of high-priority waste units was conducted from August 1993 through August 1994. This site was included in that investigation. DOE/RL-95-13 includes information related to characterization borehole 299-W19-98 that was drilled between 216-U-4 and 216-U-4A. Cesium-137, cobalt-60 and europium-154 were identified.

Code:	216-U-4A	**Classification:**	Accepted
Names:	216-U-4A; 216-U-4 Dry Well; 216-U-4 Reverse Well Replacement French Drain	**Reclassification**	None
Type:	French Drain	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1970

Description: This site is a french drain that is posted "Underground Radioactive Material". The drain consists of a vertically set concrete pipe. The drain rests on undisturbed soil and is not gravel filled. The top of the drain is painted yellow and has a removable lid.

Location: This site is located at the southwest corner of the 222-U Building. It is approximately one foot southeast of the 216-U-4 reverse well.

Related Sites/ Structures: The site is associated with the 222-U Building and the 216-U-4 Reverse Well.

Process Description: From July 1955 to January 1965 the site received acidic decontamination waste containing fission products from hood sinks in the 222-U. Waste flowed to the 216-U-4A French Drain via the overflow line from the deactivated 216-U-4 Reverse Well. From January 1965 to July 1970 the site received Pacific Northwest Laboratory operations decontamination waste from a hood sink in the 222-U Building.

Waste Type: Process Effluent

Waste Description: The site waste contains nitrate, phosphate, and sodium. RHO-CD-673 states that both plutonium and fission products were discharged to the site from laboratory hoods and sinks. A limited field investigation of high-priority waste units was conducted from August 1993 through August 1994. DOE/RL-95-13 includes information related to characterization borehole 299-W19-98 that was drilled between 216-U-4 and 216-U-4A. Cesium-137, cobalt-60 and europium-154 were identified.

Code: 216-U-4B
Classification: Accepted

Names: 216-U-4B; 216-U-4B Dry Well; 216-U-4B French Drain
Reclassification None

Type: French Drain
Start Date: 1/1/1960

Status: Inactive
End Date: 1/1/1970

Description: The site consists of a french drain that is under a cement pad. A one inch diameter stainless steel vent riser extends approximately 1.2 meters (4 feet) above the surface. It is posted with "Underground Radioactive Material" signs.

Location: This site is located on the southeast side of the 222-U Building.

Related Sites/ Structures: The site is associated with the 222-U Building. The 200-W-107 Miscellaneous Stream drain is located vey near the 216-U-4B site.

Process Description: From January 1960 to July 1970 the site received waste from a hot cell and hood in the 222-U Building. From January 1965 to July 1970, the site received waste from hoods and hot cells in 222-U from Pacific Northwest Laboratory work.

Waste Type: Process Effluent

Waste Description: From January 1960 to July 1970 the site received waste from a hot cell and hood in the 222-U Building. From January 1965 to July 1970 the site received hot cell and hood waste from Pacific Northwest Laboratory experiments conducted in 222-U. The site waste contains nitrate.

Code: 216-U-5
Classification: Accepted

Names: 216-U-5; 221-U Cold U Trench #2; 216-U-4
Reclassification None

Type: Trench
Start Date: 1/1/1952

Status: Inactive
End Date: 1/1/1952

Description: This site consists of a backfilled trench that is posted "Underground Radioactive Material".

Location: The site is located northwest of the 221-U building.

Related Sites/ Structures: The site is associated with the 221-U building and the 216-U-6 trench.

Process Description: This site was used as liquid disposal site for unirradiated uranium waste from the cold start-up run at 221-U.

Waste Type: Process Effluent

Waste Description: This site received liquid unirradiated uranium waste from the cold start-up run at 221-U. The waste contained 200 kilograms of nitrate.

Code: 216-U-6 **Classification:** Accepted

Names: 216-U-6; 221-U Cold U Grave #1; 221-U Cold U Trench; U Facility Unirradiated Uranium Waste Trench; 216-U Cold U Trench #1; 216-U-5 **Reclassification** None

Type: Trench **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1952

Description: This site consists of a backfilled trench that is posted "Underground Radioactive Material".

Location: The site is located northwest of the 221-U building.

Related Sites/ Structures: The site is associated with the 221-U building and the 216-U-5 trench.

Process Description: This site was used as liquid disposal site for unirradiated uranium waste from the cold start-up run at 221-U.

Waste Type: Process Effluent

Waste Description: In March 1952, the site received liquid, unirradiated uranium waste from the cold start-up run at 221-U. The waste included 200 kilograms of nitrate.

Code: 216-U-7 **Classification:** Accepted

Names: 216-U-7; 221-U Counting Box French Drain; 221-U Vessel Vent Blower Pit French Drain **Reclassification** None

Type: French Drain **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1957

Description: The french drain is within a larger area that has been stabilized and posted with Underground Radioactive Material signs. This drain is constructed of a concrete pipe set vertically into the ground. Gravel fills 1.1 meters (3.5 feet) of the pipe.

Location: This site is located on the southeast side of the 221-U Building near Section 6. It is northwest of the 241-UX-154 Diversion Box.

Related Sites/ Structures: The site is associated with the 221-U Building, UPR-200-W-162 and UPR-200-W-138. The pipeline from the counting box to the french drain is sitecode 200-W-217-PL.

Process Description: This site received liquid wastes from a counting box floor drain during the metal recovery program at the 221-U Building.

Waste Type: Process Effluent

Waste Description: The site received liquid wastes from a counting box floor drain during the metal recovery program. The site waste contains nitrate. Due to UPR-200-W-138, it is assumed that 13 kilograms (30 pounds) of uranium in uranyl nitrate hexahydrate (UNH) solution were also introduced to the soil through the 216-U-7 French Drain. However, the release associated with UPR-200-W-138 may be associated with a different french drain. The release information is vague. It is possible the event effected the 216-U-7 French Drain if sufficient liquid volume was released to the surface to flow southward and reach the 216-U-7 French Drain location.

Code: 216-U-8 **Classification:** Accepted

Names: 216-U-8; 216-U-9; 216-WR-1,2,3 Cribs **Reclassification** None

Type: Crib **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1960

Description: The site is marked and posted with Underground Radioactive Material signs. Adjacent contaminate soil was scraped and placed on top of the crib, creating a mound. The contaminated soil was covered with an additional 0.3 to 0.6 meters (1 to 2 feet) of clean soil.

Location: The site is located west of Beloit Avenue and south of 16th Street.

Related Sites/ Structures: The site is associated with 270-W, 216-U-12, 200-W-42, the 221-U and 224-U Buildings and the 291-U Stack.

Process Description: The cribs received acidic process condensate from the 221-U and 224-U buildings along with drainage from the 291-U stack via an underground vitrified clay pipeline.

Waste Type: Process Effluent

Waste Description: The site received process condensate from 221-U and 224-U Buildings and the 291-U Stack drainage. The waste is acidic.

Code: 216-U-12 **Classification:** Accepted

Names: 216-U-12; 216-U-12 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1988

Description: The site is marked and posted with Underground Radioactive Material.

The bottom of the crib was filled with approximately 264 cubic meters (9,320 cubic feet) of gravel. A perforated 30-centimeter (12-inch) vitrified clay pipe runs horizontally the length of the unit below grade.

Location: The crib is located south of 16th Street and west of Beloit Avenue. It is south of the 216-U-8 crib.

Related Sites/ Structures: The crib is associated with 270-W, 216-U-8, the 224-U facility, 291-U stack and pipeline sites 200-W-42-PL and 200-W-151-PL.

Process Description: The 216-U-12 Crib was built in 1960 to replace the 216-U-8 Crib when it showed signs of cave-in potential. 216-U-12 was operational until 1988, when the pipeline was cut and capped. The 216-U-12 Crib was replaced by the 216-U-17 Crib.

Waste Type: Process Effluent

Waste Description: From April 1960 to May 1967, the site received 291-U-1 Stack drainage, 241-WR Vault waste (aka 244-WR vault), and 224-U process condensate via the C-5 Tank. Contaminated water from the 241-WR Vault was discharged to the crib in October 1965 that included 3.14 kilograms (6.9 pounds) of thorium. From May 1967 to September 1972, the site received the above wastes (excluding the 241-WR Vault waste) and occasional waste via the C-7 Tank in the 224-U building. From September 1972 to November 1981, the site was taken out of service. From November 1981 to January 1987, the site received corrosive process condensate (corrosive: [D002] typical pH range is 0.5-1.5) from the 224-U building. The crib also received miscellaneous storm drain wastes from 224-U building. Between April 1960 and September 1972, 6.7 E5 kilograms of nitrate was released to the crib from the Uranium Tri-Oxide process.

Code:	216-U-13	**Classification:**	Accepted
Names:	216-U-13; 216-U-13 Cribs; Vehicle Steam Cleaning Pit	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1956

Description: This site consisted of two trenches of equal dimensions. The trenches were sloped so that vehicles could be driven down to the decontamination station at the bottom. The two trenches are no longer marked or posted. Some debris is visible in the area. The area is not level. Many deep gullies are located in the area west of the 241-U Tank Farm.

Location: This site was located west of the 241-U Tank Farm.

Process Description: The site received drainage from equipment steam cleaning and decontamination activities done inside the trenches. The pits were used mainly to decontaminate trucks and cranes bearing low levels of radioactive contamination. Several large pumps used in the Uranium Recovery process were also cleaned here, but the residue was scraped and taken to the 200 West Burial Grounds.

Waste Type: Water

Waste Description: The site used steam and water hoses to remove radioactive contaminants from vehicles, equipment and pumps from the Uranium Recovery operation. The site waste may include traces of detergent and nitric acid.

Code:	216-U-14	**Classification:**	Accepted
Names:	216-U-14; 216-U-14 Ditch; Laundry Ditch	**Reclassification**	None
Type:	Ditch	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1995

Description: The entire ditch has been backfilled and surface stabilized. It is posted as Underground Radioactive Material.

Location: The ditch originated west of the 284-W Powerhouse, west of Bridgeport Avenue. It extended southward, terminating at the 216-U-10 Pond.

Release Description: Occurrence Report 86-46 states that on August 6, 1986, 2365 liters (625 gallons) of recovered nitric acid, containing 39 kilograms (86 pounds) of uranium was discharged though the chemical sewer to the 207-U retention Basin. Prior to the discovery of the release, the outlet valves on the retention basin were open to the 216-U-14 Ditch. The acid released to the ditch was greatly diluted with the 1140 liter (300 gallon) per minute flow of cooling water from the 224-U facility being processed through the chemical sewer system. The outlet valves from the retention basin were closed shortly after the discovery of the release and the remainder of the acid release was contained in the retention basin. The effluent in the retention basin was neutralized with 270 kilograms (600 pounds) of sodium carbonate. The Hanford Site Waste Management Units Report (1987) reported different release values. It stated approximately 3000 liters (796 gallons) of 50% reprocessed nitric acid was released to the unit. The total release to the environment consisted of approximately 101,250 kilograms (225,000) pounds of corrosive solution (pH less than 2.0) and 45.4 kilograms (100 pounds) of uranium.

Related Sites/ Structures: The ditch is associated with the 284-W Powerhouse, 2723-W (old laundry facility), 2724-W (new laundry facility), 221-U, 224-U, 271-U the 242-S Evaporator building and the 241-U-110 tank. The 200 West Area Powerhouse Pond was constructed over the location of the head end of the 216-U-14 Ditch. The direct pipeline from 221-U is 200-W-84-PL. The pipeline from

2724-W is 200-W-102-PL. A pipeline from 241-U tank farm to the 216-U-14 ditch is sitecode 200-W-168-PL. The outlet pipe from 207-U is sitecode 200-W-222-PL. The effluent discharge pipe from 242-S Evaporator to the 216-U-14 ditch is sitecode 200-W-223-PL.

Process Description: The 216-U-14 ditch was excavated in 1944 and was the original effluent route to the 216-U-10 Pond. It received powerhouse waste water, laundry waste water (until 1981) via 200-W-102 Pipeline, and steam condensate and cooling water from 221-U, 224-U and the 242-S Evaporator. Near the head end of the ditch, a 0.6 meter (2 foot) diameter pipe allowed 284-W Powerhouse and laundry effluent to flow under 19th Street and connect to the main portion of the ditch. The ditch also had a 1.22 meter (4 foot) diameter culvert that allowed effluent to flow under 16th Street to the portion of the ditch located north of the 242-S Evaporator and also flowed under Cooper Ave. to terminate at 216-U-10 Pond.

Waste Type: Process Effluent

Waste Description: From 7/44 to 9/44, the site received wastewater from the 284-W Powerhouse. From 9/44 to 1/50, the same plus waste from 2723-W (original laundry and mask cleaning station). From 1/50 to 3/52, received wastewater from 284-W and 2724-W Laundry Building (new laundry facility). From 3/52 to 5/54, the same plus chemical sewer waste from 221-U and cooling water from 224-U. From 5/54 to 8/55, the same plus cooling water from 241-U-110 condenser tank. From 8/55 to 11/73, the same plus 271-U cooling water. From 11/73 to 4/80, the same plus 242-S Evaporator condensate and cooling water. From 4/80 to 9/81, the same minus 242-S condensate, 2723-W and 2724-W waste. From 9/81 to 7/84, the same minus 221-U, 224-U, and 271-U waste. The 221-U and 224-U effluent entered the ditch after passing through the 207-U Retention Basin. The 216-U-16 crib was built in 1984 to accept 224-U effluent that had previously been discharged to the ditch. However, the 216-U-16 crib failed in 1985. Some 224-U effluent was diverted back to the 216-U-14 Ditch until November 1994, when the outlet pipe to the 207-U Retention Basin was permanently isolated and filled with concrete. The portion of the ditch, located west of Cooper Ave., received effluent from the 242-S Evaporator and remained active until April 1995. Discharge from the 242-S Evaporator was eliminated in 1995 ending all discharges to this unit.

Code: 216-U-15 **Classification:** Accepted

Names: 216-U-15; 388-U Tank Dumping; U-152 Interface Crud Burial; UN-200-W-158; UN-216-W-10; UPR-200-W-125 **Reclassification** None

Type: Trench **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The site is the result of a deliberate discharge of liquid waste into a hole in the ground. No surface markers exist to identify the exact location of this waste unit. Originally, the site was delimited by a wooden fence and posted with Underground Contamination signs. The perimeter fence and all identification markings of this site were removed in 1971.

Location: The site was located west of the 271-U Building and north of 16th Street.

Related Sites/ Structures: The 216-U-15 Trench was associated with the 388-U Tank and the 276-U Solvent Storage Area.

Process Description: Approximately 26,500 liters (7000 gallons) of material was discharged via an overground pipeline. The hole was backfilled and the piping was removed after the transfer was completed. HW-50584 indicates conflicting information. The May 1957 monthly report states that 79,494 liters (21,000 gallons) of organic solution (RAX) was originally scheduled to be transferred to the PUREX plant, but was buried because it was found to be incompatible with the PUREX process. The material was buried, with minor ground contamination occurring

when the overground line used to transport the material from 276-U leaked. One 8 inch culvert was replaced and the contaminated ground was dug up and buried.

Waste Type: Chemicals

Waste Description: This site received 26,500 liters (7,000 gallons) of waste from the 388-U Tank in the 276-U Solvent Building. The waste consisted of interface crud, activated charcoal, and diatomaceous earth containing approximately 1 curie of fission products. HW-50584 indicates conflicting information. The May 1957 monthly report states that 79,494 liters (21,000 gallons) of organic solution (RAX) was originally scheduled to be transferred to the PUREX plant, but was buried because it was found to be incompatible with the PUREX process.

Code: 216-U-16 **Classification:** Accepted

Names: 216-U-16; UO3 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1984

Status: Inactive **End Date:** 1/1/1987

Description: The crib is identified with concrete AC-540 markers and is posted with Underground Radioactive Material signs.

Location: The crib is located south of 16th Street, between Beloit and Cooper Avenues, southwest of the 224-U Building.

Related Sites/ Structures: The crib is associated with the 224-U and the 221-U facilities and the 216-U-14 ditch. The pipeline that feeds this crib is sitecode 200-W-170-PL.

Process Description: The crib was activated on July 20, 1984. The 216-U-16 crib was built to receive waste from the 224-U Uranium Oxide Processing Facility. The crib is constructed of two header pipes, 20 centimeters (8 inch) reducing to 15 centimeters (6 inch) that are located 0.9 meters (3 feet) above the crib bottom, running the length of the unit, one on each side. At each end of the pipe is a 15 centimeter (6 inch) vent pipe. Connecting the two header pipes were twenty-two 10 centimeter (4 inch) perforated pipes running the width of the unit, equally spaced, 0.9 meters (3 feet) above the bottom. Each header pipe has a 10 centimeter (4 inch) vent riser. An acid resistant distribution box is located at the crib inlet (northeast edge). A short pipeline connected the crib to the existing VCP Process Sewer line. In July 2000, the vent risers were sealed and cut off below grade. There are three gage wells, one near the north and south ends and one near the center. The bottom is filled with 1.5 meters (5 feet) of gravel. Covering the gravel is a reinforced polyethylene liner extending 2.4 meters (8 feet) up the sides of the excavation. The crib structure has been backfilled over to grade. A 15 centimeter (6 inch) subdrainage pipe runs the width of the unit at the west side.

Waste Type: Process Effluent

Waste Description: The site received 224-U steam condensate, 224-U chemical sewer waste, 271-U compressor cooling water, 221-U chemical sewer waste, and 224-U process condensate.

Code: 216-U-17 **Classification:** Accepted

Names: 216-U-17; 216-U-17 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1988

Status: Inactive **End Date:** 1/1/1994

Description: The crib is marked and posted with Underground Radioactive Material signs.

Location: The crib is located south of 16th Street and east of Beloit Ave. inside the 200 West Area. It is southeast of the 221-U facility.

Related Sites/ Structures: The crib is associated with the 224-U facility and the 200-W CSLA. The pipeline associated with the crib is sitecode 200-W-195-PL.

Process Description: The crib was built to replace the 216-U-12 cribs. The crib received effluent from the 224-U building process condensate from the conversion of urynal nitrate hexahydrate (UNH) to Uranium Tri-oxide (UO3) through the calcining operations. The process condensate was neutralized prior to discharge to the crib. Effluent flow was evenly distributed over the entire unit from the distribution line lying in an aggregate field with a PVC vapor barrier. The site footprint is 70 meters by 26 meters (230 feet by 86 feet). The stormwater runoff from the 224-U facility was rerouted to the 207-U basins.

Waste Type: Process Effluent

Waste Description: The unit received 224-U process condensate. A neutralization system was placed into operation before startup of this crib to preclude the discharge of process condensate outside the range of 2.0 to 12.5 pH.

Code: 241-U-361 **Classification:** Accepted

Names: 241-U-361; 241-U-361 Settling Tank; 361-U-TANK **Reclassification** None

Type: Settling Tank **Start Date:** 1/1/1951

Status: Inactive **End Date:** 1/1/1967

Description: The 241-U-361 Tank is an underground settling tank constructed of reinforced concrete. The 216-U-1&2 Cribs and the 241-U-361 Settling Tank are co-located within a common radiologically controlled area. It is posted with Underground Radioactive Material (URM). Due to the 1953 release, the surface surrounding the settling tank has been covered with shotcrete. The tank is posted with Inactive Miscellaneous Underground Storage Tank (IMUST) signs.

Location: The 241-U-361 Settling Tank is located southwest of 221-U, north of 16th Street.

Related Sites/ Structures: This unit is associated with the 221-U building, UPR-200-W-19 and the 216-U-1 and 216-U-2 Cribs. The pipeline to the tank is sitecode 200-W-193-PL. The pipeline from the tank to the 216-U-1 and 2 cribs is sitecode 200-W-194-PL.

Process Description: The tank received cell drainage from the 5-6 tank in 221-U and waste from the 224-U building until the Uranium Recovery operations shut down in 1957. From July 1957 through May 1967, the 216-U-1&2 Crib system received waste from the 224-U facility and equipment decontamination waste and reclamation waste from the 221-U canyon via the 241-U-361 tank. The waste flowed through the 241-U-361 settling tank and then to the 216-U-1 and 2 cribs, located 26 meters (85 feet) west, via an underground pipe (sitecode 200-W-193-PL).

Waste Type: Process Effluent

Waste Description: The tank received radioactively contaminated liquid from U Plant. It is presently estimated to contain 104,100 liters (27,500 gallons) of sludge with an unknown plutonium content. Sample data collected in 1976 estimated the tank contained 760 curies of strontium-90, 1365 curies of cesium-137, 69,000 kilograms of uranium and less than one gram of plutonium.

Code: 200-W-1 **Classification:** Accepted

Names: 200-W-1; REDOX Mud Pit West
Reclassification None
Type: Mud Pit
Start Date:
Status: Inactive
End Date:

Description: The site was originally described as a pit that is approximately 15.3 meters (50 feet) by 31 meters (100 feet). The surface of the area has the appearance of drilling mud, and has the typical surface that is left from evaporated or percolated liquid. Vegetation is absent from the area.

Two samples were collected in 1995. The results identified bentonitic clay and diatomaceous material.

The following observations were made during a field visit in August 1999. The site is in a shallow depression. It is difficult to discern the precise boundaries of the site because the general area appears to have been disturbed by heavy equipment. One section of the site is devoid of vegetation and appears to have some soil discoloration. West of this section is an area where the ground surface is broken up and sparsely vegetated. These two distinctive areas are surrounded by sparse to moderate vegetation cover, composed primarily of cheatgrass and tumbleweeds. An approximately 2.5 centimeter (1 inch) diameter rubber hose was seen near the west edge of the site and some lumber and a wooden stake were found at the unvegetated spot.

Location: The site is located west of REDOX, outside the REDOX exclusion fence. It is north of 10th Street.

Related Sites/ Structures: The site is associated with 200-W-17 and 200-W-18.

Waste Type: Chemicals

Waste Description: Site characterization is required for this site.

Code: 200-W-2
Classification: Accepted
Names: 200-W-2; REDOX Berms West
Reclassification None
Type: Spoils Pile/Berm
Start Date:
Status: Inactive
End Date:

Description: The majority of the area is level, with evidence of soil disturbance over several acres. The site consists of two bermed areas. One berm is approximately 1.5 meters (5 feet) high by 9.2 meters (30 feet) wide. The other berm is approximately 3.1 meters (10 feet) high and 15.3 meters (50 feet) wide. The berms are not marked or posted.

Location: The site is located northwest of the 202-S Facility, outside the REDOX exclusion area fenceline.

Waste Type: Soil

Waste Description: The wastes at this unit are unknown. Characterization studies need to be performed.

Code: 200-W-6
Classification: Accepted
Names: 200-W-6; 200-W Painter Shop Paint Solvent Disposal Area
Reclassification None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of contaminated soil. The soil was identified in 1993, while performing building modifications at the paint shop.

Location: The site is located inside 200 West Area, north of 19th Street and east of Bridgeport Ave. It is within the construction forces shop complex at the 2318W Annex (previously referred to at 15019 shop building).

Release Description: Soil within an excavation exhibited a strong solvent odor.

Process Description: The construction forces shop complex has been situated at this location for many years.

Waste Type: Chemicals

Waste Description: Paint solvents were routinely disposed of to the soil in this area prior to 1984, according to conversations with "old timers".

Code: 200-W-9 **Classification:** Accepted

Names: 200-W-9; Project W291 Excavation VCP Contamination **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1994

Status: Inactive **End Date:**

Description: The site is currently a gravel area with two metal caissons. The area is not marked or posted. The tops of the caissons are labeled MH T-1 and MH T-2. While excavating for MH T-2 manhole for the new TEDF line from T-Plant to the 200 Area Treated Effluent Disposal Facility (project W291), contamination was discovered on an existing 25 cm (10 inch) vitrified clay pipe that was exposed during the excavation activity.

Location: The site is located in 200 West Area, near the southeast corner of 221-T. It is 42 meters (138 ft) north of 23rd street.

Release Description: An old vitrified clay pipe was uncovered while excavating for MH T-2 manhole for the new waste line from T-Plant to the 200 Area Treated Effluent Disposal Facility (project W291). The pipeline was left in the excavation.

Related Sites/ Structures: The 25 centimeter (10 inch) vitrified clay pipe (see 200-W-163-PL) carried chemical sewer effluent from 291-T, 222-T and 224-T to the 216-T-3 crib.

Process Description: The old vitrified clay pipe is assumed to be a chemical sewer line associated with 221-T and 222-T (see 200-W-163-PL).

Waste Type: Soil

Waste Description:

Code: 200-W-11 **Classification:** Accepted

Names: 200-W-11; Concrete Foundation South of 241-S; S-Farm Foundation and Dump Site **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: A concrete foundation, small burn areas, bare areas and scattered debris are located south of 241-S Tank Farm.

Location: The site is north of 10th Street and west of Camden Ave., south of the 241-S Tank Farm.

Related Sites/ Structures: The site is possibly associated with the construction of the 241-SX, 241-SY, 241-S Tank Farms.

Waste Type: Misc. Trash and Debris

Waste Description: concrete foundation, small burn areas, bare areas, scattered debris including wire, weld rod, paint cans, oil cans, solvent cans, vehicle parts, cable, melted roofing material, glass, wood, pipe, rubber brick, metal, concrete, etc.

Code: 200-W-12 **Classification:** Accepted

Names: 200-W-12; 201-W Soil Mound and Plastic Pipe **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The site consists of a soil mound with one 0.76-meter (2.5-foot) above-ground plastic pipe and one 20-centimeter (8-inch) above-ground plastic pipe topped with tees and elbows. There are also insulated electrical wires and an electrical heat controller.

Location: The site is located northwest of 201-W and approximately 75 meters (246 feet) north of 13th Street and west of Albany Avenue.

Related Sites/ Structures: The site may be associated with other adjacent test sites. See 200-W-35 and 200-W-10.

Process Description: During the 1970's, the Atlantic Richfield (ARCO) and Rockwell Research Departments used this area for testing equipment and processes to support the waste management operations. This area was selected for testing because it was adjacent to the REDOX facility (where the Research Department offices were located) and because the area did not contain any contaminated facilities or vadose contamination.

Waste Type: Equipment

Waste Description: The site consists of a soil mound (about 0.3-meter [1-foot] above grade) with one 0.76-meter (2.5-foot) above ground poly pipe and one 20-centimeter (8-inch) above ground poly pipe topped with tees and elbows. The site includes insulated wire and a heat controller. A below ground tank is suspected but unverified.

Code: 200-W-13 **Classification:** Accepted

Names: 200-W-13; 2713-WB Green Hut Complex; Regulated Vehicle Maintenance Shop Parking Areas **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is the areas of discolored soil (petroleum possibly) adjacent and near 2713-WB.

Miscellaneous regulated equipment has been stored outside and north of 2713-WB in the past. Trash and debris are scattered around 2713-WB including vitrified clay pipe, wood, metal, glass, cloth, plastic, rubber, brick, and aerosol cans. There is a coated (pink) steam line on south side of 2713-WB indicating asbestos.

Location: The site is located within the 200 West Area, north of 19th Street. 2713-WB is approximately 100 meters west of Bridgeport Ave.

Related Sites/ Structures: The site is related to the Minor Construction Area, Paint Shop, Shops, and the Power House.

Process Description: The site was used for regulated (i.e., containing radioactive material) vehicle maintenance and storage. In 1995, the north parking area and the area on the west side of the building were chained and posted with Contamination Area signs.

Waste Type: Soil

Waste Description: There are areas of discolored soil (presumed to be petroleum products) adjacent and near 2713-WB and areas with radiation protection postings. Regulated radioactive material and equipment have been stored outside and north of 2713-WB. The inside of the building was the Regulated Vehicle repair shop during the 1980's.

Code: 200-W-14 **Classification:** Accepted

Names: 200-W-14; 200 West Heavy Equipment Storage Area **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1995

Status: Inactive **End Date:**

Description: The site appears as a bare area. Several large, discolored areas were previously documented in this area. During August through October 2014, the adjacent buildings and structures, known as the Engineering Projects and Construction camp, were demolished to slab on grade. This activity also removed the oil stained soil. It was disposed in ERDF. No verification samples were collected.

Location: The site is located northwest of the intersection of Bridgeport Ave. and 19th Street, in 200 West Area. It is near the 2713 WB Maintenance Shop. It was also adjacent to several craft shop buildings.

Related Sites/ Structures: The site is associated with the building trades craft shops and support structures.

Process Description: The site was a heavy equipment (including cranes, forklifts, diesel generators, backhoes, vehicles) parking area with five or six large spots of petroleum contaminated soil. Contaminated soil was encountered down to a depth of 0.61 meters (2 feet) or more. During the 1995 site visit, the equipment continued to overflow and leak. No drip pans or containment were being used.

Waste Type: Oil

Waste Description: The soil at the site contains petroleum (oil, fuel, etc.) from leaky and overflowing (especially during hot weather) equipment (cranes, generators, front end loaders, forklifts, etc.).

Code: 200-W-15 **Classification:** Accepted

Names: 200-W-15; S Plant Project W-087 Hexone Discovery **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The pipe trench where the hexone soil was found has been back filled to grade with soil originally removed from the excavation. Hexone contaminated soil was also put back into the excavation. There is currently no visual evidence of this excavation on the surface. The area is now under asphalt. It is not marked or posted.

Location: The site is located approximately 18 meters (59 feet) southwest of the southwest corner of REDOX (202-S). It is above the 200-W-189-PL pipeline.

Release Description: In June, 1995, while excavating pipe trench for Project W-087 (new transfer lines from 222-S to 244-S), a dark 4.6-centimeter (3-inch) thick layer of soil was noted at about 0.6-meter (2-foot) depth. It was determined to be hexone and surfactants (source: 8/4/1995 Email from L Marquardt - not available). The hexone soil was stockpiled and returned to the excavation after the pipe was installed in the trench.

Related Sites/ Structures: The 202-S, 222-S, and 244-S are associated with the site.

Process Description: Hexone was used in the adjacent facility 202-S REDOX.

Waste Type: Chemical Release

Waste Description: The waste consists of soil containing hexone and surfactants.

Code: 200-W-21 **Classification:** Accepted

Names: 200-W-21; 204-T Unloading Station; T-Plant Waste Railcar Unloading Facility; Unloading Station 1 and Unloading Station 2 **Reclassification** None

Type: Pump Station **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1968

Description: The unloading station consisted of two unloading platforms, Unloading Station 1 and Unloading Station 2. The platforms and piping from both stations were removed in 1996. The area has a short railroad siding extending from the main rail line into T-Plant. The concrete structure foundations remain and are posted with Underground Radioactive Material signs.

Location: The 204-T Unloading Station platform structures were located west of 221-T at the north end of the 216-T-34 crib.

Related Sites/ Structures: The site is associated with the 216-T-34 crib, 216-T-35 crib and the 340 facility in 300 Area. The pipeline from Unloading Station 1 to the 216-T-34 crib is sitecode 200-W-196-PL. The pipeline from Unloading Station 2 to the 216-T-35 crib is sitecode 200-W-197-PL.

Process Description: The platform structures were used to unload 300 Area liquid laboratory waste sent in railroad tanker cars from the 340 Facility. The waste was pumped into the adjacent 216-T-34 and 216-T-35 Cribs.

Waste Type: Equipment

Waste Description: The platform structures and equipment supported the unloading of liquid waste from the 300 Area into the 216-T-34 and 216-T-35 cribs.

Code:	200-W-22	**Classification:**	Accepted
Names:	200-W-22; 203-S/204-S/205-S Stabilized Area	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1983

Description: The site consists of multiple consolidated sites. All above ground surface features have been removed. The site is currently posted as an Underground Radioactive Material Area (URMA). There are also two small, posted URMA's located under the abandoned steam line, on the south end of this site.

Location: The site is located northwest of the 202-S Facility.

Related Sites/ Structures: The site is associated with the 203-S & 205-S UNH Processing Facilities, the REDOX UNH Unloading Facility and UPR-200-W-32, UPR-200-83, UPR-200-W-10, UPR-200-W-69, UPR-200-W-86, UPR-200-W-116 and UPR-200-W-123.

Process Description: The 203-S, and 205-S Facilities were constructed in the early 1950's to process and decontaminate the uranyl nitrate hexahydrate (UNH) produced by Reduction Oxidation (REDOX) operations. The primary process unit consisted of a column filled with silica gel that removed traces of fission products from the UNH. The silica gel column (SG-1) was located in the underground 205-S Vault. The vault also contained a waste neutralization tank. Operations in the vault were accomplished remotely. The 205-S Facility was a two story, aboveground, chemical make-up building. It contained two chemical make-up tanks, a UNH sample room and extensive piping connected to the REDOX facility and the underground vault. The 203-S Facility was an aboveground UNH storage facility that consisted of two 19,000 liter (5,000 gallon) stainless steel tanks that were set in an open concrete basin. There was also a 204-S Tank Farm, that consisted of four 190,000 liter (50,000 gallon) above-ground tanks set in two open concrete basins. A UNH Unloading Facility was located at the adjacent railroad siding. An above-ground UNH pipeline connected the 203-S, 204-S, 205-S Area to the 224-U Facility. During the REDOX Plant operation, the UNH solution was pumped from REDOX to the 205-S silica gel column for purification. The purified UNH was stored in the 203 and 204 tanks and the routed to 224-U, via an above ground line, for final processing. The fission products left in the silica gel column were stripped out with nitric acid. The acid was neutralized and send to cribs. UNH from the PUREX Plant were transported by truck to the unloading station and placed in the 204-S tanks. The PUREX solutions were then processed through the silica gel column. After REDOX shut down (1965), the 203-S and 205-S were placed on standby. The Unloading Station was converted to a railcar unloading station. The 204-S tanks continued to store material from the Unloading Station. Shipments included thorium nitrate from PUREX, 100-N Reactor decontamination solutions and 300 Area Laboratory wastes. The thorium nitrate was stored in tanks 204-S-1, 204-2 and 204-3. After an extended storage time, the thorium nitrate was shipped to Fernald, Ohio. The 203-1, 203-2 and 203-3 tanks were flushed. Tank 204-S-4 tank was used to hold the 100-N Reactor and 300 Area wastes. Tank 4 was connected to the 240-S-151 Diversion Box so that waste could be transferred to tank farms. Substantial dose rates were associated with these shipments. Several feet of sludge built up in the bottom of tank 4 and increased the dose rate problem. Increasing dose rate issues and contamination spreads lead to the construction of an enclosed unloading facility in 200 East Area (204-AR) that opened in 1981 and replaced this outdoor unloading station at REDOX.

Waste Type: Soil

Waste Description: Waste processed and stored in this area included contaminated UNH from REDOX and PUREX, Thorium Nitrate from PUREX, 100-N Reactor decontamination waste and 300 Area Laboratory waste. Radiological contaminants may be present in and around the remaining contaminated structures (cement basins and piping) that were not removed in the 1983 stabilization efforts.

Code:	200-W-42	**Classification:**	Accepted
Names:	200-W-42; 200-W-42-PL; U Plant Radioactive Process Sewer from 221-U to 216-U-8 & 216-U-12 Cribs	**Reclassification**	None
Type:	Radioactive Process Sewer	**Start Date:**	1/1/1952
Status:	Inactive	**End Date:**	1/1/1988

Description: A large portion of this pipeline was removed in 2006. The portion removed was from the neutralization tank (southward) to the 216-U-8 crib. The excavation (approximately 15 feet deep) was left open when remediation activities ceased in 2006. The open trench is marked with steel posts along the entire length. The angle of the side slopes were greater than the requirements for safe entry. The steepness of the slope resulted in surveillance, tumbleweed removal and sampling activities being conducted remotely from the top of the trench. Blown in tumbleweeds and live, growing contaminated tumbleweeds in the open trench caused the area to be posted as a Contamination Area. In 2010, six to 36 inches of clean backfill material was added to the open excavation on the south side of 16th Street. The area was downposted to Underground Radioactive material Area. In 2012 six to 36 inches of clean backfill was added to the open excavation on the north side of 16th Street. This activity achieved a safe side slope and covered residual radiological contamination. The Contamination Area on the north side of 16th Street was downposted to an Underground Radioactive Material Area in July 2012. A portion of the pipeline from 221-U to the neutralization Pit still remains. The portion of the pipeline from 216-U-8 to 216-U-12 crib is also still intact.

Location: The waste site is an underground pipeline that extends from the 221-U Building to the 216-U-8 and 216-U-12 Cribs. It is located west of Beloit Avenue. A portion of the pipeline is north of 16th Street, but the majority of it is located south of 16th Street.

Release Description: Over the years, growing contamination over the pipeline absorbed radioactive contamination. The posted contaminated area over the pipeline south of 16th Street was given the number UPR-200-W-163.

Related Sites/ Structures: The pipeline is associated with 221-U Building, 224-U Facility, 270-W, 291-U Stack, 216-U-8 Crib and 216-U-12 Crib, UPR-200-W-163 and 200-W-151-PL.

Process Description: The underground vitrified clay pipeline transferred process condensate from the 221-U and 224-U Buildings and the 291-U Stack to the 216-U-8 and 216-U-12 Cribs. The waste was acidic. The pipeline was originally connected to the 216-U-8 Crib which became active in 1952. The 216-U-12 Crib was built in 1960 to replace the 216-U-8 Crib when it showed potential signs of cave-in. A WYE joint was made in the 216-U-8 Crib pipeline to reroute and extended the pipeline to the 216-U-12 Crib.

Waste Type: Process Effluent

Waste Description: From 1952 to 1960, the line transferred waste from 221-U, 224-U and 291-U to the 216-U-8 crib. The 216-U-12 crib replaced the 216-U-8 crib in 1960. The pipeline was extended further south to the 216-U-12 location. From April 1960 to May 1967, the pipeline received waste from the 291-U-1 Stack drainage, 241-WR Vault waste, and 224-U process condensate via C-5 Tank. Disposal of contaminated water from 241-WR Vault was accomplished in October 1965 and included 3.14 kilograms (6.9 pounds) of thorium. From May 1967 to September 1972, the site received the above wastes excluding the 241-WR Vault waste and occasional waste via the C-7 Tank in the 244-U Building. From September 1972 to November 1981, the site was taken out of service. After November 1981, the pipeline received process condensate (corrosive: typical pH range is 0.5-1.5) from the 224-U Building. In the past, this facility also received miscellaneous storm drain wastes from 224-U. A Limited Field Investigation was done in 1994 to characterize selected waste sites in the 200-UP-2 Operable Unit. Fourteen surface and

subsurface soil samples along with four vegetation samples were collected to characterize the vitrified clay pipeline (VCP) leading to the 216-U-8 Crib. An attempt was made to determine if the contamination had spread laterally from the pipeline by digging holes with an auger rig where subsurface contamination had been identified. An increase in activity was noted at approximately 3 meters (10 feet). At a depth of 3.3 meters (11 feet) the auger was stopped by large cobbles. The samples were analyzed for cesium-137, strontium-90, gross alpha and gross beta. Specific sample data is documented in BHI-00033.

Code: 200-W-51 **Classification:** Accepted

Names: 200-W-51; Septic Tank (Abandoned) **Reclassification** None

Type: Septic Tank **Start Date:**

Status: Inactive **End Date:** 1/1/1994

Description: The site is an abandoned septic tank that has been filled and covered. The septic tank was discovered during excavations (for exhauster upgrades) outside 241-SY Tank Farm. The tank walls were collapsed to the greatest extent practicable to increase the over-burden of soil. The site was backfilled and compacted with clean fill dirt. The tank is marked with a WIDS sitecode sign.

Location: The site is located north (and slightly east) of the 241-SY-101 tank, north of the 241-SY Tank Farm fence.

Waste Type: Sanitary Sewage

Waste Description: The waste is the heel remaining in an abandoned septic tank.

Code: 200-W-53 **Classification:** Accepted

Names: 200-W-53; Contaminated Soil East of 207-T Retention Basin **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: This site was an area of surface soil contamination located east of the 207-T Retention Basins. It was identified in 1994, resulting in approximately 155,706 square feet of land being marked and posted as a Soil Contamination Area (SCA). The contaminated soil was scraped and placed inside the 207-T Retention Basin. The scraped area is currently posted as an Underground Radioactive Material Area (URM). A site visit in 2014 found the posting had not changed.

Location: The site is a large area of posted Underground Radioactive Material, located east of the 207-T Retention Basin. The source of the contamination was assumed to be the 241-T Tank Farm and the 207-T Retention Basin. A small Underground Radioactive Material area surrounding well 299-W11-28, on the west side of the retention basin, is considered to be part of 200-W-53 also.

Release Description: Specks of contamination spread from the operation of 241-T Tank Farm on the wind.

Related Sites/ Structures: The site is associated with the 207-T basin.

Waste Type: Soil

Waste Description: Contaminated soil specks were identified.

Code: 200-W-54 **Classification:** Accepted

Names: 200-W-54; Contamination Migration from 241-SX Tank Farm **Reclassification** None

Type: Contamination Migration **Start Date:**

Status: Inactive **End Date:**

Description: This site is an expanding area of contamination migration. A major radiological zone reduction activity was done in October 2011. Three and one half acres were covered with gravel and downposted to Underground Radioactive Material Area. The original unplanned release was defined in 1997. It was a large, irregular shaped Soil Contamination Area (SCA) located on the east side of 241-S/SX Tank Farms. In 1997, it measured approximately 175 meters (575 feet) by 100 meters (330 feet). Another Global Positioning Survey was done in 1998. The posted Soil Contamination Area had been extended approximately 50 meters (165 feet) to the west (up to the tank farm fence) and approximately 200 meters (660 feet) in the north-south direction. A site visit in August 2000 found multiple additional radiologically chained and posted areas in this vicinity. There is also one separately posted Contamination Area located north of 241-SY Tank Farm, across a gravel road. In 2009, contaminated rabbit feces were found outside the posted areas. Some areas of rabbit feces and specks were delineated and posted as a Contamination Area. The posted area size and shape varies with additional radiological surveys.

Location: The site is located east and north of the 241-S, SX, SY Tank Farm fence. It extends eastward to the west edge of the 216-S-9 Crib. The posted area size and shape varies often, with additional radiological surveys.

Related Sites/ Structures: The site is associated with activity in the 241-S, SX and SY Tank Farms.

Waste Type: Soil

Waste Description: The posted soil contamination areas are the result of contamination migration out of the tank farms.

Code: 200-W-63 **Classification:** Accepted

Names: 200-W-63; Contaminated Concrete Pad **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was a "T" shaped concrete pad that had been posted with Surface Contamination Area signs. A site visit in September 1999 found the pad had been covered with gravel and reposted as Underground Radioactive Material.

Location: The pad is located approximately 180 meters (591 feet) northwest of 241-TY Tank Farm and 80 meters (262 feet) south of 23rd Street in 200 West Area.

Process Description: Employees who have worked in 200 West Area state the pad was used to store radiologically contaminated tanks in the late 1980's. The tanks were removed in 1991 and the pad was left posted as a Surface Contamination Area.

Waste Type: Equipment

Waste Description:

Code: 200-W-67 **Classification:** Accepted

Names: 200-W-67; Contaminated Soil at the Corner of Cooper and 16th Street **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1998

Status: Inactive **End Date:**

Description: The site is currently posted as an Underground Radioactive Material area.

Location: The site is located inside 200 West Area, east of the 16th Street and Cooper Ave. intersection. It is adjacent to the 216-U-3 Crib.

Release Description: A radiological survey done by the 200 West Tank Farm Radiological Protection group in April 1998 identified contamination specks and a contaminated ant hill near the intersection of 16th Street and Cooper Ave. The maximum reading on the specks was 11 mr/hr. Another speck was found that read 6 mr/hr. Other contamination levels ranged from 500 counts per minute to 70,000 counts per minute. The ant hill read 3000 counts per minute. Some of the contamination was removed as it was found. The rest of the area was posted as a Contamination Area (CA) in April 1998. The source of the contamination has not been determined.

Waste Type: Soil

Waste Description:

Code: 200-W-71 **Classification:** Accepted

Names: 200-W-71; Undocumented Burn Pit; Undocumented Trench **Reclassification** None

Type: Trench **Start Date:**

Status: Inactive **End Date:**

Description: The open trench was visible on a 1948 aerial photograph of 200 West Area. The trench is also visible on photograph number 3757, taken in May 1956. Smoke is emitting from the trench, indicating it was used as a burn pit. The trench has been backfilled. The area where the trench had been located is not marked or posted. The area seems somewhat disturbed and is covered with cheatgrass and some rabbitbrush.

Location: The open trench was located southeast of the 221-U facility. It was south of 16th Street and east of Beloit Avenue.

Related Sites/ Structures: The site is associated with the Construction Surface Laydown Area (sitecode 200-W CSLA).

Process Description: It is not known exactly what the trench was used for. Hanford drawing H-2-1495 shows the trench and labeled it "Maintenance Disposal Ground". The 1948 aerial photograph shows an open trench and a spoil pile. Historical photographs from 1950 and 1956 show smoke emitting from the trench, indicating it was used as a burn pit. There are no designated burial grounds at this location. Later, the same area was used as a construction lay down area for the reconfiguration of U Plant for the uranium recovery process. When choosing the site for the 216-U-17 Crib, a meeting was held on July 2, 1987 with several knowledgeable long time employees. The subject of the existence of an old burial ground located adjacent to the 216-U-

17 Crib site was discussed. The obvious surface debris was attributed to the surface lay down area that supported the U Plant re-construction activities. There was a general recollection among the older employees that natural uranium was once sent to a trench in this area. However, no radioactivity was ever detected during various core sampling done in the area over the years.

Waste Type: Misc. Trash and Debris

Waste Description: Drawing H-2-1495 labels the trench as the Maintenance Disposal Ground. Historical photographs show smoke emitting from the trench, indicating it was used as a burn pit.

Code: 200-W-75 **Classification:** Accepted

Names: 200-W-75; Radiological Logging System (RLS) Calibration Silos **Reclassification** None

Type: Experiment/Test Site **Start Date:** 1/1/1978

Status: Inactive **End Date:**

Description: The site consists of four underground Radiological Logging System (RLS) equipment calibration silos. The silos are galvanized steel containers with metal lids bolted on top. The silos have somewhat different design constructions, for calibrating different types of equipment. One type consisted of a 25 centimeter (6 inch) capped well casing is inserted through the centers of the silos. There are two risers with bolted lids adjacent to the well casing. The silos are posted with Underground Radioactive Material signs.

Location: Three calibration silos are located west of the 202-S building, south of the 276-S building and north of the 211-S tanks. One calibration silo is located west of the 211-S tanks, across an asphalt access road.

Process Description: In the late 1970's, test well mockups were used to calibrate in-well radionuclide detectors. The calibration mockups were constructed of a steel container approximately 2.4 meters (8 feet) deep filled with soil. Tubes containing radioactive sources were inserted into the soil at distances of 2.5, 7.6, 15, 30, 46 and 61 centimeters from the well casing that was located in the center of the mockup. The mockup silo was buried so that a Radiological Logging System vehicle could drive up to the calibration silo and drop its logging probe into the center well casing.

Waste Type: Equipment

Waste Description: The calibration silos contained radioactive sources consisting of known quantities of cobalt-60, strontium-90, ruethinium-106 and cerium-144 in sealed capsules. Since the silo covers are posted with Underground Radioactive Material signs, it is assumed the sources are still inside the silos.

Code: 200-W-77 **Classification:** Accepted

Names: 200-W-77; Posted Contamination Area East of 216-U-14 Ditch **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was a small area marked with posts and chain, posted with Contamination Area signs. After being backfilled with gravel, the area was downposted to Underground Radioactive Material.

Location: The site is located adjacent to the railroad track, west of 216-U-16 Crib and east of the stabilized 216-U-14 Ditch.

Waste Type: Vegetation

Waste Description:

Code: 200-W-80 **Classification:** Accepted

Names: 200-W-80; Mound of Contaminated Soil Southwest of T Plant; Stabilized Contaminated Soil Area Southwest of T Plant **Reclassification** None

Type: Spoils Pile/Berm **Start Date:**

Status: Inactive **End Date:**

Description: The site is a gravel area surrounded with post and chain and Underground Radioactive Material Area signs. The site had been a mound of soil surrounded with radiation rope and posted with Contamination Area signs. The mound was approximately 1.5 meters (5 feet) high, 8.2 meters (27 feet) long, and 3 meters (10 feet) wide. The mound of soil and the surrounding area contained many pieces of asphalt, similar to that in the adjacent parking lot of T Plant. The mound and surrounding area is covered by a thin growth of cheatgrass and tumbleweeds. About 3 meters (10 feet) east of the site is a small posted URM, with one capped well inside the posted area and one just outside. The capped well outside is locked and has a warning of potential contamination. Across the northern part of the contamination area are fence posts marking an underground pipeline, traveling east-west, posted as a URM. Another posted underground pipeline goes under the mound of soil, in a north-south direction, and is also posted as a URM.

Location: The site is located west of 221-T and northeast of the 241-T-361 settling tank. It is about 15 meters (50 feet) west of the steam pipeline.

Waste Type: Soil

Waste Description: The site consists of a mound of soil surrounded with radiation rope and Contamination Area signs. A survey of the mound surface did not detect any contamination. It is not known if there is contamination inside the mound.

Code: 200-W-81 **Classification:** Accepted

Names: 200-W-81; Contaminated Tumbleweed Fragments Along Railroad Track East of 218-W-3AE **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was three posted Contamination Areas on the railroad track east of the burial ground, south of the 610 Gate of the 200 West Area fence. In 2009, each Contamination Area was radiologically surveyed and downposted to Soil Contamination Areas. Later, six inches of clean gravel was placed on the areas and the postings were changed Underground Radioactive Material Areas.

Location: The sites are located east of the 218-W-3AE Burial Ground along the railroad track, south of 12th Street.

Waste Type: Soil

Waste Description:

Code: 200-W-82 **Classification:** Accepted

Names: 200-W-82; Crib Unloading Station; Risers East of 216-TY-201 and 216-T-26, 216-T-27 and 216-T-28 Cribs; Truck Unloading Station **Reclassification** None

Type: Product Piping **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1966

Description: The site consists of two concrete pads with flanged risers, surrounded by Contamination Area postings.

Location: The site is located east of Camden Avenue, east of the 216-TY-201 Flush Tank and 216-T-26, 216-T-27, and 216-T-28 Cribs.

Related Sites/ Structures: The site is associated with the 216-T-27 and 216-T-28 Cribs. The pipeline associated with the unloading station is described in 200-W-188-PL.

Process Description: Based on the available information, it is believed that this site is a liquid waste truck unloading station. It is assumed that the short pipeline, shown on drawing H-2-2733, extended eastward to the risers. The unloading station was built to accommodate tanker trucks unloading 300 Area liquid wastes into the 216-T-27 and 216-T-28 cribs. The unloading station jetted waste from the trucks to the cribs and was capable of unloading two trucks at a time.

Waste Type: Equipment

Waste Description: The 216-T-27 and 216-T-28 received liquid waste from the 300 Area via trucks. The waste at the unloading station is the underground transfer piping, risers and pads and adjacent soil contaminated from leaks.

Code: 200-W-83 **Classification:** Accepted

Names: 200-W-83; Contamination Area North of 2727W **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site had been a posted Contamination Area extending across the railroad track north of the 2727-W Sodium Storage building. In April 2007, the contamination was backfilled with clean dirt and the area posting was changed to Underground Radioactive Material. The railroad tracks are no longer used.

Location: The site is located on the railroad tracks, north of the 2727-W building.

Related Sites/ Structures: The 2727-W Building, about 100 meters (100 yards) of this site, is posted with "Danger" signs for the sodium stored inside. It, and three nearby mobile trailers, are posted as Radiological Materials Areas.

Process Description: No source of the contamination at this site is obvious from field conditions.

Waste Type: Soil

Waste Description:

Code: 200-W-85 **Classification:** Accepted

Names: 200-W-85; Soil Contamination Area East of 2727 W **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was originally a posted Soil Contamination Area. The posting surrounded some growing rabbit brush and grass. No soil discoloration or disturbance was apparent. In December 2001, the area was covered with clean backfill material and downposted to an Underground Radioactive Material Area.

Location: The site is located approximately 30 meters (100 feet) east of the fenced 2727-WA equipment storage yard.

Process Description: It is not known what caused the contamination at this location. No radiological survey could be found to determine when the area was posted or the radiological conditions inside the posted area.

Waste Type: Soil

Waste Description:

Code: 200-W-86 **Classification:** Accepted

Names: 200-W-86; Contamination Area Around Light Pole **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was originally a small, graveled Soil Contamination Area around an active (in use) pole with a street light attached, near the intersection of the U plant railroad sour and Bridgeport Avenue. In December 2001, the utility pole was removed and the area was covered with clean backfill. The area was downposted to Underground Radioactive Material.

Location: The site is located northwest of 221-U, on a gravel road known as Bridgeport Avenue.

Related Sites/ Structures: The light pole is related to the electrical utility facilities.

Waste Type: Equipment

Waste Description: The history (source and amount of contamination) of the site is unknown, but the power pole is surrounded by a small Soil Contamination Area.

Code: 200-W-87 **Classification:** Accepted

Names: 200-W-87; Unplanned Release on Chemical Spur Railroad Track Northwest of 221-U Plant **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was originally a posted Contamination Area on a portion of the railroad spur. The spur is no longer active. In December 2001, the area was covered with clean backfill material and downposted to an Underground Radioactive Material Area.

Location: The site is located approximately 61 meters (200 feet) northwest of the 2714-U building and T-Hopper yard on the U Plant chemical spur railroad track.

Related Sites/ Structures: UPR-200-W-118 is another unplanned release located on the same railroad spur, but closer to the 221-U building. This unplanned release was associated with material being transported to the 211-U Tank Farm area. The 211-U Chemical Unloading Station was removed and the area stabilized with gravel in 1998. The graveled area is posted with Underground Material Area signs. The demolished 2714-U was in this area.

Process Description: The chemical spur railroad track was used to transport chemicals to and from the 211-U Tank Farm and also to transport "T-Hopper" containers. The T-Hoppers contained calcined, uranium powder that had been processed in the 224-U Uranium Trioxide (UO3) plant. They were stored in a fenced area west of the 2714-U Building. However, the posting on this spur is the result of rail cars and engine parked here (see Site Comment).

Waste Type: Soil

Waste Description:

Code: 200-W-89 **Classification:** Accepted

Names: 200-W-89; 252-U; C8S17 Substation; U Plant Electrical Substation; U-Cat Substation **Reclassification** None

Type: Foundation **Start Date:**

Status: Inactive **End Date:**

Description: The site was a gravel Underground Radioactive Material (URM) area, located where the 252-U Electrical Substation had been located. The site is now located within the boundaries of the larger Underground Radioactive Material Area, known as 200-W-136. The 200-W-136 WIDS site includes the back side of 221-U and also the demolished 224-U, 224-UA, 203U, 203UX and the 272-U Hot Shop footprints.

Location: The site is located near the intersection of Beloit and 16th Street in 200 West Area, east of the (demolished) 224-U building.

Related Sites/ Structures: The site is associated with 221-U and 224-U and 200-W-136.

Process Description: The 252-U Substation provided electric utility support to the 221-U and 224-U facilities.

Waste Type: Soil

Waste Description: The waste in this area is residual radioactive contamination in soil. After the electrical substation was decommissioned, a posted Underground Radioactive Material area remains. Laboratory analysis of metal, ceramic pieces and asbestos fibers (August 1998) identified cesium 134 and cesium 137. Some barium, cadmium, chrome and lead was also noted. No PCB's were identified. The radioactive contamination is assumed to have been deposited on the substation from U Plant and 224-U stack emissions.

Code: 200-W-90 **Classification:** Accepted

Names: 200-W-90; Underground Radioactive Material Areas Posted Along 23rd Street in 200 West Area **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is comprised of three posted Underground Radioactive Material areas. Two are located on the south side of 23rd Street, across from the 218-W-2A Burial Ground. One is located further east, on the south side of 23rd Street, across from the 241-T Tank Farm.

Location: The posted areas are located along the south shoulder of 23rd Street, in 200 West Area, between Camden and Dayton Avenues.

Related Sites/ Structures: It is possible the areas are related to UPR-200-W-63.

Waste Type: Soil

Waste Description:

Code: 200-W-92 **Classification:** Accepted

Names: 200-W-92; Contaminated Mound of Soil and Debris; Soil Mound West of 241-TY Tank Farm **Reclassification** None

Type: Dumping Area **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is a mound of soil is approximately 1.5 meters (5 feet) high. It had been surrounded with chain and posted with Contamination Area signs. Several radiation flags were placed in the mound to identify significant contamination. Rocks, asphalt and chunks of cement were visible. Some vegetation, including rabbitbrush, had been growing on the mound. In April 2007, clean gravel was placed on top of the contamination and the site was down posted to Underground Radioactive Material.

Location: The mound is located west of an unnamed gravel road, west of the 241-TY Tank Farm.

Waste Type: Misc. Trash and Debris

Waste Description: Maximum contamination levels of 1,600,000 disintegrations per minute per 100 square centimeters of beta gamma and 14,000 disintegrations per minute per 100 square centimeters of alpha were found on the soil and debris.

Code: 200-W-106 **Classification:** Accepted

Names: 200-W-106; Soil Contamination Area Adjacent to 200-W-55 Dump Site **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: Soil contamination was found and posted on February 13, 2003. In March 2010, the area was surface stabilized and downposted to Underground Radioactive Material.

Location: The site is located west of the 241-TX Tank Farm, west of the 216-T-25 Trench and northeast of the 200-W-55 debris dump site.

Code: 200-W-127 **Classification:** Accepted

Names: 200-W-127; Surface Stabilized Area East of UPR-200-W-29/UPR-200-W-97 (UN-216-W-5) **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is a posted Underground Radioactive Material area that has been covered with gravel.

Location: The site is located on the south side of 23rd Street in 200 West Area. It is west of T Plant and east of UPR-200-W-29/UPR-200-W-97, a posted Underground Radioactive Material area on the corner of 23rd St. and Camden Ave.

Related Sites/ Structures: Encased pipeline 200-W-129-PL crosses this radiologically posted area.

Code: 200-W-128 **Classification:** Accepted

Names: 200-W-128; Underground Radioactive Material Area East of 218-W-4A **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site is posted with Underground Radioactive Material signs. A considerable amount of sand appears to have blown onto the posted area.

Location: The site is located approximately 100 feet south of 23rd Street, inside 200 West Area. It is adjacent to the 218-W-4A fence.

Related Sites/ Structures: The area is associated with the 218-W-4A burial ground.

Code: 200-W-231 **Classification:** Accepted

Names: 200-W-231; Temporary Facilities Construction Trailer Septic Tank and Tile Field **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1951

Status: Inactive **End Date:**

Description: The septic and tile field are not visible. They are not marked or posted. They were noticed on Hanford Site drawing H-2-2289. Exact coordinates are not available.

Location: The septic tank and tile field are located west of Camden Ave. and south of 23rd St. They are approximately 16.7 meters (55 feet) south of the 200-W-79-PL pipeline, the pipeline that feed the 216-T-36 crib.

Process Description: During the 1950's, many Temporary Construction buildings were set up to support construction activities. H-2-2289 was drawn in February 1951. It shows a septic tank and tile field that supported a Temporary Construction office and an X-ray laboratory. The Temporary

construction facilities were supporting the construction of 241-TY Tank Farm.

Waste Type: Sanitary Sewage

Waste Description: H-2-2289 was drawn in February 1951. It shows a septic tank and tile field that supported a Temporary Construction office and an X-ray laboratory. It is possible that x-ray development solutions were discharged to the septic system.

Code: 200-W-244-PL
Classification: Accepted

Names: 200-W-244-PL; Encased Pipelines from 221-U Canyon Building to 241-WR Vault; Lines 4705, 4707, 4709, 4711, 4861, 4871
Reclassification None

Type: Encased Transfer Piping
Start Date:

Status: Inactive
End Date:

Description: The waste site is a grouping of six pipelines in a concrete encasement. Four lines connect to Section 3 of the 221-U canyon. Two lines connect to Section 4 of the 221-U canyon. All six lines also connect to the 241-WR Vault.

Location: The encased pipeline is located on the east side of the 221-U facility, west of Beloit Ave.

Process Description: The 241-WR Vault received uranium and thorium slurry solutions (via underground encased pipelines) from the single shell tanks and prepared the waste to be fed into 221-U facility to extract the uranium and thorium. The 241-WR vault added chemicals and adjusted the pH before it was transferred to the 221-U canyon to be processed through the tributyl phosphate extraction columns. The 241-WR vault (tank 241-WR-001) also received neutralized waste from the 221-U extraction process (via underground encased pipelines) and stored it until it was transferred back to the tank farms via the 241-UX-154 Diversion Box.

Code: 200-W-248-PL
Classification: Accepted

Names: 200-W-248-PL; Direct Buried lines from 241-UX-154 to 200-W-244-PL and 241-WR Vault; Line Numbers 4866, 4976 and 4977
Reclassification None

Type: Direct Buried Tank Farm Pipeline
Start Date:

Status: Inactive
End Date:

Description: The waste site is three underground, stainless steel pipeline buried in the same soil trench. Three stainless steel pipelines (lines 4866, 4976 and 4977) exit the north side of the 241-UX-154 Diversion Box. The three lines extend northward, buried in a single soil trench. They connect into the 200-W-244-PL concrete encasement near the south wall of the 241-WR vault.

Location: The three direct buried pipelines are located on the east side of the 221-U building.

Code: 218-W-8
Classification: Accepted

Names: 218-W-8; 222-T Vault
Reclassification None

Type: Burial Vault
Start Date: 1/1/1945

Status: Inactive
End Date: 1/1/1952

Description: Three underground vaults are contained in this site. The two original vaults are 3 by 3 by 3.7

meters (10 by 10 by 12 feet) deep, made of 5.1 by 30.5-centimeter (2 by 12-inch) wooden planking, with the tops 1.5 meters (5 feet) below grade. The third replacement vault is a concrete culvert pipe encasement 2.4 meters (8 feet) in diameter and 7.6 meters (25 feet) long and 1 meter (3.2 feet) below grade. The top of the encasement is a 23-centimeter (9-inch) precast concrete cover and the bottom is a 30.5-centimeter (12-inch) thick concrete floor. The disposal chutes for the wooden vault were removed.

Location: The unit is located southeast of the 222-T Building.

Waste Type: Misc. Trash and Debris

Waste Description: This site contains laboratory process sample waste from the 222-T Building.

Code: 218-W-9 **Classification:** Accepted

Names: 218-W-9; Dry Waste Burial Ground No. 9; Non-TRU Dry Waste No. 009 **Reclassification** None

Type: Burial Ground **Start Date:** 1/1/1954

Status: Inactive **End Date:** 1/1/1954

Description: The burial area is 42.7 meters (140 feet) by 29.8 meters (98 feet). The location is designated by four corner posts and chain. No data is available regarding depth, slope, or actual area used inside the posted area.

Location: The site is located northwest of the 202-S Building and north of 216-S-7 Crib.

Release Description: UPR-200-W-109 states that after repairing the buckled portions of the waste line near the 216-S-9 crib, a pressure test indicated another leak in the line. Additional hydrostatic testing finally forced the water to bubble to the surface. It surfaced inside the radiation zone marking the 218-W-9 burial trench. Dose rates of the liquid were 450 mR/hr, but as the water sank back into the soil, the dose rate dropped to 20 mR/hr. Excavation of the liquid bubble site disclosed a vertical buckle in the pipeline with a sizable break in the line at that point. The event occurred in 1969. (RHO-CD-673)

Related Sites/ Structures: The waste site is associated with pipeline 200-W-139-PL. The pipeline runs beneath the eastern edge of the 218-W-9 posted area. The Unplanned Release UPR-200-W-109 documents a break in the (200-W-139-PL) pipeline occurred inside the posted area of the 218-W-9 waste site.

Waste Type: Misc. Trash and Debris

Waste Description: The unit contains an unknown amount of sheet metal scrap, including the 211-S Tank taken from the REDOX Facility. The waste contains less than 0.1 curie total beta activity. ARH-2015 part 4 says the REDOX scrap metal was contaminated with ruthenium-106.

Code: 231-W-151 **Classification:** Accepted

Names: 231-W-151; 231-W-151 Sump; 231-W-151 Vault; 231-W-151-001 (Tank); 231-W-151-002 (Tank); 231-Z-151 Sump **Reclassification** None

Type: Receiving Vault **Start Date:** 1/1/1948

Status: Inactive **End Date:** 1/1/1974

Description: The unit is a concrete vault partially underground with 3 steel risers and one vent structure

protruding from holes in the top. The vault contains two tanks (see subsites). It is posted with Contamination Area/Radiation Area signs and Restricted Access Unsafe Structure, Confined Space and IMUST signs.

Location: The site is located approximately 36.6 meters (120 feet) east of 231-Z building.

Release Description: In September 2002, alpha contamination was discovered on the concrete surface, around the riser. Maximum contamination levels were 210,000 disintegrations per minute (direct) and 420 disintegrations per minute removable.

Related Sites/ Structures: The site is related to 231-Z. building, 216-Z-5, 216-Z-6, 216-Z-7, 216-Z-10 and UPR-200-W-130. The pipelines from 231-Z to this vault are sitecode 200-W-199-PL. The pipeline from the vault to 216-Z-5 is sitecode 200-W-202-PL. The pipeline from the vault to 216-Z-7 is sitecode 200-W-203-PL. The pipeline from the vault to 216-Z-10 is 200-W-204-PL.

Process Description: The 231-W-151 vault tanks were installed to receive drainage from about 75 floor drains in Building 231-Z. Solids in the floor drainage would settle out leaving sludge and sediment in the bottom of the tanks. Waste was diverted to the 216-Z-5, 216-Z-6, 216-Z-7 cribs and the 216-Z-10 Reverse Well through this vault. The tanks were used for neutralizing 231-Z Building wastes prior to disposal to a crib. Since 231-Z was used to finish plutonium, any wastes or chemicals generated or used in the process may have conceivably been introduced to the 231-W-151 vault tanks.

Waste Type: Process Effluent

Waste Description: The unit consists of a vault containing the two tanks, 231-W-151-001 and 231-W-151-002, installed to receive drainage from 75 floor drains in Building 231-Z. Floor drainage solids settled, leaving sludge and sediment in the tanks. Plutonium finishing wastes or chemicals from building 231-Z may have been introduced to the two tanks. A water sample taken from 231-W-151-001 May 9, 1974 showed Cs137, Sr89, Sr90, and Uranium. 231-W-151-001 was reported to contain only ~0.001grams of plutonium then, and little or no ferrocyanides. A water sample taken from 231-W-151-002 May 9, 1974 showed cesium-137, strontium-89/strontium-90, uranium, plutonium-238, plutonium-239, plutonium-240, and americium-241. In summary, these results indicate a content of 228 grams of plutonium in the sludge in 231-W-151-002, and less than 0.001grams in the supernatant.

This Site has the Following SubSites:

Code: 231-W-151:1
Names: 231-W-151:1; 231-W-151-001; Overflow Tank

Code: 231-W-151:2
Names: 231-W-151:2; 231-W-151-002

Code: 231-W-151:1 **Classification:** Accepted

Names: 231-W-151:1; 231-W-151-001; Overflow Tank **Reclassification** None

Type: Receiving Vault **Start Date:**

Status: Inactive **End Date:**

Description: Tank 231-W-151-001 is located within the 231-W-151 Vault. It is a 15,140 liter (4000 gallon) stainless steel tank that received drainage from the 231-Z building floor drains. The drainage was routed to 231-W-151-002, which when filled, overflowed into 231-W-151-001 (second in the process). The solids would settle out into the tanks and the supernate was discharged to the 216-Z-7 crib. Tank operations began in 1948 and were discontinued in 1974. The inlet lines to the tank have been blanked off. In 1974, a sample was taken that indicated 231-W-151-001 contained only 0.001 grams of plutonium. The tank contents were reported to be 5,413 liters (1430 gallons) of supernate and no sludge.

Process Description: The 231-W-151 vault tanks were installed to receive drainage from about 75 floor drains in Building 231-Z. Solids in the floor drainage would settle out leaving sludge and sediment in the bottom of the tanks. Waste was diverted to the 216-Z-5, 216-Z-6, 216-Z-7 cribs and the 216-Z-10 Reverse Well through this vault. The tanks were used for neutralizing 231-Z Building wastes prior to disposal to a crib. Since 231-Z was used to finish plutonium, any wastes or chemicals generated or used in the process may have conceivably been introduced to the 231-W-151 vault tanks.

The SubSite is Part Of:

Code: 231-W-151

Names: 231-W-151; 231-W-151 Sump; 231-W-151 Vault; 231-W-151-001 (Tank); 231-W-151-002 (Tank); 231-Z-151 Sump

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Code: 231-W-151:2 **Classification:** Accepted

Names: 231-W-151:2; 231-W-151-002 **Reclassification** None

Type: Receiving Vault **Start Date:**

Status: Inactive **End Date:**

Description: Tank 231-W-151-002 is located within the 231-W-151 Vault. It is a 3,596 liter (950 gallon) stainless steel tank that received drainage from the 231-Z building floor drains. It is the first tank in a series of two tanks. The solids would settle out into the tanks and the supernate was discharged to the 216-Z-7 crib. Tank operations began in 1948 and were discontinued in 1974. The inlet lines to the tank have been blanked off. In 1974, a sample was taken that indicated 231-W-151-002 contained 228 grams of plutonium in the sludge and less than 0.001 grams of plutonium in the supernate. The tank contents were reported to be 3,615 liters (955 gallons) of supernate and 45 liters (12 gallons) of sludge.

Process Description: The 231-W-151 vault tanks were installed to receive drainage from about 75 floor drains in Building 231-Z. Solids in the floor drainage would settle out leaving sludge and sediment in the bottom of the tanks. Waste was diverted to the 216-Z-5, 216-Z-6, 216-Z-7 cribs and the 216-Z-10 Reverse Well through this vault.

The SubSite is Part Of:

Code: 231-W-151

Names: 231-W-151; 231-W-151 Sump; 231-W-151 Vault; 231-W-151-001 (Tank); 231-W-151-002 (Tank); 231-Z-151 Sump

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Code: 270-W **Classification:** Accepted

Names: 270-W; 270-W Neutralization Tank; 270-W Tank **Reclassification** None

Type: Neutralization Tank **Start Date:** 1/1/1952

Status: Inactive **End Date:** 1/1/1960

Description: There is no visual evidence for this tank. The tank was located beneath the cement foundation of the 2715-UA building. The 2715-UA building was removed in August 2005, leaving the foundation slab in place. After the demolition, the 270-W tank risers were protected with a cement block. A review of drawings indicated the 2715 UA building was placed over the 270-W tank. The 270-W consists of an underground, stainless steel tank that is 2.7 meters (9 feet) tall and 2.7 meters (9 feet) in diameter. The nominal capacity of the tank is 14,300 liters (3780 gallons). The area was covered with gravel.

Location: The unit is located under the northeast end of 2715-UA building, inside the 224-U facility fence.

Related Sites/ Structures: The tank is associated with the 224-U facility and pipeline sites 200-W-136, 200-W-42-PL, and 200-W-151-PL.

Process Description: The tank was filled with limestone and used to neutralize acidic process condensate generated from the 224-U building. Following the pH adjustment, the waste was released to the 216-U-8 crib via a 15 centimeter (6 inch) VCP line. The 216-U-8 crib was taken out of service in 1960 and replaced with the 216-U-12 crib. A letter report, written in 1974, indicated that the 270-W tank was part of the waste line to the 216-U-12 crib. The report states that "the UO3 plant is scheduled to restart in 1977. Since the integrity of the 270-W tank could not be assured, a bypass line should be installed around the tank before the plant begins to discharge waste". The letter also states that based on the last liquid to flow through the tank, the liquid composition in the tank may include 2.64 X 10-9 curies/gallon of beta emitters, 9.69 X 10-5 grams/gallon of uranium and 1 X10-9 grams/gallon of plutonium.

Waste Type: Process Effluent

Waste Description: The unit was filled with limestone and used to neutralize acidic 224-U process condensate from the UO3 plant operation. Contributors to the process condensate included feed UNH concentrator offgas, calciner offgas, phosphoric acid, and potassium hydroxide. Analyses of process condensate samples have revealed trace amounts of hydrogen fluoride, mercury, acetone, 1-butanol, 2-butanone, and n-nitrosodiumethylamine. Analysis of the last liquid to flow through the tank revealed beta emitters, uranium, and plutonium. (Harlow Internal Memo states : 2.64E-9 curies per gallon of beta emitters, 9.69E-5 grams per gallon of uranium and 1E-9 grams per gallon of plutonium [unit conversion equals 6.97E-10 curies per litter of beta emitters, 2.56E-5 grams per liter of uranium, and 2.64E-9 grams per liter of plutonium]).

Code: 2607-W3 **Classification:** Accepted

Names: 2607-W3 **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1944

Status: Inactive **End Date:** 8/1/1998

Description: This system includes a drain field that was expanded in the 1950's. In August 1998, under project W-396, the 2607-W3 Septic Tank was pumped, sampled, filled with sand and abandoned in place per WAC codes. The 2607-W3 Septic Tank was constructed of reinforced concrete. At one time, the eastern access was posted with a Radioactive Material warning sign.

Location: This unit lies northeast of the 241-T-361 Settling Tank, approximately 61 meters (200 feet) north of 23rd Street and 244 meters (800 feet) southwest of the 221-T Building.

Related Sites/ Structures: The 2607-W3 Septic Tank as associated with the 221-T, the 222-T, the 224-T, and the 271-T Buildings.

Process Description: The 2607-W3 Septic Tank and associated drain field were designed to accept sanitary sewer effluent from the 221-T, the 222-T, the 224-T, and the 271-T Buildings. After being properly abandoned, the 2607-W3 effluent was redirected to the 2607-W1 system.

Waste Type: Sanitary Sewage

Waste Description: The 2607-W3 septic system has been abandoned in place. This system has been redirected to the 2607-W1 system. Prior to this, the 2607-W3 septic system received sanitary sewer effluent at an estimated rate of 501 cubic feet (14.2 cubic meters) per day.

Code: 2607-W4 **Classification:** Accepted

Names: 2607-W4; 221-T Head End Septic Tanks and Drainfields
Reclassification None

Type: Septic Tank
Start Date: 1/1/1944

Status: Inactive
End Date: 6/1/1998

Description: The 2607-W4 site consists of two septic systems that both used the 2607-W4 identifier. Both systems supported the 221-T Head End Addition.

The original 2607-W4 septic system was installed in 1944 and taken out of service in 1985. The septic tank had a single chamber with inside dimensions of 4 feet (1.2 meters) long, 2 feet (0.6 meters) wide and 8 feet 4 inches (2.5 meters) deep. The tank extended approximately 6 inches (15 centimeters) above grade when it was constructed and had a wooden lid. The drainfield would have a minimum of 64 linear feet of perforated drain tile, but the location and configuration of the drainfield has not been found on drawings. No features of this system are visible at the surface.

The replacement 2607-W4 septic system was installed in 1985 and taken out of service in 1998. The septic tank is a 1000-gallon (3700-liter), pre-cast concrete tank with two chambers. The drainfield is roughly 56 feet (17 meters) by 16 feet (4.9 meters). The abandoned tank has a metal manhole cover. The abandoned drainfield is located in a depression and was surrounded by post and chain when it was photographed during a 2000 site visit.

Location: Both septic systems are located northwest of the 221-T Head End Addition and adjacent to each other. The drainfield for the replacement tank is located northwest of the tank. The location for the original drainfield is not known.

Related Sites/ Structures: The 2607-W4 septic systems are associated with the 221-T Head End Addition.

Process Description: The 2607-W4 septic systems received sanitary sewer effluent from the 221-T Head End Addition.

Waste Type: Sanitary Sewage

Waste Description: The 2607-W4 septic systems received sanitary sewer effluent. In 1987 it was estimated that the replacement tank was receiving waste at a rate of 2,800 gallons (10,600 liters) per day [reported in source document as 374 cubic feet]. In 1995 it was estimated that the replacement tank was receiving at a rate of 1,330 gallons (5,000 liters) per day.

Code: 2607-W5
Classification: Accepted

Names: 2607-W5; Septic Tank and Drain Field
Reclassification None

Type: Septic Tank
Start Date: 1/1/1944

Status: Inactive
End Date:

Description: The 2607-W5 Septic Tank has been determined to be inactive.

It was a single-compartment tank constructed of concrete and has three entry openings on the top, each protected by a wooden cover. A pipe connects the septic tank to a concrete diversion box, and then to a second concrete diversion box before entering the drainfield. The septic system has two drain fields. The original drain field is located west and north of the septic tank, outside the URM area boundary. The replacement tile field is located north and east of the septic tank.

	The septic tank and diversion box are currently located within an Underground Radioactive Material (URM) area related to the 216-U-1, 216-U-2 cribs and the 241-U-361 stabilization.
Location:	This unit lies southwest of the 221-U Canyon Building and east of the 207-U Retention Basin. It is north of the 241-U-361 settling tank.
Release Description:	UPR-200-W-19 occurred in 1953. The 241-U-361 tank overflowed and caused the ground to become contaminated. The Underground Radioactive Material area, located adjacent to the 2607-W5, is the result of the surface stabilization of this unplanned release.
Related Sites/ Structures:	The 2607-W5 Septic Tank is associated with the 221-U Canyon Building, the 222-U Laboratory, the 224-U Facility, the 271-U Building and UPR-200-W-19.
Process Description:	The original tile field was built in 1944. A replacement tile field was built east of the original tile field in 1954. The 2607-W5 Septic Tank and associated drain field were designed to accept sanitary sewer effluent from U Plant facilities. In 1998, the system was being used by MO-107 and MO-419. These two mobile trailers have been removed from the area.
Waste Type:	Sanitary Sewage
Waste Description:	The 2607-W5 Septic System received sanitary sewer effluent at an estimated rate of 1,741 liters (460 gallons) per day in 1995. This unit received sanitary sewer effluent at an estimated rate of 12.2 cubic meters (431 cubic feet) per day in 1987.

Code:	2607-W7	**Classification:**	Accepted
Names:	2607-W7; Septic Tank	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	1/1/1954
Status:	Inactive	**End Date:**	

Description:	The 2607-W7 Septic Tank was a small, 950 liter (350 gallon) tank constructed of reinforced concrete. Previous documentation stated the 2607-W7 Septic System includes a septic tank and drain field that lie within a radiation zone. A site visit done in 1999 found the septic tank to be located between two Underground Radioactive Material areas. The location of the drain field was visually not apparent. HNF-SD-LL-SP-001 shows the drain field west of the septic tank.
Location:	This unit lies 14 meters (45.9 feet) north of the northernmost corner of the 221-U Canyon Building.
Related Sites/ Structures:	The 2607-W7 Septic Tank is associated with the 221-U Canyon Building.
Process Description:	The 2607-W7 Septic Tank and associated drain field are designed to accept sanitary waste sewer effluent from the connected facility, a single restroom.
Waste Type:	Sanitary Sewage
Waste Description:	No radionuclides or hazardous chemicals are associated with this system. The current flow rate to the 2607-W7 Septic System is unknown. However, this system received sanitary sewer effluent at an estimated rate of 1.02 cubic meters (36 cubic feet) per day in 1987.

Code:	2607-W8	**Classification:**	Accepted
Names:	2607-W8	**Reclassification**	None
Type:	Septic Tank	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1998

Description: This system is located adjacent to posted radiation zone containing the 216-Z-5 and 216-Z-4 cribs. The 2607-W8 Septic Tank is constructed of reinforced concrete and has three manhole covers visible on the surface. It is a single compartment tank with an attached dosing siphon. This unit includes a tile field. The site is marked with a sign that read "Septic Tank - 2607-W8".

Location: This unit lies northeast of the 231-Z Building and east of the 216-Z-16 Crib.

Related Sites/ Structures: The 2607-W8 Septic Tank is associated with a sanitary tile field and the 231-Z Building.

Process Description: The 2607-W8 Septic Tank and associated tile field were designed to accept sanitary sewer effluent from the 231-Z Building. The 231-Z Building was associated with the plutonium product finishing process. The tank capacity and dimensions include the settling tank and dosing siphon chamber.

Waste Type: Sanitary Sewage

Waste Description: Although the site is located within a posted radiological area and is associated with the 231-Z Building, DOE/RL-91-58 states that no radionuclides or hazardous chemicals have been associated with this system. The 2607-W8 septic system received sanitary sewer effluent at an estimated rate of 5,015 liters (1,325 gallons) per day in 1992. The estimated rate was 5.45 cubic meters (192 cubic feet) per day in 1987.

Code: 2607-WC
Classification: Accepted
Names: 2607-WC; 2607-WC Septic System
Reclassification None
Type: Septic Tank
Start Date: 1/1/1971
Status: Inactive
End Date:

Description: The 2607-WC Septic System has been determined to be inactive. It consists of two tanks and a trench type drain field. A site visit by MSA in July 2015 observed 2607-WC appears to be functional, although not currently being used. The control panel is not operating but could be fixed and brought back into service.

Location: This unit is on the west side of Cooper Ave., across from the 242-S Evaporator Building and northeast of the 272-S Maintenance Shop.

Related Sites/ Structures: The 2607-WC septic system is associated with the 272-S Building, the 242-S Building and MO-027.

Process Description: The 2607-WC Septic Tanks and associated drain field are designed to accept sanitary sewer effluent from the connected facilities.

Waste Type: Sanitary Sewage

Waste Description: The current flow rate to septic system 2607-WC is unknown. The 2607-WC system received sanitary waste at an estimated rate of 1,260 gallons (4,770 liters) per day in 1995.

Code: 2607-WZ
Classification: Accepted
Names: 2607-WZ
Reclassification None
Type: Septic Tank
Start Date: 1/1/1944
Status: Inactive
End Date:

Description: The 2607-WZ Septic System includes a drain field. A WIDS sitecode sign on a post marks the

assumed location.

Location: This unit is assumed to be located inside 200 West Area, southwest of the 241-SX Tank Farm and southeast of the 216-S-25 Crib.

Related Sites/ Structures: The 2607-WZ Septic Tank is associated with the 241-SX Tank Farm.

Process Description: The 2607-WZ Septic Tank was designed to accept sanitary sewer effluent.

Waste Type: Sanitary Sewage

Waste Description: The current flow rates for the 2607-WZ Septic System are unknown. The system received sanitary sewer effluent at an estimated rate of 22.6 cubic meters (798 cubic feet) per day in 1987.

Code: 241-WR VAULT

Classification: Accepted

Names: 241-WR VAULT; 241-WR Vault (Tanks -001 Through -009); 241-WR-01 Thru 09; 244-WR Vault; 296-U-6 Stack; 241WR; 241-WR Diversion Station Vault

Reclassification None

Type: Receiving Vault

Start Date: 1/1/1952

Status: Inactive

End Date: 1/1/1976

Description: The vault is a below grade, reinforced concrete structure. There are nine compartments arranged in two rows with a 189,000 liter (50,000 gallon) tank in each compartment. A concrete wall separates the two rows of tanks. In addition to the tanks, the vault contains miscellaneous agitators, pumps, and valves. It is marked and posted with Underground Radioactive Material area signs. The exhaust stack and dry well are included in this site. See sub-site descriptions.

Location: This site is located northeast of the 221-U Building, west of Beloit Ave.

Release Description: Tank leaks within the vault were noted in the 1960's. 241-WR-001 was reported to have collapsed during the TBP operation (1952-1958) and was observed to be empty in 1965. However, the 001 sump contained 51,786 liters (13,700 gallons) of liquid. Samples taken at that time indicated the liquid to be slightly contaminated water. All of the sumps and tanks were pumped out in 1965. The liquid was sent to the 216-U-12 crib. When tank 002 was pumped, it floated loose from its base, rupturing the lines connected to the tank. A significant clean up and repair effort was required to return the facility to service. Tanks WR-001, WR-002, WR-004 and WR-005 are suspected to have leaked. Individual specific occurrence reports were not issued. The "hot side" tanks have reportedly contaminated the "cold side" of the vault.

Related Sites/ Structures: The vault is associated with the 296-U-6 Stack, 221-U Plant Uranium Recovery processes, Thorium Recovery process, 200-W-244-PL, 200-W-248-PL, 200-W-105-PL, 241-UX-154 and BC Cribs and Trenches.

Process Description: The 241-WR Vault received uranium and thorium slurry solutions (via underground encased pipelines) from the single shell tanks and prepared the waste to be fed into 221-U facility to extract the uranium and thorium. The 241-WR vault added chemicals and adjusted the pH before it was transferred to the 221-U canyon to be processed through the tributyl phosphate extraction columns. The 241-WR vault (WR-001) also received neutralized waste from the 221-U extraction process and stored it until it was transferred back to the tank farms.

During the WR vaults active operation, it stored uranyl nitrate hexahydrate, nitric acid, and

tributyl phosphate wastes transferred into the vault storage tanks via underground pipelines. During U Plant Uranium Recovery Process operations (1952 to 1958), uranyl nitrate hexahydrate was stored and used as feed for 221-U. Recovered nitric acid was temporarily stored in WR vault to be used again. Tributyl phosphate wastes were stored in WR Vault before being routed to the BC cribs and trenches via the 241-UX-154 Diversion Box and the Cross Site Transfer line (600-284-PL). Following termination of uranium recovery operations in 1958, the vault was used to store nitric acid and thorium from the REDOX and PUREX processes.

In October 1965, contaminated water, including 3.14 kilograms of thorium, was discharged to 216-U-12 crib.

Waste Type: Process Effluent

Waste Description: The site waste contains nitric acid, tributyl phosphate, uranyl nitrate hexahydrate from the TBP process, and thorium nitrate storage. The unit also contains radioactively contaminated equipment and structures. Approximately 60 curies of beta contamination remains inside the vault structure.

This Site has the Following SubSites:

Code: 241-WR VAULT:1
Names: 241-WR VAULT:1; 296-U-6 Stack

Code: 241-WR VAULT:2
Names: 241-WR VAULT:2; 296-U-6 Dry Well

Code: 241-WR VAULT:1 **Classification:** Accepted

Names: 241-WR VAULT:1; 296-U-6 Stack **Reclassification** None

Type: Receiving Vault **Start Date:**

Status: Inactive **End Date:**

Description: The surface features of the stack were removed in 1986. The remaining below grade structure includes a 1.04 meter (3 foot 8 inch) octagonal concrete foundation extending 1.23 meters (4 feet) below grade, which encases a portion of the 45.72 centimeter (18 inch) stack that extends 0.31 meters below grade.

Above grade features included a 5.08 centimeter (2 inch) drain pipe exited northwest side of the stack, under the duct, and entered the ground at that point; a 1.9 centimeter (0.75 inch) drain pipe exited the duct just before meeting the stack, and flowed straight down, meeting the 5.08 centimeter (2 inch) drain below grade and a 2.54 centimeter (1 inch) fan drain pipe exited the concrete foundation below the fan, above grade. This pipe entered the ground and connected to the 5.08 centimeter (2 inch) pipe and a 60.96 centimeter (24 inch) dry well.

The 3.81 centimeter (18 inch) diameter, carbon-steel, 296-U-6 vault exhaust stack was mounted on a 1.04 meter (3 foot 8 inch) octagonal concrete foundation. The stack extended 14.63 meters (48 feet) above grade level. The stack was used to discharge unfiltered ventilation air from the storage of UNH for feed to 221-U, then from HNO3 storage, and later from the storage of thorium.

The SubSite is Part Of:

Code: 241-WR VAULT
Names: 241-WR VAULT; 241-WR Vault (Tanks -001 Through -009); 241-WR-01 Thru 09; 244-WR Vault; 296-U-6 Stack; 241WR; 241-WR Diversion Station Vault

Code:	241-WR VAULT:2	**Classification:**	Accepted
Names:	241-WR VAULT:2; 296-U-6 Dry Well	**Reclassification**	None
Type:	Receiving Vault	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: A 5.08 centimeter (2 inch) drain pipe ran from the north side of the concrete stack foundation, southeast to a 60.96 centimeter (24 inch) dry well. The exact location of the dry well is not known. The dry well is located southeast of where the stack once stood.

The SubSite is Part Of:
Code: 241-WR VAULT
Names: 241-WR VAULT; 241-WR Vault (Tanks -001 Through -009); 241-WR-01 Thru 09; 244-WR Vault; 296-U-6 Stack; 241WR; 241-WR Diversion Station Vault

Code:	207-Z	**Classification:**	Accepted
Names:	207-Z; 207-Z Retention Basin; 241-Z Retention Basin; 241-ZRB; 241-Z-RB	**Reclassification**	None
Type:	Retention Basin	**Start Date:**	1/1/1949
Status:	Inactive	**End Date:**	1/1/1959

Description: The basins were filled with high density grout in 2006. The site had been a concrete basin structure divided into two halves. The two sides were separated by a 0.3 meter (1 foot) thick concrete wall. Each basin contained a sump with a sump pump. A 1.8 meter (6 feet) high chain link fence used to surround the basins.

Location: The concrete basins are located inside the Z Plant Exclusion Area fence, south of 236-Z building.

Related Sites/ Structures: The retention basin is associated with the 241-Z and 234-5Z facilities. Pipelines associated with the basin are discussed in sitecode 200-W-209-PL.

Waste Type: Steam Condensate

Waste Description: The site received potentially contaminated waste. Steam condensate and cooling water, via the D-3 piping system, was sent to this holding facility then released to the 216-Z-1 and 216-Z-11 Ditches.

Code:	216-Z-4	**Classification:**	Accepted
Names:	216-Z-4; 216-Z-4 Crib; 231-W-3 Crib; 231-W-3 Pit; 231-W-3 Sump; 216-Z-3	**Reclassification**	None
Type:	Trench	**Start Date:**	1/1/1945
Status:	Inactive	**End Date:**	1/1/1945

Description: The 216-Z-4 Trench is an inactive waste management unit. The unit was backfilled and deactivated in 1945. The original configuration was a large unlined excavation.

Location: 216-Z-4 crib is east of 231-Z and north of 216-Z-17 crib.

Related Sites/ Structures: Structures associated with this trench include the capped pipeline from the 231-Z Building and the 231-W-151 Vault sump.

Process Description: The trench was constructed in 1945 to temporarily receive liquid laboratory waste from the 231-Z Building. The 216-Z-4 Trench was deactivated and backfilled when it was discovered to be too small for the waste stream. The laboratory effluent was rerouted to the 216-Z-6 Crib. (since the 216-Z-6 crib was fed with an aboveground pipeline, it is likely the 216-Z-4 was also fed with an above ground pipeline).

Waste Type: Process Effluent

Waste Description: The site received the process and laboratory waste from the 231-Z Building. The waste was neutral to basic.

Code: 216-Z-6 **Classification:** Accepted

Names: 216-Z-6; 216-Z-6 & 6A Crib; 231-W Crib; 231-W-4 Crib; 231-Z-6; 216-W-4; 216-Z-4 **Reclassification** None

Type: Crib **Start Date:** 1/1/1945

Status: Inactive **End Date:** 1/1/1945

Description: The 216-Z-6 is a below grade, inactive waste management unit. The site consists of a rectangular wooden box set in the base of an excavation. The trench was fed by an above ground pipeline.

Location: The crib is located east of the 231-Z Building and north of Nineteenth Street.

Process Description: The 216-Z-6 Crib received process waste from the 231-Z Building, via an overground line from the 231-W-151 Sump. The site was only used for one month, and abandoned due to plugging of the surrounding soil by process sludge and precipitates.

Waste Type: Process Effluent

Waste Description: The site received process waste from the 231-Z Building via an above ground line from the 231-W-151 Sump Tank.

Code: 216-Z-7 **Classification:** Accepted

Names: 216-Z-7; 231-W Crib; 231-W Trench; 216-Z-6 **Reclassification** None

Type: Crib **Start Date:** 1/1/1947

Status: Inactive **End Date:** 1/1/1967

Description: The 216-Z-7 Crib is an inactive below grade waste management unit. The crib trench was backfilled upon retirement in 1967. The crib consists of two parallel wooden structures placed in two shallow parallel trenches within a single terraced excavation. Each wooden box consists of three timber tiers, with a perforated distribution box running the length of the second tier. The interior trenches are backfilled and covered with wood planks.

Location: The site is located east of the 231-Z Building and north of Nineteenth Street.

Related Sites/ Structures: Structures associated with this unit include four vent boxes and vent risers, transfer pipes, the 231-Z-151 Sump, and the distribution piping (sitecode 200-W-203-PL). There are two waste unloading stations west of the center line of the crib.

Process Description: Crib 216-Z-7 received process waste from the 231-Z Building from 1947 to 1967. The crib was built to replace Crib 216-Z-5. A riser on the west side of the crib received 300 Area liquid waste from tanker trucks.

Waste Type: Process Effluent

Waste Description: From 1947 to 1953 this crib received process waste from the 231-Z Building via the 231-Z-151 Sump. Beginning in 1953, the site received Hanford laboratory waste from the 231-Z Building, until 1965. From 1965 to 1967, the site received laboratory waste generated by Pacific Northwest Laboratory operations inside the 231-Z Building, and waste delivered in tanker trucks from the 340 Building.

Code: 216-Z-13 **Classification:** Accepted

Names: 216-Z-13; 216-Z-13 A and B; 216-Z-13 Dry Well; 234-5 Dry Well #1; Miscellaneous Stream #261, #261A, #654 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1949

Status: Inactive **End Date:** 1/1/1999

Description: The site has been determined to be inactive. It consists of a two part drain system. The lower drain is not visible from the surface. The covered top of the upper french drain is visible on the surface, adjacent to a single cement marker post with a metal plate labeled 216-Z-13 (see 1985 photograph 122440-250cn).

Location: The french drain is located northeast of the 291-Z1 stack.

Related Sites/ Structures: This french drain is associated with include two effluent discharge pipes, the ET-8 exhaust fan turbine, and the 291-Z Building. The pipeline to the french drain is 200-W-214-PL.

Process Description: The lower french drain is constructed of two tile culverts placed end-to-end, and backfilled beneath 9 feet (2.7 meters) of gravel. It is located approximately 6 meters (20 feet) south of the drain structure visible on the surface. Two pipes discharged to the lower french drain. The miscellaneous stream (#261) to the drain has been eliminated. The lower french drain received cooling water and steam condensate from the 291-Z ET-8 exhaust fan turbine, building steam condensate and cooling water drainage from the S-13 and S-14 coolers and a floor drain (Misc. Streams #261, 261A and #654). The upper portion of the drain received steam condensate from the 291-Z turbine exhaust stack. Due to the common nature of the discharge to the upper and lower drain systems, there is a potential for historical documentation related to the drains to be confusing. Due to the common nature of the waste discharged to the drains, the upper and lower drains are treated as a single waste site.

Waste Type: Steam Condensate

Waste Description: This french drain received emergency condensate from the turbine of the ET-8 exhaust fan, and 291-Z building steam condensate and floor drainage. Due to the french drain's location, low levels of vadose zone contamination are assumed.

Code: 216-Z-14 **Classification:** Accepted

Names: 216-Z-14; 216-Z-14 A and B; 216-Z-14 Dry Well; 234-5 Dry Well #2; Miscellaneous Stream #261, #263 and #263A **Reclassification** None

Type: French Drain **Start Date:** 1/1/1949

Status: Active **End Date:**

Description: The site consists of two drain systems. The upper drain is marked with a single cement marker post. The top of the drain has been paved over with asphalt. The lower drain system is not visible from the surface. It is located approximately 6 meters (20 feet) southeast of the cement marker post. The lower french drain is constructed of two tile culverts placed end to end, and backfilled beneath 9 feet (2.7 meters) of gravel. Two pipes discharge to the french drain. The culvert is filled with cobble.

Location: The french drain is located northwest of the 291-Z1 Stack.

Related Sites/ Structures: The lower french drain is associated with two effluent discharge pipes, the ET-9 exhaust fan turbine, and the 291-Z Building. The pipeline to the french drain is 200-W-215-PL.

Process Description: The lower french drain receives cooling water and steam condensate from the turbine of the ET-9 exhaust fan and 291-Z floor drainage. The condensate discharged to the upper drain system has been disconnected and now discharges to the ground. Due to the common nature of the discharge to the upper and lower drain systems, the drains are considered to be a single waste site. There is a potential for historical documentation related to the drains to be confusing.

Waste Type: Steam Condensate

Waste Description: The french drain receives emergency condensate and steam condensate from the turbine of the ET-9 exhaust fan along with 291-Z building steam condensate and floor drainage. Due to the french drain's location, low levels of vadose zone contamination are assumed. The site is addressed in the Miscellaneous Streams Best Management Practices Report, as a b stream (a stream discharging in a surface contaminated area). Based on process history, the drain receives non contaminated effluent.

Code: 216-Z-15 **Classification:** Accepted

Names: 216-Z-15; 216-Z-15 Dry Well; 234-5 Dry Well #3; Miscellaneous Stream #262 **Reclassification** None

Type: French Drain **Start Date:** 1/1/1949

Status: Inactive **End Date:** 1/1/1997

Description: The 216-Z-15 Dry Well is an inactive, below grade french drain. The drain structure is 9 feet below grade and not visible from the surface. The site is marked with a single concrete marker post that reads "Buried Radioactivity - Do Not Excavate." The marker post is believed to be located directly above the drain structure. The unit is composed of two sections of vitrified clay pipe in a vertical configuration. There is one inlet pipe. The pipe is filled with cobbles and the upper end is covered with a wood plank.

Location: The unit is adjacent to the southeast corner of the 2731-Z Building and north of the 291-Z Ventilation Building.

Related Sites/ Structures: The french drain was associated with the 291-Z building. The pipeline to the french drain is 200-W-216-PL.

Process Description: The french drain received condensate drainage from the 291-Z building S-12 Evaporator Cooler via a floor drain in the northwest corner of the 291-Z building. The source was later re-routed to the 291-Z Sump and batch discharged to the PFP Low Level Waste Treatment Facility.

Waste Type: Process Effluent

Waste Description: The site used to receive the drainage from the 291-Z building S-12 Evaporator Cooler. That source was eliminated in May 1997. Low levels of contamination are assumed, due to the possibility of accidents or unusual events in nearby areas.

Code: 216-Z-16 **Classification:** Accepted

Names: 216-Z-16; 216-Z-16 Crib **Reclassification** None

Type: Crib **Start Date:** 1/1/1968

Status: Inactive **End Date:** 1/1/1977

Description: The site is a rectangular excavation with gravel filling the bottom third. A perforated pipe runs the length of the excavation. The gravel is covered with a polyethylene barrier. The excavation is backfilled to grade.

Location: The crib is located northwest of the 231-Z Building.

Related Sites/ Structures: Eleven crib penetrating monitoring wells, one gage well, two monitoring wells adjacent to the crib, a vent riser, and the waste transfer line from 231-Z Building comprise structures associated with this trench. The crib pipeline is sitecode 200-W-200-PL.

Process Description: The crib was used to dispose of 231-Z laboratory waste in the soil column.

Waste Type: Process Effluent

Waste Description: The site received waste from Pacific Northwest Laboratory operations in the 231-Z Building. The waste was neutral to basic, and included approximately 0.08 kilograms (0.16 pounds) of plutonium.

Code: 216-Z-17 **Classification:** Accepted

Names: 216-Z-17; 216-Z-17 Ditch **Reclassification** None

Type: Trench **Start Date:** 1/1/1967

Status: Inactive **End Date:** 1/1/1968

Description: The 216-Z-17 is an inactive waste site has been deactivated and backfilled. During operation this unit was configured as a long excavation that had sloped sides. The carbon steel effluent discharge pipe fed into a metering box that in turn discharged to the open trench.

Location: This unit is due east of the 231-Z Building, and immediately east of the 216-Z-6 Crib.

Related Sites/ Structures: Structures associated with the 216-Z-17 Trench include the 231-W-151 Sump Tank, waste transfer lines, the metering box, and the effluent discharge pipe. The pipeline that fed the 216-Z-17 crib is sitecode 200-W-201-PL.

Process Description: The trench was used to dispose of laboratory waste from Laboratory operations in the 231-Z Building.

Waste Type: Process Effluent

Waste Description: The site received waste from Pacific Northwest Laboratory operations in the 231-Z Building. The waste is neutral to basic, and contained approximately 0.05 kilograms (0.11 pounds) of plutonium.

Code: 2607-Z **Classification:** Accepted

Names: 2607-Z **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1949

Status: Inactive **End Date:** 6/1/1999

Description: The septic system was abandoned per the requirements of Washington Administrative Code 246-272-18501 in 1999. The 2607-Z Septic Tank and drain field lie in a fenced area. The septic tank is constructed of concrete and is a two chamber tank. Three manholes are provided for personnel entry. The drain field measures approximately 86 meters (282 feet) in length and 47 meters (154 feet) in width. The tile field is located inside a fenced area.

Location: This unit lies east of the 236-Z Building and southeast of the 234-5Z Building.

Related Sites/ Structures: The 2607-Z Septic Tank is associated with the 234-5Z, 2704-Z, 270-Z, 236-Z, 292-Z, 2701-Z, 2701-ZA, and the 2701-ZB Buildings.

Process Description: The 2607-Z Septic Tank and drain field are designed to accept sanitary sewer effluent from the associated facilities. It received waste from 234-5Z and 2704-Z.

Waste Type: Sanitary Sewage

Waste Description: No radionuclides or hazardous chemicals have been associated with this waste unit. Current flow rates indicate that the drain field is not providing adequate effluent treatment. This unit received sanitary sewer effluent at an estimated rate of 6,000 gallons (23,000 liters) per day in 1992.

Code: 2607-Z1 **Classification:** Accepted

Names: 2607-Z1; Septic Tank and Drainfield **Reclassification** None

Type: Septic Tank **Start Date:** 1/1/1958

Status: Inactive **End Date:** 1/1/1999

Description: The septic system was abandoned per the requirements of Washington Administrative Code 246-272-18501 in 1999. The system (septic tank and drainfield) was constructed in 1958 and was pumped once a week. The drainfield location has been used as a laydown area in the past and the underground laterals may have been damaged.

Location: The site is located west of the 2721-Z Building, west of the 234-5Z facility.

Related Sites/ Structures: The site is associated with 234-5Z Building Annex and 2736-ZB.

Waste Type: Sanitary Sewage

Waste Description: The waste is sanitary sewage.

Code: 600-70 **Classification:** Accepted

Names: 600-70; Solid Waste Management Unit (SWMU) #2 - Miscellaneous Solid Waste **Reclassification** None

Type: Dumping Area **Start Date:** 1/1/1950

Status: Inactive **End Date:**

Description: The site is located on relatively flat terrain except for natural depressions and evidence that trenches may have been dug. Large amounts of construction materials such as concrete, wood, metal, cans, barrels and transite are visible. Numerous areas of burned materials were also observed.

Location: The site is located 360 meters (1,181 feet) east of REDOX, outside the 200-W Area perimeter fence.

Waste Type: Barrels/Drums/Buckets/Cans

Waste Description: Large piles of debris that includes concrete cover blocks, concrete chunks, wood, scrap metal, cans, buckets, barrels, glass and transite are spread over a large area.

Waste Type: Construction Debris

Waste Description: Concrete, rebar.

Waste Type: Misc. Trash and Debris

Waste Description: Metal lathe turnings, glass, lumber and tar.

Waste Type: Asbestos (friable)

Waste Description: Suspected friable asbestos.

Waste Type: Asbestos (non-friable)

Waste Description: Transite

Code: UPR-200-W-3 **Classification:** Accepted

Names: UPR-200-W-3; Railroad Contamination; UN-200-W-3 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1949

Status: Inactive **End Date:**

Description: The T-Plant Railroad Cut is a posted Contamination Area from the tunnel door westward to a chain link gate. A 1.8 meter by 1.8 meter (6 foot by 6 foot) posted Contamination Area is located approximately 6 meters (20 feet) west of the T-Plant chain link fence that crosses the railroad cut track and encloses the T-Plant facility.

Location: The site is located on the T Plant railroad cut track, northwest of the 221-T Canyon Building.

Release Description: On several occasions in 1949, contaminated equipment being hauled to the 200 West Burial Ground from T Plant contaminated ground near the railroad.

Waste Type: Chemicals

Waste Description: The release was undefined radioactive contamination.

Code: UPR-200-W-4 **Classification:** Accepted

Names: UPR-200-W-4; Railroad Contamination; UN-200-W-4 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1949

Status: Inactive **End Date:**

Description: The release is not physically marked or posted.

Location: The contamination spread was located on the railroad tracks extending from the 221-T Canyon Building Tunnel to the Heavy Equipment Burial Ground.

Release Description: In 1949, contamination spread from a burial box that had been transported from the 221-T Canyon Building to the Heavy Equipment Burial Ground. After the box was buried, the bulldozer used to cover the trench was found to be contaminated with dust which had readings up to 10,000 counts/minute. A complete survey was made from the Canyon Building to the Heavy Equipment Burial Ground, which revealed a spread of contaminated particles. The most contamination was found in the vicinity northeast of the burial ground.

Waste Type: Soil

Waste Description: Contamination specks were found along the RR track with readings averaging 7 millirem/hour.

Code:	UPR-200-W-14	**Classification:**	Accepted
Names:	UPR-200-W-14; Waste Line Leak at 242-T Evaporator; UN-200-W-14	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	10/1/1952
Status:	Inactive	**End Date:**	10/1/1952

Description: The Unplanned Release site is described as contamination on the surface above the waste line between the 242-T Evaporator and the 207-T Retention Basin (see 200-W-166-PL). Since the exact location of this 1952 Unplanned Release is not documented, it was considered possible that one of the areas stabilized in 2001 is in the same location as the 1952 line leak. The mapping coordinates for the 1952 contamination have been estimated from the limited information provided. A posted URMA with Bio Barrier signs is currently located at the location indicated in the 1952 hand drawn sketch. A WIDS sitecode sign was placed at this posted URMA in 2014.

Location: The 1952 release occurred in an underground pipeline causing water to be observed on the surface, east of the 241-TY Tank Farm. The exact location was not documented. A hand drawn sketch in HW-60807 places the release location near the 241-TY east fence. The mapping coordinates have been estimated.

Release Description: In October 1952, a steam coil in the 242-T waste evaporator tank caused ground contamination along the surface above the leaking cast iron pipe which carries cooling water and steam condensate from the waste evaporator building to the 207-T Retention Basin.

Related Sites/ Structures: The release is associated with the 242-T Evaporator, 207-T Basin and pipelines 200-W-166-PL.

Process Description: H-2-44511 shows a cast iron pipeline that connects the 242-T Evaporator with the 207-T Retention Basin (see pipeline sitecode 200-W-166-PL). The pipeline carried steam condensate from the building to the basin. The line runs north to south along the east side of the 241-TY Tank Farm, parallel to an encased waste transfer line.

Waste Type: Steam Condensate

Waste Description: Cooling water and steam condensate from the 242-T waste evaporator that was routed to the 207-T retention basin through an underground cast iron pipeline. The contaminants were not identified, but since 242-T was the source of the stream, the material probably has a similar composition to the liquid discharged to the cribs.

Code:	UPR-200-W-19	**Classification:**	Accepted
Names:	UPR-200-W-19; 241-U-361 Overflow; UN-200-W-19	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	

Description: The site is an unplanned release. The area where the release occurred is covered with shotcrete and currently marked as a "Underground Radioactive Material" (URM) area that also contains the 216-U-1 Crib, 216-U-2 Crib, the 241-U-361 Settling Tank. A portion of the 2607-W5 tile field is also included in the URM area. In 2014, the posted area was expanded to the east due to growing contaminated vegetation. An area measuring approximately 36 by 36 feet, on the east side of a gravel road, was also included in this expansion. In 2015, an area on the north side, adjacent and overlapping 2607-W5, was expanded due to elevated radiological readings being detected with the Rad tractor.

Location: The release occurred north of 16th Street, near the 361-U Settling Tank and the 216-U-1&2 Cribs.

Release Description: In the Spring of 1953, organic wastes and cell drainage from the Tributyl Phosphate (TBP) process in 221-U and waste from 224-U (UO3) overflowed to the ground by way of the tank (241-U-361) and crib vents (216-U-1 and 216-U-2). Contamination readings of 11.5 rads per hour at a distance of 7.6 centimeters (3 inches) were reported over an area of approximately 4.6 square meters (50 square feet).

Related Sites/ Structures: The release is associated with the 221-U, 224-U, 241-U-361 tank and the 216-U-1&2 Cribs.

Waste Type: Chemicals

Waste Description: The release contained an unknown quantity of organic wastes and cell drainage from the Tributyl Phosphate (TBP) and Uranium Trioxide (UO3) plants with readings to 11.5 rads/hour at 7.6 centimeters (3 inches).

Code:	UPR-200-W-23	**Classification:**	Accepted
Names:	UPR-200-W-23; Waste Box Fire at 234-5Z; UN-200-W-23	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1953
Status:	Inactive	**End Date:**	1/1/1953

Description: A 1999 facility walkdown could not locate this unplanned release site. The approximate area is marked with a WIDS sign painted on the asphalt. The event occurred in June 1953. In 2015, the 234-5Z Complex was in the demolition process and affects the area of this Unplanned Release.

Location: A sketch included in HW-60807 places this release near the south wall of 234-5Z, approximately 61 meters (200 feet) north of the 291-Z Stack.

Release Description: In June 1953, a fire in a waste box resulted in approximately 28 square meters (300 square feet) of ground contamination. The fire caused a spread of plutonium contamination with readings up to 10,000 disintegrations per minute.

Waste Type: Ash

Waste Description: Plutonium contamination up to 10,000 disintegrations was spread by a fire in a waste box in June 1953.

Code:	UPR-200-W-33	**Classification:**	Accepted
Names:	UPR-200-W-33; Ground Contamination at 224-U; UN-200-W-33	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	3/1/1955
Status:	Inactive	**End Date:**	3/1/1955

Description: The release site occurred inside the fenced 224-U facility boundary. The 224-U and 224-UA buildings were demolished in 2010. The area is covered with gravel. The release site is not separately marked or posted.

Location: The site is located approximately 28 meters (90 feet) east of the 224-U Building.

Release Description: In March 1955, a leaking flange of the C-5 Condensate Line from the 224-U Building caused a small area 3 by 4.5 meters (10 by 15 feet) of ground to become contaminated.

Related Sites/ Structures: The release is associated with the Uranium Recovery process at the 224-U facility.

Waste Type: Process Effluent

Waste Description: A leaking flange in the C-5 condensate line at the 224-U building caused an area of ground contamination measuring approximately 0.9 meters by 0.9 meters (3 foot by 3 foot).

Code:	UPR-200-W-36	**Classification:**	Accepted
Names:	UPR-200-W-36; Groundwater Contamination at 216-S-1 and 216-S-2	**Reclassification**	None
Type:	Unplanned Release	**Start Date:**	1/1/1955
Status:	Inactive	**End Date:**	1/1/1955

Description: The 216-S-1 & 2 cribs are currently bare ground, marked by concrete posts and a light chain, posted with "Underground Radiation Material" area and "Cave-in Potential" signs. The well is painted yellow and marked 299-W22-3.

Location: The release occurred at a well located near the east end of 216-S-1 & 2 cribs, east of the 241-SX Tank Farm.

Release Description: On August 2, 1955, process vapors were smelled near the 216-S-1 & 2 cribs. A Radiation Monitor investigated the area and found the well cap on test well 207-S-11 (alias 299-W22-3) to have a dose rate of 4 rad per hour on the well cap. A water sample was collected from the well on August 4, 1955 that resulted in a personnel contamination incident. The sampler also reported a gurgling sound coming from the well. It was concluded that the well casing had failed or ruptured. The rupture was apparently allowing process waste to bypass the crib soil column and flow directly into the groundwater. The well was promptly backfilled with sand.

Related Sites/ Structures: The release is associated with the 216-S-1 & 2 cribs and well 299-W22-3.

Process Description: The test well originally consisted of a 20.3 centimeter (8 inch) steel casing driven to a depth of 45.7 meters (150 feet). In January of 1955, the well was extended an additional 50 meters (163 feet), beneath the groundwater table which was at a depth of about 65.5 meters (215 feet) in 1955.

Waste Type: Process Effluent

Waste Description: The 216-S-1 and 216-S-2 Cribs received cell drainage from the D-1 Receiver Tank and redistilled condensate from the D-2 Receiver Tank in the 202-S Canyon Building. The inorganics found at the site include: aluminum, nitrate, nitric acid, and sodium. The radionuclides found at this site are: cobalt-60, americium-241, cesium-137, uranium, and plutonium. An unknown volume of this waste entered the groundwater beneath the crib through a rupture in the well casing. During the time between the last normal reading from the well (June 1955) and the time the incident was discovered, about 7,500,000 liters (2,000,000 gallons) of liquid waste, with an estimated gross beta activity of 7,500 curies had passed into the crib. Also, within this span of time about 40 grams (1.4 ounces) of plutonium had entered the crib.

Code: UPR-200-W-39 **Classification:** Accepted

Names: UPR-200-W-39; 224-U Buried Contamination Trench; UN-200-W-39 **Reclassification** None

Type: Unplanned Release **Start Date:** 3/1/1954

Status: Inactive **End Date:** 3/1/1954

Description: The release site is not marked because the 224-UA Building was built over the release location. The 224-U and 224-UA buildings were demolished in 2010. The area is now covered with gravel.

Location: According to available references, the release occurred on the southeast side of the 224-U building. The disposal trench is located under the 224-UA (Calciner Building) addition.

Release Description: A leak from 224-U, during March 1954, spread to an area southeast of the 224-U Building. The contamination was placed in a trench that measured 3.1 meters (10 feet) wide by 15.2 meters (50 feet) long. The contamination was covered with 0.9 meters (3 feet) of clean soil.

Related Sites/ Structures: The release is associated with the 224-U Facility.

Waste Type: Process Effluent

Waste Description: The release was described as a leak from 224-U. The effected soil was placed in a nearby trench. A later reference described the contamination as uranium, less than 10 nanocuries/gram. No volume estimate is provided.

Code: UPR-200-W-41 **Classification:** Accepted

Names: UPR-200-W-41; Railroad Contamination; REDOX Railroad Cut Contamination; UN-200-W-41 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1956

Status: Inactive **End Date:**

Description: The railroad track from the 202-S Tunnel to the first gravel road intersection has been covered with clean backfill material. The berms on the sides of railroad cut have been pushed in and posted as an "Underground Radioactive Material" area.

Location: The release occurred on the railroad right-of-way from the 202-S Railroad cut to the burial ground. The railroad cut and the railroad track north of REDOX has been backfilled, stabilized and posted as Underground Radioactive Material.

Release Description: On July 7, 1956, during the transit of a box containing the J-5 Filter and miscellaneous equipment from the 202-S Building Canyon, spotty contamination up to 1,000 millirads/hour at surface was spread along the right-of-way from the 202-S Building railroad cut to the burial ground presumably from liquid contained in the burial box. Six spots of 1,000 millirads/hour were found on the east side of the track on the blacktop at the 16th Avenue crossing. The area was immediately roped off and was eventually decontaminated to less than 1,000 counts per minute. Initial surveys indicated spotty contamination from 100 to 500 millirads/hour along the east side of the right-of-way diminishing in frequency from 19th Avenue to the burial ground. A check of the flat car used for the burial revealed low level contamination on all horizontal surfaces of 10,000 to 20,000 counts per minute and several areas on the paper in the southeast corner of the flat car to 3,000 millirads/hour at surface. Special fiberglass deposition filters placed along the tracks did not indicate a general contamination spread.

Related Sites/ Structures: The site is associated with 202-S and UPR-200-W-42.

Process Description: Radiologically contaminated fuel rods were transported to the REDOX facility for processing by rail car. Contaminated material and equipment were transported to the burial grounds on the same rail road track. Over time the railroad track became contaminated.

Waste Type: Chemicals

Waste Description: The waste was contaminated with beta/gamma with readings to 1,000 millirads/hour.

Code: UPR-200-W-46 **Classification:** Accepted

Names: UPR-200-W-46; Contaminated Railroad Track; H-2 Centrifuge Burial; UN-200-W-46 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1957

Status: Inactive **End Date:**

Description: The railroad track from the 202-S Tunnel to the first gravel road intersection has been covered with clean backfill material. The railroad cut located inside the facility fence is posted as a "Contamination Area." The section of covered track from the fence to the first gravel road intersection is posted as an "Underground Radioactive Material" area.

Location: Burial operation of the H-2 Centrifuge from REDOX resulted in spotty contamination in the REDOX, 234-5Z, and 224-U Plant areas. General low level smearable contamination was also found along the railroad right-of-way to the burial ground.

Release Description: Problems began when the H-2 Centrifuge was placed in a burial box in the REDOX Railroad Tunnel on December 30, 1957. After a short period of time fumes were observed coming from the centrifuge. Corrective measures to control the escape of fumes were attempted but were generally unsuccessful. After about four hours of this condition, fumes escaped the tunnel and began circulating throughout the REDOX Building via the ventilation system. By 4:30 A.M., December 31, 1957, respiratory protection was required for all personnel entering the north side of REDOX or the 233-S Building. Later, the respiratory protection requirements were extended to the south operating areas of REDOX. Considerable surface contamination was deposited in and around REDOX, including construction work areas outside the building. The centrifuge was transported by train to the burial ground. The burial box was observed to be "puffing" slightly as it proceeded to the burial site but no contamination was observed along the railroad right of way. It was buried at about 10:00 A.M on December 31, 1957. Dose rates related to the centrifuge burial were documented as 185 millirads/hour at 177 meters (580 feet), and about 2 millirads/hour at 0.8 kilometers (0.5 mile). Radiation fields averaging 1 rad/hour during backfilling of the centrifuge box in the burial ground prevented the box from being completely

buried in one day. Two employees received face and nostril contamination during the backfill operation. Two days later, radiation surveys revealed a general low level smearable contamination along the railroad right-of-way.

Waste Type: Equipment

Waste Description: The waste was contaminated fumes emitting from a centrifuge, with beta/gamma readings up to 1 rad/hour noted during burial. The centrifuge was ruthenium contaminated.

Code: UPR-200-W-48 **Classification:** Accepted

Names: UPR-200-W-48; Contaminated Railroad Track Near 221-U; UN-200-W-48 **Reclassification** None

Type: Unplanned Release **Start Date:** 7/9/1958

Status: Inactive **End Date:**

Description: The area is no longer marked or posted. The waste site was a spread of radioactive contamination in 1958.

Location: The contamination spread occurred at the west end of the 221-U railroad cut at Bridgeport Avenue, west of 221-U.

Release Description: On July 9, 1958, a survey of the railroad area revealed a spread of contamination in the vicinity of the road intersection with the 221-U railroad. The incident occurred when a jumper, wrapped in plastic, was transferred from a flat-bed truck to a railroad flat-car at the railroad crossing. The jumper was transferred from the truck to the railroad car by a crane and moved into the 221-U railroad tunnel. Dose rates up to 9 rad per hour over an area of about 93 square meters (1,000 square feet) were detected. The contamination spread was caused by the plastic wrapping on the jumper being damaged during transfer.

Waste Type: Chemicals

Waste Description: The release site contained beta/gamma with readings to 9 rads/hour that spread while moving a plastic wrapped, waste transfer jumper off a flat bed truck. It is not known what facility the jumper came from.

Code: UPR-200-W-51 **Classification:** Accepted

Names: UPR-200-W-51; UPR-200-W-52; Release from 241-S Diversion Box; UN-200-W-51 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1958

Status: Inactive **End Date:**

Description: The release site is not currently marked or posted. The area where this release had been located (in 1958) is near an area that was surface stabilized in 1992 (UPR-200-W-165).

Location: The contamination spread southward from the 241-S-151 Diversion Box (inside the 241-S tank farm) to approximately 91.4 meters (100 yards) beyond the 200 West Area fence. The plume was approximately 100 meters (300 feet) wide.

Release Description: On September 12, 1958, high pressure steam was applied to the D-8 line of the 241-S Diversion box in an attempt to unplug it. The pressure bled back into the diversion box and caused a release of contamination. A follow up survey revealed contamination readings up to 1 rad/hour immediately around the box. Contamination levels 30 meters (100 feet) south of the diversion box were 50 milirad per hour. A narrow strip of contamination extended southward, across Tenth Street, with contamination levels of 4,000 counts per minute. The contamination

continued southward approximately 91.44 meters (100 yards) beyond the 200 West Area fence. The particles outside of the 200 West Area fence read on the order of 5,000 counts per minute. The contaminated areas were posted and the gross contamination was flushed with water.

Related Sites/ Structures: The site is associated with the 241-S-151 Diversion Box, UPR-200-W-52, UPR-200-W-114 and UPR-200-W-165.

Waste Type: Process Effluent

Waste Description: Beta/gamma particulates with readings up to 50 millirads/hour within 100 feet (30.48 meters) of the diversion box and readings on Tenth Street to about 4,000 counts/minute and 5,000 counts per minute outside the fence were documented. Beta/gamma readings of up to 1 rad/hour were identified immediately around the 241-S-151 Diversion Box. Specific contaminants were not identified.

Code: UPR-200-W-55 **Classification:** Accepted

Names: UPR-200-W-55; Uranium Powder Spill at 224-U; UN-200-W-55 **Reclassification** None

Type: Unplanned Release **Start Date:** 4/12/1960

Status: Inactive **End Date:** 4/12/1960

Description: The site is no longer marked or posted. The 224-U building was demolished in 2010. The area is now covered with gravel.

Location: The spill occurred at the 224-UA Building Loadout Room asphalt loading ramp. The nearby roadway, and ground surface around the ramp were contaminated.

Release Description: On April 12, 1960, a 224-UA Loadout Room container overrun caused 1.36 metric tons (1.5 tons) of uranium powder to spill onto the asphalt loading ramp when a loading hose broke. This resulted in the contamination of the 224-UA Building asphalt loading ramp and a nearby roadway. During cleanup uranium was spread to nearby ground.

Waste Type: Chemicals

Waste Description: On April 12, 1960, 1.36 metric tons (1.5 tons) of uranium powder that had been separated from fission products spilled on the ground. Most of the powder was picked up and drummed.

Code: UPR-200-W-60 **Classification:** Accepted

Names: UPR-200-W-60; Railroad Contamination; UN-200-W-60 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1966

Status: Inactive **End Date:**

Description: The U Plant Railroad had been surrounded with soil berms on the north and south sides of the track and posted with Contamination Area signs. The area was surface stabilized in 2001. The stabilization included the UPR-200-W-60 area. The entire area, including the railroad tracks, is now covered clean dirt and posted with Underground Radioactive Material Area signs.

Location: Spotty contamination extended from the 221-U tunnel door along the railroad tracks for a distance of about 68.6 meters (225 feet).

Release Description: On February 25, 1966, contaminated water dripped from a hole in the bottom of a PUREX equipment transfer box as the box was being pulled from the 221-U Building tunnel. Radioactivity along the railroad track ranged from a few thousand counts per minute to a

maximum of 1 rad/hour. The release effected approximately 68 meters (225 feet) of rail road track.

Related Sites/ Structures: The site is associated with the 221-U building and UPR-200-W-117.

Waste Type: Chemicals

Waste Description: PUREX equipment was being transferred to U Plant in a rail car filled with water (for shielding). Beta/gamma contamination was found on the railroad tracks with readings ranging from a few thousand counts per minute to a maximum of 1 rad/hour.

Code: UPR-200-W-63 **Classification:** Accepted

Names: UPR-200-W-63; Road Contamination Along the South Shoulder of 23rd Street; UN-200-W-63 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1966

Status: Inactive **End Date:**

Description: The release site is not currently marked.

Location: The contamination spread effected the road surface of 23rd Street in 200 West Area. ARH-2015 and ARH-2757 state the contamination was spread began 152.4 meters (500 feet) west of the west railroad crossing on 23rd Street and extended (eastward) to the intersection of Bridgeport and 23rd Street, along the south shoulder of 23rd Street. The document also gives approximate Hanford Site coordinates of N43175, W74025/N43175, W77500.

Release Description: On September 21, 1966, strontium-90 in the form of particulate matter spread from a used diversion box jumper as it was being transported from the 200 West Dry Waste Burial Ground to the 221-T Canyon. The jumper had just previously been removed from the 241-TX-153 Diversion Box. Spotty contamination on 23rd Street was found along the road and shoulder. Speck contamination approximated one per square yard of ground surface along the shoulder of 23rd Street.

Related Sites/ Structures: It is possible this release is associated with the radiologically posted areas 200-W-90.

Waste Type: Chemicals

Waste Description: The contamination was in the form of strontium-90 with an activity of about 1 curie. Spots of contamination up to 500 millirads/hour were removed from the road.

Code: UPR-200-W-65 **Classification:** Accepted

Names: UPR-200-W-65; Contamination in the T-Plant Railroad Cut; UN-200-W-65 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1969

Status: Inactive **End Date:**

Description: The railroad cut is currently posted as a Contamination Area, extending from the tunnel door westward to a chain link gate and fence.

Location: The contamination was found in the T Plant railroad cut, that is located on the west side of the 221-T facility adjacent to the railroad tunnel.

Release Description: On October 27, 1969, contamination was found during a routine survey of the 221-T Plant railroad cut. Spots of contamination from 5,000 counts per minute to 150 millirads/hour were found between the rails of the spur line and adjacent to the spur line. One area, about 45.72 meters (50 yards) from the tunnel door, was generally contaminated over an area measuring 0.9 meters (3 feet) by 3 meters (10 feet). From this area west, the contamination spots were spaced a few inches to a few feet until approximately 114.3 meters (125 yards) from the tunnel door, where the contamination was non-detectable. The exact source of the contamination is unknown, but the location limits the cause to a rail car carrying radioactive material which was not effectively contained.

Process Description: Contaminated equipment was sent to T Plant on railcars for repair and decontamination.

Waste Type: Chemicals

Waste Description: Beta/gamma with readings from 5,000 counts/minute to 150 millirads/hour.

Code: UPR-200-W-67 **Classification:** Accepted

Names: UPR-200-W-67; Contamination Near 2706-T; UN-200-W-67 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1970

Status: Inactive **End Date:**

Description: The unplanned release site is marked with a single post with a WIDS site number sign. The sign is adjacent to the MO433 trailer.

Location: The contamination was located on the north side of 2706-T Building adjacent to the MO433 trailer.

Release Description: On August 5, 1970, a contaminated electric lift was parked outside a radiation zone on the north side of the 2706-T building. Contamination from the vehicle affected the ground beneath the vehicle; an area of approximately 0.91 meters (3 feet) by 7.32 meters (24 feet). The ground was contaminated with a maximum of 20,000 counts per minute. The lift had been positioned outside of the radiation zone awaiting a radiological release survey. The electric lift was from 221-B Plant, but had not been properly surveyed before being moved to 2706-T.

Process Description: The 2706-T building is a vehicle and equipment decontamination facility.

Waste Type: Equipment

Waste Description: Beta/gamma with readings of 20,000 counts/minute on the ground. The contaminated electric lift read as high as 500 millirads/hour.

Code: UPR-200-W-73 **Classification:** Accepted

Names: UPR-200-W-73; Contaminated Railroad Track at 221-T; UN-200-W-73 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1974

Status: Inactive **End Date:**

Description: The railroad cut adjacent to the 221-T tunnel is currently posted as a Contamination Area. The rail spur leading into the 2706-T facility is currently not posted. The Unplanned Release area is

not specifically marked or posted.

Location: The contamination was located on the railroad tracks that connect the 221-T Building Tunnel to the 2706-T Building.

Release Description: On October 16, 1974, a contamination spread from a leaking multi-purpose transfer box was discovered. During a routine survey in the 221-T Building Tunnel, on October 14, 1974, contamination levels up to 3,800 millirads/hour were detected on the bed of the multi-purpose transfer box railroad car. Decontamination of the rail car was scheduled for October 15, 1974. During the decontamination effort, a hair-line crack was observed in a weld of the outer shell of the transfer box. Radiation readings on the transfer box were reduced to 350 millirads/hour and 600 counts per minute smearable on October 16, 1974. The railcar was moved to the 2706-T Building so repairs could be made. A follow-up survey of the railcar at 2706-T indicated that additional contamination had seeped out. Radiation readings on the rail car had increased to 50,000 counts per minute smearable. A survey of approximately 365.76 meters (400 yards) of railroad track between 221-T Building Tunnel and the 2706-T Building revealed spots of contamination up to 40 millirads/hour. The cause of the leakage was migration of decontamination solution to the hair-line crack area and subsequent leaking due to rail movement of the transfer box.

Process Description: Contaminated equipment was transferred to T Plant on railcars for repair and decontamination.

Waste Type: Chemicals

Waste Description: Spotty beta/gamma contamination with readings to 40 millirads/hour on the ground.

Code: UPR-200-W-76 **Classification:** Accepted

Names: UPR-200-W-76; Contamination Found at 241-TX-155; UN-200-W-76 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1977

Status: Inactive **End Date:**

Description: In 2008, the area surrounding 241-TX-152 Diversion Box, 241-TX-155 Diversion Box and 241-TX-302B catch tank has been covered with a layer of clean gravel. It is posted with Bio-Barrier and Underground Radioactive Material signs. A single white sign with black letters reading "WIDS UPR-200-W-76" is hanging on the chain on the near the south side of the 241-TX-152 Diversion Box.

Location: The site is located east of Camden Ave. The radiologically posted area surrounds the 241-TX-152 Diversion Box, 241-TX-155 Diversion Box and 241-TX-302B catch tank.

Release Description: On August 24, 1977, contaminated rabbit fecal pellets were found around the 241-TX-155 Diversion Box. A more extensive survey revealed contaminated pellets with readings as high as 100 millirads/hour scattered in an area of about 50 yards (45.72 meters) by 100 yards (91.44 meters) around the diversion box. Two pellets were analyzed for radiological contaminants and found to contain mostly cesium-137. Subsequent surveys found additional spotty contamination extending in a 152 meter (500 foot) radius around the 241-TX-155 diversion box. The source of the contamination was traced to leaks from the 241-TX-155 Diversion Box. The east side of the diversion box had been partially excavated in 1976. The excavation was left open for more than a year, allowing access for animal intrusion.

Related Sites/ Structures: The site is associated with the 241-TX-155 and 241-TX-152 Diversion Boxes.

Process Description: The original Occurrence Report (77-180) described the release as contaminated rabbit feces extending 100 yards (91.44 meters) by 50 yards (45.72 meters) around the 241-TX-155 Diversion Box and additional specks of contamination extending to a 152 meter (500 foot) radius around the 241-TX-155 diversion box.

Waste Type: Animal Waste

Waste Description: Radioisotopic analyses on two individual rabbit pellets revealed: 18.6 microCuries cesium-137 per gram of sample, 0.044 microCuries cesium-134 per gram of sample, 0.093 microCuries europium-155 per gram of sample, 0.026 microCuries europium-154 per gram of sample, and 2.63 microCuries strontium-90 per gram of sample. Beta-gamma readings up to 100 millirads/hour were found.

Code: UPR-200-W-78 **Classification:** Accepted

Names: UPR-200-W-78; UN-200-W-78; UO3 Powder Spill at 224-U **Reclassification** None

Type: Unplanned Release **Start Date:** 8/21/1970

Status: Inactive **End Date:** 8/21/1970

Description: The site is no longer marked or posted. The 224-U building was demolished in 2010. The area is now covered with gravel.

Location: The release caused an area, located 36 meters (40 yards) south of the Uranium Tri-Oxide barrel storage area, to become contaminated.

Release Description: On August 21, 1970 a radiation survey done with a truck mounted road monitor. The equipment detected an area measuring approximately 3.72 square meters (40 square feet) contaminated with levels up to 20,000 counts/minute. It is assumed that some uranium powder spilled prior to March 1969, when the last pallets were moved from 224-U.

Waste Type: Chemicals

Waste Description: Uranium trioxide powder was spilled on the ground. Contamination up to 20,000 counts per minute was found.

Code: UPR-200-W-82 **Classification:** Accepted

Names: UPR-200-W-82; Contamination Spread at 240-S-151; UN-200-W-82 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1980

Status: Inactive **End Date:** 1/1/1980

Description: A WIDS sign has been placed on the chain link fence north of 202-S. The fenced area is also marked with Underground Radioactive Material Area signs. The 240-S-151 Diversion Box is posted with radiological warning signs. The contamination spread occurred in the soil adjacent to the diversion box.

Location: The contamination spread occurred on the north and east side of the 240-S-151 Diversion Box and the 240-S-302 Catch Tank, on the north side of the REDOX facility (202-S).

Release Description: A piece of equipment moved in for the 240-S-151 Diversion Box installation, was caught under the late snow cover. Moisture from the melting snow and rain penetrated the plastic wrap, and ran off toward the catch tank area spreading contamination over the areas of run-off. Traffic from daily routine surveillance of the catch tank liquid levels apparently tracked some

contamination to the chain boundary and step-off area.

Related Sites/ Structures: UPR-200-W-82 was associated with the 240-S-151 Diversion Box and the 240-S-302 Catch Tank. May be a Duplicate entry - see UPR-200-W-20.

Waste Type: Process Effluent

Waste Description: The release consisted of beta/gamma particulates that spread from a contaminated piece of equipment, with readings up to 80,000 counts per minute found outside the radiation zone.

Code: UPR-200-W-99 **Classification:** Accepted

Names: UPR-200-W-99; 241-153-TX Diversion Box Contamination Spread; UN-200-W-99; UN-216-W-7 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1966

Status: Inactive **End Date:** 1/1/1966

Description: The waste site is the result of airborne contamination (in 1966) affecting the ground on both sides of Camden Ave. The area on the east of Camden Avenue, east of the 241-TX Tank Farm was stabilized with soil and grass. It is marked with "Underground Radioactive Material" signs.

Location: The release site is located east of the 241-TX Tank Farm, extending approximately 69 to 91 meters (75 to 100 yards) east of Camden Avenue.

Release Description: UPR-200-W-99 occurred on September 21, 1966. Two plumes of airborne contamination from the 241-TX-153 Diversion Box floated northeast and southeast. The releases contaminated the ground and road on both sides of Camden Avenue. The total length of contamination was identified to be 228 meters (750 feet) north and south along Camden Ave. The contamination extended a maximum of 91 meters (300 feet) east of Camden Ave. The maximum contamination found was 700 millirem per hour.

Related Sites/ Structures: UPR-200-W-99 was associated with the 241-TX-153 Diversion Box and Camden Avenue.

Waste Type: Process Effluent

Waste Description: Airborne particulates containing approximately 1 curie of strontium-90, with maximum readings of up to 700 millirads/hour, contaminated a large area around the diversion box.

Code: UPR-200-W-101 **Classification:** Accepted

Names: UPR-200-W-101; 221-U Acid Spill R-1 Through R-9; UN-200-W-101; UN-216-W-9 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1957

Status: Inactive **End Date:** 1/1/1957

Description: The UPR-200-W-101 release site was posted with "Surface Contamination" warning signs. The contaminated ground was covered with sand and gravel. A larger contaminated area (UPR-200-W-162), also located on the east side of 221-U, was surface stabilized in 1998. UPR-200-W-101 was located within the UPR-200-W-162 posted area. After being covered with clean material, he posting was changed to Underground Radioactive material. UPR-200-W-101 is not separately marked or posted within the area.

Location: UPR-200-W-101 occurred at the northeast end of the 221-U Building (sections R-1 through R-9) in the 200 West Area.

Release Description: UPR-200-W-101 occurred in March 1957, when reclaimed acid was spilled onto the ground at the northeast end of the 221-U Building. Approximately 1 curie of fission products was released. An area 19.8 meters (65 feet) by 27.5 meters (90 feet) was covered with 3 inches of sand and gravel after the occurrence.

Related Sites/ Structures: UPR-200-W-101 was associated with sections R-1 through R-9 of the 221-U Building and UPR-200-W-162.

Process Description: Reclaimed acid was distributed via overhead pipelines between 224-U and 211-U.

Waste Type: Chemicals

Waste Description: At the time of discharge, the reclaimed acid contained approximately one curie of strontium-90.

Code: UPR-200-W-103 **Classification:** Accepted

Names: UPR-200-W-103; 216-Z-18 Line Break; Pipe Line Leak; UN-200-W-103; UN-216-W-13 **Reclassification** None

Type: Unplanned Release **Start Date:** 4/1/1971

Status: Inactive **End Date:** 4/1/1971

Description: The release site is posted with Underground Radioactive Material (URM) warning signs. Contamination still remains under the clean soil. A WIDS number sign has been placed inside the URM to mark the approximate release location. The pipeline waste site associated with this release is 200-W-174-PL.

Location: UPR-200-W-103 occurred within the Z Plant exclusion area, approximately 1.8 meters (6 feet) south and 3.7 meters (12 feet) west of the southwest corner of the 236-Z Building in the 200 West Area.

Release Description: In 1971, the 216-Z-18 Crib line broke near the southwest corner of the 236-Z Building. An excavation of the area uncovered gross alpha contamination in the soil.

Related Sites/ Structures: UPR-200-W-103 is associated with the 216-Z-18 Crib line (200-W-174-PL), the 234-5 Building, and the 236-Z Building.

Waste Type: Process Effluent

Waste Description: The release contained approximately 10 grams of plutonium with gross alpha contamination greater than 6,000,000 disintegrations per minute.

Code: UPR-200-W-111 **Classification:** Accepted

Names: UPR-200-W-111; Sludge Trench at 207-U; UN-216-W-21 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1960

Status: Inactive **End Date:**

Description: The site is a trench near the south wall of the 207-U South Retention Basin. The site had been posted with "Surface Contamination" signs. In 1997, contaminated soil in the vicinity of the 207-U Retention Basin was scraped and consolidated around the basin perimeter. The contaminated soil was covered with clean backfill. The radiological posting was changed to "Underground Radioactive Material."

Location: The site is approximately 3 meters (10 feet) from the concrete wall on the south side of the 207-U South Retention Basin in the 200 West Area.

Release Description: Sludge was scraped from the bottom of the south 207-U Retention Basin and placed in a narrow trench adjacent to the south wall of the basin. The sludge was covered with 1.2 meters (4 feet) of clean soil.

Related Sites/ Structures: UPR-200-W-111 was associated with the 207-U South Retention Basin.

Waste Type: Sludge

Waste Description: Approximately 21 cubic meters (27 cubic yards) of sludge from the 207-U South Retention Basin was buried adjacent to the Retention Basin. Until 1972, the retention basins received steam condensate and cooling water from the 224-U Building and chemical sewer waste from the 221-U Building.

Code: UPR-200-W-112 **Classification:** Accepted

Names: UPR-200-W-112; Sludge Trench at 207-U; UN-216-W-22 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site had been posted with "Surface Contamination" warning signs. In 1997, the contaminated area in the vicinity of the 207-U Retention Basin was scraped and consolidated. The area was covered with clean soil and the radiological posting was changed to "Underground Radioactive Material."

Location: The site is approximately 3 meters (10 feet) from the concrete wall on the north side of the 207-U North Retention Basin in the 200 West Area.

Release Description: Sludge was scraped from the bottom of the north 207-U Retention Basin and placed in a narrow trench adjacent to the north basin wall. The sludge was covered with 1.2 meters (4 feet) of clean soil.

Related Sites/ Structures: UPR-200-W-112 was associated with the 207-U North Retention Basin.

Waste Type: Sludge

Waste Description: Approximately 21 cubic meters (27 cubic yards) of sludge from the 207-U North Retention Basin was buried adjacent to the north side of the Retention Basin. Until 1972, the retention basins received steam condensate and cooling water from the 224-U Building and chemical sewer waste from the 221-U Building.

Code: UPR-200-W-116 **Classification:** Accepted

Names: UPR-200-W-116; Ground Contamination North of 202-S; UN-200-W-116; UN-216-W-26 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1968

Status: Inactive **End Date:** 1/1/1981

Description: The site has a light chain barricade and is posted with Underground Radioactive Material signs.

Location: The release affected an area east of the 204-S Unloading Station, north of the 202-S Building and west of the REDOX railroad cut.

Release Description: The area designated as UPR-200-W-116 in 1980 was contaminated with particulates spreading by wind from the 204-S Waste Storage Tank exhaust and the related Railroad Tanker Waste Unloading Station. Radioactive particulates traveled eastward and affected an area approximately 0.8 hectares (2 acres) in size. In 1974, ground contamination, with radioactive levels up to 20,000 counts per minute, was identified.

Related Sites/ Structures: UPR-200-W-116 was associated with the 204-S Waste Storage Tank, the 204-S Railroad Tanker Waste Unloading Station, and sitecode 200-W-22 (a larger area posted as Underground Radioactive Material).

Waste Type: Chemicals

Waste Description: The release contaminated 0.81 hectares (2 acres) of land with radioactive specks from the 204-S area.

Code: UPR-200-W-117 **Classification:** Accepted

Names: UPR-200-W-117; 221-U Railroad Cut Contamination; Railroad Track Contamination; UN-200-W-117; UN-216-W-27 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: In November 2000, a posted Soil Contamination Area was located on the railroad spur leading into the 221-U railroad cut and tunnel. Most of the posted area is the railroad track on a bed of gravel. There is an unusual patch of asphalt across a portion of the railroad track, inside the posted Soil Contamination Area. In December 2001, the area was covered with clean backfill material and downposted to an Underground Radioactive Material Area.

Location: The release site was the ground around the railroad cut northwest of the 221-U Building in the 200 West Area.

Release Description: This site is the result of contaminated liquid and particulate matter dropping from railroad cars moving equipment and waste into and out of the 221-U Facility over time.

Related Sites/ Structures: UPR-200-W-117 was associated with the 221-U Building and the railroad cars servicing that facility.

Process Description: The track leads to the 221-U tunnel door. Material and equipment was transported in and out of the U Plant canyon via the tunnel entrance.

Waste Type: Chemicals

Waste Description: The contamination was primarily fission products and uranium from chemical processing operations.

Code: UPR-200-W-118 **Classification:** Accepted

Names: UPR-200-W-118; Contamination at 211-U; UN-200-W-118; UN-216-W-28 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1960

Status: Inactive **End Date:** 1/1/1972

Description: The release site consisted of the ground outside the concrete unloading station at the 211-U Tank Farm. The unplanned release site is no longer marked or posted. The area around the

211-U tanks and railroad spur has been stabilized with gravel and is posted as an Underground Radioactive Material area.

Location: UPR-200-W-118 was located on the railroad spur, northwest of the 221-U Building, adjacent to the 211-U Chemical Tank Farm.

Release Description: This contaminated area was the result of drips and spills from the reclaimed nitric acid unloading station at the 211-U Chemical Tank Farm. Wind-borne particulate matter spread to the ground surface outside the concrete unloading station, contaminating approximately 0.4 hectares (1 acre) of ground.

Related Sites/ Structures: UPR-200-W-118 is associated with the 211-U and 211-UA Chemical Tank Farms.

Process Description: The Uranium Recovery Process at 224-U received uranyl nitrate from REDOX and PUREX. After the uranium was removed, the reclaimed nitric acid was stored in the 211-UA tanks. It was transferred from 224-U to 211-UA via overhead lines. The slightly radioactive nitric acid was recycled back to REDOX and PUREX. In the 1960's and 1970's it was returned to the separations facilities in railcars. It was pumped out of the 211-UA tanks into the railcars via underground lines and a pump pit. Some leakage was associated with the pumping process and caused low level radioactive contamination around the area. The reclaimed nitric acid storage was moved from 211-UA to a holding tank within the 224-U facility in the 1980's and the railcar unloading platform was abandoned. Some residual acid and waste water, contaminated above crib release limits, continued to be stored in the 211-UA tanks. All the acid and waste water was removed from the tanks prior to being transitioned to the new Environmental Restoration Contractor in 1994. Although the tanks were emptied, the acid pump pit and underground lines had not been flushed. Leaking valves and seals and residual contamination in the pump pit caused low level radioactive contamination to spread around the tanks and railcar unloading platform. The area was posted as a Contamination Area again in the early 1990's. The lines and pump pit were flushed in 1998 and the surface contamination was covered with gravel. The area was changed to an Underground Radioactive Material Area.

Waste Type: Chemicals

Waste Description: The waste consisted of radioactive reclaimed nitric acid that spilled to the soil.

Code: UPR-200-W-138 **Classification:** Accepted

Names: UPR-200-W-138; UPR-200-W-22; 221-U Vessel Vent Blower Pit French Drain; UN-200-W-138; UN-200-W-22; UN-216-W-11 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1953

Status: Inactive **End Date:** 1/1/1953

Description: The site was described as the ground near the R-3 entrance to the 221-U Building. The area has been surface stabilized and posted with Underground Radioactive Material signs within a larger area known as UPR-200-W-162. The UPR-200-W-138 Unplanned Release is not separately marked or posted.

Location: UPR-200-W-138 occurred at the northwest corner of the 221-U Building, near the R-3 entrance. It is located inside the larger, surface stabilized area, UPR-200-W-162.

Release Description: Uranyl nitrate hexahydrate (UNH) solution overflowed into the 221-U Building Vessel Vent Blower Pit, then onto the ground through the French Drain.

Related Sites/ Structures: UPR-200-W-138 was associated with the 221-U Building Vessel Vent Blower Pit and the larger surface stabilized area UPR-200-W-162. It may also be associated with the 216-U-7

french drain.

Waste Type: Process Effluent

Waste Description: An estimated 140 kilograms (300 pounds) of uranium nitrate hexahydrate (UNH) solution, containing 14 kilograms (30 pounds) of uranium, was released to the ground through the French Drain. The information for this release is vague. Some documentation indicates the french drain involved was the 216-U-7, but drawing reviews indicate the blower pit is located north of 216-U-7. The blower pit drained to the 241-WR vault. If the event involved surface liquid being released, it is possible it flowed southward and could have effected the 216-U-7 drain.

Code: UPR-200-W-162 **Classification:** Accepted

Names: UPR-200-W-162; Contaminated Area on East Side of 221-U; UN-216-W-37 **Reclassification** None

Type: Unplanned Release **Start Date:** 1/1/1991

Status: Inactive **End Date:**

Description: The waste site was originally posted with "Surface Contamination" warning signs. The area was backfilled with clean material from the 200 Area Ash Pit in 1998. The radiological posting was changed to "Underground Radioactive Material." In 2011, after the demolition of 224-U and 224-UA, the 200-W-136 Underground Radioactive Material Area was greatly expanded. It was extended to the back side of the 221-U building. This eliminated the need for a separate radiological posting for the UPR-200-W-162 waste site.

Location: The release site is the area adjacent to and east of the 221-U Canyon Building from Section R-1 to R-19 in the 200 West Area.

Release Description: The site consists of surface radiological speck contamination.

Related Sites/ Structures: UPR-200-W-162 was associated with the 221-U Canyon Building. The 200-W-136 posted area was expanded and now encompasses the area previously known as UPR-100-W-162. Also associated with UPR-200-W-101 and UPR-200-138 are located inside this larger Underground Radioactive Material Area.

Waste Type: Chemicals

Waste Description: The site consists of surface speck contamination.

Code: UPR-200-W-165 **Classification:** Accepted

Names: UPR-200-W-165; Contamination Area East of 241-S; UN-216-W-30 **Reclassification** Interim No Action (5/12/2014)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The waste site is no longer marked or posted. The area was Interim Stabilized, over time from 1992 through 1995. The site was evaluated and reclassified to Interim No Action in 2014.

The site had been a large area of posted Surface Contamination, located east of the 241-S Tank Farm, north of the steam line. The radiologically posted areas were scraped and the contaminated soil combined with other waste sites. The 216-S-23 and 216-S-18 waste sites

were inside the Surface Contamination Area posting. Some of the contaminated soil was placed on top of the 216-S-23 crib. Some was used to backfill the 216-S-18 depression. After collecting soil samples of the scraped area, the area was removed from radiological control in 1993.

Location: UPR-200-W-165 was located east of the 241-S, 241-SX, and 241-SY Tank Farms, west of the 216-S-9 Crib and north of the steam line.

Release Description: Radioactive surface contamination migrated from the 241-S, 241-SX, and 241-SY Tank Farms, eventually contaminating an area of approximately 4.7 hectares (11.5 acres).

Related Sites/ Structures: UPR-200-W-165 was associated with contamination migration from operational activities in the 241-S, the 241-SX, and the 241-SY Tank Farms. It was remediated in conjunction with the adjacent UPR-200-W-114 site (contaminated soil south of the steam line).

Waste Type: Chemicals

Waste Description: The waste consisted of contamination specks that migrated from the 241-S, 241-SX, and 241-SY Tank Farms.

Closure Info: Interim: This waste site Interim Stabilization began in 1992, but no Reclassification form was processed at that time. The Reclassification form was processed in 2014.

The posted radiological surface contamination was divided into three sections, based on the locations of aboveground steam lines that restricted the earth moving equipment. Areas adjacent to the 241-S, SX and SY tank farm fences were not stabilized.

The contaminated surface soil in the northern section was scraped and consolidated onto the top of the 216-S-23 crib. A layer (18 to 24 inches deep) of clean soil was placed on top to cover the contaminated soil. Approximately 5.9 acres was decontaminated. The area decontamination was completed in July 1992. The contaminated surface soil in the southern section was scraped and consolidated onto the top of the 216-S-1 &2 and 216-S-8 cribs. Some contaminated soil was placed inside the 207 Retention basin. A layer (18 to 24 inches deep) of clean soil was placed on top to cover the contaminated soil. Approximately 11.7 was decontaminated and another 2 acres were covered with clean dirt. This area was completed in September 1992.

The soil contamination area between the steam lines was found to be greater than 1 foot deep. From December 1994 through February 1995, approximately 5000 square feet was decontaminated and the radiological posting removed. Some of the contaminated soil was consolidated on top of the 216-S-9 crib and some was placed into the 216-S-18 depression and covered with clean dirt. Construction debris was uncovered in this area. The area under the steamline remained a posted Contamination Area until the steamline was removed.

The scraped areas were revegetated with wheatgrass. Approximately 60 acres inside 241-S and SX tank farm fences were treated with a soil fixative to prevent recontamination of areas outside the fence.

Code: UPR-200-W-166 **Classification:** Accepted

Names: UPR-200-W-166; Contamination Migration from 241-T Tank Farm; UN-216-W-31 **Reclassification** None

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: The site was originally defined as a large, irregularly shaped area of surface soil contamination located north and east of the 241-T Tank Farm. The areas of soil contamination have been

	scraped and consolidated onto the west slope of the 216-T-14 through 216-T-17 Trenches and also into the 207-T Retention Basin. The unplanned release is no longer separately marked or posted.
Location:	In 1985, the original area of soil contamination was described as being located north and east if 241-T Tank Farm, west of the 216-T-14 through 216-T-17 Trenches and surrounding the 207-T Retention Basin. In 1996, additional soil contamination was found east of the 207-T Retention Basin and was also considered to be UPR-200-W-166.
Release Description:	The site consisted of spotty contamination which is suspected to have originated from 241-T Tank Farm.
Related Sites/ Structures:	UPR-200-W-166 was associated with the 216-T-14 through 216-T-17 Trenches, 241-T Tank Farm, the 207-T Retention Basin and 200-W-53.
Process Description:	Contamination in the soil surrounding the exterior of the 241-T Tank Farm and the 207-T Retention Basin ranged from 25,000 to 250,000 disintegration per minute. The source of the contamination is suspected to be years of operating activities in the tank farm and dried particles blowing out of the retention basin.
Waste Type:	Soil
Waste Description:	The waste consisted of spotty contamination which is suspected to have originated from the 241-T Tank Farm.

300-FF-1

Code:	300 ASH PITS	**Classification:**	Accepted
Names:	300 ASH PITS; 300 Area Ash Pits; 300 Ash Pits	**Reclassification**	Final Closed Out (12/17/1997)
Type:	Coal Ash Pit	**Start Date:**	1/1/1944
Status:	Inactive	**End Date:**	1/1/1994

Description: In 1997, samples collected from test pits determined no further action was required. The unit consisted of two separate excavations that are 4.6 to 6.1 meters (15 to 20 feet) deep and 7,400 square meters (80,000 square feet) in area.

Location: The site is located in the 300 Area, south of the 316-1 Process Pond and west of the 300 Area Filter Backwash Pond (300 FBP).

Process Description: The 300 Area coal-fired power house generated coal ash starting in about 1944. The ash was suspended in a water slurry and sluiced to the South Process Pond (SPP) until 1951. When the coal fly ash was dry, it was hauled to several locations, including these disposal pit located west of the 300 Area. These pits received about 56,000,000 liters per year (15,000,000 gallons per year) of fly ash slurry during operations.

Waste Type: Ash

Waste Description: Coal fly ash was periodically sluiced from the 384 Powerhouse to the pits with water at the rate of 57 million liters/year (15 million gallons/year). Analysis of the fly ash according to 173-303 WAC indicated it was non-Extraction Procedure toxic. Filter backwash water was diverted to the east ash pit from 1992 to June 1995 to allow for the construction of a liner in the filter backwash pond and resolution of permitting issues.

Closure Info: Final: During the 300-FF-1 Phase 1 remedial investigations (RI), samples of ash showed that metals concentrations were below cleanup standards. However, the ash pits were constructed in an area that at one time was part of the South Process Pond (SPP). The Remedial Investigation did not collect samples from soils below the ash pit sediments that could contain contaminants from the SPP. Therefore, the 300-FF-1 Record of Decision required remedial action at the ash pits to verify no contaminants below the ash pits remained from previous SPP operations.

Six sample test pit locations were randomly identified at the ash pits. Samples were taken below the ash pit sediments, at a depth about 4.6 meters (15 feet) below surface grade. Field screening was performed at about 0.3 meter (1 foot) intervals in the ash, but did not identify any contaminants of concern above the cleanup levels. Samples were collected in August 1997 at a depth below the layers of ash, and the pits backfilled. Field screening did not identify any contaminants of concern. The sample results indicated no further action was required.

Code:	300 FBP	**Classification:**	Accepted
Names:	300 FBP; 300 Area Filter Backwash Pond	**Reclassification**	Final No Action (11/7/2000)
Type:	Surface Impoundment	**Start Date:**	1/1/1987
Status:	Inactive	**End Date:**	1/1/1998

Description: This site has been reclassified as "No Action." The unit consists of two subsites; one is a single, rubber lined basin measuring 97.5 meters (320 feet) by 65 meters (213 feet), 7.6 meters (25 feet) deep. From 1987 to 1992, the basin operated as an unlined percolation pond, which is the second subsite. In 1992, the basin was lined with a synthetic liner on a concrete foundation.

Location: The site is located north of the 338 Building and east of the 300 Area Ash Pits, near the banks

of the Columbia River. The basin is enclosed by a locked chain link fence.

Related Sites/ Structures: The site is associated with the 384 Powerhouse and the 300 Area Treated Effluent Disposal Facility (TEDF).

Process Description: Before the pond was lined, filter backwash was discharged to it and allowed to percolate to groundwater. After 1995, the backwash was held in the lined pond to clarify. The clarified water was sent to the 300 Area TEDF (Treated Effluent Disposal Facility). The Hanford Site Waste Management Units Report reports that the unit received water and nonhazardous alum from backwash filters used to filter water for sanitary and process use. Analysis of the backwash showed it to be nonhazardous. The accumulated sediment in the ponds is not regulated and could be disposed of in a landfill.

Waste Type: Water

Waste Description: The unit receives 76 million liters/year (20 million gallons/year) of water and alum backwashed from filters. Analysis of the backwash has shown it to be nonhazardous.

This Site has the Following SubSites:

Code: 300 FBP:1
Names: 300 FBP:1; 300 FBP (Unlined)

Code: 300 FBP:2
Names: 300 FBP:2; 300 FBP (Lined)

Code: 300 FBP:1 **Classification:** Accepted

Names: 300 FBP:1; 300 FBP (Unlined) **Reclassification** Final No Action (2/19/1998)

Type: Surface Impoundment **Start Date:**

Status: Inactive **End Date:**

Description: The subsite represents the unlined pond that operated from 1987 to 1992. This component of the 300 FBP is included as a "no action" site within the 300-FF-1/300-FF-5 Record of Decision.

Closure Info: Final: No remediation was perfumed.

The SubSite is Part Of:

Code: 300 FBP
Names: 300 FBP; 300 Area Filter Backwash Pond

Code: 300 FBP:2 **Classification:** Accepted

Names: 300 FBP:2; 300 FBP (Lined) **Reclassification** Final No Action (11/7/2000)

Type: Surface Impoundment **Start Date:**

Status: Inactive **End Date:**

Description: This subsite is the lined filter backwash pond. This site is not addressed within the 300-FF-1/300-FF-5 Record of Decision.

Closure Info: Final: No remediation was perfumed.

The SubSite is Part Of:

Code: 300 FBP
Names: 300 FBP; 300 Area Filter Backwash Pond

Code:	300 RFBP	**Classification:**	Accepted
Names:	300 RFBP; East Bay of South Process Pond; Pond 5; 300 Area Retired Filter Backwash Pond	**Reclassification**	Final Closed Out (7/23/2003)
Type:	Pond	**Start Date:**	1/1/1975
Status:	Inactive	**End Date:**	1/1/1987

Description: The site has been remediated and closed out. When the South Process Pond became inactive in 1975, the east lobe started to be used by the 300 Area Water Treatment Facility as a filter backwash pond.

Location: The unit was located west of the 300 Area, in the east lobe of the 300 Area South Pond.

Related Sites/ Structures: This site was associated with the South Pond (316-1); the Contaminated Soil West of the South Process Pond (300-262); and unplanned release (UPR) sites UPR 300-32, UPR-300-33, UPR-300-34, UPR-300-35, UPR-300-36, UPR-300-37, and UPR-300-FF-1.

Process Description: The 300 RFBP and the 316-1 South Process Pond, collectively referred to as the 316-1 South Process Pond site, are the site of former high-volume liquid waste disposal activities located north of the 300 Area complex, near the Columbia River. The easternmost boundary of the 316-1 South Process Pond is approximately 49 meters (160 feet) west of the shoreline of the Columbia River. The 316-1 South Process Pond site was built in 1943 and was the first 300 Area process liquid disposal unit. It was originally a single, large infiltration pond to which dikes were later added, forming three settling ponds and a large main infiltration pond. The east lobe of the site was used by the 300 Area water treatment plant as a filter backwash pond (WIDS site 300 RFBP). Combined process wastes discharged from the fuel fabrication facilities to the South and North Process Ponds ranged from 1,514,000 to 11,360,000 liters/day (400,000 to 3,000,000 gallons/day). During their operational life, the process ponds received thousands of kilograms of uranium as dissolved material and finely divided solids. Much of the uranium was carried with the infiltration water, but some remained in the pond soils. Discharging of waste to the process ponds ended in 1975.

Waste Type: Process Effluent

Waste Description: The unit received 3.8E+07 to 7.6E+07 liters/year (1E+07 to 2E+07 gallons/year) of water and nonhazardous alum from backwashing filters. Analysis of the backwash has shown it to be nonhazardous.

Closure Info: Interim (7/23/2003): Remediation activities at the 316-1 South Process Pond site began in 1997 with excavating trenches around the periphery of the 316-1 site. Trenching was performed to assess the lateral extent of contamination. The majority of remedial excavation and disposal activities were conducted in 1999 and 2000. Excavation at the site involved removing the overburden (scraped surface) soils and contaminated soils. The contaminated soil was transported to the ERDF for disposal. Based on field screening, overburden materials and comingled soil identified as potentially clean were placed in stockpiles for potential use as backfill. Soil samples were collected adjacent to utility poles located in the 316-1 site. Where these samples indicated contaminant concentrations above the cleanup criteria, the soil was removed and the area immediately backfilled and compacted with clean material to maintain the integrity of the utility pole. Excavation and disposal of the 316-1 South Process Pond remediation waste was completed in June 2000. The filter backwash pond (WIDS site 300 RFBP) was a lobe on east side of the process pond. During remediation, soil was primarily removed from the area on the west side of the process pond, near the pond inlet. The two north-south parallel soil berms inside the pond were removed. Areas to the south and west of the

original pond boundaries were also removed during remediation. The general elevation at the bottom of the excavation used for analysis was 111.3 meters (365 ft) upon completion. The excavation depth was approximately 5.7 meters (19 ft).

Code: 300-3 **Classification:** Accepted

Names: 300-3; 300-FF-1 Aluminum Hydroxide **Reclassification** Final No Action (7/17/1996)

Type: Burial Ground **Start Date:**

Status: Inactive **End Date:**

Description: The waste site was investigated and determined to require No Action per the 1996 Record of Decision for 300-FF-1. It was a wooden structure consisting of several horizontal (0.30 to 0.46 meters [1 to 1.5 ft] diameter) cedar logs forming a vertical wall. The structure contained a white, chalky substance.

Location: This site is about 100 meters (330 feet) northwest of the 316-1 South Process Pond.

Process Description: Photos from 1956 indicate the site was possibly used to receive sodium aluminate/aluminum hydroxide scrapings from the South and North Process Ponds.

Waste Type: Chemicals

Waste Description: Sample analysis of the white, chalky material was consistent with aluminum hydroxide, or hydrous aluminum oxide, but the uranium levels were very small. Uranium content for one sample was 58 picocuries/gram and another was 30 picocuries/gram. Uranium concentrations in pond scrapings are usually higher.

Closure Info: Final: The structure was investigated by the site historical group. Photos from 1956 indicate the site was possibly used to receive sodium aluminate/aluminum hydroxide scrapings from the South and North Process Ponds. The white chalky substance was sampled and analyzed in October 1993.

According to page 50 of the Declaration of the Record of Decision for the 300-FF-1 and 300-FF-5 Operable Units (1996 DOE Document Number 038509), remedial action is not needed at the 300-3 Aluminum Hydroxide Site. Regulator concurrence with supporting documentation eliminates the need for signatures on the Reclassification form.

Code: 300-44 **Classification:** Accepted

Names: 300-44; R-32; UN-300-FF-1; UPR-300-FF-1 **Reclassification** Final Closed Out (12/17/1997)

Type: Unplanned Release **Start Date:**

Status: Inactive **End Date:**

Description: This site was located southwest of 618-4 Burial ground. It has been remediated and was closed out in 1997. It had been a posted Underground Radiological Material Area.

Location: The site was near the southwest end of the 618-4 Burial Ground. The surface area was derived from a Global Position Survey (GPS) of the site boundary.

Related Sites/ Structures: The site is associated with WIDS sitecode UPR-300-FF-1.

Waste Type: Soil

Waste Description: The soil contamination appears to be the result of shallow buried materials.

Closure Info: Final: The waste site was approximately 159 square meters (1711 sq. ft). A layer of overburden ranging in depth from 0.3 to 0.9 meters (1 to 3 feet) was removed prior to the excavation and stockpiled. Only an additional 0.3 meters (1 foot) was removed to complete the excavation, based on radiological surveys. Contaminated soil was disposed at the Environmental Restoration Disposal Facility. Four verification samples were collected; two from the bottom of the excavation and two from the stockpiled overburden. The samples were analyzed for 300-FF-1 Operable Unit contaminants of concern.

Code:	300-49	**Classification:**	Accepted
Names:	300-49; Landfill 1a; UN-300-FF-1; UPR-300-FF-1	**Reclassification**	Final Closed Out (5/28/2003)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site has been remediated and closed out in July 1999. It was a large, rectangular area with visible debris on the surface and areas of subsidence. After excavation and closure activities the area was included in the 2004, 300-FF-1 Regrading Plan.

Location: The site was located southeast of 618-5 Burial Ground, near the Columbia River bank.

Related Sites/ Structures: The site was associated with WIDS sitecode UPR-300-FF-1.

Waste Type: Misc. Trash and Debris

Waste Description: Material visible on the surface included empty acid and mercury bottles, ceramics, and other glassware that appeared to be of laboratory origin, metal, and a partially buried 208-liter (55-gallon) drum. Materials that are radiologically contaminated include soil, tumbleweeds, pipes, ceramics, glass, and a small amount of yellow material that resembles "yellow cake" (a complex uranium compound, the product of chemically refining natural uranium).

Closure Info: Interim: The cleanup verification package (CVP-2000-00020) has documented that the 300-49 site has achieved the remedial action objectives (RAOs) and corresponding remedial action goals (RAGs) as established in the Final Record of Decision for the 300-FF-1 and 300-FF-5 Operable Units (ROD) (EPA 1996) and the Remedial Design Report/Remedial Action Work Plan for the 300 Area (RDR/RAWP) (DOE RL-96-70).

Site contaminants of concern (COCs) and contaminants of potential concern (COPCs) identified in the 300-FF-1 Remedial Design Report/Remedial Action Work Plan (1997 RDR/RAWP) consisted of the following: cobalt-60, uranium-234, uranium-235, uranium-238, polychlorinated biphenyls (PCBs). COPC's: arsenic, thallium, benzo(a)pyrene, chrysene. Of the PCBs analyzed, only Aroclor-1254 was detected in cleanup verification samples and was therefore evaluated as a site COC.

The COPC arsenic was not detected in cleanup verification samples at concentrations above Washington State background of 20 mg/kg (Washington Administrative Code 173-340) (the maximum detected value was 5.5 mg/kg) and is therefore not included as a COC in the evaluation of the site for cleanup verification. The COPCs thallium and the two polynuclear aromatic hydrocarbons (benzo[a]pyrene and chrysene) were not detected in cleanup verification samples at the detection limits specified in the RDR/RAWP and are therefore not included as COCs in evaluation of the site for cleanup verification.

An additional contaminant (lead) was identified from analysis of material excavated during remediation and evaluated as a site COPC. Lead was detected at levels above Hanford Site background of 10.2 mg/kg in cleanup verification samples and is therefore evaluated as an additional site COC for cleanup verification of the Landfill 1A site.

Landfill 1A (300-49) and Landfill 1B (300-50) have been surface stabilized.

Cleanup verification samples were taken on June 28, 2000. The site excavation and overburden soil sample data were recorded in HEIS as SAF B00-037.

At the completion of the remedial action, the total excavation was approximately 6,906 square meters (74,340 square feet) in area with a maximum depth of approximately 3 meters (10 feet). Approximately 17,761 metric tons (19,578 tons) of material from the site were disposed at the Environmental Restoration Disposal Facility. All visible debris was removed from the Landfill 1A site, and the site was excavated to native soil. An additional 5,644 metric tons (6,221 tons) of material (overburden) identified as potentially clean was stockpiled at the site for potential use as backfill.

Results of the sampling, laboratory analysis, and data evaluations of the Landfill 1A site indicate that all remedial action objectives and goals for direct exposure, protection of groundwater, and protection of Columbia River have been met.

Code:	300-50	**Classification:**	Accepted
Names:	300-50; Landfill 1b; UN-300-FF-1; UPR-300-FF-1	**Reclassification**	Final Closed Out (5/29/2003)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The site was remediated in 2000 and closed out in 2003.

The site was an area of surface disturbance. After excavation and closure activities were completed the area was included in the 2004, 300-FF-1 Regrading Plan.

Location: The site was located directly south of 618-5. It was bounded on the south by the north perimeter fence of the North Process Pond (316-2), and on the west by the east perimeter fence of the Process Trenches (316-5).

Related Sites/ Structures: The site was associated with WIDS sitecode UPR-300-FF-1 and 300-49 (Landfill 1a).

Waste Type: Misc. Trash and Debris

Waste Description: A large number of discrete objects were detected by ground penetrating radar.

Closure Info: Interim: Remedial action objectives for the Landfill 1B site were established by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy, Richland Operations Office, in concurrence with the Washington State Department of Ecology. These objectives are documented in the Record of Decision for the 300-FF-1 and 300-FF-5 Operable Units (ROD) (EPA, 1996) and the 300-FF-1 Remedial Design Report/Remedial Action Work Plan (1997 RDR/RAWP) (DOE/RL96-70).

The selected remedial action for the Landfill 1B site included excavation to the extent required to meet specified soil cleanup levels and disposal of contaminated excavation materials at the

Environmental Restoration Disposal Facility. The remedial action also included the removal and disposal of solid waste and all construction debris. Excavation was driven by remedial action objectives for direct exposure, protection of groundwater, and protection of the Columbia River. For the respective points of compliance, remedial action goals (RAGs) were established in the 1997 RDR/RAWP and updated in the Remedial Design Report/Remedial Action Work Plan for the 300 Area (2002 RDR/RAWP) (DOE/RL-2001-47). Waste site contaminants of concern (COCs) and contaminants of potential concern (COPCs) identified from knowledge of the processes used in the 300 Area and previous 300-FF-1 Operable Unit investigations were listed in Table 2-1 of the 1997 RDR/RAWP.

Site excavation and waste disposal are complete, and the exposed surfaces have been sampled and analyzed to verify attainment of the RAGs. At the completion of remedial action, the total excavation was approximately 10,498 square meters (113,000 square feet) in area with a maximum depth of approximately 3.1 meters (10 feet). Approximately 35,652 metric tons (39,300 tons) of material from the site were disposed at the Environmental Restoration Disposal Facility. All visible debris was removed from the Landfill 1B site, and the site was excavated to native soil. Overburden material identified as potentially clean was stockpiled at the site for potential use as backfill at this waste site.

The results of the sampling, laboratory analysis, and data evaluations of the Landfill 1B site indicate that all remedial action objectives and goals for direct exposure, protection of groundwater, and protection of Columbia River have been met.

Cleanup verification samples were collected from the excavation and overburden soil and analyzed for the established contaminants of concern. The excavation soil sample were collected on July 5, 2000. The overburden soil samples were collected on June 28, 2000. The sample results can be located on the HEIS database under the SAF number B00-038.

The CVP demonstrates that remedial action at the Landfill 1B site has achieved the RAOs and corresponding RAGs established in the approved ROD, the 1997 RDR/RAWP, and the 2002 RDR/RAWP. The remaining soils at the Landfill 1B site have been sampled, analyzed, and modeled. The results of this effort indicate that the materials from the Landfill 1B site containing COCs at concentrations exceeding RAGs have been excavated and disposed of at the ERDF. These results also indicate that residual concentrations in remaining site soil will support future land uses that can be represented (or bounded) by the industrial land-use scenario, and that residual concentrations throughout the site are protective of groundwater and the Columbia River. The CVP demonstrates acceptability for industrial land use; therefore, institutional controls limiting land use to industrial are required. Institutional controls preventing uncontrolled drilling or excavating are also required. The Landfill 1B site is verified to be remediated in accordance with the ROD and may be backfilled.

Code:	300-51	**Classification:**	Accepted
Names:	300-51; Landfill 1c; UN-300-FF-1; UPR-300-FF-1	**Reclassification**	Final No Action (7/17/1996)
Type:	Dumping Area	**Start Date:**	
Status:	Inactive	**End Date:**	

Description: The waste site was Closed Out per the 300-FF-1 Record of Decision. The debris has been removed. The site is no longer marked or posted.

Location: The site is located at a small point of land directly east of the northeast corner of 316-2 (North Process Pond).