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Revision 0

200-IS-1 Operable Unit Scoping

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

ch2m SM

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Richland, Washington 99352

200-IS-1

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Terms

CAW	current acid waste
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CHPRC	CH2M HILL Plateau Remediation Company
CMS	corrective measure study
COPC	contaminants of potential concern
DOE-RL	U.S. Department of Energy, Richland Operations Office
EDTA	ethylenediaminetetraacetic acid
FS	feasibility study
GIS	geographic information system
GSR	general summary report
HDELP	di(2-ethylhexyl) phosphoric acid
HDW	Hanford defined waste model
HEDTA	hydroxyethylethylenediaminetriacetic acid
HVAC	heating, ventilation, and air conditioning
NPH	normal paraffin hydrocarbon
OU	operable unit
PFP	Plutonium Finishing Plant
PRF	Plutonium Reclamation Facility
PUREX	Plutonium-Uranium Extraction (Plant or process)
R-CPP	RCRA-CERCLA past practice
RCRA	*Resource Conservation and Recovery Act of 1976*
RECUPLEX	recovery of uranium and plutonium by extraction
REDOX	Reduction-Oxidation (Plant or process)
RFI	RCRA facility investigation
RI	remedial investigation
SME	subject matter expert
TBD	to be determined

TBP	tributyl phosphate process
TPA	Tri-Party Agreement
TSD	treatment, storage, and disposal
UO_3	uranium trioxide
UPR	unplanned release
URM	underground radioactive material
URMA	underground radioactive material area
WESF	Waste Encapsulation and Storage Facility
WMA	waste management area
WIDS	Waste Information Data System (database)

1 Introduction

This document presents scoping information for the 200-IS-1 Operable Unit (OU) *Resource Conservation and Recovery Act of 1976* (RCRA) facility investigation (RFI)/corrective measure study (CMS) and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remedial investigation (RI)/feasibility study (FS) process. The 200-IS-1 OU is located in the Central Plateau Inner Area and includes inactive buried waste transfer pipelines, inactive pipeline components (e.g., diversion boxes, catch tanks, valve pits, vaults, and control structures), and contaminated soil resulting from unplanned releases (UPRs) from the pipelines and their components. The information compiled herein will be used as a basis for the initial evaluation, identification of data needs, and task planning during the 200-IS-1 OU RFI/CMS/RI/FS process. The following describes this document's organization and content:

- **Chapter 2** describes the purpose of this document.
- **Chapter 3** describes the RFI/CMS/RI/FS scoping process methodology and key references that were used to gather, evaluate, and organize existing waste site information.
- **Chapter 4** discusses waste streams and associated constituents relevant to the 200-IS-1 OU. Information in this chapter supports the waste stream discussions provided in individual scoping summaries (Chapter 7), identification of contaminants of potential concern (COPCs), risk characterization, and cleanup action selection for the 200-IS-1 OU waste sites.
- **Chapter 5** describes the waste site groups developed to support information management during RFI/CMS/RI/FS scoping. Table 11 lists the group assignments for each waste site.
- **Chapter 6** lists the 200-IS-1 OU waste sites.
- **Chapter 7** presents individual scoping summaries for the 200-IS-1 OU waste sites. These scoping summaries are the product of the scoping process described in Chapter 3. Each scoping summary provides a waste site figure in addition to relevant site-specific operational history, construction, waste stream, and characterization information. This chapter also includes a plate map showing all of the 200-IS-1 OU waste sites.

Detailed information on the 200-IS-1 OU environmental setting, regulatory processes, and other relevant information will be provided in future documents, as stipulated in the Tri-Party Agreement (TPA) (Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order*) and the Hanford Facility RCRA Permit (WA7890008967, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste*).

2 Purpose

This document is a work product of the RFI/CMS/RI/FS process, which provides the most relevant information and current understanding of 200-IS-1 OU waste sites. Information in this document is intended to support 200-IS-1 OU initial evaluations, data gap identification, and decision-making.

3 Scoping Process

This chapter explains how waste site scoping was conducted for the 200-IS-1 OU. Information obtained during scoping is provided in the waste site scoping summaries (Chapter 7). The following describes the scoping process in greater detail:

1. **Reference identification and review:** The CH2M HILL Plateau Remediation Company (CHPRC) 200-IS-1 OU project team identified and reviewed more than 4,000 references spanning over 70 years

(including approximately 1,650 engineering drawings) for the most relevant and representative waste site information. First, the project team identified and reviewed numerous references that focused on operational processes, Central Plateau geographic areas, and multiple waste sites. These references, which are listed at the end of this chapter, enabled the project team to efficiently identify related waste sites and additional reference materials. The project team also reviewed each waste site's Waste Information Data System (WIDS) General Summary Report (GSR) for an initial list of site-specific references (e.g., site-specific engineering drawings and radiological survey reports). Relevant daily and monthly operations reports, engineering drawings of nearby sites, and early Hanford operations source documents were also reviewed to verify pertinent waste site details. Site-specific references used to develop the scoping summaries are located in the WIDS Library.

When reviewing references, the project team focused on identifying the following types of waste site information: operational dates; physical waste site details (e.g., construction materials and dimensions); documented or suspected unintentional releases, and operational issues (e.g., plugging); waste-site specific characterization and survey data; isolation dates and activities (e.g., capping, blanking of nozzles, and weather covering); and identification of uncertainties potentially significant to project decision-making (e.g., location, dimensions, operational timeframes).

2. **Scoping summary preparation:** All relevant waste site information was compiled into the scoping summary format described in Chapter 7. With more than 70 years of supporting information, some sources occasionally reported incorrect or conflicting details about a waste site. In such instances, the project team selected the information that was verifiable with other sources and represented the best-available understanding of site conditions for inclusion in the scoping summary.

3. **Scoping summary review and revision:** Draft scoping summaries underwent two iterations of subject matter expert (SME) review. The first review included SMEs from the CHPRC 200-IS-1 OU project team, and the second included SMEs from the U.S. Department of Energy, Richland Operations Office (DOE-RL). Scoping summaries were updated, as appropriate, following resolution of any comments resulting from the SME reviews.

4. **WIDS coordination and interface:** The CHPRC 200-IS-1 OU project team provided WIDS with the final scoping summaries and supporting references so that WIDS GSRs and geographic information system (GIS) data could be updated, as appropriate, and scoping summary references could be saved in the WIDS Library.

5. **Scoping summary publication:** Individual waste site scoping summaries are provided in Chapter 7 and may be updated and republished in subsequent revisions of this document, if needed.

As discussed in Step 1, the following references provided initial overarching information used during waste site scoping.

- 7G410-MEJ-07-004, *Information on Process Waste Pipeline Failures Due to Corrosion*
- ARH-1562, *200 East and North Areas Radioactive Liquid Waste Disposal Sites*
- ARH-2155, *Radioactive Liquid Waste Disposal Facilities 200 West Area*
- BHI-00033, *Surface and Near Surface Field Investigation Data Summary Report for the 200-UP-2 Operable Unit*
- BHI-00175, *Z Plant Aggregate Area Management Study Technical Baseline Report*
- BHI-00177, *T Plant Aggregate Area Management Study Technical Baseline Report*

- BHI-00179, *B Plant Aggregate Area Study Technical Baseline Report*
- Cramer, 1987, *Hanford Site Waste Management Units Report*
- DOE/RL-91-60, *S Plant Source Aggregate Area Management Study Report*
- DOE/RL-92-05, *B Plant Source Aggregate Area Management Study Report*
- DOE/RL-2002-14, *Tanks/Lines/Pits/Boxes/Septic Tank and Drain Fields Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan; Includes: 200 IS-1 and 200-ST-1 Operable Units*
- DOE/RL-2004-17, *Remedial Investigation Report for the 200-CS-1 Chemical Sewer Group Operable Unit*
- DOE/RL-2005-14, *Removal Action Work Plan For the Plutonium Finishing Plant Above-Grade Structures: Facility Deactivation*
- DOE/RL-2006-51, *Remedial Investigation Report for the Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit: Includes the 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units*
- DOE/RL-2007-02, *Supplemental Remedial Investigation/Feasibility Study Work Plan for the 200 Areas Central Plateau Operable Units: Volume II: Site-Specific Field-Sampling Plan Addenda*
- DOE/RL-2010-114, *200-IS-1 Operable Unit Pipeline System Waste Sites RFI/CMS/RI/FS Work Plan*
- DOE/RL-2010-49, *Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units*
- DOE/RL-88-21, *Hanford Facility Dangerous Waste Part A Permit Application*
- DOE/RL-88-30, *Hanford Site Waste Management Units Report*
- DOE/RL-91-52, *U Plant Source Aggregate Area Management Study Report*
- DOE/RL-91-58, *Z Plant Source Aggregate Area Management Study Report*
- DOE/RL-91-60, *S Plant Aggregate Area Management Study Report*
- DOE/RL-91-61, *T Plant Source Aggregate Area Management Study Report*
- DOE/RL-92-04, *PUREX Source Aggregate Area Management Study Report*
- DOE/RL-92-18, *Semi-Works Source Aggregate Area Management Study Report*
- DOE/RL-96-82, *Dangerous Waste Closure Plan 241-Z Treatment and Storage Tanks*
- DOE/RL-98-35, *Surveillance and Maintenance Plan for the Plutonium Uranium Extraction (PUREX) Facility*
- HNF-1744, *Radionuclide Inventories of Liquid Waste Disposal Sites on the Hanford Site*
- HNF-2503, *Authorization Basis Status Report (Miscellaneous TWRS Facilities, Tanks and Components)*

- HNF-SP-0665, *Environmental Radiological Survey Summary* (Revisions 67, 71, 75, 79, 83, 87, 91, 95, and 99; fourth quarter reports for calendar years 2007 through 2015)[1]
- HW-10475 ABC, *Hanford Technical Manual Sections A, B and C*
- HW-60807, *Unconfined Underground Radioactive Waste and Contamination in the 200 Areas, 1959*
- HW-66266, *Hazards Summary Report for the Hanford Plutonium Critical Mass Laboratory*
- PNL-6456, *Hazard Ranking System Evaluation of CERCLA Inactive Waste Site at Hanford*
- PNL-6964 HEDR, *A History of Major Hanford Facilities and Processes Involving Radioactive Material*
- PNL-MA-588, *Resource Book - Decommissioning of Contaminated Facilities at Hanford*
- RHO-CD-673, *Handbook 200 Area Waste Sites*
- RHO-CD-977, *Isolation of Auxiliary Tank Farm Facilities*
- RHO-MA-231, *Tank Farm Processing and Services Operations Training Manual*
- RHO-WM-PL-10, *Long-Range Decommissioning Plan for Rockwell Hanford Operations Surplus Facilities Management Program*
- RPP-25113, *Residual Waste Inventories in the Plugged and Abandoned Pipelines at the Hanford Site*
- SD-DD-FL-001, *Rockwell Retired Contaminated Facility Listing And Description*
- WHC-EP-0342, *Hanford Site Stream-Specific Reports* (Addenda 2, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, and 32)
- WHC-MR-0132, *A History of the 200 Area Tank Farms*
- WHC-SD-DD-TI-057, *Summary of Radioactive Underground Tanks Managed by Hanford Restoration Operations*
- WHC-SD-EN-ES-019, *Semiworks Aggregate Area Management Study Technical Baseline Report*
- WHC-SD-EN-ES-040, *Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington*

4 Waste Streams

This chapter presents summary information to support the individual scoping summary waste stream discussions presented in Chapter 7. It identifies relevant waste streams and their associated constituents in order to support COPC identification, risk characterization, and cleanup action selection for the 200-IS-1 OU waste sites. Information in this chapter is presented in the following tables:

- Table 1 provides an alphanumeric listing of the high-activity waste stream codes referenced in the scoping summaries (Chapter 7) and Tables 2 through 6. This table does not include all high-activity waste streams because not all high-activity waste streams were assigned a waste stream code (LA-UR-96-3860, *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4*), and it

[1] The document title was modified several times from 2007 to 2015, so titles for earlier revisions may differ from the title presented here.

also does not include non-code abbreviations sometimes used for waste streams. Generally, intermediate- and low-activity waste streams did not receive waste stream codes.[2]

- Table 2 provides additional descriptions of the high-, intermediate-, and low-activity waste and process streams conveyed by 200-IS-1 OU waste sites, as identified in individual scoping summaries (Chapter 7). Waste streams are organized alphabetically by waste stream name under their associated chemical process, and descriptions include associated waste stream codes and/or other abbreviations used in reference material, as appropriate.

- Tables 3 through 6 present chemical and radionuclide constituent inventory information for the supernatant (Tables 3 and 4) and sludge (Tables 5 and 6) components of the high-activity waste streams formerly conveyed through a pipeline or structure in the 200-IS-1 OU. These tables are based on outputs from the Hanford Defined Waste (HDW) Model (LA-UR-96-3860). Information is organized alphanumerically by waste stream code.

- Tables 7 and 8 present chemical and radionuclide constituent inventory information for crib sites that formerly received discharges via process sewer systems in the 200-IS-1 OU. Crib constituent inventories provide insight into the intermediate- and low-activity waste streams that may have traveled through 200-IS-1 OU waste sites prior to discharge to cribs. Inventory information is based on RPP-26744, *Hanford Soil Inventory Model*.

- Table 9 provides a comprehensive list of all the constituents relevant to Central Plateau facility operations, liquid waste management, and disposal. This list was developed using process knowledge information from Central Plateau facilities operations, and not all listed constituents were necessarily present in the waste streams relevant to the 200-IS-1 OU.

For more information regarding the chemical processes and waste streams presented in Tables 1 and 2, refer to the following:

- BNWL-C-119, *Management of Radioactive Wastes*, which provides an overview of Hanford Site radioactive waste handling and storage.

- ERDA-1538, *Final Environmental Statement Waste Management Operations: Hanford Reservation*, which describes Central Plateau facilities and operations (including waste type, handling, and storage) in detail.

- HNF-10638, *Plutonium Finishing Plant Impure Plutonium Oxide: Characterization of Items with >30 and <85 Weight Percent Plutonium*, which provides Plutonium Finishing Plant (PFP) process information.

- WHC-EP-0342, *Hanford Site Stream-Specific Reports* (Addenda 2, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, and 32), which provides additional information on specific waste streams.

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[2] High-activity waste is stored in underground tanks and was historically defined as having radionuclide concentrations greater than 100 µCi/mL (1E+11 pCi/L). Intermediate-activity waste was historically defined as having radionuclide concentrations between 5E-5 µCi/mL (5E+4 pCi/L) and 100 µCi/mL (1E+11 pCi/L). Low-activity waste was historically defined as having radionuclide concentrations less than 5E-5 µCi/mL (5E+4 pCi/L) (BNWL-C-119, *Management of Radioactive Wastes at the Hanford Plant*).

Table 1. Alphanumeric Listing of High-Activity Waste Stream Codes

Waste Stream Code	Waste Stream Name	Chemical Process
1C1	First Cycle Decontamination Waste and Coating Waste	Bismuth Phosphate Process
1C2		
1CFeCN	Ferrocyanide Sludge	Uranium Recovery Process
224-1	Lanthanum fluoride process 224 Building waste	Bismuth Phosphate Process
224-2		
2C1	Second Cycle Decontamination Waste	Bismuth Phosphate Process
2C2		
A1SltCk	Saltcake*	Evaporation and In-Tank Solidification
A2SltSlr	Salt Slurry*	Evaporation and In-Tank Solidification
AR	Washed Sludge	Cesium and Strontium Recovery
B	B Plant High-Activity Waste	Cesium and Strontium Recovery
BL	B Plant Low-Activity Waste	Cesium and Strontium Recovery
BT-SltCk	Saltcake*	Evaporation and In-Tank Solidification
BYSltCk		
CSR	Cesium Recovery Waste (Hot Semiworks); Cesium Recovery Waste (B Plant)	Cesium and Strontium Recovery
CWP1	Cladding Waste	PUREX Process
CWP2		
CWR1	Aluminum Cladding Waste	REDOX Process
CWR2		
CWZr1	Zirconium Cladding Waste	PUREX Process
CWZr2		
DW	Decontamination Waste	Various Processes
HS	Hot Semiworks Purification Waste	Cesium and Strontium Recovery
MW1	Metal Waste	Bismuth Phosphate Process
MW2		
OWW1	PUREX Organic Wash and Non-Boiling	PUREX Process
OWW2		
OWW3		
P1	PUREX High-Level Waste	PUREX Process
P2		
P2'	PUREX Acid Waste	PUREX Process
P3AZ1	PUREX High-Level Waste	PUREX Process
P3AZ2		
PASF	PUREX Ammonia Scrubber Feed Waste	PUREX Process

Table 1. Alphanumeric Listing of High-Activity Waste Stream Codes

Waste Stream Code	Waste Stream Name	Chemical Process
PFeCN1	Ferrocyanide Sludge	Uranium Recovery Process
PFeCN2		
PL1	PUREX Non-Boiling Waste	PUREX Process
PL2	PUREX Organic Wash Waste and Non-Boiling Waste	PUREX Process
R1	REDOX High Level Waste	REDOX Process
R2		
RSltCk	Saltcake*	Evaporation and In-Tank Solidification
S1SltCk		
S2SltSlr	Salt Slurry*	Evaporation and In-Tank Solidification
SRR	Strontium Recovery Waste	Cesium and Strontium Recovery
T2SltCk	Saltcake*	Evaporation and In-Tank Solidification
TBP	Tributyl Phosphate Process Waste	Uranium Recovery Process
TFeCN	Ferrocyanide Sludge	Uranium Recovery Process
TH1	Thoria Process Waste	PUREX Process
TH2		
UR	Tributyl Phosphate Process Waste	Uranium Recovery Process
Z	Plutonium Finishing Plant Waste	Plutonium Finishing Process

*Saltcake is a hard, crystalline (solid) material created when high-activity waste was evaporated. Saltcake was transported through pipelines as a slurry after being dissolved and/or suspended in supernatant.

PUREX = plutonium uranium extraction
REDOX = reduction oxidation

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Bismuth Phosphate Process (B Plant, T Plant)	
Cell 5-6 Drainage Waste	Intermediate-activity waste collected in the floor drains of 221-B cells 5 and 6.
Chemical Sewer Waste	Low-activity waste generated by B Plant. Includes liquid effluent from chemical drains, water flushes, and other effluents from drains in the 221-B, 217-B, and 271-B Buildings. This waste stream also received waste steam condensate, cooling water, HVAC unit wash water, sanitary water, and other effluents from the WESF, 225-BC Air Compressor Building, 212-B Cask Station, 276-B Building, 2902-B Sanitary Water Tank, 222-B HVAC system, and 224-B HVAC and floor drains. *Waste Stream Abbreviation: BCE*

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Bismuth Phosphate Process Continued (B Plant, T Plant)	
Coating Waste	High-activity waste generated during the decladding process. *Waste Stream Code: CW*
Cold Startup Waste	Low-activity waste generated from B Plant prior to the introduction of radioactive material.
Cooling water	Low-activity waste generated from B Plant. Includes raw water that was passed through the B Plant and WESF cooling coils, condensers, and heat exchangers. *Waste Stream Abbreviation: CBC*
Decontamination Waste	Intermediate-activity waste generated from the decontamination of process vessels, piping, equipment, and facilities in the B Plant complex. *Waste Stream Code: DW*
First Cycle Decontamination Waste and Coating Waste	High-activity waste generated during the decontamination process. *Waste Stream Codes: 1C1 (1944-1949); 1C2 (1950-1956)*
Lanthanum Fluoride Process 224 Building Waste	High-activity waste generated by further purifying the plutonium product in the 224-B and 224-T Buildings. *Waste Stream Codes: 224-1 (1944-1949); 224-2 (1950-1956)*
Metal Waste	High-activity waste generated during plutonium extraction. *Waste Stream Codes: MW1 (1944-1949); MW2 (1950-1956)*
Process Condensate	Intermediate-activity waste generated by B Plant. Includes waste from decontamination work, ventilation unit chemical sewer drainage, vessel ventilation steam condensate, and process vessel ventilation exhaust. *Waste Stream Abbreviation: BCP*
Second Cycle Decontamination Waste	High-activity waste generated during the decontamination process. *Waste Stream Codes: 2C1 (1944-1949); 2C2 (1950-1956)*
Stack Drainage Waste	Intermediate-activity waste generated from condensation of off-gases within the stack and spray-washing the stack interior liner.
Steam Condensate	Low-activity waste generated from B Plant. Includes steam condensate used to supply heat to the concentrator. *Waste Stream Abbreviation: BCS*
T Plant Laboratory Wastewater	Low-activity effluent from T Plant floor and safety shower drains, cooling systems, steam condensate traps, sinks, hoods, and process water lines. Also includes compressed air line condensate and vacuum pump seal water from the 221-T Building Head-End.
T Plant Wastewater	Low-activity effluent from T Plant building floor drains that collected safety shower water and nonradioactive liquids used during housekeeping and maintenance operations which included steam condensate, cooling water, and heating coil water.

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Bismuth Phosphate Process Continued (B Plant, T Plant)	
Tank Farm Supernatant Overflow Decontamination Waste	Intermediate-activity waste that overflowed from the single-shell underground storage tanks.
REDOX Process (S Plant)	
Aluminum Cladding Waste	High-activity waste generated by removal of uranium slug jackets, dissolution of the slugs, and decontamination and suspended solid reduction during the feed preparation step. *Waste Stream Codes: CWR1 (1952 1960); CWR2 (1961 1966)*
Chemical Wastewater	Low-activity effluent waste from floor drains and cooling water discharge from air compressor (funnel drains) in the 202-S and 276-S Buildings; float valve drain overflow from the 2901-S-901 sanitary water tower; and pump, tank, and station drains from the 211-S Tank Farm.
Cold Startup Waste	Low-activity waste generated from the S Plant complex prior to the introduction of radioactive material.
Cooling Water	Low-activity waste consisting of raw water that passed through the cooling jackets and coils on the process vessels.
Floor Drainage Wastewater	Intermediate-activity waste collected in the 202-S, 203-S, and 276-S Building floor drains.
Hexone[a]	Commercial-grade hexone used for reactor fuel processing.
Process Condensate	Intermediate-activity waste generated during the solvent recovery process where hexone is distilled from the aqueous effluent of the solvent extraction process.
REDOX High Level Waste	High-activity waste generated by solvent extraction to remove uranium and plutonium from the prepared feed. *Waste Stream Codes: R1 (1952 1959); R2 (1959 1966)*
Steam Condensate	Intermediate-activity condensate from the steam supply system that was drawn off through steam traps and emptied into the chemical sewer.
PUREX Process (A Plant)	
Ammonia Scrubber Condensate	Intermediate-activity condensate waste from the concentrator. *Waste Stream Abbreviation: ASD*
Chemical Sewer Waste	Low-activity wastewater from ventilation air heaters and assorted floor drains in non-radiological controlled service areas of the PUREX Plant (202-A Building and supporting facilities). Also included steam condensate and cooling water from the vacuum fractionator. *Waste Stream Abbreviation: CSL*

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
PUREX Process Continued (A Plant)	
Cladding Waste	High-activity waste generated by removal of aluminum clad slugs during the feed preparation step of the solvent extraction process. *Waste Stream Codes: CWP1 (1956 1960); CWP2 (1961 1972)*
Cold Startup Waste	Low-activity waste generated prior to the introduction of radioactive material.
Cooling Water	Low-activity waste generated from raw water that has passed through cooling coils and condensate from steam that has passed through heating coils. *Waste Stream Abbreviation: CWL*
Neutralized High-Level Waste[c]	High-level aqueous waste following concentration, denitration, and neutralization. This waste stream is considered analogous with PUREX high-level waste. *Waste Stream Abbreviation: NHW*
Process Condensate	Intermediate-activity condensate waste from the intercycle (or first cycle) uranium concentrator and/or the final uranium concentrator. *Waste Stream Abbreviation: PDD*
PUREX Acid Waste	High-activity concentrated and denitrated HA Column wastes from the PUREX Plant for aluminum-clad fuels. These wastes were not neutralized but sent directly to B Plant. *Waste Stream Code: P2' (1964-1972)*
PUREX Ammonia Scrubber Feed Waste	High-activity effluent from the scrubber used to treat the ammonia gas that was produced during zirconium de-cladding. *Waste Stream Code: PASF*
PUREX High-Level Waste	Combined high-activity waste generated by removing plutonium, uranium, and neptunium during solvent extraction. This waste stream is analogous with neutralized high-level waste.[c] *Waste Stream Codes: P1 (1956-1962); P2 (1963-1967);* *P3AZ1 to tank 241-AZ-101 (1983 to 1986);* *P3AZ2 to tank 241-AZ-102(1986 to 1990)*
PUREX Non-Boiling Waste	High-activity waste generated during solvent treatment. The PUREX solvent was routinely regenerated for reuse by a series of washes to remove soluble impurities. *Waste Stream Code: PL1 (1968-1972)*
PUREX Organic Wash and Non-Boiling Waste	High-activity waste generated during solvent treatment. The PUREX solvent was routinely regenerated for reuse by a series of washes to remove soluble impurities. *Waste Stream Codes: OWW1 (1956-1962); OWW2 (1963-1967; also called 1OW); OWW3 (1968-1972; also called 2OW).*

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
PUREX Process Continued (A Plant)	
PUREX Organic Wash Waste and Non-Boiling Waste	High-activity waste generated during solvent treatment. The PUREX solvent was routinely regenerated for reuse by a series of washes to remove soluble impurities. *Waste Stream Code: PL2 (1983-1988)*
Steam Condensate	Intermediate-activity condensed steam and warm raw water that was used to control the temperature of certain process vessels. The condensate is from steam that has passed through cooling coils. May also include personnel decontamination shower drainage, railroad tunnel drainage, fuel storage basin liquid, and liquid from backflushing radiation monitors with raw water. *Waste Stream Abbreviation: SCD*
Thoria Process Waste	High-activity waste generated by removing thorium during solvent extraction. *Waste Stream Code: TH1 (1966) and TH2 (1970)*
Uranyl Nitrate Hexahydrate[a]	High-activity uranium-rich solution generated by the PUREX process that was transported to the 224-U Building where it was converted to a powdered uranium oxide solid. *Waste Stream Abbreviation:* UNH
Zirconium Cladding Waste	High-activity waste generated by removal of zirconium clad slugs during the feed preparation step of the solvent extraction. *Waste Stream Codes: CWZr1 (1968-1972); CWZr2 (1983-1989)*
Plutonium Finishing Process (Z Plant)	
Analytical and Development Lab Waste	Intermediate-activity laboratory process waste, discarded analytical reagents, and sink and emergency shower wastewater from the PFP Analytical and Development Laboratory.
Cooling water	Low-activity waste consisting of raw water that passed through the cooling jackets and coils on the process vessels.
Plutonium Finishing Plant Waste	High-activity (post-1973) and intermediate-activity (pre-1973) liquid waste generated by converting plutonium nitrate solution resulting from the chemical separations processes (bismuth phosphate, REDOX, and PUREX) into plutonium oxide or metal. The liquid waste stream consists of the filtrate and the condensate from the calciner off-gas. *Waste Stream Code: Z*
PRF Waste	High-activity (post-1973) and intermediate-activity (pre-1973) waste generated by plutonium recovery from Plutonium Finishing Plant waste. Included organic process effluent from the various columns, solvent cleanup waste, and aqueous water wash waste.

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Plutonium Finishing Process Continued (Z Plant)	
Process Condensate	High-activity (post-1973) and intermediate-activity (pre-1973) waste condensate generated by the PRF that included filtrate evaporate distillate and steam jacket condensates from the filtrate and product evaporators.
RECUPLEX Waste	High-activity (post-1973) and intermediate-activity (pre-1973) spent aqueous extract, organic process effluent, and waste silica gel from the RECUPLEX process.
Stack Drainage Waste	Intermediate-activity evaporator cooler drainage from the 291-Z Building that was generated from the filtered PFP ventilation air exhaust.
Steam condensate	Low-activity waste condensate from the steam supply system that was drawn off through steam traps and emptied into the chemical sewer.
Uranium Recovery Process (U Plant)	
Cold Startup Waste	Low-activity waste generated prior to the introduction of radioactive material.
Ferrocyanide Sludge	For *Waste Stream Codes PFeCN1 (1954-1955); PFeCN2 (1955-1958)*: High-activity waste sludge from TBP in-plant scavenged supernatant and co-disposed TBP sludge. *For Waste Stream Code TFeCN*: High-activity sludge waste from supernatant scavenging in 244-CR Vault. *For Waste Stream Code 1CFeCN:* High-activity waste sludge from TBP in-plant scavenging of T-Plant First Cycle Decontamination Waste (without coating waste).
Scavenged Waste	Intermediate-activity decanted liquid from the supernatant.
Tributyl Phosphate Process Waste	High-activity waste generated from the uranium recovery process using tributyl phosphate. *Waste Stream Codes: TBP or UR*
UO_3 Plant Process Condensate	Intermediate-activity process off-gas condensates generated from the process off-gas stream that passed through condensers.
Cesium and Strontium Recovery (S Plant, B Plant)	
B Plant High-Activity Waste	High-activity effluent waste generated from strontium recovery by HDELP solvent extraction. It included rare earth fission products, recovered current acid wastes, solvent wash waste, and other solutions containing high activity such as cask station receipts and cell drainage. This waste stream is also called PUREX waste processed at B Plant (P-B) and PUREX acid waste (PSS-B). *Waste Stream Code: B*

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Cesium and Strontium Recovery Continued (S Plant, B Plant)	
B Plant Low-Activity Waste	High-activity B Plant waste generated from strontium recovery by HDELP solvent extraction. It included the aqueous waste stream from column 1A, organic wash waste from PUREX Acid Sludge processing, insoluble solids remaining after treatment of solids centrifuged from the current acid wastes feed and WESF transfers with low radionuclide content. *Waste Stream Code: BL*
Cesium Recovery Waste (B Plant)	High-activity supernatant and sluicing waste generated from cesium recovery by ion-exchange. This waste stream is analogous[d] with Ion Exchange Waste, REDOX Ion Exchange Waste, and Sludge Ion Exchange Waste, which are described further in this table. *Waste Stream Code: CSR*
Cesium Recovery Waste (Hot Semiworks)	High-activity supernatant waste generated from cesium recovery by ion-exchange. *Waste Stream Code: CSR*
Cold Startup Waste	Low-activity waste generated prior to the introduction of radioactive material.
Cooling Water	Low-activity waste generated from raw water used as a cooling medium for the process vessels that was discharged from coils and tube bundles.
Fission Product Crude, Crude Strontium[a]	Fission products recovered from high-activity waste at the Hot Semiworks and stored in vessels at B Plant, 244-CR Vault and Semiworks prior to operation of the Waste Fractionization Plant (B Plant). The fission products were eventually separated, containerized, and stored as a solid at the WESF.
Hot Semiworks Purification Waste	High-activity effluent waste from the solvent extraction. *Waste Stream Code: HS*
Ion Exchange Waste[d]	High-activity ion exchange waste from PUREX supernatant. *Waste Stream Abbreviations: IX; PIX*
Process Condensate	Intermediate-activity condensate waste generated from three concentrator vessels used to evaporate process solutions.
REDOX Ion Exchange Waste[d]	High-activity ion exchange waste from REDOX supernatant. *Waste Stream Abbreviation: RIX*
Sludge Ion Exchange Waste[d]	High-activity ion exchange waste from PUREX sludge supernatant *Waste Stream Abbreviation: SIX*
Steam Condensate	Intermediate-activity steam condensate waste generated from heat coils in process tanks.

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Cesium and Strontium Recovery Continued (S Plant, B Plant)	
Strontium Recovery Waste	High-activity waste consisting of effluent combined with solids centrifuged from the 244-AR Vault feed, strontium purification wastes after solvent extraction, ion exchange rework and other high-activity solutions. *Waste Stream Code: SRR*
Washed Sludge	High-activity waste generated from strontium recovery by HDELP solvent extraction. *Waste Stream Code: AR*
Evaporation and In-Tank Solidification (Tank Farms)	
Cooling water	Low-activity waste consisting of raw water that was supplied to the evaporator for cooling purposes.
Evaporator bottoms	Intermediate-activity waste from the concentration of non-boiling waste through in-tank solidification.
Process Condensate	Intermediate-activity waste generated by condensing the evaporated non-boiling waste stored in underground storage tanks.
Saltcake[b]	*For Waste Stream Code A1SltCk (1977-1980)*: Saltcake from the first 242-A Evaporator campaign using 241-A-102 feed tank. *For Waste Stream Code BT-SltCk (formerly BSltCK and T1SLtCk)*: Saltcake from 242-B Evaporator operation (1951-1953) and the 242-T Evaporator operation (1951-1955). *For Waste Stream Code: BYSltCk (1965-1974)*: Saltcake from in-tank solidification in BY-Farm. *For Waste Stream Code: RSltCk (1952-1966)*: Saltcake from self-concentration in S- and SX-Farms. *For Waste Stream Code: S1SltCk (1973-1976)*: Saltcake from the first 242-S Evaporator campaign using 241-S-102 feed tank. *For Waste Stream Code: T2SltCk (1965-1976)*: Saltcake from the last 242-T Evaporator campaign.
Salt Slurry[b]	*For Waste Stream Code: A2SltSlr (1981-1988)*: High-activity sludge waste from supernatant scavenging in 244-CR Vault. Saltcake from the second 242-A Evaporator campaign using 241-AW-102 feed tank. *For Waste Stream Code: S2SltSlr (1977-1980)*: Saltcake from the second 242-S Evaporator campaign using 241-SY-102 feed tank.
Steam condensate (242-B and 242-S Buildings)	Intermediate-activity waste generated at the 242-B and 242-S Buildings. Included steam condensate from the reboiler, steam condensate and raw water from heating and cooling jackets, purging system trap condensate, and vacuum pump seal water.

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
Evaporation and In-Tank Solidification Continued (Tank Farms)	
Steam condensate (242-T Building)	Low-activity steam condensate waste from the 242-T Building steam supply.
Feed Material Into Other Processes	
Column Aqueous Waste	High-activity (high salt) waste stream from the Plutonium Reclamation Facility. *Waste Stream Abbreviation: CAW*
Decontamination Waste	High-activity waste generated from the decontamination of process equipment prior to maintenance and/or refurbishment. *Waste Stream Code: DW*
PUREX Acid Waste	High-activity concentrated and denitrated HA Column wastes from the PUREX Plant for aluminum-clad fuels. These wastes were not neutralized but sent directly to B Plant. *Waste Stream Abbreviation:* PAW
PUREX Acidified Sludge	High-activity A and AX Tank Farm sludges that have been dissolved in acid *Waste Stream Abbreviation: PAS*
PUREX Sludge Supernatant	High-activity supernatant derived from water used to sluice sludges from A and AX Tank Farms or concentrated PUREX Acidified Sludge solvent extraction waste supernatant bearing cesium. *Waste Stream Abbreviation: PSS*
PUREX Supernatant	High-activity A, AX, and some C Tank Farm supernatant. *Waste Stream Abbreviation: PSN*
REDOX Supernatant	High-activity SX and other selected 200 West Area Tank Farm supernatants. *Waste Stream Abbreviation: RSN*

Notes:

a. Process stream was not directly managed or disposed in tank farms, cribs, ponds, or trenches.

b. Saltcake is a hard, crystalline (solid) material created when high-activity waste was evaporated forming salt crystals. Saltcake was transported by pipeline as a slurry; it was dissolved and/or suspended in supernatant to become mobile.

c. There are no data published for Neutralized High-Level Waste (NHW); however, data are available for PUREX High-Level Waste (P1 and P2). The constituents present in NHW would also be present in P1 and P2; therefore, all constituents associated with P1 and P2 should be considered present in NHW.

d. There are no data published for Ion Exchange Waste (IX and PIX), REDOX Ion Exchange Waste (RIX), and Sludge Ion Exchange Waste (SIX); however, data are available for the Cesium Recovery Waste (B Plant and Hot Semiworks; CSR). The IX, PIX, RIX, and SIX waste streams are analogous to CSR; therefore, constituents present in CSR should be considered present in IX, PIX, RIX, and SIX.

Table 2. Waste and Process Streams Conveyed by 200-IS-1 Operable Unit Waste Sites

Waste Stream Name	Waste Stream Description
CAW = current acid waste	RECUPLEX = recovery of uranium and plutonium by extraction
HDELP = di(2-ethylhexyl) phosphoric acid	REDOX = reduction oxidation
HVAC = heating, ventilation, and air conditioning	TBP = tributyl phosphate process
PFP = Plutonium Finishing Plant	UO_3 = uranium trioxide
PRF = Plutonium Reclamation Facility	WESF = Waste Encapsulation and Storage Facility
PUREX = plutonium uranium extraction	

Sources:

242-S Evaporator Steam Condensate Stream Specific Report (WHC-EP-0342, Addendum 29)
Acceptable Knowledge Summary Report for Plutonium Finishing Plant Complex Effluents (WMP-33204)
A Brief History of the T Plant Facility at the Hanford Site (WHC-MR-0452)
Chemical Laboratory Waste Group Operable Unit RI/FS Work Plan: Includes 200-LW-1 and 200-LW-2 Operable Units (DOE/RL-2001-66)
Engineering Evaluation and Environmental Analysis Report for the Plutonium Finishing Plant Sub-Grade Structures and Installations (DOE/RL-2006-53)
Final Environmental Statement Waste Management Operations: Hanford Reservation (ERDA-1538)
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Hazards Evaluation Waste Fractionization – B Plant (Project CAC-144) B-Plant Modifications for FPCE-Waste Management History and Stabilization of the Plutonium Finishing Plant (PFP) Complex, Hanford Site (HNF-EP-0924)
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Preliminary Estimation of the Waste Inventories in Hanford Tanks Through 1977 (SD-RE-TI-005)
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Preliminary Tank Characterization Report for Single-Shell Tank 241-TX-118: Best-Basis Inventory (HNF-SD-WM-ER-718)
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PUREX Process Operation and Performance 1970 THORIA Campaign (ARH-2127)
PUREX Technical Manual (HW-31000 DEL)
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Review of Historical Evidence of Carbon Tetrachloride Deposited to Soil at Z Plant, 200 West Area, Hanford Site (Biblio716)
S Plant Aggregate Area Management Study Report (DOE/RL-91-60)
Study of Liquid Effluents and CERCLA Hazardous Constituents Generated and Discharged by the Plutonium Finishing Plant (D&D-30349)
U Plant Aggregate Area Management Study Technical Baseline Report (BHI-00174)
U Plant Source Aggregate Area Management Study Report (DOE/RL-91-52)

Table 3. Chemical Constituent Information in Supernatant for High-Activity Waste Streams Associated with the 200-IS-1 OU

Waste Stream Code[a]	Acetate	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbonate	Chlorine	Chromium	Citrate	Dibutyl phthalate	EDTA	Ferricyanide	Fluorine	Glycolate	HEDTA	Hydroxide	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrilotriacetic Acid	Nitrite	Oxalate	Phosphate	Plutonium-Total	Potassium	Silicate	Sodium	Strontium	Sulfate	Uranium-Total	Zirconium
1C1	–	–	●	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	●	–	●	●	●	●	●	T	●	●	●
1C2	–	–	●	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	●	●
1CFeCN	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	●	●
224-1	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	T	–	●	–	●	●	–	T	●	●	●	●	–	●	T	●	T	–
224-2	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	T	–	●	–	●	●	–	T	●	●	●	●	–	●	T	●	T	–
2C1	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	T	–	●	●	●	●	●	T	●	T	–
2C2	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	T	–	●	●	●	●	●	T	●	T	–
A1SltCk	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	T	●	T	T	●	●	–	●	T	●	●	●	●	●	T	●	T	T
A2SltSlr	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	T	●	T	T	●	●	–	●	T	●	●	●	●	●	T	●	T	T
AR	–	●	●	T	–	●	●	●	●	–	–	–	–	T	–	–	●	●	–	●	●	T	●	●	–	●	–	●	●	●	●	●	T	●	●	T
B	–	●	T	–	–	●	●	●	●	●	–	–	–	–	–	–	●	●	–	●	–	T	●	●	–	●	–	–	●	●	●	●	T	●	●	–
BL	–	●	T	–	–	●	●	●	T	●	–	●	–	–	●	●	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	T	–
BT-SltCk	–	●	●	●	T	●	●	●	●	–	T	–	–	●	–	–	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	T	T
BYSltCk	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	T	●	T	T	●	●	–	●	T	●	●	●	●	●	T	●	T	T
CSR	–	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	–	●	T	T	●	●	–	●	–	●	●	●	●	●	T	●	●	T
CWP1	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	–	●	●	–	●	–	–	●	●	●	●	T	●	●	–
CWP2	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	–	●	●	–	●	–	–	●	●	–	●	T	●	●	–
CWR1	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	–	●	●	–	●	–	–	●	●	●	●	T	●	●	–
CWR2	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	–	●	●	–	●	–	–	●	●	–	●	T	●	●	–
CWZr1	–	–	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	●	–	–	●	●	–	●	T	●	●	●
CWZr2	–	–	●	–	–	●	●	●	–	–	–	–	–	●	–	–	●	●	–	–	–	–	–	●	–	●	–	–	●	●	–	●	T	–	●	●
DW	–	–	–	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	–	–	●	●	–	●	–	–	–	●	–	●	–	●	–	–
HS	●	–	●	–	–	●	●	●	●	●	–	●	–	–	–	–	●	●	–	●	–	T	●	●	–	●	–	–	●	●	–	●	T	●	●	–
MW1	–	–	T	●	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	–	–	●	●	–	●	–	●	●	●	●	●	T	●	●	–
MW2	–	–	T	●	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	●	–
OWW1	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	–	–	–	–	●	●	–	●	–	–	●	●	–	●	T	●	●	–
OWW2	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	–	–	●	–	●	●	–	●	–	–	●	●	–	●	T	●	●	–
OWW3	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	–	–	●	–	●	●	–	●	–	–	●	●	–	●	T	●	●	–
P1	–	–	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	T	●	●	–	●	–	–	●	●	●	●	T	●	●	–
P2	–	–	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	●	–	T	●	●	–	●	–	–	T	●	●	●	T	●	●	–
P2'	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
P3AZ1	–	●	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	●	–	–	T	●	–	●	T	●	●	–
P3AZ2	–	●	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	–	●	●	–	●	–	–	T	●	–	●	T	●	●	–
PASF	–	–	●	–	–	●	●	●	–	–	–	–	–	–	–	–	●	●	–	–	–	–	–	●	–	–	–	–	–	●	–	●	–	–	–	–
PFeCN1	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	T	–
PFeCN2	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	T	●	–	–	–	T	●	●	–	●	–	●	●	●	●	●	T	●	T	–
PL1	–	–	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	–	–	●	●	–	●	–	●	●	●	–	●	T	●	●	–
PL2	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	–	–	●	–	●	●	–	●	–	●	●	●	–	●	T	●	●	–
R1	–	●	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	T	T	●	●	–	●	–	–	●	●	●	●	T	●	T	–
R2	–	●	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	–	–	–	T	●	●	–	●	–	–	●	●	●	●	T	●	T	–
RSltCk	T	●	●	T	●	●	●	●	●	●	●	●	–	T	●	●	●	●	–	T	T	T	●	●	–	●	–	T	●	●	●	●	T	●	T	T

Table 3. Chemical Constituent Information in Supernatant for High-Activity Waste Streams Associated with the 200-IS-1 OU

Waste Stream Code*	Acetate	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbonate	Chlorine	Chromium	Citrate	Dibutyl phthalate	EDTA	Ferricyanide	Fluorine	Glycolate	HEDTA	Hydroxide	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrilotriacetic Acid	Nitrite	Oxalate	Phosphate	Plutonium-Total	Potassium	Silicate	Sodium	Strontium	Sulfate	Uranium-Total	Zirconium
S1SltCk	•	•	•	T	•	•	•	•	•	•	•	•	--	•	•	•	•	•	T	•	T	T	•	•	--	•	T	•	•	•	•	•	T	•	T	T
S2SltSlr	•	•	•	T	•	•	•	•	•	•	•	•	--	•	•	•	•	•	T	•	T	T	•	•	--	•	T	•	•	•	•	•	T	•	T	T
SRR	--	--	•	--	T	•	•	•	--	--	T	--	--	--	--	--	•	•	--	--	--	T	--	•	--	•	--	--	•	•	•	•	T	•	•	--
T2SltCk	T	•	•	T	•	•	•	•	•	•	•	•	--	•	•	•	•	•	T	•	T	T	•	•	--	•	T	•	•	•	•	•	T	•	T	T
TFeCN	--	•	•	•	T	•	•	•	•	--	T	--	--	•	--	--	•	•	--	T	--	T	•	•	--	•	--	•	•	•	•	•	T	•	•	T
TH1	--	•	T	--	•	•	•	•	•	--	•	--	--	•	--	--	•	•	--	--	--	--	•	•	--	•	--	•	T	•	--	•	T	•	T	--
TH2	--	•	T	--	•	•	•	•	•	--	•	--	--	•	--	--	•	•	--	--	--	--	•	•	--	•	--	•	T	•	--	•	T	•	T	--
UR/TBP	--	--	T	•	T	•	•	•	•	--	T	--	--	--	--	--	•	•	--	--	--	T	•	•	--	•	--	•	•	•	--	•	T	•	T	--
Z	--	•	--	--	--	•	•	•	•	--	--	--	--	--	--	--	•	•	--	--	--	--	•	•	--	•	--	T	•	•	--	•	--	•	--	--

Source: *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4* (LA-UR-96-3860)

*Reference Table 1 for the waste stream name associated with each waste stream code and Table 2 for waste stream descriptions.

-- = no modeled inventory reported for constituent
• = constituent present in modeled inventory at ≥ 0.01% of total constituent mass
T = constituent present in modeled inventory at < 0.01% of total constituent mass

EDTA = ethylenediaminetetraacetic acid
HEDTA = hydroxyethylethylenediaminetriacetic acid

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Table 4. Radionuclide Constituent Information in Supernatant for High-Activity Waste Streams Associated with the 200-IS-1 OU[a]

Waste Steam Code[b]	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Proactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
1C1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
1C2	T	•	T	T	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
1CFeCN	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
224-1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	T	--	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	--
224-2	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	--	T	T	•	--	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	--
2C1	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	•
2C2	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	--	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	•
A1SltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
A2SltSlr	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
AR	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
B	T	•	T	•	•	•	T	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
BL	T	•	T	T	--	T	T	--	--	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
BT-SltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	•	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
BYSltCk	T	T	T	T	•	•	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•

Table 4. Radionuclide Constituent Information in Supernatant for High-Activity Waste Streams Associated with the 200-IS-1 OU[a]

Waste Steam Code[b]	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Protactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
CSR	T	•	T	•	•	•	T	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
CWP1	T	•	T	T	•	•	•	T	•	•	T	T	T	T	T	T	T	T	•	•	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
CWP2	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	T	T	T	•	•	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
CWR1	T	•	T	T	•	•	•	T	•	•	T	T	T	T	T	T	T	T	•	•	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
CWR2	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	T	T	T	•	•	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
CWZr1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
CWZr2	T	•	T	•	•	T	T	•	•	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
DW	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HS	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
MW1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	•	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
MW2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
OWW1	T	T	T	T	•	T	•	T	•	T	T	T	T	T	•	T	T	T	T	T	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
OWW2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
OWW3	T	•	T	T	•	T	•	T	•	T	T	T	T	T	•	T	•	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	T	T	T	T	•	T
P1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
P2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
P2'	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
P3AZ1	T	T	T	•	•	T	T	•	•	T	T	T	T	T	•	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
P3AZ2	T	T	T	•	•	T	T	•	•	T	T	T	T	T	•	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
PASF	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFeCN1	T	•	T	T	•	•	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
PFeCN2	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
PL1	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	--	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
PL2	T	•	T	•	•	T	T	•	•	•	T	T	T	T	•	•	T	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
R1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
R2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
RSltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
S1SltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
S2SltSlr	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
SRR	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
T2SltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
TFeCN	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
TH1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	•	T	T	T	T	•	T
TH2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	•	T	T	T	T	•	T
UR/TBP	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	•	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
Z	--	•	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	•	•	•	•	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4* (LA-UR-96-3860).

a. Decay basis January 1, 2001.
b. Reference Table 1 for the waste stream name associated with each waste stream code and Table 2 for waste stream descriptions.

-- = no modeled inventory reported for constituent
• = constituent present in modeled inventory at ≥ 0.01% of total activity
T = constituent present in modeled inventory at < 0.01% of total activity

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Table 5. Chemical Constituent Information in Sludge for High-Activity Waste Streams Associated with the 200-IS-1 OU

Waste Stream Code[a]	Acetate	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbonate	Chlorine	Chromium	Citrate	Dibutyl phthalate	EDTA	Ferricyanide	Fluorine	Glycolate	HEDTA	Hydroxide	Hydroxyl radical	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Oxalate	Phosphate	Plutonium-Total	Potassium	Silicate	Sodium	Strontium	Sulfate	Uranium-Total	R Zirconium Hydroxide
1C1	–	●	●	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	●	●	●	–	●	●	●	●	●	T	●	●	T
1C2	–	●	●	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	T	●	●	●	–	●	●	●	●	●	T	●	●	T
1CFeCN	–	–	T	●	–	●	●	●	●	–	–	–	●	●	–	–	●	●	●	–	–	–	●	●	●	●	–	●	●	●	●	●	T	●	●	●
224-1	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	●	–	●	–	T	●	T	●	●	●	●	–	●	T	●	T	–
224-2	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	●	–	●	–	●	●	T	●	●	●	●	–	●	T	●	T	–
2C1	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	T	●	T	–	●	●	●	●	●	T	●	T	–
2C2	–	–	T	●	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	T	●	T	–	●	●	●	●	●	T	●	T	–
A1SltCk	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	●	T	T	●	●	●	T	●	●	●	●	●	T	●	●	T
A2SltSlr	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	T	●	T	●	●	●	T	●	●	●	●	●	T	●	●	T
AR	–	●	●	T	–	●	●	●	●	–	–	–	–	T	–	–	●	●	●	–	T	T	●	●	T	●	–	●	●	●	●	●	●	●	●	T
B	–	●	●	–	–	●	●	●	T	●	–	–	–	–	–	–	●	●	●	–	●	–	●	●	T	●	–	–	●	T	●	●	●	●	●	–
BL	–	●	T	–	–	●	●	●	T	●	–	●	–	–	●	●	●	●	●	–	–	–	●	●	●	●	–	●	●	●	●	●	T	●	●	–
BT-SltCk	–	●	●	●	T	●	●	●	●	–	T	–	–	●	–	–	●	●	●	–	–	–	T	●	●	●	–	●	●	●	●	●	T	●	●	T
BYSltCk	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	●	T	T	●	●	●	T	●	●	●	●	●	T	●	●	T
CSR	–	●	●	T	–	●	●	●	●	●	●	●	–	T	●	●	●	●	●	–	●	T	T	●	●	●	–	●	●	●	●	●	T	●	●	T
CWP1	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	●	–	–	●	●	●	–	–	●	T	●	●	T	●	●	–
CWP2	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	●	–	–	T	●	●	–	–	●	●	–	●	T	●	●	–
CWR1	–	●	T	–	–	●	●	●	T	–	–	–	–	–	–	–	●	●	●	–	●	–	–	T	●	●	–	–	●	T	●	●	T	●	●	–
CWR2	–	●	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	●	–	–	T	●	●	–	–	●	●	–	●	T	●	●	–
CWZr1	–	–	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	●	●	●	–	–	●	●	–	●	T	●	●	●
CWZr2	–	–	●	–	–	●	●	●	–	–	–	–	–	●	–	–	●	●	●	–	–	–	–	–	●	●	–	–	●	●	–	●	T	–	●	●
DW	–	–	–	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	–	–	–	●	●	●	–	–	–	●	–	●	–	●	–	–
HS	●	–	●	–	–	●	●	●	●	●	–	●	–	–	–	–	●	●	●	–	●	–	●	●	●	●	–	–	●	●	–	●	T	●	●	–
MW1	–	–	T	T	–	●	●	T	T	–	–	–	–	–	–	–	●	●	●	–	–	–	–	T	●	●	–	●	●	T	T	●	T	●	●	–
MW2	–	–	T	T	–	●	●	T	T	–	–	–	–	–	–	–	●	T	●	–	–	–	T	T	●	●	–	●	●	T	T	●	T	●	●	–
OWW1	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	●	–	–	–	–	●	●	●	–	–	●	T	–	●	T	●	●	–
OWW2	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	●	–	–	●	–	●	●	●	–	–	●	●	–	●	T	●	●	–
OWW3	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	●	–	–	●	–	●	●	●	–	–	●	●	–	●	T	●	●	–
P1	–	–	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	T	–	●	●	T	●	–	–	●	●	●	●	●	●	●	–
P2	–	–	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	●	–	●	●	T	●	–	–	●	●	●	●	●	●	●	–
P2'	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
P3AZ1	–	●	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	●	T	●	–	–	●	●	–	●	●	●	●	–
P3AZ2	–	●	●	–	–	●	●	●	●	–	–	–	–	●	–	–	●	●	●	–	–	–	–	●	●	●	–	–	●	●	–	●	●	●	●	–
PASF	–	–	●	–	–	●	●	T	–	–	–	–	–	–	–	–	●	●	●	–	–	–	–	–	●	–	–	–	–	T	–	●	–	–	–	–
PFeCN1	–	–	●	T	–	●	●	●	T	–	–	–	●	●	–	–	●	T	●	–	–	–	●	●	●	●	–	●	T	●	●	●	T	●	●	–
PFeCN2	–	–	●	T	–	●	●	●	T	–	–	–	●	●	–	–	●	T	●	–	–	–	●	●	●	●	–	●	T	●	●	●	●	●	●	–
PL1	–	–	T	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	–	–	–	●	●	●	–	●	●	●	–	●	T	●	●	–
PL2	–	–	T	–	●	●	●	●	●	–	●	–	–	–	–	–	●	●	●	–	–	●	–	●	●	●	–	●	●	●	–	●	T	●	●	–

Table 5. Chemical Constituent Information in Sludge for High-Activity Waste Streams Associated with the 200-IS-1 OU

Waste Stream Code*	Acetate	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbonate	Chlorine	Chromium	Citrate	Dibutyl phthalate	EDTA	Ferricyanide	Fluorine	Glycolate	HEDTA	Hydroxide	Hydroxyl radical	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Oxalate	Phosphate	Plutonium-Total	Potassium	Silicate	Sodium	Strontium	Sulfate	Uranium-Total	R Zirconium Hydroxide
R1	–	●	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	–	●	T	●	●	●	–	–	●	●	●	●	T	●	●	–
R2	–	●	●	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	–	–	T	●	T	●	–	–	●	●	●	●	●	●	●	–
RSltCk	T	●	●	T	T	●	●	●	●	●	●	●	–	T	●	●	●	●	●	–	T	T	T	●	●	●	–	T	●	●	●	●	T	●	●	T
S1SltCk	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	●	T	T	●	●	●	T	●	●	●	●	●	T	●	●	T
S2SltSlr	●	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	●	T	T	●	●	●	T	●	●	●	●	●	T	●	T	T
SRR	–	–	●	–	T	●	●	●	–	–	T	–	–	–	–	–	●	●	●	–	–	–	●	–	T	●	–	–	●	●	●	●	●	●	●	–
T2SltCk	T	●	●	T	●	●	●	●	●	●	●	●	–	●	●	●	●	●	●	T	●	T	T	●	●	●	T	●	●	●	●	●	T	●	●	T
TFeCN	–	●	●	●	T	●	●	●	●	–	T	–	●	●	–	–	●	●	●	–	T	–	T	●	●	●	–	●	T	●	●	●	T	●	T	T
TH1	–	●	●	–	●	●	●	●	●	–	●	–	–	●	–	–	●	●	●	–	–	–	–	●	●	●	–	●	T	●	–	●	T	●	●	–
TH2	–	●	●	–	●	●	●	●	●	–	●	–	–	●	–	–	●	●	●	–	–	–	–	●	●	●	–	●	T	●	–	●	T	●	●	–
UR/TBP	–	–	●	T	T	●	●	●	T	–	T	–	–	–	–	–	●	T	●	–	–	–	●	T	●	●	–	●	T	●	–	●	T	●	●	–
Z	–	●	–	–	–	●	●	●	●	–	–	–	–	–	–	–	●	●	●	–	–	–	–	●	●	●	–	T	●	●	–	●	–	●	–	–

Source: *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4* (LA-UR-96-3860)

*Reference Table 1 for the waste stream name associated with each waste stream code and Table 2 for waste stream descriptions.

– = no modeled inventory reported for constituent
● = constituent present in modeled inventory at ≥ 0.01% of total constituent mass
T = constituent present in modeled inventory at < 0.01% of total constituent mass

EDTA = ethylenediaminetetraacetic acid
HEDTA = hydroxyethylethylenediaminetriacetic acid

Table 6. Radionuclide Constituent Information in Sludge for High-Activity Waste Streams Associated with the 200-IS-1 OU[a]

Waste Stream Code[b]	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Protactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
1C1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	•
1C2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	•
1CFeCN	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	•
224-1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	T	–	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	–
224-2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	–	T	T	T	–	•	•	•	•	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	–
2C1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	•
2C2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	–	T	T	•	•	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	•
A1SltCk	T	•	T	T	•	•	T	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
A2SltSlr	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
AR	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
B	T	•	T	T	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	T	T	T	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
BL	T	•	T	T	–	T	T	–	–	T	T	T	•	T	•	•	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
BT-SltCk	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
BYSltCk	T	•	T	T	•	•	T	T	•	•	T	T	T	T	•	•	T	T	•	•	T	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
CSR	T	•	T	T	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
CWP1	T	•	T	T	•	•	•	T	•	•	T	T	T	T	T	T	T	T	•	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	T
CWP2	T	•	T	T	•	•	T	T	•	•	T	T	T	T	T	T	T	T	•	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	•	•	T
CWR1	T	•	T	T	•	•	•	T	•	•	T	T	T	T	T	T	T	T	•	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	T
CWR2	T	•	T	T	•	T	T	T	•	•	T	T	T	T	T	T	T	T	•	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	T
CWZr1	T	•	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
CWZr2	T	•	T	•	•	T	T	•	•	•	T	T	T	T	T	T	T	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
DW	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
HS	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
MW1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	•	T	T	•	•	T
MW2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	•	T	T	•	•	T
OWW1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	•	•	•	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	•	T	T	•	•	T
OWW2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	•	•	T	T	•	•	T
OWW3	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	•	•	•	T	T	•	•	T
P1	T	•	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
P2	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
P2'	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
P3AZ1	T	•	T	•	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
P3AZ2	T	•	T	•	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
PASF	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PFeCN1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
PFeCN2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
PL1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	–	T	T	T	T	•	•	•	•	T	T	T	T	T	T	T	•	T	T	T	T	T	T	•	•	T	T	•	•	T
PL2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	•	•	•	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	•	T	T	•	•	T

Table 6. Radionuclide Constituent Information in Sludge for High-Activity Waste Streams Associated with the 200-IS-1 OU[a]

Waste Stream Code[b]	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Proactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
R1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	•	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T
R2	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T
RSltCk	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	T	•	T
S1SltCk	T	•	T	T	•	T	T	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	T	•	T
S2SltSlr	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	T	•	T
SRR	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	T	T	T	•	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T
T2SltCk	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	T	•	T
TFeCN	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T
TH1	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	•	T	T	T	T	T	T	•	T
TH2	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	•	T	T	T	T	T	T	•	T
UR/TBP	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	•	T
Z	--	•	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	•	•	•	•	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4* (LA-UR-96-3860).

a. Decay basis January 1, 2001.

b. Reference Table 1 for the waste stream name associated with each waste stream code and Table 2 for waste stream descriptions.

-- = no modeled inventory reported for constituent

• = constituent present in modeled inventory at ≥ 0.01% of total activity

T = constituent present in modeled inventory at < 0.01% of total activity

Table 7. Chemical Constituent Information for Crib Sites Associated with the 200-IS-1 OU

Crib	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbon Tetrachloride	Carbonate	Chlorine	Chromium	Ferricyanide	Fluorine	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Normal Paraffin Hydrocarbon	Phosphate	Potassium	Silicon	Silver	Sodium	Sulfate	Tributyl Phosphate	Uranium-Total	Zirconium
216-A-1	--	●	--	--	●	--	●	●	●	--	--	●	--	●	--	T	●	●	●	--	--	●	●	--	●	●	--	●	--
216-A-2	--	T	--	--	T	--	T	T	T	--	--	T	--	--	--	--	T	●	--	●	--	--	T	--	T	T	●	●	--
216-A-3	--	T	--	T	●	--	T	T	T	--	●	T	--	--	T	T	T	●	T	--	●	●	--	T	●	T	--	●	--
216-A-4	--	T	--	T	●	--	T	T	T	--	●	T	--	--	T	T	T	●	T	--	●	●	--	T	●	●	--	●	--
216-A-5	--	--	--	--	--	--	--	●	--	--	--	●	--	--	--	--	--	●	--	--	--	--	--	--	●	●	--	●	--
216-A-6	T	T	--	T	●	--	●	●	●	--	●	●	--	T	T	T	●	●	●	--	●	●	●	T	●	●	--	●	T
216-A-7	--	T	--	T	T	--	T	T	T	--	T	T	--	T	T	T	T	●	--	●	--	T	T	--	T	T	●	●	--
216-A-8	●	T	--	●	●	--	●	●	T	--	●	●	--	●	●	T	T	●	--	●	--	●	●	--	●	●	●	●	--
216-A-9	T	--	--	●	●	--	●	●	●	--	●	●	--	T	T	T	●	●	●	--	●	●	●	--	●	●	--	●	--
216-A-10	--	--	--	--	●	--	●	●	--	--	T	●	--	--	T	--	--	●	--	--	--	T	●	--	●	●	--	●	--
216-A-11	--	--	--	--	●	--	●	●	--	--	●	●	--	--	T	--	--	●	--	--	--	●	●	--	●	●	--	●	--
216-A-12	--	--	--	--	●	--	●	●	--	--	●	●	--	--	T	--	--	●	--	--	--	●	●	--	●	●	--	●	--
216-A-13	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-14	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-15	--	--	--	--	●	--	●	●	--	--	●	●	--	--	T	--	--	●	--	--	--	●	●	--	●	●	--	●	--
216-A-21	--	●	--	--	●	--	●	●	--	--	--	●	--	--	--	--	--	●	--	--	--	●	--	T	●	--	--	●	--
216-A-22	--	T	--	T	●	--	●	T	T	--	●	T	--	--	T	T	T	●	--	--	●	●	T	--	●	●	--	●	--
216-A-24	●	T	--	●	●	--	T	●	T	--	●	●	--	●	●	T	T	●	--	●	--	●	●	--	●	●	●	●	--
216-A-25	T	T	T	●	●	T	●	●	T	--	●	●	--	T	T	T	T	●	T	--	●	●	●	T	●	●	--	●	T
216-A-26	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-26A	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-28	--	T	--	T	●	--	--	--	T	--	●	T	--	--	T	T	T	●	--	--	●	●	--	--	●	--	--	●	--
216-A-30	T	T	--	T	●	--	●	●	●	--	●	●	--	T	T	T	●	●	●	--	●	●	●	T	●	●	--	●	T
216-A-31	--	T	--	--	T	--	T	T	T	--	--	T	--	--	--	--	T	●	--	●	--	--	T	--	T	T	●	●	--
216-A-32	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-35	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-36A	--	●	--	--	●	--	●	●	--	--	--	●	--	--	--	--	--	●	--	--	--	●	--	T	●	--	--	●	--
216-A-36B	--	●	--	--	●	--	●	●	--	--	--	●	--	--	--	--	--	●	--	--	--	●	--	T	●	--	--	T	--
216-A-37-1	--	--	--	●	●	●	--	●	--	--	●	●	--	●	●	T	--	●	--	--	--	●	●	--	●	●	--	T	--
216-A-37-2	--	--	--	●	●	--	●	●	--	--	●	●	--	T	T	T	--	●	--	--	--	●	●	--	●	●	--	●	--
216-A-40	T	T	T	T	●	--	●	●	T	--	●	●	--	T	T	T	T	●	T	--	T	●	●	--	●	●	--	T	T
216-A-41	T	T	--	T	●	--	T	●	T	--	●	●	--	T	T	T	T	●	T	--	●	●	T	T	●	●	--	T	T
216-A-45	T	T	T	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	T	--	●	●	T	--	●	●	--	T	T
216-B-2-2E	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
216-B-2-2W	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
216-B-3	●	T	T	●	●	●	●	●	T	--	●	●	T	●	T	T	T	●	T	●	●	●	●	T	●	●	--	●	T
216-B-4	--	●	●	--	●	--	●	●	●	--	●	●	T	--	T	T	●	●	●	--	●	●	●	T	●	●	--	●	T
216-B-5	--	T	●	--	●	--	●	●	●	--	●	●	●	--	●	--	●	●	T	--	●	●	●	T	●	●	--	T	--
216-B-7A&B	--	T	●	--	●	--	●	●	●	--	●	●	T	T	●	T	●	●	●	--	●	●	T	T	●	●	--	T	--
216-B-8	--	T	●	--	●	--	●	●	●	--	●	●	T	--	T	--	●	●	T	--	●	●	●	T	●	●	--	T	--

Table 7. Chemical Constituent Information for Crib Sites Associated with the 200-IS-1 OU

Crib	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbon Tetrachloride	Carbonate	Chlorine	Chromium	Ferricyanide	Fluorine	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Normal Paraffin Hydrocarbon	Phosphate	Potassium	Silicon	Silver	Sodium	Sulfate	Tributyl Phosphate	Uranium-Total	Zirconium
216-B-9	--	T	•	--	•	--	•	•	•	--	•	•	T	--	T	--	•	•	T	--	•	•	•	T	•	•	--	T	--
216-B-10A	--	•	T	T	•	--	•	•	•	--	•	•	T	--	T	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-10B	--	--	--	--	•	--	•	•	•	--	--	•	--	--	--	--	•	•	•	--	--	•	--	--	•	•	--	T	--
216-B-11A&B	•	•	•	T	•	--	•	•	•	--	•	•	--	•	•	•	•	•	•	•	•	•	•	--	•	•	--	T	T
216-B-12	T	T	T	T	•	--	•	T	•	--	•	T	--	T	T	T	T	•	•	T	•	•	T	--	•	•	--	•	T
216-B-13	--	•	•	--	•	--	•	•	•	--	•	•	T	•	•	•	•	•	•	•	•	•	•	T	•	•	--	•	T
216-B-14	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-15	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-16	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-17	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-18	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-19	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-20	•	•	•	T	•	--	•	•	•	T	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-21	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	T	T
216-B-22	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-23	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-24	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-25	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-26	--	T	•	--	•	--	•	•	•	T	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	•	--
216-B-27	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-28	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-29	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-30	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-31	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-32	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-33	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-34	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-43	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-44	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-45	--	T	•	--	•	--	•	•	•	T	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	•	--
216-B-46	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-47	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-48	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-49	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-50	•	•	T	•	•	--	•	•	•	--	•	•	T	•	T	•	T	•	•	•	•	•	•	•	•	•	--	T	T
216-B-51	--	T	•	--	•	--	•	•	•	--	•	•	--	--	--	T	•	•	•	--	•	•	•	T	•	•	--	T	--
216-B-52	•	•	•	T	•	--	•	•	•	--	•	•	--	T	--	T	•	•	•	--	•	•	•	T	•	•	--	•	T
216-B-53A	--	T	--	--	•	--	•	•	•	--	T	•	--	•	T	T	•	•	•	--	•	•	•	T	•	•	--	•	--
216-B-53B	--	T	--	--	•	--	•	•	•	--	T	•	--	T	T	T	•	•	•	--	•	•	T	T	•	•	--	•	--
216-B-54	--	T	--	--	•	--	•	•	•	--	T	•	--	•	T	T	•	•	•	--	•	•	•	T	•	•	--	•	--
216-B-55	T	T	T	T	•	--	•	•	T	--	•	•	--	T	T	T	T	•	T	--	T	•	•	--	•	•	--	T	T
216-B-58	--	T	--	--	•	--	•	•	•	--	T	•	--	•	T	T	•	•	•	--	•	•	•	T	•	•	--	•	--

Table 7. Chemical Constituent Information for Crib Sites Associated with the 200-IS-1 OU

Crib	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbon Tetrachloride	Carbonate	Chlorine	Chromium	Ferricyanide	Fluorine	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Normal Paraffin Hydrocarbon	Phosphate	Potassium	Silicon	Silver	Sodium	Sulfate	Tributyl Phosphate	Uranium-Total	Zirconium
216-B-59	T	T	T	T	●	--	●	●	T	--	●	●	--	T	T	T	T	●	T	--	T	●	●	--	●	●	--	T	T
216-B-62	●	●	T	T	●	--	●	●	●	--	●	●	--	T	T	T	●	●	●	--	●	●	●	--	●	●	--	T	T
216-B-63	T	T	T	T	●	--	●	●	T	--	●	●	--	T	T	T	T	●	T	●	T	●	●	T	●	●	--	●	T
216-C-1	●	●	--	--	●	--	●	●	●	--	--	●	--	T	T	T	●	●	●	--	--	●	●	T	●	●	--	●	--
216-C-2	--	--	--	--	●	--	--	--	--	--	--	●	--	●	●	●	--	●	--	●	--	●	--	--	●	●	--	T	--
216-C-3	--	T	--	T	●	--	T	T	T	--	●	T	--	T	T	T	T	●	T	--	●	●	--	--	●	T	--	T	--
216-C-4	●	T	--	--	●	--	●	●	T	--	--	●	--	●	T	T	●	●	●	●	●	●	●	--	●	●	--	●	--
216-C-5	--	●	--	--	●	--	●	●	●	--	--	●	--	●	--	T	●	●	●	--	--	●	●	--	●	●	--	●	--
216-C-7	--	--	--	--	●	--	--	●	--	--	●	●	--	●	●	--	--	--	--	●	--	●	--	--	●	--	--	T	--
216-C-9	T	T	T	T	●	--	●	●	T	--	●	●	--	T	T	T	T	●	T	T	T	●	●	--	●	●	--	T	T
216-C-10	--	●	--	--	●	--	●	●	●	--	--	●	--	●	●	●	●	●	●	●	--	●	--	--	●	●	--	●	--
216-S-1&2	●	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	●	--	--	--	--	--	--	●	--	--	●	--
216-S-5	T	T	--	T	●	--	T	T	T	--	T	T	--	T	T	T	T	●	●	--	●	●	●	T	●	T	--	●	--
216-S-6	T	T	--	T	●	--	T	T	T	--	T	T	--	T	T	T	T	●	●	--	T	●	●	T	●	T	--	●	--
216-S-7	●	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	●	--	--	--	--	--	--	●	--	--	●	--
216-S-9	●	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	●	--	--	--	--	--	--	●	--	--	●	--
216-S-10P	●	T	--	--	●	--	●	●	●	--	●	●	--	●	●	●	T	●	●	--	--	●	●	T	●	●	--	●	--
216-S-13	T	T	--	T	●	--	T	●	●	--	●	T	--	--	T	T	T	●	●	--	●	●	--	--	●	●	--	T	--
216-S-16P	T	T	--	T	●	--	T	T	T	--	T	T	--	T	T	T	T	●	●	--	T	●	●	T	●	T	--	●	--
216-S-17	T	T	--	T	●	--	T	●	T	--	●	T	--	T	T	T	T	●	●	--	●	●	●	T	●	●	--	T	--
216-S-20	--	T	--	--	●	--	●	●	●	--	T	●	--	●	T	T	●	●	●	--	●	●	●	T	●	●	--	●	--
216-S-21	●	●	T	●	●	--	●	●	●	--	●	●	--	T	T	●	T	●	●	●	T	●	●	T	●	●	--	T	T
216-S-22	--	--	--	--	--	--	--	●	--	--	--	●	--	--	--	--	--	●	--	--	--	--	--	--	●	●	--	T	--
216-S-23	T	T	--	--	●	--	T	T	T	--	--	T	--	T	T	T	T	●	●	--	--	●	●	T	●	T	--	T	--
216-S-25	--	T	--	T	●	--	●	●	●	--	●	T	--	T	T	T	T	●	--	●	●	●	●	--	●	●	--	T	--
216-S-26	--	--	--	--	●	--	●	●	●	--	●	●	--	●	●	●	T	●	--	T	--	●	●	T	●	●	--	T	--
216-T-1	●	--	--	--	●	--	●	●	●	--	●	●	--	T	T	T	●	●	●	●	--	●	●	--	●	●	--	T	--
216-T-4A	--	●	●	T	●	●	●	●	●	--	●	●	T	T	T	T	●	●	●	●	●	●	●	T	●	●	--	●	T
216-T-6	--	T	●	--	●	--	●	●	●	--	●	●	●	--	●	--	●	●	T	--	●	●	●	T	●	●	--	T	--
216-T-8	--	--	--	--	●	--	●	●	●	--	--	●	--	--	--	--	●	●	●	--	--	●	--	--	●	●	--	●	--
216-T-19	--	T	●	--	●	●	●	●	●	--	●	●	T	T	●	T	●	●	T	●	●	●	●	T	●	●	--	T	--
216-T-26	--	T	●	--	●	--	●	●	●	●	●	●	--	--	--	T	●	●	●	--	●	●	●	--	●	●	--	●	●
216-T-27	--	T	--	--	●	--	●	●	●	--	T	●	--	T	T	T	●	●	●	--	●	●	●	T	●	●	--	●	--
216-T-28	--	T	--	--	●	--	●	●	●	--	T	●	--	T	T	T	●	●	●	--	●	●	●	T	●	●	--	●	--
216-T-33	--	T	--	T	●	--	●	●	●	--	●	●	--	--	T	T	●	●	●	--	●	●	--	--	●	●	--	●	--
216-T-34	--	--	--	--	●	--	●	●	●	--	T	●	--	T	T	T	●	●	●	--	--	●	T	T	●	●	--	●	--
216-T-35	--	--	--	--	●	--	--	●	●	--	●	●	--	●	●	●	--	●	--	--	--	●	●	●	●	●	--	●	--
216-T-36	--	--	--	--	●	--	●	●	●	--	--	●	--	--	--	--	●	●	●	--	--	●	--	--	●	●	--	●	--
216-U-1&2	--	T	T	T	●	--	●	●	●	--	●	●	--	--	T	T	●	●	●	●	●	●	--	--	●	●	●	●	--
216-U-3	--	T	--	T	●	--	--	●	●	--	●	T	--	T	T	T	T	●	--	●	●	●	●	--	●	●	--	●	--
216-U-4	--	T	T	--	●	--	●	●	●	--	●	●	T	--	T	--	●	●	●	--	●	●	--	T	●	●	--	T	--
216-U-8	--	T	T	T	●	--	T	●	T	--	●	T	T	--	T	T	T	●	T	--	●	●	T	T	●	T	--	●	T

Table 7. Chemical Constituent Information for Crib Sites Associated with the 200-IS-1 OU

Crib	Aluminum	Ammonia	Bismuth	Butanol	Calcium	Carbon Tetrachloride	Carbonate	Chlorine	Chromium	Ferricyanide	Fluorine	Iron	Lanthanum	Lead	Manganese	Mercury	Nickel	Nitrate	Nitrite	Normal Paraffin Hydrocarbon	Phosphate	Potassium	Silicon	Silver	Sodium	Sulfate	Tributyl Phosphate	Uranium-Total	Zirconium
216-U-10	●	●	--	T	●	●	●	●	●	--	●	●	--	●	T	T	T	●	●	T	●	●	●	T	●	●	●	●	T
216-U-14	●	●	--	T	●	--	●	●	T	--	●	●	--	T	T	T	T	●	●	T	●	●	●	T	●	●	--	●	T
216-U-16	●	--	--	T	●	--	●	●	--	--	●	●	--	T	●	T	T	●	●	●	--	●	●	--	●	●	●	T	--
216-U-17	--	T	--	T	●	--	--	--	T	--	●	T	--	--	T	T	T	●	--	--	●	●	--	--	●	--	--	T	--
216-Z-5	--	--	--	●	●	●	--	●	T	--	●	●	--	--	T	--	T	●	●	--	●	--	--	--	T	--	●	T	--
216-Z-7	--	--	--	●	●	●	●	●	●	--	●	●	--	--	T	--	●	●	●	--	●	●	--	--	●	●	●	●	--
216-Z-10	--	--	--	●	●	●	--	●	T	--	●	●	--	--	T	--	T	●	●	--	●	--	--	--	●	--	●	●	--
216-Z-15	--	--	--	--	●	--	●	●	●	--	●	●	--	●	●	T	T	--	--	T	--	●	●	--	●	●	--	T	--
216-Z-16	--	--	--	--	--	--	●	●	T	--	●	--	--	--	--	--	T	--	--	--	--	●	--	--	●	--	--	T	--
216-Z-17	--	--	--	--	--	--	●	●	T	--	●	--	--	--	--	--	T	--	--	--	--	●	--	--	●	--	--	T	--

Source: *Hanford Soil Inventory Model, Rev. 1* (RPP-26744).

-- = no modeled inventory reported for constituent
● = constituent present in modeled inventory at ≥ 0.01 percent of total constituent mass
T = constituent present in modeled inventory at < 0.01 percent of total constituent mass

Table 8. Radionuclide Constituent Information for Crib Sites Associated with the 200-IS-1 OU*

Crib	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Proactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
216-A-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	T	●	●	●	●	--	--
216-A-2	T	●	T	●	●	●	T	T	●	●	T	T	T	T	●	●	T	●	T	T	●	●	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	T	T	T	●	T	T	●	●	●
216-A-3	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	--	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	●	●	T
216-A-4	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	--	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	●	●	●	●	●	●	●	T
216-A-5	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-6	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-7	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	T
216-A-8	T	T	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-9	T	T	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	T	T	●	T	T	T	T	●	T	●	●	T	T	●	T	●	T
216-A-10	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-11	T	T	T	--	--	--	●	--	--	--	T	T	T	--	--	--	●	●	--	--	--	●	●	●	●	T	T	T	T	--	--	--	●	--	T	T	--	--	T	T	●	●	●	●	●	--
216-A-12	T	T	T	--	--	--	●	--	--	--	T	T	T	--	--	--	●	●	--	--	--	●	●	●	●	T	T	T	T	--	--	--	●	--	T	T	--	--	T	T	●	●	●	●	●	--
216-A-13	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-14	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-15	T	T	T	--	--	--	●	--	--	--	T	T	T	--	--	--	●	●	--	--	--	●	●	●	●	T	T	T	T	--	--	--	●	--	T	T	--	--	T	T	●	●	●	●	●	--
216-A-21	T	●	T	--	●	T	--	T	●	●	T	T	T	T	T	T	--	●	--	--	--	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	--	●	T	T	●	T	T	●	●	T
216-A-22	T	T	T	--	--	--	T	--	--	--	T	T	T	--	--	--	T	T	--	--	--	T	T	T	T	T	T	T	T	--	--	--	T	●	T	T	--	●	T	T	●	●	●	●	T	--
216-A-24	T	T	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	●	T
216-A-25	T	●	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	●	T	T	●	●	T
216-A-26	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T

Table 8. Radionuclide Constituent Information for Crib Sites Associated with the 200-IS-1 OU*

Crib	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Protactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
216-A-26A	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	T	●	T
216-A-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	●	--	--	--	●	T	T	●	●	●	●	--	--
216-A-30	T	T	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	●	●	●	T	T	●	●	T
216-A-31	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	●	T
216-A-32	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-A-35	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-A-36A	T	●	T	T	●	T	--	T	●	T	T	T	T	T	●	T	--	T	--	--	--	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	--	●	T	T	T	T	T	T	●	T
216-A-36B	T	●	T	T	●	T	--	--	●	●	T	T	T	T	T	--	T	T	--	--	--	T	T	T	●	T	T	T	T	T	●	T	●	T	T	T	--	●	T	T	T	T	T	T	●	T
216-A-37-1	T	●	T	--	--	--	●	--	--	--	T	T	T	--	--	--	--	T	--	--	--	T	●	T	●	T	T	T	T	--	--	--	●	--	T	T	--	●	T	T	T	T	T	T	●	--
216-A-37-2	T	●	T	--	--	--	●	--	--	--	T	T	T	--	--	--	T	T	--	--	--	●	●	●	●	T	T	T	T	--	--	--	●	--	T	T	--	●	T	T	●	T	●	●	●	--
216-A-40	T	●	T	●	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	T	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-A-41	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	T	T	T	T	T	●	T	T	T	T	T	T	T	T
216-A-45	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	T	T	T	T	T
216-B-2-2E	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
216-B-2-2W	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
216-B-3	T	●	T	T	●	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	●	T
216-B-4	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-5	T	●	T	T	●	T	T	T	●	T	T	T	T	T	●	●	T	T	T	●	●	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	●	●
216-B-7A&B	T	●	T	T	●	T	T	T	●	T	T	T	T	T	●	●	T	T	T	●	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	●	T	T	T	T	T	●	T
216-B-8	T	●	T	T	●	T	T	T	●	T	T	T	T	T	●	●	T	T	T	●	●	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	●	●
216-B-9	T	●	T	T	●	T	T	T	●	T	T	T	T	T	●	●	T	T	T	●	●	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	●	●
216-B-10A	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-10B	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	●	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-11A&B	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	T	T	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	●	T
216-B-12	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	●	T	T	●	●	T
216-B-13	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	T	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-14	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-15	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-16	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-17	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-18	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-19	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-20	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-21	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-22	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-23	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-24	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-25	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-26	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-27	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-B-28	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-B-29	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T

Table 8. Radionuclide Constituent Information for Crib Sites Associated with the 200-IS-1 OU*

Crib	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Protactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
216-B-30	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-31	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-32	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-33	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-34	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-43	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-44	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-45	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-46	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-47	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-48	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-49	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-50	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-51	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-B-52	T	•	T	T	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-53A	T	•	T	T	•	T	•	T	•	•	T	T	T	T	•	T	--	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	•	•	T
216-B-53B	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	T	--	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	T	•	T
216-B-54	T	•	T	T	•	T	•	T	•	•	T	T	T	T	•	T	--	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	T	•	T
216-B-55	T	•	T	•	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-58	T	•	T	T	•	T	•	T	•	•	T	T	T	T	•	T	--	T	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	•	•	T
216-B-59	T	•	T	•	•	•	•	T	•	•	T	T	T	T	•	•	T	T	T	•	•	T	•	T	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	•
216-B-62	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	T	T	T	T	T	T	T	•	T
216-B-63	T	•	T	T	•	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	•	•	T	T	T	•	T	T	•	T	T	•	•	T
216-C-1	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	•	•	T	T	•	•	T
216-C-2	T	--	--	--	•	--	--	--	•	--	--	--	--	--	--	--	--	T	--	--	--	T	•	•	•	T	T	T	T	--	--	--	•	--	T	T	--	--	T	T	T	T	T	T	•	--
216-C-3	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T
216-C-4	T	•	T	T	T	T	T	--	T	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	•	T	T	T	T	T	•	T	•	T	T	T	T	T	T	T	T	T	T	T	•	T
216-C-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	T	T	•	•	•	•	--	--
216-C-7	T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	•	--	--	--	•	•	•	•	T	•	T	T	--	--	--	--	--	T	T	--	--	T	T	•	•	•	•	--	--
216-C-9	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-C-10	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	T	T	T	T	•	T
216-S-1&2	T	•	T	T	•	T	--	T	•	T	T	T	T	T	•	T	T	T	--	--	--	•	•	•	•	T	T	T	T	T	•	T	•	•	T	T	--	•	T	T	•	T	T	•	•	T
216-S-5	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	•	T	T	•	•	T
216-S-6	T	•	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	•	•	T	•	•	T
216-S-7	T	•	T	T	•	T	--	T	•	T	T	T	T	T	•	T	T	T	--	--	--	•	•	•	•	T	T	T	T	T	•	T	•	•	T	T	--	•	T	T	•	T	T	T	•	T
216-S-9	T	T	T	T	•	T	--	T	•	T	T	T	T	T	T	T	T	T	--	--	--	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	--	•	T	T	T	T	T	T	•	T
216-S-10P	T	•	•	T	•	T	•	T	•	•	•	T	•	T	T	T	T	•	T	•	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	•	T	T	•	•	T
216-S-13	T	•	T	--	•	--	T	T	•	T	T	T	T	T	T	T	--	T	T	T	•	•	•	•	•	T	T	T	T	T	•	--	•	•	T	T	--	•	T	T	T	T	T	T	•	•
216-S-16P	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	•	T	T	•	•	T
216-S-17	T	T	T	T	•	T	T	T	•	T	T	T	T	T	•	T	T	T	T	•	T	T	T	T	T	T	T	T	T	T	•	T	•	•	T	T	T	•	T	T	•	T	T	T	•	T
216-S-20	T	•	T	T	•	T	•	T	•	•	•	T	T	T	•	T	T	•	T	T	T	•	•	•	•	T	T	T	T	T	•	T	•	T	T	T	T	•	T	•	•	T	T	•	•	T
216-S-21	T	T	T	T	•	T	T	T	•	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	•	T	•	T	T	T	T	•	T	T	T	T	T	T	•	T

Table 8. Radionuclide Constituent Information for Crib Sites Associated with the 200-IS-1 OU*

Crib	Actinium-227	Americium-241	Americium-243	Antimony-125	Barium-137m	Cadmium-113m	Carbon-14	Cesium-134	Cesium-137	Cobalt-60	Curium-242	Curium-243	Curium-244	Europium-152	Europium-154	Europium-155	Iodine-129	Neptunium-237	Nickel-59	Nickel-63	Niobium-93m	Plutonium-238	Plutonium-239	Plutonium-240	Plutonium-241	Plutonium-242	Protactinium-231	Radium-226	Radium-228	Ruthenium-106	Samarium-151	Selenium-79	Strontium-90	Technetium-99	Thorium-229	Thorium-232	Tin-126	Tritium	Uranium-232	Uranium-233	Uranium-234	Uranium-235	Uranium-236	Uranium-238	Yttrium-90	Zirconium-93
216-S-22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	T	T	T	T	T
216-S-23	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-S-25	T	T	T	–	T	–	T	–	T	T	T	T	T	–	–	–	–	T	–	–	–	T	T	T	T	T	T	T	T	T	–	–	T	–	T	T	–	●	T	T	T	T	T	T	T	–
216-S-26	T	●	T	–	●	–	●	–	●	●	T	T	T	–	–	–	–	T	–	–	–	●	●	●	●	T	T	T	T	T	–	–	●	–	T	T	–	●	T	T	●	T	●	●	●	–
216-T-1	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	●	T
216-T-4A	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	●	T	T	●	●	T
216-T-6	T	●	T	T	●	T	T	T	●	T	T	T	T	T	●	●	T	T	T	●	●	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	T	T	T	T	●	●
216-T-8	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	●	T	T	T	T	T	T	T	●	T	T	●	●	T
216-T-19	T	T	T	T	●	T	T	T	●	T	T	T	T	T	●	T	–	T	T	T	T	T	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	T	T	T	T	●	T
216-T-26	T	●	T	T	●	●	●	T	●	●	T	T	T	T	●	●	T	T	T	●	●	T	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	●
216-T-27	T	●	T	T	●	T	●	T	●	●	T	T	●	T	●	T	–	●	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	●	●	T	T	●	●	T
216-T-28	T	●	T	T	●	T	●	T	●	●	T	T	T	T	●	T	–	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	●	●	T	T	●	●	T
216-T-33	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	●	T	T	T	●	●	●	●	T	T	●	●	T
216-T-34	T	●	T	T	●	T	●	T	●	●	T	T	●	T	T	T	●	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	●	●	●	T	T	●	●	T
216-T-35	T	●	●	–	●	–	●	–	●	●	●	T	●	–	–	–	–	●	–	–	–	●	●	●	●	T	T	T	T	T	–	–	●	–	T	T	–	–	T	T	●	T	T	●	●	–
216-T-36	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	T	●	●	●	T	T	●	●	T
216-U-1&2	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	●	●	●	●	●	T
216-U-3	T	–	–	–	T	–	–	–	T	T	–	–	–	–	–	–	–	T	–	–	–	T	T	T	T	T	T	T	T	–	–	–	T	T	T	T	–	●	T	T	●	T	T	●	T	–
216-U-4	T	T	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	●	T	T	●	T	T	T	T	T	T	T	●	T	●	●	T	T	T	●	T	T	T	T	T	T	●	T
216-U-8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	●	T	T	T	●	T	T	●	T	T	●	T	T
216-U-10	T	●	T	T	●	T	T	T	●	●	T	T	●	T	T	●	T	●	T	T	T	●	●	●	●	T	T	T	T	T	●	T	●	T	T	T	T	●	T	T	●	T	T	●	●	T
216-U-14	T	●	T	T	●	T	●	T	●	●	T	T	T	T	●	●	●	T	T	●	T	●	●	●	●	T	T	T	T	T	●	T	T	●	T	T	T	●	T	T	●	T	T	●	●	T
216-U-16	T	T	T	–	T	–	T	T	T	–	T	T	T	–	–	–	T	T	–	–	–	T	T	T	T	T	T	T	T	T	–	–	T	–	T	T	–	●	T	T	T	T	T	T	T	–
216-U-17	T	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T	–	–	–	T	T	T	T	T	T	T	T	–	–	–	–	–	T	T	–	●	T	T	T	T	T	T	–	–
216-Z-5	T	●	T	T	●	T	–	T	●	T	T	T	T	T	T	T	–	T	–	–	–	T	●	●	●	T	T	T	T	T	T	T	●	T	T	T	–	–	T	T	T	T	T	T	●	T
216-Z-7	T	●	T	T	●	T	T	T	●	T	T	T	T	T	T	T	T	T	T	T	T	●	●	●	●	T	T	T	T	T	T	T	●	T	T	T	T	T	T	●	T	T	T	T	●	T
216-Z-10	T	●	T	T	●	T	–	T	●	T	T	T	T	T	T	T	–	●	–	–	–	●	●	●	●	T	T	T	T	T	T	T	●	T	T	T	–	–	T	T	T	T	T	T	●	T
216-Z-15	T	●	T		●	–	–	–	●	–	T	T	T	–	–	–	–	T	–	–	–	●	●	●	●	T	●	T	T	–	–	–	●	–	T	T	–	–	T	T	●	●	●	●	●	–
216-Z-16	T	●	●	T	T	T	–	T	T	–	●	T	●	T	T	T	–	●	–	–	–	●	●	●	●	T	T	T	T	T	T	T	T	T	T	T	–	–	T	T	T	T	T	T	T	T
216-Z-17	T	●	●	T	T	T	–	T	T	–	●	T	●	T	T	T	–	●	–	–	–	●	●	●	●	T	T	T	T	T	T	T	T	T	T	T	–	–	T	T	T	T	T	T	T	T

Source: *Hanford Soil Inventory Model, Rev. 1* (RPP-26744).

* Decay basis January 1, 2001.

– = no modeled inventory reported for constituent
● = constituent present in modeled inventory at ≥ 0.01% of activity
T = constituent present in modeled inventory at < 0.01% of activity

Table 9. Comprehensive Constituents List Associated with Central Plateau Processes and Liquid Waste Management

Radionuclides					
Actinium-225 (Ac-225)	Cesium-135 (Cs-135)	Iron-55 (Fe-55)	Polonium-211 (Po-211)	Samarium-149 (Sm-149)	Thorium-232 (Th-232)
Actinium-227 (Ac-227)	Cesium-137 (Cs-137)	Iron-59 (Fe-59)	Polonium-212 (Po-212)	Samarium-151 (Sm-151)	Thorium-233 (Th-233)
Actinium-228 (Ac-228)	Cesium-141 (Cs-141)	Krypton-86 (Kr-86)	Polonium-213 (Po-213)	Selenium-75 (Se-75)	Thorium-234 (Th-234)
Aluminum-28 (Al-28)	Cesium-144 (Cs-144)	Lanthanum-140 (La-140)	Polonium-214 (Po-214)	Selenium-79 (Se-79)	Thulium-170 (Tm-170)
Americium-241 (Am-241)	Chlorine-36 (Cl-36)	Lead-209 (Pb-209)	Polonium-215 (Po-215)	Silver-108 (Ag-108)	Tin-113 (Sn-113)
Americium-242 (Am-242)	Chromium-51 (Cr-51)	Lead-210 (Pb-210)	Polonium-216 (Po-216)	Silver-110m (Ag-110m)	Tin-123 (Sn-123)
Americium-242m (Am-242m)	Cobalt-57 (Co-57)	Lead-211 (Pb-211)	Polonium-218 (Po-218)	Sodium-22 (Na-22)	Tin-123m (Sn-123m)
Americium-243 (Am-243)	Cobalt-60 (Co-60)	Lead-212 (Pb-212)	Potassium-40 (K-40)	Strontium-85 (Sr-85)	Tin-125 (Sn-125)
Antimony-122 (Sb-122)	Curium-242 (Cm-242)	Lead-214 (Pb-214)	Praseodymium-143 (Pr-143)	Strontium-89 (Sr-89)	Tin-126 (Sn-126)
Antimony-123 (Sb-123)	Curium-243 (Cm-243)	Manganese-54 (Mn-54)	Praseodymium-144 (Pr-144)	Strontium-90 (Sr-90)	Uranium-232 (U-232)
Antimony-124 (Sb-124)	Curium-244 (Cm-244)	Molybdenum-93 (Mo-93)	Promethium-143 (Pm-143)	Sulfur-35 (S-35)	Uranium-233 (U-233)
Antimony-125 (Sb-125)	Curium-245 (Cm-245)	Neodymium-147 (Nd-147)	Promethium-147 (Pm-147)	Tantalum-182 (Ta-182)	Uranium-234 (U-234)
Antimony-126 (Sb-126)	Einsteinium-254 (Es-254)	Neptunium-239 (Np-239)	Protactinium-231 (Pa-231)	Technetium-99 (Tc-99)	Uranium-235 (U-235)
Antimony-126m (Sb-126m)	Europium-152 (Eu-152)	Nickel-59 (Ni-59)	Protactinium-233 (Pa-233)	Tellurium-121 (Te-121)	Uranium-236 (U-236)
Barium-133 (Ba-133)	Europium-154 (Eu-154)	Nickel-63 (Ni-63)	Protactinium-234 (Pa-234)	Tellurium-125m (Te-125m)	Uranium-237 (U-0237)
Barium-135m (Ba-135m)	Europium-155 (Eu-155)	Niobium-93m (Nb-93m)	Radium-223 (Ra-223)	Tellurium-127 (Te-127)	Uranium-238 (U-238)
Barium-137 (Ba-137)	Francium-221 (Fr-221)	Niobium-94 (Nb-94)	Radium-224 (Ra-224)	Tellurium-129 (Te-129)	Vanadium-49 (V-49)
Barium-140 (Ba-140)	Francium-223 (Fr-223)	Niobium-95 (Nb-95)	Radium-226 (Ra-226)	Tellurium-129m (Te-129m)	Yttrium-88 (Y-88)
Beryllium-10 (Be-10)	Gadolinium-152 (Gd-152)	Niobium-96 (Nb-96)	Radium-228 (Ra-228)	Thallium-204 (Tl-204)	Yttrium-90 (Y-90)
Bismuth-210 (Bi-210)	Gadolinium-153 (Gd-153)	Niobium-98 (Nb-98)	Radon-219 (Rn-219)	Thallium-207 (Tl-207)	Yttrium-91 (Y-91)
Bismuth-213 (Bi-213)	Germanium-68 (Ge-68)	Palladium-107 (Pd-107)	Radon-220 (Rn-220)	Thallium-208 (Tl-207)	Zinc-65 (Zn-65)
Bismuth-214 (Bi-214)	Gold-195 (Au-195)	Phosphorus-32 (P-32)	Radon-222 (Rn-222)	Thallium-209 (Tl-209)	Zirconium-93 (Zr-93)
Cadmium-109 (Cd-109)	Hydrogen-3 (Tritium; H_3)	Plutonium-238 (Pu-238)	Rhenium-187 (Re-187)	Thorium-227 (Th-227)	Zirconium-95 (Zr-95)
Carbon-14 (C-14)	Iodine-123 (I-123)	Plutonium-239/240 (Pu-239/240)	Rhodium-106 (Rh-106)	Thorium-228 (Th-228)	
Cerium-141 (Ce-141)	Iodine-125 (I-125)	Plutonium-241 (Pu-241)	Ruthenium-103 (Ru-103)	Thorium-229 (Th-229)	
Cerium-144 (Ce-144)	Iodine-129 (I-129)	Plutonium-242 (Pu-242)	Ruthenium-106 (Ru-106)	Thorium-230 (Th-230)	
Cesium-134 (Cs-134)	Iodine-131 (I-131)	Polonium-210 (Po-210)	Samarium-147 (Sm-147)	Thorium-231 (Th-231)	
Inorganics					
Aluminum	Cerium	Hydrobromic acid	Manganese/permanganate	Phosphotungstic acid	Sulfuric acid
Ammonia/ammonium	Chloride/perchlorate	Hydrochloric acid	Mercury (inorganic)	Platinum	Tantalum
Antimony	Chloroplatinic acid	Hydrofluoric acid	Molybdenum	Plutonium	Tellurium
Arsenic	Chromium	Hydrogen	Neodymium	Potassium	Tin
Barium	Chromium (VI)	Hydrogen peroxide	Nickel	Rhodium	Titanium
Beryllium	Cobalt	Hydroxide	Nitrogen/nitrate/nitrite	Ruthenium	Tungsten

Table 9. Comprehensive Constituents List Associated with Central Plateau Processes and Liquid Waste Management

Inorganics (continued)					
Bismuth	Copper	Indium	Nitric acid	Selenium	Uranium
Boron/borate	Cyanide	Iodine/iodate	Osmium	Silicon	Vanadium
Boric acid	Fluoride	Iron	Oxygen/oxides	Silver	Yttrium
Bromine/bromate	Gallium	Lanthanum	Ozone	Sodium	Zinc
Cadmium	Germanium	Lead	Periodic acid	Strontium	Zirconium
Calcium	Gold	Lithium	Phosphorus/phosphate	Sulfide/sulfite/sulfates	
Carbon/carbonate	Hafnium	Magnesium	Phosphoric acid	Sulfamic acid	
Organics					
1,1-Dichlorethane	Acetonitrile	Cyclopentane	Hydroxylamine hydrochloride	Octachloronaphthalene	Total petroleum hydrocarbons
1,1-Dichlorethene	Acetophenone	Dichlorodiphenyldichloroethane	Hydroxylamine nitrate	o-Phenanthroline	Toxaphene
1,1-Dimethylhydrazine	Acrolein	Dichlorodiphenyltrichloroethane	Hydroxyquinoline	Orvus K	trans-1,2-Dichloroethene
1,1,1-Trichloroethane	Acrylonitrile	Dichlorodiphenyldichloroethylene	Hyflo-Super-Cel	Oxalic acid	trans-1,3-Dichloropropene
1,1,2-Trichloroethane	Aldrin	Decane	Immunol 1468-2	Oxirane (ethylene oxide)	Tributyl phosphate
1,1,2,2-Tetrachloroethane	Alizarin yellow	Di-(2-ethylhexyl) phosphoric acid	Indeno[1,2,3-cd]pyrene	o-Xylene	Trichloroethylene
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	alpha-BHC	Diacetone alcohol	Ionac A-580/Permutit	Pace-S-Teen	Trichlorofluoromethane
1,2-Dichlorbenzene	Ammonium oxalate	Dibenz[a,h]anthracene	Isodrin	Pentachloronaphthalene	Triethylamine
1,2-Dichloroethane	Ammonium perfluorooctanoate	Dibenzofuran	Isopropyl alcohol	Pentachlorophenol	tri-iso-Octylamine
1,2,2-Trichloro-1,1,2-trifluorethane	AMSCO	Dibutyl butyl phosphonate	Jasco® paint stripper	Pentasodium diethylene triamine pentaacetate	tri-n-Dodecylamine
1,2,4-Trichlorobenzene	Anthracene	Dibutyl phosphate	Kelite 25E	Penvert 192	tri-n-Octylamine
1,3-Butadiene	Anti-Foam 60	Dichlorodifluoromethane	Keraff	Peroklean	tris(hydroxymethyl)aminomethane
1,3-Dichlorobenzene	Arsenazo III	Dichlorofluoromethane (Freon 21)	Kerosene	Phenanthrene	Trisodium hydroxyethyl ethylenediamine triacetate
1,4-Dinitrobenzene	Benzene	Dichloromethane (methylene chloride)	Lard oil	Phenol	Trisodium nitrilo triacetate
1,4-Dioxane	Benzene hexachloride	Dieldrin	Madelic acid	Phosphotungstic acid	Turco (Fabricfilm)
1-Chloroethene (vinyl chloride)	Benzo(a)anthracene	Diethylphthalate	Methanol	Picric acid	Turco 2822
1-Methylpropyl alcohol (2-butanol)	Benzo(a)pyrene	Di-n-butylphthalate	Methyl isobutyl ketone (hexone)	p-nitrochlorobenzene	Turco 4358-4A
2,4-Dinitrophenol	Benzo(b)fluoranthene	Diversy Chemical 159	Methyl isocyanate	Polychlorinated biphenyls	Turco 4501 A
2,4-Dinitrotoluene	Benzo(ghi)perylene	Dodecane	Methyl lactic acid	Propionitrile	Turco 4518
2,4,5-Trichlorophenol	Benzo(k)fluoranthene	Dow Anti-Foam B	Methylcyclohexane	p-Xylene	Turco 4521
2,6-bis(tert-Butyl)-4-methylphenol	Benzyl alcohol	DOWEX™ 21 K/Amberlite XE-270	Methylhydrazine	Pyridine	Turco 4605-8
2-Butanone (methyl ethyl ketone)	beta-BHC (Lindane)	Duolite ARC-359™	Mineral oil	Saf-Tee Solvent F.O. 128	Turco 4669
2-Butaenaldehyde (2-butenal)	Biphenyl	Endrin	Molybdate-citrate reagent	s-diphenyl carbazide	Turco 4715
2-Heptanone	Bromocresol purple	Ethanol	Mono-2-ethylhexyl phosphoric acid	Shell E-2342	Turco 4738

Table 9. Comprehensive Constituents List Associated with Central Plateau Processes and Liquid Waste Management

Organics (continued)					
2-Hexanone	Bromomethane	Ethyl benzene	Monobutyl phosphate	Shell spray base	Pyrene
2-Methyl-2propanol	Bromonaphthalene	Ethyl ether	m-xylene	Sodium gluconate	Turco alkaline
2-Methyl-2-propenenitrile	Butane	Ethylene dirbromide	Naphthalene	Sodium tartrate	Turco Deseal Zit 2
2-Methylphenol (o-cresol)	Butanol	Ethylene glycol	Naphthylamine	Soltrol-170	Turco EPO Strip
2-Pentanone	Butylated hydroxy toluene	Ethylene-diamine tetraacetic acid	n-Butyl benzene	Spartan DC 13	Turco EPO Strip NP
2-Propenoic acid	Carbazole	Fluoranthene	n-Heptane	Sugar	Turco Plaudit
2-sec-Butyl-4,6-dinitrophenol (dinoseb)	Carbon tetrachloride	Formaldehyde	n-Hexane	Sulfonic acid	Turco T-5561
3-Chloropropene	Chlordane	Formic acid	Nitrilotriacetic acid	Super Gel Hyflo	Turco T-5589
3-Heptanone	Chlorobenzene	gamma-BHC (Lindane)	Nitrobenzene	Tartaric acid	Turco 2844
3-Methyl-2-butanone	Chlorodifluoromethane (Freon 22)	Glycerol	n,n-Diphenylamine	Tetrabromoethane	Urea
3-Pentanone	Chlorethane	Greases	n-Nitroso-n,n-dimethylamine	Tetrachloroethylene	West Lode degreaser
4-Heptanone	Chloroform	Heptachlor	n-Nonane	Tetrachloronaphthalene	Wyandotte 1112
4-Methylphenol (p-cresol)	Chloromethane	Hexachlorobenzene	n-Octane	Tetradecane	Wyandotte Kevlar
5-Methyl-2-hexanone	Chrysene	Hexachlorobutadiene	Normal paraffin hydrocarbons	Tetrahydrofuran	Wyandotte MF
Acenaphthene	cis-1,2-Dichloretheylene	Hexachloroethane	n-Pentane	Tetraphenyl boron	Wyandotte P1075
Acenaphthylene	cis-1,2-Dichloretheylene	Hexachloronaphthalene	n-Propionaldehyde	Thenoyltrifluoroacetone	Xylene
Acetic acid	Citric acid	Hexafluoroacetone	n-Propyl alcohol (1-propanol)	Thymolphthalein	
Acetic acid ethyl ester	Cyclohexane	Hexanal	Oakite® clear guard	Tide	
Acetic acid n-butyl-ester	Cyclohexanone	Hydrazine	Oakite rust stripper	Toluene	
Acetone	Cyclohexene	Hydroxyacetic acid	Oakite Swiff	Total organic carbon	

Sources:

200 Areas Disposal Sites for Radioactive Liquid Wastes (ARH-947).

B Plant Aggregate Area Study Technical Baseline Report (BHI-00179).

B Plant Source Aggregate Area Management Study *Report* (DOE/RL-92-05).

Hanford Site Stream-Specific Reports (WHC-EP-0342, addenda 2, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, and 32).

Hanford Soil Inventory Model, Rev. 1 (RPP-26744).

Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4 (LA-UR-96-3860)

Inventory of Chemicals Used at Hanford Site Production Plants and Support Operations (1944-1980) (WHC-EP-0172).

PUREX Source Aggregate Area Management Study Report (DOE/RL-92-04).

Radionuclide Inventories of Liquid Waste Disposal Sites on the Hanford Site (HNF-1744).

Removal of Cesium from Uranium Recovery Process Wastes (HW-31442).

S Plant Source Aggregate Area Management Study Report (DOE/RL-91-60).

S Plant Aggregate Area Management Study Report (DOE/RL-91-60).

Semi-Works Source Aggregate Area Management Study Report (DOE/RL-92-18).

T Plant Aggregate Area Management Study Technical Baseline Report (BHI-00177).

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U Plant Source Aggregate Area Management Study Report (DOE/RL-91-52).

Z Plant Aggregate Area Management Study Technical Baseline Report (BHI-00175).

Z Plant Source Aggregate Area Management Study Report (DOE/RL-91-58).

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5 Waste Site Groups

This chapter describes the 200-IS-1 OU waste site groups that were identified to support information management during the RFI/CMS/RI/FS process. These groupings provide a framework for developing conceptual site models and for identifying potential cleanup actions and associated data needs. The waste site groups (i.e., pipelines, liquid management structures, underground tanks, UPRs, and unique sites) are based on the current understanding of historical processes and generally align with the existing WIDS administrative waste site designations. Sections 5.1 through 5.5 discuss each waste site group in greater detail.

Based on information compiled during the scoping process (Chapters 3 and 7), each 200-IS-1 OU waste site was assigned to the waste site group most closely representing its characteristics.[3] Table 10 provides the number of 200-IS-1 OU waste sites in each group and Table 11 lists individual waste site group assignments.

5.1 Pipelines

Waste sites in the pipelines group—which are further categorized as process transfer lines or process sewers—conveyed liquid waste and other process liquids generated on the Central Plateau.

Process transfer lines are primarily associated with intermittent transfers of high-activity waste between processing facilities and/or tank farms (Table 2 gives examples of high-activity waste). These transfer lines were designed, operated, and monitored to minimize and control pipeline failures such as leaks or blockages. Depending on design needs and construction date, process transfer lines were either directly buried in the soil or installed within various encasement types (e.g., concrete or pipe-in-pipe). Where present, encasements provided a barrier between pipelines and the external environment and allowed for monitoring and control of any leaked waste. Process transfer lines that failed were promptly isolated and then repaired or abandoned in place (HW-24500, *Protection of Exterior Buried Waste Lines*; WHC-EP-0400, *200-UP-2 Operable Unit Technical Baseline Report*; TO-230-098, *Specific Cross-Site Transfer Procedure TK-102-SY to TK-102-AW Via 244-S*; FDM-T-020-00002, *Waste Transfer and Routing Facilities, Facility Description Manual*).

Process sewers are generally associated with intermittent or regular discharges of intermediate- and low-activity wastes, including processing wastes, cooling water, and condensate to a soil discharge feature (e.g., crib or pond) or intermediate treatment or holding facility (Table 2 gives examples of intermediate- and low-activity waste). Process sewers were primarily direct buried but were sometimes incidentally included in an encasement. While designed to minimize failures, process sewers were not typically operated and monitored as closely as the process transfer lines.

5.2 Liquid Management Structures

Waste sites in the liquid management structures group were used to manage and direct liquid waste transfers through pipelines. The diversion boxes, diverter station, and valve pits were not designed or operated to retain liquids, but control structures held liquid wastes as part of normal operations. Diversion boxes and diverter stations were also designed with leak drainage and collection systems (e.g., drain lines connected to a dedicated catch tank) (WHC-EP-0400). Valve pits, which allowed for remote access at some pipeline connection points, did not always have drainage or collection systems.

[3] Waste sites consisting of a catch tank and an associated feeder and/or return pipeline were assigned to the underground tank group. Also, a waste site was considered to include any UPRs to soil that may have occurred from that site, unless a separate waste site had been defined for the release.

5.3 Underground Tanks

Waste sites in the underground tanks group were used to provide subsurface holding for various liquids (e.g., leaked or spilled liquid waste and rainfall or snowmelt seepage). The majority of tanks in this group are catch tanks that held liquids drained from their associated diversion boxes. These liquids were monitored and could be removed from the catch tank by pumping (FDM-T-020-00002; WHC-SD-EN-ES-040, *Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site*). Other underground tanks in this group include neutralization tanks, disposal tanks, and a settling tank.

5.4 Unplanned Releases

Waste sites in the UPRs group consist of contaminated soil resulting from known or suspected surface or subsurface liquid releases, deposition from airborne releases, or cross-contamination from historical repair or maintenance activities. The UPR sites vary greatly in size and nature, and they may have resulted from a single release or multiple release events.

5.5 Unique Sites

Waste sites in the unique sites group are distinct from other 200-IS-1 OU waste sites in construction and/or function and therefore cannot be associated with one of the aforementioned waste site groups.

6 Waste Site Listing

This chapter provides summary information for the 200-IS-1 OU waste sites, which currently include the sites listed in Appendix C of the *Hanford Federal Facility Agreement and Consent Order Action Plan* (Ecology et al., 1989b), hereafter referred to as the TPA Action Plan, as well as those that may be added to the 200-IS-1 OU through the formal TPA change package process.

Table 10 provides 200-IS-1 OU summary information, and Table 11 provides an alphanumeric listing of the 200-IS-1 OU waste sites. The following describes the columns in Tables 10 and 11:

- *Waste Site Code* – Lists the WIDS waste site code (Table 11 only).
- *Operable Unit* – Identifies each waste site's assigned operable unit. Those waste sites listed as "IS-1" have been assigned to the 200-IS-1 OU and are listed in Appendix C of the TPA Action Plan. Those waste sites listed as "to be determined (TBD) IS-1" are tentatively planned to be assigned to the 200-IS-1 OU in the future.
- *Waste Site Group* – Identifies each waste site's group assignment. See Chapter 5 for a description of waste site groups.
- *Segmented* – Identifies whether a waste site has been administratively segmented (administrative segmentation is being performed based on operational planning boundary considerations). Those waste sites listed as "Yes" have been segmented into multiple waste sites, and those listed as "No" have not. WIDS provides names for individual segments based on the original parent waste site's name followed by a segment identifier (e.g., 200-E-114-PL-A; 200-E-114-PL-B; 200-E-114-PL-C), and each segment has its own WIDS GSR.
- *Regulatory Determination* – Identifies the waste site as a RCRA treatment, storage, and disposal (TSD) unit or RCRA-CERCLA past practice (R-CPP) unit. Appendix C of the TPA Action Plan includes determinations for the waste sites that have been assigned to the 200-IS-1 OU; however, this

column has been left blank as a currently-drafted TPA change package will most likely change or add determinations for many of the wastes sites listed in Table 11. Regulatory determinations for each site will be included once the 200-IS-1 OU scope has been defined through the formal TPA change package process.

Table 10. 200-IS-1 OU Waste Site Listing Summary

Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-IS-1 (75) TBD 200-IS-1 (231)	Process Transfer Line (54) Process Sewer (162) Liquid Management Structure (27) Underground Tank (16) Unplanned Release (38) Unique Site (9)	Yes (119) No (187)	Regulatory determinations are not included at this time but will be added in a future revision.

Note: Parentheses show the number of parent waste sites falling within each category.

TBD = to be determined

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-E-111-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-112-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-113-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-114-PL	200-IS-1	Process Sewer	Yes	See note
200-E-116-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-126-PL-B	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-127-PL-B	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-135	TBD 200-IS-1	Unplanned Release	No	See note
200-E-143-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-144-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-145-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-147-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-148-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-149-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-150-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-151-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-152-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-153-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-154-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-155-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-156-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-157-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-158-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-159-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-160-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-161-PL	TBD 200-IS-1	Process Sewer	Yes	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-E-162-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-164-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-165-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-166-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-167-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-168-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-169-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-170-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-171-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-172-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-173-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-174-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-175-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-176-PL-A	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-177-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-178-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-179	TBD 200-IS-1	Underground Tank	No	See note
200-E-182-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-183-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-184-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-185-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-186-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-187-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-188-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-189	TBD 200-IS-1	Underground Tank	No	See note
200-E-190	TBD 200-IS-1	Underground Tank	No	See note
200-E-191-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-192-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-193-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-194-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-195-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-198-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-199-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-201-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-202-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-203-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-204-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-205-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-206-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-207-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-209-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-213-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-214-PL	TBD 200-IS-1	Process Sewer	No	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-E-215-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-217-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-218-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-219-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-220-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-221-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-222-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-223	TBD 200-IS-1	Liquid Management Structure	No	See note
200-E-224-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-225-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-226-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-227-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-228-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-229-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-E-230-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-231-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-232-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-233-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-234-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-238-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-239-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-240-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-241-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-242-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-243-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-244-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-245-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-246-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-247-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-248-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-249-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-250-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-251-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-252-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-253-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-254-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-255-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-257-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-258-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-259-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-260-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-261-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-262-PL	TBD 200-IS-1	Process Sewer	No	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-E-263-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-264-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-265-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-266-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-267-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-268-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-269-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-270-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-271-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-272-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-273-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-274-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-275-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-276-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-277-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-279-PL	TBD 200-IS-1	Process Sewer	No	See note
200-E-281-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-282-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-E-283-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-E-285	TBD 200-IS-1	Liquid Management Structure	No	See note
200-E-291-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-7	200-IS-1	Underground Tank	No	See note
200-W-16	200-IS-1	Underground Tank	No	See note
200-W-58	200-IS-1	Liquid Management Structure	No	See note
200-W-59	200-IS-1	Liquid Management Structure	No	See note
200-W-78-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-79-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-84-PL	200-IS-1	Process Sewer	Yes	See note
200-W-88-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-97-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-98-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-99-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-100-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-105-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-125-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-129-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-130-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-131-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-132-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-137-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-138-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-139-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-140-PL	TBD 200-IS-1	Process Sewer	Yes	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-W-141-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-142-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-143-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-146-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-147-PL-B	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-149-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-150-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-151-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-152-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-153-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-154-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-155-PL-B	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-156-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-157-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-158-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-159-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-160-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-161-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-162-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-163-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-164-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-165-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-166-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-167-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-168-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-170-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-171	TBD 200-IS-1	Unplanned Release	No	See note
200-W-172	TBD 200-IS-1	Unplanned Release	No	See note
200-W-173-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-175-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-176-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-177-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-178-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-179-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-180-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-181-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-182-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-W-183-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-W-184-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-185-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-186-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-W-187-PL	TBD 200-IS-1	Process Transfer Line	No	See note
200-W-188-PL	TBD 200-IS-1	Process Sewer	No	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
200-W-190-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-191-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-192-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-193-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-194-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-195-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-196-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-197-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-198-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-199-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-200-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-201-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-202-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-203-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-204-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-209-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-212-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-213-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-216-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-219-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
200-W-222-PL	TBD 200-IS-1	Process Sewer	No	See note
200-W-223-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-224-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-225-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-226-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-227-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-228-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-229-PL	TBD 200-IS-1	Process Sewer	Yes	See note
200-W-230-PL	TBD 200-IS-1	Unique Site	No	See note
200-W-235-PL	TBD 200-IS-1	Process Sewer	No	See note
216-A-508	200-IS-1	Liquid Management Structure	No	See note
216-A-524	200-IS-1	Liquid Management Structure	No	See note
216-S-172	200-IS-1	Liquid Management Structure	No	See note
216-TY-201	200-IS-1	Underground Tank	No	See note
240-S-151	200-IS-1	Liquid Management Structure	No	See note
240-S-152	200-IS-1	Liquid Management Structure	No	See note
240-S-302	200-IS-1	Underground Tank	No	See note
241-AR-151	TBD 200-IS-1	Liquid Management Structure	No	See note
241-AX-151	TBD 200-IS-1	Liquid Management Structure	No	See note
241-B-154	200-IS-1	Liquid Management Structure	No	See note
241-B-302B	200-IS-1	Underground Tank	No	See note
241-BX-154	200-IS-1	Liquid Management Structure	No	See note
241-BX-155	200-IS-1	Liquid Management Structure	No	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
241-BX-302B	200-IS-1	Underground Tank	No	See note
241-BX-302C	200-IS-1	Underground Tank	No	See note
241-C-154	200-IS-1	Liquid Management Structure	No	See note
241-CX-70	200-IS-1	Unique Site	No	See note
241-CX-71	200-IS-1	Unique Site	No	See note
241-CX-72	200-IS-1	Unique Site	No	See note
241-ER-151	200-IS-1	Liquid Management Structure	No	See note
241-ER-152	200-IS-1	Liquid Management Structure	No	See note
241-ER-153	TBD 200-IS-1	Liquid Management Structure	No	See note
241-ER-311	200-IS-1	Underground Tank	No	See note
241-ER-311A	200-IS-1	Underground Tank	No	See note
241-EW-151	TBD 200-IS-1	Unique Site	No	See note
241-TX-152	200-IS-1	Liquid Management Structure	No	See note
241-TX-154	200-IS-1	Liquid Management Structure	No	See note
241-TX-155	200-IS-1	Liquid Management Structure	No	See note
241-TX-302B	200-IS-1	Underground Tank	No	See note
241-TX-302BR	200-IS-1	Underground Tank	No	See note
241-TX-302C	200-IS-1	Underground Tank	No	See note
241-U-151	200-IS-1	Liquid Management Structure	No	See note
241-U-152	200-IS-1	Liquid Management Structure	No	See note
241-UX-154	200-IS-1	Liquid Management Structure	No	See note
241-UX-302A	200-IS-1	Underground Tank	No	See note
241-Z	200-IS-1	Unique Site	No	See note
244-AR VAULT	TBD 200-IS-1	Unique Site	No	See note
276-S-141	200-IS-1	Unique Site	No	See note
276-S-142	200-IS-1	Unique Site	No	See note
2904-S-160	200-IS-1	Liquid Management Structure	No	See note
2904-S-171	200-IS-1	Liquid Management Structure	No	See note
600-284-PL	TBD 200-IS-1	Process Transfer Line	Yes	See note
HSVP	200-IS-1	Liquid Management Structure	No	See note
UPR-200-E-3	200-IS-1	Unplanned Release	No	See note
UPR-200-E-7	200-IS-1	Unplanned Release	No	See note
UPR-200-E-18	TBD 200-IS-1	Unplanned Release	No	See note
UPR-200-E-42	200-IS-1	Unplanned Release	No	See note
UPR-200-E-45	200-IS-1	Unplanned Release	No	See note
UPR-200-E-67	200-IS-1	Unplanned Release	No	See note
UPR-200-E-77	200-IS-1	Unplanned Release	No	See note
UPR-200-E-78	200-IS-1	Unplanned Release	No	See note
UPR-200-E-79	TBD 200-IS-1	Unplanned Release	No	See note
UPR-200-E-84	200-IS-1	Unplanned Release	No	See note
UPR-200-E-100	TBD 200-IS-1	Unplanned Release	No	See note
UPR-200-E-145	200-IS-1	Unplanned Release	No	See note
UPR-200-W-2	200-IS-1	Unplanned Release	No	See note

Table 11. 200-IS-1 OU Waste Site Listing

Waste Site Code	Operable Unit	Waste Site Group	Segmented	Regulatory Determination
UPR-200-W-5	200-IS-1	Unplanned Release	No	See note
UPR-200-W-6	200-IS-1	Unplanned Release	No	See note
UPR-200-W-28	200-IS-1	Unplanned Release	No	See note
UPR-200-W-29	200-IS-1	Unplanned Release	No	See note
UPR-200-W-32	200-IS-1	Unplanned Release	No	See note
UPR-200-W-35	200-IS-1	Unplanned Release	No	See note
UPR-200-W-38	200-IS-1	Unplanned Release	No	See note
UPR-200-W-64	200-IS-1	Unplanned Release	No	See note
UPR-200-W-97	200-IS-1	Unplanned Release	No	See note
UPR-200-W-98	200-IS-1	Unplanned Release	No	See note
UPR-200-W-102	200-IS-1	Unplanned Release	No	See note
UPR-200-W-108	200-IS-1	Unplanned Release	No	See note
UPR-200-W-109	200-IS-1	Unplanned Release	No	See note
UPR-200-W-113	200-IS-1	Unplanned Release	No	See note
UPR-200-W-114	200-IS-1	Unplanned Release	No	See note
UPR-200-W-115	200-IS-1	Unplanned Release	No	See note
UPR-200-W-130	200-IS-1	Unplanned Release	No	See note
UPR-200-W-131	200-IS-1	Unplanned Release	No	See note
UPR-200-W-135	200-IS-1	Unplanned Release	No	See note
UPR-200-W-161	200-IS-1	Unplanned Release	No	See note
UPR-200-W-164	200-IS-1	Unplanned Release	No	See note
UPR-200-W-167	200-IS-1	Unplanned Release	No	See note

Note: Regulatory determinations are not included at this time but will be added once the 200-IS-1 OU scope has been defined through the formal TPA change package process.
TBD = to be determined

7 Waste Site Scoping Summaries

This chapter presents the individual scoping summaries for the 200-IS-1 OU waste sites. These scoping summaries, which begin on page 57 and are provided in the same order as Table 11 (i.e., alphanumerically by waste site code), are the product of the scoping process described in Chapter 3 and present detailed site-specific information significant to risk characterization and cleanup action selection for the 200-IS-1 OU.[4] A collaborative approach involving the Washington State Department of Ecology (Ecology), DOE-RL, and the 200-IS-1 OU project team was used to develop the scoping summary layout and content. Figure 1 provides the layout and sections shown on the first page of each scoping summary. It also describes the type of information provided on the first page of each scoping summary and lists the types of references used in information gathering.

[4] The 200-E-114-PL scoping summary also includes 200-E-221-PL and 200-E-222-PL; 241-TX-302B and 241-TX-302BR are combined in one scoping summary

Page 1 of 1 **Scoping Summary: Waste Site Code**

History

Summarizes key historic information such as operational dates, known or suspected releases (if applicable), and as-left or current conditions.

Note: The absence of statements regarding known or suspected releases from a waste site, combined with an absence of unplanned release (UPR) sites, rooted contaminated tumbleweeds, or animal intrusion/droppings in the vicinity of a waste site, may suggest that no leaks or releases occurred; however, the possibility of an unknown or undocumented release cannot be ruled out.

Information sources: references identified in the Waste Information Data System (WIDS) general summary report (GSR) and WIDS Library, project and facility evaluations, daily and monthly work reports, aggregate area management reports, and engineering drawings.

Displays a plan view map showing the waste site components and any applicable site interfaces or features of interest. The following color-coding conventions were used for these maps:

- Blue = Waste site (or portions of waste site) less than 15 feet below ground surface (bgs)
- Green = Waste site (or portions of waste site) greater than or equal to 15 feet bgs
- Pink = Portions of waste site within Tank Farm boundaries
- Orange = Intersecting waste site(s)

Maps were generated using Hanford geographic information system (GIS) data overlain with features of interest and any corrections based on engineering drawings.

Construction

Provides physical details which may vary depending on the waste site type or group (i.e., pipeline, liquid management structure, underground tank, unplanned release, unique site). Example construction details include:

- Dimensions (i.e., length, diameter, internal volume)
- Depth
- Construction material type
- Flow method (e.g., gravity flow or pressurized)
- Encasement type

Information sources: engineering drawings and geographic information system (GIS) data.

Features of Interest

Highlights portions of the waste site that may support sampling strategy development. Features of interest vary depending on the waste site type or group and include things such as:

- Test risers, elbows, bends, and expansion joints
- Isolation caps
- Floor drains
- Valves

Information source: engineering drawings.

Relevant Characterization

Summarizes relevant investigation data and observations. Existing characterization data was not typically available for waste sites without a documented release.

Information sources: radiological surveys, incident reports, well and borehole logs, and unplanned release (UPR) investigations.

Waste Streams

Summarizes the chemical processes supported by the waste site and provides information regarding the waste streams that were transported by, contained in, or came in contact with the waste site. See Chapter 4 for more information on the waste streams and/or waste stream codes referenced in this section.

Information sources: tank reports, Tanks Farm and process transfer histories, and cribs/trenches disposal records and investigations results.

Misc./Other Relevant Information

Contains any important details that do not fall within the other sections' scope. Examples of other relevant information include:

- Information related to inconsistancies between source documents
- Noted uncertainties about site conditions

Information sources: various.

Site Interfaces

Origin/Termination

Provides details on waste site starting and ending locations.

Site Intersects

Lists other waste sites that intersect or are in the vicinity of the subject waste site and identifies key interfaces with other operable units (OUs) and/or waste management areas (WMAs).

Information sources: geographic information system (GIS) data and engineering drawings

Figure 1. Annotated Scoping Summary

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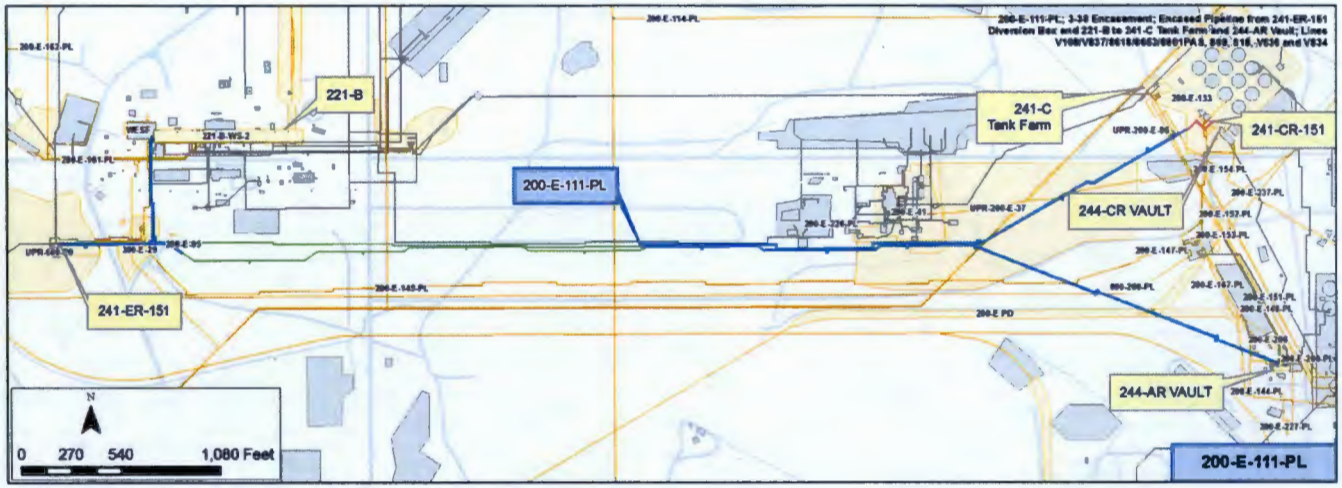
Scoping Summary: 200-E-111-PL

History

The 200-E-111-PL waste site is a series of inactive underground radioactive process sewer pipelines initially constructed to transport waste from the 221-B facility to the C Tank Farm via the 241-CR-151 Diversion Box. The site was originally built circa 1952 as part of the waste metal recover project and was modified in the late 1960s to add the Sludge Removal and Waste Transfer Line.

From 1968 to 1978, wastes were sent to the 244-AR Vault for processing where cesium was concentrated in the liquid phase, and strontium in the sludge phase. Liquid was sent to B-Plant for cesium recovery, and sludge went to the 244-CR Vault for further processing.



Construction

- Total Length: 25,833
- Diameter: 3-in.
- Composition: Stainless Steel
- Initially Gravity, later Pressurized
- Direct Buried: 8653/V836/8618 (PCW)
- Encasement Specifications: 3-38 Concrete for 834/8653/818
- (NHW), V833/8618/809 (PAW) and V837/V108/8653/8901 (PAS)
- Depth: 4-19 ft bgs
- Total Calculated Volume: 9,217 gal

Features of Interest

- 1968 modifications included breaching and resealing existing encasements for:
  - 14 loop expansion
  - 5 single pipe "S" joints
  - 4 "L" joints buried under corrugated steel half pipes
  - Spliced new lines to existing lines, realigned encasements at direction changes
- Swab risers, posted with light chain along the pipeline

Relevant Characterization

- Radiological surveys discovered 300,000 dpm on tumbleweeds and the ground in 2005, then badger holes and tumbleweeds above the buried pipeline in 2006

Waste Streams

- B Plant - Bismuth Phosphate Process (BiPO4)
  - MW2: Metals Waste
- 244-AR Vault waste included
  - CWP1/2: Aluminum cladding waste
  - CWZr1/2: Zirconium cladding waste
  - 244-AR Vault also processed Neutralized High-Level Waste (NHW) that was generated during the 221-B Plant waste fractionization of PAW by solvent extractions

Misc./Other Relevant Information

- The entire pipeline is posted URM and there are two URMAs

Site Interfaces

Origin/Termination:

221-B (facility)

WMA C
- 244-CR Vault

200-IS-1
- 244-AR Vault

Site Intersects:

200-IS-1 OU
- 200-E-114-PL
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-151-PL
- 241-E-152-PL
- 200-E-153-PL
- 200-E-154-PL
- 200-E-167-PL
- UPR-200-E-84

Site Intersects (Cont.):

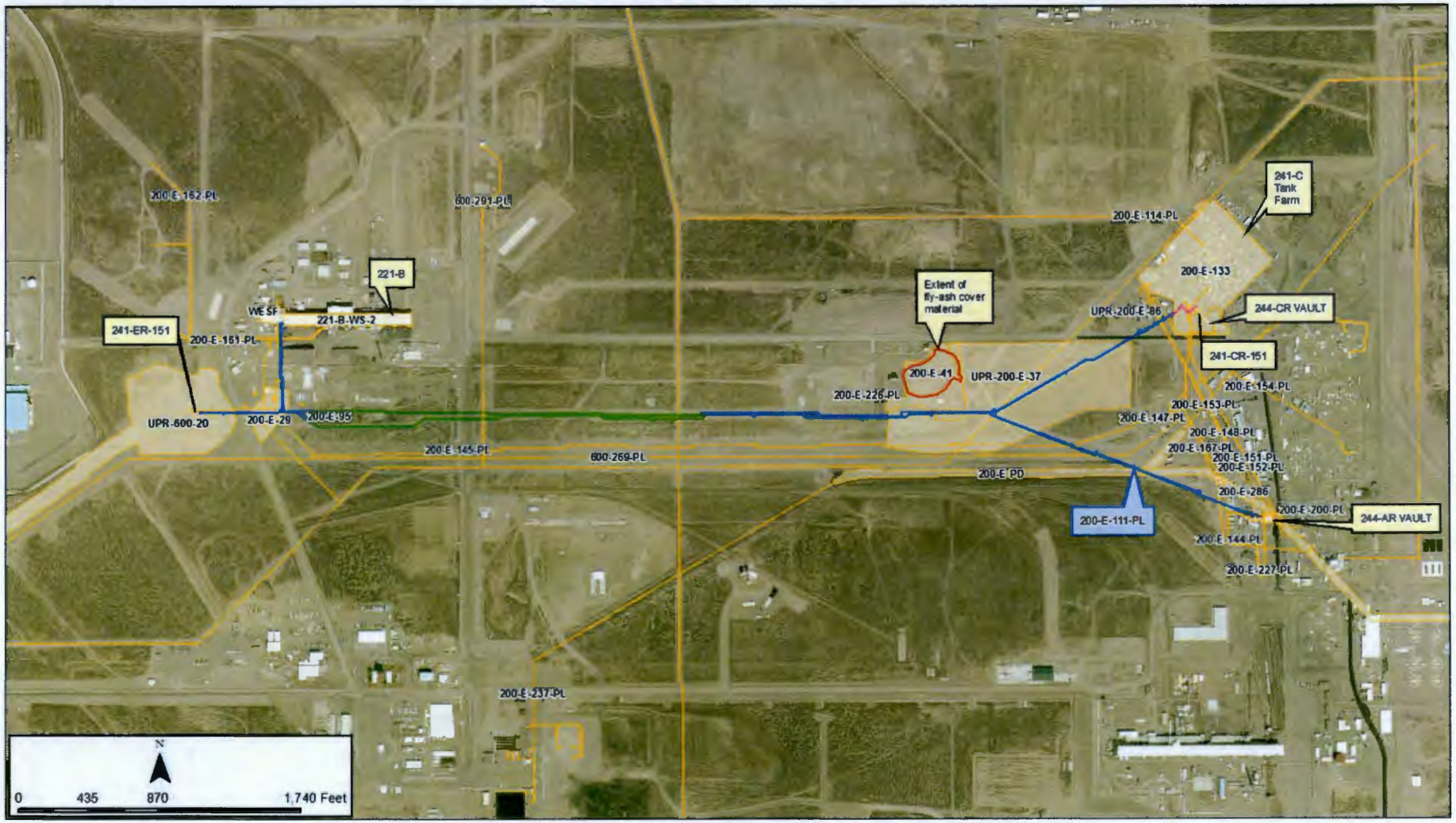
200-EA-1 OU
- 200-E-29 (UPR)
- UPR-200-E-37
- 200-E PD

200-OA-1 OU
- UPR-600-20

WMA C
- 241-CR-151
- UPR-200-E-86
- 200-E-133

No Operable Unit
- 200-E-237-PL
- 200-E-286
- 600-269-PL
- 600-291-PL

Scoping Summary: 200-E-111-PL

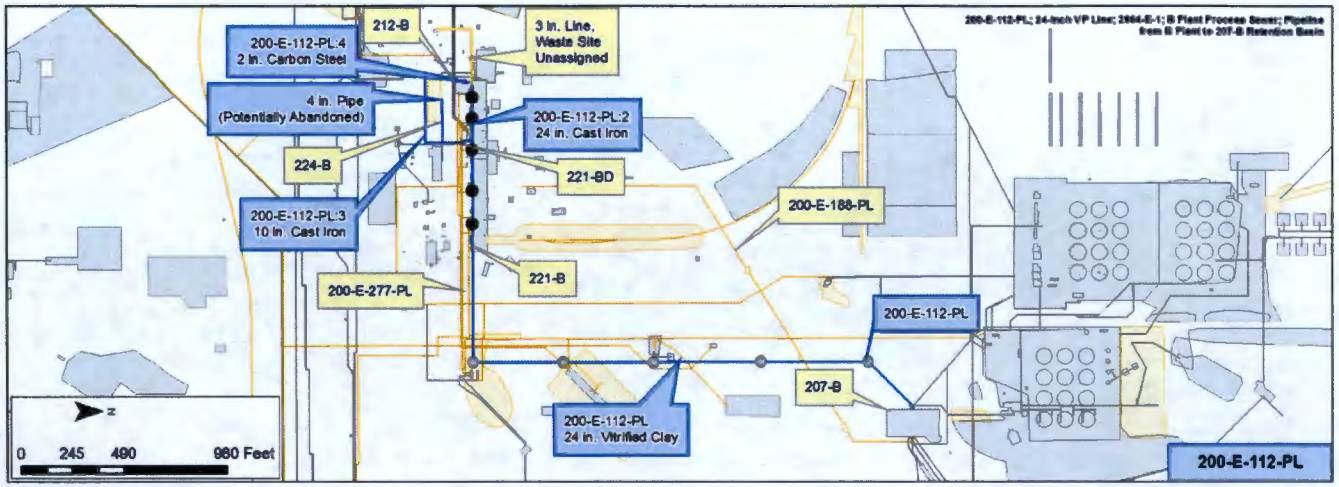


Scoping Summary: 200-E-112-PL

History

The 200-E-112-PL waste site is an inactive underground radioactive process sewer that transferred process effluent and cooling water from the south side of 221-B Plant Building structures 221-B, 212-B, and 224-B to the 207-B Retention Basin.

By the late 1960's, it is indicated that a short 4 in. sewer line north of 224-B was either disconnected or abandoned. The last recorded transfer of liquid waste in 200-E-112-PL was in 1997.



Construction

Vitrified Clay: 1 Pipe (200-E-112-PL: 1)

- Length: 2,300 ft
- Diameter: 24 in.
- Gravity flow
- Direct Buried: 2-to-20 ft bgs
- Calculated volume: 54,050 gal

Cast Iron: 3 Pipes (24 in. , 10 in., and 4 in.) (200-E-112-PL: 2,3,4)

- Length: 1,200 ft (for 24 in.); 530 ft (for 10 in.); 135 ft (4 in.)
- Gravity flow
- Direct Buried: ~2-to-20 ft bgs
- Cathodic Protection: None Located
- Calculated volume: 30,448 gal

Carbon Steel: 1 Pipe

- Length: 40 ft
- Diameter: 2 in.
- Gravity flow
- Direct Buried: ~2 ft bgs
- Cathodic Protection Observed
- Calculated volume: 7 gal

Features of Interest

- 5 pipe pits (black dots on maps)
- 2 Screens/Vent Pipe (Start and end of 221-B)
- 5 manholes (grey dots on maps)
- ~10 bends
- Multiple 6 in. Pipe connections from Buildings 221-B and 224-B into 200-E-112-PL (W-74397)
- 4 in. Line north of 224-B may be connected to the 10 in. line running north to connect with the 24 in. carbon steel line adjacent to 221-B

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils (except the 216-B-63 Ditch, located in Other Relevant Information)

Waste Streams

- Process: Drain Waste and Cooling Water
- Waste Streams: Process effluent and cooling water normally containing small amounts of radioactivity
- In November 1963 there was a release (UPR-200-E-32) of Ce-144 from 221-B through the 200-E-112-PL to the 207-B Retention Basin

Misc./Other Relevant Information

- Unassigned 3 in. Pipeline on the eastside of 221-B, see H-2-43603
- Estimated radionuclides content into the 216-B-63 Ditch (200-E-112-PL discharges went into the ditch) includes: 1.98 Ci Sr-90; 0.59 Ci Cs-137; 0.15 Ci Total U; 7.5E-02 Ci Total Alpha; 6.32 Ci Total Beta

Site Interfaces

Origin/Termination Point:

200-CB-1

- 221-B

Facilities

- 224-B
- 212-B

200-EA-1

- 207-B (Retention Basin)

Site Intersects:

No Operable unit

- 600-291-PL
- 200-E-138
- 200-E-28

Site Intersects:

200-IS-1

- 200-E-188-PL
- 200-E-198-PL
- 200-E-199-PL
- 200-E-195-PL
- 200-E-213-PL
- 200-E-226-PL
- 200-E-277-PL
- UPR-200-E-77

200-EA-1

- 216-B-59B

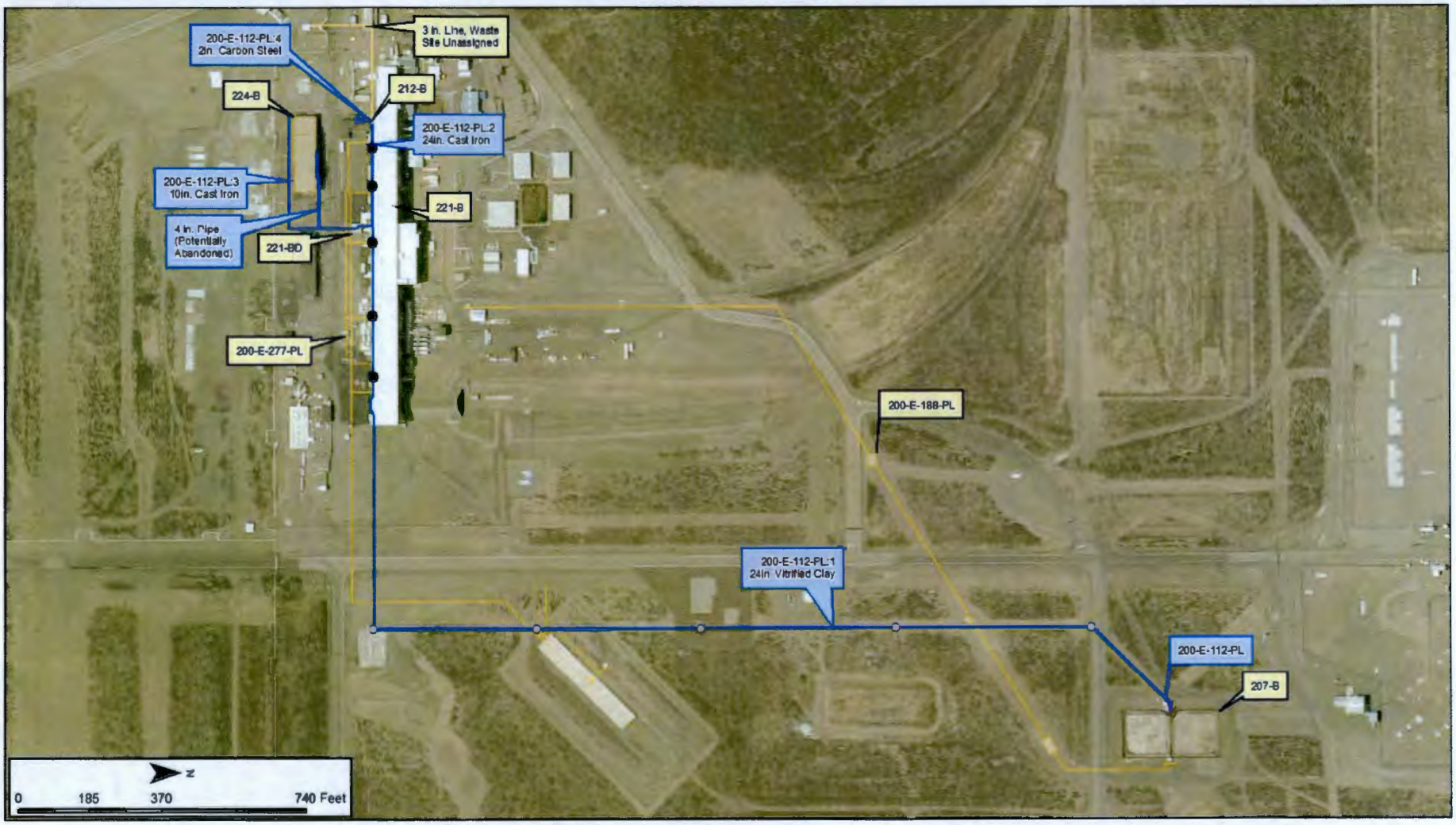
200-CB-1

- UPR-200-E-87

Facilities

- 221-BD
- 2711B

Scoping Summary: 200-E-112-PL

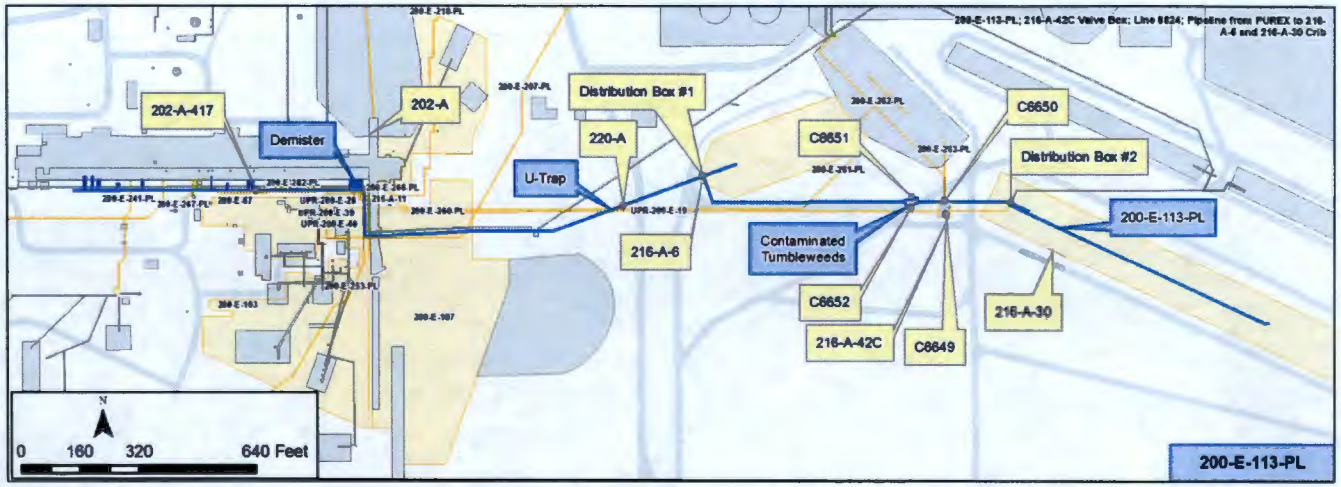


Scoping Summary: 200-E-113-PL

History

The 200-E-113-PL waste site is an inactive pipeline that consists of two segments (8824 and 8824B) that carried steam condensate waste from the 202-A PUREX Canyon and Service Facility to the 216-A-6 Crib and 216-A-30 Crib.

The original segment (8824) connecting the PUREX facility to the 216-A-6 Crib was constructed in 1955. A 45 ft. section at the west end was replaced in 1965 due to corrosion. The second segment (8824B) from Distribution Box #1 to the 216-A-30 Crib was added in 1960. Following the addition, the cribs were operated in parallel from 1961 to 1966. The 216-A-6 Crib was abandoned in 1970 and blanked where it exited Distribution Box #1. After determining that 200-E-113-PL was damaged by corrosion and leaking, it was removed from service in 1973 and replaced by 200-E-260-PL. The 200-A-30 Crib was isolated in 1995 by filling the crib distribution box with concrete.



Construction

- Length:
  - Segment 8824: 1,908 ft.
  - Segment 8824B: 1,675 ft.
- Diameter: 16 in.
- Composition: Carbon Steel
- Flow Method: Gravity
- Encasement: None
- Cathodic Protection
- Depth:
  - Segment 8824: 10 ft. - 23 ft.
  - Segment 8824B: 4 ft. - 17 ft.
- Calculated volume:
  - Segment 8824: 19,915 gal
  - Segment 8824B: 17,483 gal
- Disposition
  - Segment 8824: West End Capped
  - Segment 8824B: Connected to distribution box that was filled with concrete in 1995

Features of Interest

- 220-A Proportional Sampling Pit (see Figure 3). This feature was added in 1955 and was filled with concrete in 1975
- 202-A-417 Steam Condensate Pump Pit (Added in 1955 and was filled with concrete in 1975, see Figures 1 and 2)
- 2 elbows
- 2 bends
- 30 Tee connections
- 1 U-Trap (see H-2-3998 Section A-A')
- 1 Demister (see H-2-3998 Details II and III)
- Distribution Box #1 (west of the 216-A-6 Crib)
- Distribution Box #2 (west of the 216-A-30 Crib, assigned to the crib as part of 200-EA-1) - concrete filled in 1995

Relevant Characterization

- In 2000, contaminated tumbleweeds found over a 230 sq. ft. area just west of the 216-A-42C Valve Box
- In 2008, two test pits and four direct push borings (C6649-C6652) identified one bore with Cs-137 above background.
- Radiological surveys in 1972 and 2002 detected contamination in shallow soil (0 ft. to 4 ft. bgs) and contaminated tumbleweeds above the crib.
- Shallow soil contamination at 216-A-6 are the result of historical exceedances of crib capacity.

Waste Streams

- Waste Stream Process: PUREX
- Waste Streams: steam condensate from the 202-A PUREX Canyon and Service Facility to the 216-A-6 and 216-A-30 cribs between 1955 and 1992
- Consisted of condensate from the concentrator tube bundles, cooling water from vessel coils (TK-A3, -B3, -C3, -E1, -E6, -F8, -F15, -H1, and -J5) and the slug storage basin and jet out
- PUREX was put into standby mode in 1992 and never came on-line again

Misc./Other Relevant Information

- The pipeline passes through several features that are not mapped as part of the waste site. Two additional lines are located 2.5 ft. north of 8824 to replace two sections (125 ft. total) upstream of the Railroad Tunnel, and a steam condensate bypass pipe (200-E-260-PL, 8824A) from the pump pit to the 216-A-30 Crib.

Site Interfaces

Origin/Termination

- 202-A PUREX Canyon and Service Facility (origin)
- 216-A-6 Crib (termination)
- 216-A-30 Crib (termination)

Site Intersects

200-IS-1

- 200-E-207-PL
- 200-E-218-PL
- 200-E-241-PL
- 200-E-253-PL
- 200-E-260-PL
- 200-E-261-PL
- 200-E-262-PL
- 200-E-263-PL
- 200-E-266-PL
- 200-E-267-PL
- 200-E-282-PL

Site Intersects

No OU

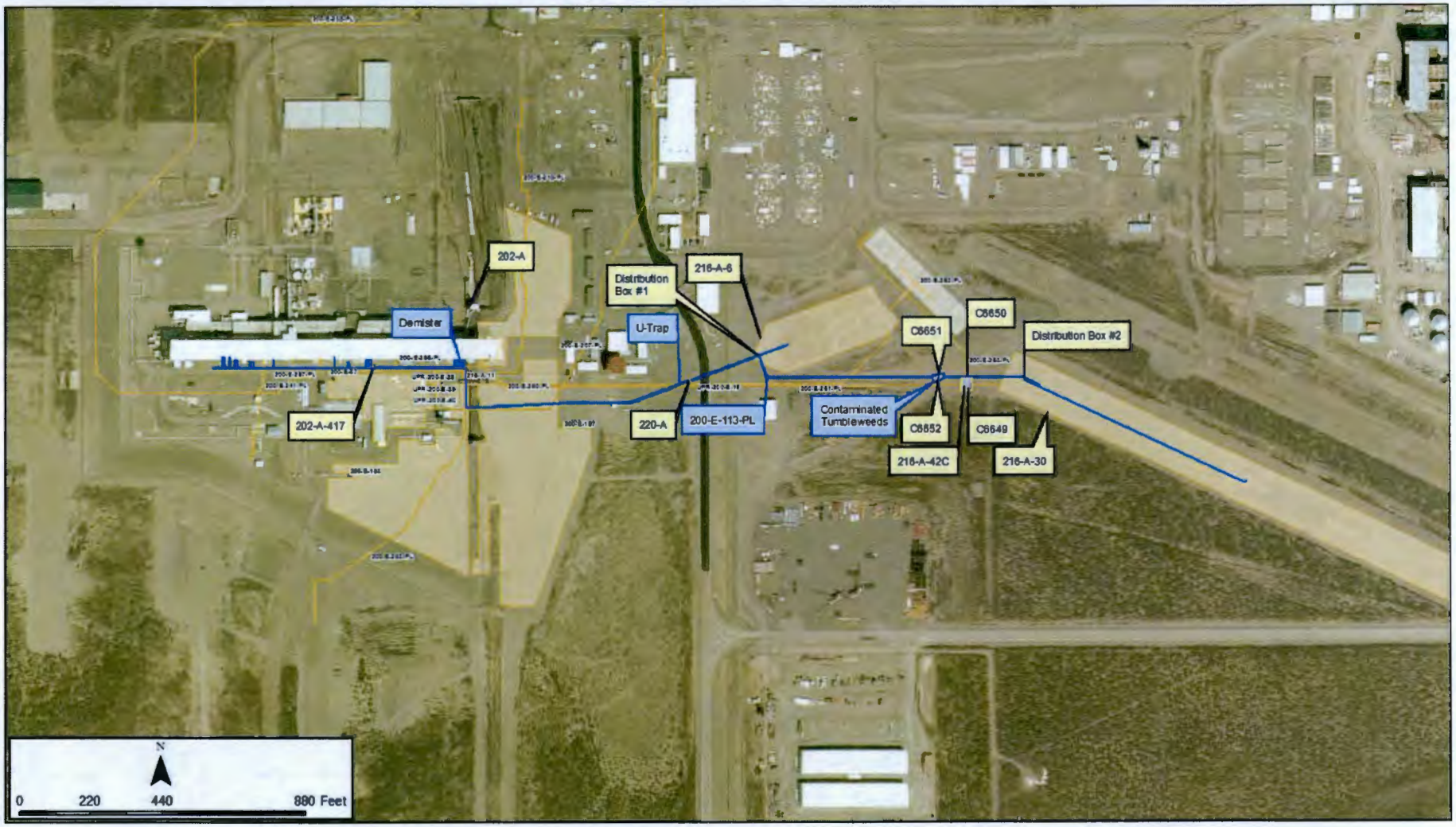
- UPR-200-E-40 (216-A-36B Sampler)
- 216-A-42C PUREX Effluent Diversion Box

200-CP-1

- 200-E-67 (injection/reverse well)
- 200-E-107 (UPR, multiple operations)
- 216-A-11 (French drain)
- UPR-200-E-28 (trap pit)
- UPR-200-E-39 (216-A-36B Crib Sampler)

200-EA-1

- UPR-200-E-19 (220A Proportional Sampler Pit)
- 200-E-103 (UPR, multiple operations)


202-A
Demister
Distribution Box #1
216-A-6
U-Trap
C6650
C6651
Distribution Box #2
202-A-417
220-A
200-E-113-PL
Contaminated Tumbleweeds
C6652
C6649
216-A-42C
216-A-30
N
0
220
440
880 Feet

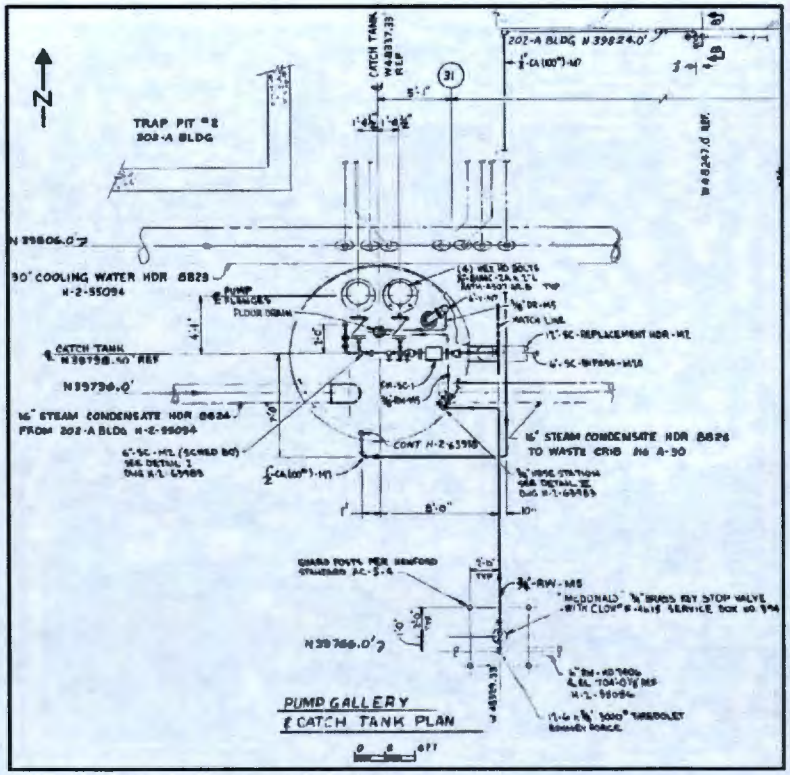


Figure 1 202-A-417 Steam Condensate Pump Pit Plan View

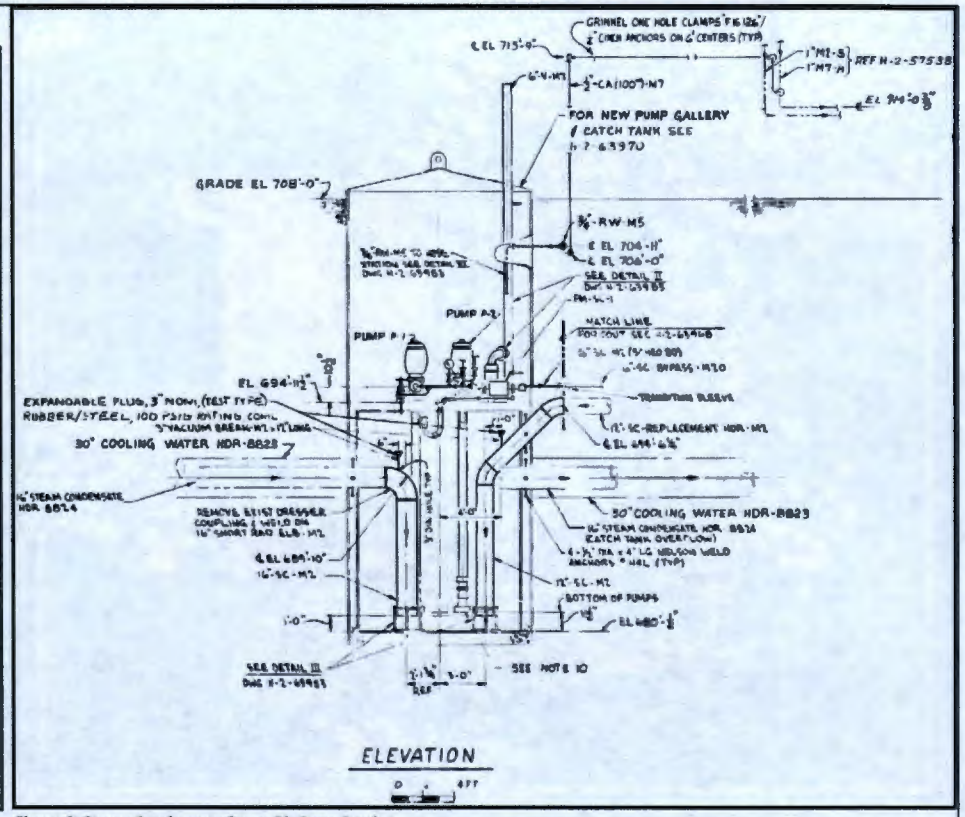


Figure 2: Steam Condensate Pump Pit Cross Section

Reference drawing H-2-63982; Also see drawing H-2-63970

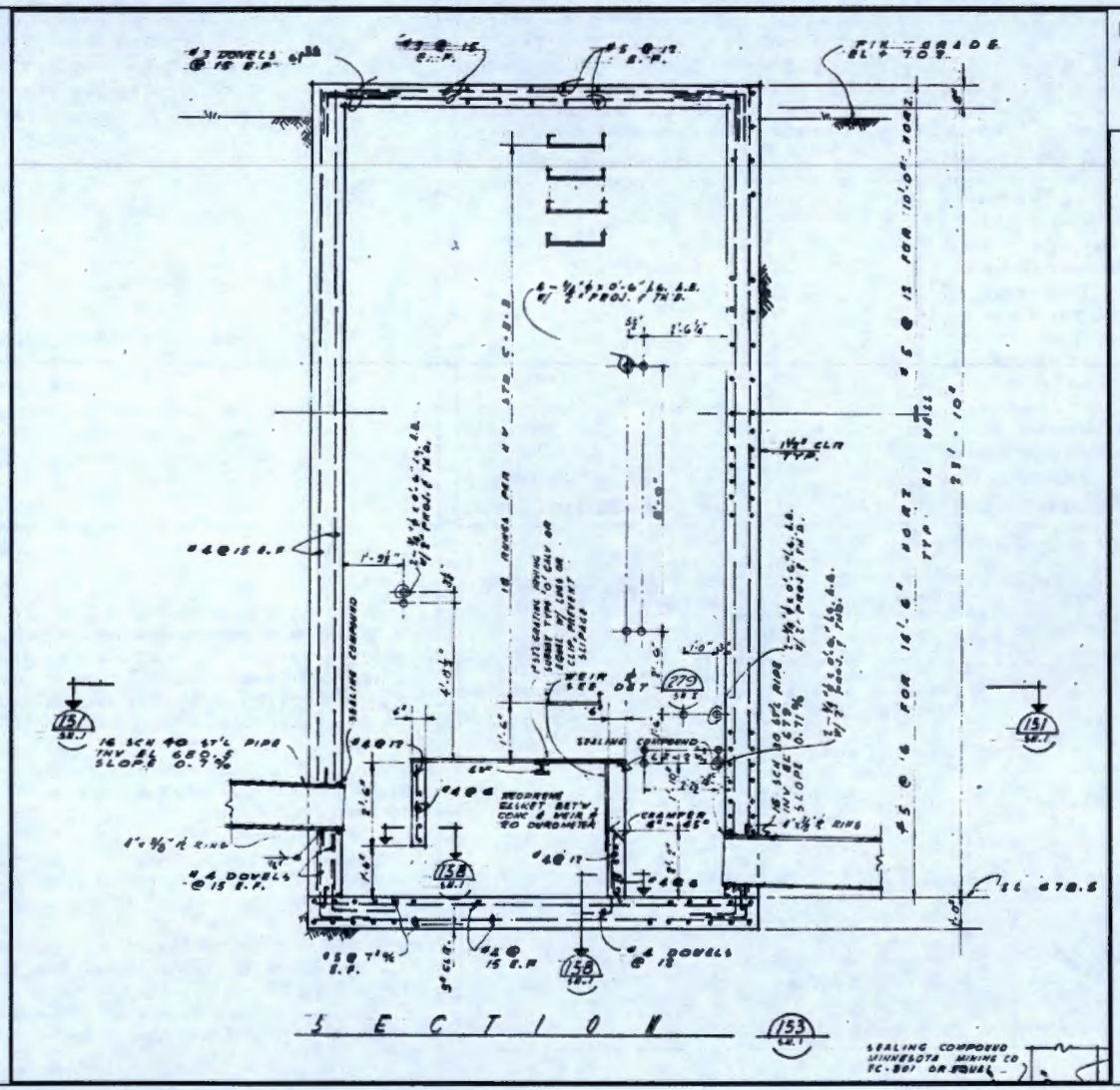


Figure 3: 220A Proportional Sampler Pit
Reference drawing H-2-56044

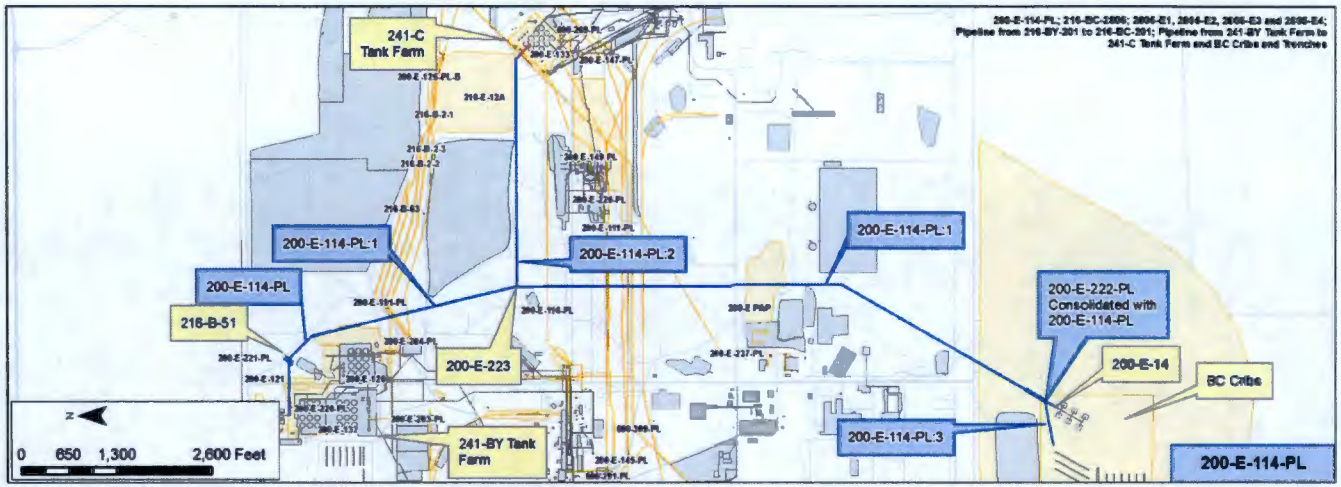
Scoping Summary: 200-E-114-PL (Including 200-E-221-PL and 222-PL)

History

The 200-E-114-PL waste site, also known as the BC Pipeline, consists of multiple pipelines associated with tributyl phosphate (TBP) supernate transfer and disposal, and ran from the 241-BY and 241-C Tank Farms to the BC Cribs and Trenches. The pipelines were constructed in 1955 as part of the reactivation of the TBP separations plant.

A valve box (200-E-223) is located at the nexus of the three major pipe runs. The pipeline was also connected to the 216-B-51 French Drain via 200-E-221-PL. In 1956, the pipeline was extended to three additional trenches (216-B-20, 21 and 22). The extension was used to connect to 20 trenches via above ground hoses. The BC Cribs and Trenches were operated until 1967.

The 200-E-221-PL and 200-E-222-PL waste sites were constructed at the same time as and were an integral part of the 200-E-114-PL system. The 200-E-221-PL waste site is a radioactive process sewer that carried flush water from 200-E-114-PL to the 216-B-51 French Drain. The 200-E-222-PL waste site is the distribution line that connected the 218-BC-201 Siphon Tank to the BC cribs.



Construction

- Length:
  - 2805-E1 & E2 / Segment 1: 3,148 ft each
  - 2805-E3 & E4 / Segment 1: 2,478 ft each
  - 2805-E1 & E2 / Segment 2: 962 ft each
  - Segment 3: 597 ft
  - 200-E-221-PL: 255 ft
  - 200-E-222-PL: (:1) 855 ft and (:2) 80 ft
- Diameter:
  - 2805-E1 & E2 / Segment 1, 2 & 3: 4 in. each
  - 2805-E3 & E4 / Segment 1: 4.5 in. each
  - 200-E-221-PL: 1 in.
  - 200-E-222-PL: (:1) 14-in and (:2) 2 in.
- Composition: Steel
- Pressurized; Direct Buried
- Depth: 0 ft – 5 ft bgs
- Total Calculated Volume:
  - 2805-E1 & E2 / Segment 1: 2,054 gal
  - 2805-E3 & E4 / Segment 1: 2,046 gal
  - 2805-E1 & E2 / Segment 2: 628 gal
  - Segment 3: 389 gal
  - 200-E-221-PL: 5.85 gal
  - 200-E-222-PL: (:1) 6,357 gal and (:2) 10 gal

Features of Interest

- 5 hose connection points
- 35 flush stations
- ~21 bends
- Encasements under road crossings
- 6 iron gate valves

Relevant Characterization

- Contaminated tumbleweeds and other vegetation were discovered growing above the pipeline in 2000 and 2010
- 2014 radiological survey revealed surface soils with elevated readings near 200-E-14 siphon tank
- In 2007 a portion of the pipeline was exposed near 200-E-14 siphon tank from wind erosion
- Geophysical logging was performed in 2008. Cesium-137 was detected in four boreholes near the 216-B-51 French Drain. The max concentration was 3,000 pCi/g at 6.5 ft bgs

Waste Streams

- The 200-E-114-PL transported 31 million gal of scavenged TBP supernatant between 1956 and 1958
  - Known to contain ferrocyanide, nitrate, phosphate, sodium, sulfate, Co-60, Cs-137, Sr-90, Ru-106, Pu and U
- An additional 700,000 gal of liquid waste from the Plutonium Recycle Test Reactor was disposed to four of the trenches between 1962 and 1967
- The trenches (216-E-53A, 53B, 54 and 58) received liquid waste transported by tanker truck from the Plutonium Recycle Test Reactor
  - It is unknown where the tanks offloaded the waste and if 200-E-114-PL carried it

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 200-E-223 (valve pit)

200-BC-1
- 200-E-14 (siphon tk)
- 216-B-14 through 19 (cribs)
- 216-B-20 through 34 (trenches)
- 216-B-52 (trench)
- 216-B-53A (trench)
- 216-B-53B (trench)
- 216-B-54 (trench)
- 216-B-58 (trench)

200-EA-1
- 216-B-51 (French Drain)

WMA B/BX/BY
- Un-numbered line btwn 216-BY-201 tank and BY Tank Farm

WMA C
- un-numbered valve box inside C Tank Farm

Site Intersects

200-IS-1
- 200-E-111-PL, 200-E-116-PL, 200-E-126-PL-B, 200-E-145-PL, 200-E-147-PL, 200-E-191-PL, 200-E-203-PL, 200-E-204-PL, 200-E-220-PL, 200-E-226-PL

200-OA-1
- UPR-200-E-11, UPR-200-E-83
- 200-SW-2
- 218-E-12A (burial god)

200-EA-1
- 200-E-121 (soil)
- 216-B-2-1, 2, 3 (ditches)
- 216-B-63 (trench)

WMA B/BX/BY
- 200-E-120 (soil)
- 200-E-132 (soil)

WMA C
- 200-E-133 (soil)

No Operable Unit
- 200-E-237-PL
- 200-E PAP (ash pit)
- 600-269-PL
- 600-291-PL

Scoping Summary: 200-E-114-PL (Including 200-E-221-PL and 222-PL)

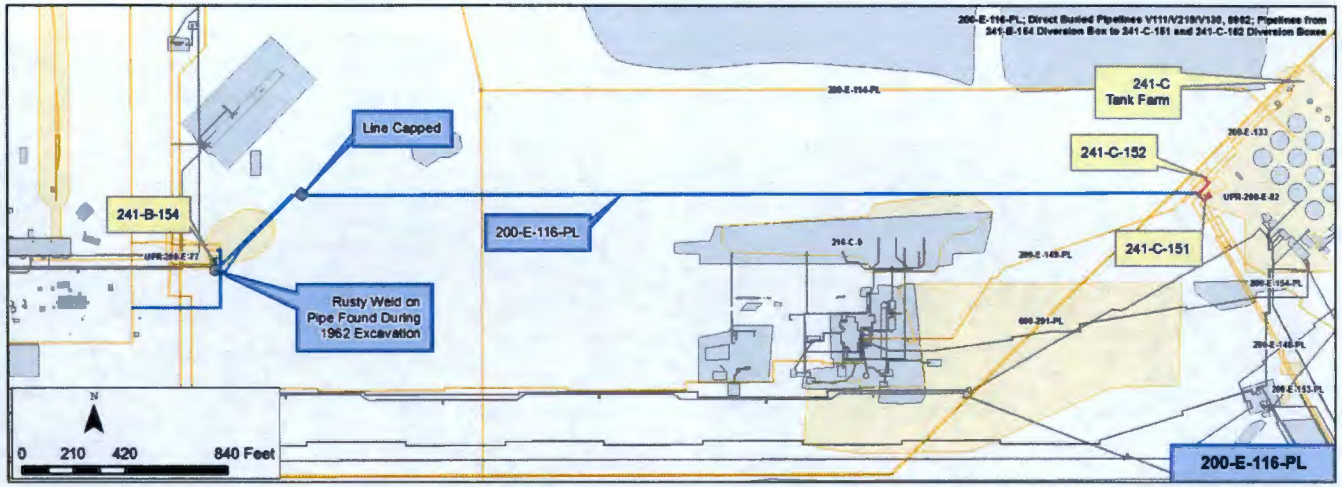
Scoping Summary: 200-E-116-PL

History

The 200-E-116-PL waste site is an inactive underground series of pipelines that extends eastward from the 241-B-154 Diversion Box to the 241-C-151 and 241-C-152 Diversion Boxes in the 241-C Tank Farm. Constructed in 1945, it transported radioactive mixed waste solutions to and from B Plant and the 241-C Tank Farm between 1946 and 1985.

In 1962, the V212 line plugged 16 ft from Diversion Box 241-B-154 and was cut and capped about 529 ft along the run. Line 8902 was routed from 200-E-198-PL, welded onto line V210 stub, and finally welded to line V211. Line 8902/V210/V211 is direct-buried and parallel to line V130.

The pipeline is posted as an "Underground Radioactive Pipeline," and several sites with radioactive vegetation were identified along the pipeline in 2000 and 2001. The sites were subsequently remediated and posted as Underground Radioactive Material Areas (URMA).



Construction

- Length:
  - V130: 4,194 ft
  - 210/8902/V211: 4,203 ft
  - V212: 529 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Drainage: Line 210/8902/V211 is pressurized; Line V130 and V212 are unspecified
- Direct Buried
- Encased beneath 8th Street
- Cathodic protection: Yes
- Calculated volume: 8,306 gal
  - V130: 8,306 gal
  - 210/8902/V211: 8,324 gal
  - V212: 1,047 gal

Features of Interest

- 6 nozzles
- 3 diversion boxes
- One capped line (V212) 529 ft northeast from 241-B-154 diversion box
- 13 bends in the pipes
- One leak in major bend in line V212
- One encasement beneath 8th Street, where the lines cross

Relevant Characterization

- Borehole log around the UPR-200-E-82 perimeter revealed U-236 and other materials were from irradiated fuel processing
- Elevated sodium with reduced Ca, Mg and K found near surface environment. Nitrate and Technecium-99 were found directly below surface. It was found contaminants extend beyond 80 ft bgs
- No documented releases or losses of transfer volumes from this pipeline.

Waste Streams

- Supported $BiPO_4$, TBP and in-farm scavenging operations which were completed in 1958, followed by Cs and Sr recovery until operations ceased.
- Disposed metal waste MW1 and first contaminant 1C1 wastes (Pu, U, $NaAlO_2$, NaOH, $NaNO_3$, $NaNO_2$, Na_2SiO_3) were the streams that ran through the pipeline. Ran from 1944-1949

Misc./Other Relevant Information

- The blue rectangular area is an undefined URMA. No additional data could be located
- Line V130 runs from the 241-B-154 diversion box to the 241-C-152 diversion box
- Line 210/8902/V211 runs from the 241-B-154 diversion box to the end of line V211 where it is welded and continues to the 241-C-151 diversion box

Site Interfaces

Origin/Termination

200-IS-1
- 241-B-154 (diversion box) (origin)

WMA C
- 241-C-151 (diversion box) (termination)
- 241-C-152 (diversion box) (termination)

Site Intersects

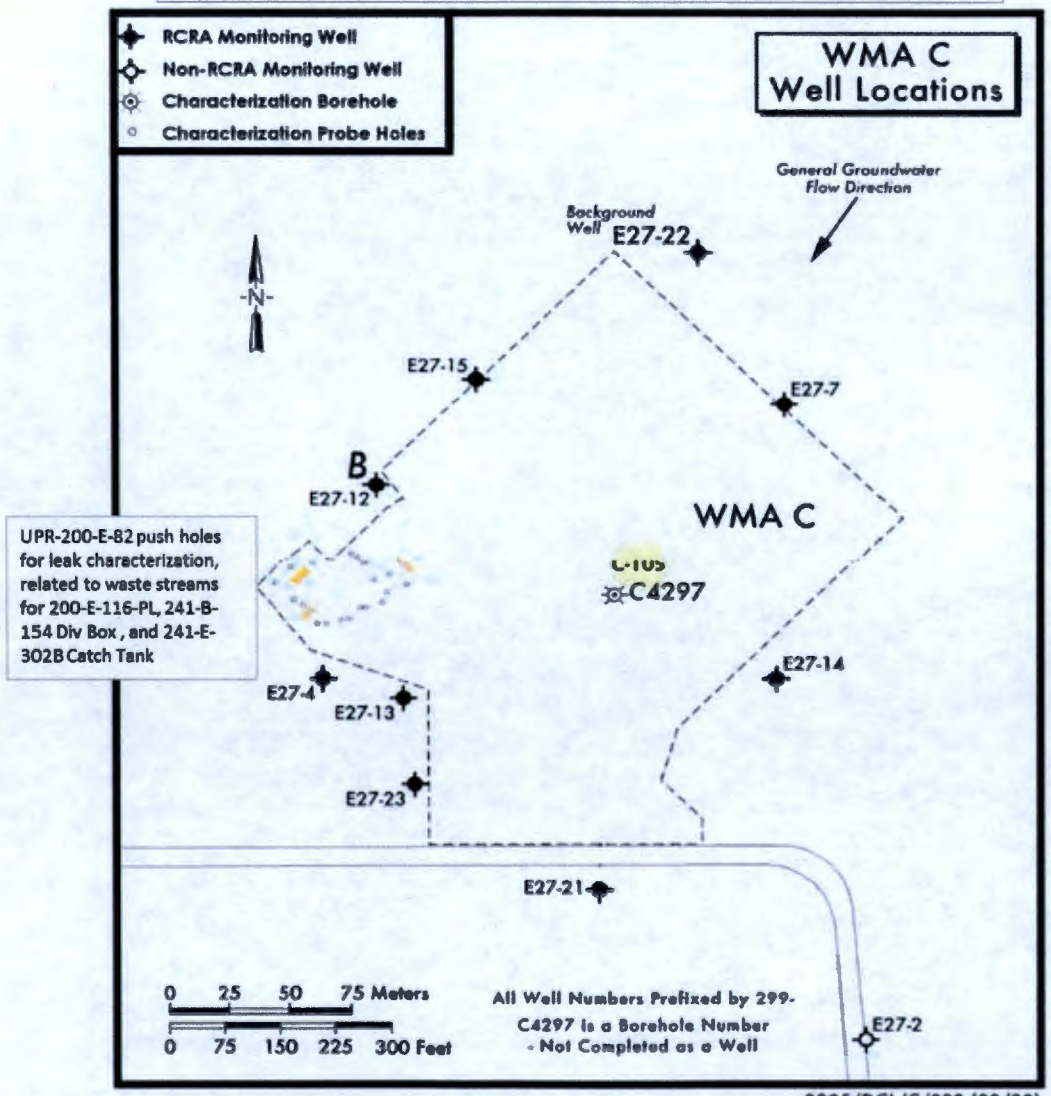
200-IS-1
- UPR-200-E-45 (soil)
- UPR-200-E-77 (soil)
- 200-E-114-PL
- 200-E-148-PL
- 200-E-149-PL
- 200-E-153-PL
- 200-E-154-PL

WMA C
- UPR-200-E-68 (soil)
- UPR-200-E-82 (soil)
- UPR-200-E-86 (soil)
- 200-E-133 (soil)

No Operable Unit
- 600-291-PL (process sewer)

241-C
Tank Farm
241-C-152
Line Capped
241-B-154
200-E-116-PL
241-C-151
Rusty Weld on
Pipe Found During
1962 Excavation
N
0
290
580
1,160 Feet

Location Map of Borehole C4297, Well 299-E27-22, and Probe Holes in the Western Corner of WMAC



UPR-200-E-82 push holes for leak characterization, related to waste streams for 200-E-116-PL, 241-B-154 Div Box, and 241-E-302B Catch Tank

2005/DCL/C/003 (08/30)

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Scoping Summary: 200-E-126-PL-B

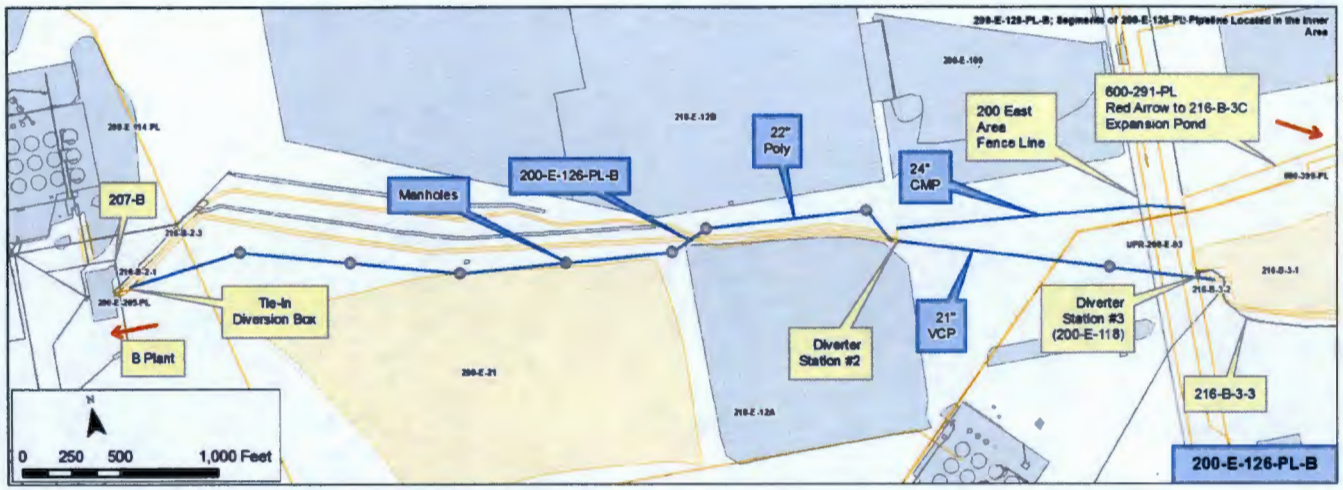
History

200-E-126-PL-B waste site consists of three inactive segments of underground pipeline that routed B-Plant effluent from the 207-B Retention Basin to the 216-B-3 Pond and ditch system.

B-Plant effluent was originally routed through the 207-B Retention Basin to the 216-B-2 ditch system to the 21 in. vitrified clay (VCP) segment of the 200-E-126-B, which discharged to the 216-B-3 ditch system from 1945 until 1994.

In 1987, the 216-B-2-3 Ditch was closed and replaced with the 22 in. high-density polyethylene pipe segment of this site, which extends from a diversion box at the junction with 200-E-205-PL to the VCP segment at Diverter Station #2 (see figures page 3 and 4). In 1994, the VCP segment was valved out and isolated.

The effluent was re-routed to the 24 in. corrugated metal (CMP) segment of 200-E-126-PL-B, which connects to a segment of 200-E-126-PL-A (currently part of 600-291-PL) on the east side of the 200 East Area fence line and flows to the 216-B-3 pond system. Service end date of the metal and poly pipe segments can be correlated to the closure of the ponds in 1995.



Construction

- Length: ~6,991 ft
  - Segment 1: ~4,000 ft
  - Segment 2: ~1,591 ft
  - Segment 3: ~1,400 ft
- Diameter
  - Segment 1: 22 in.
  - Segment 2: 21 in.
  - Segment 3: 24 in.
- Composition:
  - Segment 1: Polyethylene
  - Segment 2: Vitrified Clay
  - Segment 3: Corrugated Metal
- Flow Method: Gravity
- Direct Buried
- Encasement: None
- Cathodic Protection: None
- Depth: 4-15 ft direct buried
- Total Calculated Volume: 140,516 gal
  - Segment 1: 78,989 gal
  - Segment 2: 28,626 gal
  - Segment 3: 32,901 gal

Features of Interest

- Diverter station #2 (demolished and backfilled April 2007)
- Diverter station #3
- 16 manholes in pairs, indicated with circles on the plan view
- Diversion box at the junction with 200-E-205-PL, reference materials are unclear about this tie-in

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Jun-14-2010 - Contaminated soil found near diverter station #2 - 99,000 dpm per 100 sq-cm beta-gamma
- 1998 radionuclide inventory of the 216-B-3 pond and ditches included:
  - 8.23E+01 curies of Sr-90; 7.76E+01 curies of Cs-137; 2.10E+00 curies of U (Gross); 4.21E+00 curies of Am-241; 3.34E-03 of Pu-238; 9.6E-01 of Pu-239/40

Waste Streams

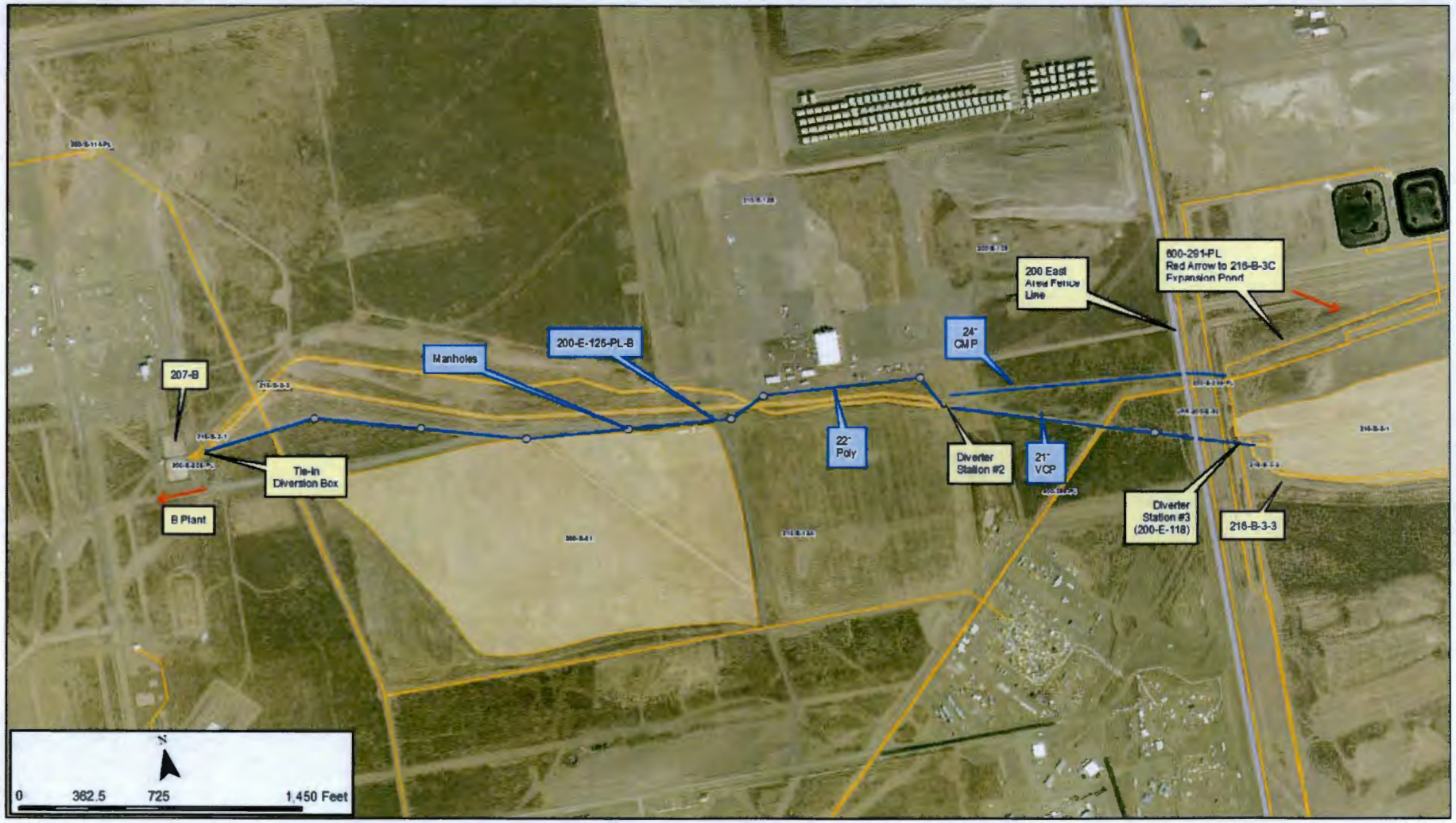
- B Plant cooling water and chemical sewer
- Due to the tie in with 200-E-205-PL at the diversion box, there is potential for an additional waste stream of 242-B Evaporator liquid via 200-E-188-PL

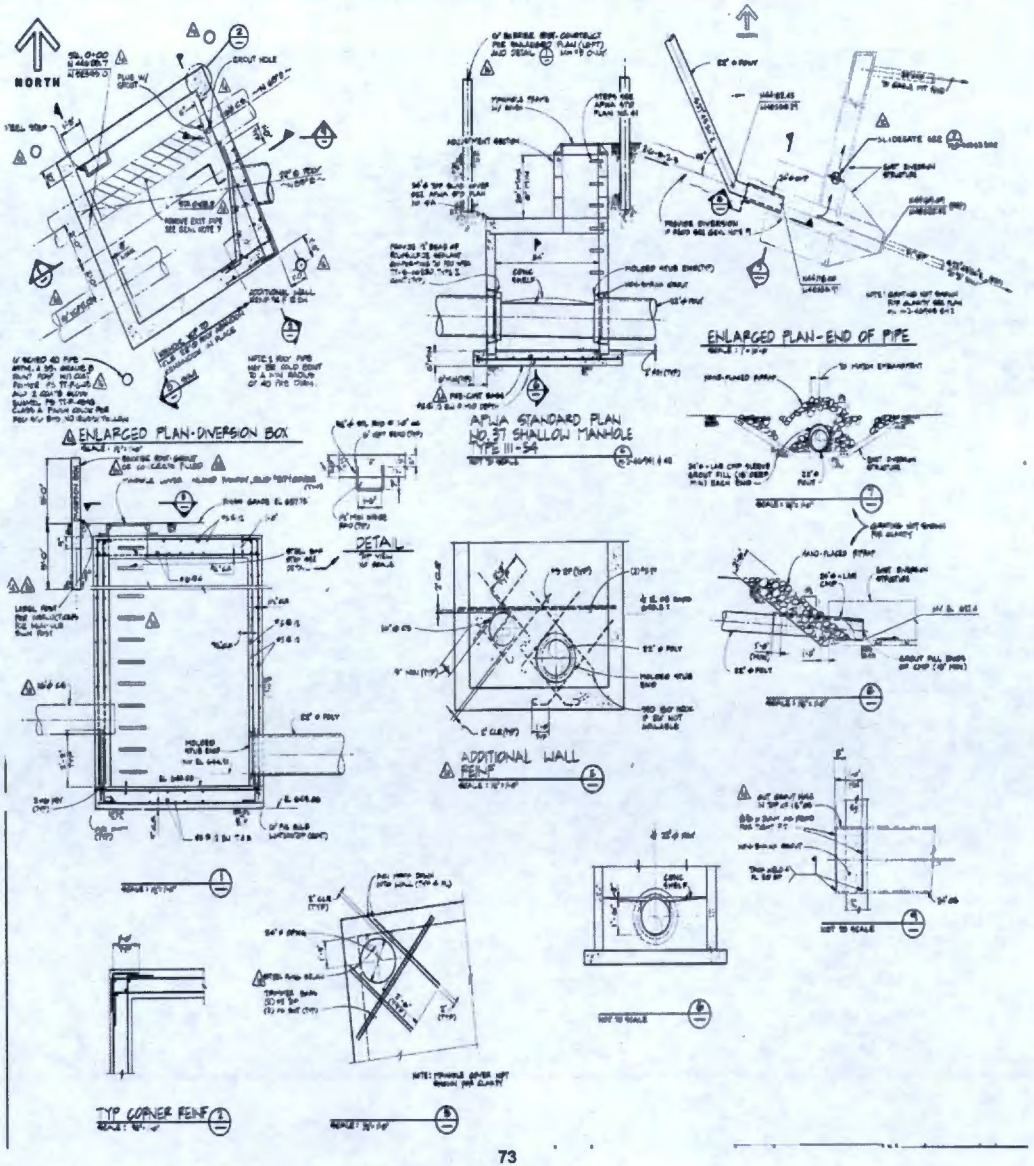
Misc./Other Relevant Information

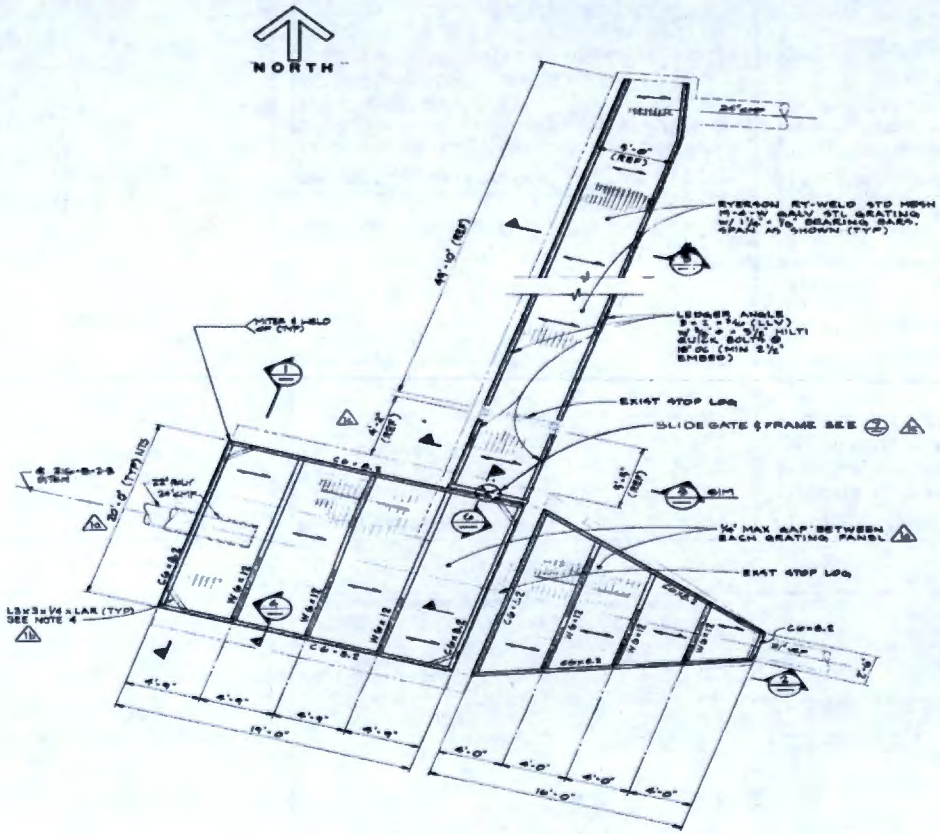
- 216-B-2-3 Ditch and the surface area of the poly pipe segment of 200-W-126-PL-B was classified as an URMA in 1995
- The original 200-E-126-PL waste site was split into two waste sites, the B site consisting of the segments located in the Inner Area to the west of the 200 East Area fence line

Site Interfaces

Origin/Termination	Site Intersects
200-EA-1	200-IS-1
• 207-B Retention Basin (origin)	• 200-E-114-PL • 200-E-205-PL
200-OA-1	200-EA-1
• 216-B-3 Ditch (termination)	• 216-B-2-1 • 216-B-2-2 • 216-B-2-3
• 600-291-PL (active) (termination)	200-OA-1
	• 216-B-3-1 • 216-B-3-2 • 200-E-126-PL-A
• Diverter Station #2 (origin and termination)	No Operable Unit
• Diverter Station #3 (200-E-118) (termination)	• UPR-200-E-93
	• 600-399-PL (active) • 200-E-21 (active) • 200-E-288-PL (active)

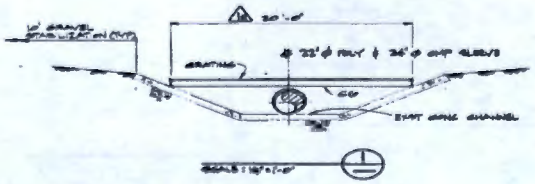

207-B
Tie-In Diversion Box
B Plant
Manholes
200-E-126-PL-B
22" Poly
24" CMP
Diverter Station #2
21" VCP
200 East Area Fence Line
600-291-PL Red Arrow to 216-B-3C Expansion Pond
Diverter Station #3 (200-E-118)
216-B-3-3
N
0
362.5
725
1,450 Feet

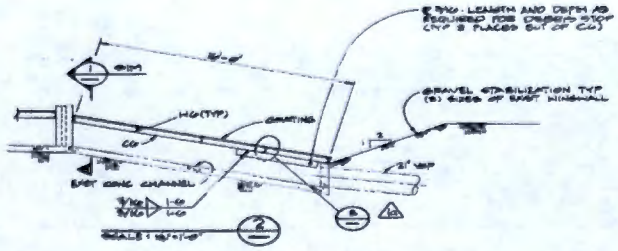

NORTH
ENLARGED PLAN-DIVERSION BOX
AWWA STANDARD PLAN
NO. 37 SHALLOW MANHOLE
TYPE III-S4
ENLARGED PLAN-END OF PIPE
DETAIL
ADDITIONAL WALL
REINF
TYP CORNER REINF



GRATE COVERS FOR END OF PIPE DIVERSION STRUCTURE

ENLARGED PLAN





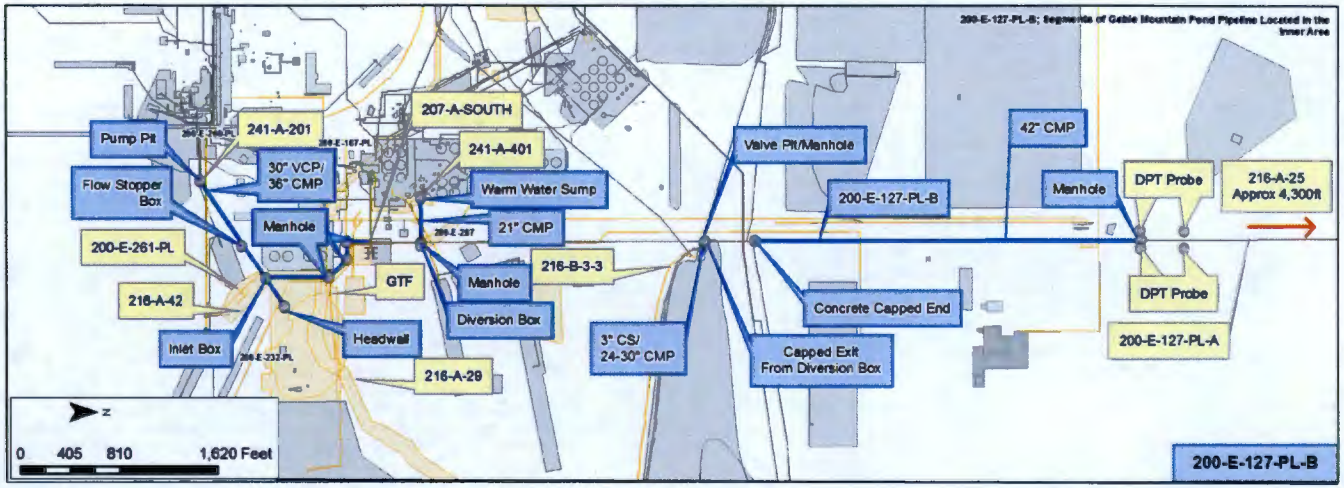
Scoping Summary: 200-E-127-PL-B

History

The 200-E-127-PL-B waste site is an inactive underground pipeline that consists of four pipe segments associated with the transfer of PUREX and B Plant effluent to the Gable Pond (216-A-25) or the B Pond system via Diverter Station #3. The pipeline has also been designated as line 1601 and 8823.

The pipeline was originally constructed in 1952 and operated until June 1992. Portions of the original 200-E-127-PL pipeline were repurposed into the Treated Effluent Disposal Facility pipeline (600-291-PL) in 1996. Additionally, due to the restructuring of Operable Units in the Central Plateau, the original pipeline site has been split into segments, some of which are associated with the waste site and others part of 200-E-127-PL-A.

In 2008, four direct push probes were drilled in the vicinity of the pipeline transition from 200-E-127-PL-B to 200-E-127-PL-A.



Construction

The bulk of this waste site is a 42-in. CMP, but other sections consist of 21, 30, 36-in. CMP, a 30-in. VCP, and a 3-in. CS pipe. Inspection of drawings indicate that the 42 inch section was gravity-flow, while some other segments were pressurized.

•Diameter: 30 inch/ 36 inch
•Material: VCP/ CMP
•Length: 1,240 feet/ 1,080 feet
•Calculated Volume: 45,506 gallons/ 57,074 gallons

•Diameter: 21 inch
•Material: CMP
•Length: 385 ft
•Calculated Volume: 6,923 gal

•Diameter: 3 inch/ 30 inch
•Material: Carbon Steel/ CMP
•Length: 118 feet/ 118 ft
•Calculated Volume: 43 gal/ 4,330 gal

•Diameter: 42 inch
•Material: CMP
•Length: 3,100 ft
•Calculated Volume: 222,982 gal

Features of Interest

- Pump Pit (241-A-201)
- Bends (5)
- Manholes (6)
- Reducer
- Capped Pipe Ends (5)
- Warm Water Sump
- Flow Stopper Box
- Diversion Box
- Tee Fitting
- Concrete Thrust Block
- Inlet Box

Relevant Characterization

- 2008 - Four direct push boreholes (C6695-C6698) were drilled in the vicinity of the transition to 200-E-127-PL-A, two borings indicated Cs-137: C6697 - 100 pCi/g at 5.5 ft, 80 pCi/g at 6.5 ft and C6698 - 30 pCi/g at 6.5 ft
- 2000 - Test pit GP-2 at 216-A-25 Gable Pond detected 58.8 pCi/g of Sr-90 at ~18 ft; 7,180 pCi/g of Cs-137 at ~14.5 ft
- 2000 - Test pit TP-7A at 216-B-3-3 Ditch detected 9.79 pCi/g of Sr-90 and 188 pCi/g of Cs-137 at ~5.5 ft. Pu-239/240 was also detected in all test pits from .032 to 5.73 pCi/g

Waste Streams

- Process Drain Wastes and Cooling Water
- Waste Types: Cooling water from the PUREX Plant, process and liquid from the railroad tunnel door drain
- Cooling water line received discharges from: uranium concentrator (E-K4), concentrator condensers, dissolver down-draft towers, PUREX plant tunnel's water fillable doors, and miscellaneous process tanks
- 216-A-25 Gable Pond and 216-B-3-3 Ditch borehole/test pit data from 2000 detected strontium-90, cesium-137, americium-241, plutonium-239/240 technetium-99 and europium-154

Misc./Other Relevant Information

•The pipeline depth varies from 7 to 25 feet. Boring records indicate the pipeline is ~7 feet below ground surface in the vicinity of the borings

Site Interfaces

Origins/Terminations

- 241-A-201 Pump Pit
- Grout Treatment Facility (GTF)
- 207-A South
- 241-A-401

200-EA-1 OU
- 216-A-29

200-OA-1 OU
- 216-B-3-3 Ditch
- 200-E-127-PL-A (discharges to 216-A-25 Gable Pond in 200-CW-1 OU)

Sites That Intersect

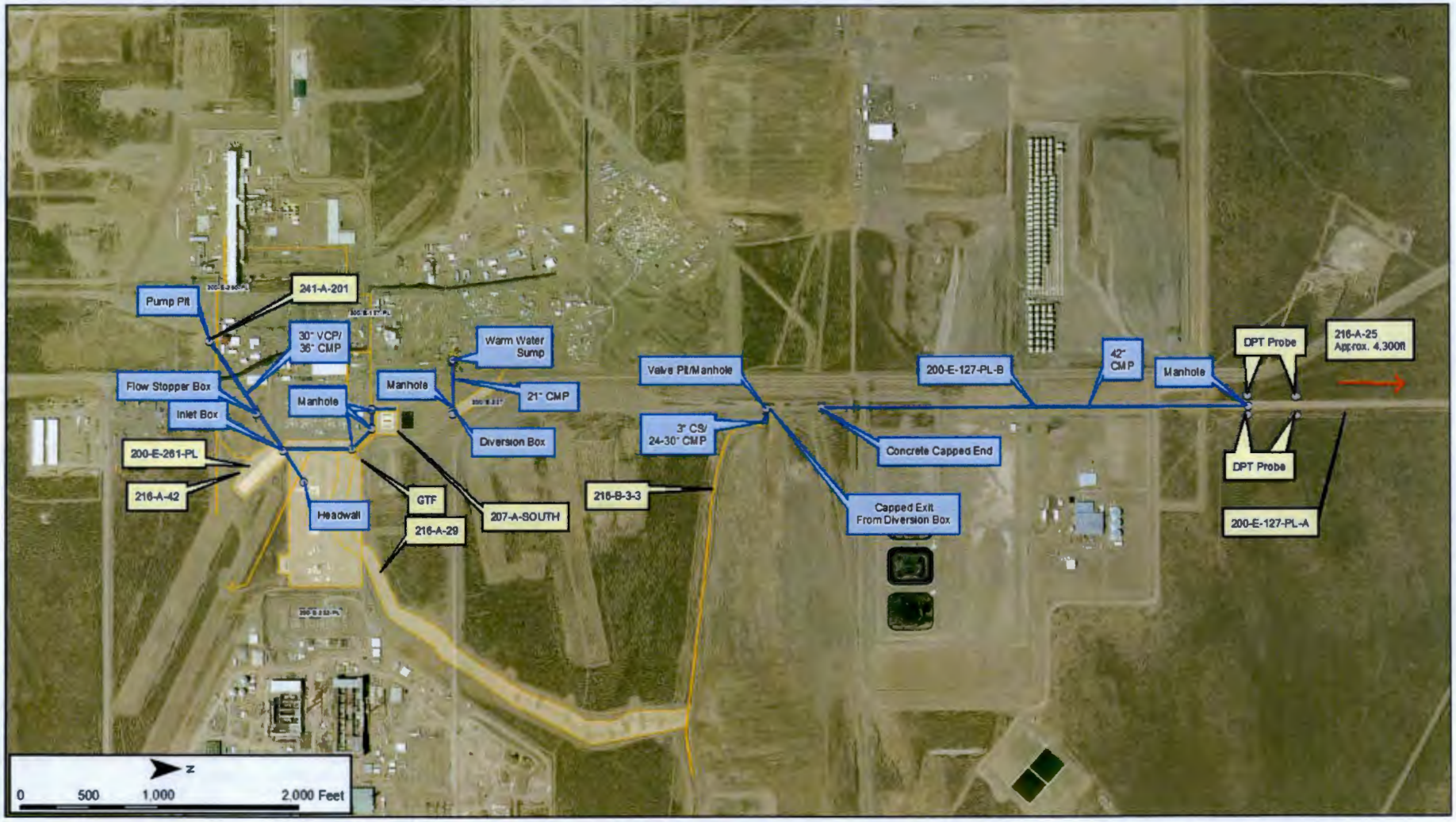
200-IS-1 OU
- 200-E-260-PL
- 200-E-261-PL
- 200-E-187-PL
- 200-E-232-PL
- 200-E-164-PL
- 200-E-166-PL
- UPR-200-E-145

200-EA-1 OU
- 216-A-42

- 200-E-131 (WMA A/AX)
- 600-291-PL (active)
- 600-292-PL (active)
- 200-E-288-PL (active)

No Operable Unit
- UPR-200-E-93
- 200-E-118
- 200-E-287

Scoping Summary: 200-E-127-PL-B



Scoping Summary: 200-E-135

History

The 200-E 135 waste site is an unplanned release south of 7th Street and southwest of the 241-C Tank Farm.

The Dyncorp Integrated Soil, Vegetation, and Animal Control (ISVAC) group submitted this as a discovery site because of growing contaminated vegetation. Underground pipelines 200-E-148-PL, 200-E-150-PL, and 200-E-153-PL cross beneath the growing contaminated vegetation area.

Contaminated tumbleweeds were detached from the ground and removed by the ISVAC team in 2000 and 2008. Direct readings of 5,000 to 100,000 CPM were detected inside the posted area. After removal of six tumbleweeds in 2008, herbicide was applied to the area. The site is surrounded with steel posts and chain with underground Radioactive Material signs posted. It has been covered with clean gravel. An abandoned, above ground steam pipe is located inside the posted area.

Construction

- The UPR is approximately 55,109 sq ft
- There are 8 pipelines that cross within the UPR
- A 12 in. diameter direct buried cooling water line crosses the UPR
- There is an above ground steam pipe that crosses the area

Features of Interest

- This site is a contaminated vegetation area. All contaminated vegetation has been removed

Relevant Characterization

- An assessment survey was conducted in Apr-2002 and found direct readings of 5,000 and 100,000 cpm
- 8 test wells were drilled to determine the extent of the subsurface contamination

Waste Streams

- Not associated with any waste stream

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
Not Applicable	200-IS-1 • 200-E-144-PL • 200-E-145-PL • 200-E-147-PL • 200-E-148-PL • 200-E-150-PL • 200-E-151-PL • 200-E-152-PL • 200-E-153-PL

Scoping Summary: 200-E-135

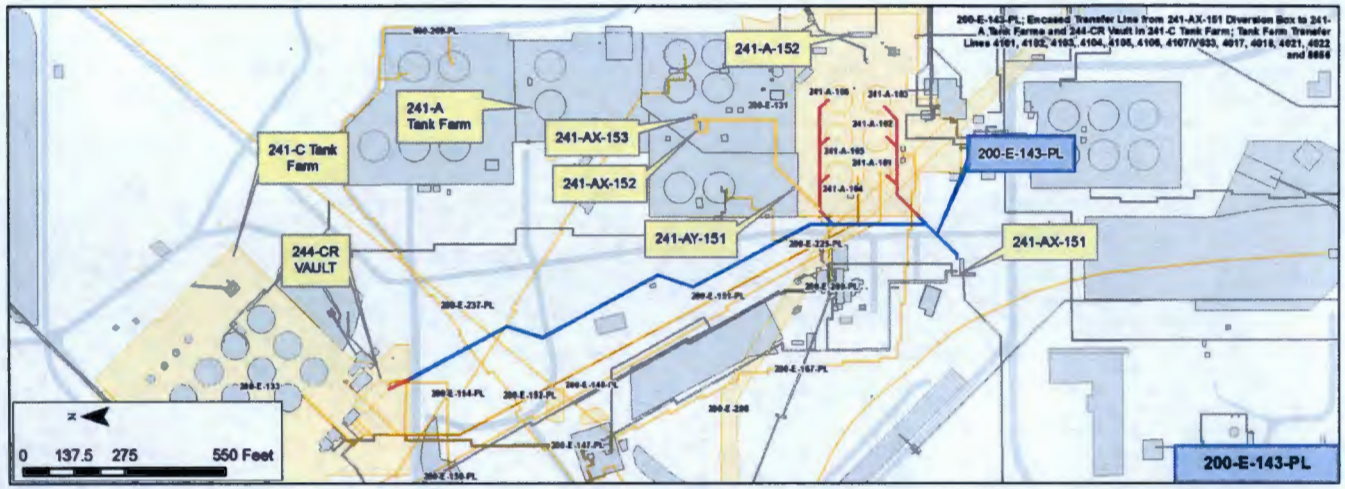
Scoping Summary: 200-E-143-PL

History

The 200-E-143-PL waste site is an inactive underground encased pipeline transfer system constructed in 1965 as part of an Improved Purex Essential Waste Routing System.

This waste site consists of twelve pipelines that were used to transport PUREX self-boiling waste from the 241-AX-151 Diversion Box to the 241-A, 241-AX, 241-AY and 241-C Tank Farms.

One of the twelve pipelines (4021) was modified in 1970 as part of the Purex Tank Farm Expansion project. The pipelines were flushed with water after each waste transfer, as was the established practice at the time. The final transfer of waste through the system was in 1976.



Construction

- Length:
  - 4017/4018 and 4021/4022: 939 ft (each)
  - 4101/4102/4103/4104/4105/4106: Varies 265 ft – 698 ft
  - 4107/V033: 754 ft
  - 8656: 1,107 ft
- Diameter: 4 in.
  - 4017/4018: 4 in.
  - 4021/4022: 3 in.
  - 4101/4102/4103/4104/4105/4106: 4 in.
  - 4107/V033: 4 in.
  - 8656: 4 in.
- Composition: Stainless Steel
- Gravity Drained
- Encasement Specifications: Steel reinforced concrete around bituminous coated corrugated metal (except 4021, 4022 and 4107)
- Depth: 3 ft – 17 ft bgs
- Total Calculated Volume:
  - 4017/4018: 613 gal
  - 4021/4022: 345 gal
  - 4101/4102/4103/4104/4105/4106: 2032 gal
  - 4107/V033: 492 gal
  - 8656: 723 gal

Features of Interest

- 3 Tee connections
- 11 Elbows
- 80 Bends

Relevant Characterization

- No characterization data was found during the historical research for this pipeline

Waste Streams

- Wastes associated with the PUREX Plant and the B Plant were transported through this pipeline
- PUREX Self-Boiling Wastes, such as Neutralized Purex acid waste (P), and Organic wash waste (OWW) were the waste streams associated with the pipeline
- The waste streams were transported from 1965-1976 and included transuranics, uranium compounds, fission products, heavy metals, other inorganics, volatile organics, and semi-volatile organics. Of particular interest are cesium, strontium, nitric acid, tributyl phosphate, bismuth phosphate and paraffin hydrocarbons

Misc./Other Relevant Information

- Of special interest are the three locations along 4021 where the pipeline was modified in 1970 and the length of 4017 pipe that was direct buried

Site Interfaces

Origin/Termination

200-IS-1 (Origin)
- 241-AX-151 (Div Box)

No Operable Unit (Origin)
- 241-AY-151 (Pump Out Pit)

WMA A/AX (Term.)
- 241-A-101 (tank)
- 241-A-102 (tank)
- 241-A-103 (tank)
- 241-A-104 (tank)
- 241-A-105 (tank)
- 241-A-106 (tank)
- 241-A-152 (Div. Box)
- 241-AX-152 (Div. Station)
- 241-AX-153 (Isolation Pit)

WMA C
- 244-CR VAULT

Site Intersects

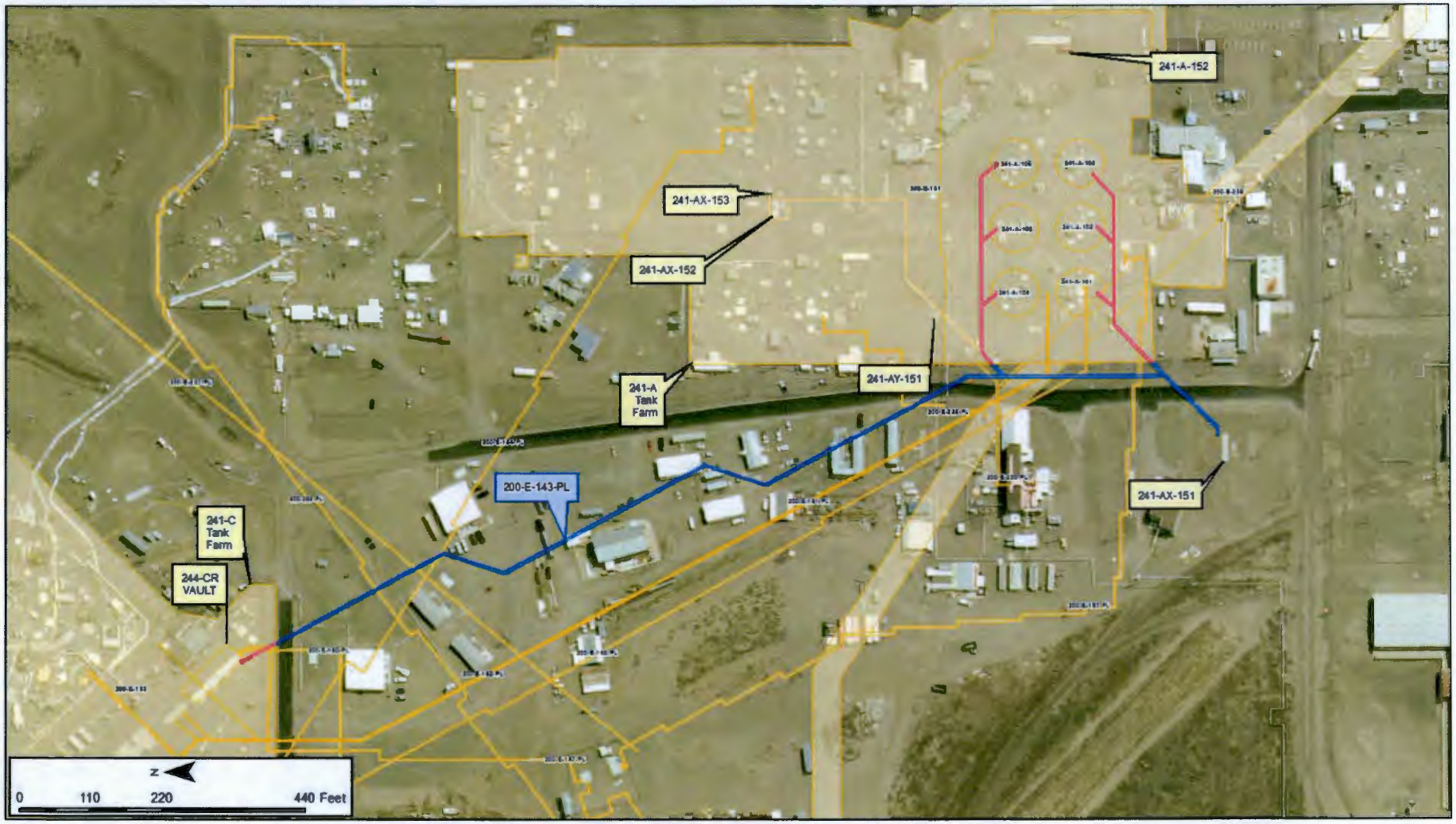
200-IS-1
- 200-E-147-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-151-PL
- 200-E-152-PL
- 200-E-154-PL
- 200-E-167-PL
- 200-E-225-PL

WMA A/AX
- 200-E-200-PL

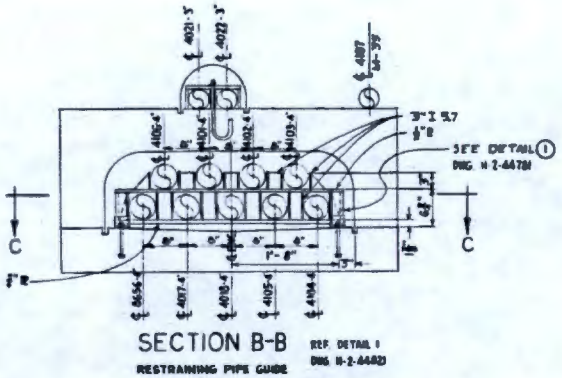
WMA C
- 200-E-133 (soil)

No Operable Unit
- 200-E-237-PL
- 200-E-286 (swamp)
- 600-269-PL

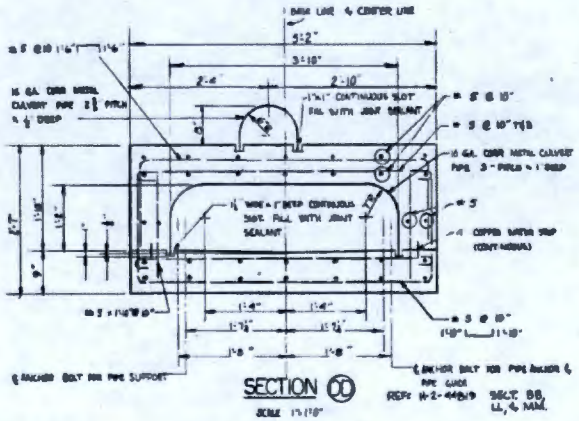
Scoping Summary: 200-E-143-PL



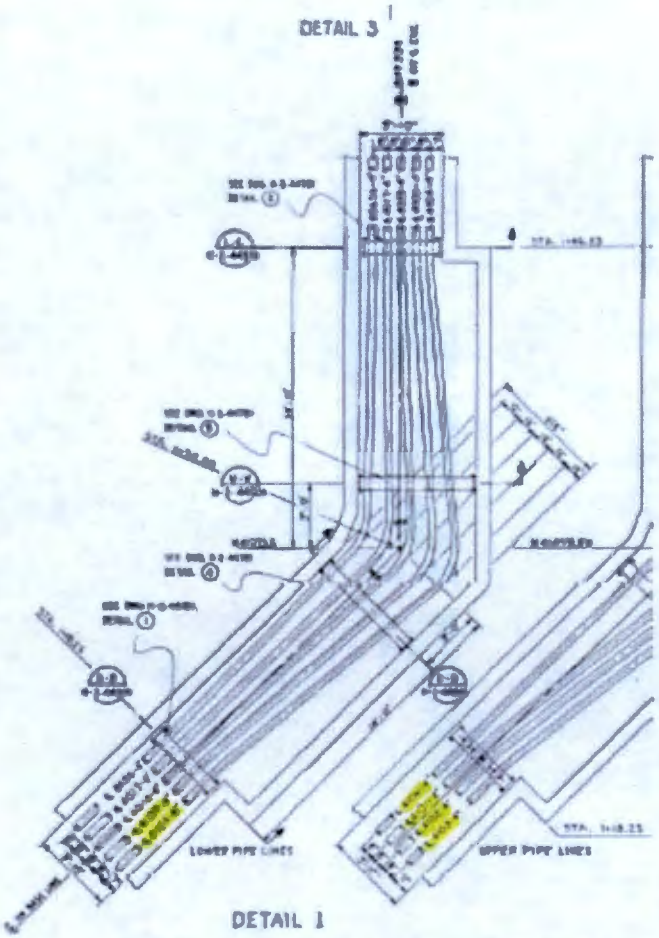
Select Features of Interest - 200-E-143-PL



Details from H-2-44819



Details from H-2-44775



Details from H-2-44775

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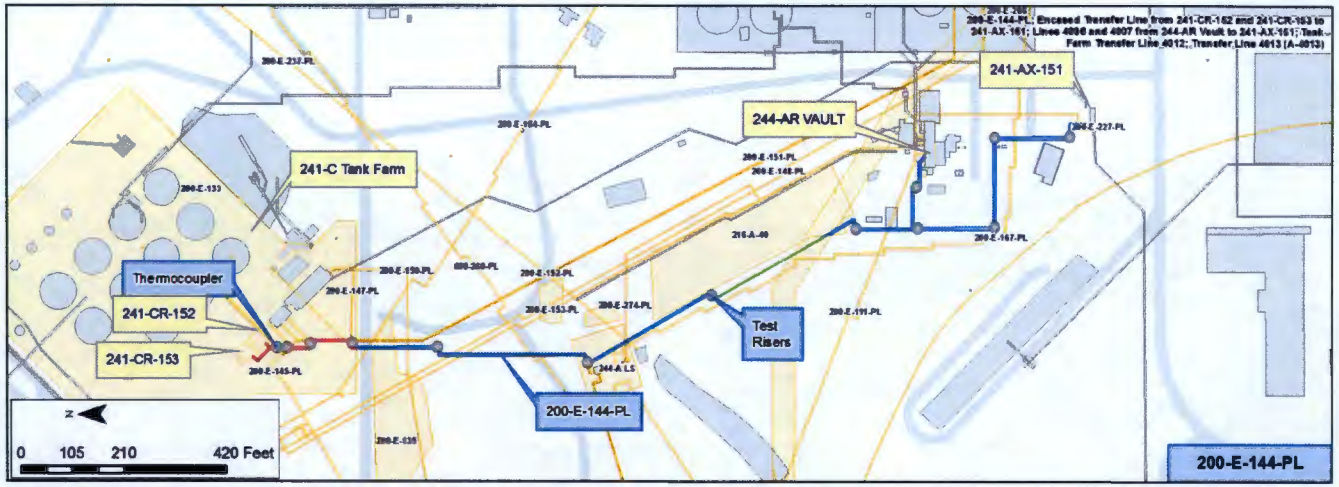
Scoping Summary: 200-E-144-PL

History

The 200-E-144-PL waste site consists of four pipelines (4006, 4007, 4012, and 4013) used to transfer waste between the 244-AR Vault and 241-AX-151 Diversion Box, and the 241-CR-152 and 241-CR-153 Diversion Boxes. It was constructed in 1973 and operated to 1980.

Lines 4012 & 4013 originate at the 241-AX-151 Diversion Box. Line 4012 terminates at the 241-CR-153 Diversion Box, and Line 4013 (spare line, never used; H-2-36641) terminates at the 241-CR-152 Diversion Box. Lines 4006 & 4007 are feed lines from the 244-AR Vault to the 241-AX-151 Diversion Box. All four lines join an encasement west of the vault. 4006 and 4007 connect on the south into diverter station. 4012 and 4013 are tied into each of the diverter box cell (D, E, F and G). 4012 and 4013 continue north as a two line encasement after the 4006 and 4007 junction (H-2-36650). Near the 244–A Lift Station they enter a four line encasement with lines 244 PAS and 228 PSN and proceed north to C-Farm.

The 241-AX-151 station, constructed in 1964 and the 244-AR vault, constructed in 1968 were built with 4-in. stainless steel pipe stubs that extended from the structure approximately 100 ft. In 1973, these pipe stubs were used to encase the 3-in. lines: 4006, 4007, 4012, and 4013 around these structures.



Construction

- Length:
  - 4012: 2,032 ft
  - 4013: 1,997 ft
  - 4006: 711 ft
  - 4007: 715 ft
- Diameter: 3 in. (all lines)
- Composition: Stainless Steel
- Pressurized (all lines)
- Encasement Specifications: 6 in. thick concrete reinforced with #4 rebar and a vinyl coating
  - 4012/4013: 115 ft in a 4 in. diameter pipe
  - 4006/4007: 200 ft in a 4 in. diameter pipe
- Depth: 4 ft – 20 ft bgs
  - 4012/4013: ~263 ft of this line is below 15 ft bgs
  - 4006/4007: Entirety below 15 ft bgs
- Total Calculated Volume:
  - 4012: 748 gal
  - 4013: 735 gal
  - 4006: 261 gal
  - 4007: 263 gal

Features of Interest

- 57 bends and 8 junctions
- Line encased in 4 in. pipe adjacent to 241-AX-151 and 244-AR Vault
- 12 test risers
- One Thermocouple
- Cathodic Protection
- 4006 and 4007 were cut and capped

Relevant Characterization

- No direct characterization data for the pipelines or adjacent soil were located.

Waste Streams

- 4012 transferred PUREX supernatant
- 4013 was a spare and is unlikely to have been used. If it was used, it could have carried PUREX supernatant, acid sludge, and sluicing supernatant
- 4006 and 4007 transferred PUREX supernatant & acid sludge
- Utilization history is uncertain but, based on receiving tank history, these lines are believed to have been used from approximately 1974 to 1980, with an unknown transfer volume
- Waste streams transferred were inferred from tank contents

Misc./Other Relevant Information

- 4012 and 4013 passes through two UPRs, and 4006 and 4007 originate in one UPR
- However, none are associated with 200-E-144-PL. The UPRs are associated with the following sources:
  - 4012 & 4013
    - 200-E-133 (Source: 241-C Tank Farm)
    - 200-E-135 (Source has not been identified)
  - 4006 & 4007: 244-A LS (Source:244-A Lift Station)

Site Interfaces

Origin/Termination

200-IS-1
- 241-AX-151 (diversion box)
- 244-AR Vault

WMA-C
- 200-E-133 (UPR)
- 241-CR-152 (diversion box)
- 241-CR-153 (diversion box)

Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-135 (UPR)
- 200-E-145-PL
- 200-E-147-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-151-PL

Site Intersects Con't

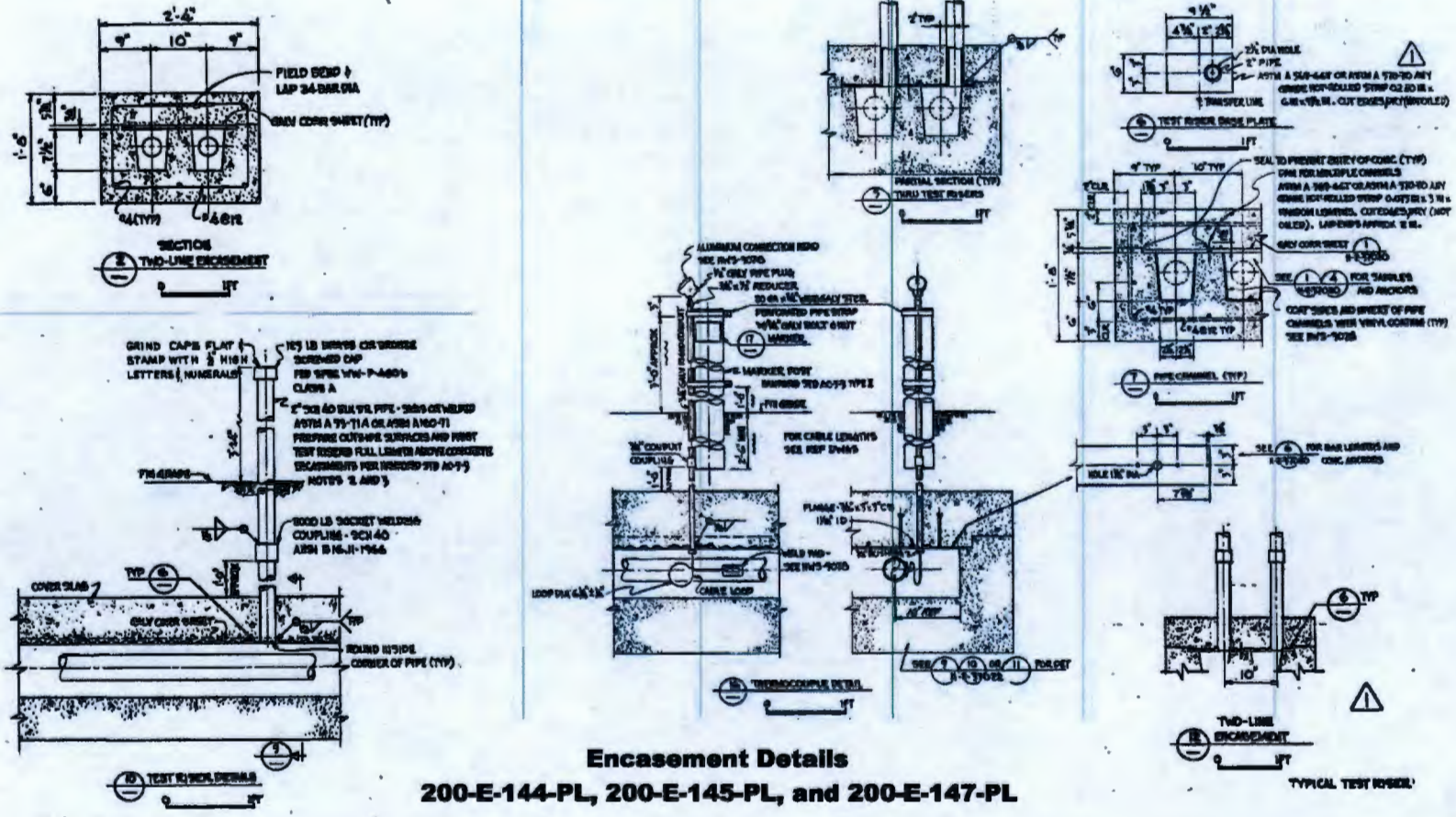
200-IS-1
- 200-E-152-PL
- 200-E-153-PL
- 200-E-154-PL
- 200-E-167-PL
- 200-E-227-PL
- 200-E-274-PL

200-EA-1
- 216-A-40 (retention basin)

WMA-C
- 244-A LS (UPR)

No Operable Unit
- 200-E-237-PL (no assigned OU)
- 200-E-286 (rejected)
- 600-269-PL (no assigned OU)

Scoping Summary: 200-E-144-PL



Encasement Details

200-E-144-PL, 200-E-145-PL, and 200-E-147-PL

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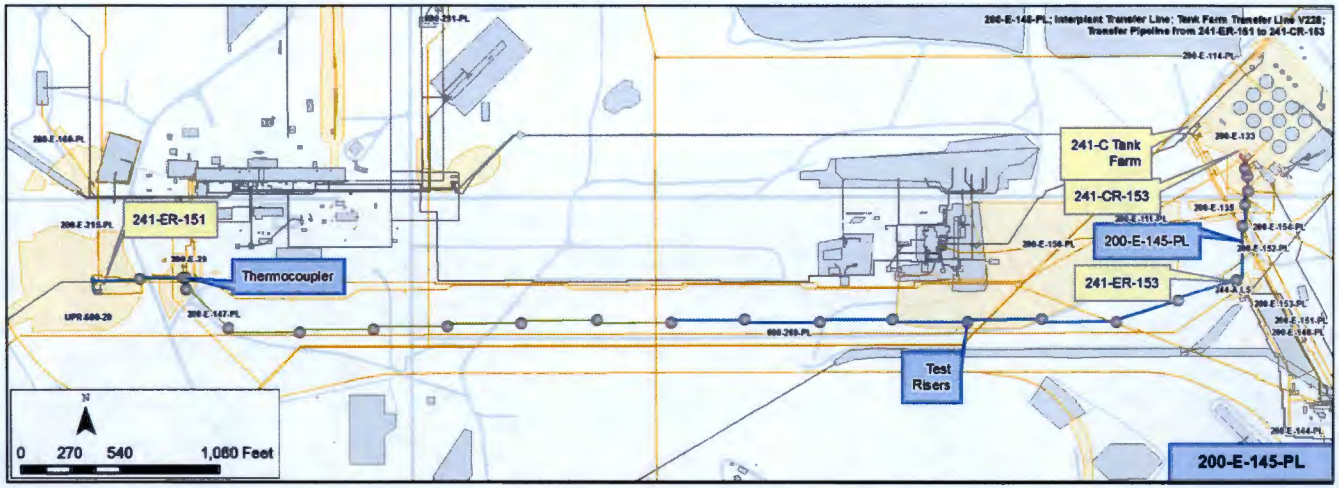
Scoping Summary: 200-E-145-PL

History

The 200-E-145-PL waste site is an inactive underground encased pipeline that transferred PUREX waste back-and-forth between the 241-ER-151 Diversion Box and the 241-C Tank Farm at the 241-CR-153 Diversion Box.

The pipeline was constructed in 1973 and active by 1974. Modifications to the line were made in late 1975 to extend the system through the 241-ER-153 Diversion Box. This modified system was put into service in 1976 and last used in 1980, based on C Tank Farm records.



Construction

Pipelines (V228)

- Length: 7,396 ft
- Diameter: 3 in.
- Composition: Seamless Stainless Steel
- Pressurized
- Encased and buried between 4 ft to 18 ft bgs
- Cathodic protection: Yes
- Calculated volume: 2,715 gal
- Travels between diversion box 241-ER-151 and diversion box 241-CR-153, passing through diversion box 241-ER-153.

Encasement

- Concrete encasement covers the north-south run between diversion boxes 241-CR-153 and 241-ER-153 and is shared with 200-E-144-PL
- The east-west run between diversion boxes 241-ER-153 and 241-ER-151 shares a concrete encasement with 200-E-147-PL
- Encasement bottom is 6 in. thick, has 6 in. sidewalls, and is capped with a 0.75 in. galvanized steel plate with a 5.75 in. concrete cover. Concrete reinforced with #4 rebar and has a vinyl coating on bottom and side walls of encasement
- Has test risers at regular intervals, including one thermocouple riser. Encasement drain located 241-CR-153 Div. Box

Features of Interest

- One Thermocoupler
- Approximately 55 bends and junctions
- Approximately 23 test risers

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil was located.

Waste Streams

- PUREX supernatant (PSN) and PUREX acid sludge (PAS)

Misc./Other Relevant Information

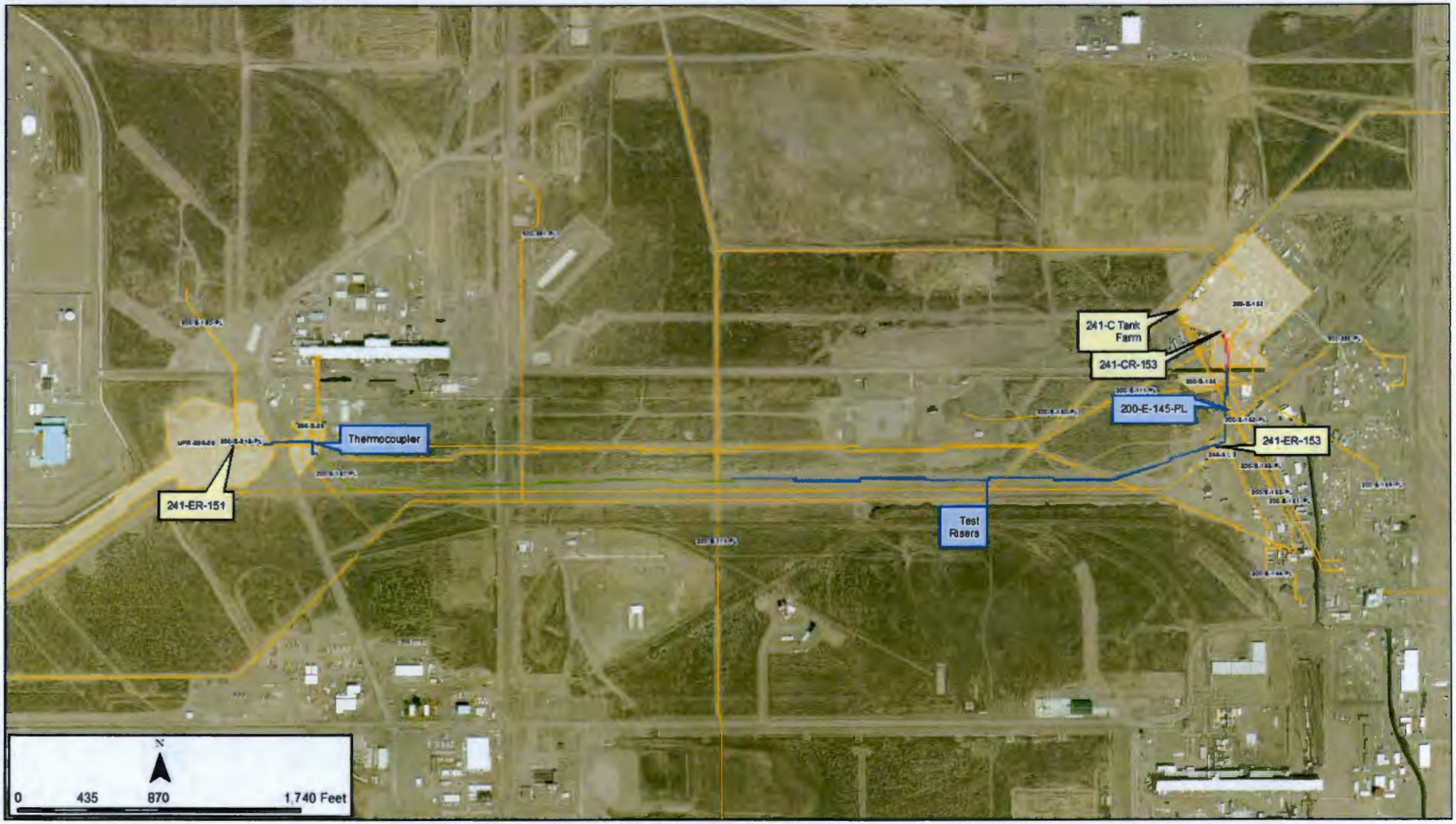
V228 passes through 6 UPRs which are not associated with 200-E-145-PL. The UPRs are associated with:

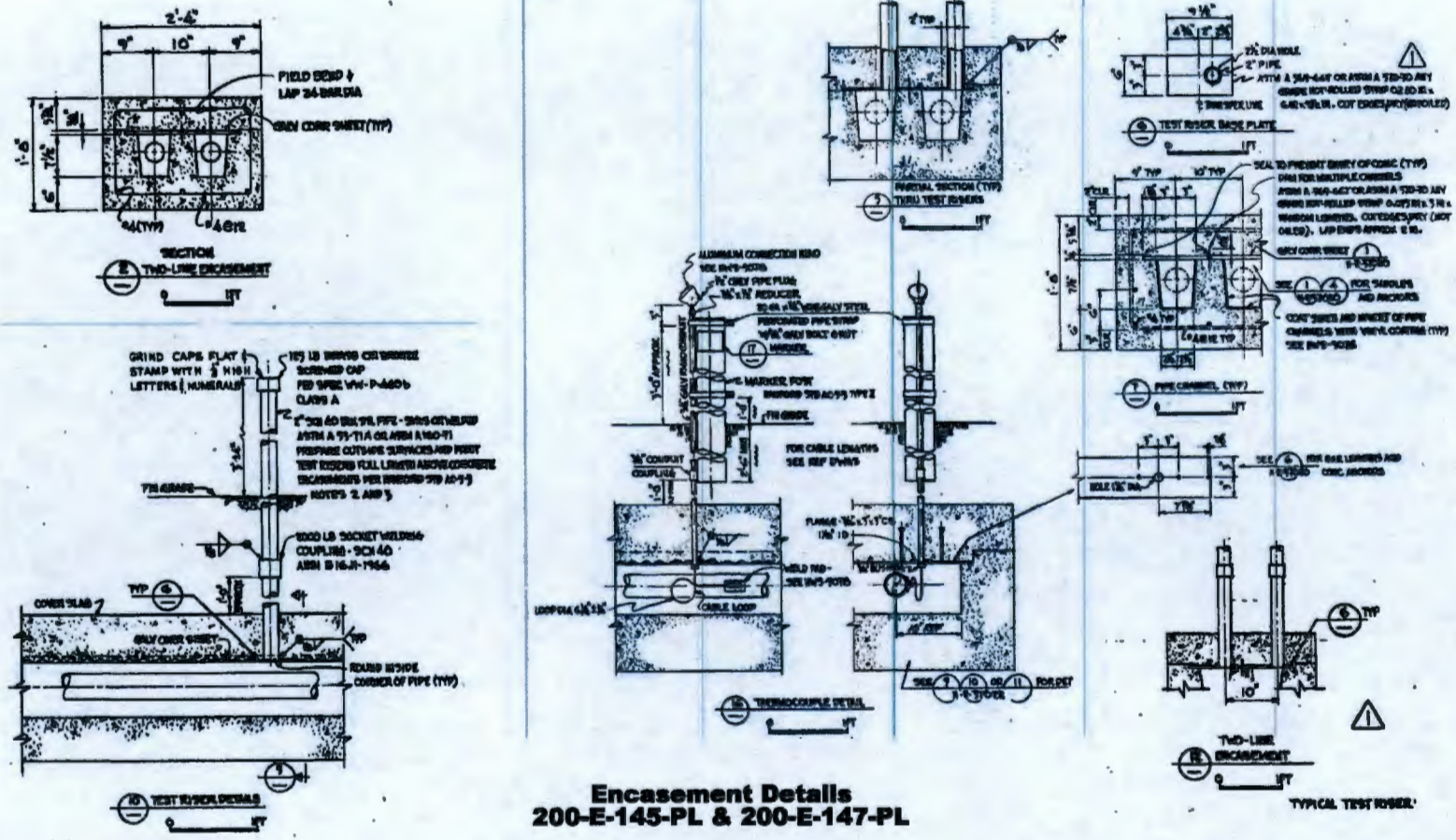
- 200-E-29: 241-ER-152 Diversion Box
- UPR-200-E-37: Strontium Semi-Works
- 200-E-133: 241-C Tank Farm
- 200-E-135: (Source has not been identified)
- 244-A LS: 244-A Lift Station
- UPR-600-20: Old Cross Site Transfer Line 600-284-PL

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 241-ER-151 (diversion box) (termination)	•200-E-111-PL
• 241-ER-153 (diversion box)	•200-E-114-PL
	•200-E-135 (UPR)
	•200-E-144-PL
	•200-E-147-PL
WMA-C	•200-E-148-PL
• 241-CR-153 (diversion box) (origin)	•200-E-150-PL
• 244-A LS (UPR)	•200-E-151-PL
• 200-E-133 (UPR) (origin)	•200-E-152-PL
	•200-E-153-PL
	•200-E-154-PL
	•200-E-160-PL
200-OA-1	•200-E-215-PL
• UPR-600-20 (termination)	•200-E-217-PL
	•200-E-228-PL
	200-EA-1
	•200-E-29 (UPR)
	•UPR-200-E-37
	No Operable Unit
	•600-269-PL
	•600-291-PL

Scoping Summary: 200-E-145-PL





Encasement Details
200-E-145-PL & 200-E-147-PL

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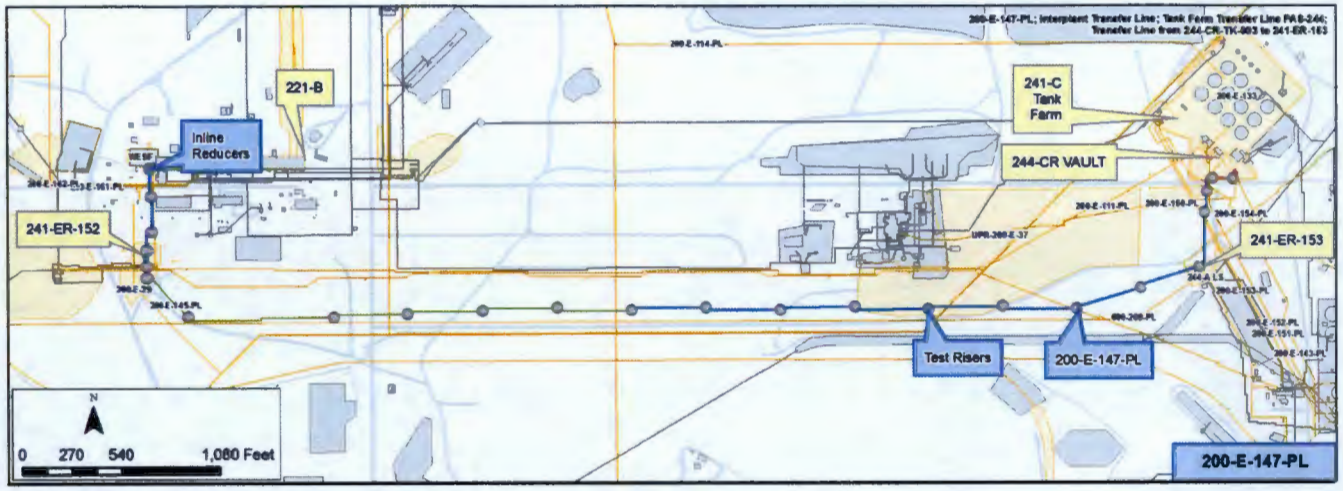
Scoping Summary: 200-E-147-PL

History

The 200-E-147-PL waste site is an inactive underground pipeline that was used to transport PUREX Acid Sludge (PAS) process fluids from the CR-Vault to 221-B for the separation of Strontium.

It was constructed in 1973 and operational until 1978. It originates at the 244-CR Vault (244-CR-TK-003), and runs through two diversion boxes (241-ER-153 on the east side of the pipe run and 241-ER-152 on the west side) en route to its terminus at the southwest corner of the 221-B Plant facility. The north-south run between the 241-ER-153 Diversion Box and the CR-Vault shares a concrete encasement with 200-E-144-PL and 200-E-145-PL. The east-west run between Diversion Boxes 241-ER-153 and just before 241-ER-152 shares a concrete encasement with 200-E-145-PL, forming the Interplant Transfer Line System.

It was put into service in 1974. Modifications were made in late 1975 to run this pipeline through diversion boxes 241-ER-153 and 241-ER-152. This modified system was put into service in 1976. This line was in use until 1978, when Strontium removal processes at B-plant were discontinued.



Construction

- Length: 7,402 ft
- Diameter: 3 in. (for 7395 ft) and 2 in. (for 43 ft)
- Composition: Stainless Steel
- Pressurized
- Depth: >15 ft bgs
- Encasement Specifications: 2-Line, 3-Line, 4-Line Concrete Encasements
  - 6 in. thick and capped with a 0.75 in. galvanized steel plate with a 5.75 in. concrete cover. The concrete is reinforced with #4 rebar and has a vinyl coating on the bottom and side walls of the encasement
  - 59 ft section north of 241-ER-152 is encased inside a 4 in. schedule 10 pipe encasement
- Calculated Volume: 2,834 gal

Features of Interest

- No documented failures or release points
- Diversion Boxes: 2
- Risers: 23
- Elbows/bends (vertical and horizontal): 45
- Reductions: 1
- At the 241-ER-153 diversion box PAS-244 changes from Stainless Steel to Carbon Steel

Relevant Characterization

- No records of release or failure
- No characterization studies have been located for this pipeline

Waste Streams

- PUREX Acid Sludge was transported through this pipeline
- Waste streams contained cesium, strontium, and cerium. Ran from 1974 to 1976

Misc./Other Relevant Information

- Some Qmap data suggests that 6,485 ft of the pipeline is carbon steel, but all Engineering documents state otherwise. The validity of the Qmap data is assumed to be incorrect.
- Though pipelines at C-Farm were thoroughly flushed after use, any residual liquids remaining in the line would have drained to the lowest elevation point, which is adjacent to the 244-CR Vault.

Site Interfaces

Origin/Termination

200-IS-1
- 241-ER-152 (Origin)
- 241-ER-153 (Origin)

WMA-C
- 244-CR-TK-003 (Origin)

200-CB-1
- 221-B (Plant) (Term)

Site Intersects

200-UR-1
- UPR-200-E-54
- UPR-200-E-55

200-EA-1
- UPR-200-E-29

WMA-C
- 200-E-133 (Contaminated Soil)

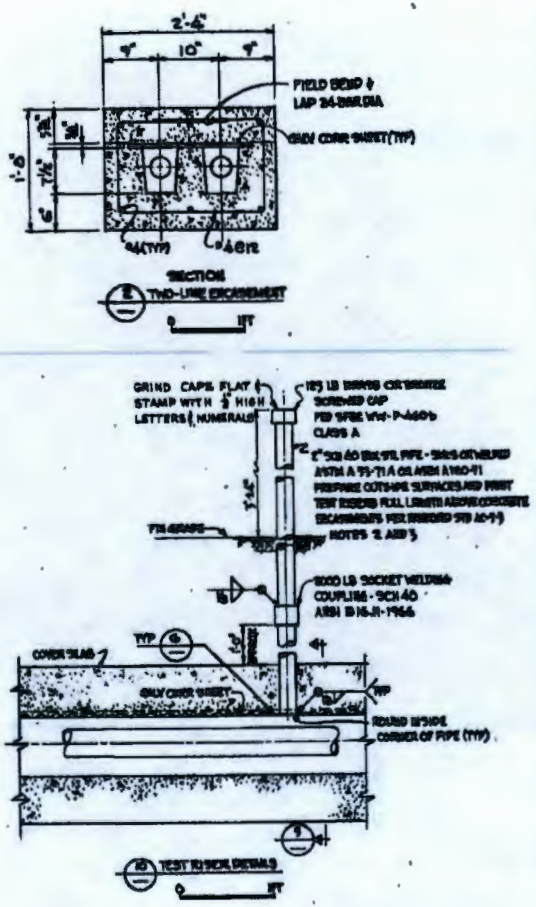
200-MG-1
- UPR-200-E-29

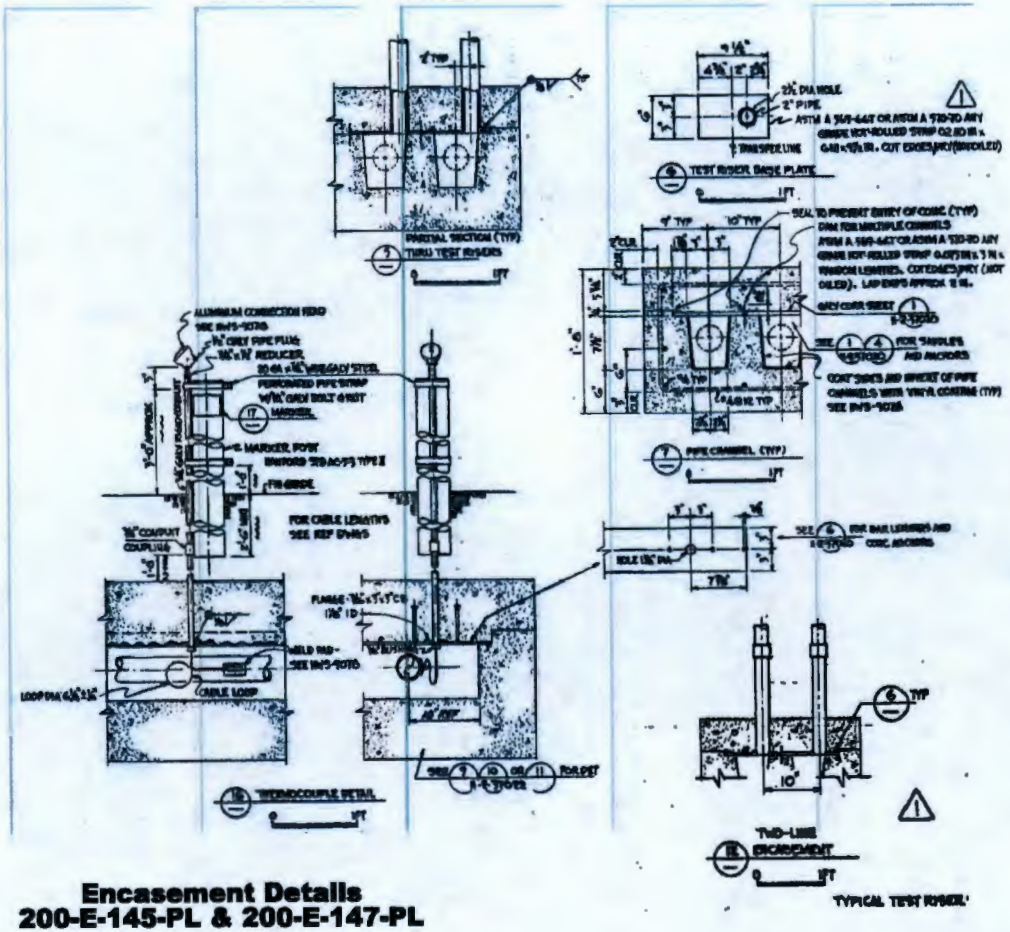
Site Intersects Con't

200-IS-1
- 200-E-111-PL
- 200-E-135-PL
- 200-E-143-PL
- 200-E-144-PL
- 200-E-145-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-151-PL
- 200-E-152-PL
- 200-E-153-PL
- 200-E-154-PL
- 200-E-161-PL
- 244-A LS (Lift Station)
- UPR-200-E-37

No Operable Unit
- UPR-200-E-27
- UPR-200-E-81
- UPR-200-E-135
- 600-269-PL
- 600-291-PL
- 225BA

Scoping Summary: 200-E-147-PL





Encasement Details
200-E-145-PL & 200-E-147-PL

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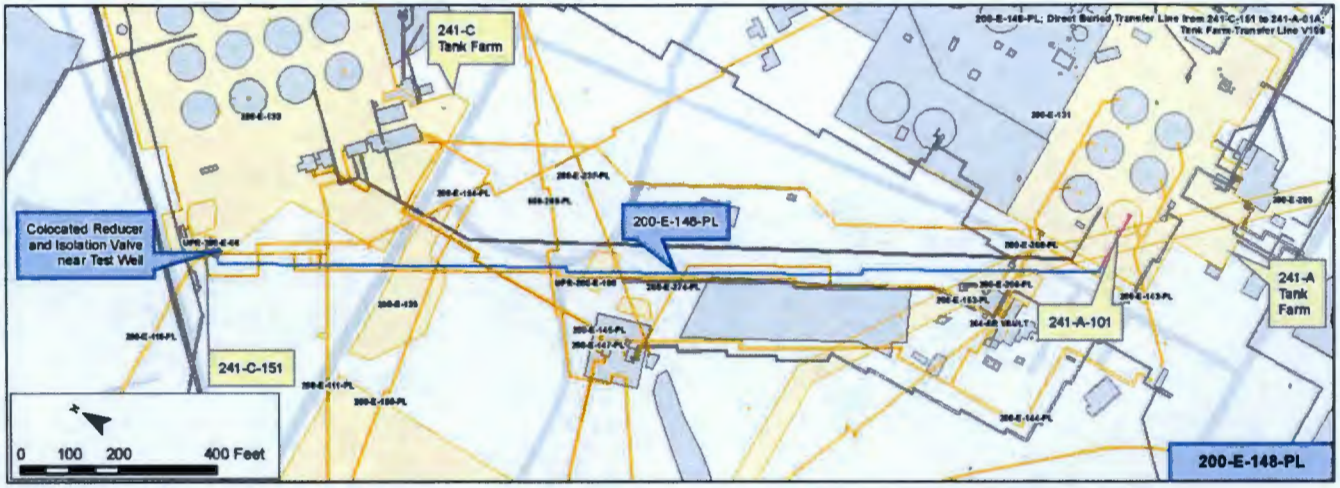
Scoping Summary: 200-E-148-PL

History

The 200-E-148-PL waste site is an inactive underground pipeline used to transfer PUREX Supernate and PUREX Sludge Supernate from the 241-A-101 Tank (WMA-A) to the 241-C-151 Diversion Box (WMA-C). This is a single pipeline run with no valves, connections, or branches.

It was constructed in 1963 and operational until around 1980, when the 241-A-101 Tank was taken out of service.

No releases, or losses of transfer fluids associated with this line, have been identified. The pipeline is surveyed as part of the S&M RARA program and is posted as an Underground Radioactive Materials Area.



Construction

- Length: 1,982 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Pressurized
- Encasement specification: Direct buried; Mounted on 3 ft wide, 5.5 in. thick concrete foundation, with 3 in. U-anchors
- Cathodic Protection: Yes
- Depth Range: 3.5 ft -8.5 ft
- Calculated Volume: 340 gal

Features of Interest

- One 3 in. X 2 in. Schedule 10 Stainless Stell reducer and isolation flange
- One test well located adjacent to reducer
  - Location and existence of test well unverified
- Four expansion joints with 24 in. corrugated metal pipe covers

Relevant Characterization

- No records of releases or failures
- No characterization studies located

Waste Streams

- Transferred PUREX supernate and PUREX sludge supernate
- Waste Streams - Inferred from tank contents: nitrates, Pu-239, U isotopes (primarily U-238), Am-241, Sr-90, Cs-137, Co-60, as well as organic chelating agents including EDTA, HEDTA andglycolate

Misc./Other Relevant Information

- There are nearby UPRs, but not indicative that they are caused from 200-E-148-PL

Site Interfaces

Origin/Termination

200 IS-1
- 241-A-101A Tank

WMA C
- 241-C-151 (Diversion Box)
- UPR-200-E-68
- 200-E-133 (soil)

Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-116 -PL
- 200-E-143-PL
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147-PL
- 200-E-150-PL
- 200-E-153-PL

Site Intersects (Con't)

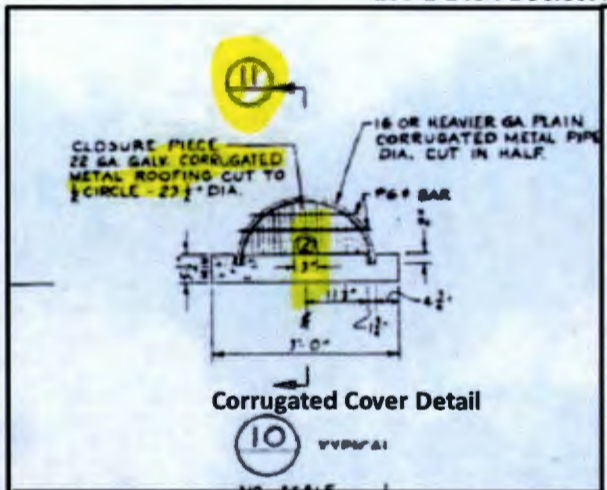
200-IS-1
- 200-E-154-PL
- 200-E-155-PL
- 200-E-206-PL
- 200-E-274-PL
- 244-AR (vault)
- UPR-200-E-100
- UPR-200-E-135

WMA A/AX
- 200-E-200-PL
- 200-E-131 (soil)

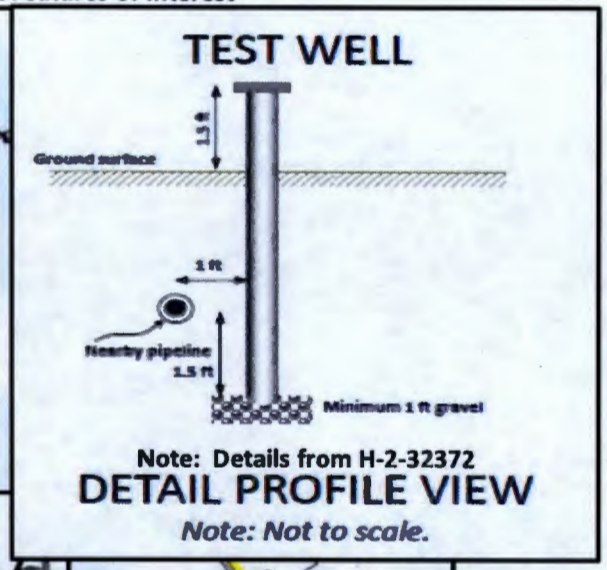
No Operable Unit
- 200-E-237-PL
- 600-269-PL
- 200-E-286 (pond)
- UPR-200-E-86

Scoping Summary: 200-E-148-PL

200-E-148-PL Select Features of Interest



Corrugated Cover Detail

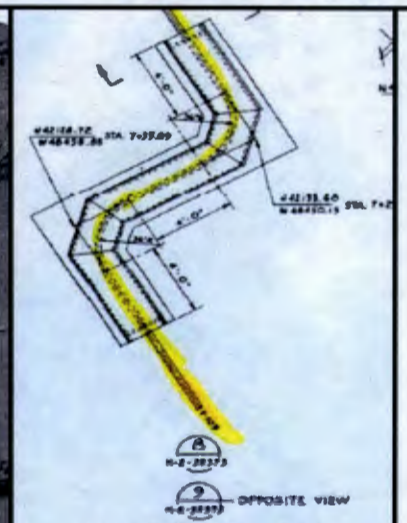


Note: Details from H-2-32372

DETAIL PROFILE VIEW

Note: Not to scale.

Pipeline Trench Under Construction at 241-C Farm (RPP-PLAN-41977, Rev 0)



Expansion Joint detail

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Scoping Summary: 200-E-149-PL

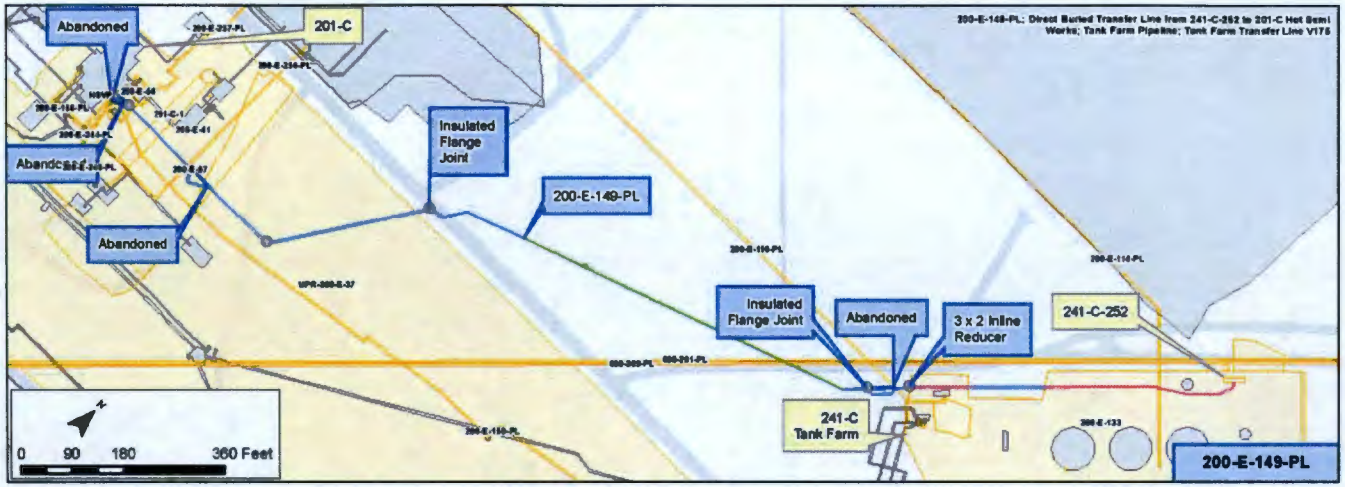
History

The 200-E-149-PL waste site is an inactive underground pipeline (V175) that extends between the 201-C Hot Semi Works Valve Box and the 241-C-252 Diversion Box at the 241-C Tank Farm.

The line was constructed in 1957 and used for the transport of PUREX process wastes in support of the PUREX pilot plant at Hot Semi-works. From 1961-1967, it was used to transport C-Tank Farm wastes to Hot Semi-works for the recovery of Strontium.

Leaks identified in 1957 were subsequently addressed by cutting and abandoning the leaking pipe sections and installing bypass lines to the south. These bypass lines were installed in 1957. The abandoned lines adjacent to the Hot Semiworks building were also blanked. It is unknown if the abandoned lines to the west followed the same procedure.

The releases are identified as the 200-E-56 and 200-E-57 waste sites, and the area stabilized with fly ash is identified under 200-E-41.



Construction

- Length: 2,177 ft
- Diameter: 3 in. on east side and 2 in. on west side
- Composition: Stainless Steel
- Pressurized
- Direct Buried and not encased
- Depth: at least 15 ft bgs
- Calculated Volume: 501 gal

Features of Interest

- Two identified and rerouted leak points (at Teflon flange gaskets)
- Four insulated flanged joints in the main pipe run
- Four abandoned and capped pipe segments
- One 3 in. x 2 in. inline reducer
- Approximately 25 elbows

Relevant Characterization

- Readings taken in 1957 next to the 201-C Building and along the facility's eastern fence adjacent to the pipeline
- 100 rad per hour at a depth of 12 ft
- Attributed to the insulated Teflon flange joint at that location
- Addressed under sitecodes 200-E-56 and 200-E-57.

Waste Streams

- Used to transport SR-depleted PAW from Semiworks to the 241-C-252 Diversion Box
- PAW is high-level acid waste from the PUREX plant solvent extraction process

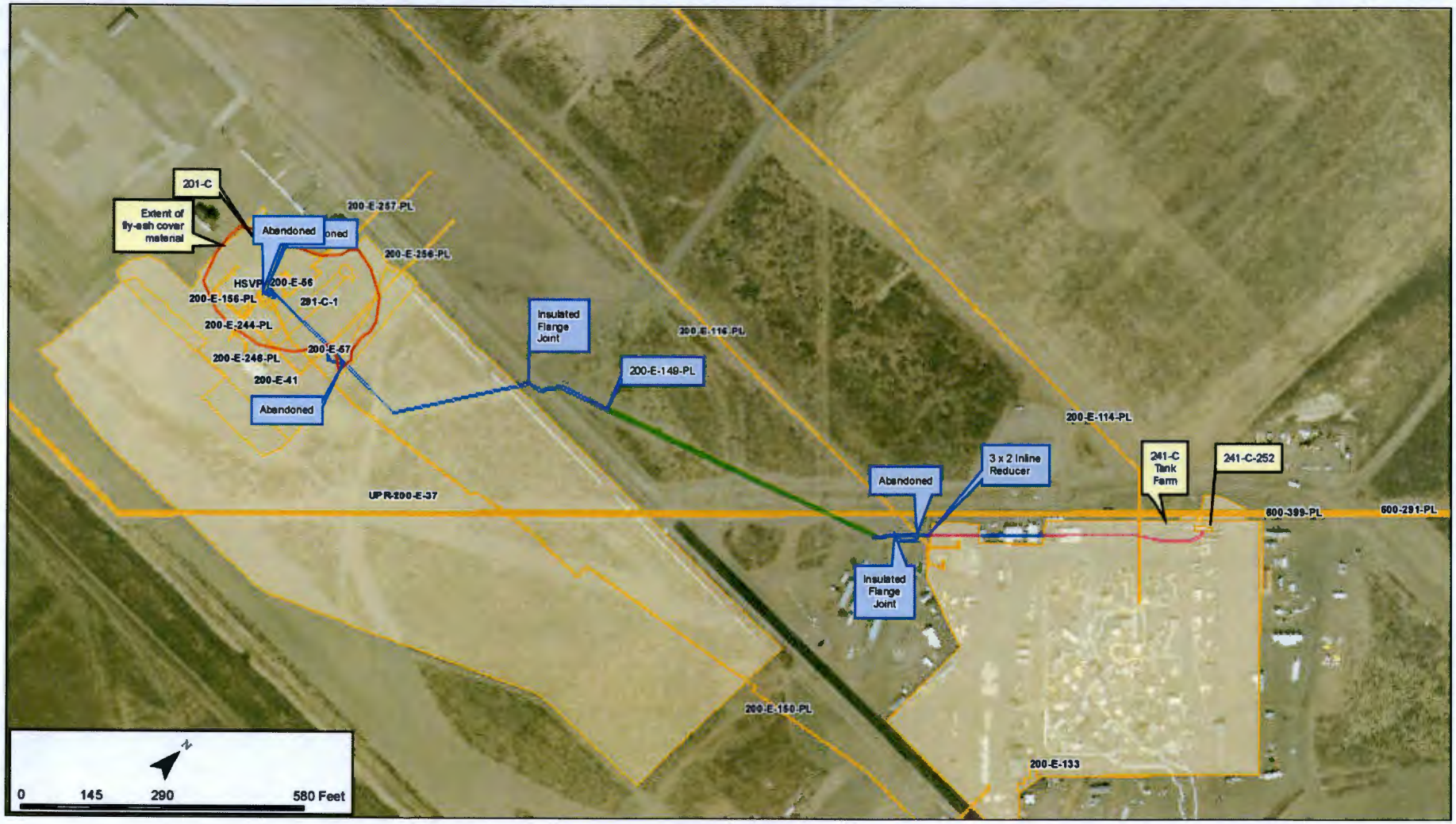
Misc./Other Relevant Information

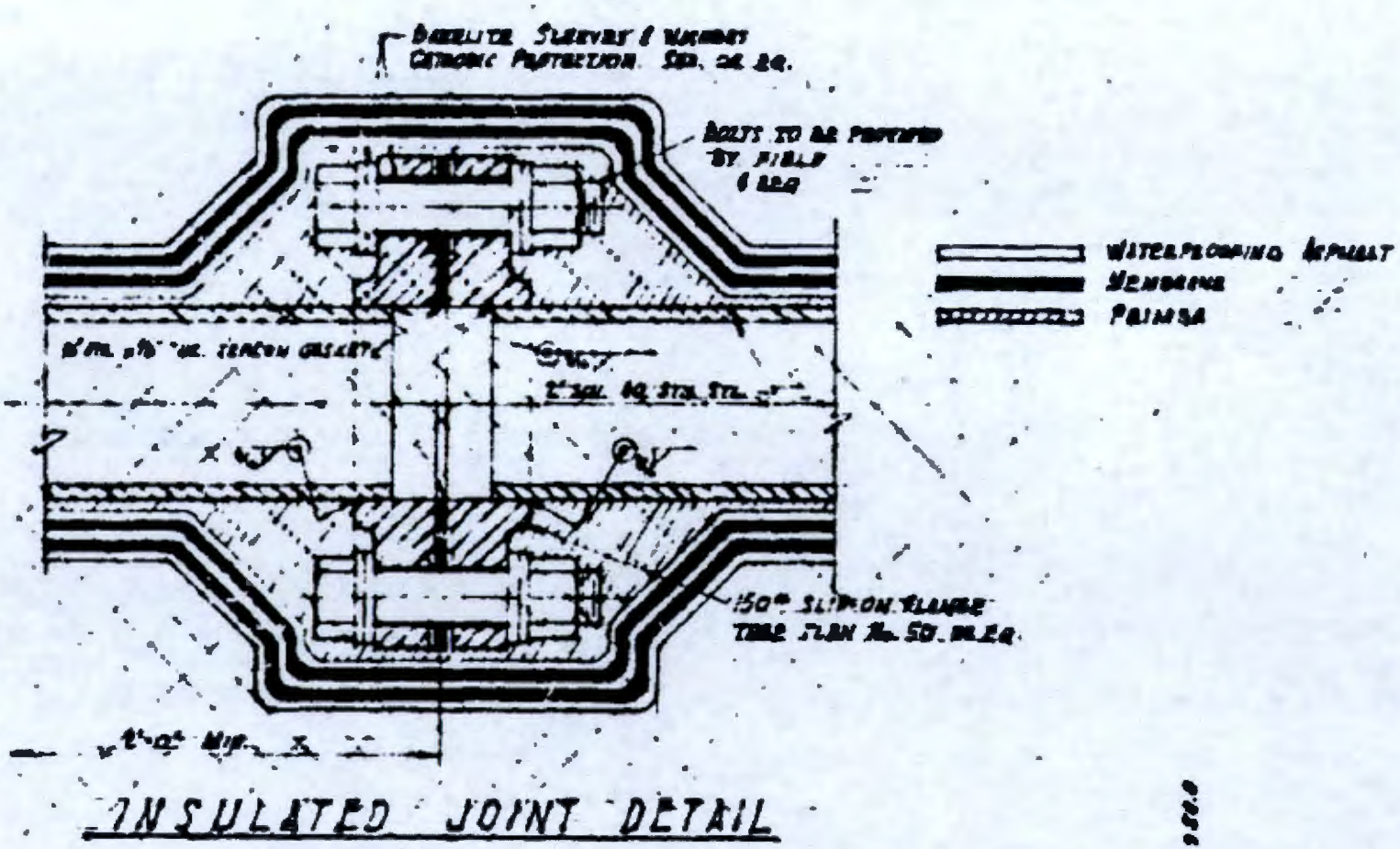
- The section east of the inline reducer falls under the WMA C proposed barrier

Site Interfaces

Origin/Termination	Site Intersects
WMA-C	200-IS-1
• 241-C-252 Diversion Box	• 200-E-150-PL
	• 200-E-156-PL
	• 200-E-244-PL
• 201-C (facility)	• 200-E-257-PL
	• 200-E-256-PL
	WMA-C
	• UPR-200-E-133
	200-EA-1
	• UPR-200-E-37
	• UPR-200-E-56
	• UPR-200-E-57
	No Operable Unit
	• MO512
	• 200-E-41 (Stabilized Area)

Scoping Summary: 200-E-149-PL




WATERPROOFING ASPHALT
MEMBRANE
PRIMER
INSULATED JOINT DETAIL

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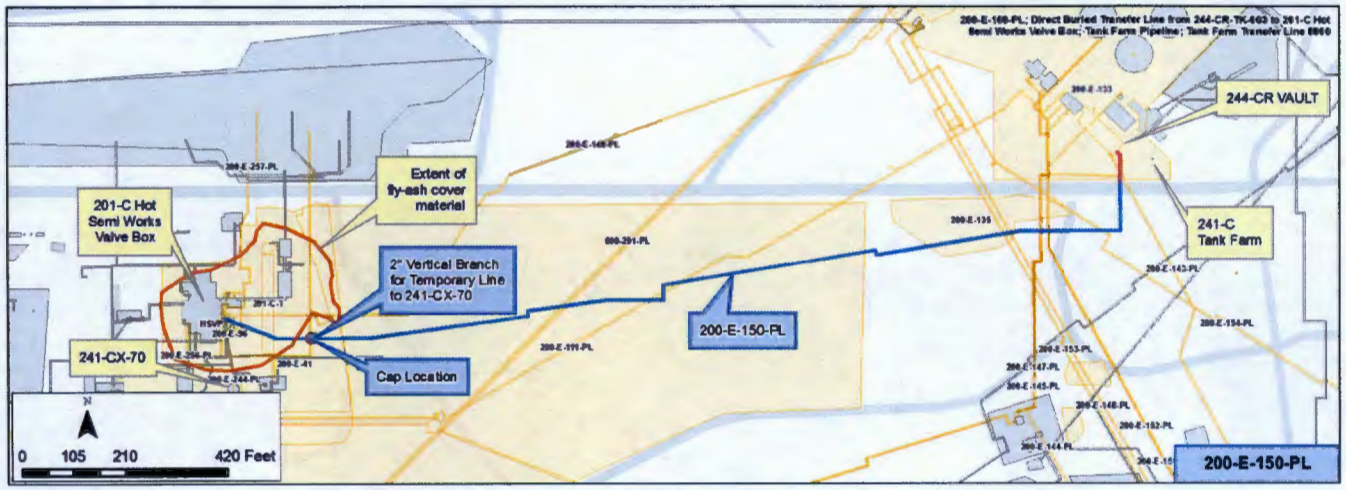
Scoping Summary: 200-E-150-PL

History

The 200-E-150-PL waste site is an inactive underground pipeline (8900) that extends from the 201-C Valve Box in the 201-C Hot Semi Works facility to the 244-CR-TK-003 in the 244-CR Vault (nozzle U10) at the 241-C Tank Farm.

The line is sometimes referred to as the Fission Product Transfer line and was used to transfer PUREX acid sludge waste from the 201-C Hot Semi Works to the 241-C Tank Farm.

It was constructed in 1963 and operational until 1968, when the 201-C Hot Semi Works facility ceased operations.



Construction

Pipeline

- Length: 2,000 ft
- Diameter: 2 in.
- Composition: Schedule 40 Stainless Steel
- Pressurized
- Direct Buried
- Depth: 6 ft - 10 ft
- Calculated volume: 330 gal
- Route has a 9 in. drop

Encasements

- 4 concrete encasements at the turns
- Described as "Expansion Encasements"

Features of Interest

- 2 in. isolation cap at approximate coordinates X574658.1 Y136329.4 (shown on map).
- Approximately 1 m East of isolation cap is a 2 in. vertical branch for a temporary line to 241-CX-70.
- 7 bends
- 6 elbows within the length of the ~2,000 ft pipeline that are each encased with a total of 4 expansion encasements (concrete base with corrugated cover).

Relevant Characterization

- No documented leaks or spills

Waste Streams

- This pipeline transferred PUREX Acid Sludge (PAS) from the Hot Semi Works facility to the 244-CR Vault
- PAS was known to contain cesium, strontium, and cerium
- PAS was acidified sludge that can be assumed to have contained some solids

Misc./Other Relevant Information

- Numerous drawings referring to this pipeline have noted "It has been determined that coordinate information on the 2" schedule 40 SST direct buried waste line from 201-C to 244-CR is not available. Future construction of the line must be preceded by a field investigation"

Site Interfaces

Origin/Termination

- 201-C (facility)(origin)

WMA C

- 244-CR Vault (244-CR-TK-003) (termination)

Site Intersects

200-EA-1

- UPR-200-E-56
- 291-C-1 (burial trench)
- UPR-200-E-37

Site Intersects

200-IS-1

- 200-E-111-PL
- UPR-200-E-135
- 200-E-143-PL
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147-PL
- 200-E-148-PL
- 200-E-149-PL
- 200-E-151-PL
- 200-E-152-PL
- 200-E-153-PL
- 200-E-154-PL
- 200-E-156-PL
- 200-E-244-PL
- 200-E-257-PL
- 241-C-154 (diversion box)

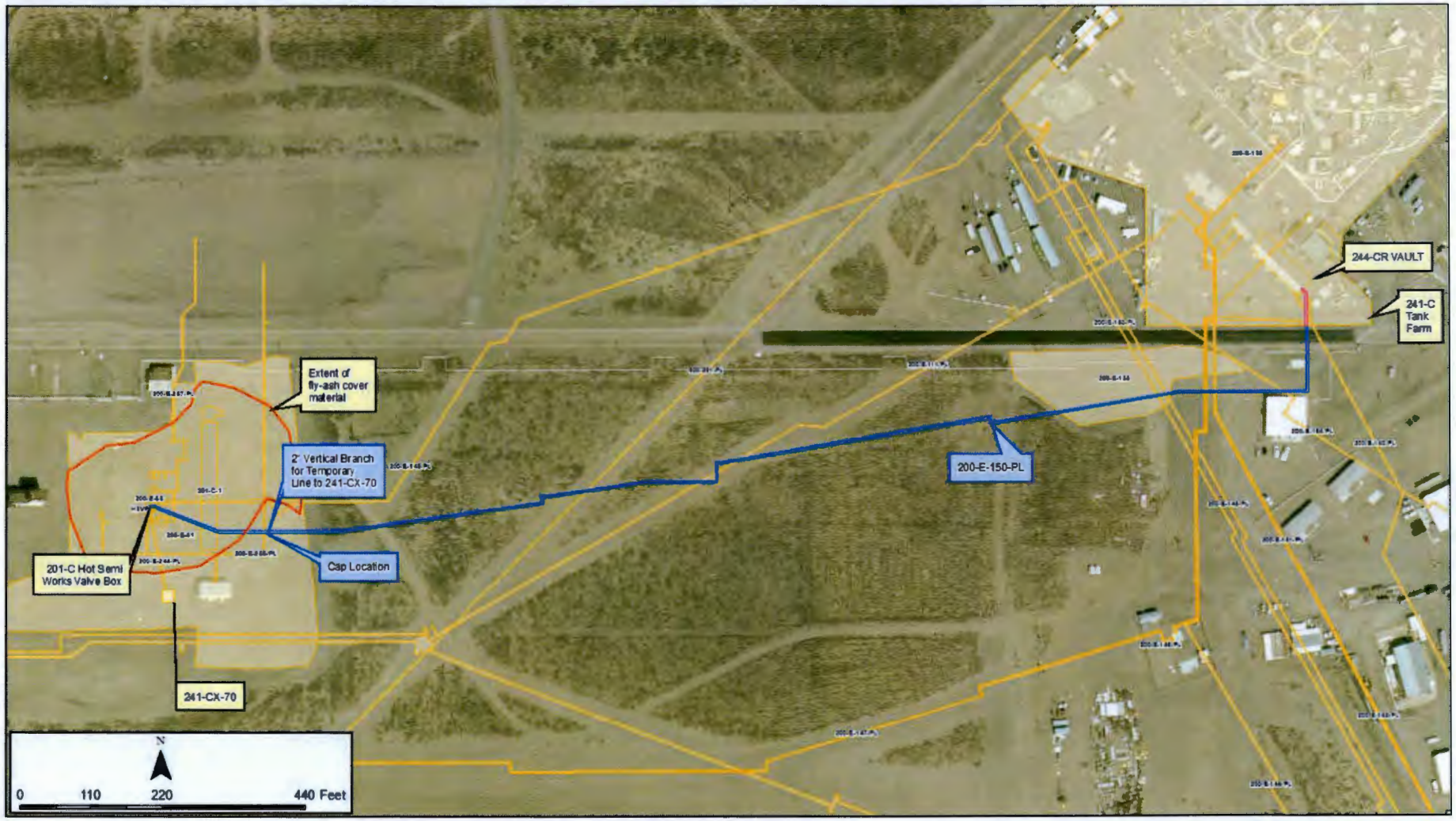
WMA C

- UPR-200-E-133

TBD

- UPR-200-E-41
- 200-E-256-PL

Scoping Summary: 200-E-150-PL



Scoping Summary: 200-E-151-PL

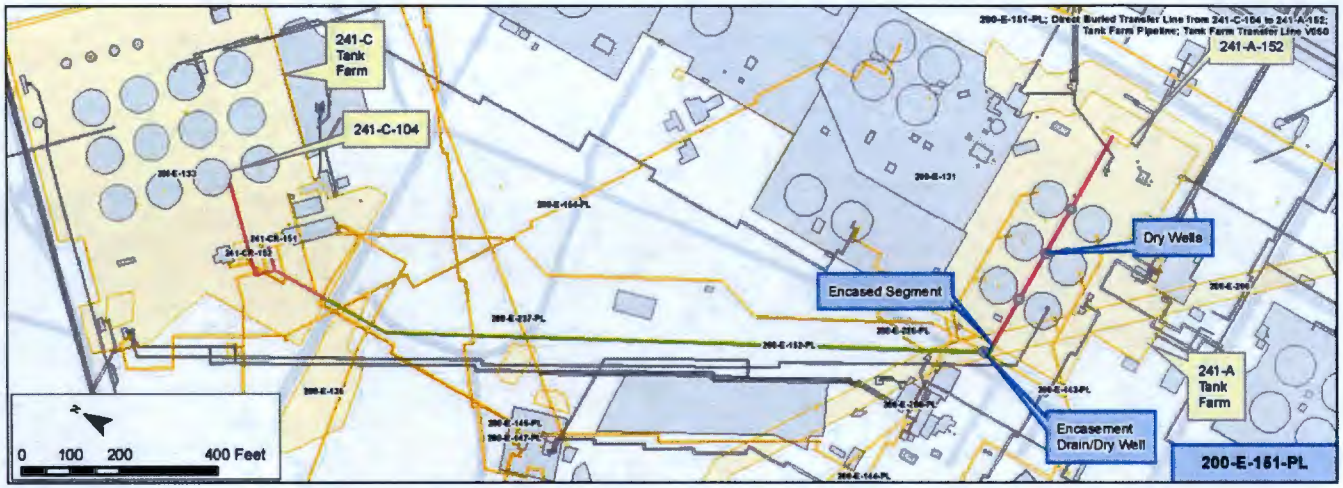
History

The 200-E-151-PL waste site is an inactive underground waste transfer pipeline that carried PUREX Coating Waste and PUREX Organic Wash Waste between the 241-A and 241-C Tank Farms.

The pipeline was constructed in 1951 and placed into service in 1953. A segment from the main line to the 241-CR-151 Diversion Box (within Tank Farm C) was abandoned in place and capped in 1966. A new segment within Tank Farm C was rerouted directly to the 241-C-104 Tank.

This pipeline was taken out of service in approximately 1985, when Tank Farm transfers were completed and the 241-A-152 Diversion Box was isolated, which included the installation of isolation plugs in all lines originating in the diversion box.

No releases or losses of transfer fluids associated with this line have been identified. The pipeline is posted as an Underground Radioactive Materials Area.



Construction

- Length: 1,860 ft
- Diameter: 3 in.
- Composition: Schedule 40 Stainless Steel
- Pressurized
- Encasement Specifications
  - 160 ft of the line in Tank Farm A is encased in concrete
  - The rest of the line (1700 ft) is direct buried on a concrete pipeline bed
- Depth: 19 ft bgs (average)
- Calculated volume: Total volume is 683 gal

Features of Interest

- A segment of V050 from the main line to 241-CR-151 was abandoned in place and capped in 1966. The line was re-routed directly to tank 241-C-104. The abandoned and re-routed segments are within WMA-C where remedial action is planned
- The pipeline encasement commencing at the 241-A-152 diversion box and extending just beyond the A Tank Farm boundary included four (4) encasement drains/dry wells
- One encasement drain/dry well located outside the A Tank Farm
- One diversion box located in Tank Farm C

Relevant Characterization

No characterization studies have been located for this pipeline.

- Records documenting the capping and replacement of the abandoned line segment within the 241-C Tank Farm were located. However, no record of spill or release was noted.

Waste Streams

- Waste came from de-cladding of aluminum that encased spent nuclear fuel, and PUREX Organic Wash Waste
- PUREX Organic Wash Wastes and PUREX Coating wastes ran through this pipeline from 1951 to 1981
- The waste streams contained inorganic salts and silicates (NaNO3, Na2CO3, NaNO2, NA2 SiO3) and Pu and U isotopes

Misc./Other Relevant Information

- The original pipeline run was modified in 1966 to replace a plugged segment from the main run to diversion box 241-CR-151. A new segment of line was routed from the plug directly to tank 241-C-104

Site Interfaces

Origin/Termination

WMA-A
- 241-A-152 (diversion box) (origin)

WMA-C
- 241-CR-151 (diversion box) (termination)
- 241-C-104 (tank) (termination)

Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-135 (UPR)*
- 200-E-143-PL
- 200-E-144-PL

*There is no identified connection between 200-E-135 (UPR) and 200-E-151-PL.

Site Intersects Con't

200-IS-1
- 200-E-145-PL
- 200-E-147- PL
- 200-E-150-PL
- 200-E-152-PL
- 200-E-154-PL
- 200-E-225-PL

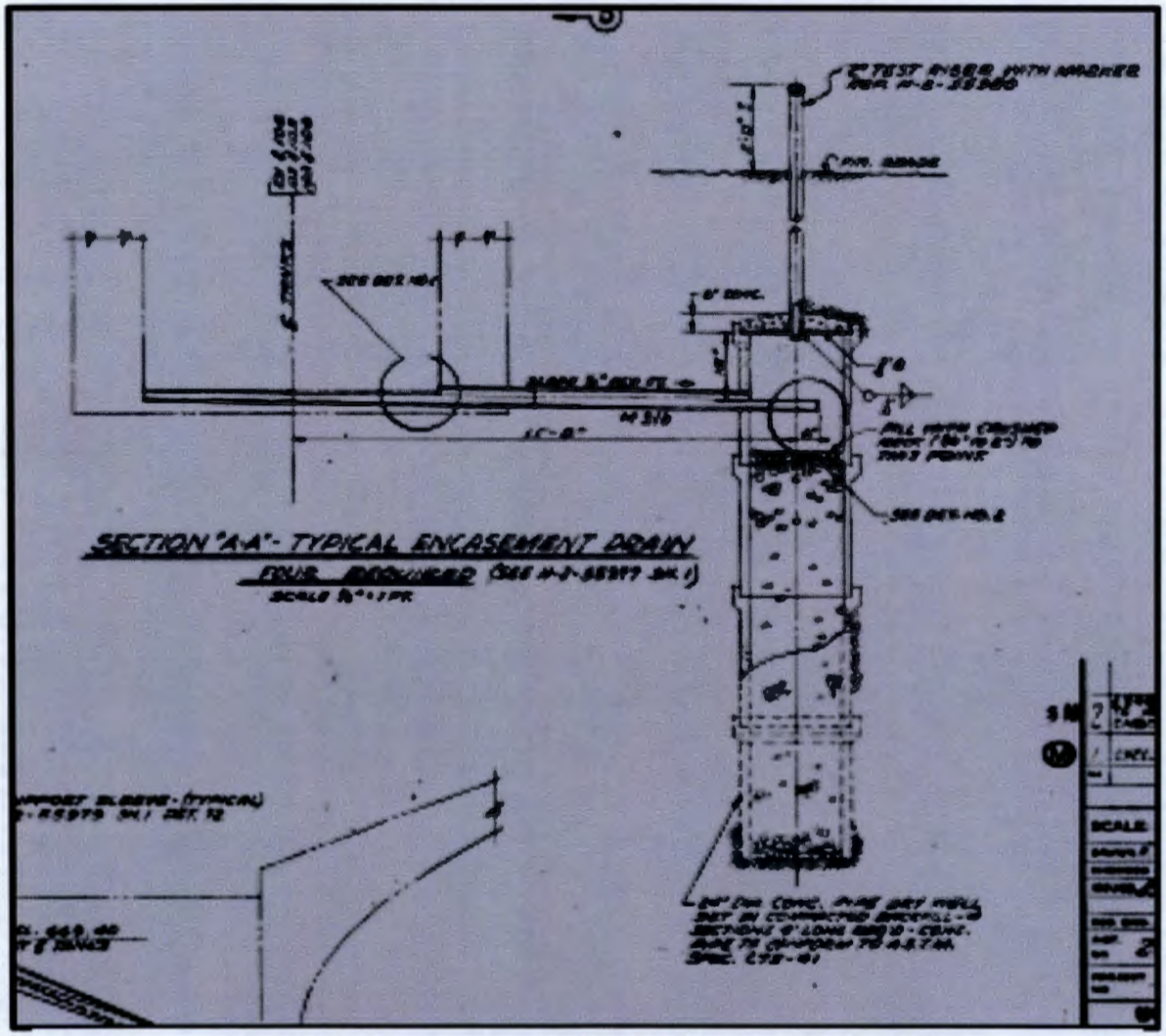
No Operable Unit
- 200-E-237-PL
- 200-E-286 (Powerhouse Ditch)
- 600-269-PL

WMA A/AX
- 200-E-131
- 200-E-200-PL

WMA C
- 200-E-133

Scoping Summary: 200-E-151-PL

200-E-151-PL Select Feature of Interest



Typical Encasement Drain from H-2-55973

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Scoping Summary: 200-E-152-PL

History

The 200-E-152-PL waste site is an inactive underground waste transfer pipeline that carried PUREX Coating Waste and PUREX Organic Wash Waste between the 241-A and 241-C Tank Farms.

The pipeline was constructed in 1951 and placed into service in 1953. A segment from the main line to the 244-CR Vault and a segment from the main line to the 241-CR-151 Diversion Box (within Tank Farm C) were abandoned in place and capped in 1966. A new segment within Tank Farm C was rerouted directly to the 241-C-104 Tank.

This pipeline was taken out of service in approximately 1985, when Tank Farm transfers were completed and the 241-A-152 Diversion Box was isolated, which included the installation of isolation plugs in all lines originating in the diversion box.

No releases or losses of transfer fluids associated with this line have been identified. The pipeline is posted as an Underground Radioactive Materials Area.

Construction

- Length: 1860 ft
- Diameter: 3 in.
- Composition: Schedule 40 Stainless Steel
- Pressurized
- Encasement Specifications
  - 160 ft of the line in Tank Farm A is encased in concrete
  - The rest of the line (1700 ft) is direct buried on a concrete pipeline bed
- Average depth: 19 ft bgs
- Calculated volume: 683 gal

Features of Interest

- Two segments of V051 from the main line to the 244CR vault 241-CR-151 diversion box were abandoned in place and capped in 1966. A new line was re-routed directly to tank 241-C-104.
- The pipeline encasement commencing at the 241-A-152 diversion box and extending just beyond the A Tank Farm boundary included four (4) encasement drains/dry wells. Three are located within the A Tank Farm where remedial action is planned.
- One encasement drain/dry well located outside the A Tank Farm.
- One diversion box located in Tank Farm C.

Relevant Characterization

- No characterization studies have been located for this pipeline
- Records documenting the capping and replacement of the abandoned line segment within the 241-C Tank Farm were located. However, no record of spill or release was noted.

Waste Streams

- Waste came from de-cladding of aluminum that encased spent nuclear fuel, and PUREX Organic Wash Waste.
- PUREX Organic Wash Wastes and PUREX Coating wastes ran through this pipeline from 1951 to 1981.
- The waste streams contained inorganic salts and silicates (NaNO3, Na2CO3, NaNO2, NA2 SiO3) and Pu and U isotopes.

Misc./Other Relevant Information

- Two segments of V051 from the main line to the 244CR vault 241-CR-151 diversion box were abandoned in place and capped in 1966. A new line was re-routed directly to tank 241-C-104.

Site Interfaces

Origin/Termination

WMA-A
- 241-A-152 (diversion box) (origin)

WMA-C
- 241-CR-151 (diversion box) (termination)
- 241-C-104 (tank) (termination)

Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-135 (UPR)*
- 200-E-143-PL

* Note - There is no identified connection between 200-E-135 (UPR) and 200-E-151-PL.

Site Intersects Con't

200-IS-1
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147- PL
- 200-E-150-PL
- 200-E-152-PL
- 200-E-154-PL
- 200-E-225-PL

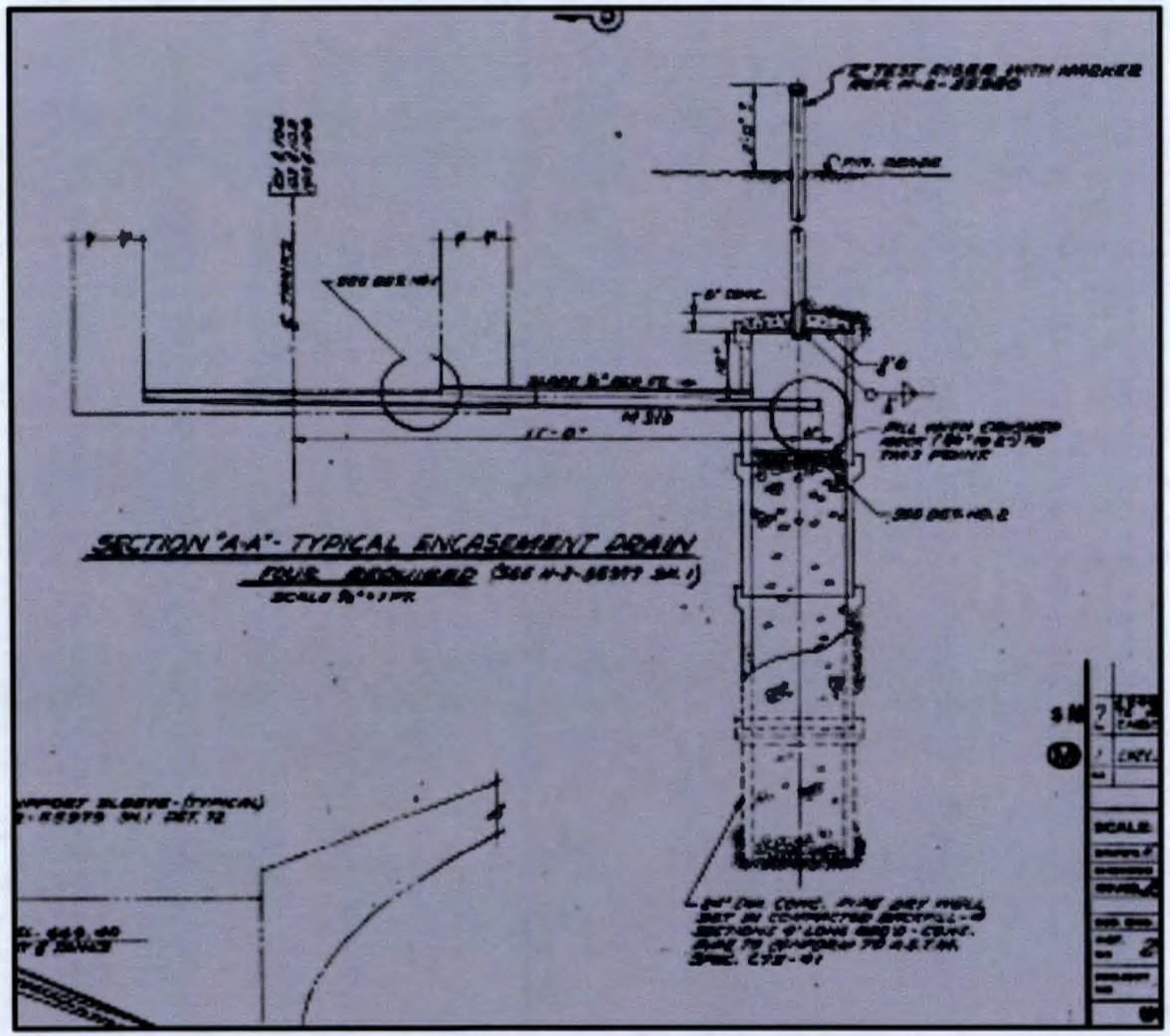
No Operable Unit
- 200-E-237-PL
- 200-E-286 (Powerhouse Ditch)
- 600-269-PL

WMA A/AX
- 200-E-131
- 200-E-200-PL

WMA C
- 200-E-133

Scoping Summary: 200-E-152-PL

200-E-152-PL Feature of Interest



Typical Encasement Drain from H-2-55973

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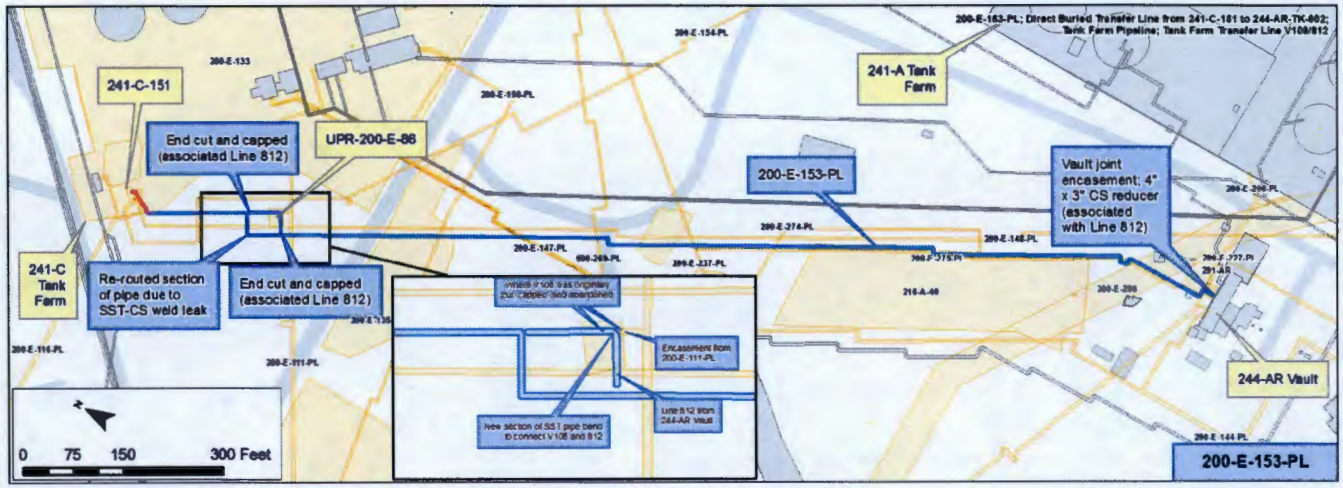
Scoping Summary: 200-E-153-PL

History

The 200-E-153-PL waste site is an inactive underground waste transfer system that consists of two lines (V108 & 812) that carried PUREX Sludge (Line V108), PUREX Sludge Supernate (Line 812), and PUREX Supernate (Line 812) from the 241-ER-151 Diversion Box (Line V108) and Tank 244-AR-TK-002 (Line 812) to the 241-C-151 Diversion Box.

V108 was the original line and operated from approximately 1953 until the early 1960s when it was cut, capped, and abandoned at the encasement coming from 200-E-111-PL. Line 812, constructed in 1966, was welded to V108 and originates from the 244-AR Vault and terminates at the 241-C-151 Diversion Box.

At the location where lines V108 and 812 were welded together, a leak was detected in 1971 (UPR-200-E-86). As a result of this failure, a section of this transfer line was cut, capped, and abandoned. The pipe was re-routed in 1971 by extending the 812 line 50 ft further north before taking a ninety degree bend and connecting back into V108.



Construction

- Length:
  - V108: 262 ft
  - 812: 1,158 ft
- Diameter: 3 in.
- Composition:
  - V108: Stainless Steel
  - 812: Carbon Steel
- Pressurized
- Direct Buried
- Depth: 10 ft bgs
- Total Calculated Volume: 524 gal
  - V108: 97 gal
  - 812: 427 gal

Features of Interest

- One 4 in. x 3 in. CS reducer (associated Line 812)
- Two ends cut and capped
- Two welds: 1 (SST to SST), 1 (SST to CS)
- 6 in. diameter cement asbestos protective sleeve over the SST to CS weld
- Five bends
- Three turns
- One vault joint encasement
- Five expansion encasements

Relevant Characterization

- Leak of approximately 17,385 gal occurred at the weld point of lines V108 and 812 around 1971 (UPR-200-E-86)
  - The line was being used to transfer process waste (containing approximately 25,000 curies of Cs-137)
    - Eight test borings were drilled and determined subsurface soil was contaminated
- As part of the WMA C RFI, sampling detected Cs-137 at 40,000 pCi/g at 8 ft bgs

Waste Streams

- Line V108 originally carried PUREX sludge (PAS)
- Line 812/V108 transferred PUREX sludge supernate (PSS) and PUREX supernate (PSN)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1 (Origin)
- 241-ER-151 (Div Box)
- 244-AR Vault (Tank 244-AR-TK-002)

WMA C (Termination)
- 241-C-151 (Div Box)

Site Intersects

WMA A/AX
- 200-E-200-PL

200-EA-1
- 216-A-40

No Operable Unit
- 600-269-PL
- UPR-200-E-100

Site Intersects Con't

WMA C
- 200-E-133 (UPR)
- UPR-200-E-68
- UPR-200-E-86

200-IS-1
- 200-E-111-PL
- 200-E-116-PL
- 200-E-135 (UPR)
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-154-PL
- 200-E-227-PL
- 200-E-237-PL
- 200-E-274-PL
- 200-E-275-PL
- 200-E-286 (Pond)

Scoping Summary: 200-E-153-PL

Figure 1. Line V108 before it was cut and capped.

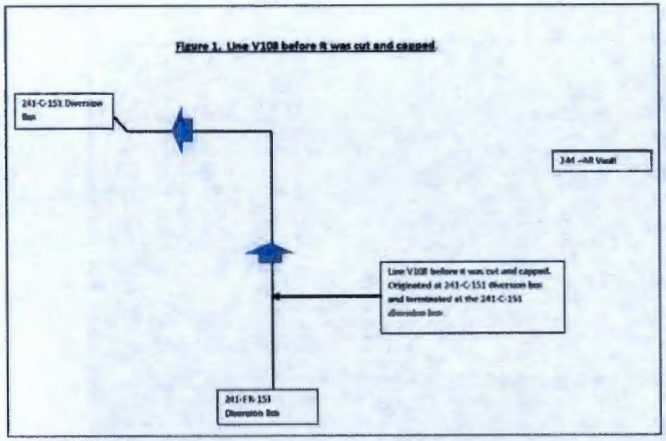


Figure 2. Line V108 after it was cut and capped in the early 1960's

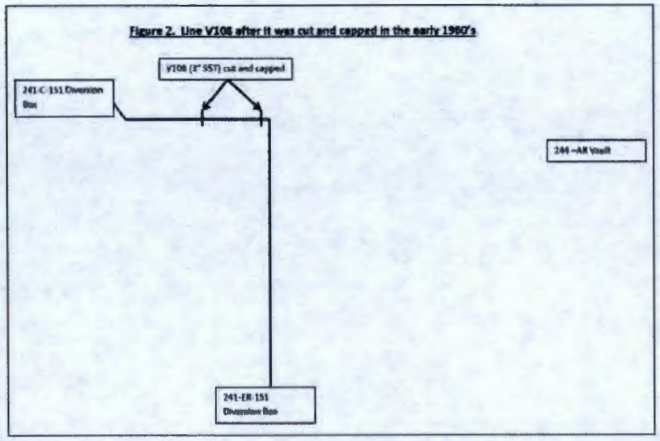


Figure 3. Line 812 welded to V108

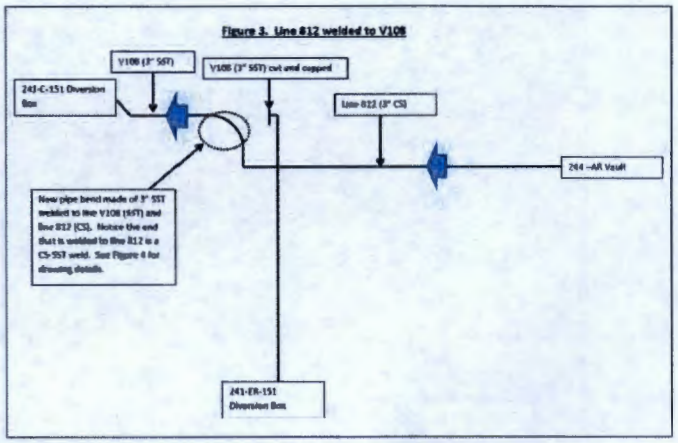


Figure 4. Line 812 Welded to Line V108 (Detail 100, Drawing H-2-61967)

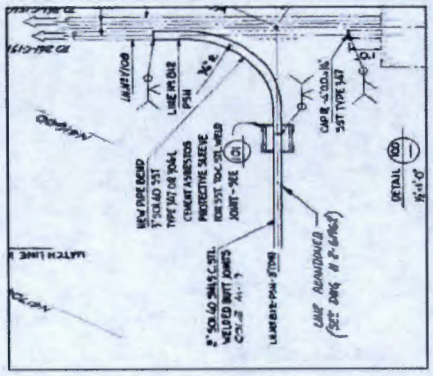


Figure 5. Re-routed Due to CS-SST Weld Leak.

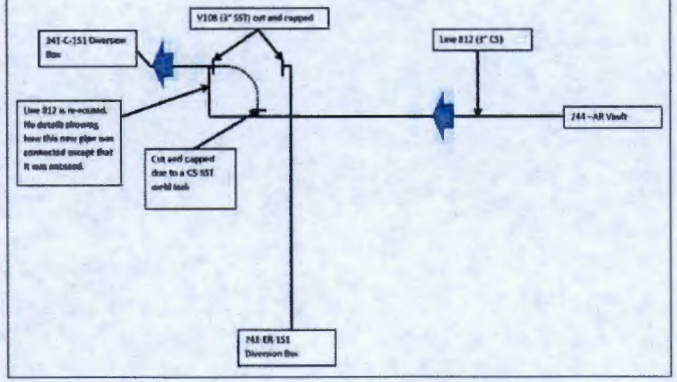
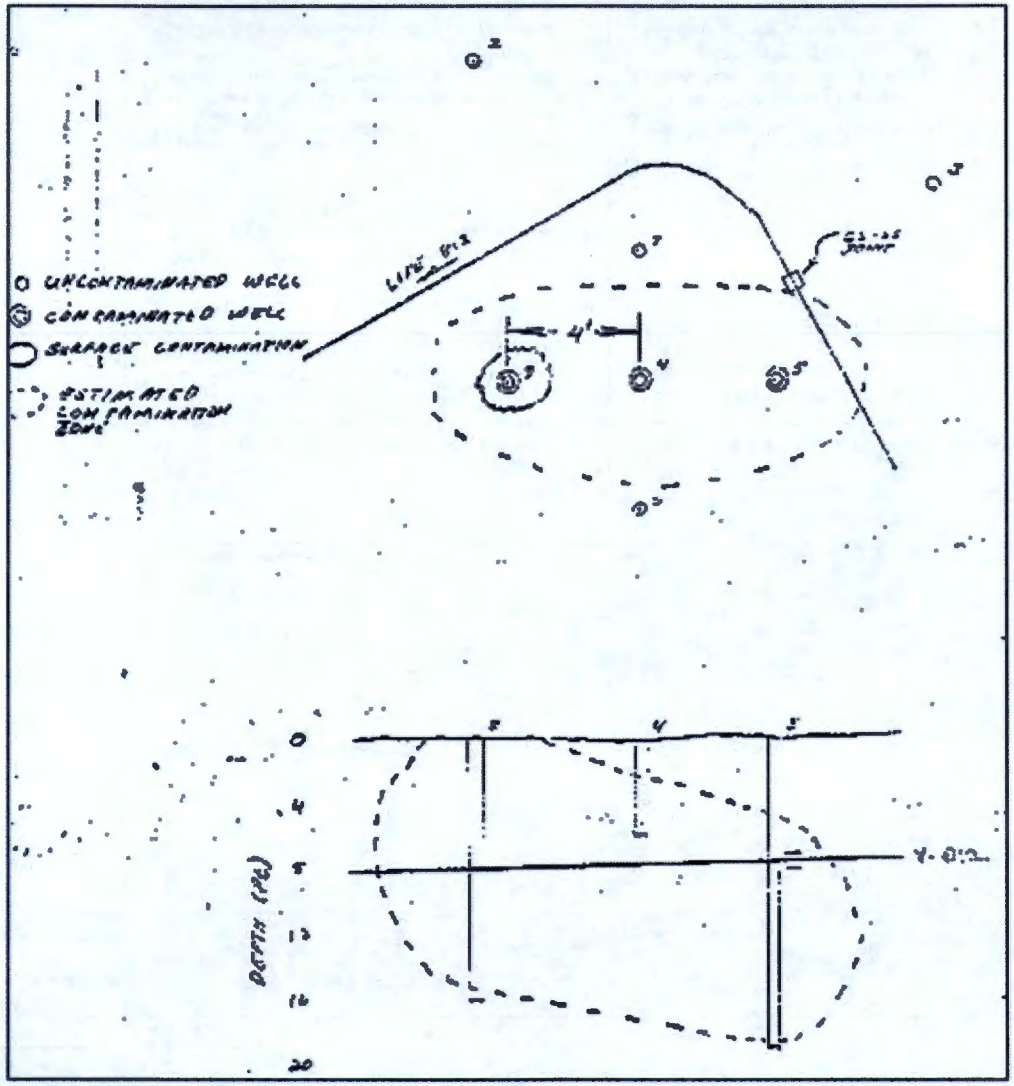


Figure 6. Location of Boreholes (RHO-CD-673, Section 1 of 3, Page 105).

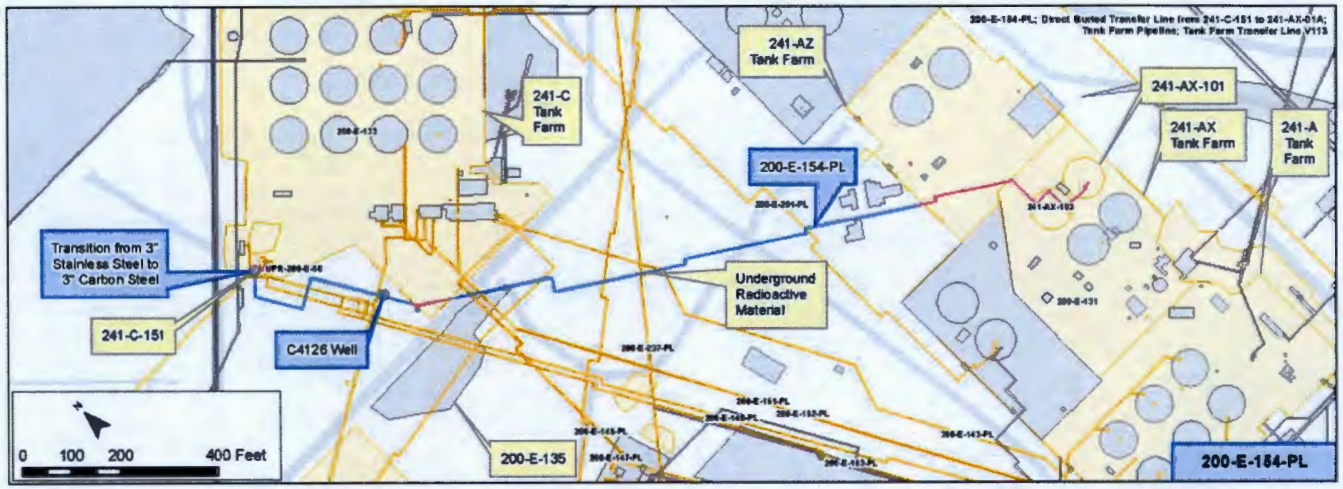


Scoping Summary: 200-E-154-PL

History

The 200-E-154-PL waste site is an inactive underground pipeline (V113) used to transfer waste between the 241-AX-101 Tank and the 241-C-151 Diversion Box.

The pipe was constructed in 1963 and operational until 1975 when it failed a pressure test.



Construction

Pipeline (V113)

- Length: 1,983.6 ft (total)
  - Segment 1: 1,947 ft
  - Segment 2: 36.6 ft
- Diameter: 3 in.
- Composition
  - Segment 1: Carbon Steel
  - Segment 2: Stainless Steel
- Gravity Drained and Pressurized (both segments)
- Encased and Direct Buried (both segments)
- Depth:
  - Segment 1: 5.9 ft - 6.3 ft bgs
  - Segment 2: 6.3 ft - 12 ft bgs
- Total calculated volume: 729 gal
  - Segment 1: 715 gal
  - Segment 2: 14 gal

Encasement

- All 12 elbows are encased in expansion enclosures (i.e., concrete base with corrugated cover and transite cap)
- Last four elbows located beneath tanks 241-AX-104 and 241-AX-101 are in pipe-in-pipe enclosures

Features of Interest

- Three (3) direct buried bends in 3 in. Stainless Steel pipe beneath the 200-E-133 (241-C tank farm) footprint
- Butt joint between 3 in. Stainless Steel and 3 in. Carbon Steel, epoxy sealed in a 6 in. concrete and asbestos sleeve with transite end-caps; under the 200-E-133 (241-C tank farm) footprint
- Sixteen (16) encased bends (one U-turn), in 3 in. Carbon Steel pipe
- One un-numbered URMA sits above the line
- Four (4) pipe-in-pipe encased bends in 3 in. Carbon Steel pipe beneath the 200-E-131 (241-A tank farm) footprint

Relevant Characterization

- Well C4126 drilling rad surveys conducted near the 200-E-154-PL did not find radiation levels significantly above background
- The 200-E-154-PL runs underneath an un-numbered URMA. No data other than the location and shape of this URMA was found

Waste Streams

- Concentrates of PUREX HLW, Organic wash waste and B Plant fusion product additions
- B Plant fusion products
- PUREX sludge supernatant liquor
- 242-A Evaporator products including evaporator bottoms, Hanford defense residual liquid, double shell slurry feed and complexed waste

Misc./Other Relevant Information

- The 200-E-154-PL failed a pressure test in January of 1975 and the cesium-ion exchange feed deliveries from tank 103-AX to tank 105-C were re-routed. There is no indication where the failure occurred.

Site Interfaces

Origin/Termination

WMA A/AX

- 241-AX-101 (tank) (termination)

WMA C

- 241-C-151 (diversion box) (origin)

Site Intersects

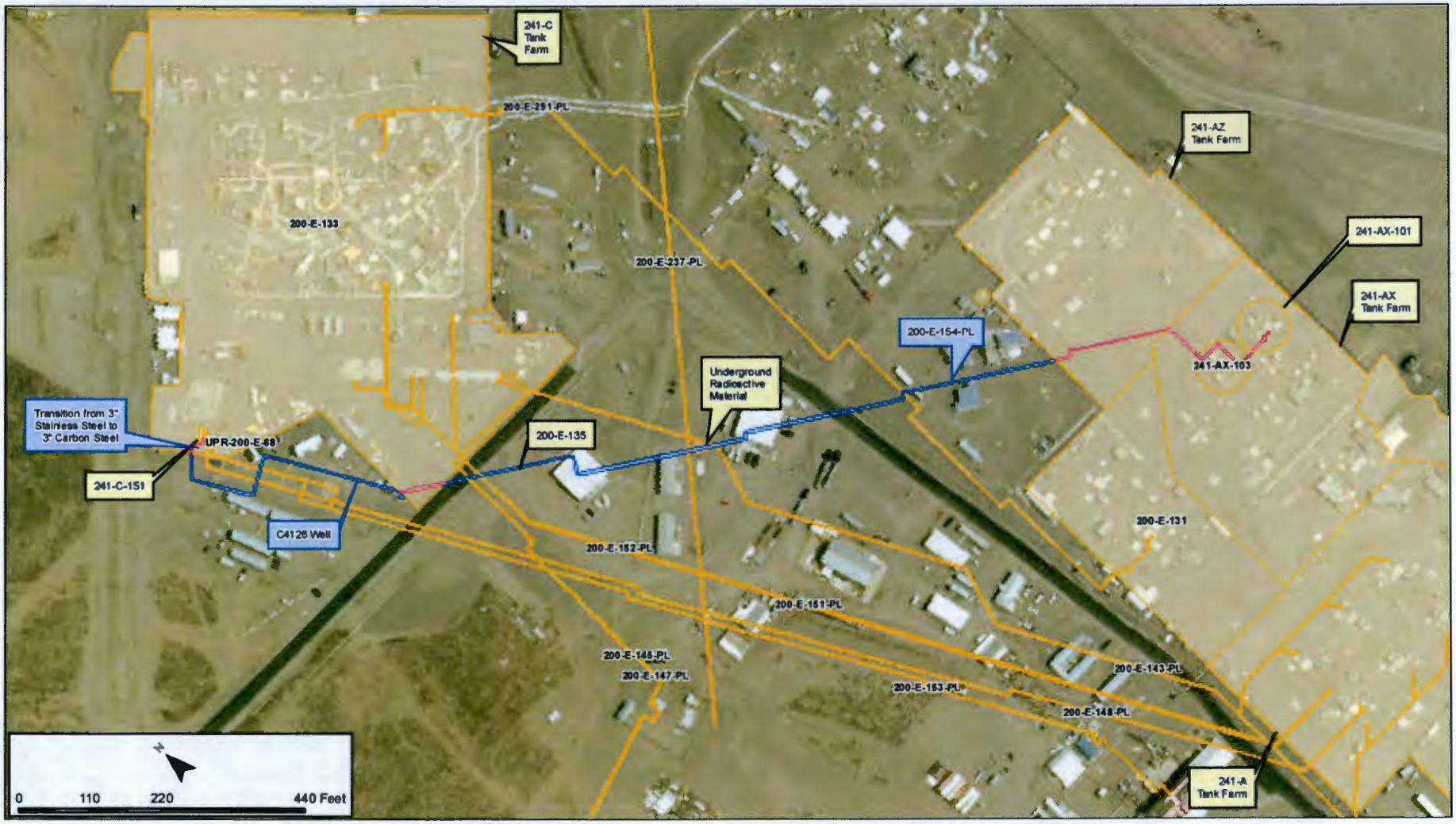
200-IS-1

- 200-E-111-PL
- 200-E-116-PL
- 200-E-143-PL
- 200-E-144-PL
- 200-E-145-PL
- 200-E-147-PL
- 200-E-148-PL
- 200-E-150-PL
- 200-E-151-PL
- 200-E-152-PL
- 200-E-153-PL
- 200-E-291-PL

WMA C

- 200-E-133 (241-C tank farm)
- UPR-200-E-68 (associated with 200-E-133)

Scoping Summary: 200-E-154-PL

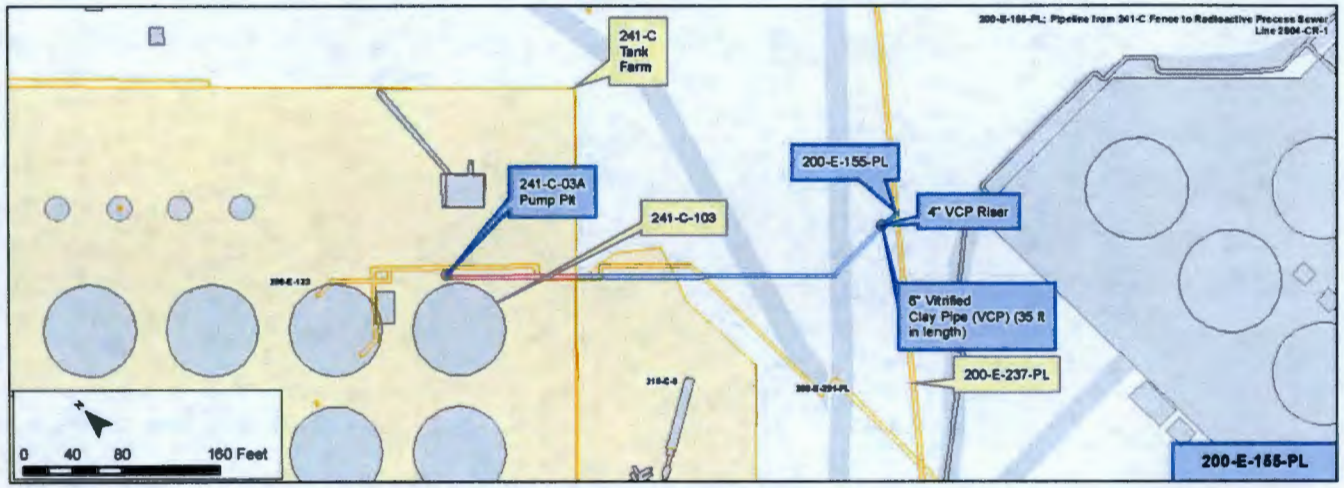


Scoping Summary: 200-E-155-PL

History

The 200-E-155-PL waste site is an inactive underground pipeline that was used to drain condensate from the 241-C-103 Tank at the 241-C-03A Pump Pit inside the 241-C Tank Farm to 200-E-237-PL, a radioactive process sewer that discharged to the B Swamp Ditch, or 216-B-3-3.

The line was constructed in 1962 and operational until 1979.



Construction

Pipelines (2904-CR-1)

- Length: 384 ft (total)
  - Segment 1: 349 ft
  - Segment 2: 35 ft
- Diameter:
  - Segment 1: 2 in.
  - Segment 2: 6 in.
- Composition:
  - Segment 1: Carbon Steel
  - Segment 2: Vitrified Clay
- Drainage Flow
  - Segment 1: Pressurized
  - Segment 2: Gravity
- Direct Buried
- Depth: 6.6 ft - 16.7 ft bgs
- Calculated Volume: 108 gal (total)
  - Segment 1: 57 gal
  - Segment 2: 51 gal

Features of Interest

- 35 ft of 6 in. vitrified clay pipe
- The 4 in. riser allowing access from the surface (a.k.a. monitor plug)
- The 2 in. Carbon Steel pipe contains one elbow (~135 degrees)
- The highest line elevation is at the junction between 2 in. Carbon Steel and 6 in. Vitrified Clay

Relevant Characterization

- Borehole found Cs-137 at less than 2 pCi/g at 7.2 ft bgs
- No records of releases or failures associated with 200-E-155-PL have been identified.

Waste Streams

- PUREX High Level Wastes, B-Plant Low Level Wastes, B-Plant, and PUREX Sludge Supernatant Wastes were the processes associated with the wastes that travelled through the pipeline
- These wastes were potentially processed from 1962 to 1979: PUREX Supernatant, B-Plant LLW, PUREX and B-Plant Supernatant, and 241-C-Tanks Waste storage

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
WMA-C	200-IS-1
•241-C-03A Pump Pit (origin)	•200-E-291-PL
	WMA-C
TBD	•216-C-8
•200-E-237-PL (terminus)	•241-C-103 (tank)
	•200-E-133

Scoping Summary: 200-E-155-PL

Scoping Summary: 200-E-156-PL

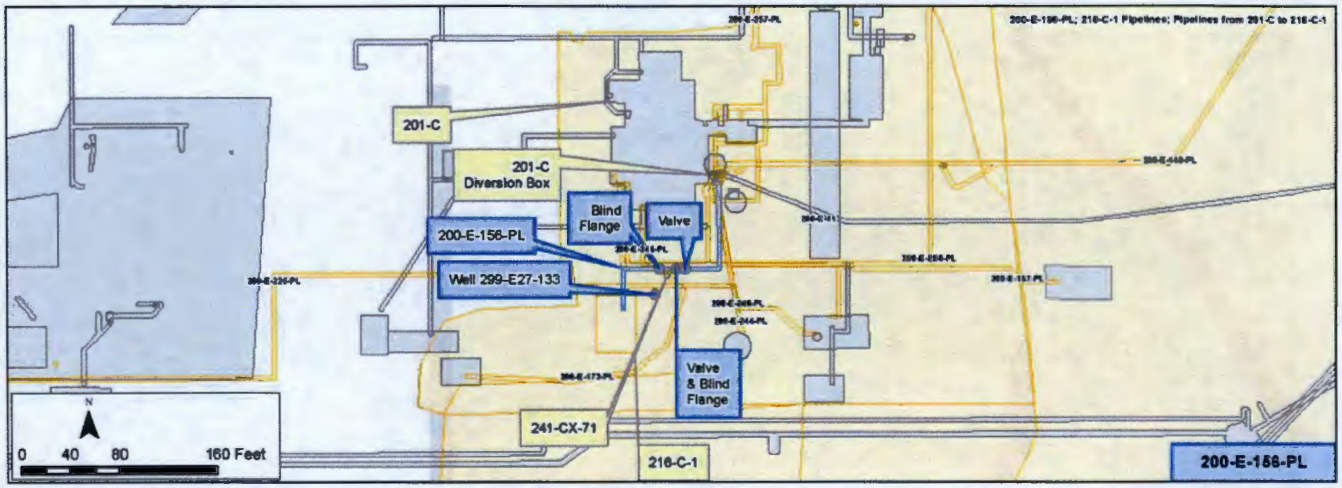
History

The 200-E-156-PL waste site is an inactive underground pipelinethat extended from the diversion box at the 201-C Building to the 216-C-1 Crib. Shortly after construction, the pipeline was modified to flow through the 241-CX-71 Neutralization Tank.

It was constructed in 1953 to convey waste from the REDOX and PUREX process pilot studies conducted at the Strontium Semi-works that ended in 1957.

In 1954, the campaign at the 201-C Building changed and the 200-E-156-PL transferred PUREX process condensate and cold run waste until 1957, when the 216-C-1 Crib reached its specific retention capacity.

The 200-E-156-PL was closed off with blank flanges at the 241-CX-71 Neutralization Tank in Jun-1957.



Construction

- Length:
  - 200-E-156-PL (Section 1): 182 ft
  - 200-E-156-PL (Section 2): 246 ft
- Diameter:
  - 200-E-156-PL (Section 1): 2 in.
  - 200-E-156-PL (Section 2): 4 in.
- Composition:
  - 200-E-156-PL (Section 1): Stainless Steel
  - 200-E-156-PL (Section 2): Saran-lined Steel
- Gravity flow
- Direct buried
- Depth: 5.5 ft to 8 ft bgs
- Calculated volume:
  - 200-E-156-PL (Section 1): 30 gal
  - 200-E-156-PL (Section 2): 160 gal

Features of Interest

- One change in pipe size 2 in. to 4-in .
- One - change in pipe material stainless steel to carbon steel
- Two - dead head flanges
- Two in-line valves
- One flow through tank (241-CX-71 Neutralization Tank)
- Four 90 degree bends
- Two 45 degree bends

Relevant Characterization

- The waste streams believed to contain the following:
  - H-3, Co-60, Sr-90, Cs-137, Pu-239 & 240, U-238.
  - Mobile constituents include: Cr(VI), I, nitric acid, Pd, K, Pa, Tc, U-238
- 1984: scintillation logging found elevated gamma response at 6.5 ft to 39.3 ft bgs in the well located 5 meters east of the 216-C-1 Crib (Well 299-E27-133)
- 1988/2014 RAD surveys found radiation levels in this area to be below background

Waste Streams

- Wastes associated with the PUREX and REDOX processes were transported
- This material, SemiWorks Process Condensate, was identified as acidic with high salt
- The last waste that flowed through the pipeline was PUREX in 1957
- Approx. 6,180,000 gal of material flowed through this pipeline during the years of operation

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-EA-1

- 216-C-1 (crib)
- 201-C (facility)

Site Intersects

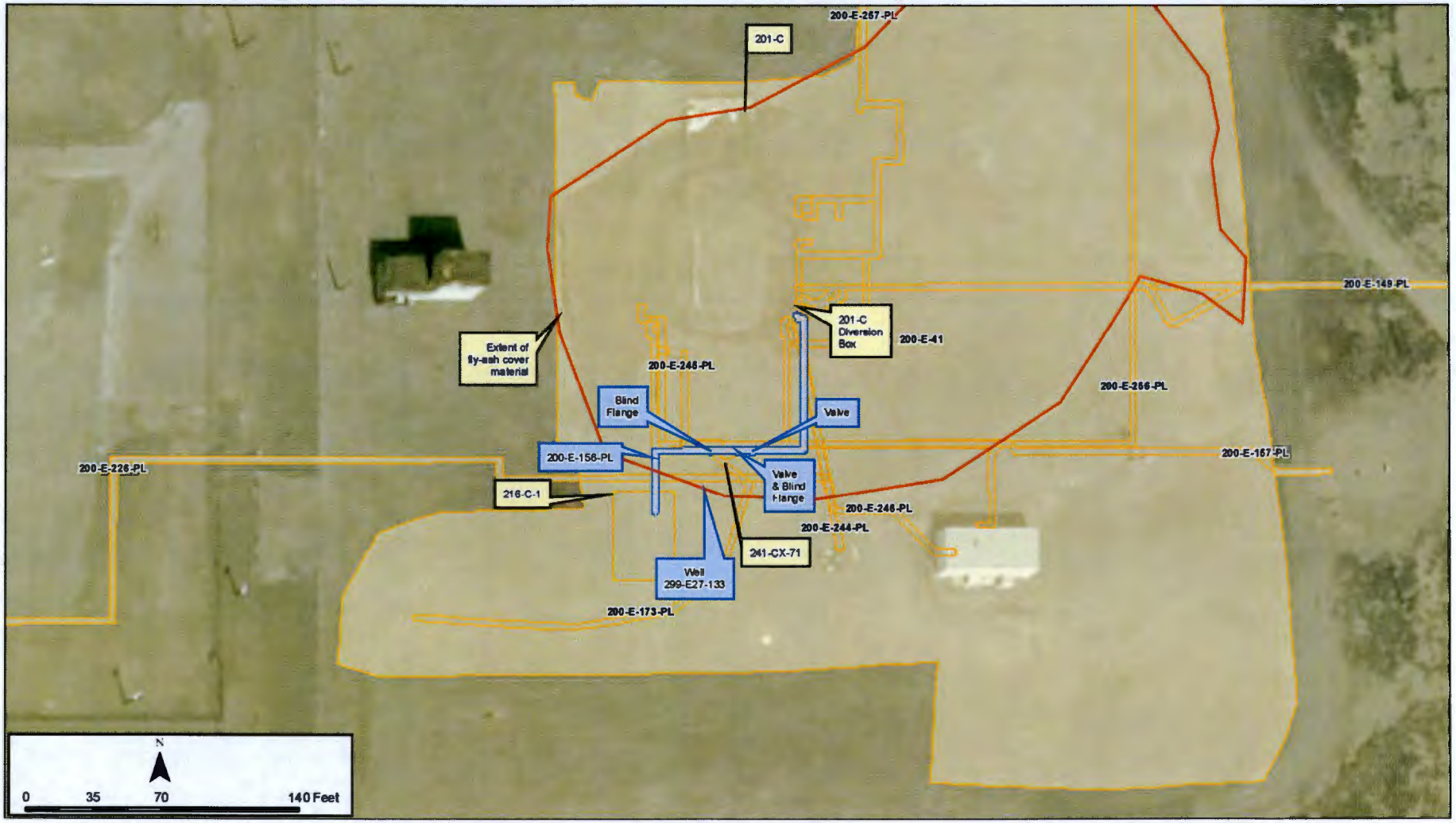
200-IS-1

- 200-E-149-PL
- 200-E-157-PL
- 200-E-226-PL
- 200-E-244-PL
- 200-E-245-PL
- 200-E-246-PL
- 200-E-256-PL
- 200-E-257-PL
- 241-CX-71 (neutralization tank)

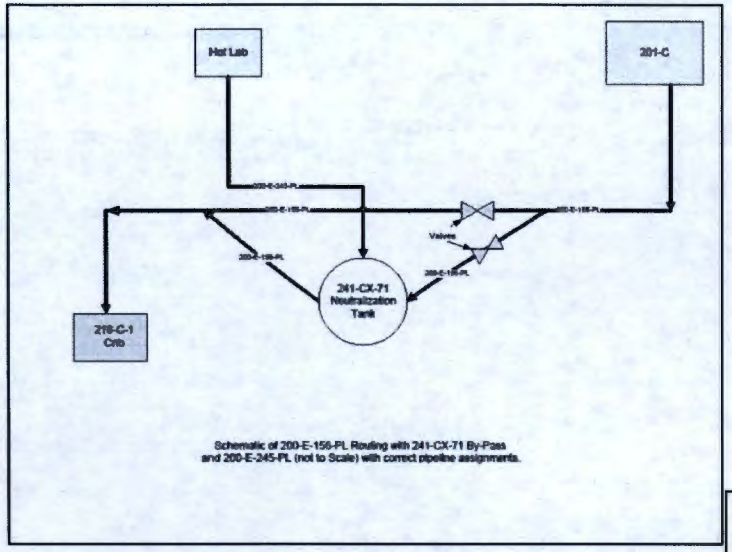
No Operable Unit

- 200-E-41 (stabilized area)

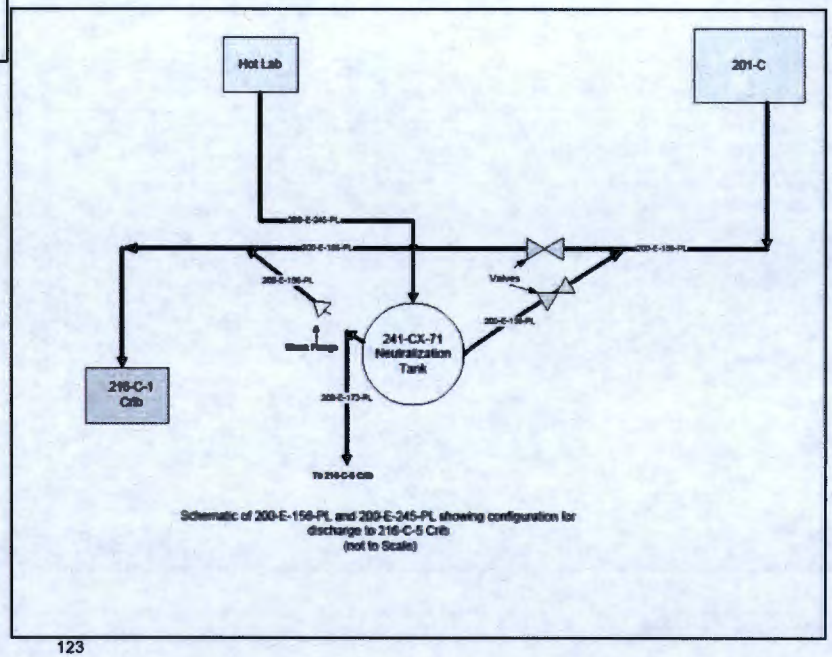
Scoping Summary: 200-E-156-PL



200-E-156-PL Feature of Interest



Schematic of 200-E-156-PL Routing with 241-CX-71 By-Pass and 200-E-245-PL (not to Scale) with correct pipeline assignments.



Schematic of 200-E-156-PL and 200-E-245-PL showing configuration for discharge to 216-C-5 Crib (not to Scale)

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Scoping Summary: 200-E-157-PL

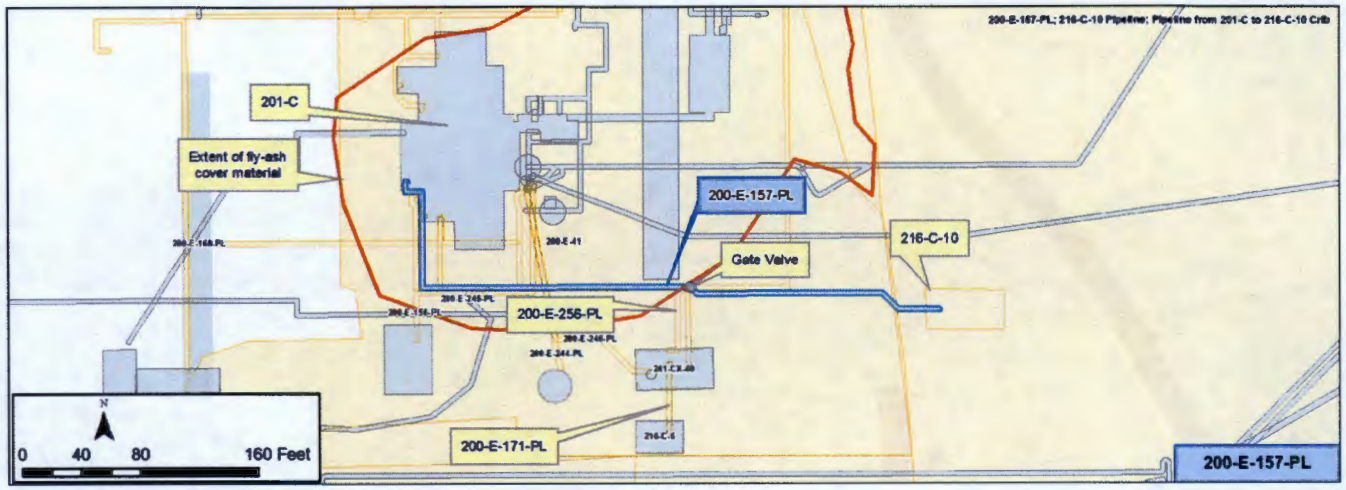
History

The 200-E-157-PL waste site is an inactive underground process sewer from the 201-C Facility and the 241-CX-Vault to the 216-C-10 Crib.

From 1955 to 1964, wastes from the 201-C Facility were transported through 200-E-157-PL to the 216-C-6 Crib through an interface with 200-E-171-PL.

Following the decommissioning of the 216-C-6 Crib, from 1964 to 1969, the pipeline transported wastes from the 201-C facility and the 241-CX-40 Vault (connected via 200-E-171-PL) to the 216-C-10 Crib.

Connection points to 201-C were isolated with grout plugs when the facility was dismantled.



Construction

- Length: 435 ft.
- Diameter: 2 in.
- Composition: Stainless Steel
- Flow Method: Gravity
- Direct Buried
- Depth: 2 ft. - 5 ft. bgs
- Calculated Volume: 71 gal

Features of Interest

- A gate valve connecting to 200-E-171-PL is located at approximately the mid point of the line, between 201-C and 216-C-10. The gate valve was installed as part of a 1964 modification. The 200-E-171-PL line was blanked at the gate valve where it tied into the 216-C-6 Crib line (see 200-E-171-PL).

Relevant Characterization

- Based on historical inventory reporting waste transferred to the 216-C-10 Crib includes:
  - 2.78E+01 Ci Sr-90
  - 6.93E-02 Ci Cs-137
  - 1.51E-05 Ci Total U
  - 9.21E-03 Ci Total Alpha
  - 6.91E+01 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

201-C Hot Semiworks/Strontium Semiworks Facility

- 216-C-6 crib received 140,011 gal of REDOX and PUREX type process condensate from 201-C and 241-CX-72 Vault floor drainage via pipeline 200-E-171-PL (1955-1964)
- Strontium Process Condensate: 216-C-10 Crib
  - 237,000 gal of acidic process condensate from the strontium recovery process at the 201-C Process Building via 200-E-157-PL from (1964-1967)

Misc./Other Relevant Information

- 200-E-41 Stabilized Hot Semiworks Area includes an ash covered area over the remnants of the decommissioned 201-C building

Site Interfaces

Origin/Termination

- 201-C (facility)

200-IS-1
- 200-E-256-PL (origin)

200-EA-1
- 216-C-10 Crib (termination)

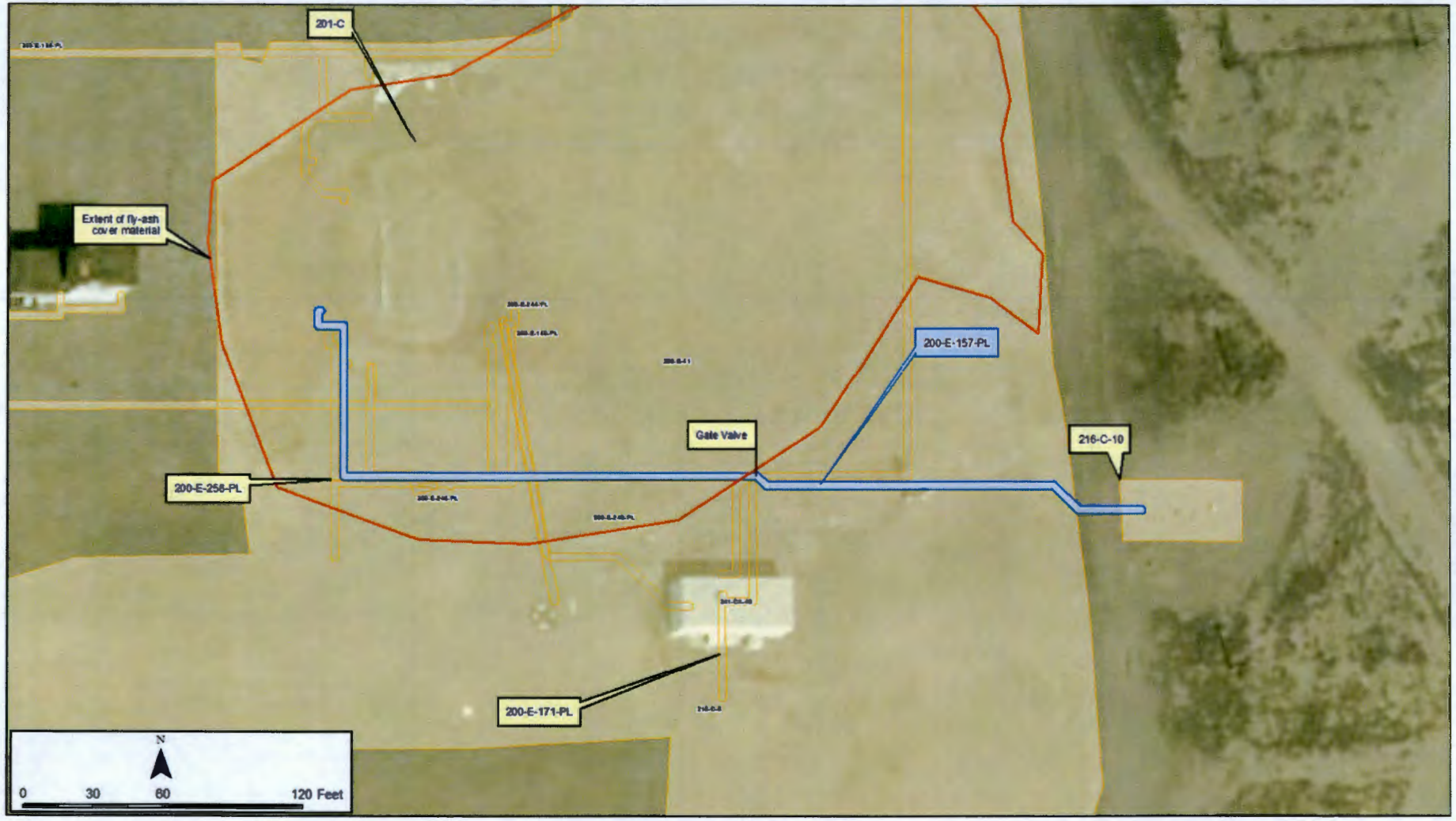
200-IS-1
- 200-E-171-PL (termination)

Site Intersects

200-IS-1
- 200-E-156-PL
- 200-E-169-PL
- 200-E-244-PL
- 200-E-245-PL
- 200-E-246-PL

- 200-E-41 (stabilized area)

Scoping Summary: 200-E-157-PL



Scoping Summary: 200-E-158-PL

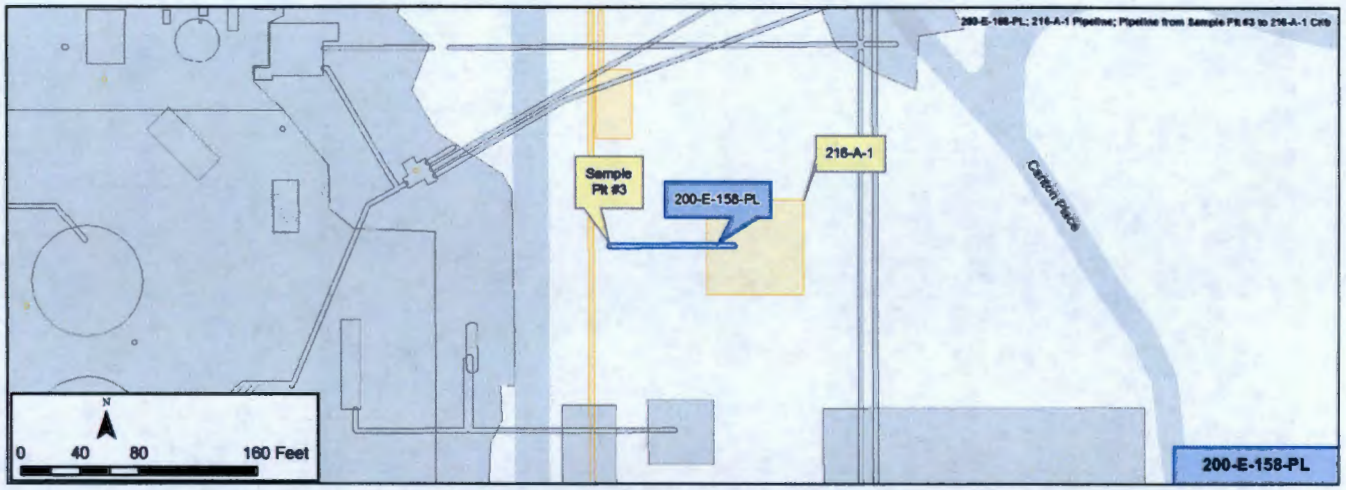
History

The 200-E-158-PL waste site is an inactive underground radioactive process sewer. It extends from Sample Pit #3, sometimes referred to as the 202-A Sampler Pit #3, to the 216-A-1 Crib.

This waste site was known as the drain line and was used for only two months in 1955, and then it was abandoned.

The supply line was an above-grade line used in November-December, 1955, and then removed. The crib was abandoned that same year, as it reached its specific retention capacity, so was backfilled.

The status, including waste site designation, of Sampe Pit #3 could not be verified through historical documents.



Construction

- Length: 83 ft
- Diameter: 6 in.
- Composition: Vitrified Clay Pipe (extra strong)
- Depth: 8-to-10 ft bgs
- Encasement: Direct-buried
- Calculated Volume: 120 gal

Features of Interest

Sample Pit #3 and 216-A-1 Crib were used only once by operations, for the initial PUREX cold uranium start up in 1955.

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil could be located.

Waste Streams

- Depleted uranium waste (PUREX startup wastes) from the cold start-up run in the 202-A Bldg, between November and December, 1955.
- Based on data from the 216-A-1 Crib, radioisotopes likely to be found in this pipeline include: Uranium.

Misc./Other Relevant Information

- The 216-A-1 Crib was surface-scraped in 1992, and contaminated soil was consolidated above the crib, then clean fill was added and area was re-posted Underground Radioactive Material.

Site Interfaces

Origin/Termination:

200-EA-1 OU

- 216-A-1 Crib

No Operable Unit

- Sample Pit #3

Site Intersects:

None identified

Scoping Summary: 200-E-158-PL

Scoping Summary: 200-E-159-PL

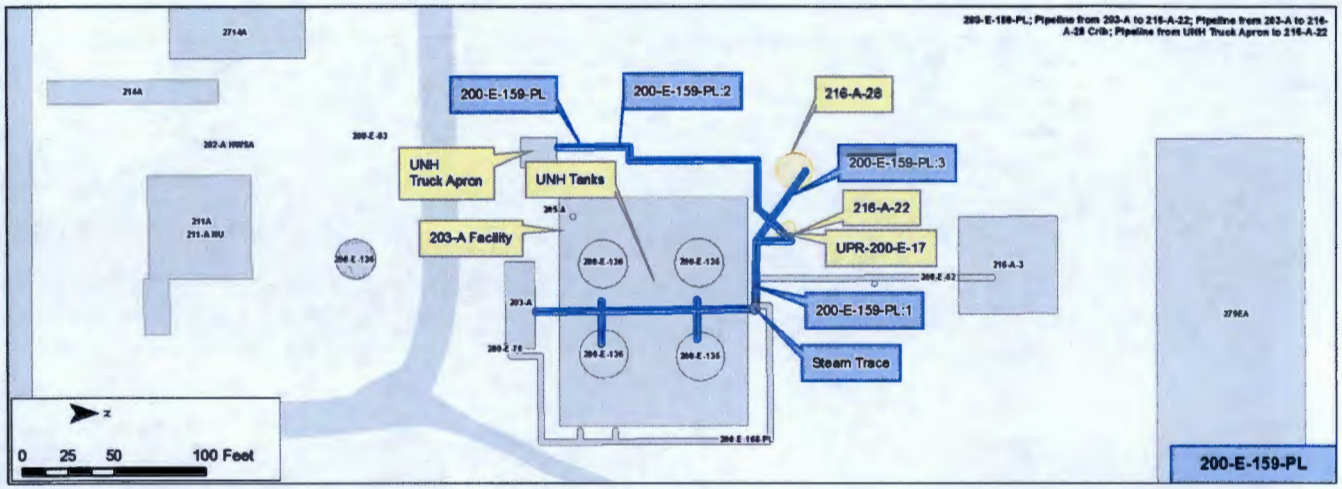
History

The 200-E-159-PL waste site is an inactive underground pipeline that transferred drainage from the uranyl nitrate hexahydrate (UNH) Truck Apron, liquid waste from the 203-A sumps, and heating coil condensate from the UNH tanks.

The pipeline was originally constructed in 1953-54 and drained from the Truck Apron, 203-A sumps, and UNH tanks into the 216-A-22 crib. In December 1958, the waste was redirected into the 216-A-28 Crib via the 200-E-159-PL:3. However, drainage from the truck loadout apron was not diverted at that time (line segment 200-E-159-PL:2).

The 216-A-28 Crib was deactivated in 1967 due to the effluent flow rate exceeding the infiltration capacity. The effluent from 203-A sumps and UNH tanks was re-routed into the 216-A-3 Crib through the connecting waste site pipe 200-E-168-PL.

The 216-A-3 Crib was taken out of service in 1981. The closure date of the 216-A-22 crib is not clear, but some documentation reports it as being in 1958, however there was a release into the crib in 1961 and based on information provided the closure date cannot be confirmed.



Construction

Carbon Steel Pipe, 2 Lines: 200-E-159-PL:2; 200-E-159-PL:3

- Total Length: 190 ft
  - 200-E-159-PL:2 - 130 ft
  - 200-E-159-PL:3 - 60 ft
- Diameter: 4 in.
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried
- Depth: 2 ft - 4 ft bgs
- Total Calculated Volume: 125 gal

Pressurized Concrete Pipe: 200-E-159-PL:1

- Length: 50 ft
- Diameter: 4 in.
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried
- Depth: 0 ft - 4 ft (section of pipe at surface at the boundary of the 202-A Facility boundary)
- Calculated Volume: 33 gal

Features of Interest

- Steam Trace system (Figure 1)
- 2 to 1 pipe connection at the 203-A Facility boundary (Figure 1)
- 4 in. plug drain valve at the UNH Truck Apron, includes a ~ 15 ft section of 4 in. Cast Iron pipe (Figure 2)
- Drain Sump (Figure 2)
- 3 bend sections

Relevant Characterization

- Based on historic inventory reporting, total waste transferred to 216-A-3 Crib was estimated at 805,700 gal and includes 1.27E-04 Ci Tc-99, 2.54 E-06 Ci Cs-135, 0.56 Ci Total U, 1.23E-02 Total Alpha, 0.18 Ci Total Beta
- Based on historic inventory reporting, total waste transferred to 216-A-28 Crib was estimated at 8,000 gal and includes 1.13E-04 Ci Tc-99, 2.26E-06 Ci Cs-135, 0.21 Ci Total U, 7.47E-03 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Processes: Drain Wastes & Cooling Water; Unknown Process/Miscellaneous Wastes
- Waste Types: Uranyl nitrate hexahydrate (UNH) Truck Apron drainage; Liquid waste from the 203-A acid pump house; Heating coil condensate from P-1 through P-4 UNH tanks, with low activity fission products transferring
- Uranium was recorded as being released through 200-E-159-PL sometime in the 1950's (UPR-200-E-17)

Misc./Other Relevant Information

- The origin location of the 200-E-159-PL:1 section was determined to be at the boundary of the 203-A Facility. Within the 203-A Facility there are two 3 in. pipes that connected to four NH tanks (TK-P1 - TK-P4) and the 203-A Pump House. Figure 1 shows the two pipes merging into one pipe at the boundary location.
- On Apr-20-1961 1,335 pounds of depleted uranium was drained through 200-E-159-PL into the 216-A-22 Crib

Site Interfaces

Origin/Termination

- 203-A (Facility)
- UNH Truck Apron (203-A Facility)

200-EA-1

- 216-A-3 (Crib)
- 216-A-22 (Crib)
- 216-A-28 (Crib)

Site Intersects

200-IS-1

- 200-E-168-PL

200-EA-1

- UPR-200-E-17

Scoping Summary: 200-E-159-PL

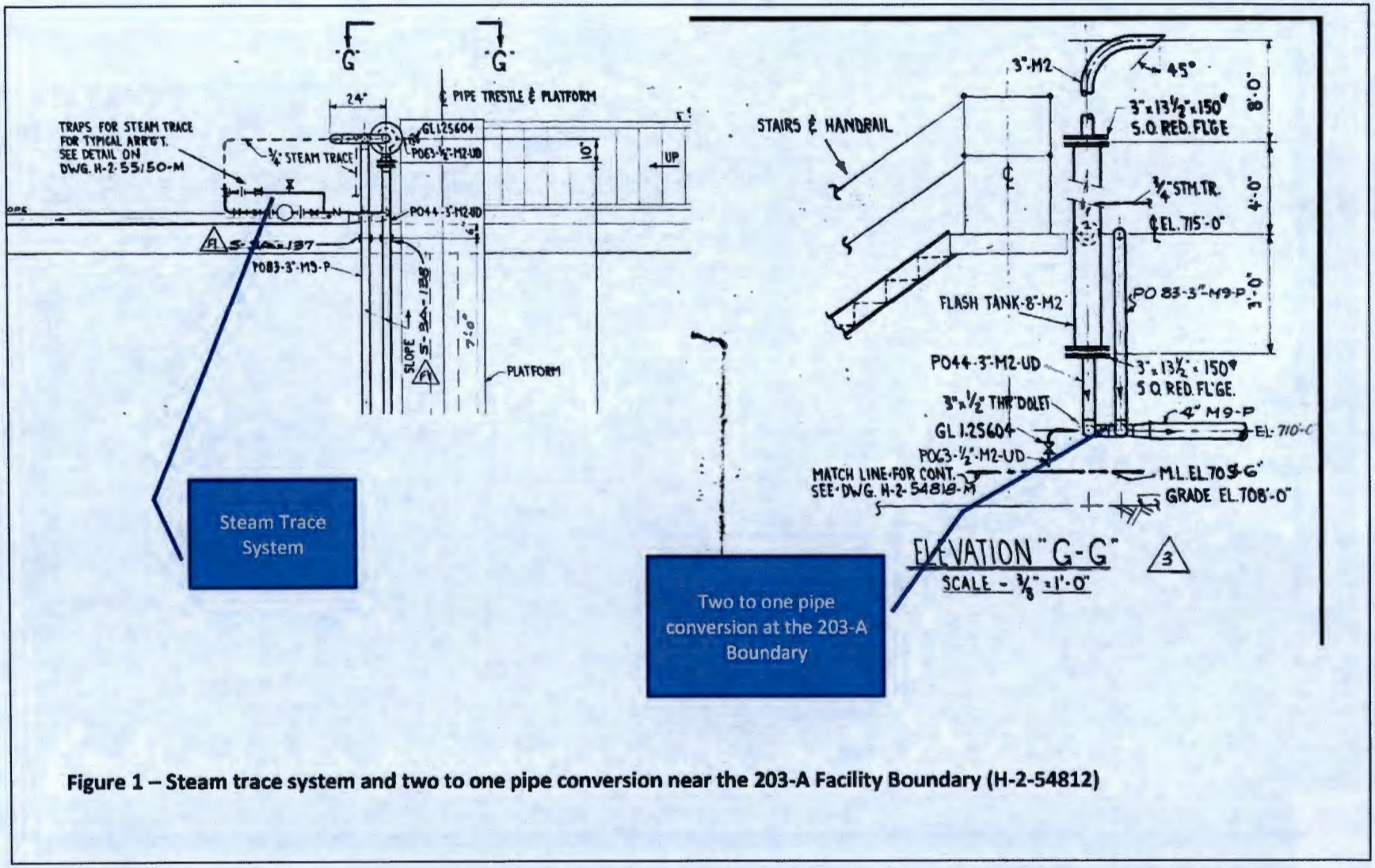


Figure 1 – Steam trace system and two to one pipe conversion near the 203-A Facility Boundary (H-2-54812)

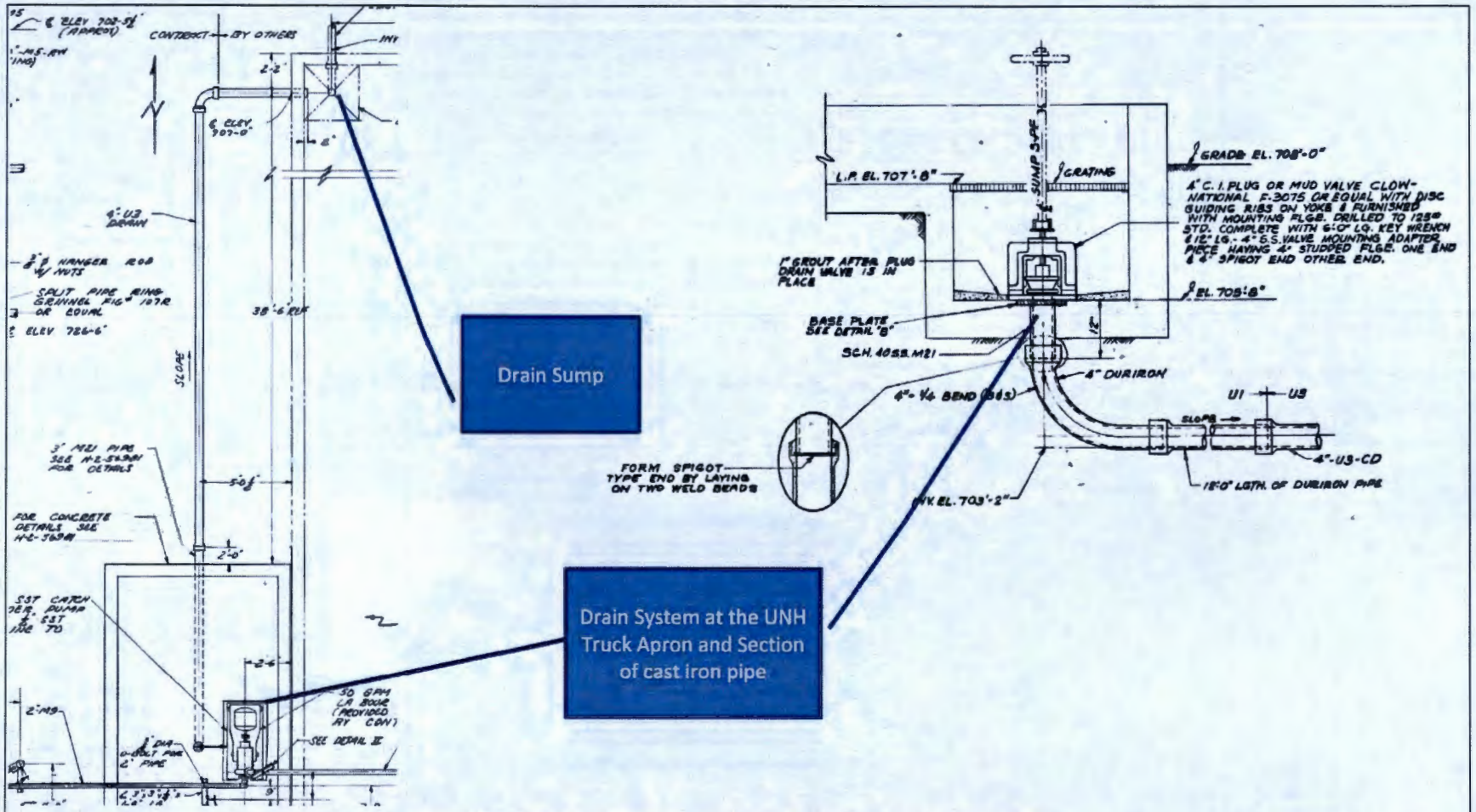


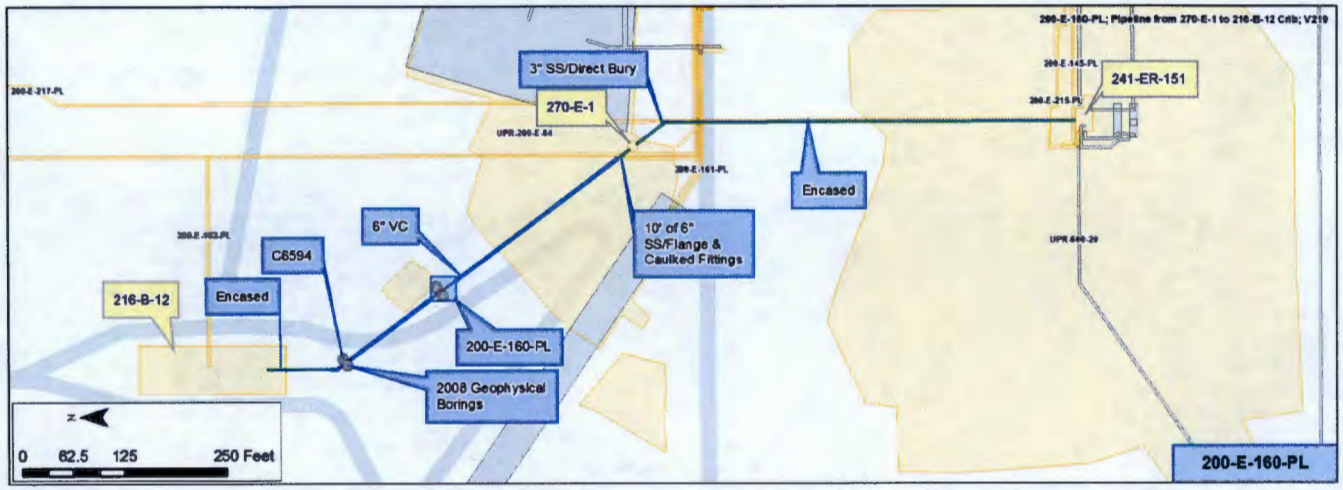
Figure 2 – Drain Sump and drain system at the UNH Truck Apron (H-2-548181 and H-2-56975)

Scoping Summary: 200-E-160-PL

History

The 200-E-160-PL waste site is an inactive underground drain line (V219) that was constructed to transport process condensate from the 241-ER-151 Diversion Box to the 216-B-12 Crib, via the 270-E-1 Neutralization Tank.

It was constructed in 1952; in 1966 the southern half of this line, from the 241-ER-151 Diversion Box to the 270-E-1 Neutralization Tank, was severed and capped. That same year, a new pipeline (200-E-162-PL) was connected to 200-E-160-PL to allow process condensate waste from the 221-B Plant to discharge to the 216-B-12 Crib. This line was capped and sealed in 1973, when the 216-B-12 Crib was closed.



Construction

- Length
  - Segment 1: 500 ft
  - Segment 2: 43 ft
  - Segment 3: 10 ft
  - Segment 4: 420 ft
  - Segment 5: 20 ft
- Diameter
  - Segment 1, Segment 2: 3 in.
  - Segment 3, Segment 4, Segment 5: 6 in.
- Composition
  - Segment 1, Segment 2, Segment 3: Stainless Steel
  - Segment 4, Segment 5: VCP
- Gravity Drained
- Encasement Specifications: Segment 1 and Segment 5 (concrete)
- Direct Buried
- Depth: 9 ft - 20 ft bgs
- Volume
  - Segment 1: 184 gal
  - Segment 2: 16 gal
  - Segment 3: 15 gal
  - Segment 4: 617 gal
  - Segment 5: 30 gal

Features of Interest

- 2 bends
- 1 flange & caulked fittings transition from stainless steel pipe to Vitrified clay pipe
- 1 concrete encasement with 8 in. bottom, 7 3/4 in. top and 6 in. sidewalls, reinforced with 1/2 in. & 3/4 in. rebar
- Stainless steel pipe exits encasement
- Pipeline enters and exits the 270-E-1 Neutralization Tank were it was modified to accept material from the 221-B building and was finally isolated and capped.
- 440 ft of vitrified clay pipe

Relevant Characterization

- 2008: Four geophysical boreholes logged to a maximum depth of 25 ft bgs. One boring (C6594) had a maximum concentration of 38 pCi/g at 14.5 ft bgs. No evidence of contamination was detected in the other three borings.
- 2004: Characterization of the 216-B-12 Crib detected elevated concentrations of Pu-239, Pu-240, Am-241, Cs137, U-238, Sr-90, H-3; uranium, chromium, nitrate as nitrogen, ammonia, tributyl phosphate(TBP), and Aroclor-1254 with concentrations decreasing with depth.

Waste Streams

- Process condensate from 221-U and 221-B building waste was transferred through this pipeline
- Waste streams including: Pu-239/240, Am-241, Cs-137, U-238, Sr-90, H-3; totals of: uranium, chromium, nitrate as nitrogen, ammonia, tributyl phosphate, and Aroclor-1254 (PCB-1254)were transferred from Nov-1952 until Dec-1957
- The last waste stream was process condensate from 221-B Building in Nov-1973
- Approximately 140,000,000 gallons discharged through this pipeline

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-ER-151 (diversion box) (origin)

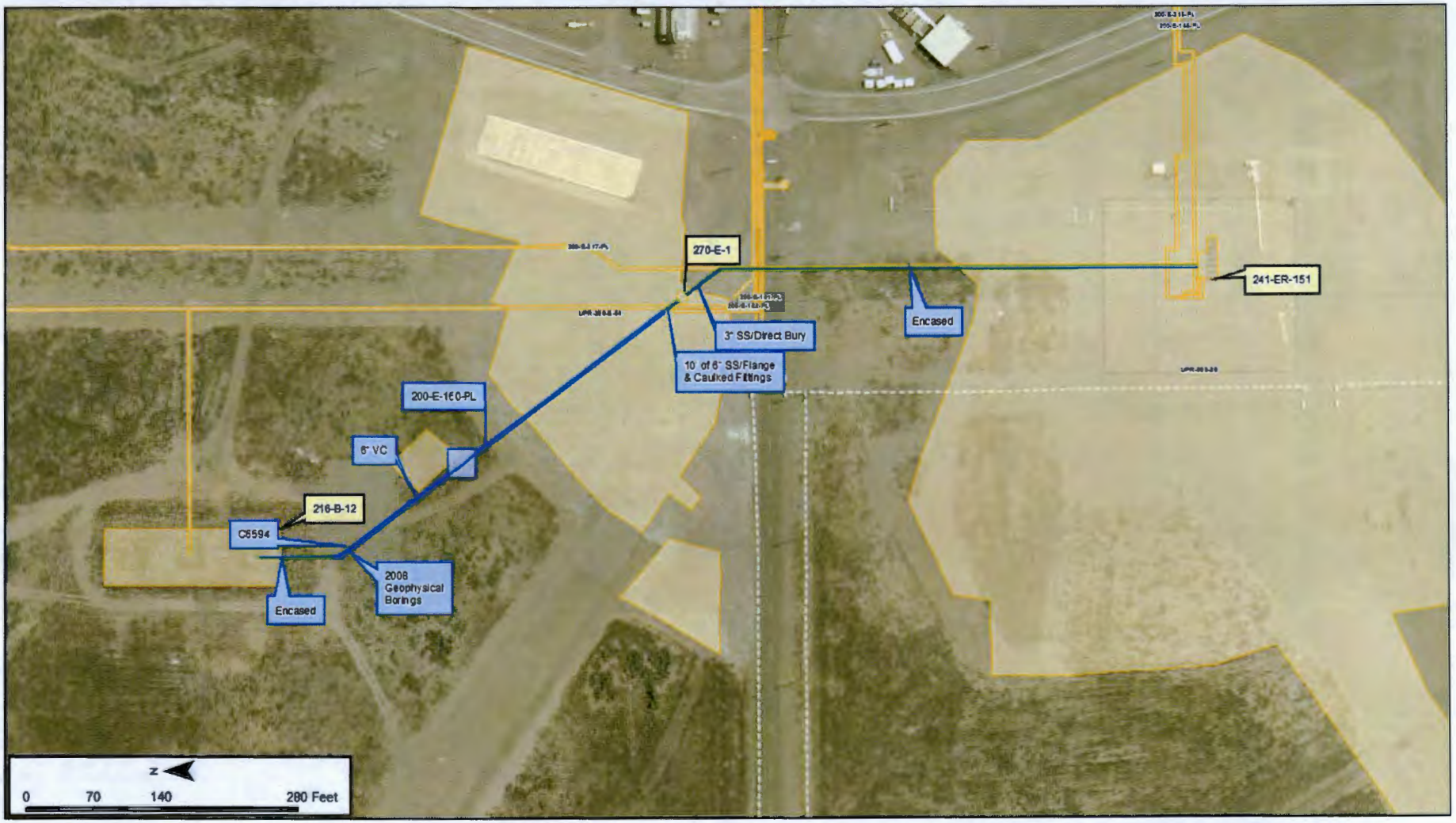
200-EA-1
- 270-E-1 Neutralization tank (termination)
- 216-B-12 crib (termination)

Site Intersects

200-IS-1
- 200-E-145-PL
- 200-E-161-PL
- 200-E-162-PL
- 200-E-215-PL
- 200-E-217-PL

200-EA-1
- UPR 200-E-64: (Radioactive soil & Ant hills UN-200-E-64 & UN-216-E-36)

200-OA-1
- UPR-600-20: (old cross site transfer line 600-284-PL)


270-E-1
241-ER-151
Encased
3" SS/Direct Bury
10' of 6" SS/Flange & Caulked Fittings
200-E-160-PL
6" VC
216-B-12
C5594
2008 Geophysical Borings
Encased
N
0
70
140
280 Feet

Scoping Summary: 200-E-161-PL

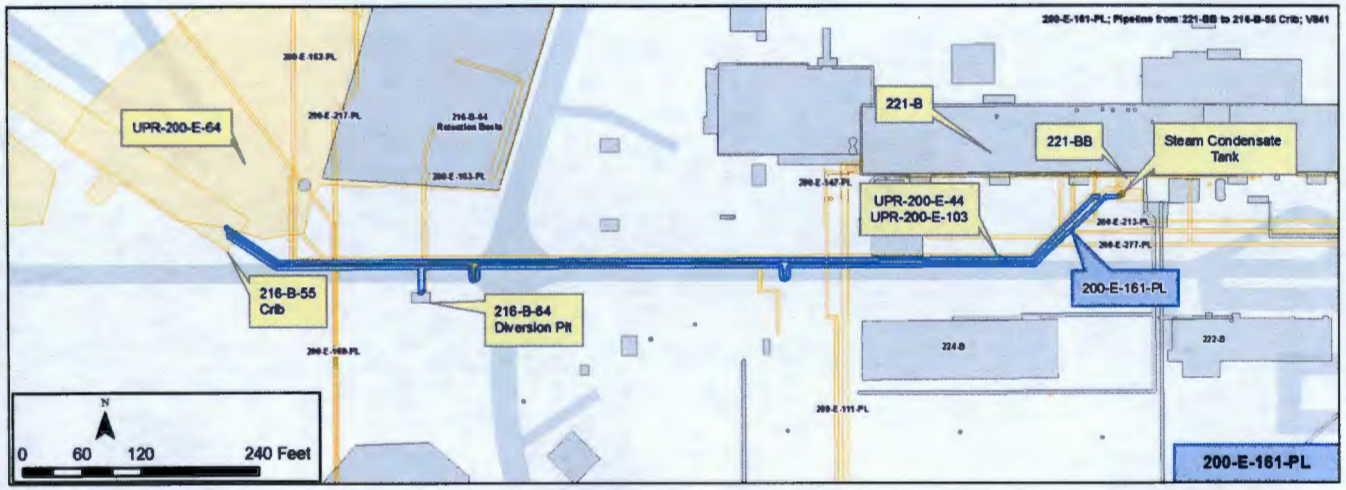
History

The 200-E-161-PL waste site is two inactive process sewer pipelines that extend from the 221-BB Process Steam and Condensate Building's Steam Condensate Tank to the 216-B-55 Crib. The pipelines do not share operational histories.

The original line was constructed in 1967 and in use until 1973, when a new line was installed. The original line was cut, capped, and abandoned in place.

In 1976, the new line was modified to flow through the 216-B-64 Diversion Pit where an additional pipeline (200-E-163-PL) was constructed to transfer fluids between the 216-B-64 Diversion Pit and the 216-B-64 Retention Basin. This line operated from 1973 through 1990, when discharges to the crib ceased. The line was cut, capped, and abandoned in 1996.

Leakage from this pipeline resulted in two unplanned releases, both in 1972: UPR-200-E-103, the contaminated soil was removed and the pipe fixed; UPR-200-E-44, soil contamination and a dose rate on the pipe. The pipe was repaired and the excavation was backfilled. There was no contamination spread from either UPR excavation. No confirmation sampling was located for either excavation.



Construction

200-E-161-PL (1967-1973)

- Length: 876 ft
- Diameter: 6 in.
- Material: Carbon Steel, factory coated with coal tar enamel & bonded asbestos felt wrap
- Gravity Flow
- Direct Buried
- Depth: 4 ft - 10 ft bgs
- Cathodic Protection: Yes
- Calculated Volume: 1,286 gal

200-E-161-PL (1973 – 1996)

- Length: 943 ft
- Diameter: 8 in.
- Material: Carbon Steel
- Gravity Flow
- Encased – 6-in. thick reinforced concrete base w/ 16 gauge galvanized corrugated steel pipe cut in half and emplaced in the concrete base (encasement also houses 200-E-162-PL)
- Depth: 4 ft - 10 ft bgs
- Calculated Volume: 2,461 gal

Features of Interest

200-E-161-PL (1967-1973)

- Cut and capped at 4 locations when it was abandoned to accommodate new pipelines

200-E-161-PL (1973-1996)

- 1 Diversion pit installed in 1976
- 1 Magnetic flowmeter (see attached construction details)
- 1 "Trap" to place pipeline below existing pipeline (see figure pg 3)

Relevant Characterization

- 1998 radionuclide curies inventory of the 216-B-55 crib included: 5.84E+00 of Sr-90, 1.11E+01 of Cs-137, 2.06E-17 of U-233, 3.48E-14 of U-235, 3.94E-06 of Pu-239/40 and 4.01E-06 of Am-241
- UPR-200-E-103 maximum soil contamination of 100,000 counts per minute
- UPR-200-E-44 soil contamination from 10,000 to 20,000 counts per minute; dose rate on the pipe line was 200 millirad per hour

Waste Streams

- Steam condensate comprised of cooling water from 200-East Area line, condensate from E-23-3 concentrator, cooling coil discharge from TK28-4, TK31-1 and TK31-6 process tanks
- Neutral to slightly basic, low salt
- Discharge through 200-E-161-PL (1967-1985; 1988-1990) to 216-B-55 Crib – 317,000,000 gal

Misc./Other Relevant Information

- UPR-200-E-44 and UPR-200-E-103 reported may be same incident. Both report leakage from 6 in. BCS crib line south of R-17 change house (221-B)

Site Interfaces

Origin/Termination

- 221-BB (facility)

200-EA-1

- 216-B-55 Crib

Site Intersects

200-EA-1

- UPR 200-E-64

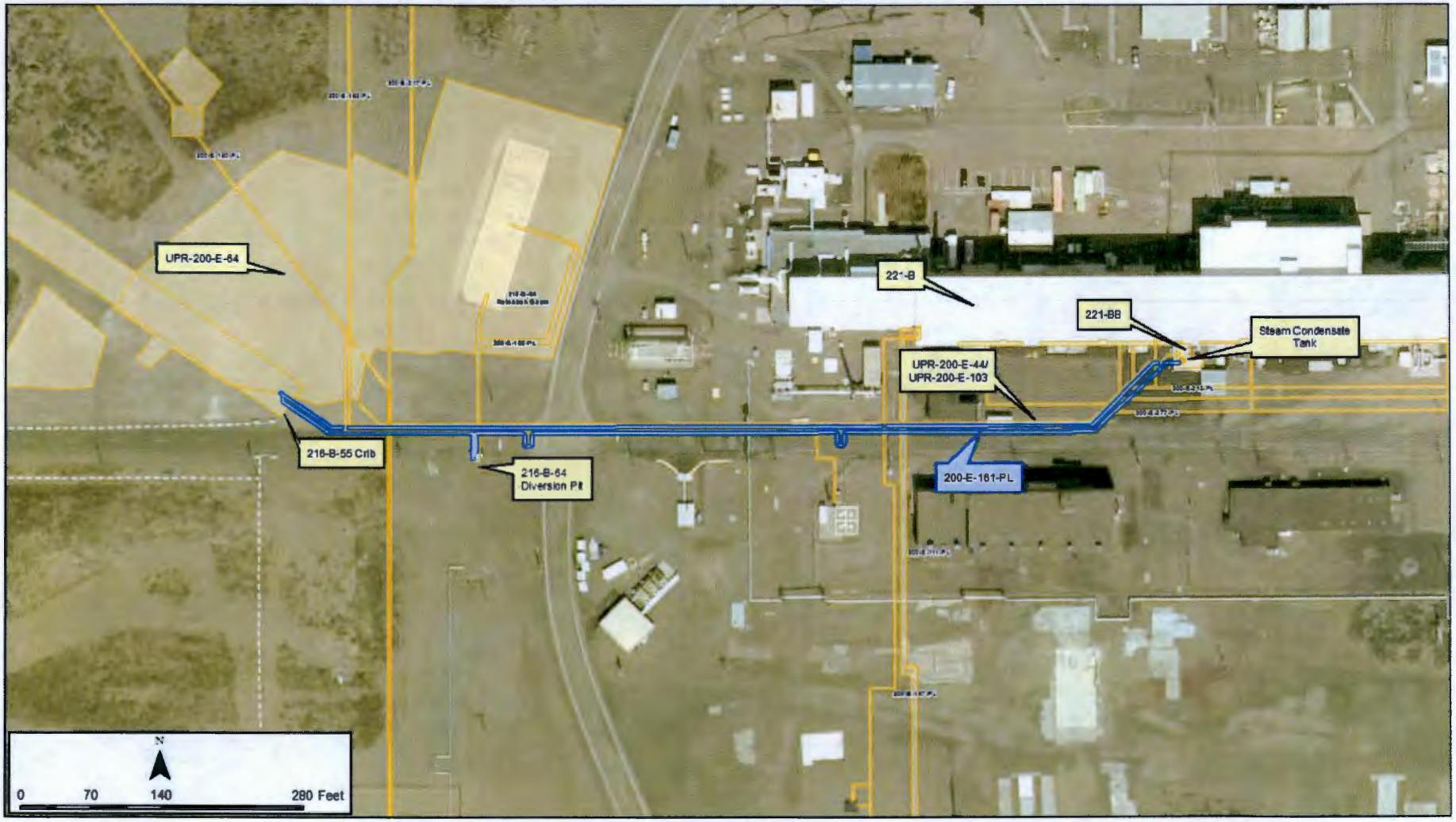
200-IS-1

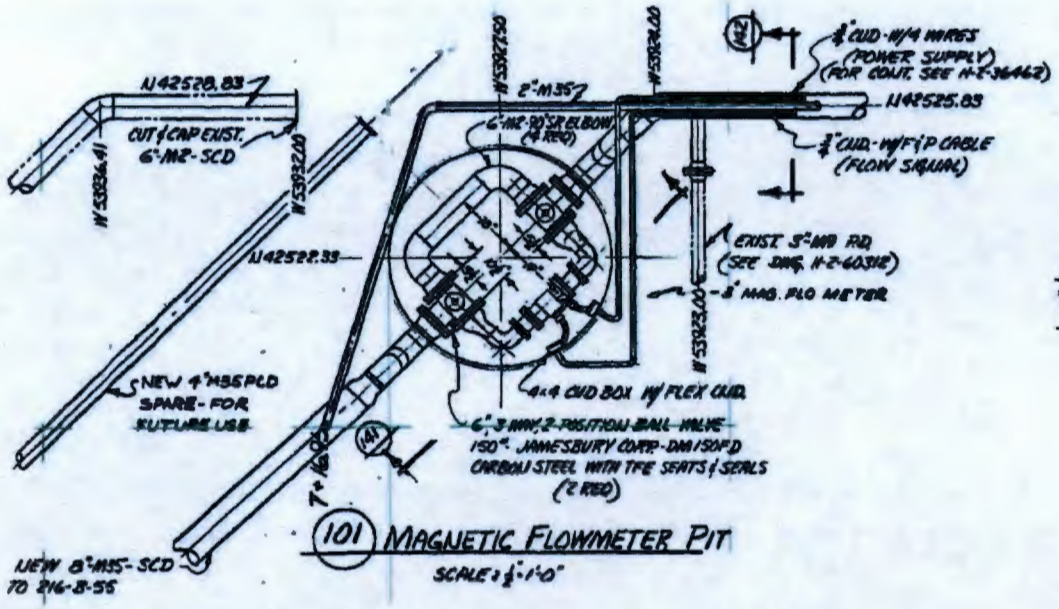
- 200-E-111-PL
- 200-E-147-PL
- 200-E-160-PL
- 200-E-162-PL
- 200-E-163-PL
- 200-E-213-PL
- 200-E-217-PL
- 200-E-277-PL

200-CB-1

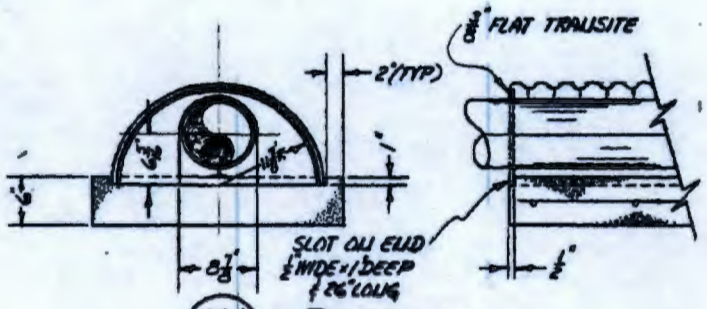
- UPR-200-E-44
- UPR-200-E-103

Scoping Summary: 200-E-161-PL

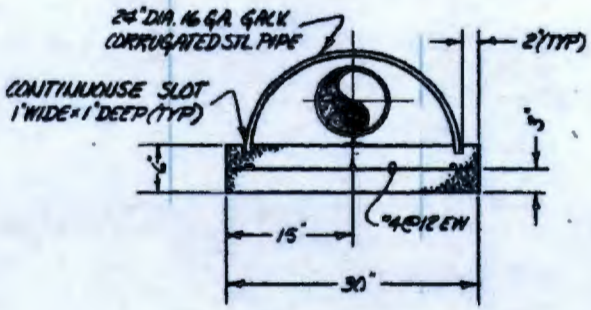




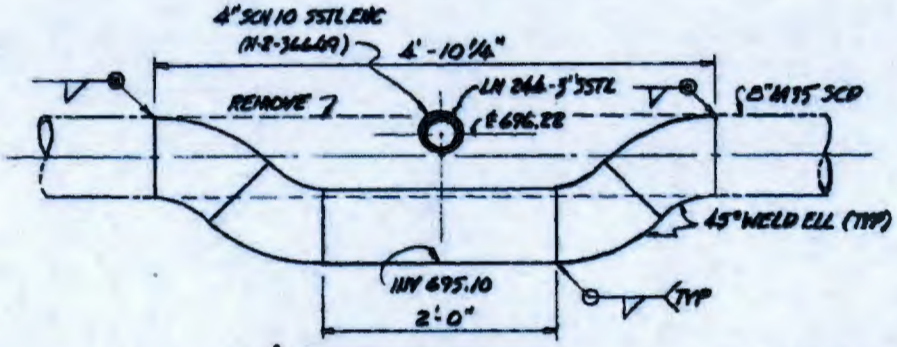
101 MAGNETIC FLOWMETER PIT
SCALE: 1/2"=1'-0"



106 DETAIL
SCALE: 1"=1'-0"



147 SECTION
SCALE: 1"=1'-0"



150 TRAP DETAIL - 8" SCD
SCALE: 1"=1'-0"

Construction Details

200-E-161-PL

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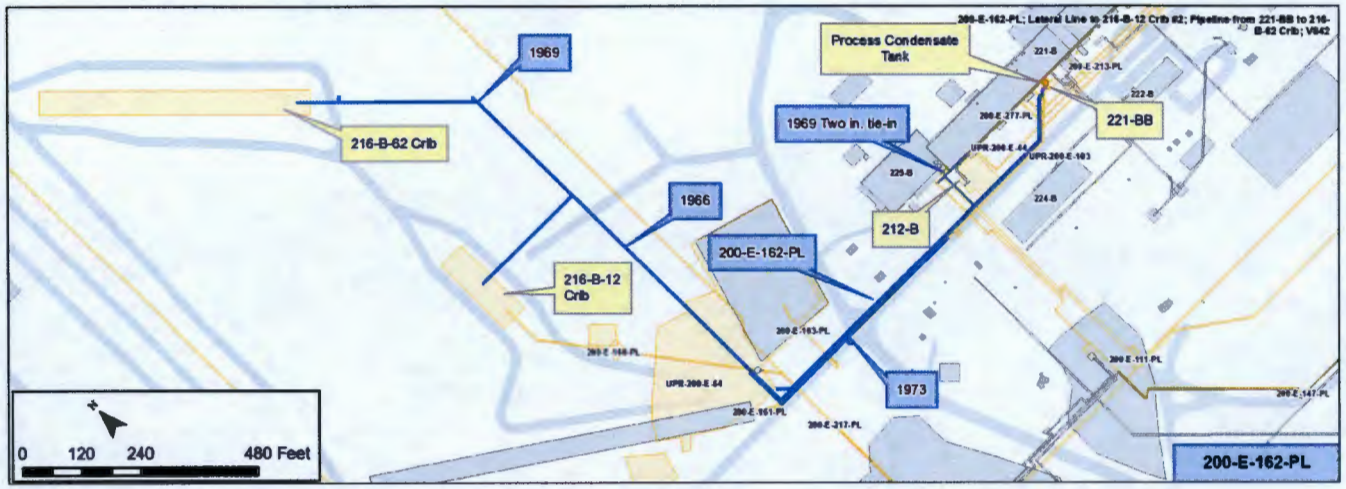
Scoping Summary: 200-E-162-PL

History

The 200-E-162-PL waste site is an inactive underground transfer system that consists of multiple inactive steam condensate lines that extend from the 221-BB Process Steam and Condensate Building's Process Condensate Tank to the 216-B-12 Crib and the 216-B-62 Crib. Constructed in 1966, this line severed 200-E-160-PL and connected the new line to the northern portion of 200-E-160-PL, which drained to the 216-B-12 Crib.

In 1969, the original line was cut at the tie-in with 200-E-160-PL and a new fiberglass-reinforced epoxy (FRE) pipeline was built extending to the newly constructed 216-B-62 Crib with an additional 90-degree tie-in connecting to the 216-B-12-Crib. Also, in 1969 a 2-in. pipeline was tied-in to transport process condensate from the 212-B Building to the main line.

In 1973, the original pipeline was cut, capped, and abandoned in place; it was replaced with a new carbon steel pipeline constructed parallel to the original carbon steel line in a shared encasement with 200-E-161-PL. The tie-in to the 216-B-12 Crib was cut, capped, and encased in a concrete plug. The new line was in use until 1991, when the 216-B-62 Crib was removed from service.



Construction

(1966-1969)

- Length: 872 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Flow Method: Gravity (to 216-B-12 crib via 200-E-160-PL)
- Depth: 5 ft to 10 ft bgs, direct buried
- Cathodic Protection: Yes
- Calculated Volume: 575 gal

(1969-1973)

- Length: 1,112 ft
- Composition: Fiberglass-reinforced epoxy (FRE)
- Depth: 5 ft - 13 ft bgs
- Calculated Volume: 725 gal

(1973 – 1991)

- Length: 952 ft (replacement section); 2,064 ft (total length)
- Composition: Carbon Steel
- Encasement: Reinforced concrete, with 16 gauge galvanized CMP; encasement also housed 200-E-161-PL (see figure pg 4)
- Depth: 4 ft - 13 ft bgs
- Calculated Volume: 1,365 gal

- See pg 4 for additional construction detail

Features of Interest

Original 1966 pipeline

- 1 - flange connecting to the 200-E-161-PL pipe
- 1 - 2 in. pipe tie-in
- 2 - Cut and capped locations when it was abandoned

1969 modifications

- 1 - diversion pit & cutting capping of line to 216-B-12
- 1 - flush pit
- 1 - Stub for future lines

1973 modifications

- 1 - 2 in. pipe tie-in
- 1 - flange connection to existing line (pg 4)
- 1 - "trap" to place pipeline below existing pipeline (pg 4)

Relevant Characterization

- 1998 radionuclide curies inventory of the 216-B-62 crib included: 6.03E+1 of Sr-90, 1.09E+02 of Cs-137, 5.24E-13 of U-233, 2.02E-11 of U-235, 2.28E-03 of Pu-239/40 and <1.01E-01 of Am-241. In 2003, Cs-137 was 8,500 pCi/g below the 216-B-62 crib
- 1998 radionuclide curies inventory of the 216-B-12 crib included: 6.40E+01 of Sr-90, 5.80E+02 of Cs-137, and 6.95E+00 of U Gross (this crib data is also influenced by the 200-E-160-PL waste stream)

Waste Streams

- Process condensate waste from the 221-B Building and the 212-B Building (TK-CS-3), identified as alkaline with low salt
- Based on characterization information from the 216-B-62 crib, approximately 74,496,000 gal of material flowed through this pipeline between 1966 and 1991

Misc./Other Relevant Information

- None identified

Site Interfaces

Origins/Terminations

200-IS-1
- 200-E-161-PL

200-CB-1
- 221-BB Building
- 212-B Building

200-EA-1
- 216-B-12 Crib
- 216-B-62 Crib

No Operable Unit
- 200-E-163-PL (not used)

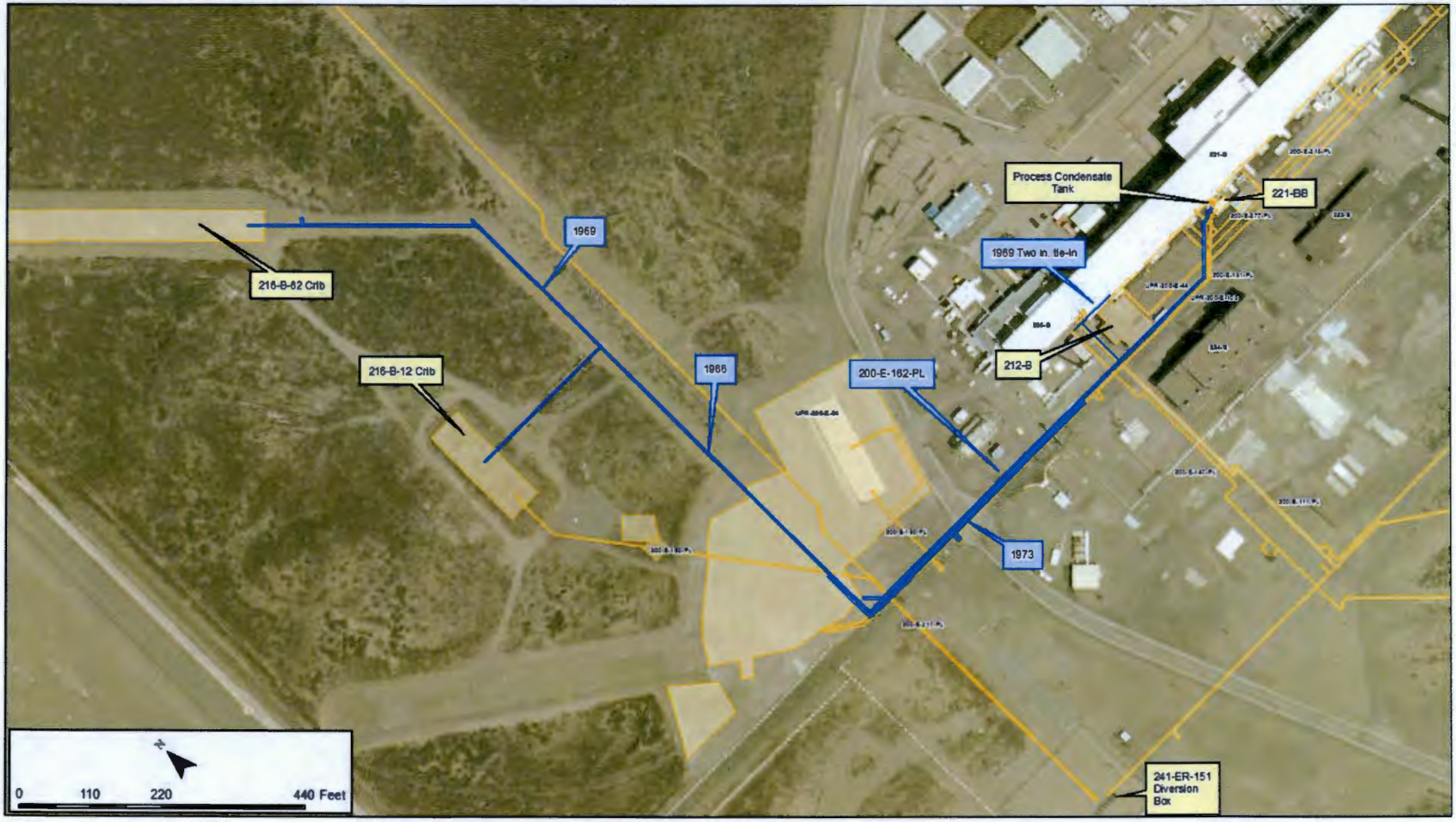
Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-147-PL
- 200-E-160-PL
- 200-E-161-PL
- 200-E-163-PL (not used)
- 200-E-213-PL
- 200-E-217-PL
- 200-E-277-PL
- UPR-200-E-44 (result of 200-E-161-PL leaking)

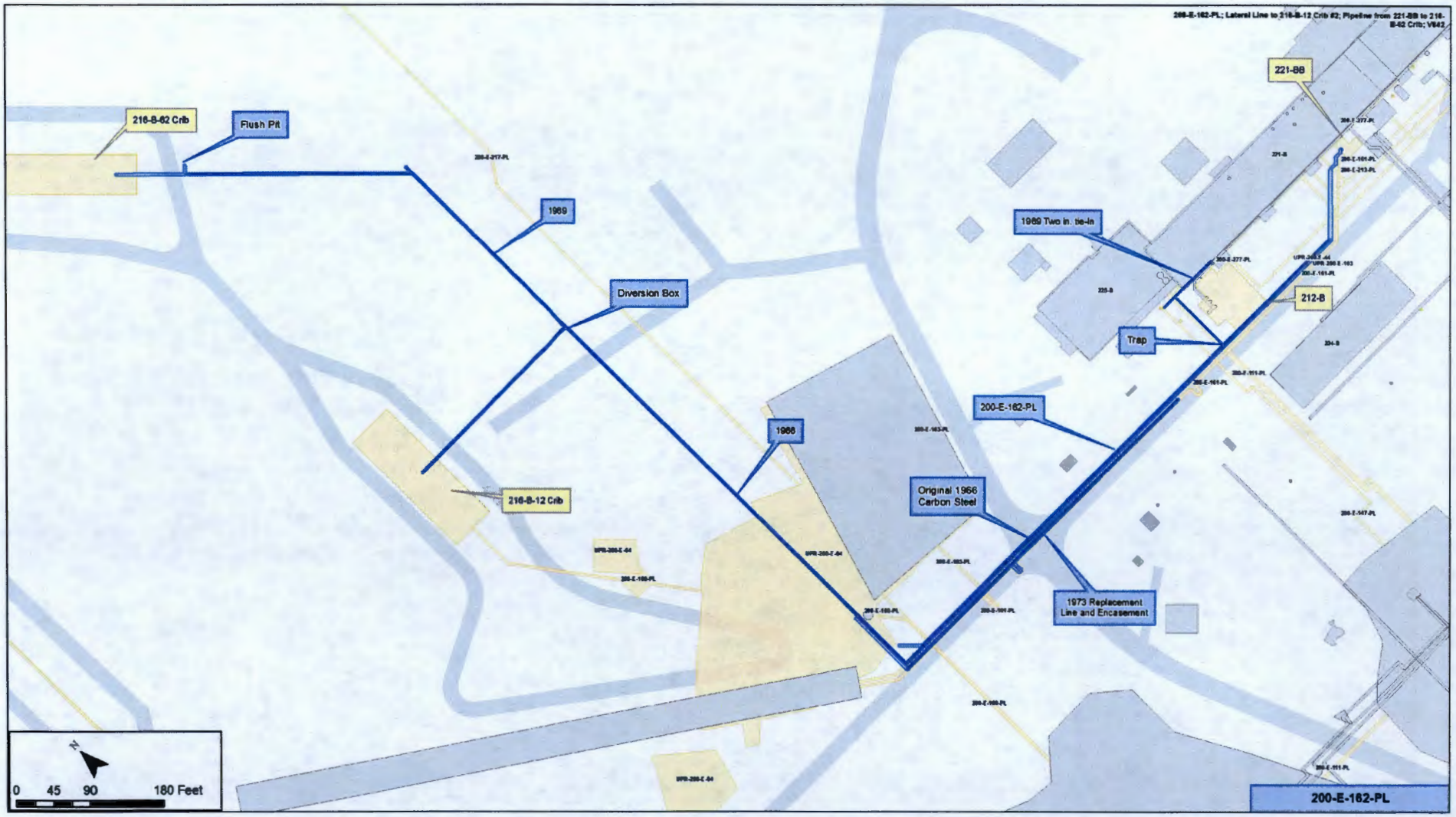
200-UP-1
- UPR-200-E-103 (result of 200-E-161-PL leaking)

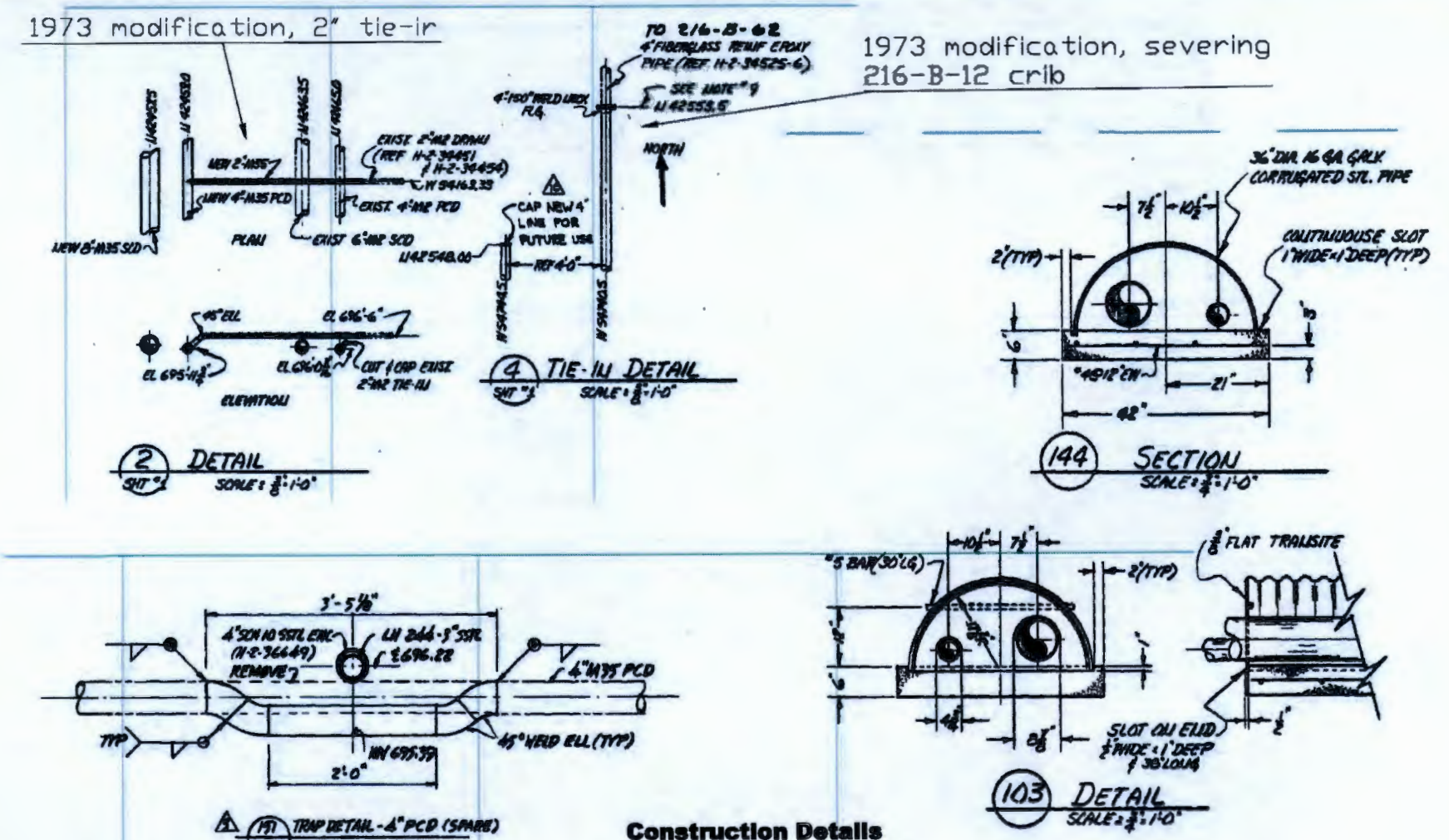
200-EA-1
- UPR 200-E-64: (Radioactive soil & Ant hills UN-200-E-64 & UN-216-E-36)

Scoping Summary: 200-E-162-PL



Scoping Summary: 200-E-162-PL





Construction Details

200-E-162-PL

Scoping Summary: 200-E-164-PL

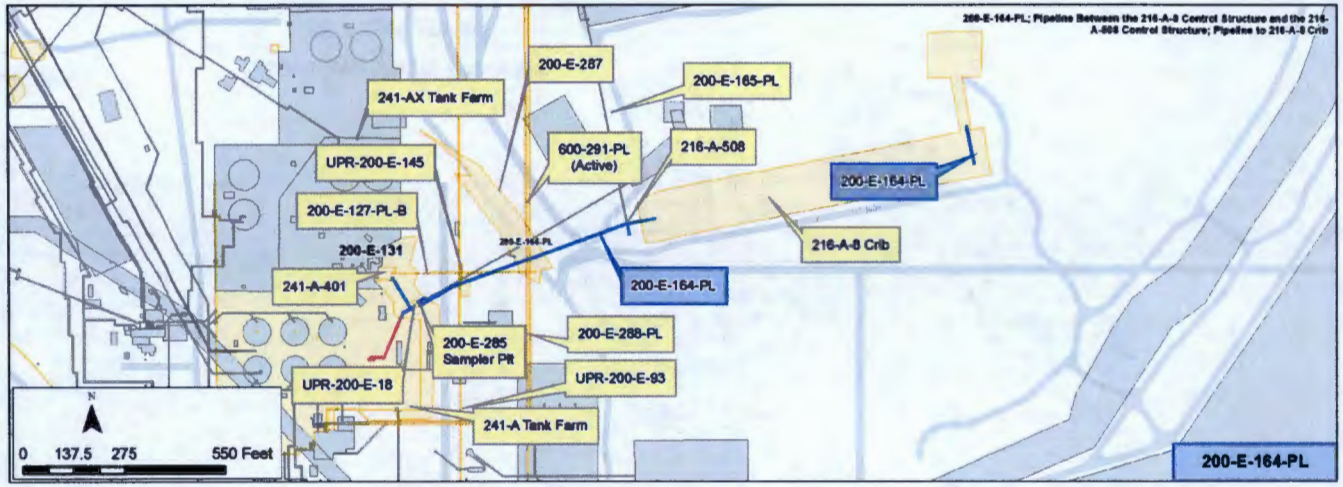
History

The 200-E-164-PL waste site is an inactive underground pipeline system connecting the 241-A Tank Farm condensate collectors and Building 241-A-401 to the 216-A-8 Crib.

Waste was transferred as early as 1955, and the system remained in use until it was isolated in 1995.

The system is directed through the 200-E-285 Sampler Pit (site of UPR-200-E-18) and the 216-A-508 Control Structure (weir box). A small stub of pipe extends south from the control structure and was never used. A non-contiguous section of the system runs from the far end of the 216-A-8 Crib to an overflow portion of the same crib.

That same year, the 216-A-508 Control Structure was filled with concrete to permanently isolate; additionally, the unit's filter and crib vent were removed and disposed.



Construction

- Length: 945 ft
- Diameter: Variable, 6 in. to 24 in.
- Composition: Carbon Steel
- Gravity Flow
- Encasement: Direct Buried (the portion of the pipeline that bisects the roadway is encased with reinforced concrete)
- Depth: 5 ft - 7.5 ft bgs
- Calculated Volume: 8,130 gal

Features of Interest

- 8 tie-ins
- 4 verticals
- 1 flanged end
- 1 roadway encasement
- 1 plugged end
- 1 overflow from Building 241-A-401
- 1 overflow assembly at rear of 216-A-8 Crib

Relevant Characterization

- No direct characterization data could be located for the pipeline or adjacent soil

Waste Streams

- Tank farm condensate
- Based on isotope contents in the 216-A-8, this line likely transferred the following: H-3, Co-60, Sr-90, Se-79, Zr-93, Tc-99, Cs-135, Cs-137, Pm-147, Sm-151, Eu-154, and U (Gross)

Misc./Other Relevant Information

- UPR-200-E-18 is an unplanned release originating in the 200-E-285 Sample Pit. The release occurred in 1959 and was caused from moisture dripping from a vent pipe and contaminated the ground around the cement pad
- 200-E-287 is a surface contamination area associated with contaminated tumbleweed fragments

Site Interfaces

Origin/Termination

WMA A/AX
- 200-E-131 (A-Tank Farm)
- 241-A-401 (Building)

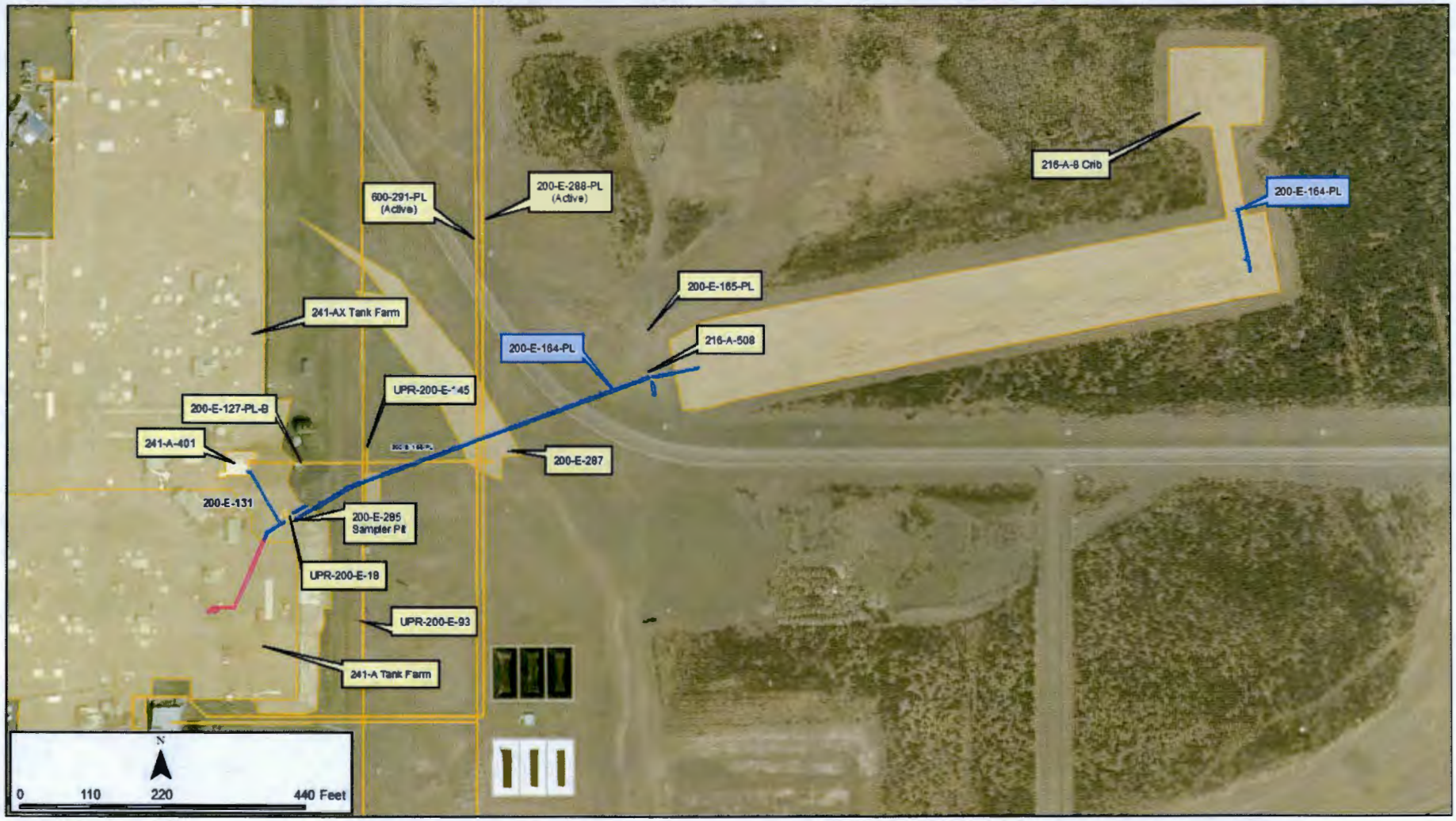
200-PW-3
- 216-A-8 Crib

Site Intersects

200-IS-1
- 200-E-127-PL-B
- 200-E-165-PL
- 200-E-166-PL
- 200-E-288-PL
- 216-A-508
- UPR-200-E-18
- UPR-200-E-145

No Operable Unit
- UPR-200-E-93
- 200-E-287
- 600-291-PL (Active)
- 200-E-288-PL (Active)

Scoping Summary: 200-E-164-PL



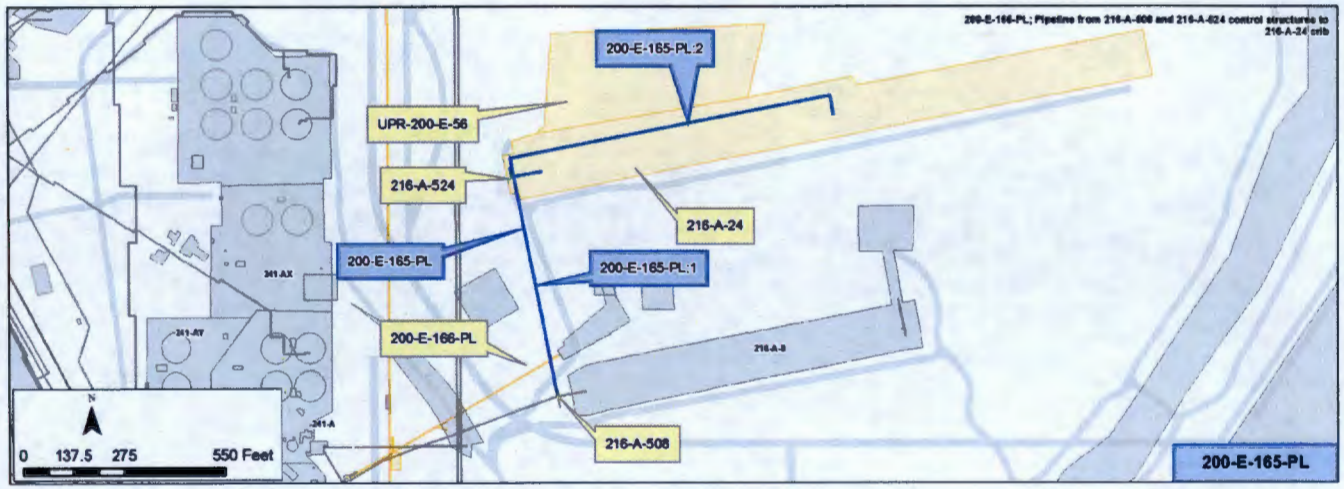
Scoping Summary: 200-E-165-PL

History

The 200-E-165-PL waste site is an inactive underground pipeline that consists of two subsites (200-E-165-PL:1 and 200-E-165-PL:2) that were used to deliver condensate from the 241-A, 241-AX, 241-AY, and 241-AZ tank farms to the 216-A-24 Crib.

The pipeline was activated in 1958 and believed to be deactivated in 1966 by valving out the pipeline at the 216-A-508 control structure. In 1979, the valve was discovered to still be in the open position, allowing liquids to enter the 216-A-24 Crib, and was subsequently closed. In 1995 the site was permanently isolated by filling the 216-A-508 control structure with concrete.

The 216-A-24 Crib is part of the PW-136 Operable Unit, which is in the Remedial Design phase. The remedial decision for the 216-A-24 Crib is to leave in place with an enhanced soil cover. If this occurs, it may negate the need to address the 200-E-165-PL:2 bypass pipeline, as it runs the length of the crib and may be included in the soil cover footprint.



Construction

- Length:
  - 200-E-165-PL-1: 679 ft
  - 200-E-165-PL-2: 970 ft
- Diameter:
  - 200-E-165-PL-1: 16 in. (for 659 ft); 20 in. (for 20 ft)
  - 200-E-165-PL-2: 2 in.
- Composition: Carbon Steel
- Gravity Drained
- Direct Buried
- Depth: 3 ft – 9 ft bgs
- Total Calculated Volume:
  - 200-E-165-PL-1: 7,209 gal
  - 200-E-165-PL-2: 158.3 gal

Features of Interest

- Three Reducers
  - One 20 in. to 16 in.
  - One 16 in. to 15 in. (216-A-508 stub)
  - One 16 in. to 2 in.
- Six tie-ins, connections to control structures and disposal crib
- Two 90 degree bends

Waste Streams

- 1958-1966: Transfer of radioactive process sewer tank farm condensate
  - Waste is described as low in salt, neutral to basic and has a record of organic content
  - Associated with the PUREX process
  - Transferred 820,000,000 liters

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 216-A-508 (Origin)	• 200-E-166-PL
	• 216-A-524
200-PW-3	
• 216-A-24 (Termination)	200-PW-3
	• UPR-200-E-56

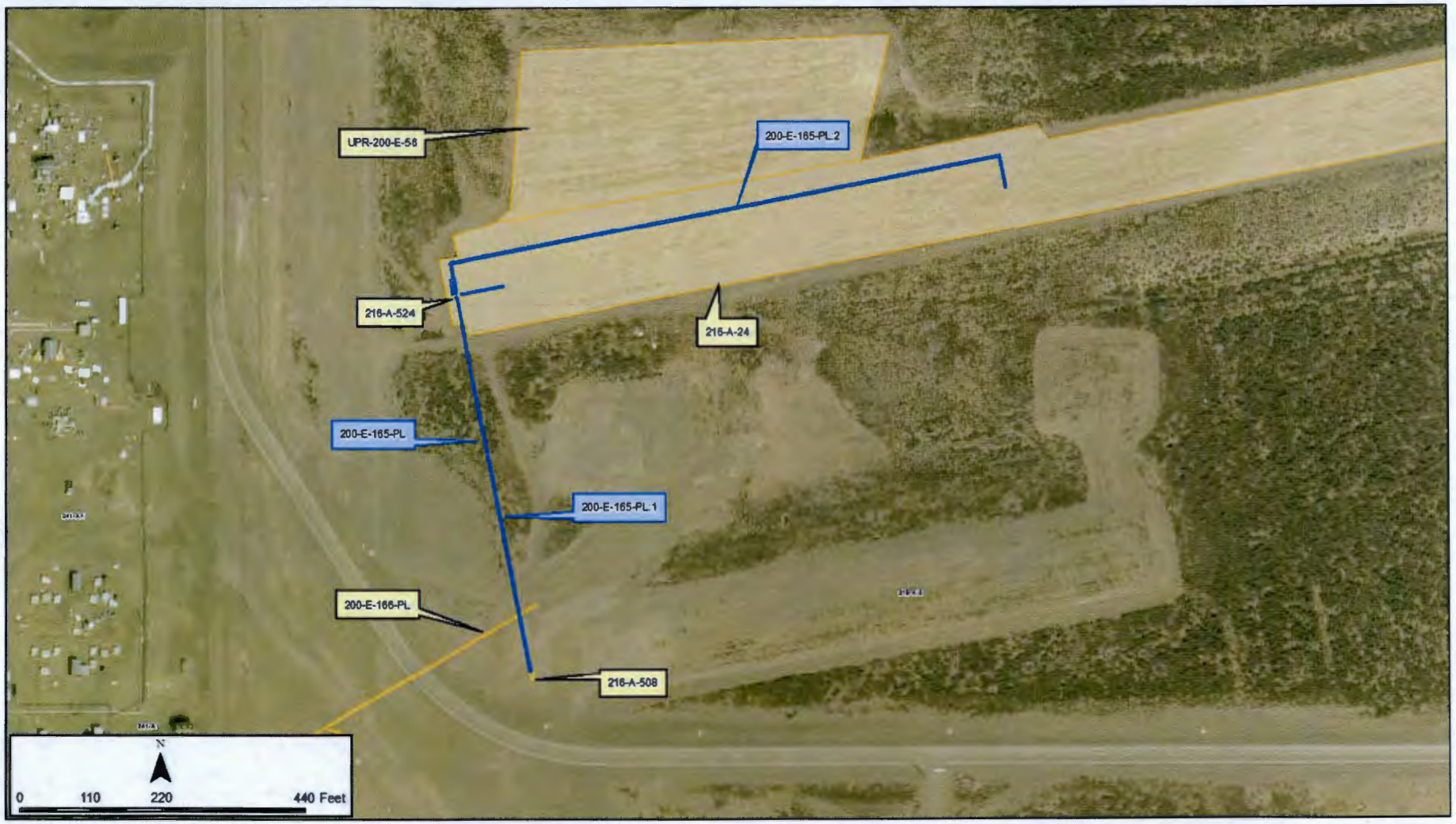
Relevant Characterization

- 1987: Radiological survey of 216-A-524 indicated 500 cpm smearable contamination, 10,000 cpm direct beta-gamma, 40 mrad/h non penetrating, and 0.7 mrem/h penetrating radiation
- 1998 radionuclide curies inventory of the 216-A-24 crib included:
  - 1.48E+01 of Sr-90, 3.94E-06 of Cs-134, 2.21E-04 of Cs-135, 2.17E+02 of Cs-137, 1.67E-02 of U Gross

Misc./Other Relevant Information

- None

Scoping Summary: 200-E-165-PL

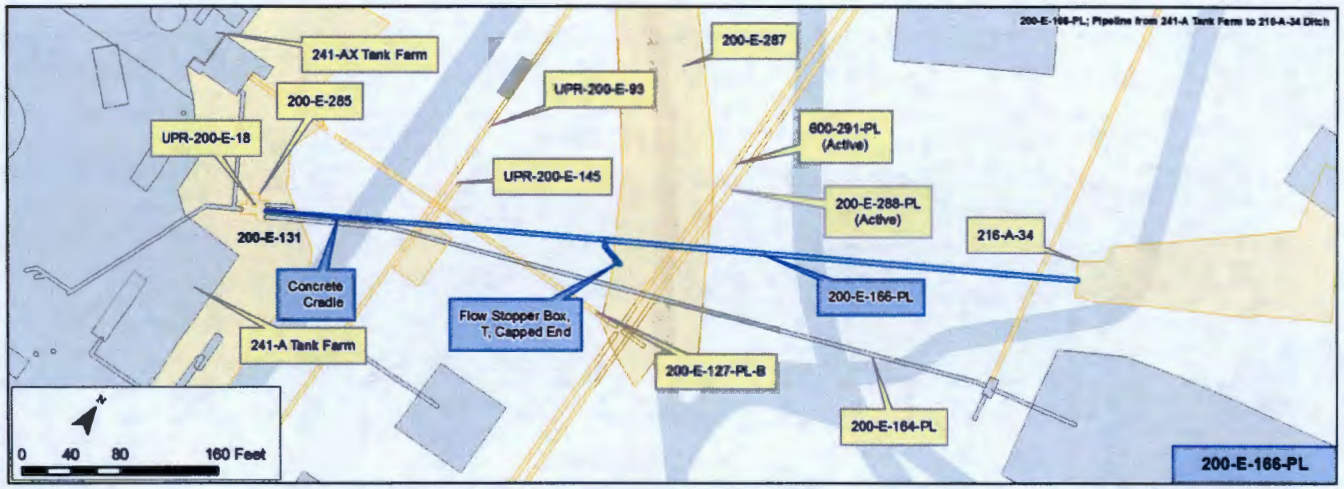


Scoping Summary: 200-E-166-PL

History

The 200-E-166-PL waste site is an inactive underground radioactive process sewer pipeline that transferred condensate from the 216-A-8 Sample Pit #2 inside the 241-A Tank Farm to the 216-A-34 Ditch. The pipeline was constructed in 1953 and operational from Nov-1955 to Dec-1957.

Unplanned release UPR-200-E-145 is associated with this waste site.



Construction

- Length: 680 ft
- Diameter: 15 in.
- Composition: Vitrified Clay Pipe
- Encasement: Concrete-cradle for 95 ft (from Tank Farm); Direct-buried thereafter
- Depth: 7 ft bgs
- Calculated Volume: 6,230 gal

Features of Interest

- Flow stopper box installed (H-2-56014) off a short section that T's from the main section of the pipeline

Relevant Characterization

- 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 dpm beta-gamma was detected at a depth of 2.5 ft
- The contamination was found above 200-E-166-PL
  - Details of the release are captured under UPR-200-E-145

Waste Streams

- 1955-to-1957: Cooling water from the contact condenser in the 241-A-431 Building (A-Tank Farm)
- Isotopes likely transported through this line, based on data from the 216-A-19 and 216-A-20 Cribs, include trace amounts of Tc-99 and U (Gross)

Misc./Other Relevant Information

- UPR-200-E-93 is an inactive site attributed to blow tumbleweeds
- 200-E-287 is a surface contamination area associated with contaminated tumbleweed fragments

Site Interfaces

Origin/Termination

200-IS-1
- 200-E-285 (Sample Pit #2)

200-EA-1
- 216-A-34 Ditch

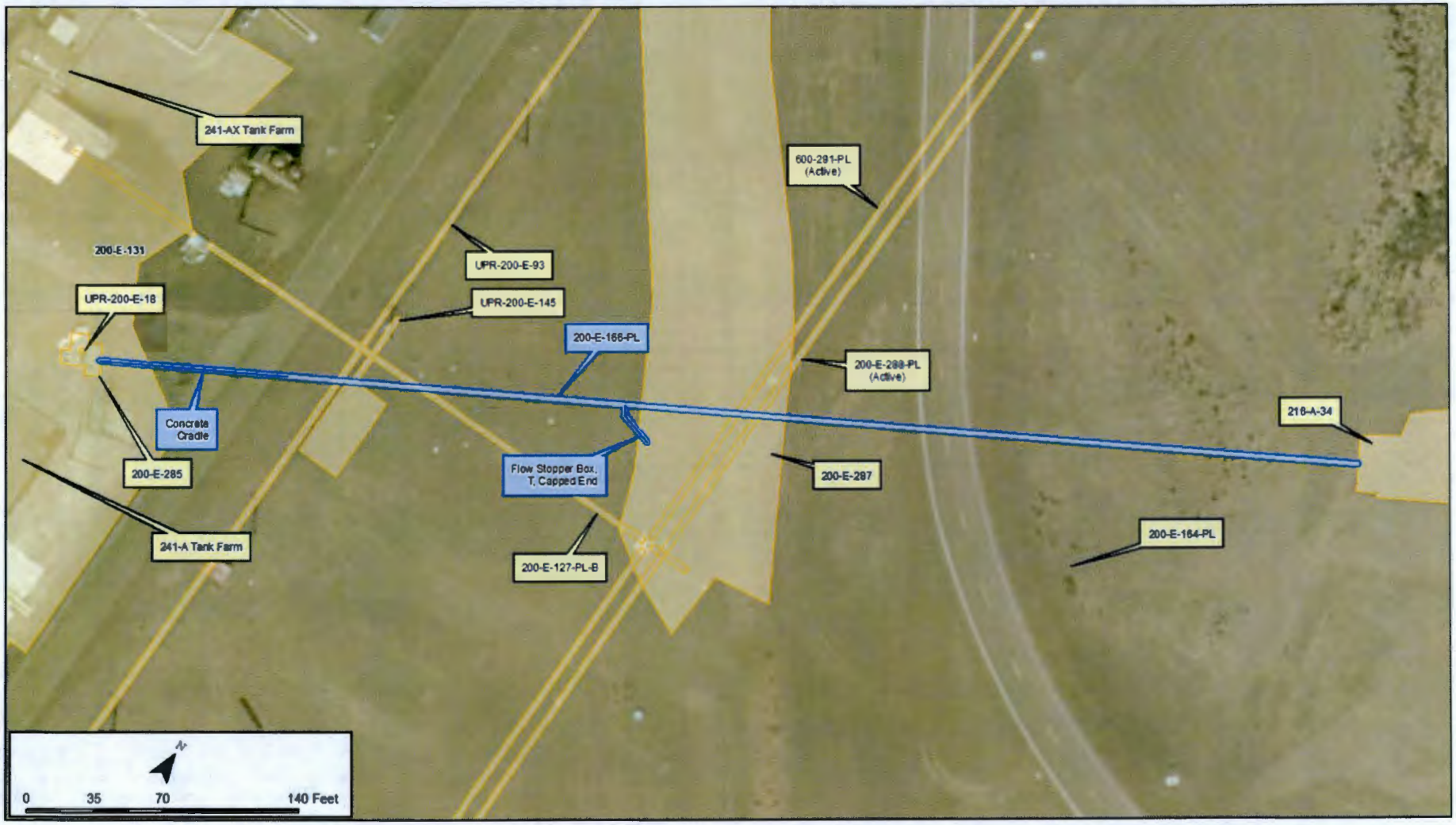
Site Intersects

200-IS-1
- UPR-200-E-18
- UPR-200-E-145
- 200-E-127-PL-B
- 200-E-165-PL

WMA A/AX
- 200-E-131

No Operable Unit
- UPR-200-E-93
- 200-E-287
- 600-291-PL (Active)
- 200-E-288-PL (Active)

Scoping Summary: 200-E-166-PL



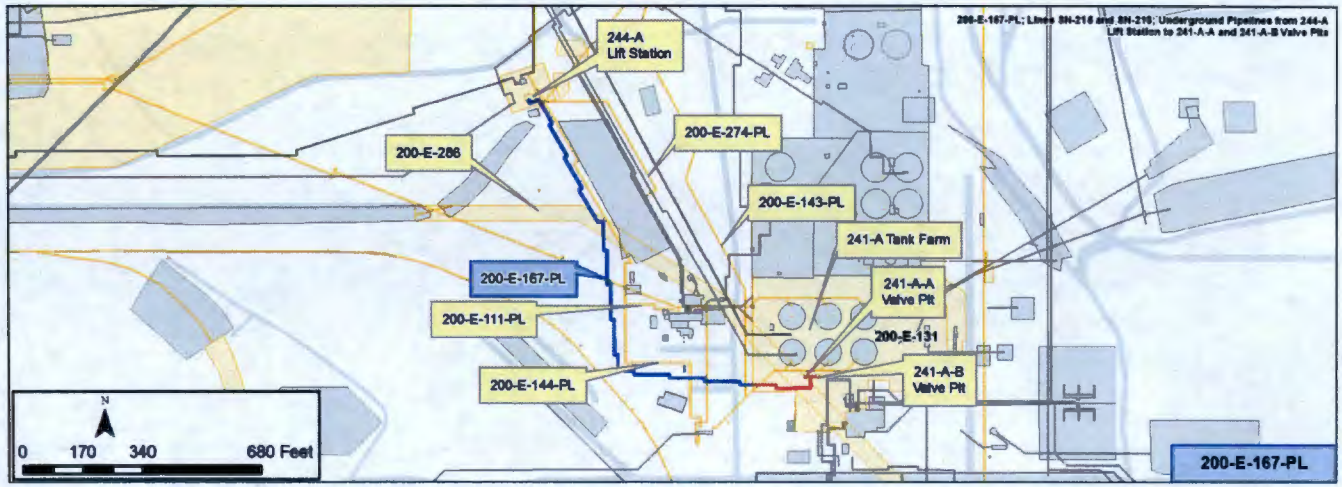
Scoping Summary: 200-E-167-PL

History

The 200-E-167-PL waste site is an inactive underground process transfer pipeline that consists of two parallel lines used to transfer wastes from the 244-A Lift Station to the 241-A-A and 241-A-B Valve Pits. These two lines are identified by the pipeline segment IDs SN-215 and SN-216

SN-215 was operational from 1973 to 1992, when it failed a pressure test due to pipe corrosion. It ran from the 244-A Lift Station to the 241-A-A Valve Pit. The lift station was used as lag storage for waste transferred from the 241-ER-153 Diversion Box.

SN-216 was operational from 1973 to 1989, when it was determined to be plugged. Attempts to unplug were never successful, and the line failed a pressure test in 1999. It ran from the 244-A Lift Station to the 241-A-B Valve Pit.



Construction

- Length
  - SN-215: 1,607 ft
  - SN-216: 1,444 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Encasement Specifications: Pipe-in-pipe (6 in. Carbon Steel Outer pipe)
- Pressurized
- Cathodic Protection
- Minimum 3 in. Polyurethane insulation
- Depth: ~2 ft bgs
- Volume
  - SN-215: 590 gal
  - SN-216: 530 gal

Features of Interest

- The pipes have many bends.
- SN-216 is believed to have plugged due to gradual buildup of bismuth phosphate metal waste or first-cycle waste deposits by plug-forming conditions in the salt well liquid transfer line. Unplugging attempts in 1999 failed.

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.

Waste Streams

- SN-216 was used to support the salt well pumping campaign for 241-U-107. This line was used to support the salt well pumping campaign for 241-U-107.

Misc./Other Relevant Information

- SN-215 failed hydrostatic test on Jun-12-1992 at S Farm (RL-WHC-TANKFARM-92-0046)
- SN-216 failed hydrostatic test on May-12-1992 at S Farm, verified only verbally (WHC-SD-WM-ES-259)
- Aerial photo shows some unmarked obstructions above-ground over this line which appear to be storage containers. A field visit may be required to determine relevance/importance, as these structures are not identified in references or via QMAP.

Site Interfaces

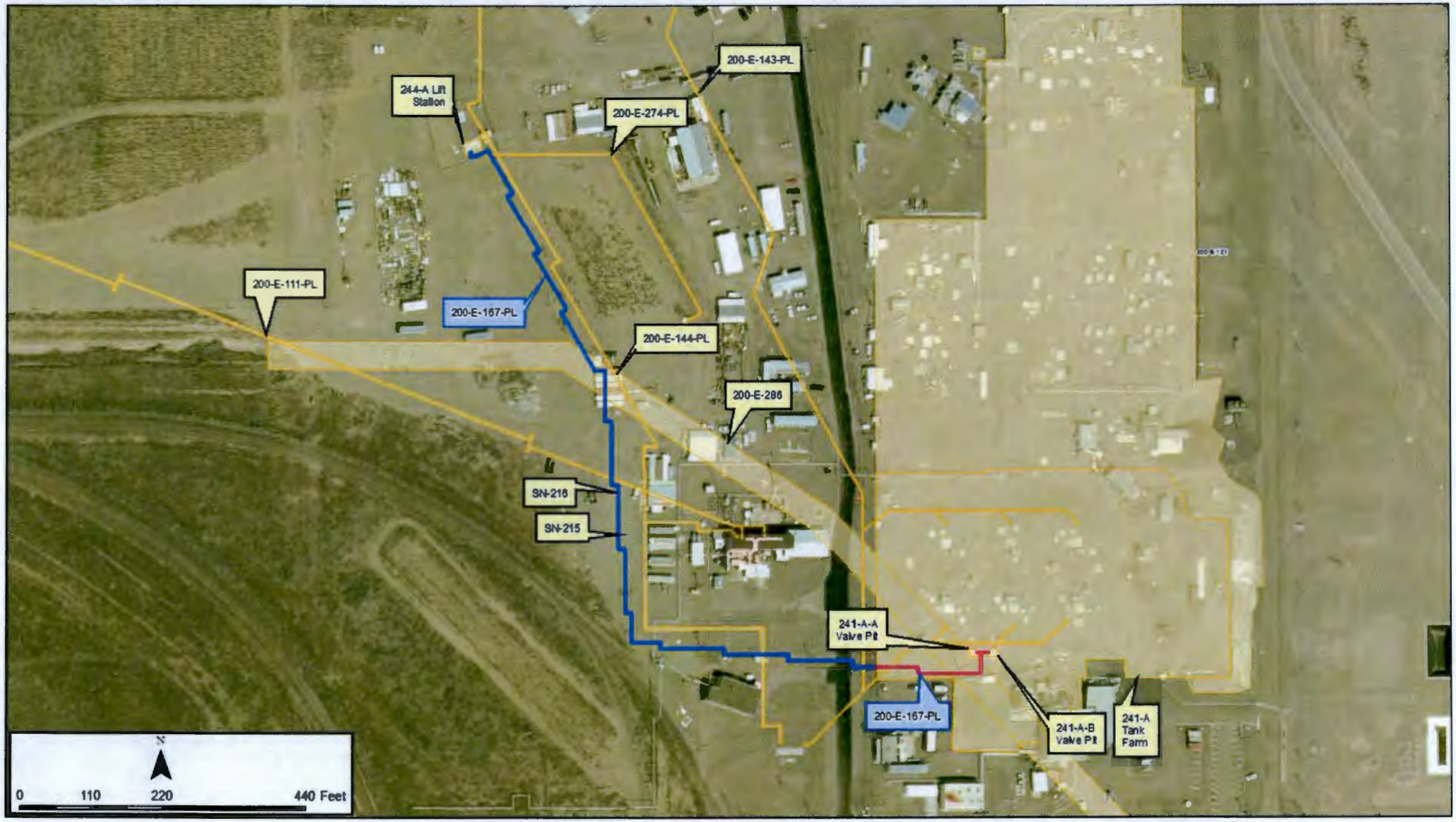
Origin/Termination

No Operable Unit
- 244-A Lift Station
- 241-A-A Valve Pit
- 241-A-B Valve Pit

Site Intersects

No Operable Unit
- 200-E-274-PL
- 200-E-111-PL
- 200-E-144-PL
- 200-E-143-PL
- 200-E-286 (rejected)

Scoping Summary: 200-E-167-PL



Scoping Summary: 200-E-168-PL

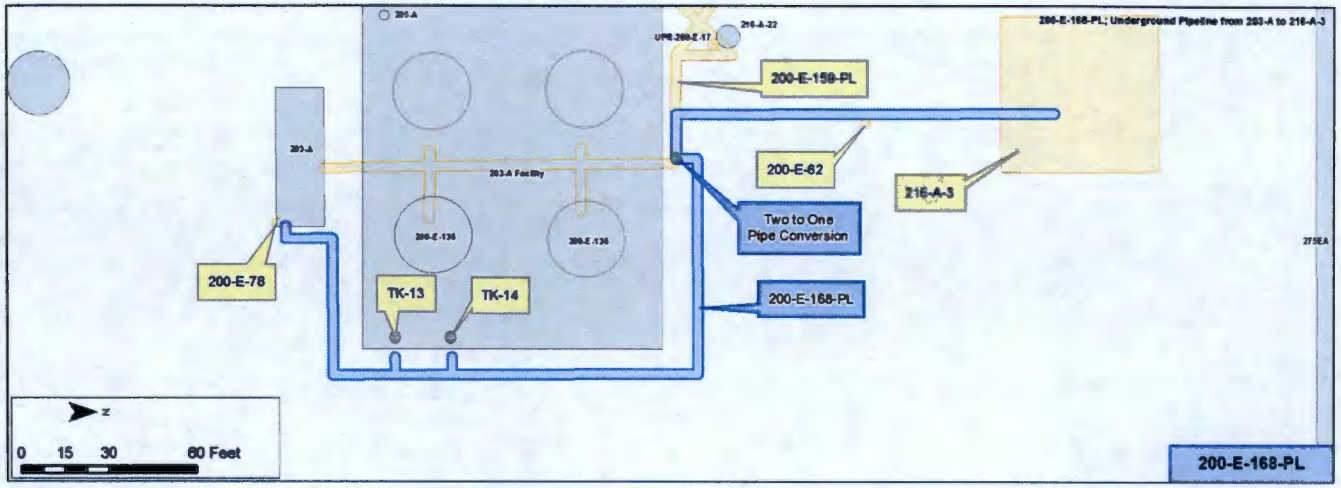
History

The 200-E-168-PL waste site is an inactive underground pipeline that was constructed in 1954 to drain a variety of waste sources from the 203-A facility into the 216-A-3 Crib.

From 1956 to Nov-1967, the line transferred silica gel regeneration waste from the 203-A Building, UNH storage pit drainage, and liquid waste from the 203-A Pump House.

The 200-E-168-PL transferred waste from the 203-A Facility to the 216-A-3 Crib, which originally discharged to the 216-A-28 crib via the 200-E-159-PL:1. In 1967, the discharge of the silica gel waste was discontinued. Additional waste sources included liquid waste from the 203-A enclosure sumps and heating coil condensate from the UNH Tanks.

In 1980, a section of 200-E-168-PL was cut and capped. In April 1981, the 216-A-3 Crib was taken out of service.



Construction

- Length: 415 ft
- Diameter: 4 in.
- Composition: Stainless Steel
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried:
- Depth: 3 ft - 9 ft
- Total Calculated Volume: 270 gal

Features of Interest

- Two-to-one pipe connection near the 203-A Facility boundary (originally lines connected into 200-E-159-PL)
- 2 side 4 in. pipe connections from tanks TK-13 and TK-14
- 7 bends
- Section of pipe was stated as being on the surface, but also stated as being removed and capped. Based on available drawings the location is believed to be near the Two to One Pipe conversion, but exact location is in not known (H-2-46776)

Relevant Characterization

- Based on historic inventory reporting, total waste transferred to 216-A-3 Crib was estimated at 805,700 gal and includes 1.27E-04 Ci Tc-99, 2.54 E-06 Ci Cs-135, 0.56 Ci Total U, 1.23E-02 Total Alpha, 0.18 Ci Total Beta
- Based on historic inventory reporting, total waste transferred to 216-A-28 Crib was estimated at 8,000 gal and includes 1.13E-04 Ci Tc-99, 2.26E-06 Ci Cs-135, 0.21 Ci Total U, 7.47E-03 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Processes: Drain Wastes & Cooling Water; Unknown Process/Miscellaneous Wastes
- Waste Types: Liquid waste from the 203-A acid pump house; Heating coil condensate from P-1 through P-4 UNH tanks (203-A Facility); silica gel regeneration waste from the 203-A Building; UNH storage pit drainage; and the liquid waste from the 203-A Pump House.
- Based on historic inventory reporting, silica gel wastes transferred to 216-A-3 Crib was estimated at 805,000 gallons, with low activity fission products transferring via 200-E-168-PL

Misc./Other Relevant Information

- The two-to-one pipe conversion is the result of waste being rerouted into 200-E-168-PL from 200-E-159-PL, which was previously being discharged into 216-A-28
- Other notes on the composition: was originally carbon steel and a small portion next to 216-A-3 was noted as being vitrified clay. Based on engineering documents the pipeline was replaced with stainless steel (H-2-54819 and H-2-56-50)

Site Interfaces

Origin/Termination

- 203-A (Facility)

200-IS-1

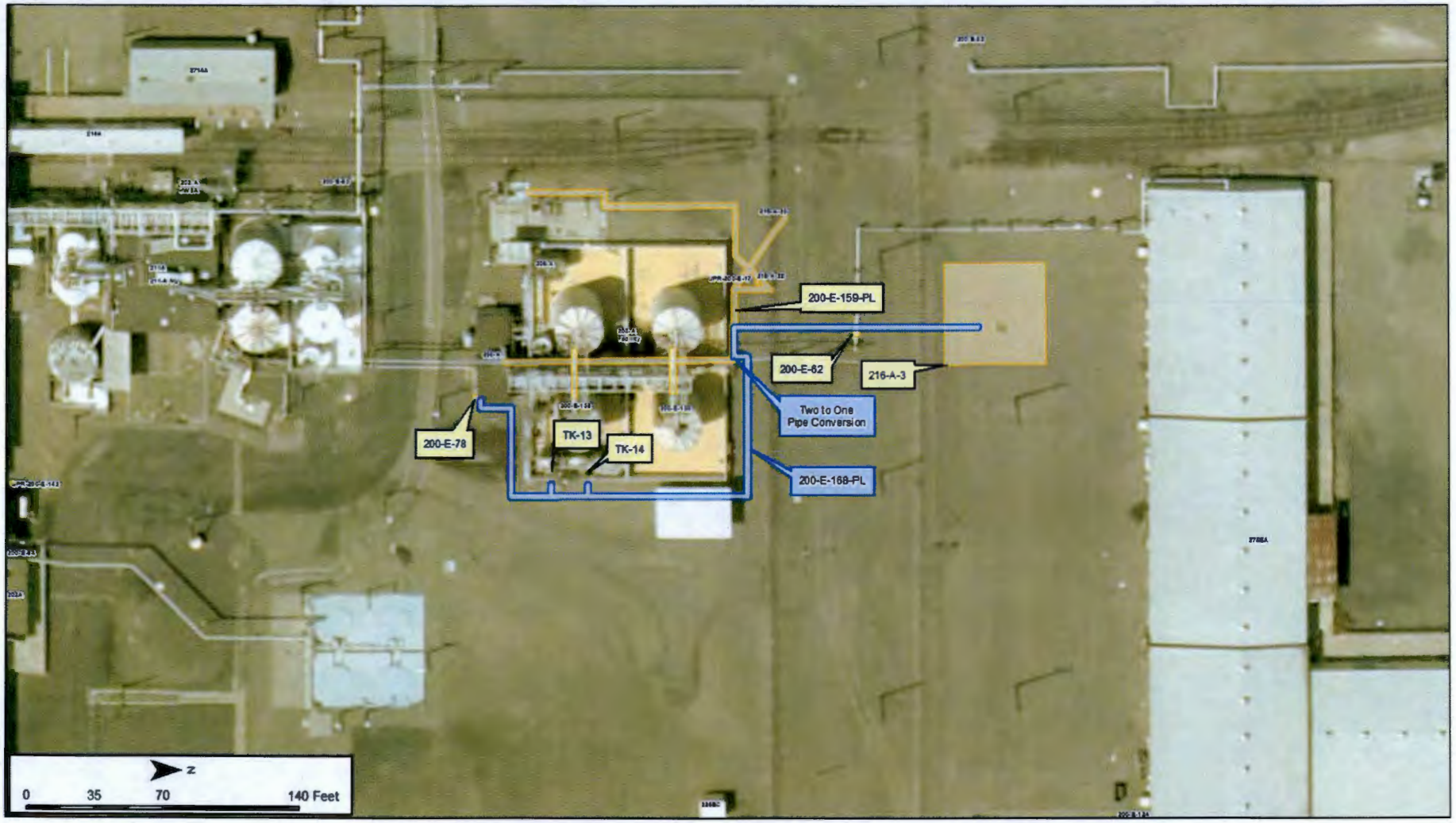
- 200-E-159-PL

200-EA-1

- 216-A-3 (Crib)

Site Intersects

- 200-E-62
- 200-E-78


200-E-159-PL
200-E-62
216-A-3
Two to One
Pipe Conversion
200-E-168-PL
200-E-78
TK-13
TK-14
N
0
35
70
140 Feet

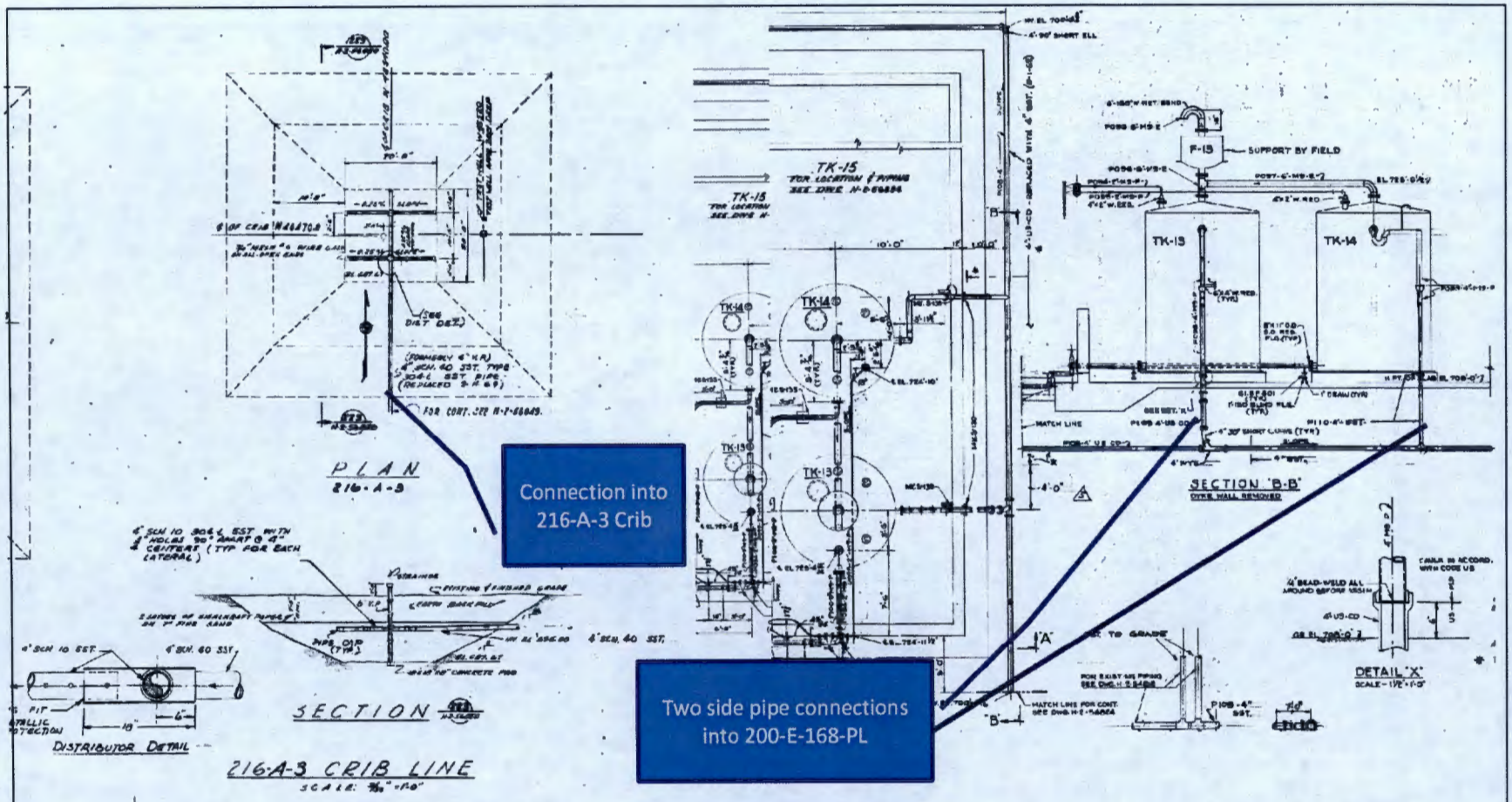


Figure 1 – 200-E-168-PL connection into the 216-A-3 Crib and two side connection to tanks TK-13 and TK-14 (H-2-54819 and H-2-56050)

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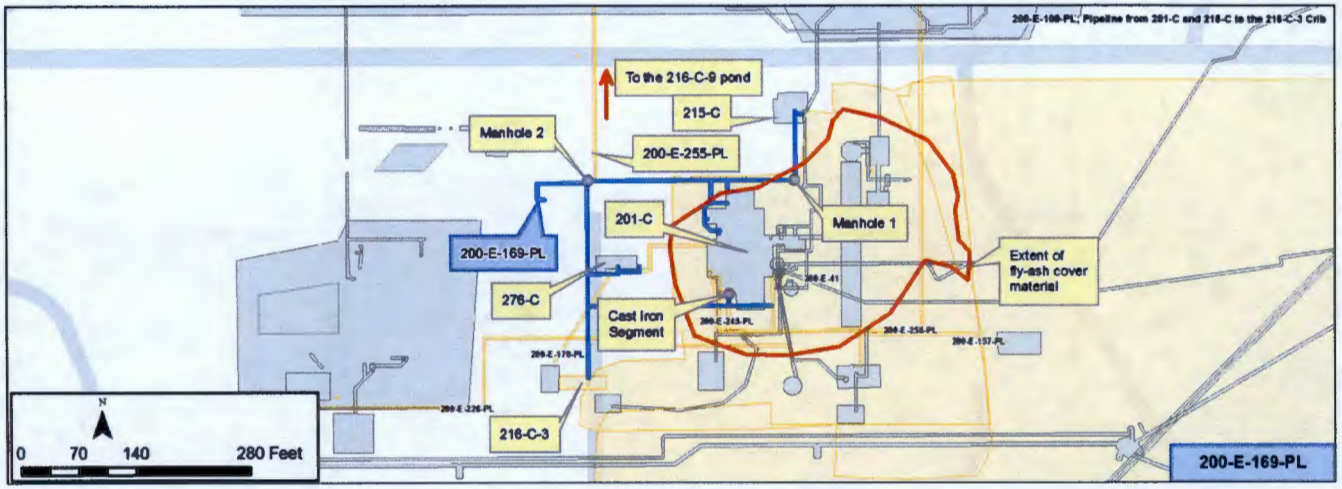
Scoping Summary: 200-E-169-PL

History

The 200-E-169-PL waste site is an inactive underground process sewer that consists of a series of pipes and two manholes that connected the 215-C Building, 201-C Facility, and 276-C Building to the 216-C-3 Crib. An additional segment to 200-E-255-PL connects the northeastern portion of the pipeline to the 216-C-9 Pond.

The majority of the pipe segments comprising 200-E-169-PL were only used for a short time, while the 216-C-3 Crib was active from 1953-to-1954. The northeastern portion of the site, which connects to 200-E-255-PL, may have been used for additional time following the discontinuation of the 216-C-3 Crib.

Connections to the 201-C Facility were isolated in 1983 when the 201-C Facility was dismantled and the remaining voids were filled with a cement material.



Construction

Pipeline

- Length: 1091 ft
- Diameter: 4 in. and 6 in. pipes
- Composition: Vitrified Clay and Cast Iron (one >5 ft segment)
- Gravity Drained
- Direct Buried
- Depth: 2 ft - 7 ft bgs
- Calculated volume: 1,113 gal (estimated based on equal lengths of 4 in. and 6 in. pipe)

Manholes

- Dimensions: 4 ft diameter x unknown height
- Buried Depth: Access cover at original grade
- Access through 24 in. diameter opening

Features of Interest

- Two manholes. The manholes appear to have been constructed of concrete, but materials could not be verified.
- The 216-C-3 Crib was deactivated by blanking off the pipeline to the crib and backfilling with layers of sand and gravel on either side of 10 mil plastic sheeting. Currently a 1 ft thick road runs across the site.

Relevant Characterization

- All Semiworks facility discharge pipes were isolated in 1983 along with decommissioning.
- Historic inventory reports show 216-C-3 Crib transferred
  - 6.4 Ci Sr-90
  - 3.44E-02 Ci Cs-137
  - 1.51E-02 Ci Total U
  - 6.14E-02 Ci Total Alpha
  - 1.62E+01 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Contaminated organic waste from 276-C
- The 216-C-3 Crib received 1,320,000 gal of liquid acidic REDOX Process waste associated with the 201-C Facility through 200-E-169-PL from 1953-1954.
- Transported cooling water from the 201-C Semiworks Facility to 200-E-255-PL from June 1953-1967. May have also transported wastes received from a floor drain in the 215-C Building.

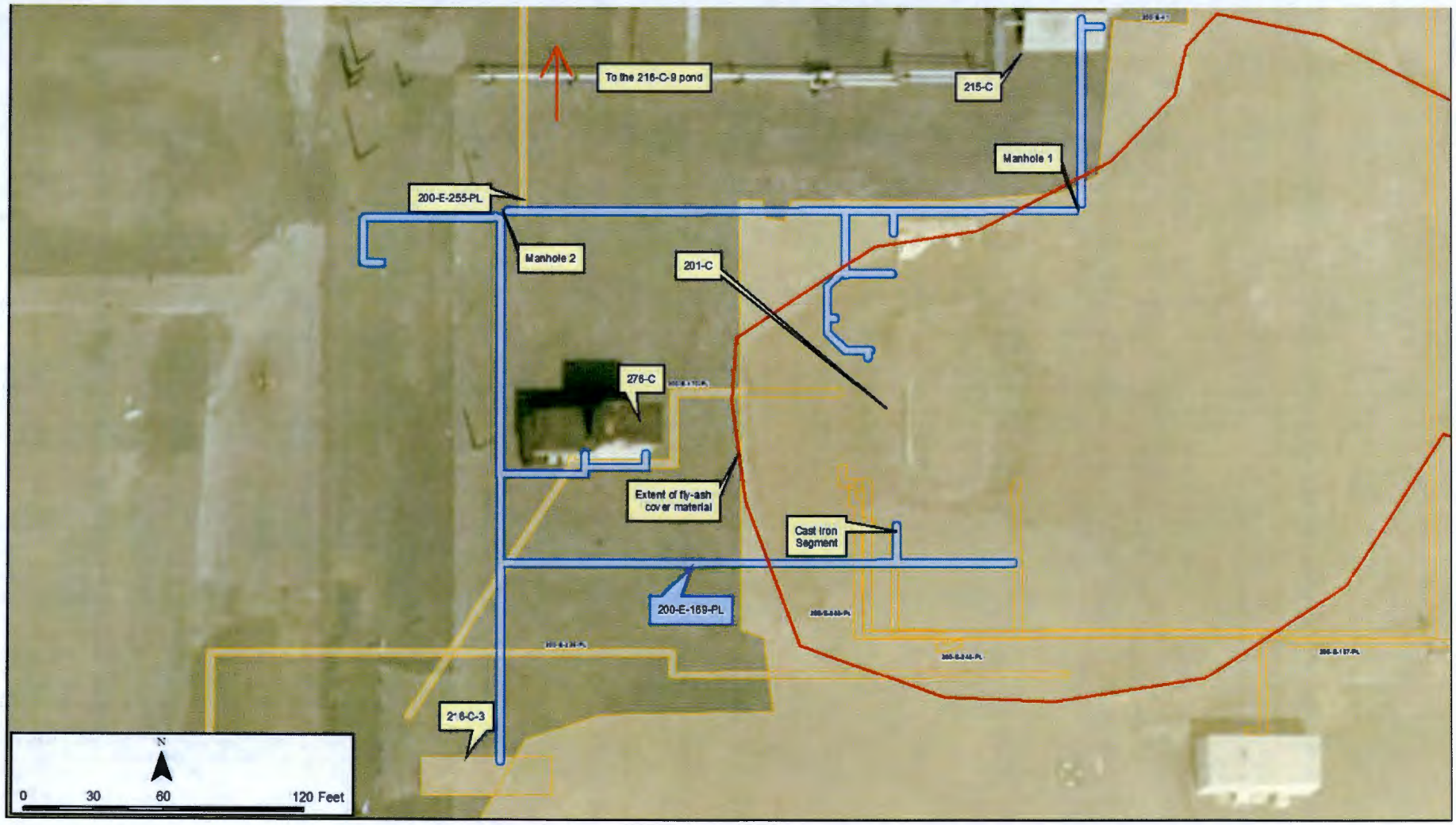
Misc./Other Relevant Information

- Note that the segment of the pipeline extending west from Manhole 2 is present in QMAPs, but no other reference to this segment could be located.
- 200-E-41 (1949-1992) Decommissioned area including 201-C building covered with fly ash. The area shown on the included images is approximate. Chained and posted as Underground Radioactive Material. A small portion of the 200-E-170 pipeline is within the area of the site.

Site Interfaces

Origin/Termination	Site Intersects
• 201-C (facility)	200-IS-1
• 215-C (facility)	• 200-E-157-PL
• 276-C (building)	• 200-E-170-PL
	• 200-E-226-PL
200-IS-1	• 200-E-245-PL
• 200-E-255-PL	• 200-E-256-PL
200-EA-1	• 200-E-41 (stabilized area)
• 216-C-3	

Scoping Summary: 200-E-169-PL



Scoping Summary: 200-E-170-PL

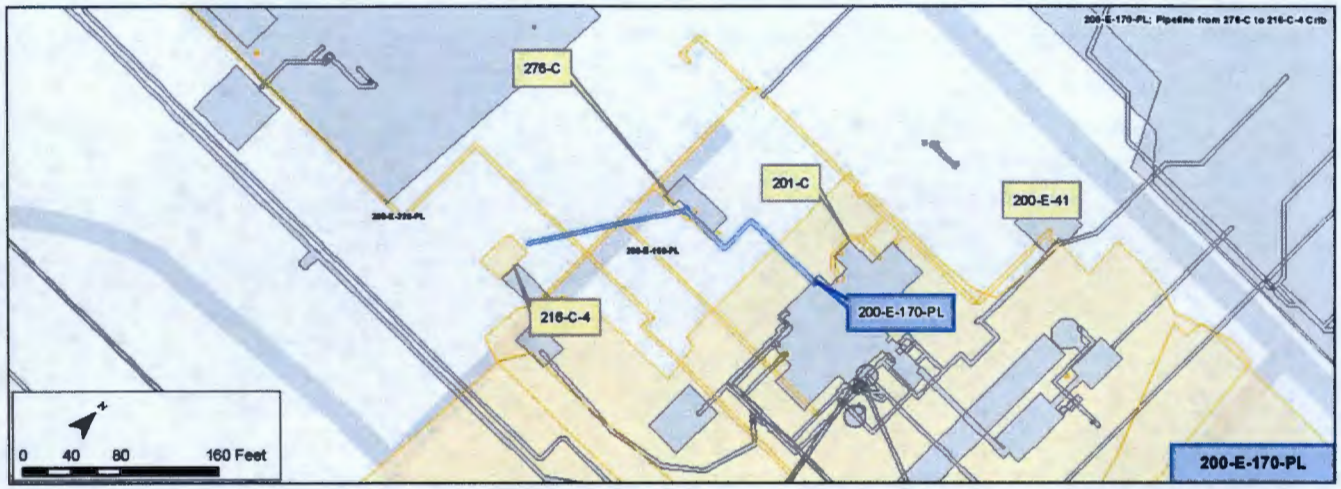
History

The 200-E-170-PL waste site is an inactive underground radioactive process sewer that consists of a series of pipelines from the 201-C Facility to the 216-C-4 Crib.

The first segment contains two parallel pipes from the 201-C Facility (now demolished) to a series of valves connecting them to two lines exiting the 276-C Solvent Handling Building. These valves connect to a second segment consisting of a single 2 in. pipe to the 216-C-4 Crib.

The 216-C-4 Crib was in service from Jul-1955 to May-1965. The Crib was deactivated in 1965 by valving out 200-E-170-PL when the specific retention capacity was reached.

The pipeline runs west and south from the 201-C Facility, and southwest from the 276-C Building to the 216-C-4 Crib. Connections to the 201-C Facility were isolated when the 201-C Facility was dismantled and the remaining voids were filled with a cement material.



Construction

- Length: 453 ft cumulative
  - Line 1: 176 ft
  - Line 2: 147 ft
  - Line 3: 130 ft
- Diameter:
  - Line 1: 1.5 in.
  - Line 2: 1 in.
  - Line 3: 2 in.
- Pipeline composition: Stainless Steel
- Gravity Drained
- Direct Buried at unknown depth
- Calculated volume: 43 gal cumulative
  - Line 1: 16 gal
  - Line 2: 6 gal
  - Line 3: 21 gal

Features of Interest

- None noted

Relevant Characterization

- A 1988 surface radiation survey found no radiation above detection limits.
- Historical inventory reports show 216-C-4 Crib transferred
  - 9.56 Ci Sr-90
  - 3.52E-2 Ci Cs-137
  - 1.13E-3 Ci Total U
  - 6.14E-2 Ci Total Alpha
  - 2.38E+1 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Contaminated organic waste from 276-C, including 24,000-kg Kerosene and 11,000-kg TBP
- Neutral to slightly basic, low salt waste from the PUREX process and the strontium, promethium, cerium, and technetium recovery process.
- Discharge to 216-C-4 Crib - 44,909 gal

Misc./Other Relevant Information

- 200-E-41 (1949-1992) Decommissioned area including 201-C building covered with fly ash.
  - The area shown on the included images is approximate. Chained and posted as Underground Radioactive Material.
  - A small portion of the 200-E-170 pipeline is within the area of the site.

Site Interfaces

Origin/Termination	Site Intersects
• 201-C (facility)	200-IS-1
• 276-C (building)	• 200-E-169-PL
	• 200-E-226-PL
200-EA-1	
• 216-C-4 crib	• 200-E-41 (stabilized area)

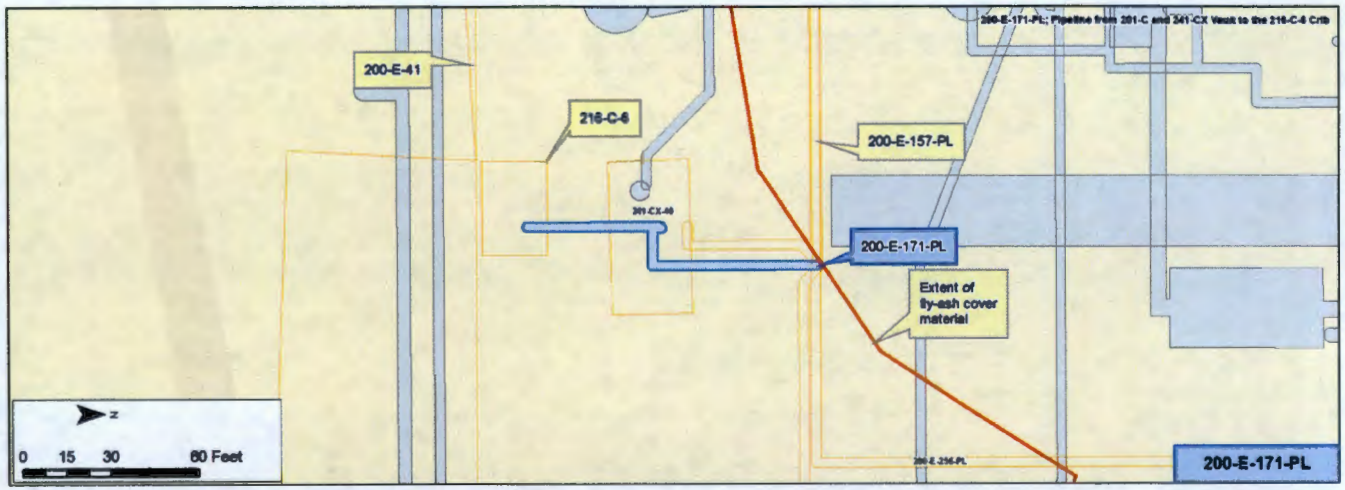
Scoping Summary: 200-E-170-PL

Scoping Summary: 200-E-171-PL

History

The 200-E-171-PL waste site is an inactive underground pipe connecting the 200-E-157-PL pipeline and the 241-CX-40 Vault floor drain to the 216-C-6 Crib.

The pipeline was operational from 1955 to 1964, when use of the 216-C-6 Crib was discontinued. Following this, the 200-E-171-PL pipeline was blanked where it ties into 200-E-157-PL pipeline.



Construction

- Length: 114 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Gravity Drained
- Direct Buried
- Depth: ~4 ft - 13 ft bgs
- Computed volume: 19 gal

Features of Interest

- 2 in. gate valve at connection to 200-E-157 (blanked when use of 216-C-4 was discontinued)
- Check valve and gate valve at connection to 241-CX-40 floor drain

Waste Streams

- 216-C-6 Crib received 140,011 gal of radioactive REDOX and PUREX type process condensate from 201-C and 241-CX Vault floor drainage via pipeline 200-E-171-PL

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1 • 200-E-157 (origin) • 241-CX-40 (Grout Removal Building) (origin)	• 200-E-41 (stabilized area)
200-EA-1 • 216-C-6 Crib (termination)	

Relevant Characterization

- Based on historical inventory reporting waste transferred to the 216-C-6 Crib includes:
  - 2.33E+1 Ci Sr-90
  - 3.77E-2 Ci Cs-137
  - 1.51E-5 Ci Total U
  - 6.14E-3 Ci Total Alpha
  - 5.81E+1 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- 200-E-41 (1949-1992) Decommissioned area including 201-C building covered with fly ash. The area shown on the included images is approximate. Chained and posted as Underground Radioactive Material. A small portion of the 200-E-170 pipeline is within the area of the site.

Scoping Summary: 200-E-171-PL

Scoping Summary: 200-E-172-PL

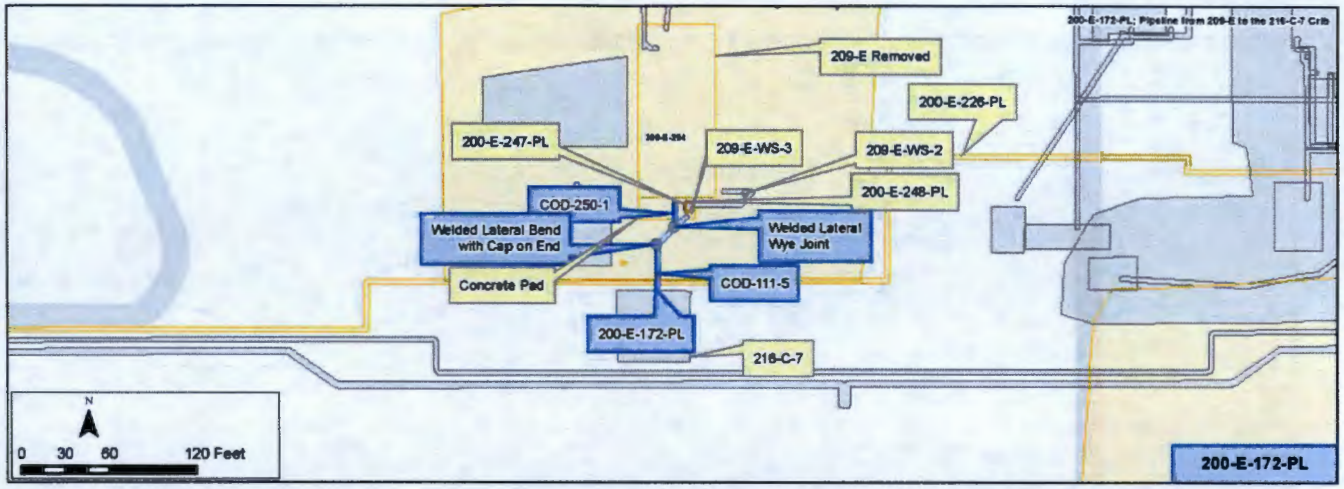
History

Waste site 200-E-172-PL consists of two inactive underground process sewer lines (COD-111-5 and COD-250-1) that drained effluent from Building 209-E at the Critical Mass Laboratory (CML).

209-E Reflector Water waste was generated in the Critical Assembly Room (CAR) of the CML, drained to a hold up tank (200-E-TK-111), and eventually pumped through COD-111-5 to be disposed of in the 216-C-7 Crib. COD-250-1 drained sink waste from the CML Mix Room to COD-111-5 and ultimately to the 216-C-7 Crib.

The CML performed criticality experiments and research in 209-E from 1960 to 1983. The Lab was prepared for closure and decommissioning in 1987 and was then unoccupied until it was demolished in December 2011.

Both lines have been cut and capped; COD-250-1 was capped during the CML's decommissioning in 1986, and COD-111-5 was capped during its demolition in 2011.



Construction

- Pipeline length:
  - COD-111-5: 56.6 ft
  - COD-2501-1: 17 ft
- Pipeline diameter: 2 in.
- Pipeline composition: Stainless steel
- Gravity drained
- Encasement: None
- Direct buried with a starting
- Depth: 3.5 ft – 9 ft bgs
- Cathodic protection: Yes
- Calculated volume:
  - COD-111-5: 10.7 gal
  - COD-2501-1: 3.23 gal

Features of Interest

- One stainless steel (SS) welded lateral wye joint (joining COD-250-1 and COD-111-5)
- One SS welded lateral bend with cap on run (COD-111-5)
- Two flanges where COD-250-1 exits the CAR
- A concrete equipment pad covering the north ends of both COD-111-5 and COD-250-1

Waste Streams

- 209-E Reflector water from 209-E-TK-111 and waste water from the sink drains in the CML Mix rooms were the processes that the wastes were associated with
- The water did not interact with waste from the experiment's samples found no contaminates
- Active from 1960 to 1983

Site Interfaces

Origin/Termination

200-EA-1

- 209-E-WS-3 (Valve Pit and 200-E-TK-111 Hold Up Tank) (origin)
- 216-C-7 Crib (termination)

No Operable Unit

- 200-E-294 (Demolished 209-E Building) (origin)

Site Intersects

200-IS-1

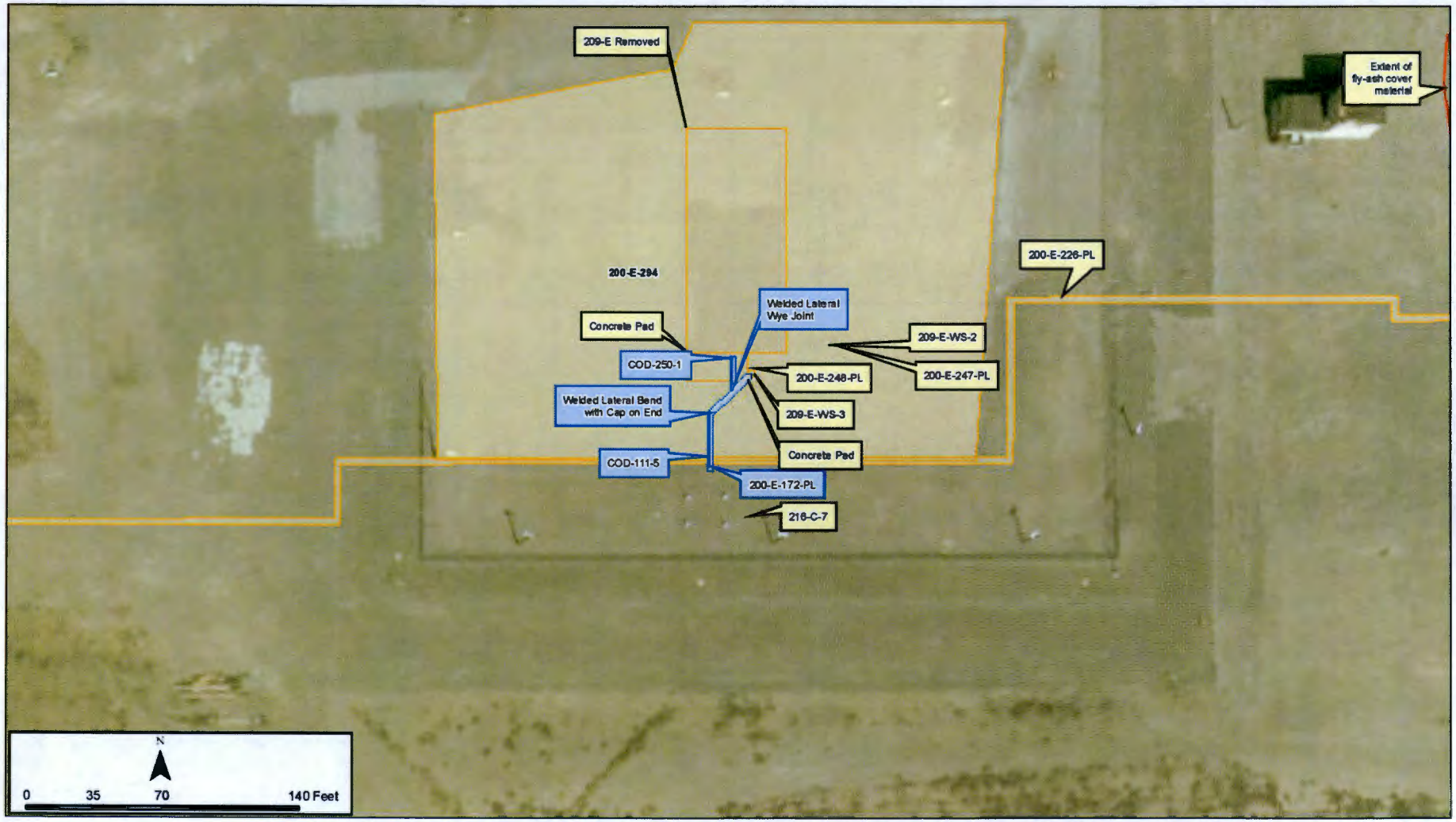
- 200-E-226-PL

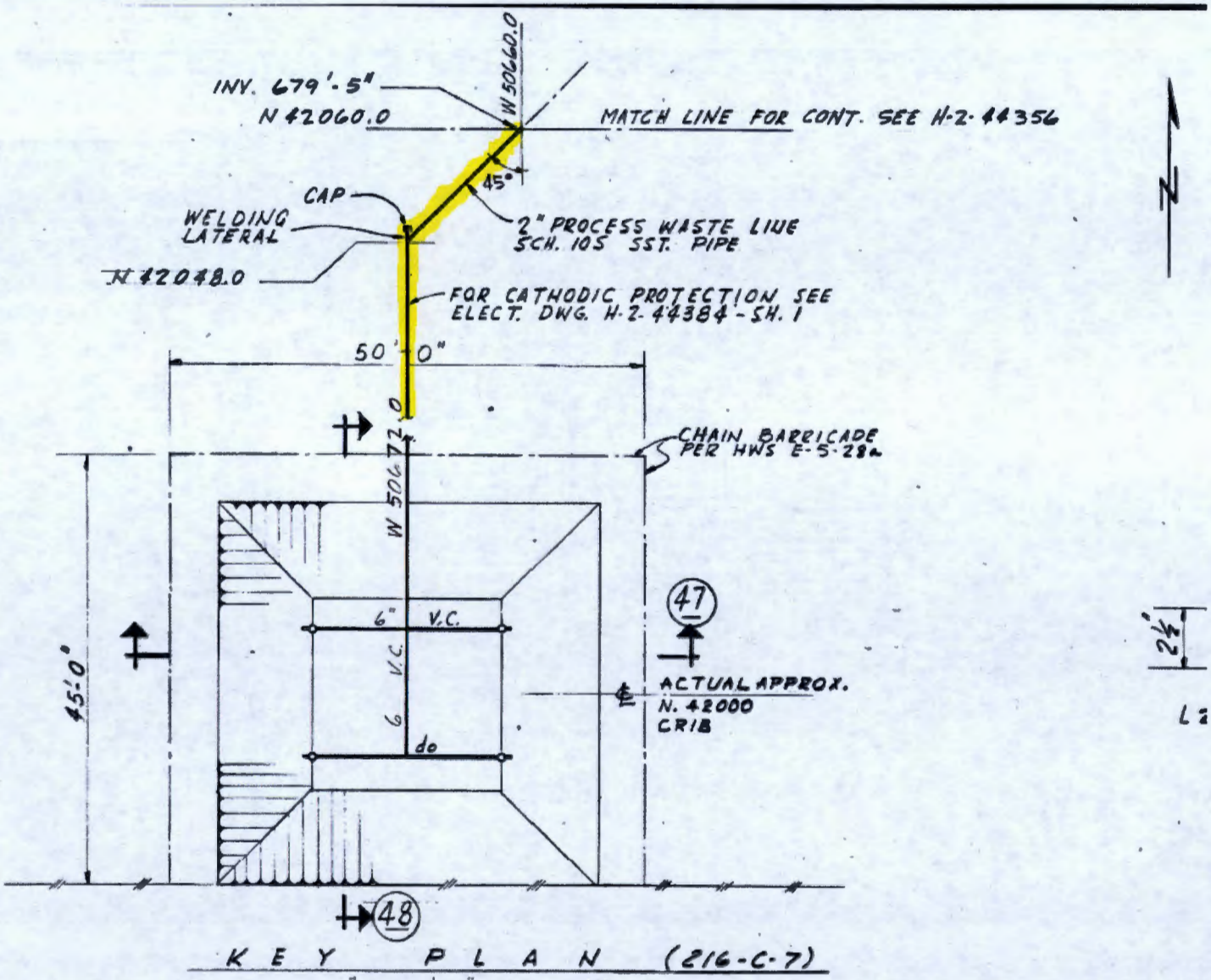
Relevant Characterization

- Extensive records document regular sampling of the 209-E Building's Reflector Water waste stream throughout the duration of the CML criticality experiments. These documents conclude that the waste stream should be designated as not dangerous

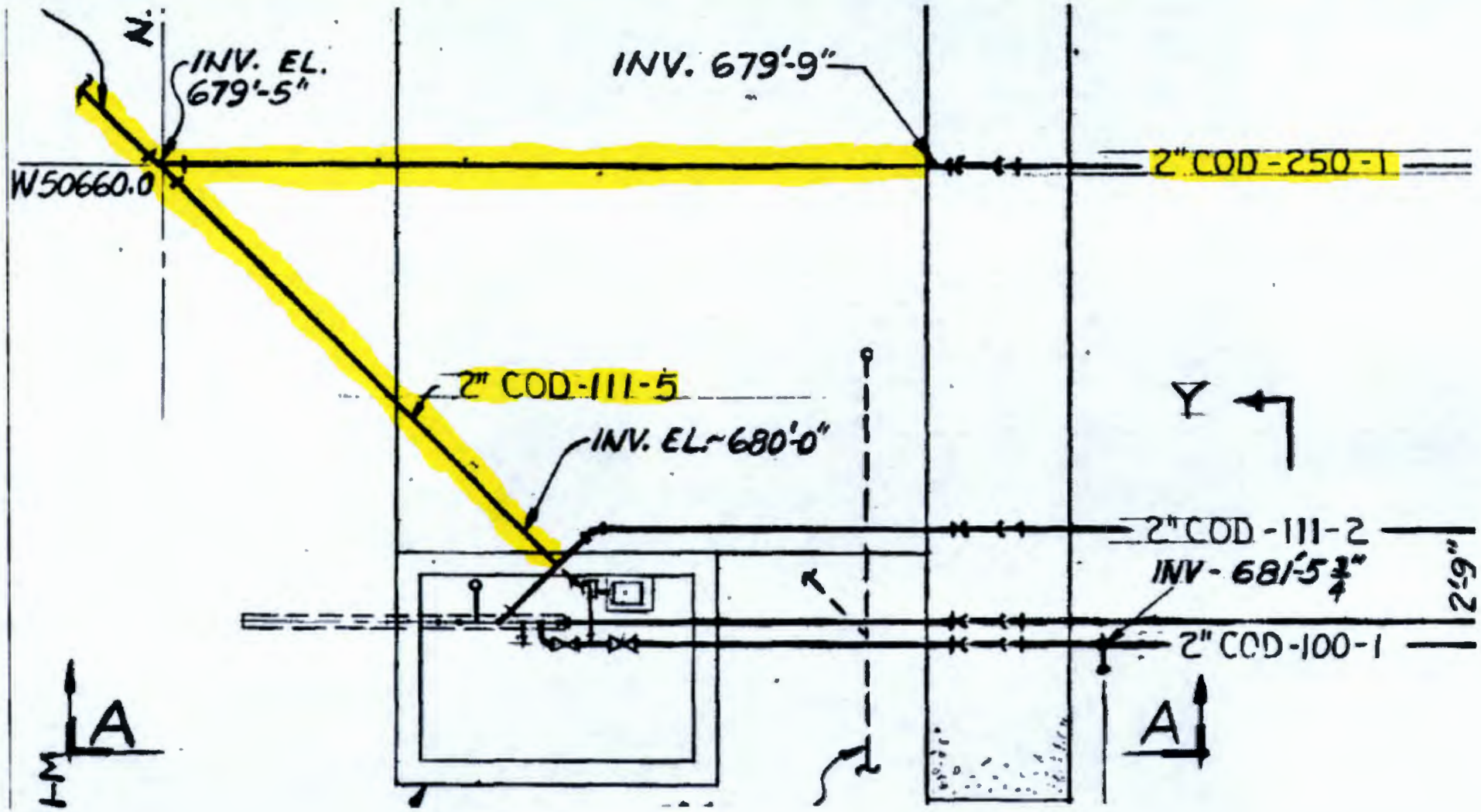
Misc./Other Relevant Information

- COD-111-5: Connects the CAR 200-E-WS-3 Valve Pit to the 216-C-7 Crib
- COD-250-1: Connects sink drains in the CML Mix Room with COD-111-5 for disposal at the 216-C-7 Crib


209-E Removed
Extent of fly-ash cover material
200-E-226-PL
200-E-294
Welded Lateral Wye Joint
Concrete Pad
209-E-WS-2
COD-250-1
200-E-248-PL
200-E-247-PL
Welded Lateral Bend with Cap on End
209-E-WS-3
Concrete Pad
COD-111-5
200-E-172-PL
216-C-7
N
0
35
70
140 Feet



KEY PLAN (216-C-7)


N
INV. EL.
679'-5"
INV. 679'-9"
W50660.0
2" COD-250-1
2" COD-111-5
INV. EL.~680'-0"
Y
2" COD-111-2
INV-681'-5 3/4"
2'-9"
2" COD-100-1
A
A

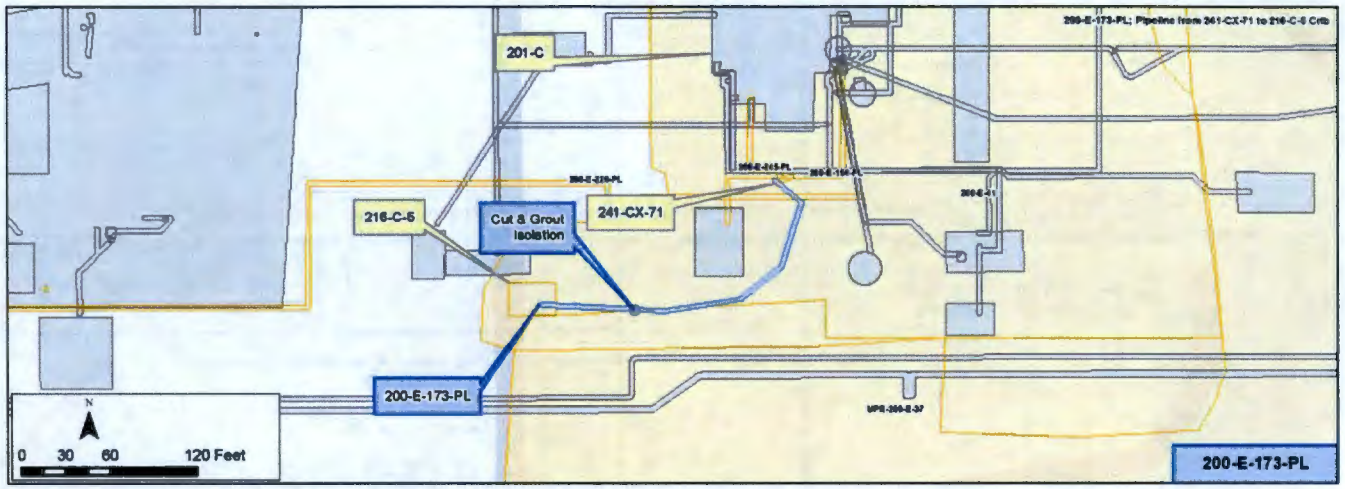
Scoping Summary: 200-E-173-PL

History

The 200-E-173-PL waste site is an inactive underground radioactive process sewer line used to transfer neutralized high-salt waste (HSW) from the 241-CX-71 Neutralization Tank to the 216-C-5 Crib.

The line was used from March 1955 through June 1955, when the specific retention capacity of the 216-C-5 Crib was reached. When it was removed from service in 1955, the 200-E-173-PL was valved out.

NOTE: 200-E-173-PL is not associated with piping removal outlined in the approved 241-CX Tank Closure Plan (DOE/RL-2008-51, Rev 1).



Construction

- Length: 240 ft
- Diameter: 2 in.
- Composition: Stainless Steel for 23 ft and connects to a Carbon Steel pipe with a threaded flange and insulating joint
- Gravity flow
- Direct buried
- Depth: 3 ft and 10.5 ft bgs.
- Calculated volume: 90 gal

Features of Interest

- One 2 in. x 3 in. reducing flange
- Three 90-degree elbows
- One 2 in. x 2 in. threaded flange

Relevant Characterization

- No sampling data were found for this capped pipeline

Waste Streams

- Waste streams associated with the 241-CX-71 Neutralization Tank
- The waste streams included PUREX waste (CWP1, CWP2, CWZr1, OWW1, P2)
- 10,000 gal of high salt and cold run waste was transported to the 216-C-5 Crib through this pipeline

Misc./Other Relevant Information

- In 1986, a short segment (~1 ft) of 200-E-173-PL, located approximately 60 ft east of the 216-C-5 Crib, was removed and the ends plugged with grout
- The 216-C-5 Crib surface was valved and deactivated in 1955 and was stabilized against wind erosion and plant root invasion in 1979

Site Interfaces

Origin/Termination

200-IS-1
- 241-CX-71 Neutralization Tank (origin)

200-MG-1
- 216-C-5 Crib (termination)

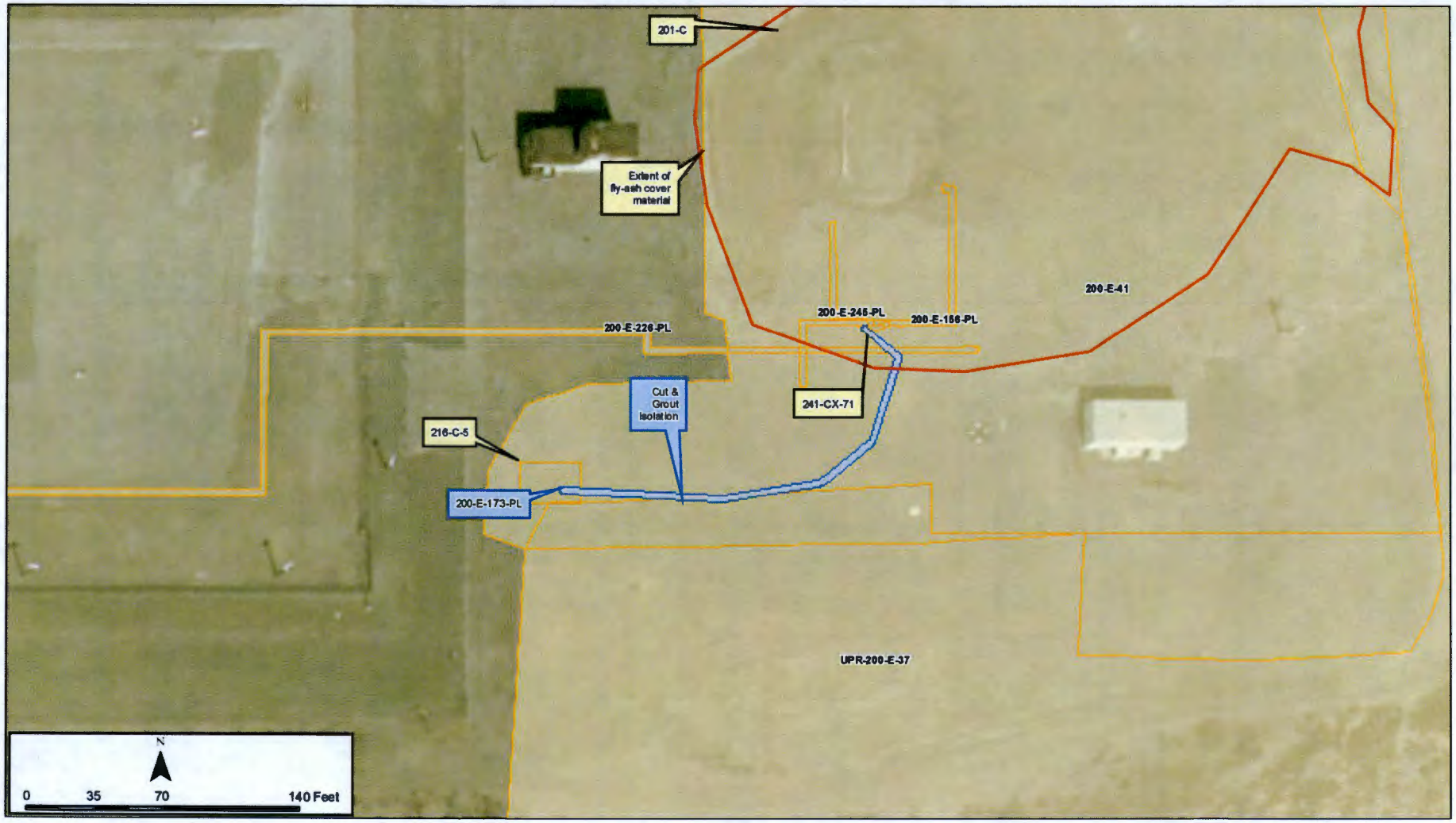
Site Intersects

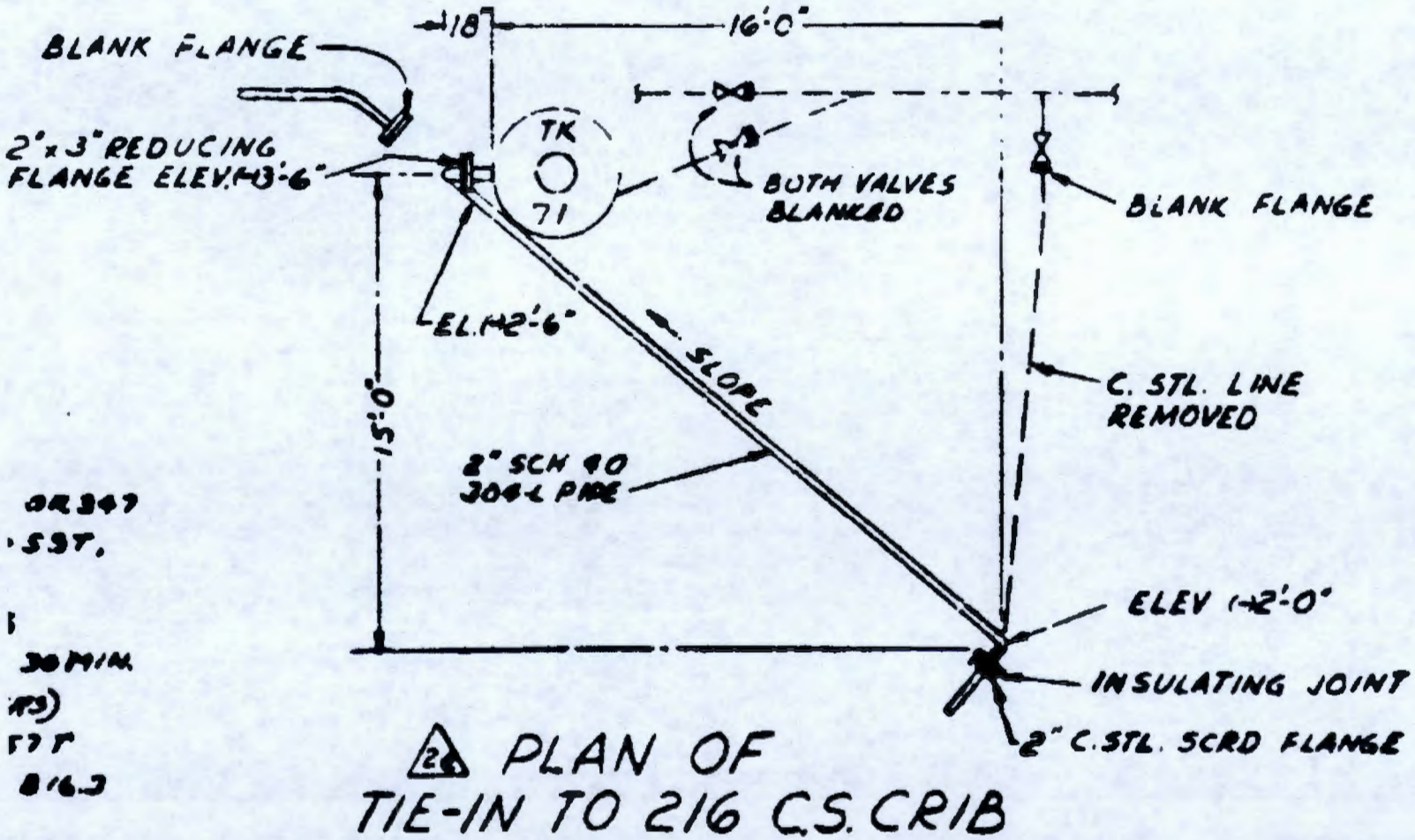
200-IS-1
- 200-E-226-PL

200-MG-1
- UPR-200-E-37 (Strontium Semi-Works Cell A)

No Operable Unit
- 200-E-41 (stabilized area)

Scoping Summary: 200-E-173-PL




BLANK FLANGE
2"x3" REDUCING FLANGE ELEV. 13'-6"
18"
16'-0"
TK
71
BOTH VALVES BLANKED
BLANK FLANGE
EL. 12'-6"
SLOPE
15'-0"
C. STL. LINE REMOVED
2" SCH 40 304L PIPE
ELEV 12'-0"
INSULATING JOINT
2" C.STL. SCRD FLANGE
PLAN OF
TIE-IN TO 216 C.S. CRIB

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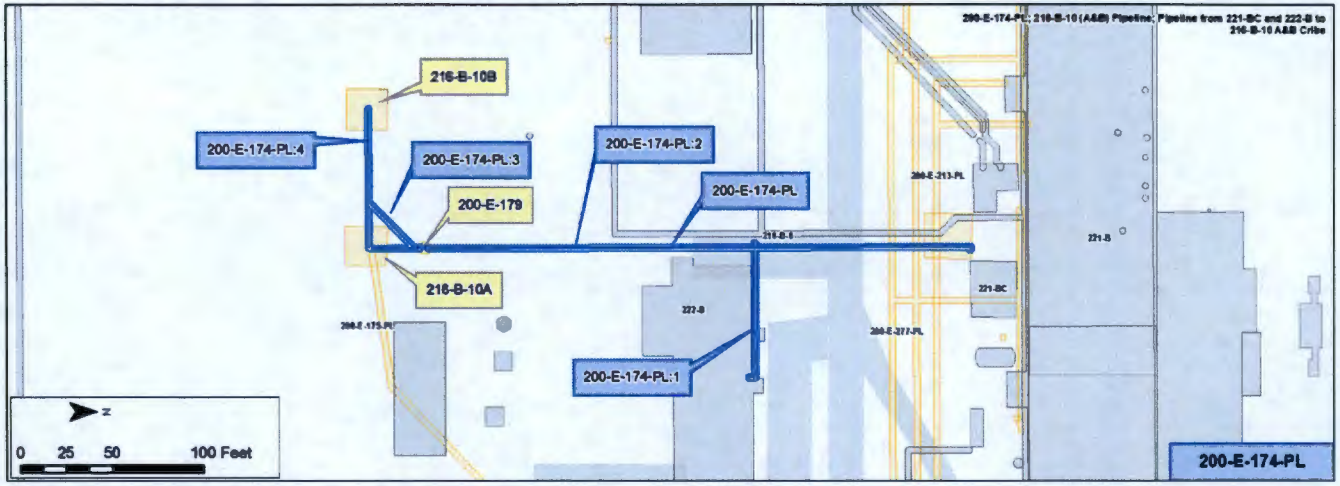
Scoping Summary: 200-E-174-PL

History

The 200-E-174 waste site is an inactive underground pipeline that carried chemical waste from the 222-B Laboratory sink and sample slurper to the 216-B-10A and 216-B-10B Cribs.

Constructed in 1950, by 1969 flow to the 216-B-10A Crib was terminated and the pipeline was extended to Building 221-BC. Additionally, an in-line catch tank (200-E-179) was added to the pipeline. The pipeline and catch tank were abandoned in 1974.

This waste site has been administratively divided into four subsites for different sections of the piping.



Construction

- Length: 499 ft
  - 200-E-174-PL:1 - 72 ft
  - 200-E-174-PL:2 - 314 ft
  - 200-E-174-PL:3 - 40 ft
  - 200-E-174-PL:4 - 73 ft
- Diameter:
  - 200-E-174-PL:1 - 3.5 in.
  - 200-E-174-PL:2 - 2 in. (from 221-BC to connection with subsite 1); 3.5 in. for remainder of subsite length
  - 200-E-174-PL:3 - 3 in.
  - 200-E-174-PL:4 - 3.5 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Depth: 3.5 ft - 15 ft bgs
- Total Calculated Volume: 205 gal
  - 200-E-174-PL:1 - 36 gal
  - 200-E-174-PL:2 - 118 gal
  - 200-E-174-PL:3 - 15 gal
  - 200-E-174-PL:4 - 36 gal

Features of Interest

- 3 in. to 2 in. reducer
- 3.5 in. running trap with 3 in. above grade vent
- Drain
- Catch tank with inlet trap (200-E-179)
- 3 in. gate valve
- Overflow connection
- Abandoned pipe end (between 216-B-10A and 216-B-10B)
- Tie-in
- 2 Pipe bends

Relevant Characterization

- Direct characterization data have been located for the pipeline or adjacent soil
- 1976 radionuclide curies inventory for the 216-B-10B crib included:
  - <.474E-04 of Pu
  - <.284E-03 of Sr-90
  - <.981E-04 of Cs-137
  - <.746E-03 of U

Waste Streams

- 1949-1974: The pipeline was used to transfer acidic mixed liquids containing transuranic material and fission products - 9,990,000 liters transferred

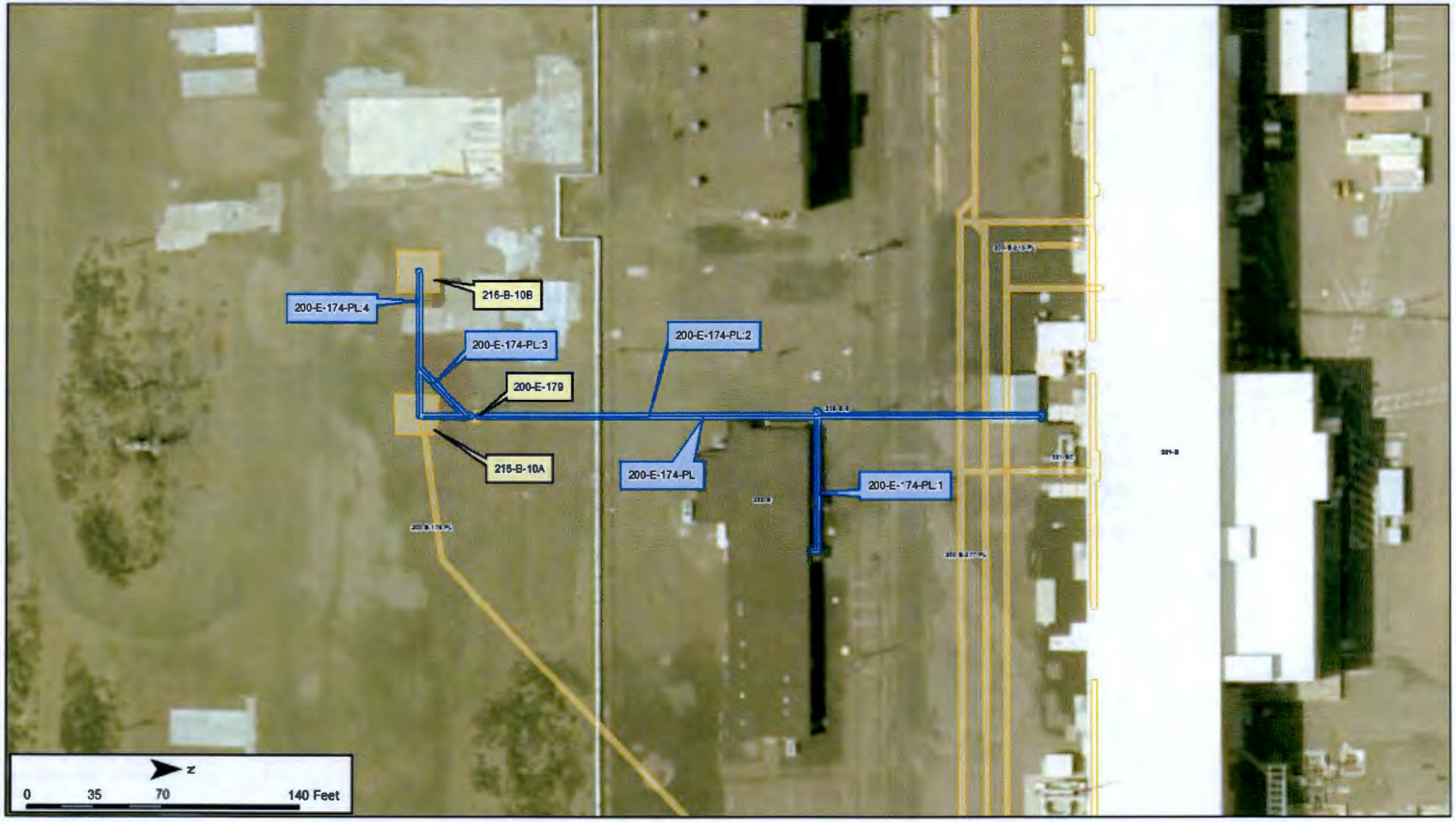
Misc./Other Relevant Information

- Curies inventory for the 216-B-10A crib was not included as relevant characterization due to waste stream influence from 200-E-175-PL

Site Interfaces

Origin/Termination	Site Intersects
• 222-B (facility)	• 200-E-175-PL
• 221-BC (facility)	• 200-E-277-PL
• 216-B-10A	• 200-E-179
• 216-B-10B	• 216-B-6

Scoping Summary: 200-E-174-PL



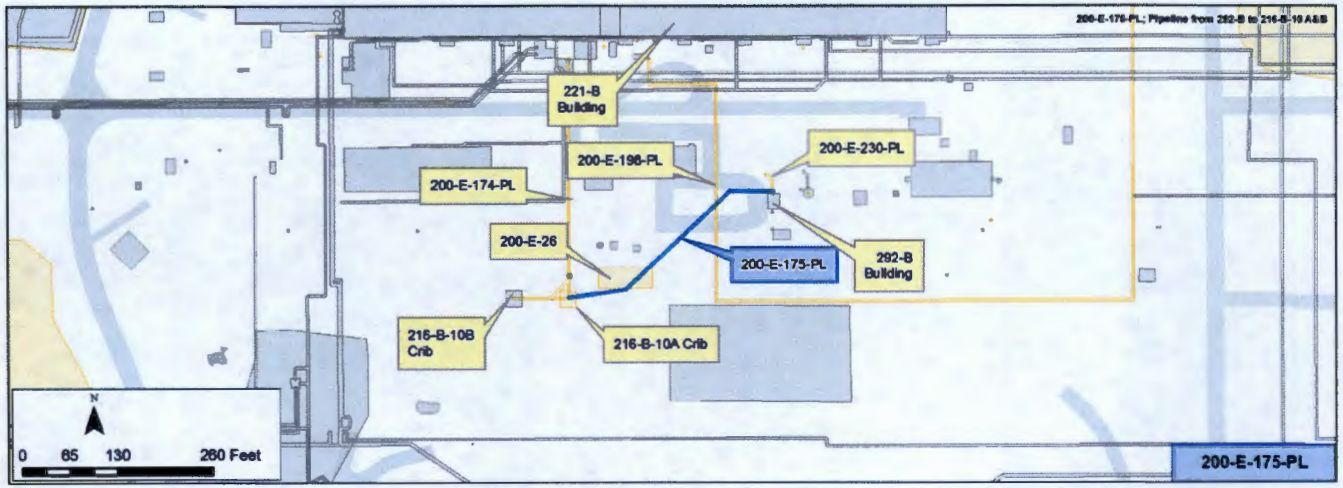
Scoping Summary: 200-E-175-PL

History

The 200-E-175-PL waste site is an inactive underground drain line from the 292-B Building's floor drain to the 216-B-10-A Crib.

The pipeline was constructed in 1949 and abandoned in 1974, when the pipe was capped at the north side of the 292-B Building.

The 216-B-10-A Crib was de-activated in 1958. Waste was re-routed to the 216-B-10-B Crib via a tie-in with 200-E-174-PL.



Construction

- Length: 328 ft
- Diameter: 6 in. (Vitrified Clay), 3.5 in. (Stainless Steel)
- Composition: Vitrified Clay Pipe and Stainless Steel
- Direct Buried
- Gravity Flow
- Depth: 7 ft - 10 ft bgs
- Calculated Volume: 120 gal

Features of Interest

- Floor Drain: 6 in.
- Reducer: 6 in. to 3.5 in.
- Transition: VCP to SS
- Riser: 6 in., capped for future use
- Bends (2)

Waste Streams

- Laboratory and Stack Drain wastes: acidic, and contains transuranics and fission products

Site Interfaces

Origin/Termination

Facility/Building

- 292-B (origin)

200-EA-1

- 216-B-10-A (termination)

Site Intersects

200-EA-1

- 200-E-26 (Diesel release unrelated to pipeline)

200-IS-1

- 200-E-230-PL
- 200-E-198-PL
- 200-E-174-PL

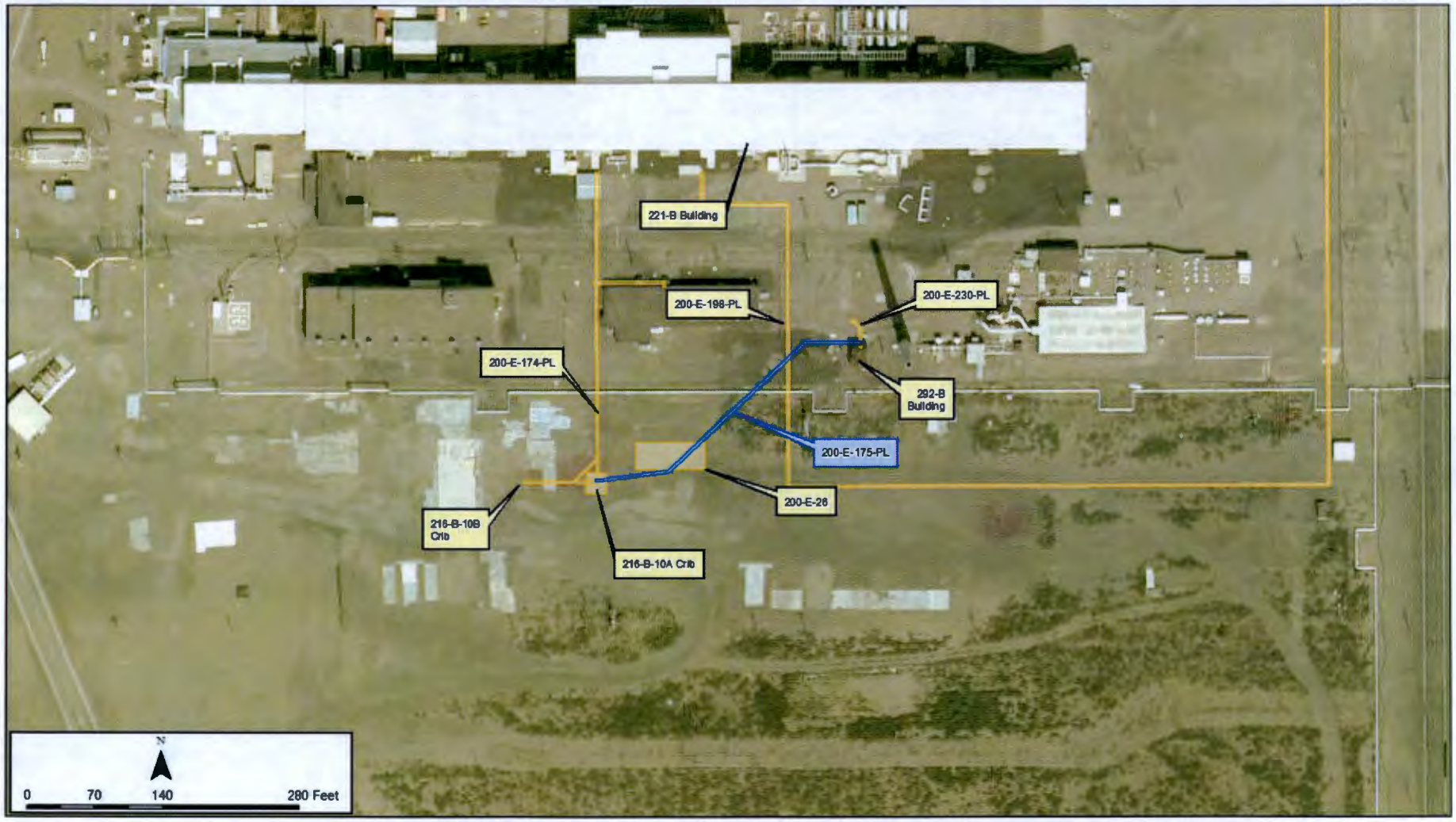
Relevant Characterization

- No direct characterization data for this pipeline was located
- Based on data from the 216-B-10-A and 216-B-10-B Cribs, isotopes likely to be discovered in this pipeline include: Sr-90, Tc-99, Cs-137, and U

Misc./Other Relevant Information

- None identified

Scoping Summary: 200-E-175-PL



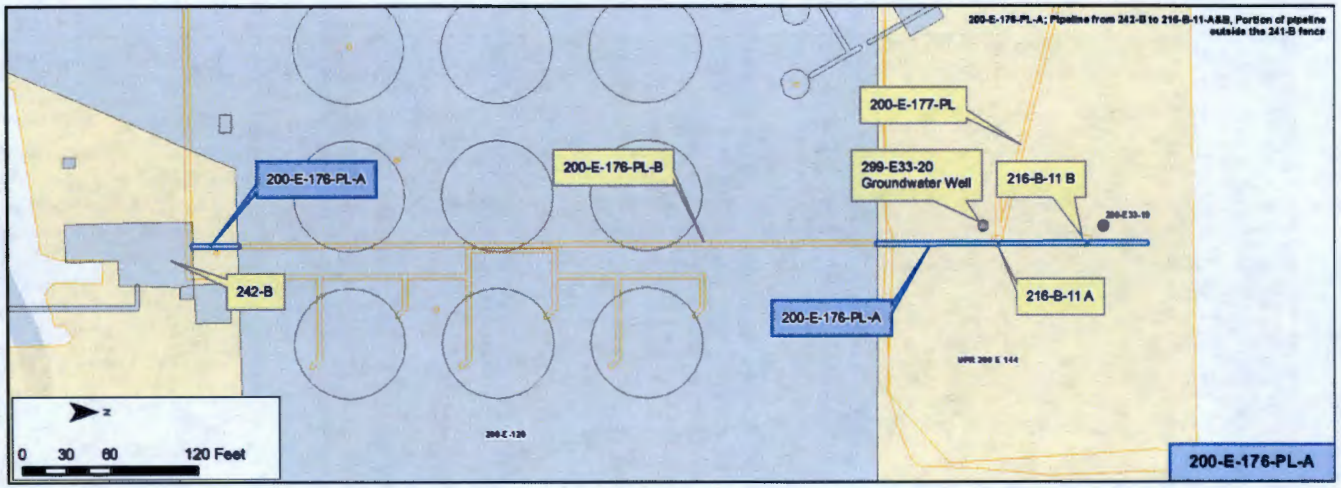
Scoping Summary: 200-E-176-PL-A

History

The 200-E-176-PL-A waste site is an inactive underground pipeline that was used to transfer process condensate from the 242-B Evaporator Building to the 216-B-11A and 216-B-11B reverse wells. The majority of the pipeline is located inside the 241-B Tank Farm fence and is not part of this waste site (200-E-176-PL-B).

The 200-E-176-PL-A is the portion of the pipeline outside of the 241-B Tank Farm fence and consists of two segments. The southern segment is a 30 foot run from the 242-B Evaporator Building to the 241-B fence line. The northern segment starts at the 241-B fence line and extends 181.5 feet to the 216-B-11A and the 216-B-11B wells.

The pipeline was constructed in 1951 and transferred waste until 1954. The pipeline was then blanked and capped at the exit of the 242-B Evaporator Building.



Construction

- Diameter: 3 in.
- Material: Carbon Steel
- Length: 212 ft
- Direct Buried
- Gravity Pipeline
- Depth: 3.5 to 12 ft
- Calculated Volume: 78 gal

Features of Interest

- None

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Characterization of 216-B-11A&B wells include:
  - 1998 radionuclides (curies): 1.62E+00 of Sr-90, 1.14E-10 of Cs-134, 6.39E-08 of Cs-135, 1.73E+01 of Cs-137, 4.53E-03 of U Gross
  - 2001 logging of 299-E33-20, which monitors the wells detected 40 pCi/g of Cs-137 at 8 and 88 ft
  - Both wells also contain waste from 200-E-177-PL

Waste Streams

- Process condensate
- Waste is described as low salt neutral to basic containing Cs-137, Sr-90, Ru-106, 0.4 grams of plutonium, and 14 kg of uranium
- An estimated 7,820,00 gallons of waste was transferred through the pipeline

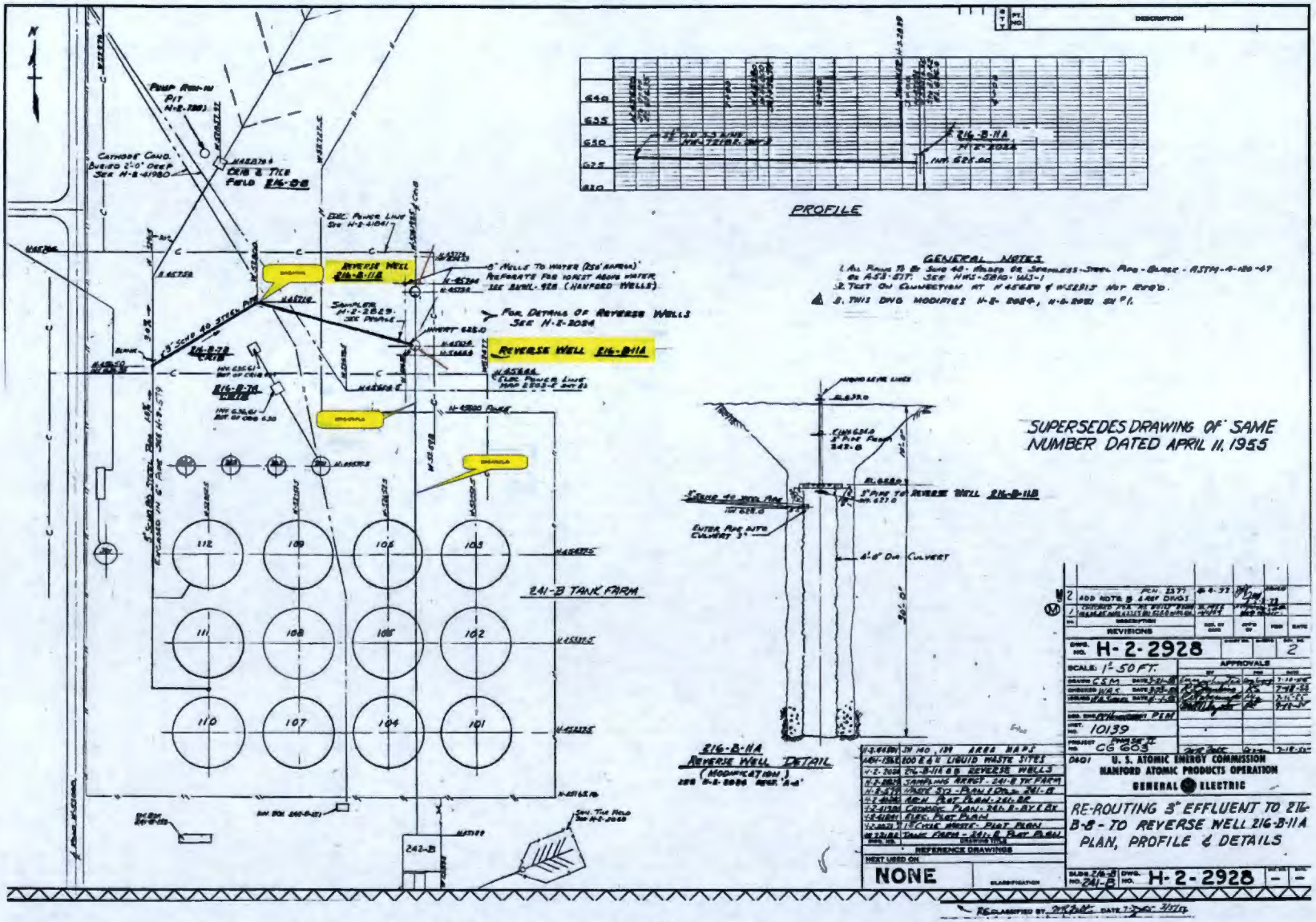
Misc./Other Relevant Information

- The figure on page 3 confirms 216-B-11-A and 216-B-11-B as being reverse wells, not cribs (1955)

Site Interfaces

Origin/Terminations	Sites That Intersect
•242-B (facility)	200-IS-1 •200-E-177-PL
200-DV-1 •216-B-11-A •216-B-11-B	200-EA-1 •UPR-200-E-144
	No Operable Unit •200-E-176-PL-B

Scoping Summary: 200-E-176-PL-A


PROFILE
GENERAL NOTES
REVERSE WELL 216-B-11B
REVERSE WELL 216-B-11A
FOR DETAILS OF REVERSE WELLS SEE H-2-2024
241-B TANK FARM
216-B-11A REVERSE WELL DETAIL
SUPERSEDES DRAWING OF SAME NUMBER DATED APRIL 11, 1955
H-2-2928
SCALE: 1" = 50 FT.
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
RE-ROUTING 3" EFFLUENT TO 216-B-8 - TO REVERSE WELL 216-B-11A PLAN, PROFILE & DETAILS
NEXT USED ON
NONE

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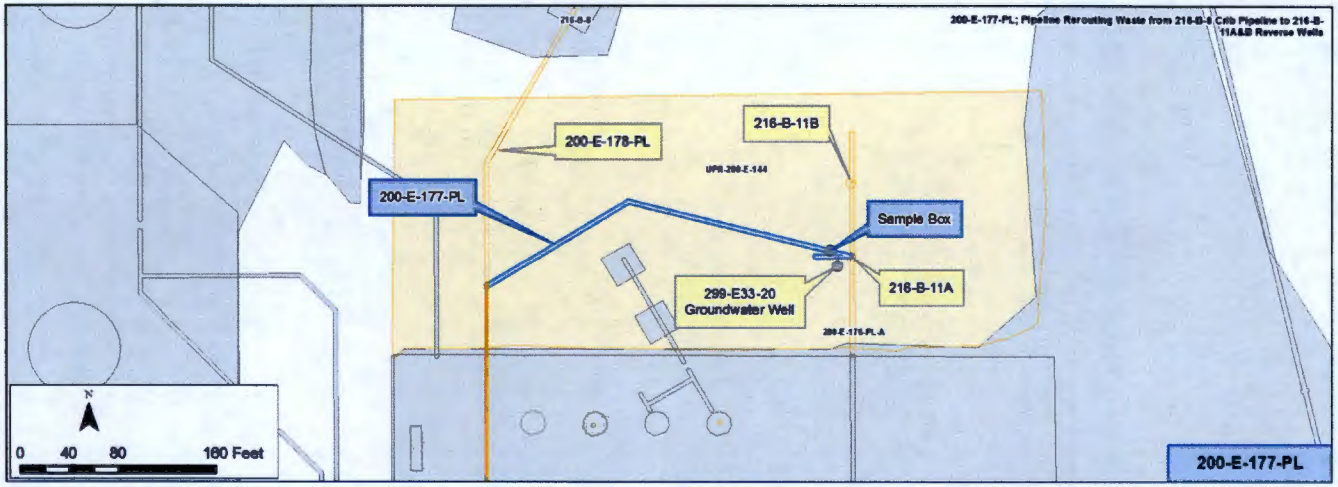
Scoping Summary: 200-E-177-PL

History

The 200-E-177-PL waste site is an inactive underground process sewer pipeline that rerouted 241-B-110 Tank effluent from 200-E-178-PL to the 216-B-11A and 216-B-11B Reverse Wells. The 241-B-110 Tank is the first in a three-tank cascade flow series with 241-B-111 and 241-B-112.

200-E-177-PL was constructed and connected to 200-E-178-PL in 1955. The operational end year for the pipeline can be correlated to when the last of the tanks (241-B-112) was removed from service in 1977. The 216-B-11A and 216-B-11B wells were backfilled in 1992.



Construction

- Total Length: 347 ft
- Diameter: 3 in.
- Composition: Carbon steel
- Flow Method: Gravity
- Direct Buried
- Encasement: None
- Cathodic Protection: None
- Depth: 13 ft bgs at the 216-B-11A well
- Calculated Volume: 127 gal

Features of Interest

- Above ground shielded sample box over a flange in the pipeline, approximately 20 ft west of the 216-B-11A well (see figure pg. 3)
- Inverse elevation at the connection to 200-E-178-PL is 627 ft (grade el. not located)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Characterization of 216-B-11A&B wells include:
  - 1998 radionuclides (curies): 1.62E+00 of Sr-90, 1.14E-10 of Cs-134, 6.39E-08 of Cs-135, 1.73E+01 of Cs-137, 4.53E-03 of U Gross
  - 2001 logging of 299-E33-20, which monitors the wells detected 40 pCi/g of Cs-137 at 8 ft and 88 ft
  - Both wells also contain the 200-E-176-PL-A&B waste

Waste Streams

- 241-B-110/111/112 tanks received:
  - Bismuth phosphate first and second cycle waste supernatant from the 221-B
  - Cell 5-6 drainage from 221-B
  - Decontamination waste from the shutdown of 221-B and attendant liquid waste from 224-B
  - Ion exchange, evaporator bottoms, and tank solidification waste
  - Fission products, PUREX waste, cesium recovery waste

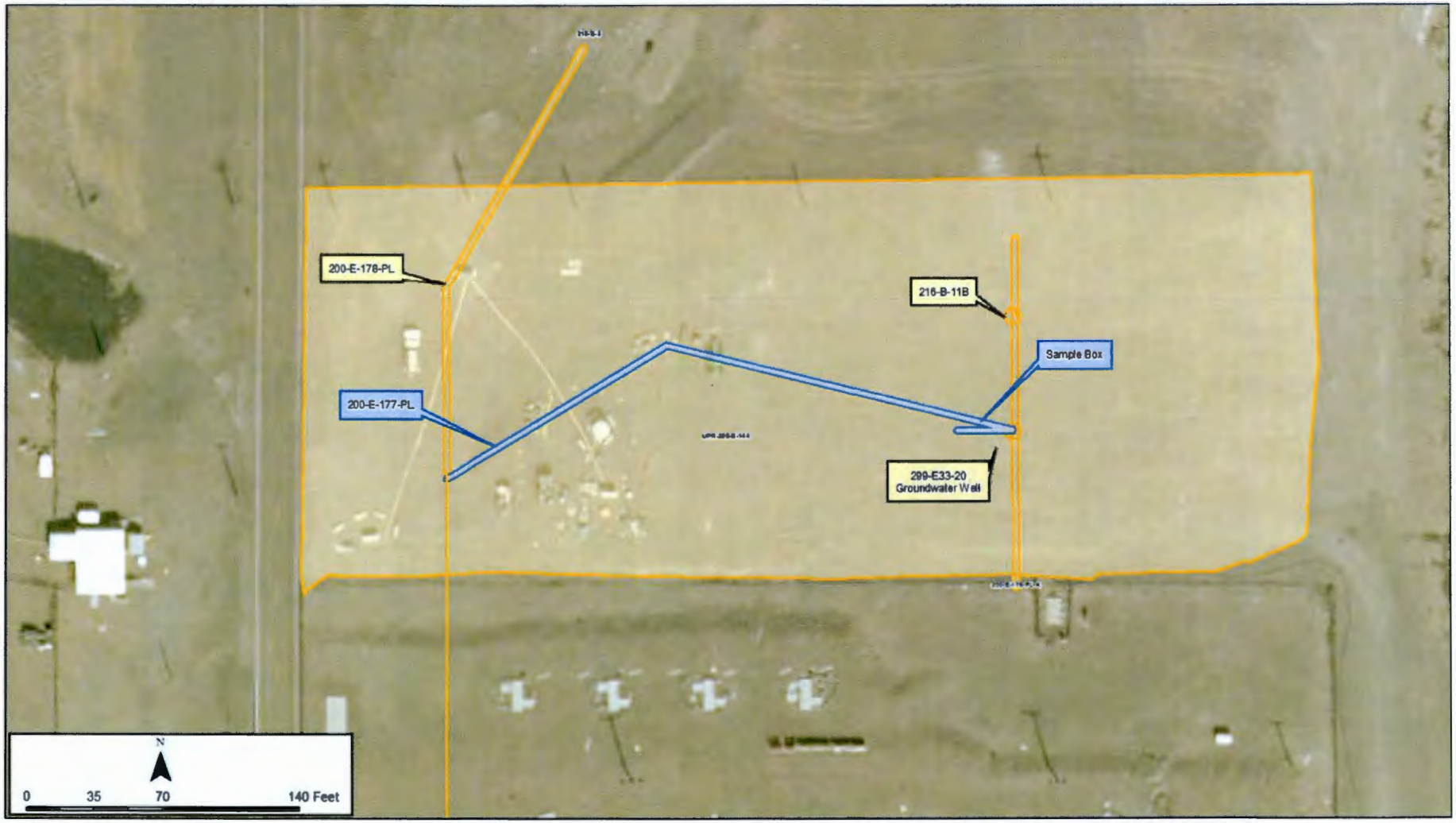
Misc./Other Relevant Information

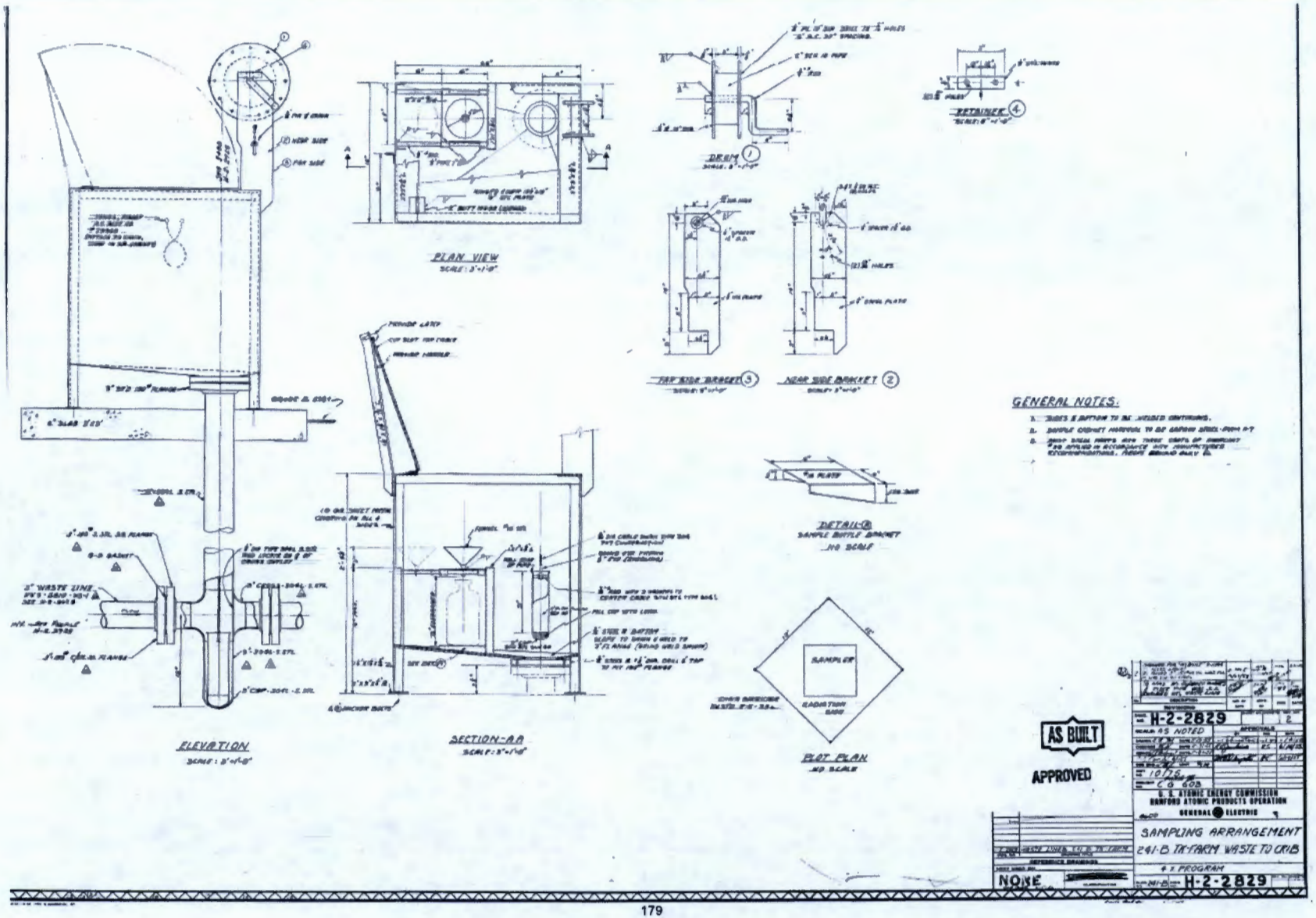
- Figure on page 4 confirms 216-B-11A and 216-B-11B as reverse wells, not cribs (1955)

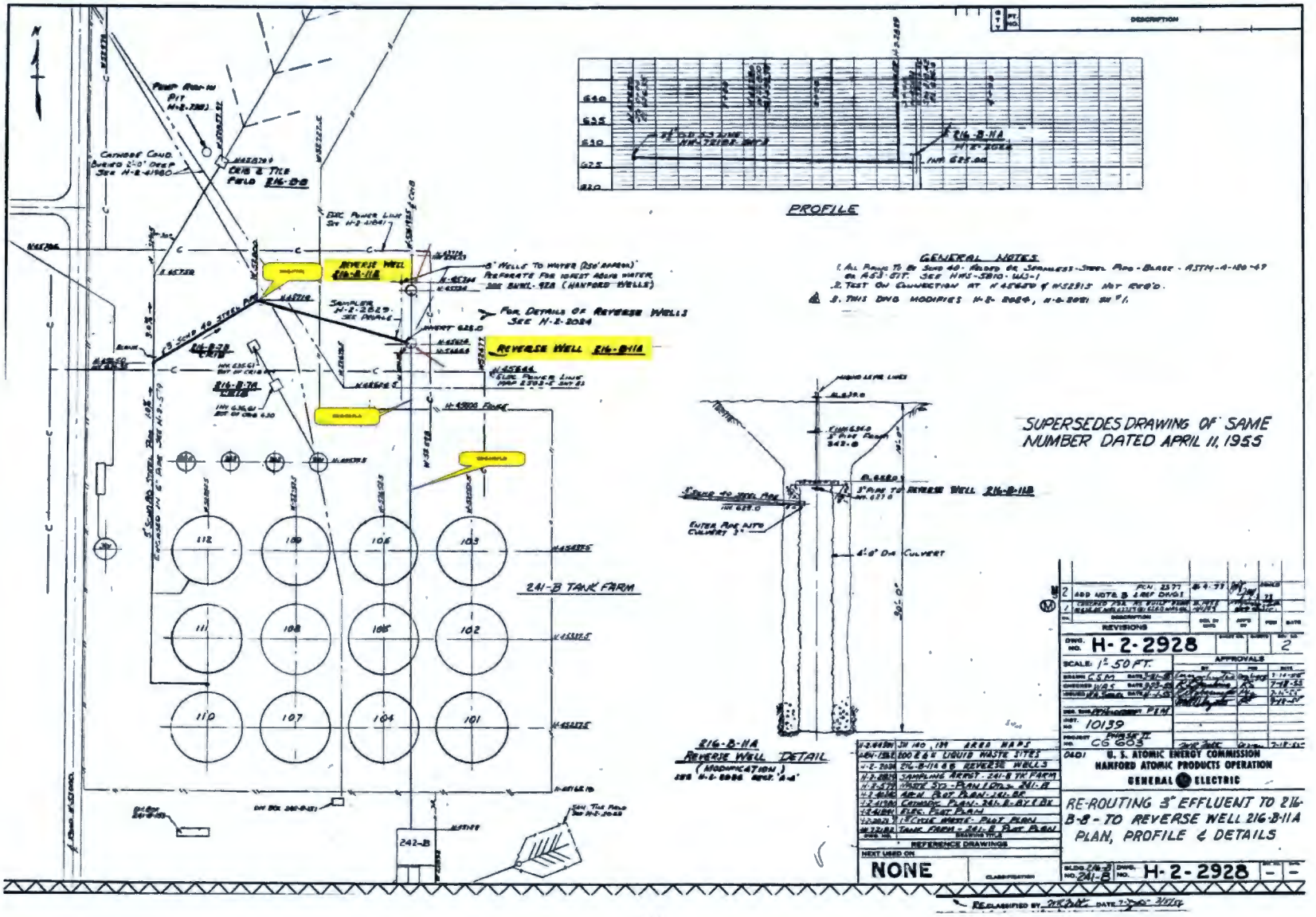
Site Interfaces

Origins/Terminations	Site Intersects
200-IS-1	200-EA-1
• 200-E-178-PL	• UPR-200-144
200-DV-1	200-IS-1
• 216-B-11A&B	• 200-E-176-PL-A

Scoping Summary: 200-E-177-PL




PLAN VIEW
SCALE: 3"=1'-0"
DRUM 1
RETAINER 4
FAR SIDE BRACKET 3
NEAR SIDE BRACKET 2
GENERAL NOTES:
DETAIL-B
SAMPLE BOTTLE BRACKET
NO SCALE
ELEVATION
SCALE: 3"=1'-0"
SECTION-AA
SCALE: 3"=1'-0"
SAMPLER
RADIATION GUARD
PLOT PLAN
NO SCALE
AS BUILT
APPROVED
H-2-2829
SCALE: AS NOTED
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
SAMPLING ARRANGEMENT
241-B TK-FARM WASTE TO CRIB
NONE
H-2-2829


PROFILE
GENERAL NOTES
SUPERSEDES DRAWING OF SAME NUMBER DATED APRIL 11, 1955
REVERSE WELL 216-B-11B
REVERSE WELL 216-B-11A
241-B TANK FARM
216-B-11A REVERSE WELL DETAIL (MODIFICATION)
RE-ROUTING 3" EFFLUENT TO 216-B-8 - TO REVERSE WELL 216-B-11A PLAN, PROFILE & DETAILS
DWG. NO. H-2-2928
SCALE: 1" = 50 FT.
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
NEXT USED ON
NONE
REFERENCE DRAWINGS

Scoping Summary: 200-E-178-PL

History

The 200-E-178-PL waste site is the abandoned portion of an inactive underground process sewer pipeline that carried effluent from the 241-B-110 Tank to the 216-B-8 Crib.

The 241-B-110 tank is the first in a three-tank cascade flow series with 241-B-111 and 241-B-112. The majority of the pipeline is located inside the 241-B Tank Farm fence and is not part of this waste site.

The start date of the pipeline can be correlated to the crib's in-service date, 1945. In 1955, the pipeline was cut and capped just outside of the tank farm fence and the section from the cap to the 216-B-8 Crib was abandoned.

The effluent was re-routed to the 216-B-11A and 216-B-11B reverse wells via 200-E-177-PL.

Construction

- Total Length: 241 ft
- Diameter: 3 inches
- Composition: Carbon steel
- Flow Method: Gravity
- Depth: 16 ft at crib entrance
  - Inverse elevation at the cut/cap is 627 ft (grade el. not located)
- Direct buried
- Encasement: 6 inch pipe-in-pipe
- Cathodic Protection: None
- Calculated Volume: 88 gal

Features of Interest

- None

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- 216-B-8 Crib:
  - 1992 radiological survey detected surface contamination of 6,000 dis/min beta and one tumbleweed with 30,000 dpm/min
  - 1998 radionuclide inventory included (curies): 4.50E+00 of Sr-90, 2.39E-08 of Cs-134, 3.52E-05 of Cs-135, 1.61E+01 of Cs-137, 1.51E-02 of U Gross

Waste Streams

- 216-B-8 crib and 241-B-110/111/112 tanks received:
  - Bismuth phosphate first and second cycle waste supernatant from the 221-B
  - Cell 5-6 drainage from 221-B
  - Decontamination waste from the shutdown of 221-B and attendant liquid waste from 224-B
  - Ion exchange waste, evaporator bottoms, and tank solidification waste
  - Fission products waste, PUREX waste, cesium recovery waste

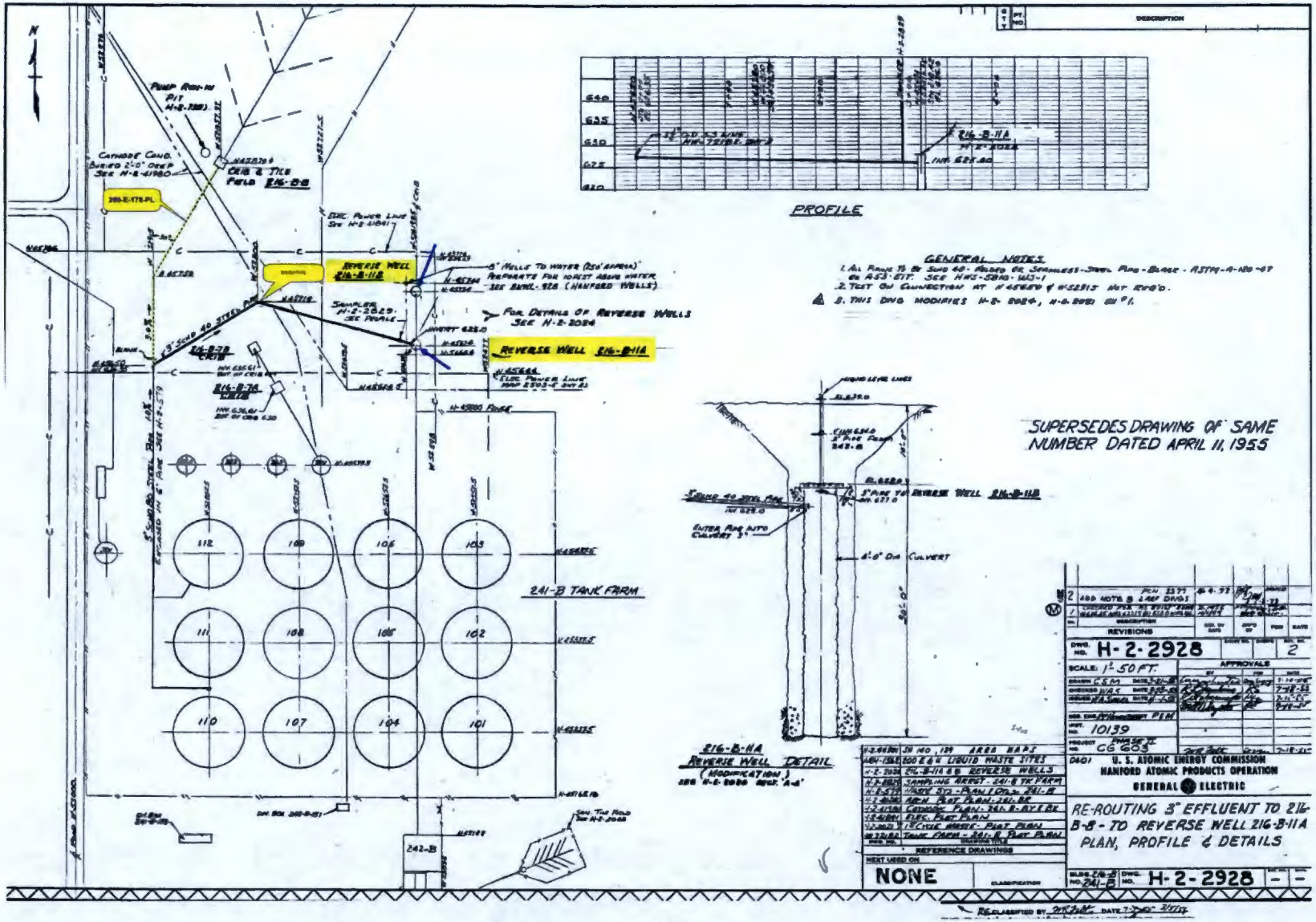
Misc./Other Relevant Information

- 216-B-8 crib received 7,190,000 gal of waste between April 1945 and December 1951
- Figure on page 3 confirms 216-B-11A and 216-B-11B as being reverse wells, not cribs (1955)

Site Interfaces

Origins/Terminations	Sites that Intersect
WMA B/BX/BY • 241-B-110 tank	200-DV-1 OU • 200-E-45
200-DV-1 OU • 216-B-8 crib	200-EA-1 OU • UPR-200-E-144
200-IS-1 OU • 200-E-177-PL	

Scoping Summary: 200-E-178-PL


PROFILE
GENERAL NOTES
SUPERSEDES DRAWING OF SAME NUMBER DATED APRIL 11, 1955
REVERSE WELL 216-B-11B
REVERSE WELL 216-B-11A
241-B TANK FARM
216-B-11A REVERSE WELL DETAIL
RE-ROUTING 3" EFFLUENT TO 216-B-8 - TO REVERSE WELL 216-B-11A PLAN, PROFILE & DETAILS
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
H-2-2928
NONE

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Scoping Summary: 200-E-179

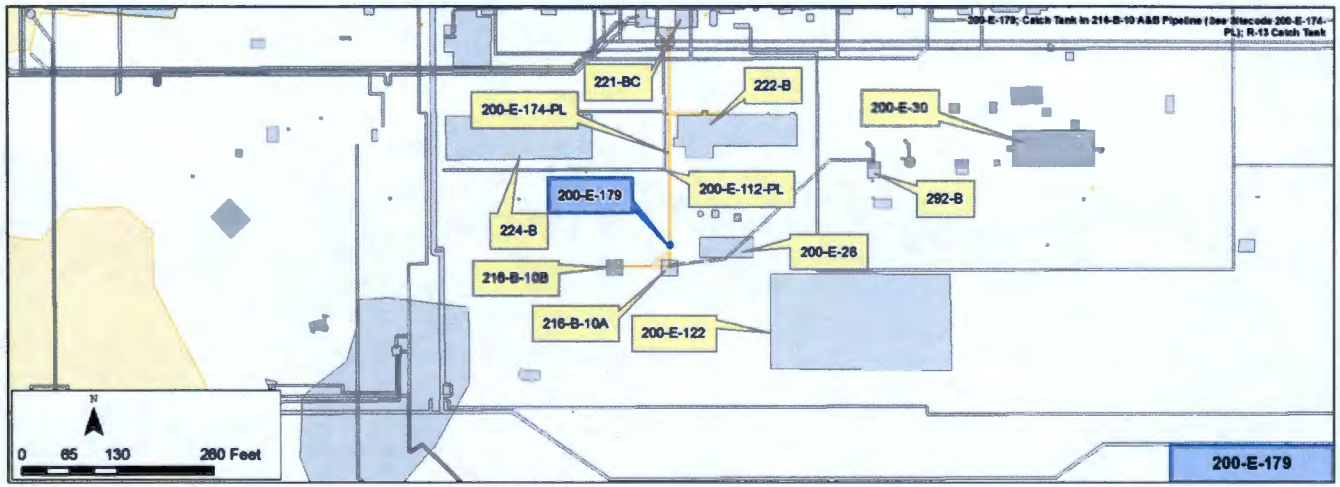
History

The 200-E-179 waste site is a small in-line catch tank that could be used for retaining decontamination water from sanitary facilities in the 221-BC Building.

The 200-E-179 catch tank was in service from approximately 1968 to 1974. This catch tank is located near the 216-B-10A Crib on the 200-E-174-PL pipeline from Building 221-BC.

In about 1968, the Building 221-BC decontamination sink and shower drain was connected to 200-E-174-PL and ran to 216-B-10B Crib, bypassing the 216-B-10A Crib which was isolated during the pipeline work (H-2-37693). Records do not indicate the volume of waste received by or currently within 200-E-179.

The tank was isolated around 1974 when the 200-E-174-PL pipeline connecting to the 216-B-10B Crib was capped at the 221-BC building source and at various points along the pipeline (H-2-34711). Access is limited by posts and chains.



Construction

- Dimensions - 48 in. high 42 in. diameter, vertical
- Composition: Steel
- Tank penetrations – N/A
- Connections – N/A
- Depth: 11 ft bgs to top of tank, 15 ft bgs to bottom of tank
- Capacity - 250 gal

Features of Interest

- Catch Tank 200-E-179 has two steel risers and a valve handle extending above grade

Relevant Characterization

- Current State: Tank is isolated
- The area above the tank is surrounded by posts and a chain to restrict access

Waste Streams

- Tank received drainage from the 221-BC Decontamination Sink and Shower Drain directed to the 216-B-10B Crib via 200-E-174-PL
- Records do not indicate the type of waste received by 200-E-179

Misc./Other Relevant Information

Building 221-BC is also referred to as the R13 SWP Change Room. The change room contained the following fixtures:

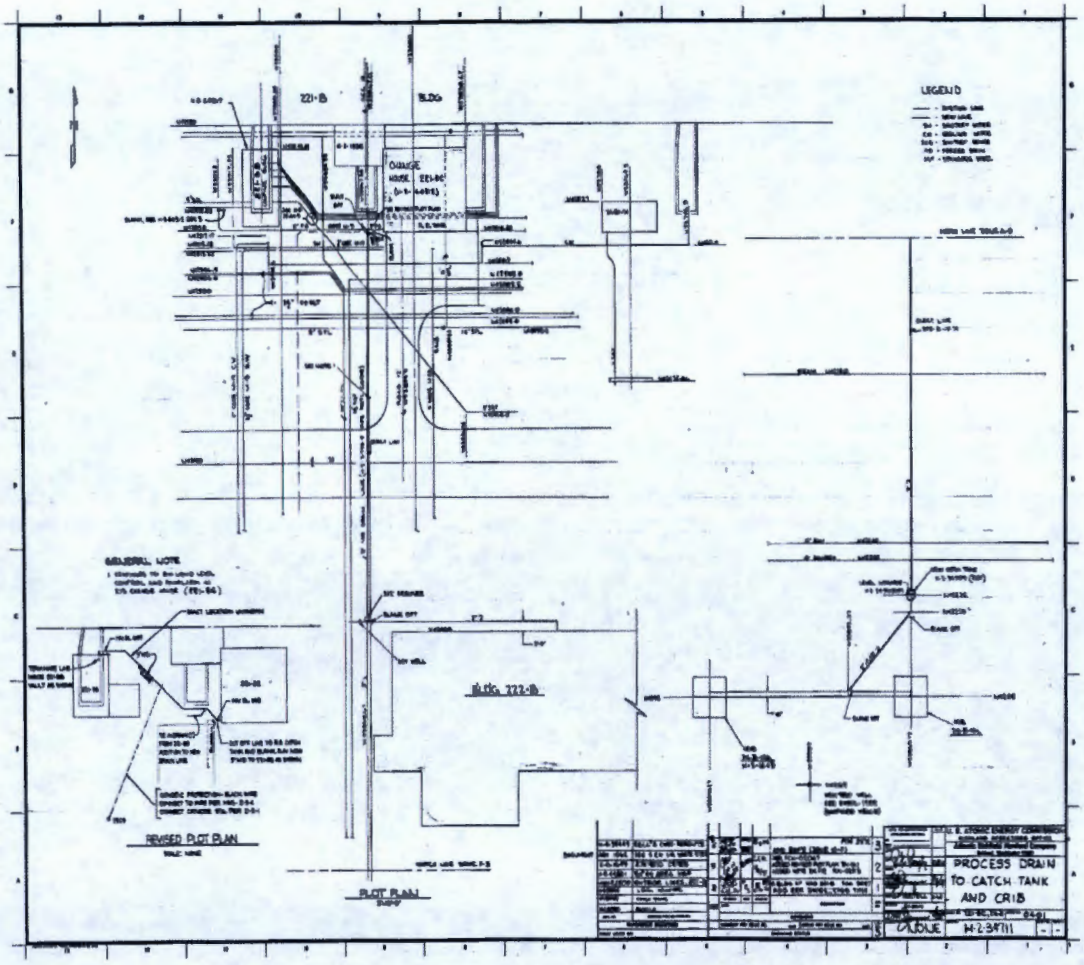
- 2 showers
- 3 sinks
- 1 toilet
- 1 urinal

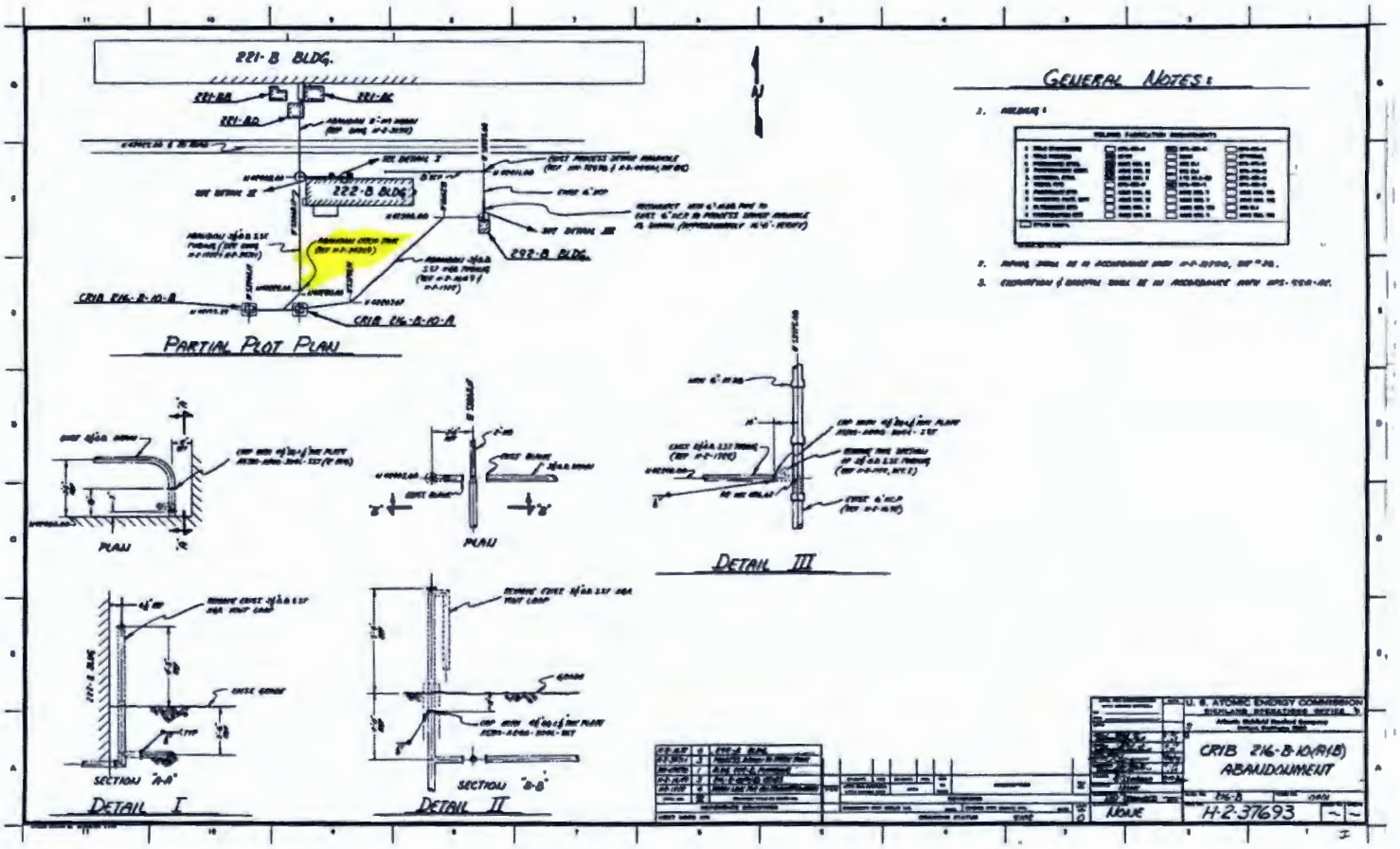
(Floor Plan from H-2-60313 Sht. 1, rev 1)

Site Interfaces

Origin/Termination	Site Interfaces
200-IS-1	
• 200-E-174	N/A

221-BC
224-B
200-E-112-PL
222-B
292-B
200-E-174-PL
200-E-30
200-E-179
200-E-26
200-E-122
216-B-10A
216-B-10B
N
0
70
140
280 Feet


221-B
BLDG.
LEGEND
GENERAL NOTE
BLDG. 222-B
REVISED PLOT PLAN
PLOT PLAN
PROCESS DRAIN
TO CATCH TANK
AND CRIB
H-2-39111


221-B BLDG.
222-B BLDG.
292-B BLDG.
CRIB 216-B-10-B
CRIB 216-B-10-A
PARTIAL PLOT PLAN
GENERAL NOTES:
PLAN
PLAN
DETAIL III
SECTION "A-A"
DETAIL I
SECTION "B-B"
DETAIL II
U. S. ATOMIC ENERGY COMMISSION
CRIB 216-B-10(R1B)
ABANDONMENT
NONE
H-2-37693

Scoping Summary: 200-E-182-PL

History

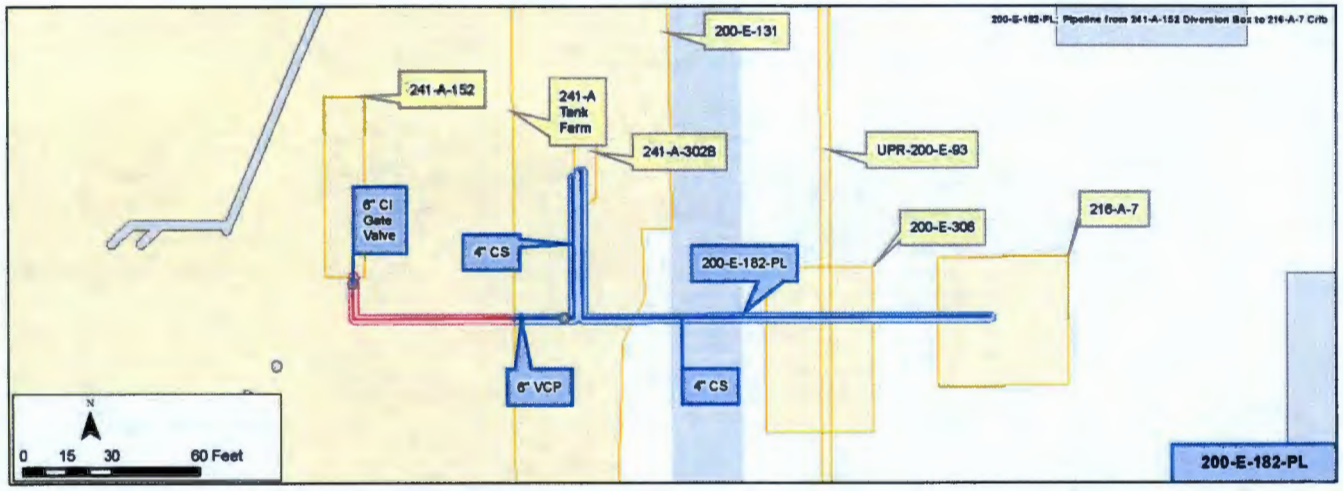
The 200-E-182-PL waste site is an inactive radioactive process sewer. The line originally (circa 1956) extended east from the 241-A-152 Diversion Box inside the A-Tank Farm to the 216-A-7 Crib.

In 1959, the effluent line to the crib was blanked, and the line from the 241-A-152 Diversion box was re-routed to the 241-A-302B Catch Tank; it remained in use through 1966.

The 241-A-152 Diversion Box was in use from 1956 to May-1980. Sometime between 2001 and 2007, it was weather-proofed with foam-covered cover blocks.

The 241-A-302B Catch Tank was isolated in 1985, and interim stabilized in 1990. The surface area surrounding this structure has since been sprayed with shotcrete. This tank, and its piping, lies outside the A-Tank Farm fence.

The 216-A-7 Crib has been targeted for remediation in place with an enhanced soil cover, as per the 2011 Record of Decision. This 15 ft soil cover above the crib would also effectively bury a portion of the 200-E-182-PL waste site's pipe at a depth greater than 15 ft bgs.



Construction

- Length: 324 ft
- Diameter: 4 in. Cast Iron to 6 in. VCP to 4 in. Carbon Steel
- Encasement: Direct Buried; a portion of the pipe beneath roadway is in concrete cradle
- Depth: 10 ft bgs
- Calculated Volume: 330 gal
- Cathodic protection on carbon steel, only

Features of Interest

- A riser and electrical box are visible where the 241-A-302B Catch Tank is located; a staircase is present to provide access to the tank surface

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Based on data from 216-A-7 Crib, the following isotopes are expected to be found in this system: Sr-90, Tc-99, Cs-137 and U

Waste Streams

- This waste site line transferred Pump pit/catch tank drainage from the 241-A-152 diversion box. It transferred TBP-Soltrol from PUREX
- Additional waste transferred from the 241-A-152 Diversion Box included fuel decladding waste, organic wash waste, sump waste, and laboratory waste

Misc./Other Relevant Information

- There are Underground Radioactive Material signs just west of the 216-A-7 Crib around UPR-200-E-93; however a rad survey of the surface conducted in 2015 found nothing above background in this area
- The 241-A-302B Catch Tank was featured in an Unusual Occurrence Report in 1989, due to liquid level variations in the tank

Site Interfaces

Origin/Termination

WMA A/X
- 241-A-152 Diversion Box
- 241-A-302B Catch Tank (*Isoloted*)

200-PW-3
- 216-A-7 Crib

Site Intersects

WMA A/X
- 200-E-131

No Operable Unit
- UPR-200-E-93
- 200-E-306

Scoping Summary: 200-E-182-PL

Scoping Summary: 200-E-183-PL

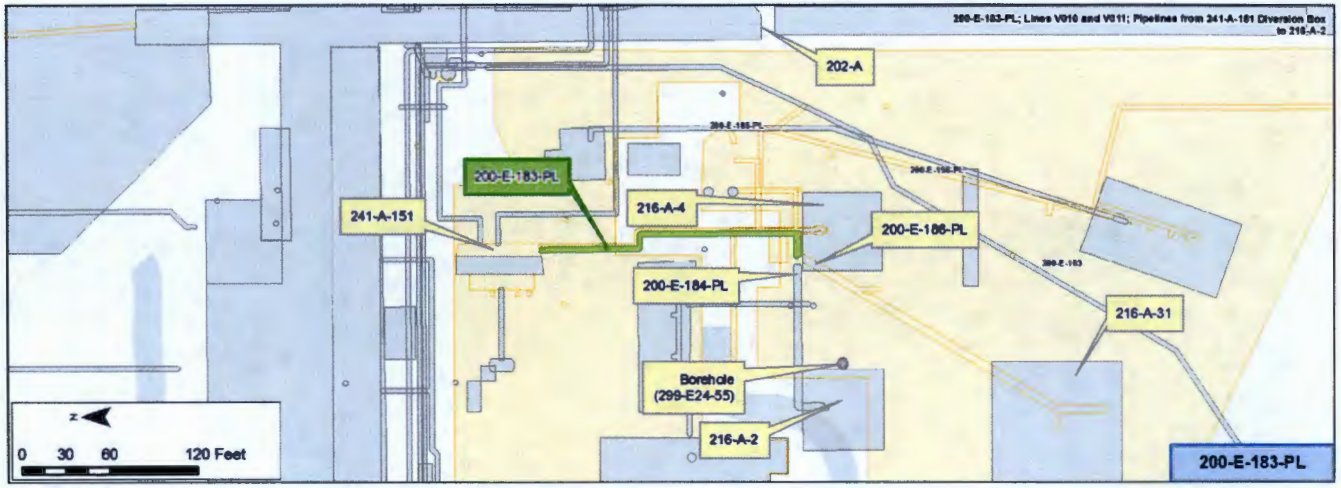
History

The 200-E-183-PL waste site is an inactive underground run of two parallel pipes (V010 and V011) that connect the 241-A-151 Diversion Box to the 216-A-2 and 216-A-31 Cribs, via the 200-E-184-PL and 200-E-186-PL lines, respectively.

From 1956-1963, the lines transferred organic waste to the 200-E-184-PL, which drained to the 216-A-2 Crib, until it reached its design capacityand the lines leading to the crib were cut-and-capped. In 1961 a modified V010 line was inadvertently filled with up to 97.5 gal of waste due to a drawing error. Up to 74.5 gal of waste could remain in 200-E-183-PL, with 23 gal in the 200-E-186-PL line. Line V010, with waste inside, was covered and abandoned in place, leaving only line V011 as active.

In 1963, line V011 was connected to the 200-E-186-PL line, which was used to carry waste into the 216-A-31 Crib from 1964 to 1966.

The V010 and V011 lines are blanked at the 241-A-151 Diversion Box. The 200-E-183-PL origin, termination, and about one third of the line length are within the 200-E-103 footprint. Disposition will need to be coordinated with 291 PUREX facility disposition.



Construction

- Length: 202 ft (each)
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity drained
- Direct Buried
- Depth: 16 ft bgs-to- 20 ft bgs
- Calculated volume: 149 gal (combined)

Features of Interest

- Three 90° elbows in each of the co-located V010 and V011 lines
- The V010 and V011 lines share a trench with the 200-E-185-PL pipelines (i.e., lines V014(1) and V016) for 180 ft starting at the 241-A-151 diversion box and running south

Relevant Characterization

- 1961: A rad survey performed on the exposed V010 stub and found a max dose of 500 r/hr at the line's surface
- 2004: A borehole log 15m to the east of the 216-A-2 crib found maximum concentrations of Cs-137: 4,600 pCi/g at 33.5 ft; Co-60: 4 pCi/g at 36.5 ft; Eu-154: 6 pCi/g at 36.5 ft; 234m-Pa: 500 pCi/g between 37.5 ft and 51.5 ft; and U-235: 35 pCi/g
- 2005: A borehole log in the 216-A-2 crib found maximum concentrations of CS-137: 2.0x10^7 pCi/g at 27.5 ft

Waste Streams

- Carried organic waste associated with the PUREX Plant - Plutonium-Uranium Extraction Process
- Organic waste including NO3, TBP, NPH, and U-Total ran through the pipelines from 1956 to 1963
- From 1964 to 1966 organic waste ran through V011
  - Included TBP, NPH, Cs-137, and U-Total

Misc./Other Relevant Information

- Up to 74.5 gal of waste could remain in the 200-E-183-PL (line V010) waste site, due to a drawing error.

Site Interfaces

Origin/Termination

200-IS-1

- 241-A-151 (Diversion Box) (origin)
- 200-E-184-PL (termination)
- 200-E-186-PL (termination)

Site Intersects

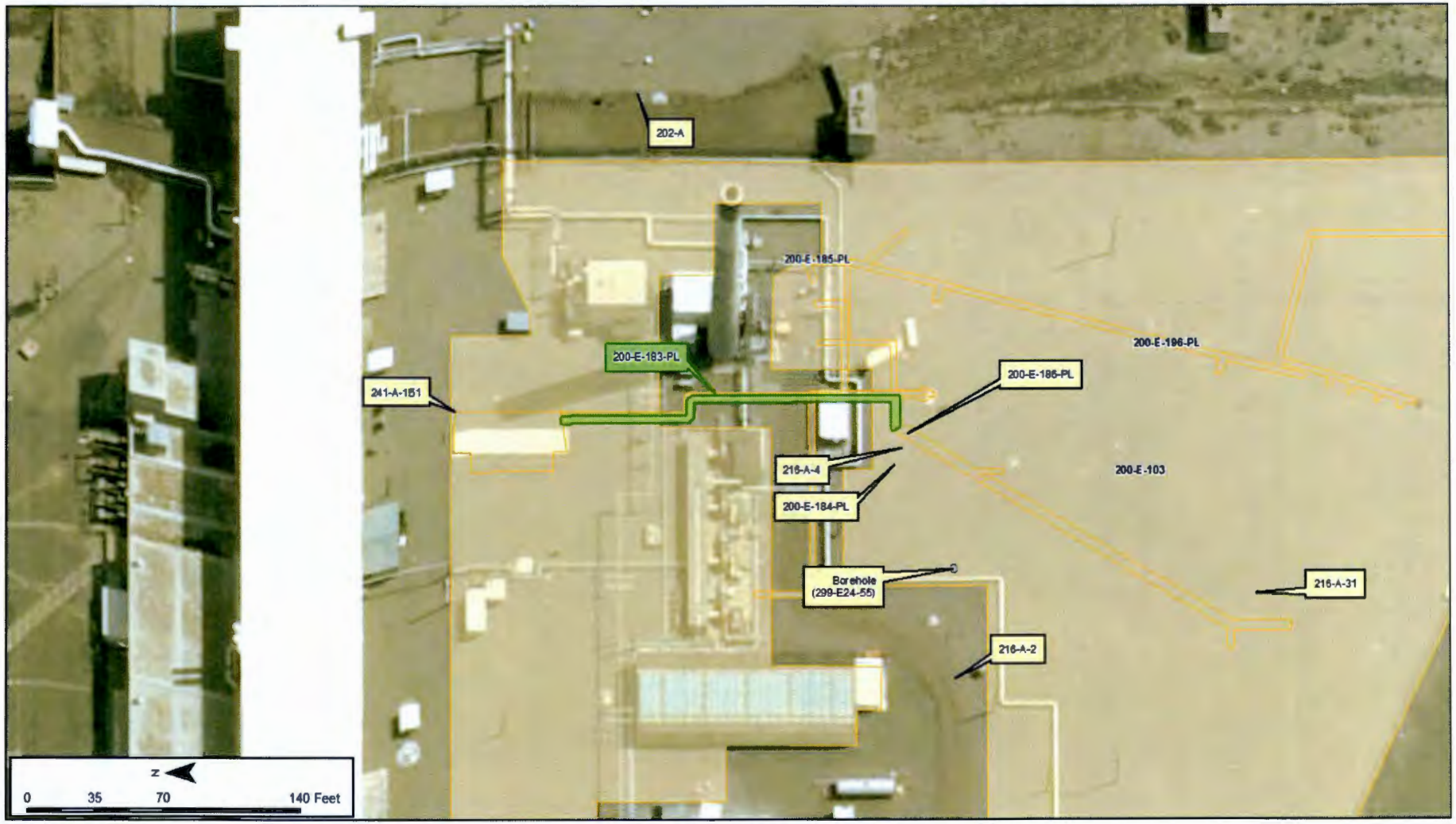
200-IS-1

- 200-E-184-PL
- 200-E-185-PL
- 200-E-186-PL
- 200-E-196-PL

200-EA-1

- 200-E-103 (PUREX Stabilized Area)
- 216-A-4 (Crib)

Scoping Summary: 200-E-183-PL



Scoping Summary: 200-E-184-PL

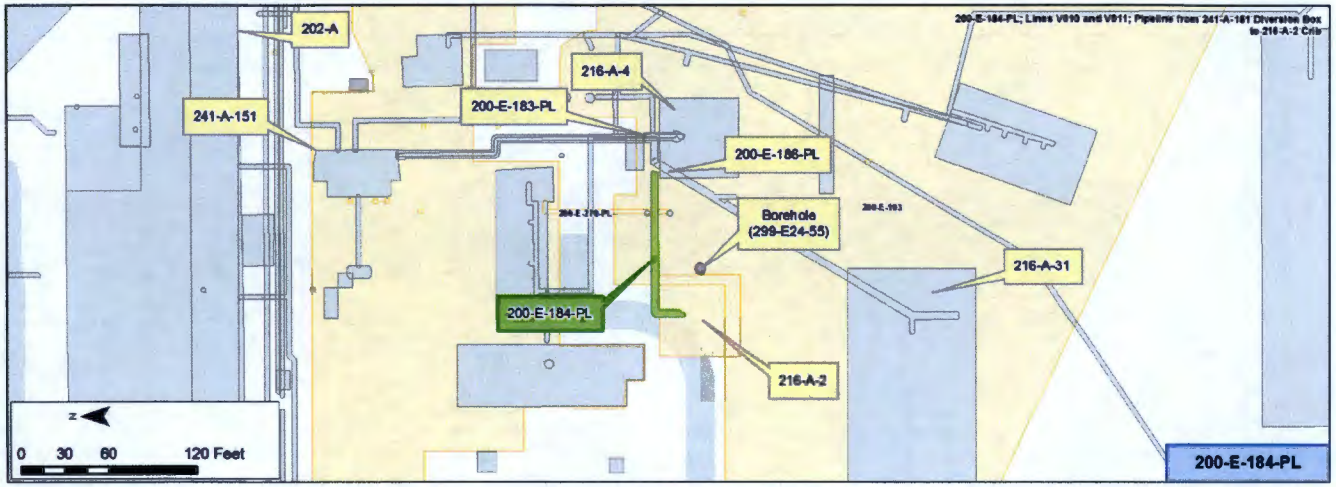
History

The 200-E-184-PL waste site consists of two parallel pipe runs (V010 and V011) that drained organic waste from its junction with the 200-E-183-PL lines into the 216-A-2 Crib.

The system was operational from 1956 to 1963, when the 216-A-2 Crib reached its design capacity and was taken out of service and its two feed lines were cut-and-capped just west of 200-E-186-PL, where the V011 line was re-routed after the 216-A-2 Crib was deactivated.

Line V010 was abandoned in place in 1961 when modifications rendered it un-usable due to a drawing error.

The majority of the 200-E-184-PL waste site is contained within the 200-E-103 footprint. Disposition actions will need to be coordinated with 291 PUREX facility disposition.



Construction

- Length: 120 ft (each)
- Diameter: 4 in.
- Composition: VCP
- Gravity drained
- Encasement: None
- Direct Buried
- Depth: 20 ft bgs
- Calculated Volume: 157 gal

Features of Interest

- One 90° elbow in each line

Waste Streams

- Both pipelines carried Organic waste material associated with PUREX Plant - Plutonium-Uranium Extraction Process
- The waste streams were organic waste material that included nitrate, TBP, NPH, and U-Total

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 200-E-183-PL (origin)	• 200-E-270-PL
200-EA-1	200-EA-1
• 216-A-2 (crib) (termination)	• 200-E-103 (PUREX Stabilized Area)

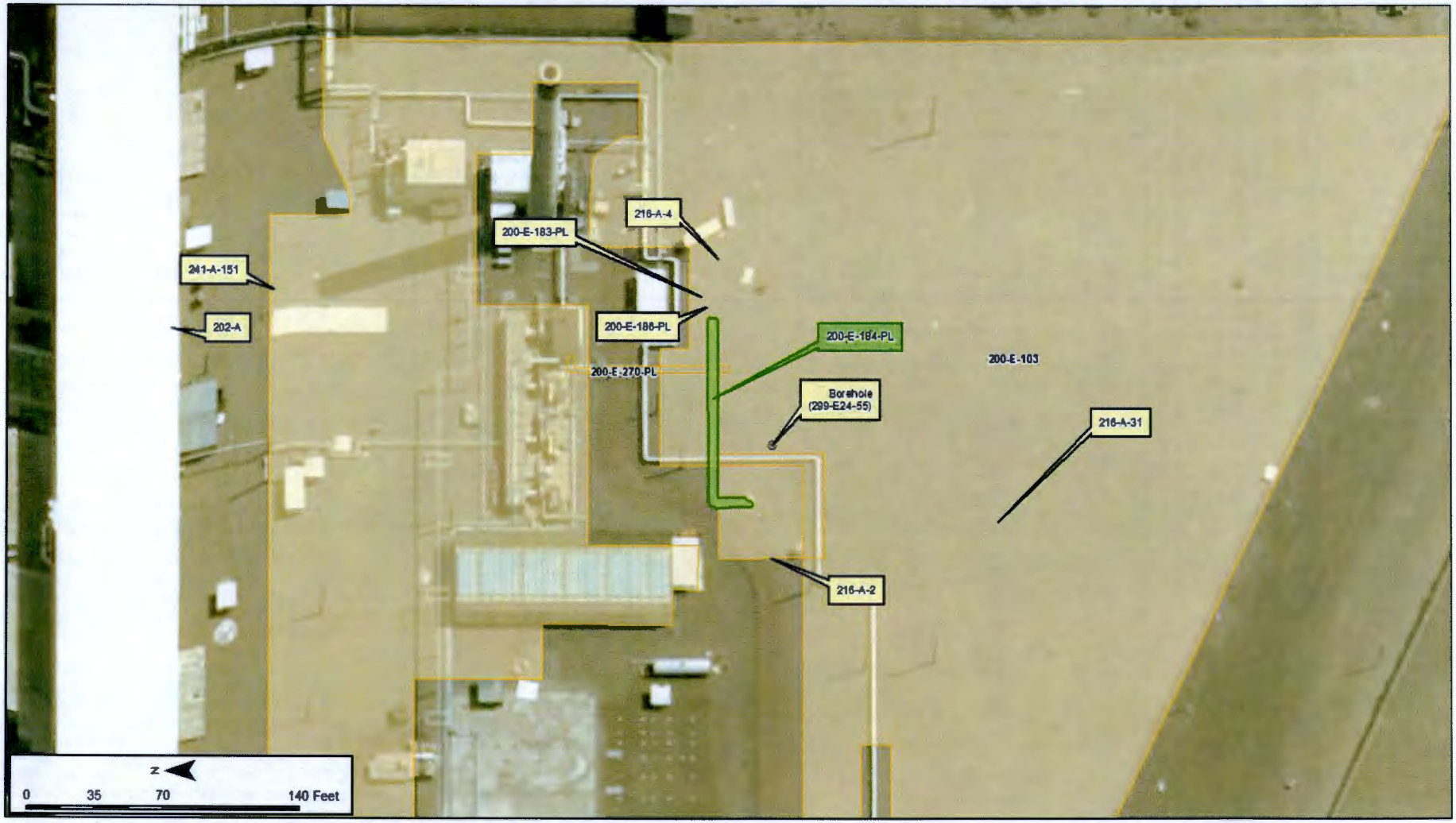
Relevant Characterization

- 2004: A borehole log 15m to the east of the 216-A-2 crib found maximum concentrations of Cs-137: 4,600 pCi/g at 33.5 ft; Co-60: 4 pCi/g at 36.5 ft; Eu-154: 6 pCi/g at 36.5 ft; 234m-Pa: 500 pCi/g between 37.5 ft and 51.5 ft; and U-235: 35 pCi/g between 37.5 ft and 51.5 ft
- 2005: An evaluation of a borehole in the 216-A-2 crib found maximum concentrations of CS-137: 2.0x10^7 pCi/g at 27.5 ft

Misc./Other Relevant Information

- The V011 line was re-routed to connect into the 200-E-186-PL lines leading to the 216-A-31 crib
  - This line was rerouted after the V010 line was abandoned due to a drawing error

Scoping Summary: 200-E-184-PL



Scoping Summary: 200-E-185-PL

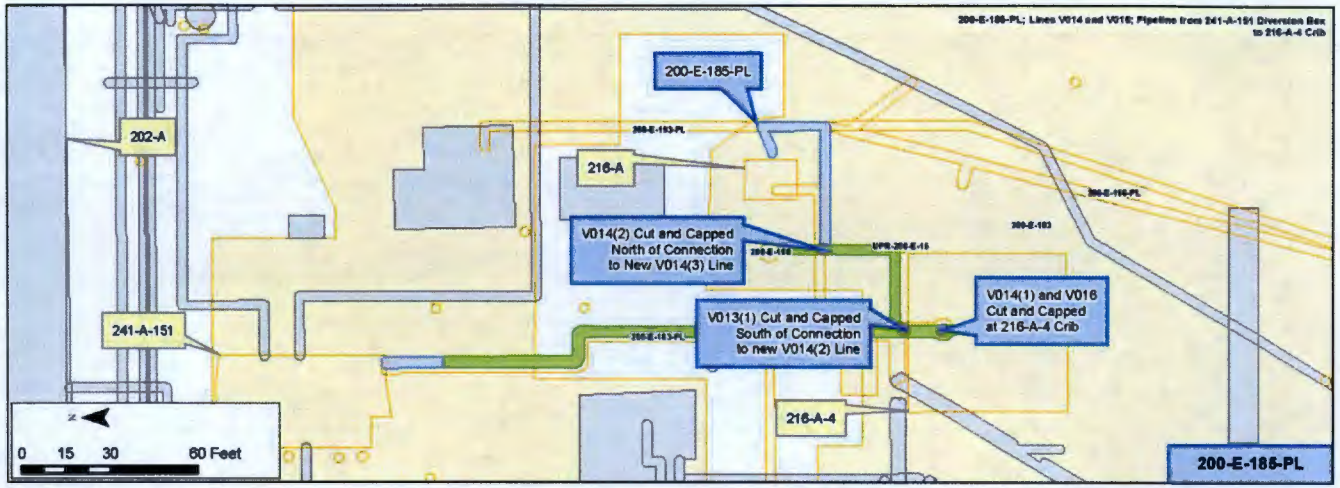
History

The 200-E-185-PL waste site is an inactive underground system that consists of two pipe runs (V014(1) and V016) used to transfer waste associated with the PUREX process from the 241-A-151 Diversion Box to the 216-A-4 Crib.

The lines were constructed in 1955 and share a trench with 200-E-184-PL for 184 ft from the diversion box until 200-E-184-PL splits while the subject waste site runs beside V167 for the last 56 ft into the 216-A-4 Crib. The lines into the 216-A-4 Crib operated for three years until the crib became blocked and was deactivated.

Line V014(1) was then modified twice (subsequent iterations identified as V014(2) and V014(3)). The first modification was to connect the 241-A-151 Diversion Box to the 200-E-190 Catch Tank, and then to connect the 241-A-151 Diversion Box to the 216-A Sample Pit.

The majority of 200-E-185-PL is contained within the 200-E-103 footprint, and disposition actions need to be coordinated with 291 PUREX facility disposition.



Construction

- Length: Combined lines are 542 ft
  - V014(1): 195 ft
  - V016: 195 ft
  - V014(2): 198 ft (only 64 ft of new pipe)
  - V014(3): 88 ft
- Diameter: 4 in.
- Composition: Stainless Steel
- Gravity drained
- Encasement: None
- Direct Buried
- Depth: 16 ft bgs-to-20 ft bgs
- Computed volume: 262 gal (combined)

Features of Interest

- Four 90° elbows, two in each parallel V014(1) and V016 line
- Three 90° elbows between the V014(2) and V014(3) single lines
- One ~70° bend in the modified section of line V014(3)
- Four vertical 90° elbows in V014(3)
- Four cut and cap locations: V014(1) twice, V016, and V014(2)
- Two shared trench runs. Lines V010 and V011 (200-E-183-PL) beginning at the 241-A-151 diversion box for 180ft Line V167 (200-E-196-PL) for the final 45 ft into the 216-A-4 crib and same Double Y connection

Relevant Characterization

- 2004: An evaluation of the 216-A-4 crib found concentrations of Cs-137 up to 2.36 X 10^8 pCi/g at 20 ft depth in a 1 ft band; representative levels are between 10^3 and 10^4 pCi/g were found at depths from 20 ft to 58 ft
- 1997: A waste profile found Tank V11-1 to have reportable quantities of the following constituents within approximately 6,000 gal of liquid: pH (corrosive) (100 lb.), Cadmium (1 lb.), Cs-137 (1.0 Ci), Sr 89/90 (0.1 Ci), Pu 239/240 (0.01 Ci), and Am-241 (0.01 Ci)

Waste Streams

- Wastes associated with the PUREX process were transported through these pipelines. These wastes were transported to 216-A-4 crib
  - The waste streams included HNO3, Concentrated UNH, and NH4OH
- The Sitewide Inventory Model (SIM) identifies NO3, and U-Total as contaminants with significant mass in the 216-A-4 crib

Misc./Other Relevant Information

- Lines V014(3) and V016 are cut and capped where they enter the 216-A-4 crib, and line V014(1) and V014(2) are cut and capped where they were rerouted.
- V014 originally ran to a double Y connection to the 216-A-4 crib, but has since been extended to the 200-E-190 catch tank. V016 still has a double Y connection to the 216-A-4 crib

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-190 (216-A-TK-2 Catch Tank) (Termination)
- 241-A-151 (Diversion Box) (Origin)

200-EA-1

- 216-A (sample pit, a.k.a. Valve Control Facility) (Termination)
- 216-A-4 (Crib) (Termination)

Site Intersects

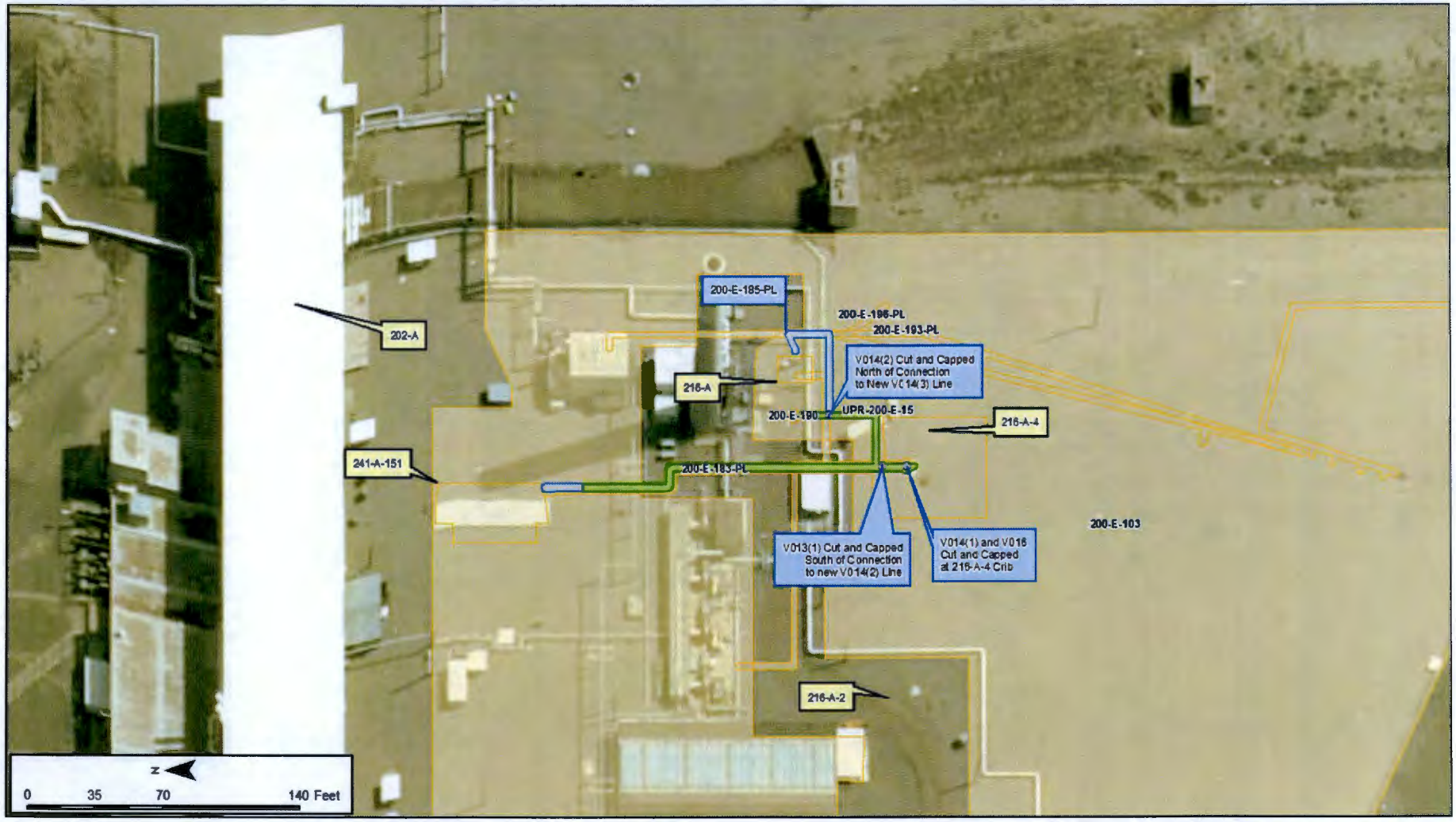
200-IS-1

- 200-E-186-PL
- 200-E-193-PL
- 200-E-196-PL

200-EA-1

- 200-E-103 (a.k.a. PUREX Stabilized Area or PUREX Area)

Scoping Summary: 200-E-185-PL



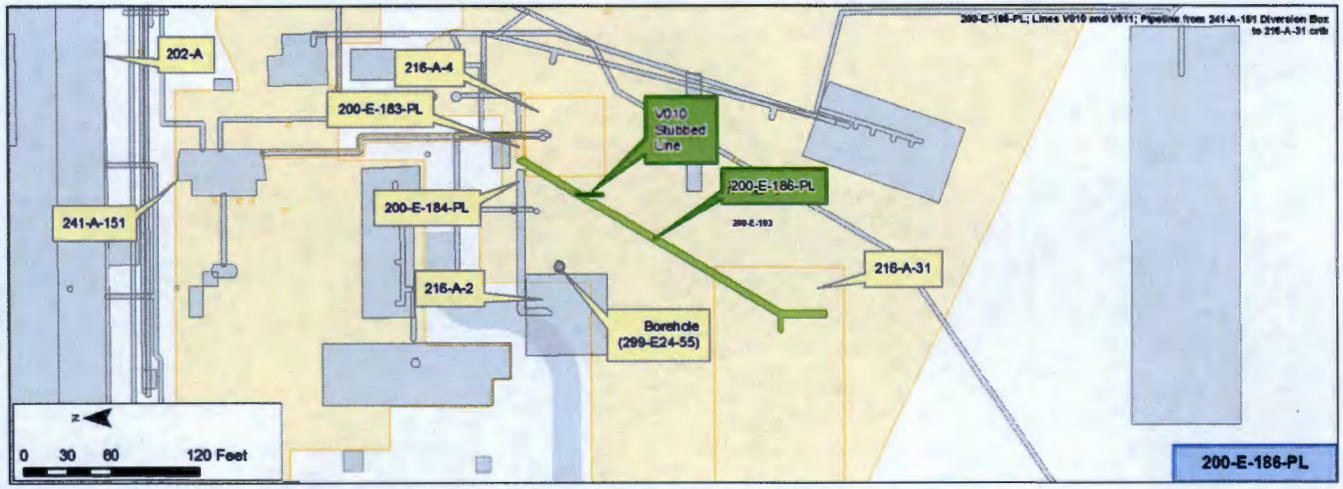
Scoping Summary: 200-E-186-PL

History

The 200-E-186-PL waste site is an inactive underground drain that consists of two parallel pipe runs (V010 and V011) from the 200-E-183-PL to the 216-A-31 Crib.

The system was operational from 1964 to 1966 and is entirely contained within the 200-E-103 footprint. Disposition actions will need to be coordinated with 291 PUREX facility disposition.

In 1961 the V010 line was inadvertently modified during construction associated with the 216-A-31 Crib and was filled with 97.5 gal of waste (up to 23 gal of this waste could remain in the 200-E-186-PL V010 line, the other 74.5 gal could reside in the 200-E-183-PL V010 line). The V010 and V011 lines are blanked at the 241-A-151 Diversion Box.



Construction

- Length
  - V010: 202 ft
  - V011: 202 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Flow
- Direct Buried
- Depth: 17.5 ft bgs-to-21 ft bgs
- Calculated volume: 149 gal (total)
  - V010: 74.5 gal
  - V011: 74.5 gal

Features of Interest

- One 135° bend in each V010 and V011, where they connect with the 200-E-183-PL waste site
- One dead end stub in the V010 line that was accidentally filled with waste in 1961

Waste Streams

- Organic waste associated with from the 202-A Building (L Cell - Pu concentration waste) flowed through these lines
- TBP, NPH, Cs-137, and U-Total flowed through the lines from 1964-1966

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 200-E-183-PL (origin)	• 200-E-183-PL
	• 200-E-184-PL
200-EA-1	
• 216-A-31 (crib) (termination)	200-EA-1
	• 200-E-103 (PUREX Stabilized Area)

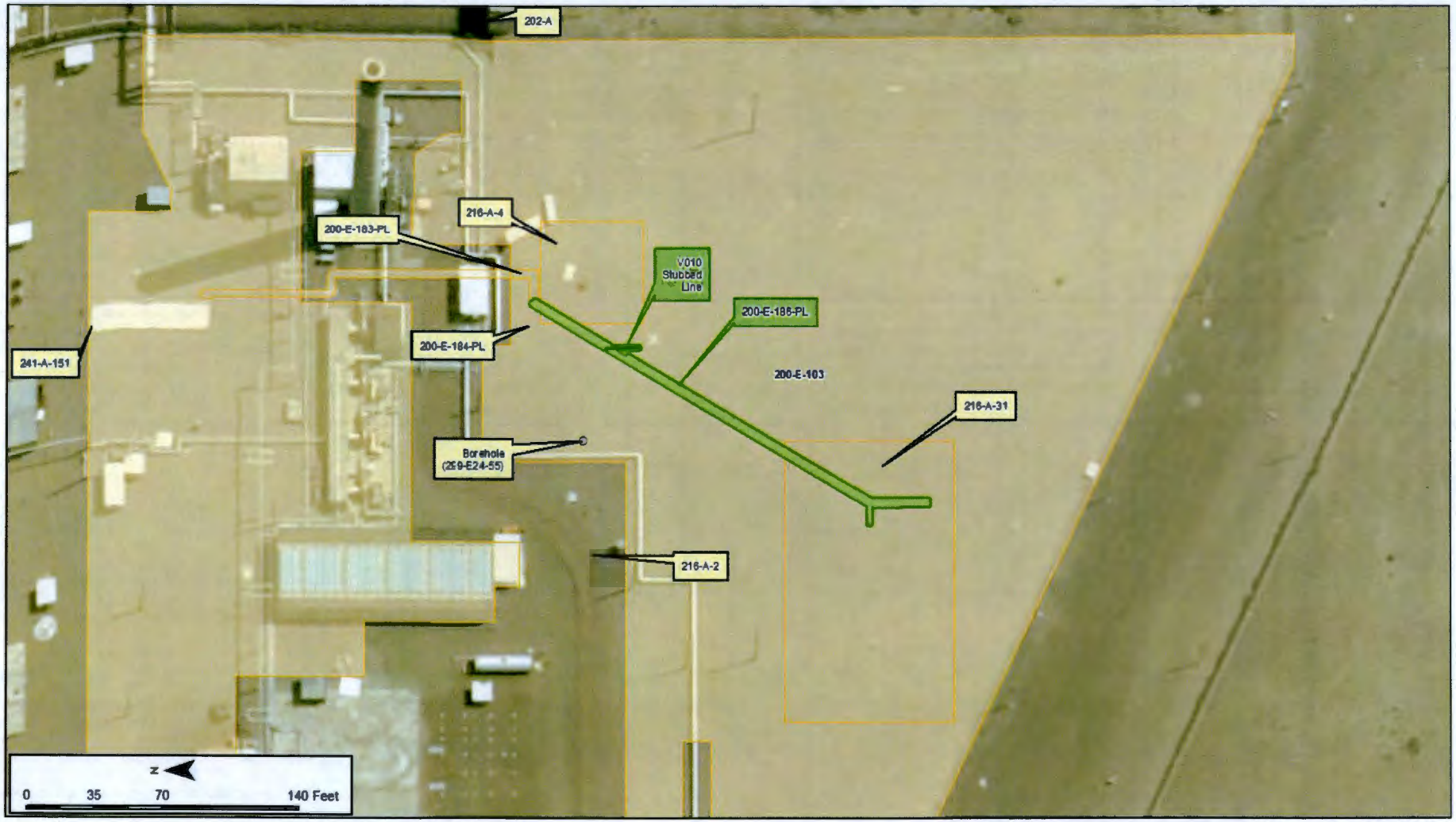
Relevant Characterization

- 1961: Rad survey of a dead end stub in line V010 found a maximum dose of 500 r/hour at the surface of the line.
- A 2004 borehole log 15-m to the east of the 216-A-2 crib found maximum concentrations of Cs-137: 4,600 pCi/g at 33.5 ft; Co-60: 4 pCi/g at 36.5 ft; Eu-154: 6 pCi/g at 36.5 ft; 234m-Pa: 500 pCi/g between 37.5 ft and 51.5 ft; and U-235: 35 pCi/g between 37.5 ft and 51.5 ft
- A 2005 evaluation of a borehole in the 216-A-2 crib found a max concentration of CS-137: 2.0x10^7 pCi/g at 27.5 ft

Misc./Other Relevant Information

- Up to 23 gal of waste could remain in the 200-E-186-PL V010 line, the other 74.5 gal could reside in the 200-E-183-PL V010 line
- These lines are blanked. It is unknown whether or not these lines are also capped, although blanking is usually synonymous with capping

Scoping Summary: 200-E-186-PL



Scoping Summary: 200-E-187-PL

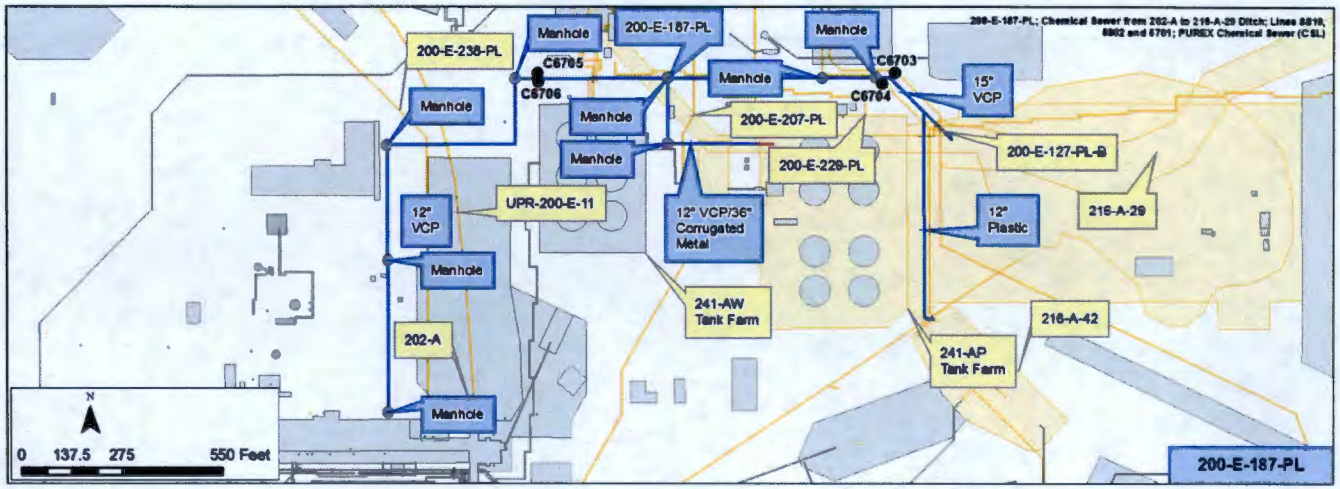
History

The 200-E-187-PL waste site is an inactive radioactive process sewer from the PUREX facility. It transferred chemical waste from the 202-A building to the 216-A-29 Ditch between Nov-1955 and Jul-1991.

The sewer was constantly flushed with clean water, as the ditch received over 6 million gallons per day.

In 1980, a north-south portion of the line was added to meet effluent monitoring requirements. This polyethylene plastic line transferred chemically or radioactively-contaminated diversions from the line to the 216-A-42 Retention Basin.

When the A-Tank Farm was constructed in 1984-85, a portion of the sewer system was re-routed to run north of the new tank farm, and the head end of the ditch was re-located to accommodate the change.



Construction

- Length: 3,512 ft (cumulative)
- Diameter: 12 in. to 15 in., midway to ditch
- Composition: Vitrified Clay Pipe, polyethylene plastic, and corrugated metal
- Encasement: Direct-buried (one small portion of concrete encasement north of AW Tank Farm)
- Depth: 12 ft bgs
- Calculated Volume: 26,114 gal

Features of Interest

- Eight manholes

Relevant Characterization

- C6703 - Manhole NW of 216-A-29 Ditch at 8 ft bgs
- C6704 - Manhole NW of 216-A-29 Ditch at 8 ft bgs
- C6705 - NW of AP Tank Farm at 15 ft bgs
- C6706 - planned borehole along the pipeline

Waste Streams

- Corrosive waste consisting primarily of acidic waste, sulfuric acid, sodium hydroxide, and heavy metals, including calcium nitrate and lead
- Based on core samples from the 216-A-29 Ditch, the following isotopes may be expected to be present in the system: Ru/Rh-106, Sb-125, Cs-137, Am-241, K-40, and Sr-90

Misc./Other Relevant Information

- The 216-A-29 Ditch was stabilized in three phases between Jul-1991 and Oct-1991

Site Interfaces

Origin/Terminations

200-CP-1
- 202-A (PUREX Fac.)

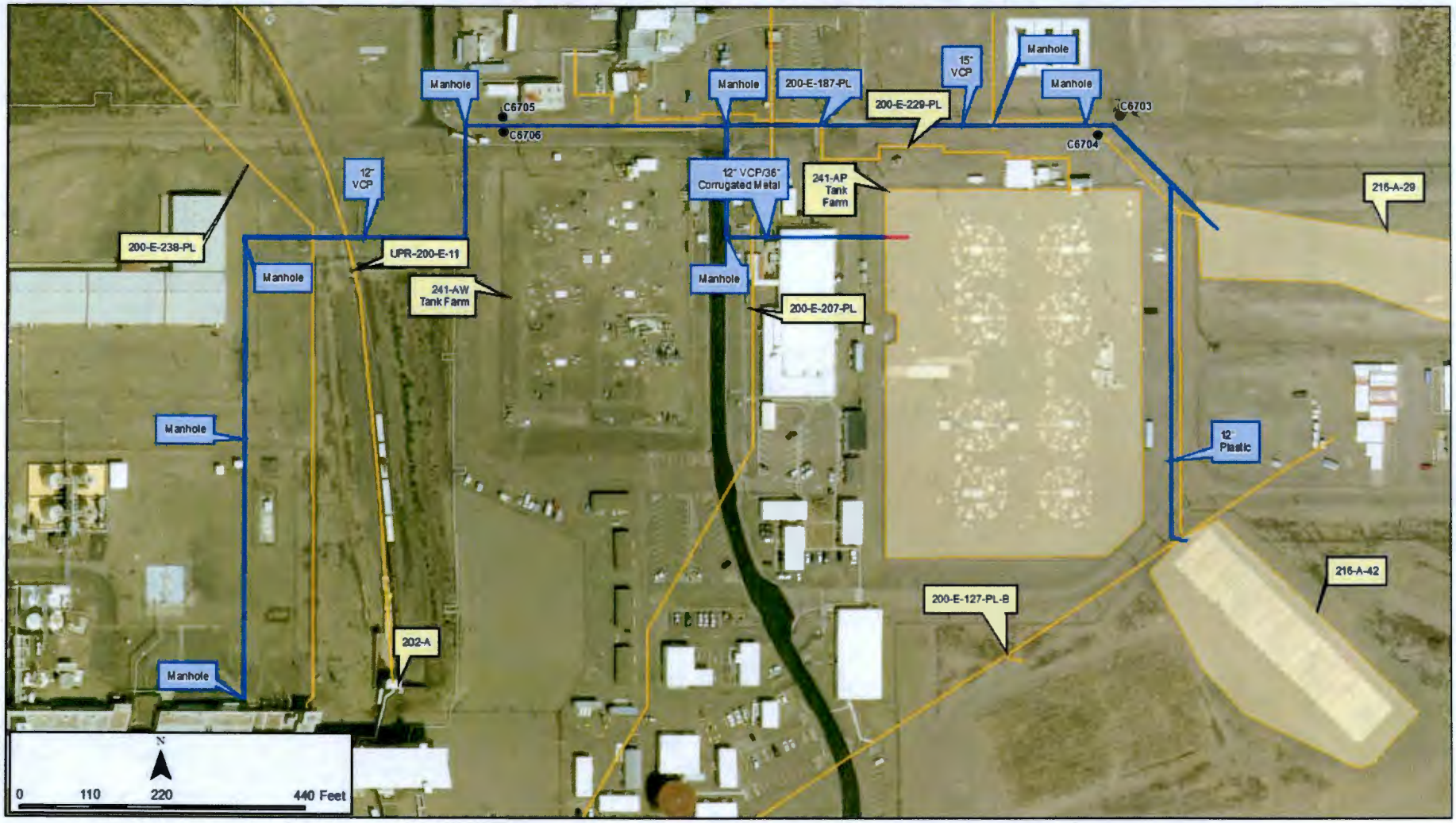
200-EA-1
- 216-A-29 Ditch
- 216-A-42 Retention Basin

Site Intersects

200-OA-1
- 200-E-127-PL-B
- UPR-200-E-11

200-IS-1
- 200-E-238-PL
- 200-E-229-PL
- 200-E-207-PL

Scoping Summary: 200-E-187-PL



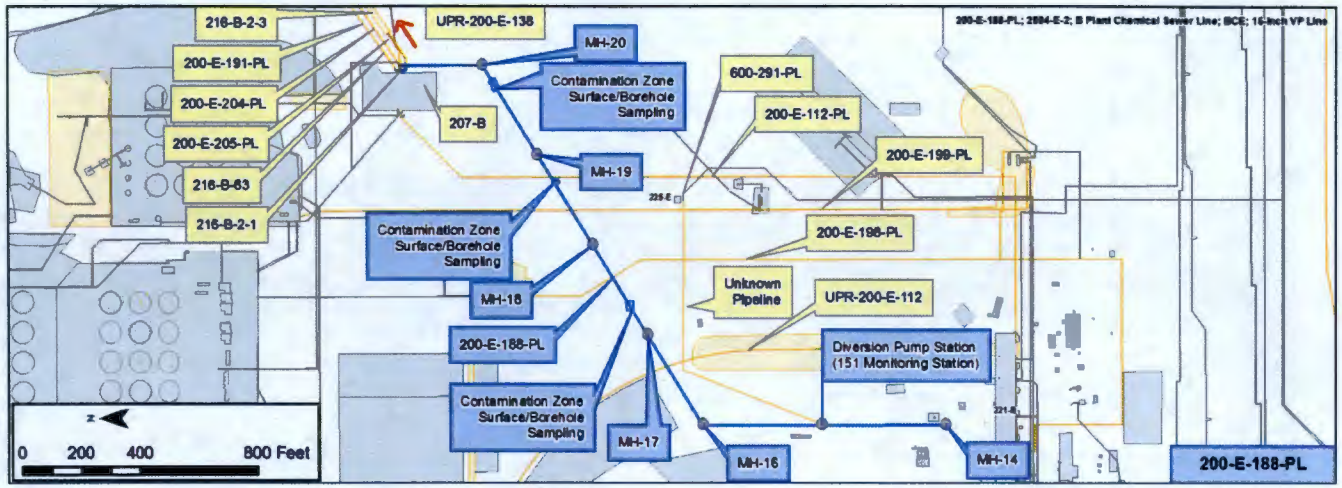
Scoping Summary: 200-E-188-PL

History

The 200-E-188-PL waste site is an inactive underground radioactive process sewer that transferred B Plant waste from Manhole (MH) 14 located north of 221-B Plant building structures to the pipeline valve box located east of the 207-B Retention Basin. The pipeline was in operations starting in 1945.

As a result of leaks noted in 1970, 200-E-188-PL was cut and plugged near the 207-B valve box. The line was unplugged/ reconnected to the valve box after this and continued to operate (section near valve box remains capped, see Figure 1). Further leaks were specified in the remaining line in the 1970's and 1980's.

In September 1985, there was an upgrade of Reinforced Thermosetting Resin Pipe to portions of the B-Plant sewer lines and the 200-E-188-PL. In the early 1990's, 200-E-188-PL was abandoned between the 207-B valve box and the newly built Diversion Pump Station (151 Monitoring Station), where an unidentified waste site connects from the 225-E Pump Station #2. The 200-E-188-PL appears to have been inactive by 1992, except the portion between MH 14 and the 151 Monitoring Station.



Construction

- Length
  - Segment 1: 2,500 ft
  - Segment 2: 25 ft
- Diameter
  - Segment 1: 15 in.
  - Segment 2: 16 in.
- Composition
  - Segment 1: Vitrified Clay
  - Segment 2: Carbon Steel
- Gravity Fed
- No Encasement Specified
- Direct Buried
- Depth
  - Segment 1: ~7 ft - 13 ft bgs
  - Segment 2: 13 ft - 15 ft bgs
- Calculated volume
  - Segment 1: 22,950 gal
  - Segment 2: 260 gal

The 200-E-188-PL waste site is directly connected to the 200-E-191-PL and 200-E-205-PL waste sites.

Features of Interest

- UPR-200-E-138 on Mar-22-1970 1,000 Ci of Sr-90 because of failure of a portable monometer
- Release of 2,500 lb of unknown corrosive acid on Mar-28-1987
- Release of 6,300 lb of nitric acid on Apr-4-1987

Documented failure and/or release points

- 6 Manholes (including Manhole 14, the origin point)
- Diversion Pump (Monitoring Station 151)

Relevant Characterization

- RAD surveys with soil samples and sample count of contaminated tumbleweed in the area at 1,200 cpm beta/gamma
- Borehole monitoring with Cs-137 at 12 and 16 pCi/g

Waste Streams

- Waste Processes: B Plant (Drain Waste & Cooling Water)
- Cooling water from the B Plant and WESF air compressor aftercoolers, steam condensate, sanitary water, rain water, and demineralizer effluent
- Refer to B Plant Chemical Sewer Stream-Specific Report (WHC-EP-0342) for extensive cover of all the waste stream associated with the pipeline (summary of findings - waste stream is noted as not containing any dangerous waste)

Misc./Other Relevant Information

- Pipeline connecting 151 Monitoring Station to Pump Station 2 (225-E) is an unidentified site (exact location unknown, more research is needed)
- Pump Station 2 (225-E) (connects into 600-291-PL and may connect to 200-E-112-PL)
- Soil Testing for 216-B-63 Ditch: Am-241 (less than 1 pCi/g), Cs-137 (4 pCi/g), Sr-90 (30 pCi/g), chromium (22 mg/kg), nitrate as N (188 mg/kg), and Aroclor-1254 (less than 1 mg/kg)

Site Interfaces

Origin/Termination

No Operable Unit
- 207-B
- Manhole 14

200-IS-1
- 200-E-191-PL
- 200-E-205-PL

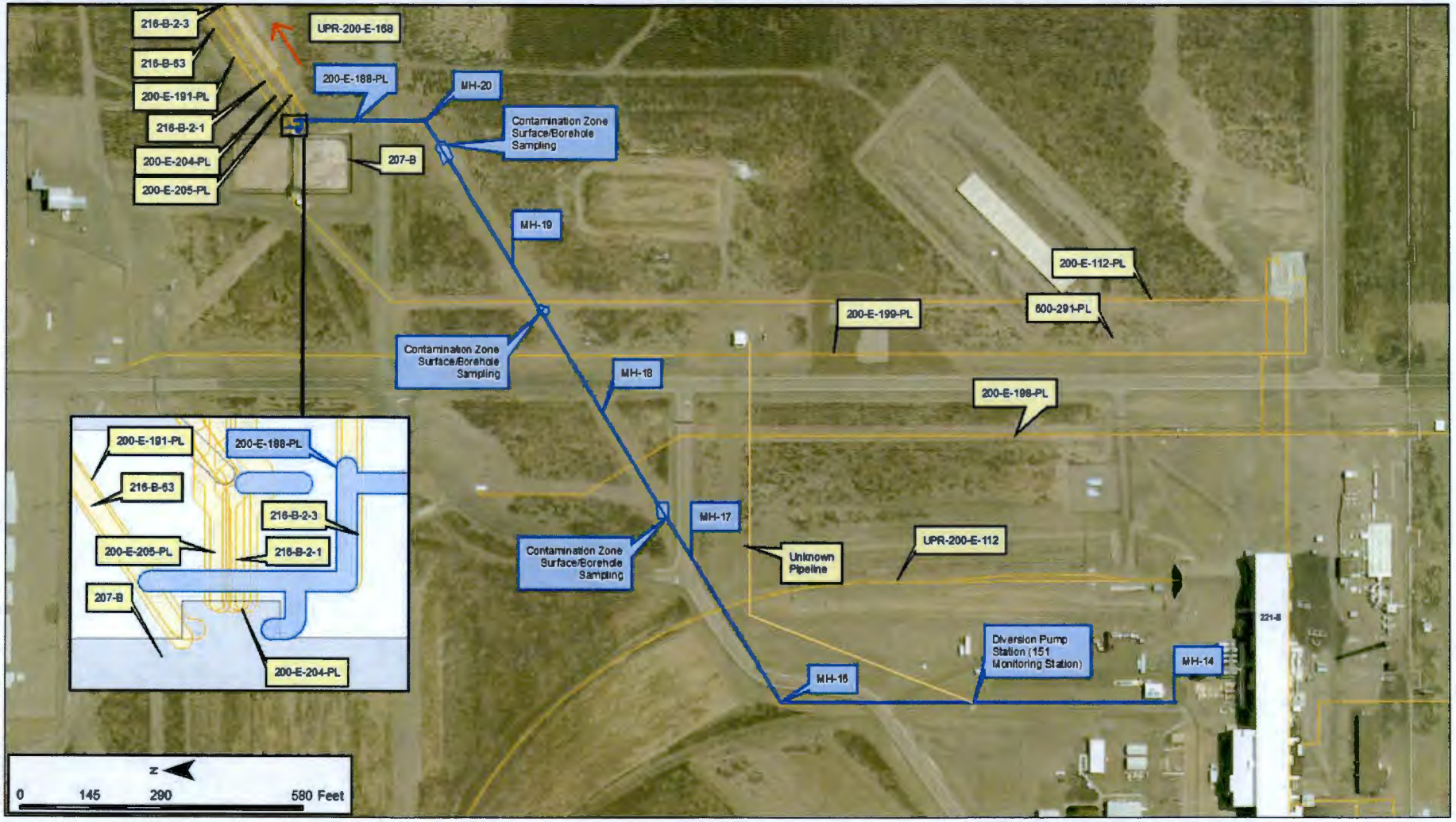
Site Intersects

200-IS-1
- 200-E-112-PL
- 200-E-198-PL
- 200-E-199-PL
- 200-E-204-PL

200-EA-1
- UPR-200-E-112

- Unassigned waste site (pipeline connecting into 151 Monitoring Station)

Scoping Summary: 200-E-188-PL



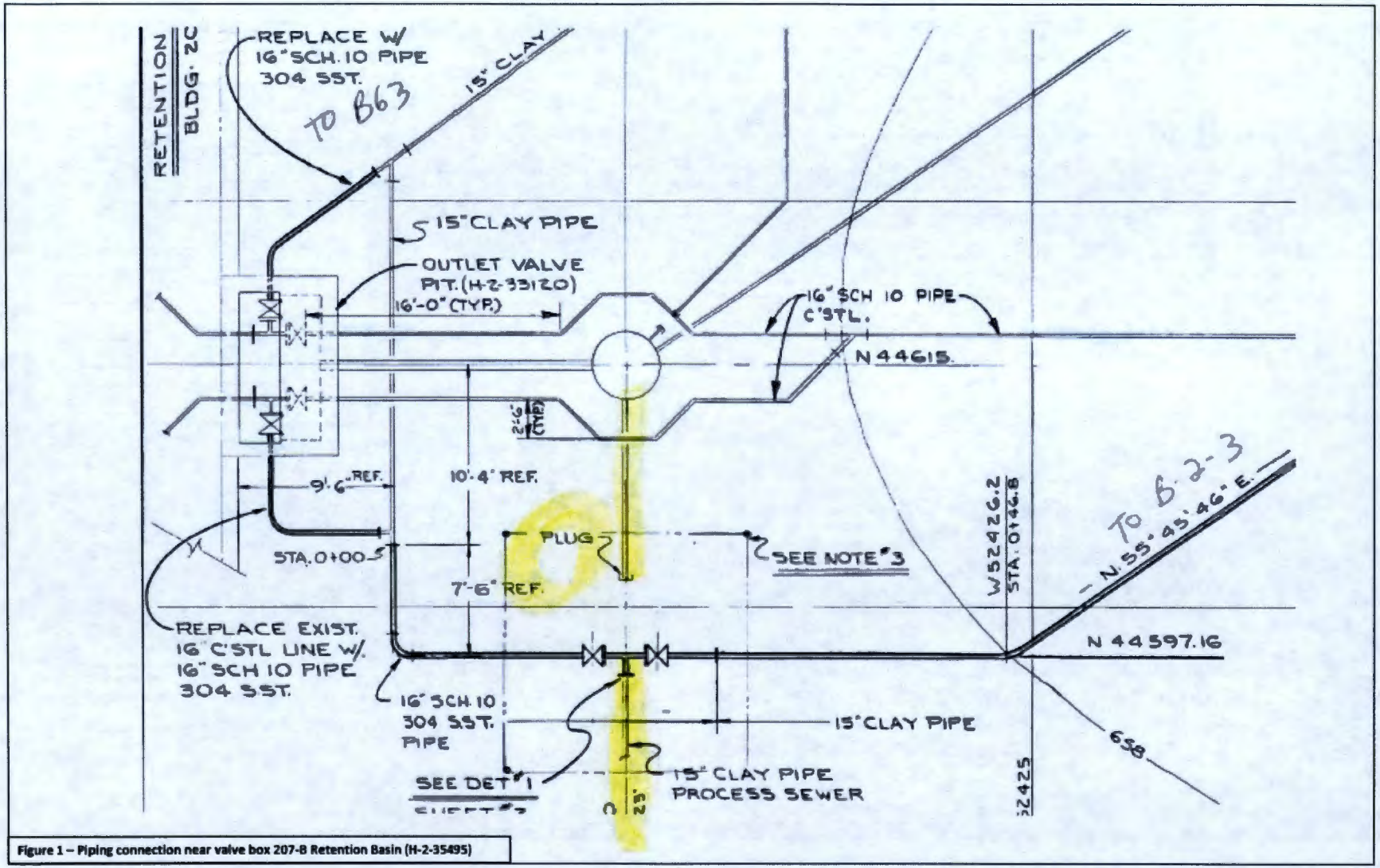


Figure 1 – Piping connection near valve box 207-B Retention Basin (H-2-35495)

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Scoping Summary: 200-E-189

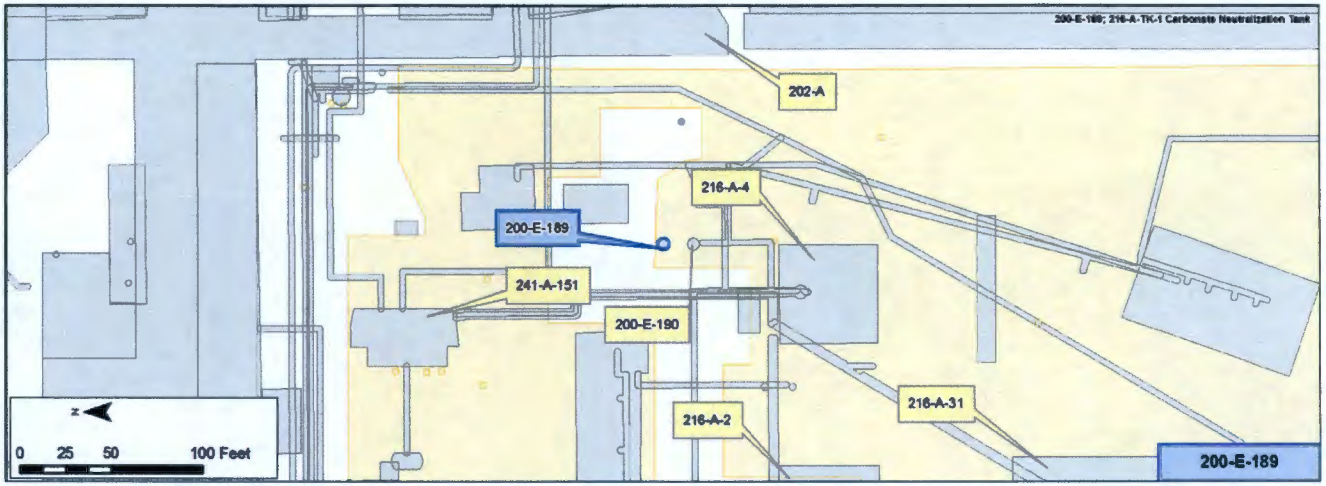
History

The 200-E-189 waste site is the 216-A-TK-1 neutralization tank, which received condensate from the PUREX 291-A exhaust stack.

Condensate collected in the PUREX 291-A stack after passing through HEPA filters and was routed either to the 216-A-TK-1 for neutralization or directly to the 216-A-TK-2 catch tank. Neutralized condensate flowed from the 216-A-TK-1 tank to the 216-A-TK-2 catch tank via line T162. The tank and all connections sit below the 200-E-103 (PUREX Stabilized Area) waste site related to the PUREX 291-A facility.

The 216-A-TK-1 neutralization tank was constructed in 1955 and in service until 1991. The neutralization tank was in standby from 1972 to 1983. The tank was drained, flushed, and isolated in 1998 during the PUREX facility pre-closure effort and is currently inactive.

The 216-A-TK-1 Unit was identified as a R-CPP unit in discussions with Ecology held on Aug-1-2015.



Construction

Catch Tank

- Vertical direct buried tank installed on 6-in concrete slab
- Dimensions: 7 ft high x 8 ft 8-3/4 in. diameter
- Capacity: 2,260 gal
- Material: Stainless Steel
- Tanks penetrations:
  - 18 in. schedule 40 carbon steel charging riser
  - 4 in. stainless steel inflow from 291-A stack
  - 4 in. stainless steel outflow to 216-TK-2
- Buried depth
  - Top of tank 14 ft bgs
  - Bottom of tank 21 ft bgs

Features of Interest

- Inlet - 4 in. stainless steel pipeline from 291-A stack
- Outlet - 4 in. stainless steel pipeline to 216-A-TK-2 catch tank
- Charging riser - 18 in. carbon steel, top ~ 2 ft above grade

Relevant Characterization

- No characterization data for the 200-E-189 waste site was located

Waste Streams

- 291-A Stack condensate
- PUREX Stack condensate pH adjusted with calcium carbonate

Misc./Other Relevant Information

A report of stack condensate overflow was submitted to Department of Ecology on Apr-24-2012. Review of technical documents, calculations and operational review indicated that the report was incorrect - no overflow occurred.

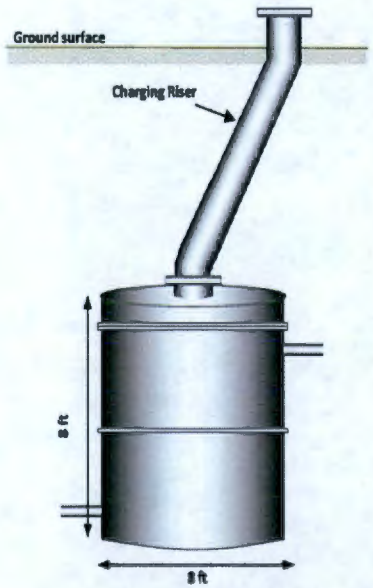
Site Interfaces

Origin/Termination	Site Intersects
200-EA-1 • 200-E-103: T021 from PUREX 291-A Stack (origin) 200-EA-1 • 200-E-103: T621 to 216-A-TK-2 Catch Tank (termination)	200-EA-1 • 200-E-103

202-A
216-A-4
200-E-189
241-A-151
200-E-190
216-A-2
216-A-31
N
0
35
70
140 Feet

200-E-189 Neutralization Tank Diagrams

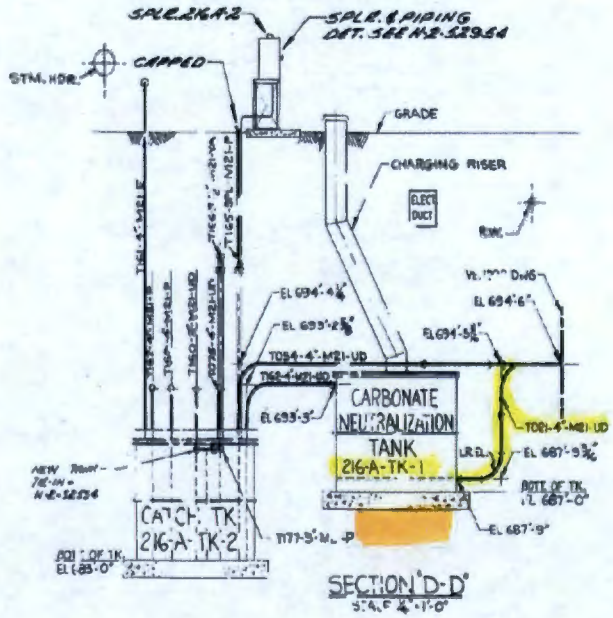
CARBONATE NEUTRALIZATION TANK



DETAIL PROFILE VIEW

Note: Not to scale.

CARBONATE NEUTRALIZATION TANK



DRAWING: H-2-55036

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Scoping Summary: 200-E-190

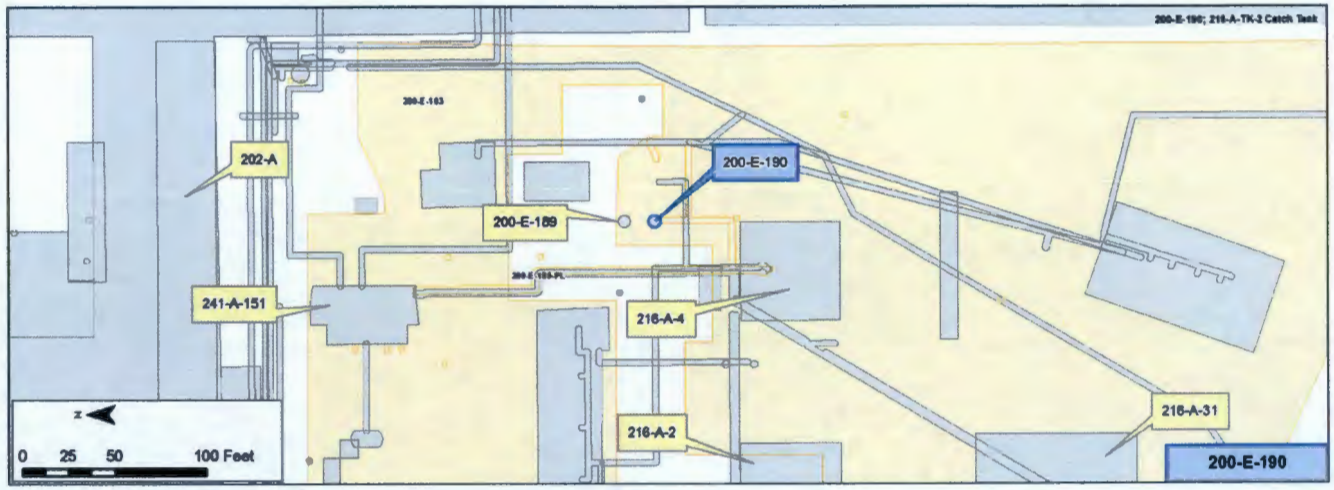
History

The 200-E-190 waste site is the 216-A-TK-2 Catch Tank, which received condensate and sampling pit wastes associated with the PUREX 291-A facility. The tank and all connections sit below the 200-E-103 (a.k.a. the Purex Stabilized Area) site, related to the former PUREX 291-A facility.

This tank was constructed in 1955 and operated until 1991 (it was in standby mode from 1972 to 1983). It was drained during the PUREX facility pre-closure effort in 1997.

The tank currently receives any liquids introduced to the 291-A facility stack (e.g., rain or snowfall), so is considered active and monitored weekly through the PUREX Surveillance and Maintenance Plan. The tank was partially drained in 2011 when rising liquid levels exceeded the tank monitoring scale and threatened to back up into the stack and ventilation ducting; up to 550 gal of liquid were removed into two 275 gal carboys.

Waste site 200-E-190 (216-A-TK-2) was identified as a R-CPP unit in discussions with Ecology held on Aug-1-2015.



Construction

Catch Tank

- Vertical direct buried tank installed on 6 in. concrete pad
- Dimensions: 7 ft high x 8 ft diameter
- Capacity: 2,260 gal
- Composition: Stainless steel
- Buried depth - top of tank 18 ft bgs; bottom of tank 25 ft bgs
- Pipelines
  - One process drain line - 3 in. SST, direct buried (T177)
  - Two process transfer lines - 4 in. SST, direct buried (T167, T168)
  - Four utility drain lines -
    - One 1 in. SST, direct buried (T178)
    - One 2 in. SST, direct buried (T160)
    - One 3 in. SST, direct buried (T127)
    - One 4 in. SSG, direct buried (T075)
  - Sampling lines
    - One 3 in. nozzle w/ three 1/2 in. SST sample tubes (T165)
    - One bundle of three 1/2 in. SST sample tubes (T165)
    - Three 1/2 in. SST sample tubes (T-166)
  - One 4 in. SST overflow line, capped (V014)

Features of Interest

The tank has 19 inlets/outlet openings; all are contained within the 200-E-103 footprint. Disposition actions to be coordinated with 291 PUREX facility disposition.

Relevant Characterization

- A 1997 waste profile conducted for the disposal of 216-A-TK-2 and V11-1 tank contents concluded that any liquid in the 216-TK-A-2 catch tank would be less concentrated in chemical and radiological constituents than the liquid in tank V11-1.
- Jan-29-2011 sampling of 291-A Stack condensate results: Cd=0.0350; Cr <0.0100; Pb <0.100; (all results ug/mL); pH = 4.03

Waste Streams

The 261-A-TK-2 was capable of receiving:

- Condensate from the 291-A Stack (condensation from filtered air and precipitation in stack)
- Neutralized condensate from the 291-A Stack after passing through the 216-A-TK-1 neutralization tank
- Waste from the building 202-A cell A, B, and C drains; no information on specific wastes from this was found
- Waste from the 291-A Stack Gas Sampling facility floor and sink drains
- Sampling waste from the 216-A Valve Control Facility (a.k.a 216-A sampling pit), lines allowed for withdrawals and deposits between the sampling pit and catch tank

Misc./Other Relevant Information

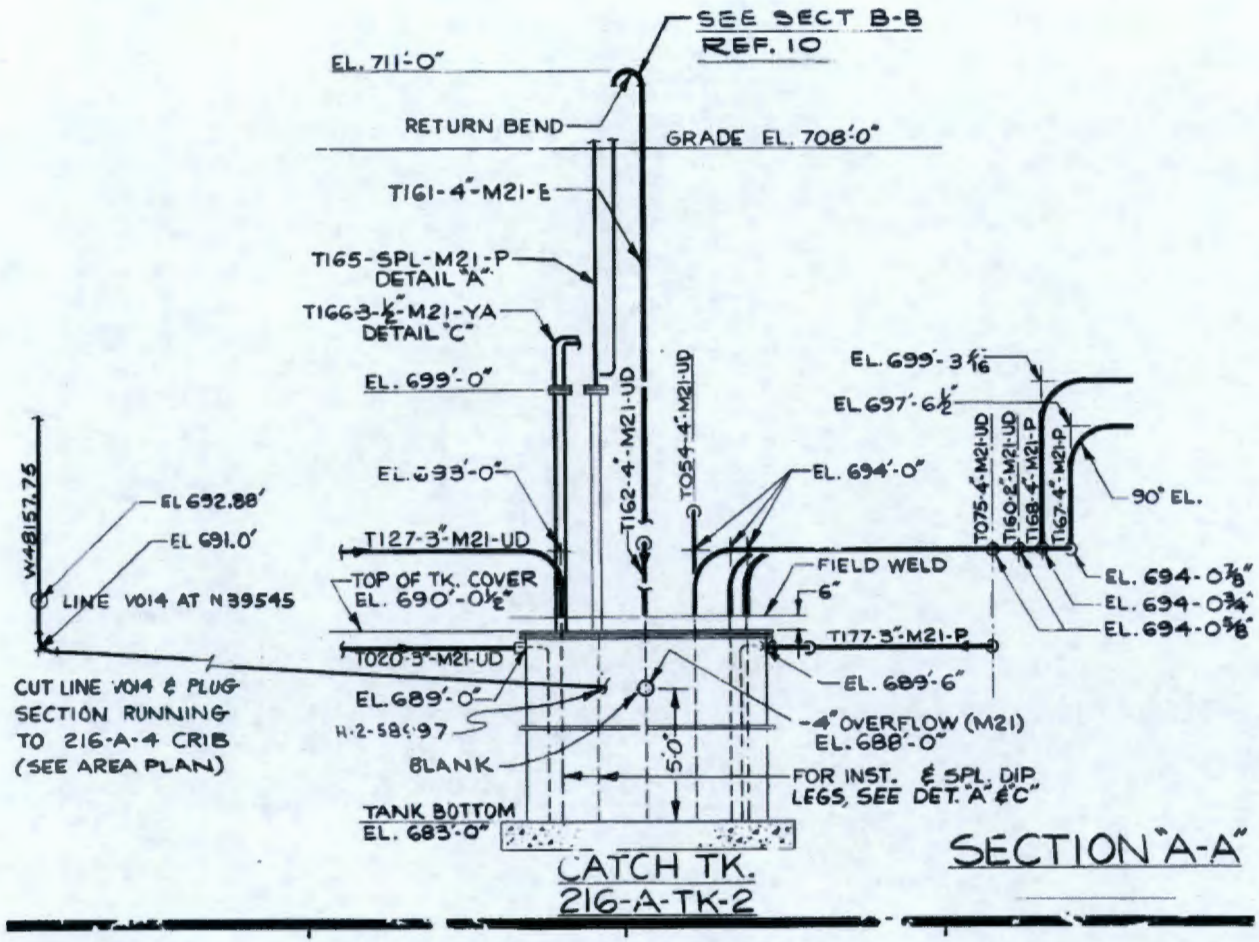
- The tank was partially drained again in 2011 when rising liquid levels exceeded the tank monitoring scale and threatened to back up into the stack and ventilation ducting; up to 550 gal of liquid were removed into two 275 gal carboys.

Site Interfaces

Origin/Termination	Site Intersects
	200-IS-1
N/A	• 200-E-185-PL
	• 200-E-189
	200-EA-1
	• 200-E-103

Scoping Summary: 200-E-190

200-E-190 Catch Tank Drawing: H-2-55036_Sheet 1_Rev 11



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Scoping Summary: 200-E-191-PL

History

The 200-E-191-PL waste site is an inactive sewer drain line to the 216-B-63 Ditch that originates at a valve pit on the east side of the 207-B Retention Basin.

It transferred discharges from the B Plant chemical sewer (200-E-188-PL) via that valve pit. The pipeline was designed to transfer chemical sewage and floor drainage, as well as emergency cooling water discharges, but there was no actual use of the site for such cooling water discharges.

The pipeline was constructed in the late 1960s and consists of a direct buried, vitrified clay pipe with two short carbon steel pipes connected to the valve pit and another to the weir box that terminates into the 216-B-63 Ditch. Waste was transferred from 1970 to 1992, when the weir box was filled with concrete and the 200-E-191-PL was cut at the termination point and taken out of service.

Construction

Vitrified Clay Pipe
- Length: 893 ft
- Diameter: 15 in.
- Composition: Vitrified Clay
- Gravity Fed
- Direct buried
- Depth: 3 ft to 15 ft
- Calculated volume: 8,200 gal

Carbon Steel Pipe (2 Segments in the valve pit east of the 207-B Retention Basin; and 1 Segment northeast of T-Valve)
- Length: 5 ft, 10 ft, and 27- ft segments
- Diameter: 16 in.
- Composition: Carbon Steel
- Gravity Fed
- Direct buried
- Depth: 3 ft - 15 ft
- No Cathodic protection
- Calculated volume: 447 gal

Features of Interest

- Valve box at origin point that connects to the 207-B Retention Basin
- T-Valve in pit at termination point that drained into 216-B-63 Trench (has been filled with concrete)
- 16 in. Carbon Steel pipe; abandoned to the northeast of the T-Valve
- Two 16 in. Carbon Steel Valves at the T-Connection

Relevant Characterization

- Radiological discharges: 8.7 curies of beta and 16.7 pounds of uranium for the 216-B-63 trench

Waste Streams

- Waste Source: B Plant
- Major sources from 2902-B High Tank (potable sanitary water), cooling water, 225-B Waste Encapsulation and Storage Facility air-compressor after-coolers, steam condensate, and demineralizer effluent
- Approximately 125,000 gal/day of corrosive waste that includes: sodium hydroxide, sulfuric acid, and nitric acid from 1975 to 1985
- Minor contributions: chemical makeup overflow systems, air conditioning units, and space heaters
- Chemical sewer discharge is the last recorded waste stream in 1992

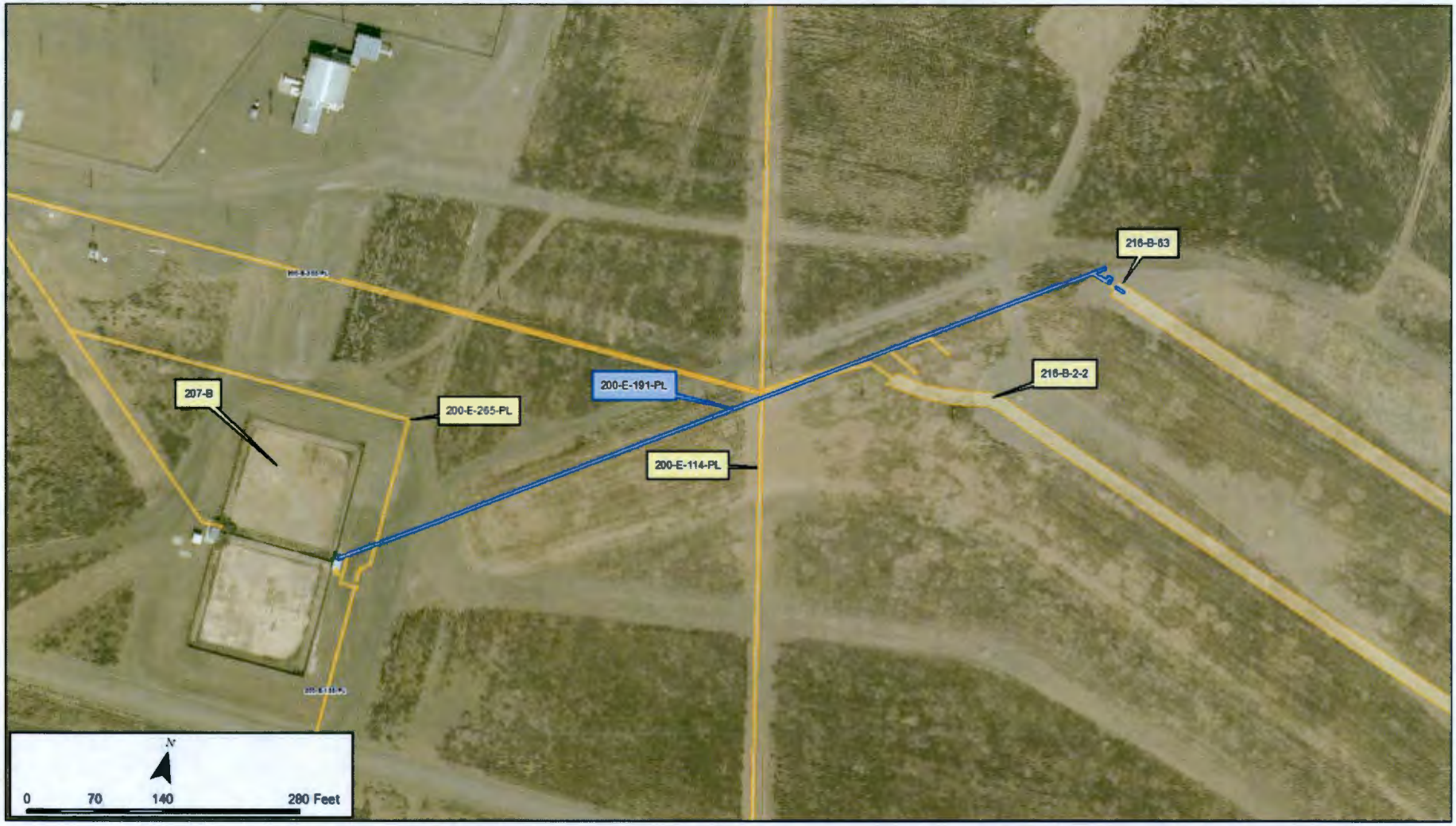
Misc./Other Relevant Information

- The pipeline feeding into 216-B-63 was described as being in deteriorating condition with recommendations for improving with polyethylene relining. Relining was completed on portions of 200-E-188-PL, but there was no documentation whether the upgrade included 200-E-191-PL (RHO-CD-101 and WHC-EP-0342).

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-EA-1
• 200-E-188-PL	• 216-B-2-2
200-EA-1	200-IS-1
• 207-B (Retention Basin)	• 200-E-114-PL
• 216-B-63	• 200-E-203-PL
	• 200-E-265-PL

Scoping Summary: 200-E-191-PL



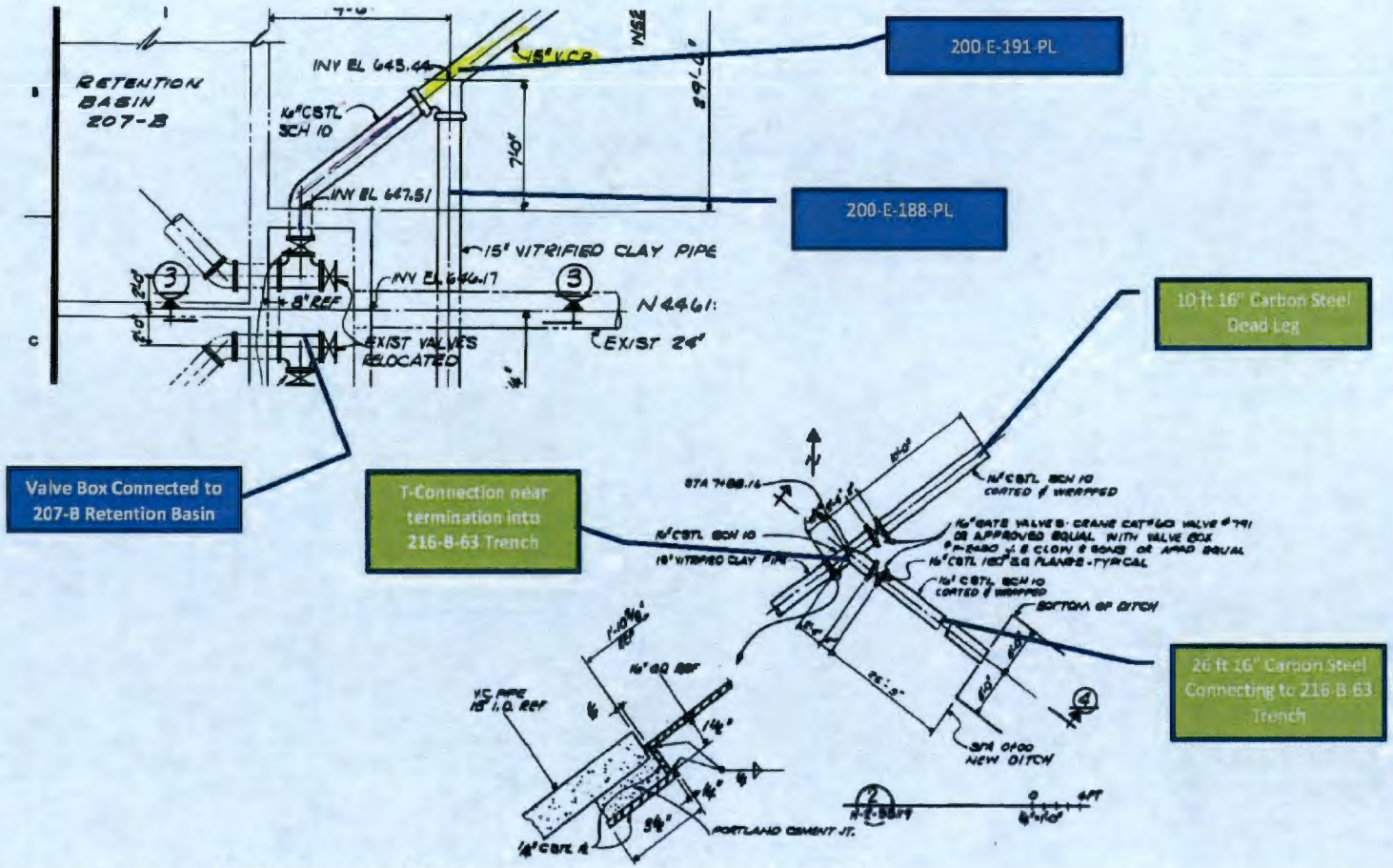


Figure 1 – Valve box next to 207-B Retention Basin and T-Valve (H-2-33120)

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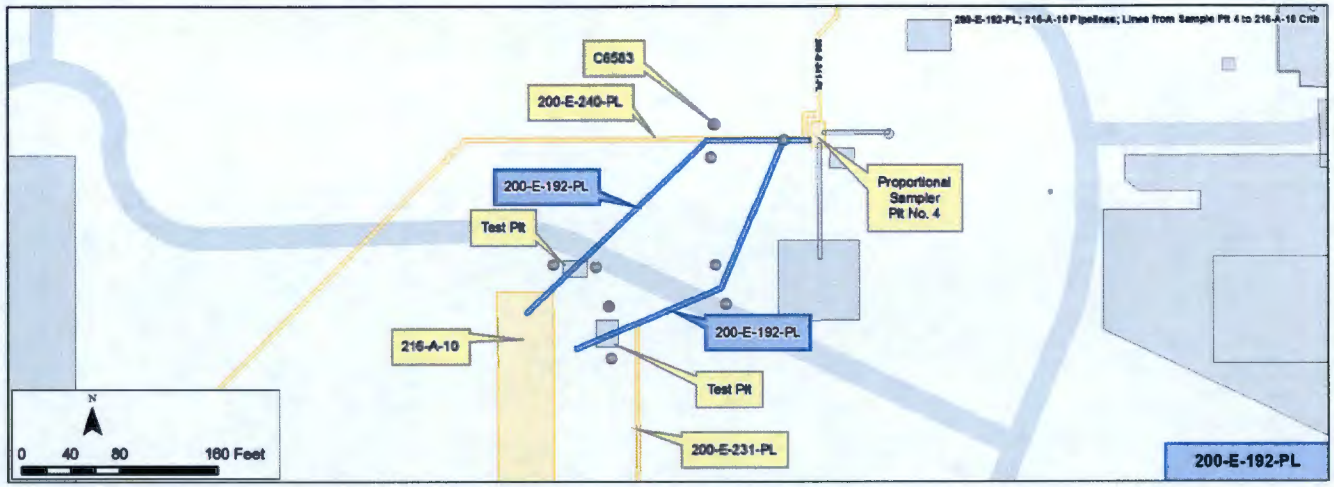
Scoping Summary: 200-E-192-PL

History

The 200-E-192-PL waste site is an inactive collection of radioactive process sewer pipelines that transported waste streams from Proportional Sampler Pit #4 to the 216-A-10 Crib beginning in 1956.

It consists of two subsites:
The 200-E-192-PL:1 subsite consists of an 8 in. vitrified clay pipe (VCP) and an 8 in. stainless steel (SS) pipe that transported waste from Proportional Sampler Pit #4 to the north end of the 216-A-10 Crib, where it connected to a center-crib distribution line. The 8 in. VCP collapsed in 1962, causing a surface depression. An 8 in. SS pipe was installed parallel to the VCP as a replacement line, but later failed in 1966 and was abandoned. The SS pipe was isolated in 1987 by blanking the line at the sampler pit.

200-E-192-PL:2 subsite consists of an 8 in. SS line that transported wastes from Proportional Sampler Pit #4 to near the northern part of the 216-A-10 Crib, where it connects to a second distribution line, east of the center-crib distribution line. In 1987, the 216-A-10 Crib was removed from service, 200-E-192-PL:2 was cut and capped shortly before it reached the 216-A-10 Crib, and the line was connected to the 216-A-45 Crib via 200-E-231-PL. The existing waste streams were re-routed to 216-A-45 through the new connection.



Construction

- Total Length: 568 ft (not inclusive of 200-E-192-PL:1 original VCP line)
- Diameter: 8 in.
- Composition:
  - 200-E-192-PL:1 - Vitrified Clay (original) and stainless steel (replacement)
  - 200-E-192-PL:2 - Stainless Steel
- Flow Method: Gravity
- Direct Buried
- Encasement: None
- Cathodic Protection: None
- Depth: 25 ft - 34 ft
- Total Calculated Volume: 1,483 gal (not inclusive of 200-E-192-PL:1 original VCP line)

Features of Interest

- Two test pits
- Eight small diameter boreholes

Relevant Characterization

- 2008 two test pits and eight small boreholes (C6579 - C6586) drilled to a depth of 30 ft
  - Gamma activity in C6583 near 200-E-192:1 was 70pCi/g eCs and Cs-137 presence confirmed
- 1998 radionuclide inventory for 216-A-10 crib included:
  - 6.66E+01 curies of Sr-90; 6.53E+01 curies of Cs-137; 8.08E-02 curies of U (Gross); 3.06E-01 curies of Pu-238; 3.49E+00 curies of Pu-239/40; 1.25E+00 curies of Am-241

Waste Streams

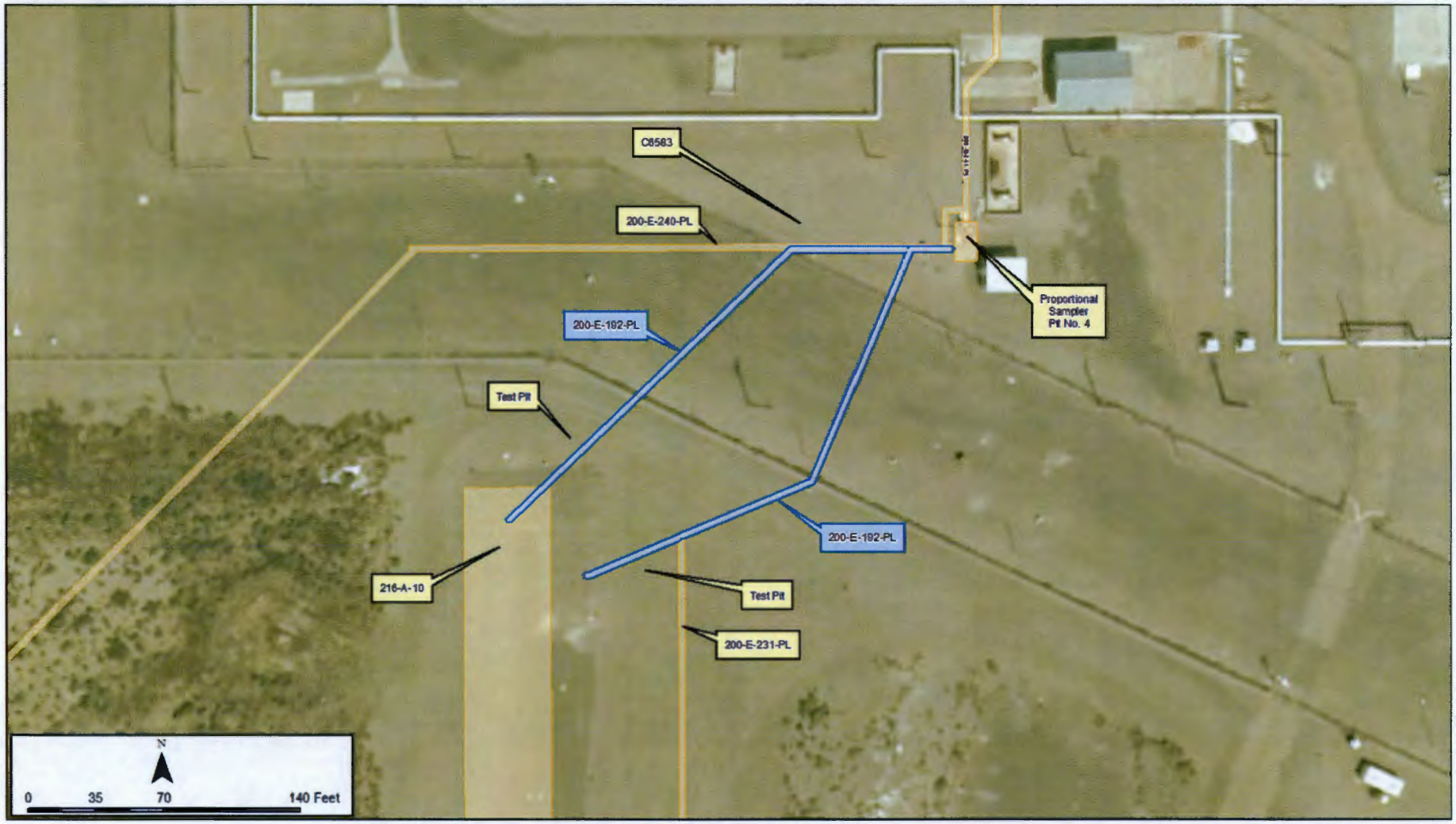
- The 216-A-10 Crib was used to dispose of Plutonium-Uranium Extraction PUREX process distillate discharge (PDD) and condensate, and is documented to have received only PPD during its operational life.
- These PUREX waste streams originated from the 202-A Canyon Building.

Misc./Other Relevant Information

- When construction was complete in 1956, the pipeline transferred nonradioactive water used in testing. From 1956 to Nov-1961, the pipeline was inactive. The pipeline began transporting contaminated wastes from the 202-A Canyon Building in Nov-1961. The pipeline was again inactive from Jan-1978 to Oct-1981. Operations ceased on Mar-3-1987

Site Interfaces

Origin/Termination	Site Intersects
• Proportional Sampler Pit No. 4 (origin)	200-IS-1 • 200-E-240-PL
200-EA-1 • 216-A-10 (termination)	
200-IS-1 • 200-E-231-PL (termination)	

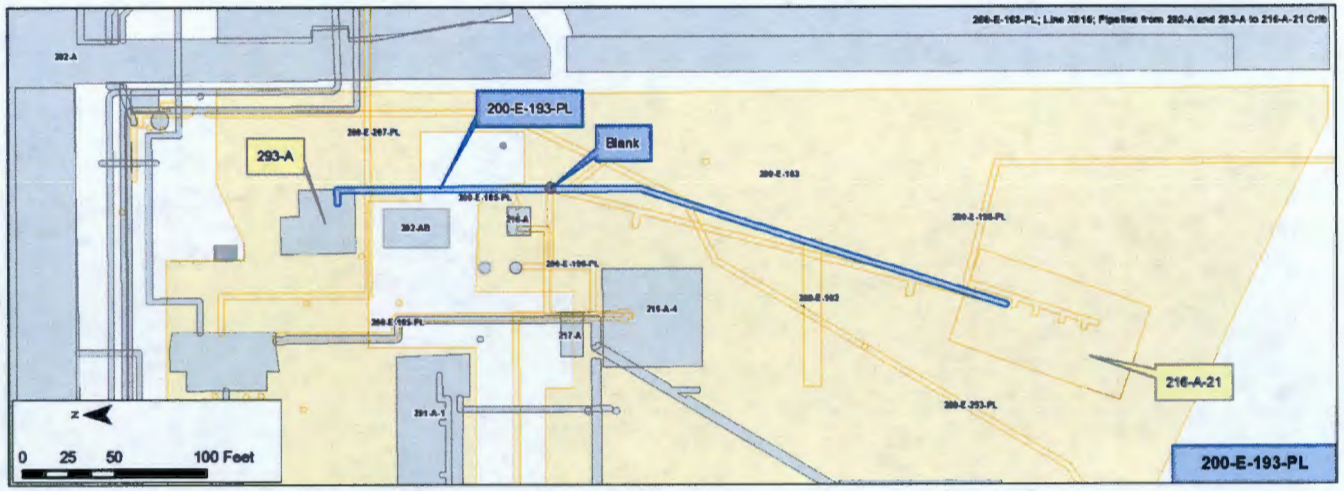

C6583
200-E-240-PL
200-E-192-PL
Test Pit
Proportional Sampler Pit No. 4
200-E-192-PL
216-A-10
Test Pit
200-E-231-PL
N
0
35
70
140 Feet

Scoping Summary: 200-E-193-PL

History

The 200-E-193-PL waste site consists of an inactive underground process sewer pipeline that carried PUREX effluent from the 293-A Building to the 216-A-21 Crib center distribution line.

The pipeline was operational from October 1957 to June 1958, when it failed and was taken out of service. In December 1958, a replacement stainless steel pipeline was installed to carry effluent to the 216-A-21 Crib (200-E-196-PL).



Construction

- Length: 376 ft
- Diameter: 6 inches
- Composition: Vitrified clay
- Flow Method: Gravity
- Depth: 7-10 ft
- Direct buried
- Encasement: None
- Cathodic Protection: None
- Calculated Volume: 552 gal

Features of Interest

- One blank
- Two 6" Y branches just east of the 216-A-21 crib are possible, as-built dates were not located (see figure pg. 4)

Waste Streams

- PUREX Ammonia Scrubber & Laboratory wastes
  - 293-A sump waste (1957-1965)
  - 202-A laboratory cell drainage (1958-1965)

Site Interfaces

Origins/Terminations	Sites that Intersect
293-A (facility)	200-EA-1 OU • 200-E-103
200-EA-1 OU • 216-A-21	200-IS-1 OU • 200-E-185-PL • 200-E-207-PL • 200-E-253-PL
	No Operable Unit • 200-E-102 • 200-E-196-PL

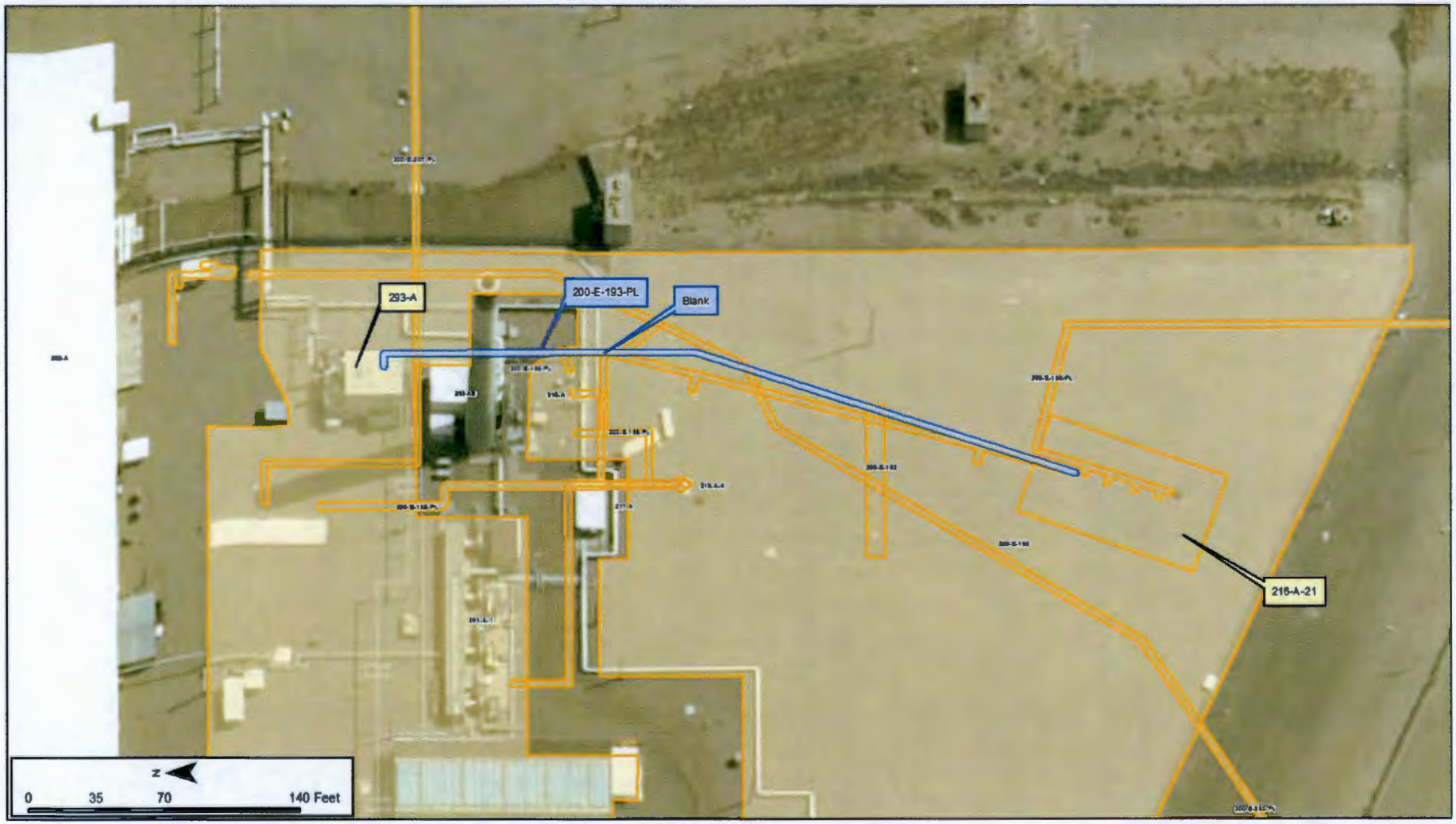
Relevant Characterization

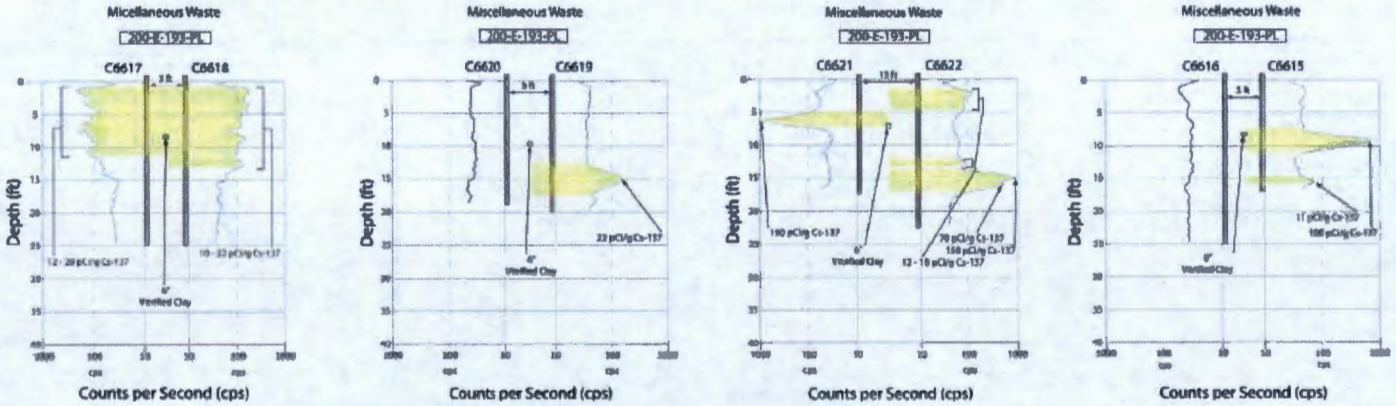
- Eight boreholes were drilled using direct push technology (DPT) along the pipeline. Elevated gamma activity was detected at various depths in 6 of the 8 boreholes (figure on page 3)
- 1998 radionuclide curies inventory of crib 216-A-21 included: 6.06E+00 of Sr-90, 6.37E+01 of Cs-137, 6.52E-06 of Cs-134, 1.51E-04 of Cs-135, 6.49E-02 of U Gross

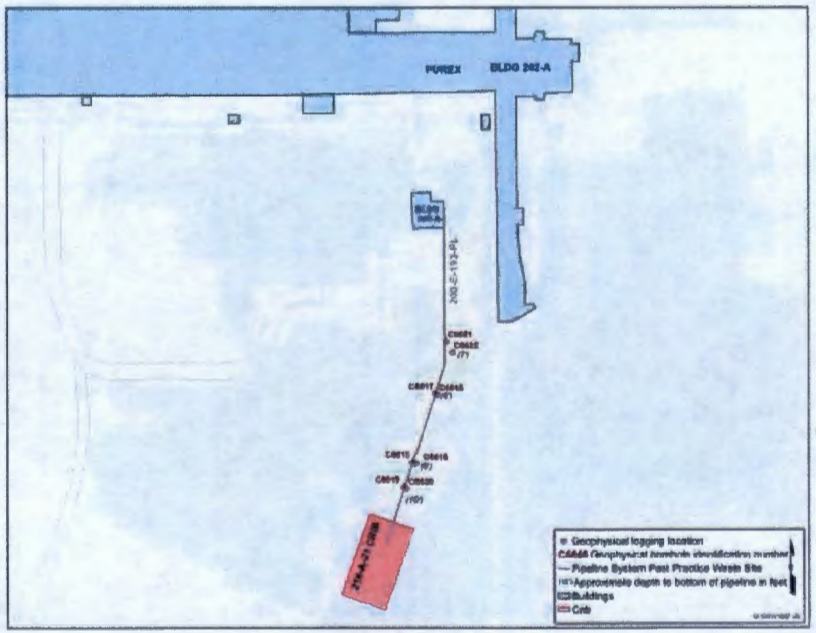
Misc./Other Relevant Information

- None

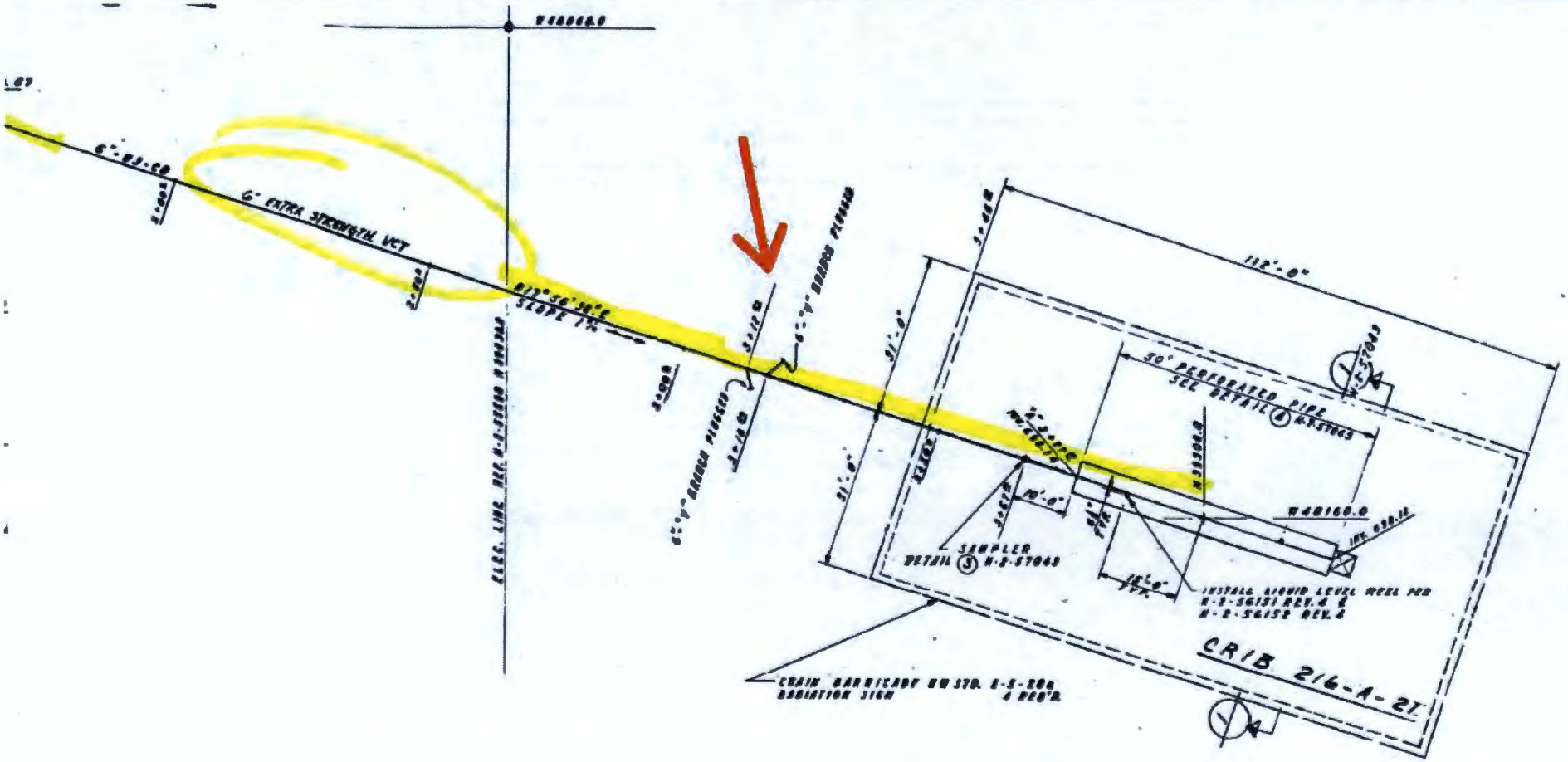
Scoping Summary: 200-E-193-PL







Pipeline 200-E-193-PL Borehole Locations


6" EXTRA STRENGTH VCT
SLOPE 1%
ELEC. LINE
112'-0"
50' PERFORATED PIPE
SEE DETAIL
SAMPLER
DETAIL
CHAIN BARRICADE
RADIATION SIGN
CRIB 216-A-21

Scoping Summary: 200-E-194-PL

History

200-E-194-PL waste site consists of an underground inactive process sewer pipeline that extends from the east side of the PUREX Plant to the 216-A-32 Crib center distribution line.

The pipeline transferred approximately 1,000 gallons of miscellaneous liquid waste from the 202-A Canyon Building between Jan-1959 and 1972.

Construction

- Length: 309-ft
- Diameter: 6-in.
- Composition: Vitrified Clay
- Flow Method: Gravity
- Direct buried
- Encasement: None
- Cathodic Protection: None
- Depth: 5-ft bgs at termination
- Calculated Volume: 454-gal

Features of Interest

- 6x4 T branch with a vent pipe at waste site termination and transition to crib distribution line

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- No characterization data was located for the pipeline's associated crib 216-A-32

Waste Streams

- 202-A canyon crane maintenance facility floor, sink and shower drainage
- TRU, fission products, uranium, and heavy metals are suspected

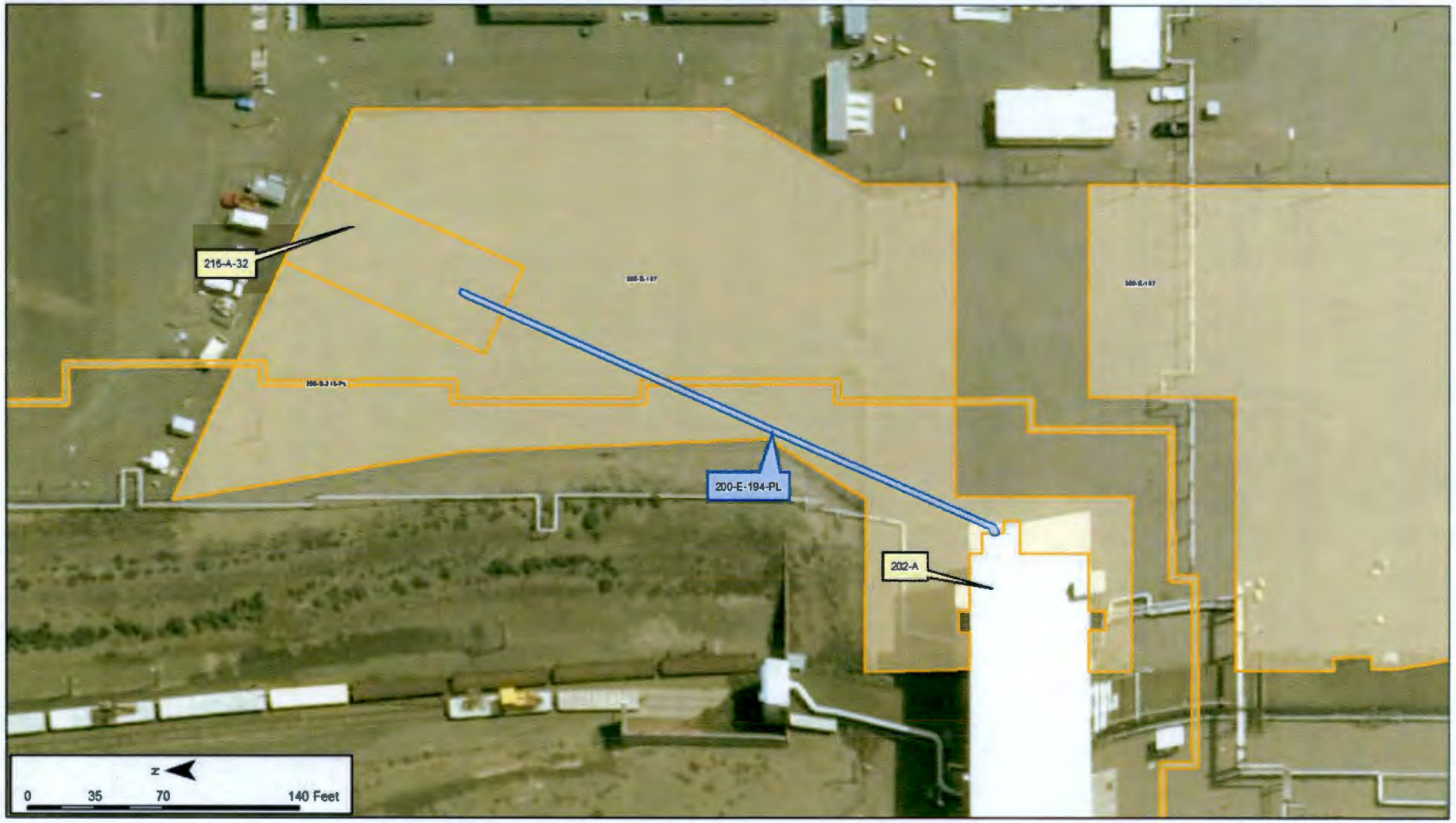
Misc./Other Relevant Information

- Records indicate that the Isochem Corporation intended to dispose of 65,000-gal of approximately 50% Soltrol kerosene diluent into the crib, however it could not be verified that the proposed disposal took place

Site Interfaces

Origins/Terminations	Site Intersects
200-CP-1	200-CP-1
• 202-A facility	• 200-E-107
200-CP-1	200-IS-1
• 216-A-32	• 200-E-218-PL

Scoping Summary: 200-E-194-PL



Scoping Summary: 200-E-195-PL

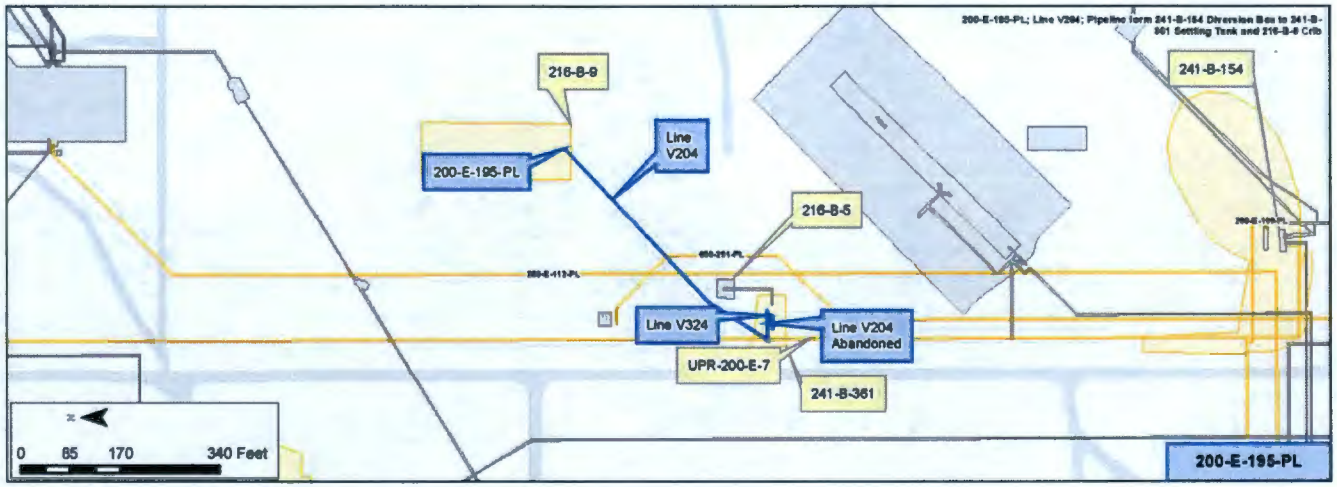
History

The 200-E-195-PL waste site is an inactive underground pipeline (V204) that was used to transfer drainage waste from 200-E-199-PL to the 216-B-9 Crib.

The pipeline was constructed in 1944 and was in service through 1951.

Originally, the pipeline transferred drainage waste from the B Plant (5-6W cells) to the 241-B-361 Settling Tank and then to the 216-B-5 Reverse well via the 241-B-154 Diversion Box. At the connection with V204/V324, the line extending north was designated V324. However, in 1947 line V204 to the settling tank was cut and rerouted directly to the 241-B-9 Crib.

The line was formally deactivated in 1992 by removal of the jumper in the 241-B-154 Diversion Box. In November 1954, approximately 18,000 L of tank wash waste leaked from the line. The location of the leakage was assigned waste site UPR-200-E-7. Details of the leakage are presented in the UPR-200-E-7 Scoping Summary.



Construction

- Length: 477 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Depth: 7 ft – 14 ft bgs
- Calculated Volume: ~175 gal

Features of Interest

- Point where V204 exits the 200-E-199-PL pipe trench and extends NE to the 216-B-9 Crib includes a welded vertical reroute
- Capped and abandoned line segment between original V204 configuration and 241-B-361 Settling Tank
- Abandoned segment of line V324 identified as part of 200-E-195-PL
- UPR-200-E-7 resulting from line V204 leak

Relevant Characterization

- The 200-E-195-PL pipeline was targeted for characterization in DOE/RL-2002-14, Rev 1 *(July 2008)*
  - Installation of Direct Push borings, geophysical logging, test pits and soil sampling were planned but not executed
  - Alternative sampling locations (unassociated with 200-E-195-PL) were selected in lieu of the planned soil samples and test pits

Waste Streams

- Line V204 transferred low-salt radioactive BiPO4 wash waste
  - From 1945 to 1947 approximately 454.2 million L was transferred to the 241-B-361 Settling Tank
  - From 1948 to 1951 approximately 18.4 million L was transferred to the 216-B-9 Crib

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 200-E-199-PL

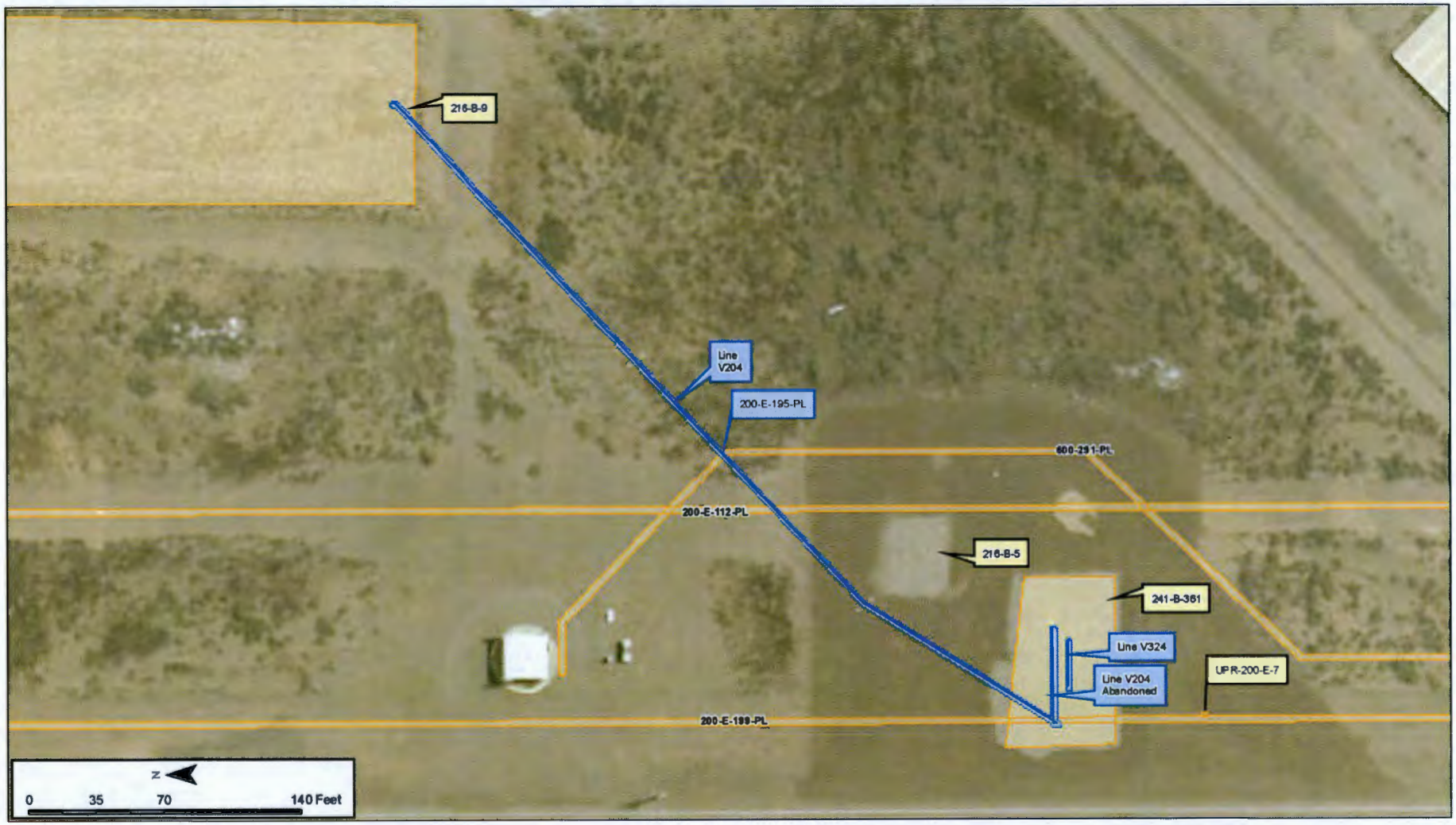
200-TW-2
- 241-B-361 Settling tank
- 216-B-9 Crib

Site Intersects

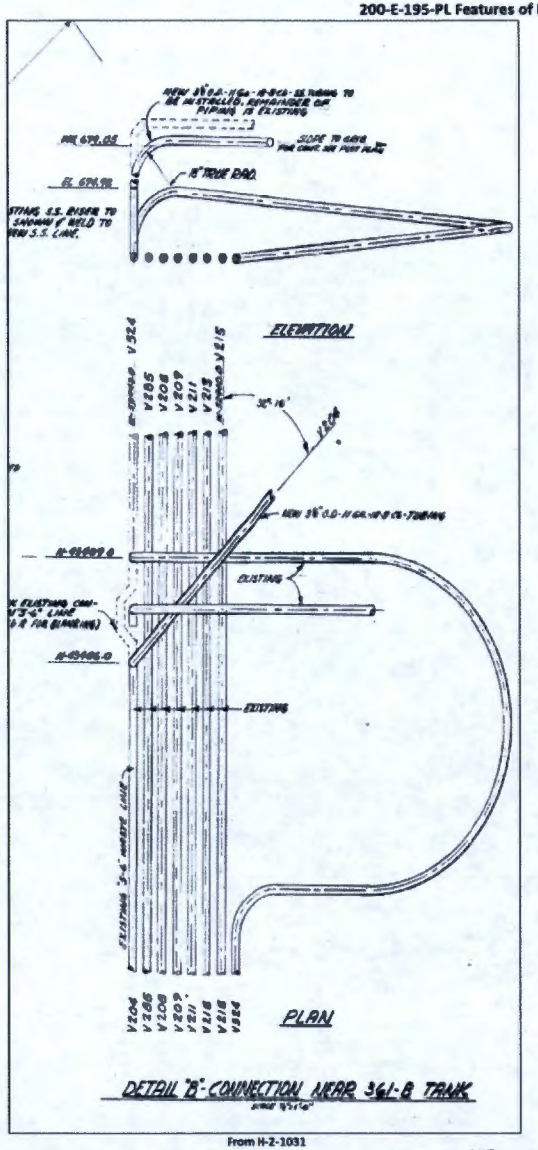
200-IS-1
- 200-E-112-PL

Other
- 600-291-PL

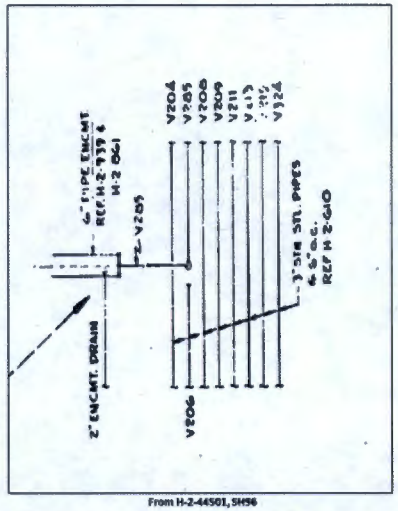
Scoping Summary: 200-E-195-PL



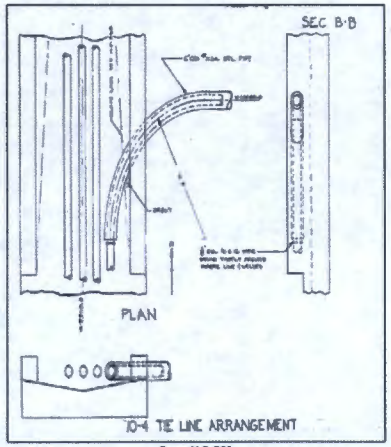
200-E-195-PL Features of Interest



From H-2-1031



From H-2-44501, SH56



From H-2-861

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Scoping Summary: 200-E-198-PL

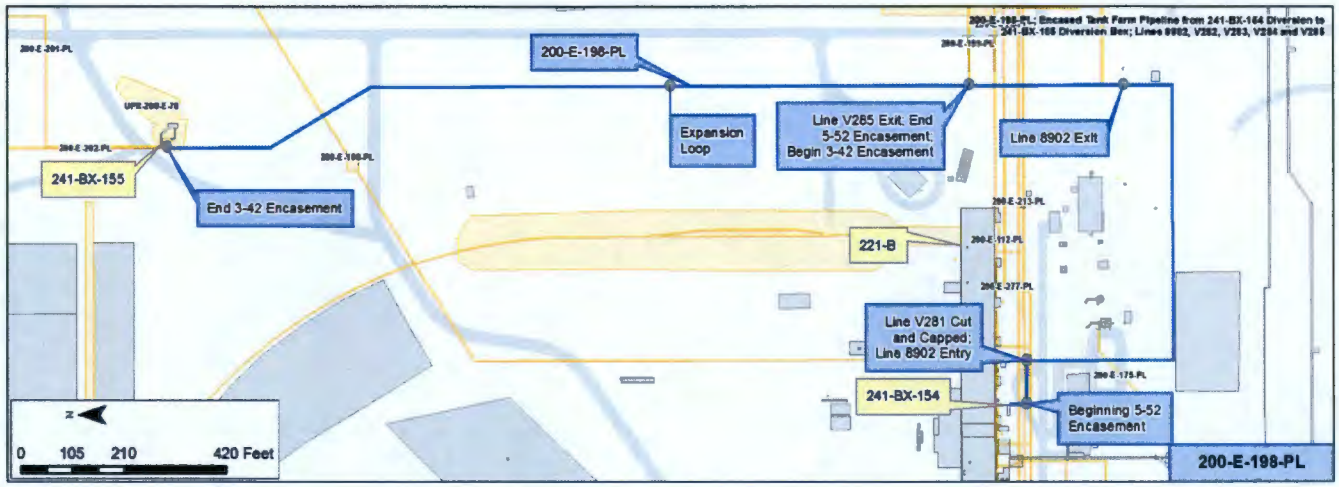
History

The 200-E-198-PL waste site is an inactive underground set of three encased pipelines (V282, V283, V284) that was used to transfer process fluids and decontamination waste from the 241-BX-154 Diversion Box to the 241-BX-155 Diversion Box.

The system was constructed in 1947 and was taken out of service in 2000, when the 241-BX-155 Diversion Box was isolated.

Additional lines are contained within the same pipeline encasement and terminate within or enter/exit the encasement at various points. Line V281 is cut and capped within the encasement. Line 8902 (200-E-116-PL) enters and exits the encasement. Line V285 (200-E-199-PL) enters the encasement from the 241-BX-154 Diversion Box, exits from the encasement, and extends to the 241-BX Tank Farm.

There were no records of leaks or modifications to the pipeline found in the historical record.



Construction

- Length:
  - V282: 3,108 ft
  - V283: 3,108 ft
  - V284: 3,108 ft
- Diameter: 3 in. ID, 3.5 in. OD
- Composition: Stainless Steel
- Drainage Unknown
- Direct Buried
- Encasement Specifications: Pipe-in-pipe (6-in Carbon Steel); five line 5-52 Reinforced Concrete; 4 Line 4-45; 3 Line 3-42
- Depth: 8 ft – 12 ft bgs
- Total Calculated Volume:
  - V282: 1,141 gal
  - V283: 1,141 gal
  - V284: 1,141 gal

Features of Interest

- Four 90-degree elbows
- One Expansion Loop (see selected features page)
- Two 45-degree bends
- Exit point for line V285 (200-E-199-PL)
- Origin and Terminus point for line 8902 (200-E-116-PL)
- Origin and Terminus point for line V281 within encasement

Relevant Characterization

- No record of releases or failures associated with 200-E-198-PL were identified
- The pipeline terminates at 241-BX-155 Diversion Box which is associated with the 200-E-78 UPR

Waste Streams

- From 1948 to 1952 the 200-E-198-PL pipeline transferred BiPO4 process waste
  - The process streams included four waste streams: metal waste , coating waste, first cycle decontamination waste (1C), and second cycle decontamination waste (2C)
- From 1968 to 1978 the 200-E-198-PL pipeline transferred process fluids including TBP waste solidification, waste fractionization, and U recovery fluids

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

IS-200-1

- 241-BX-154 (diversion box)
- 241-BX-155 (diversion box)

Site Intersects

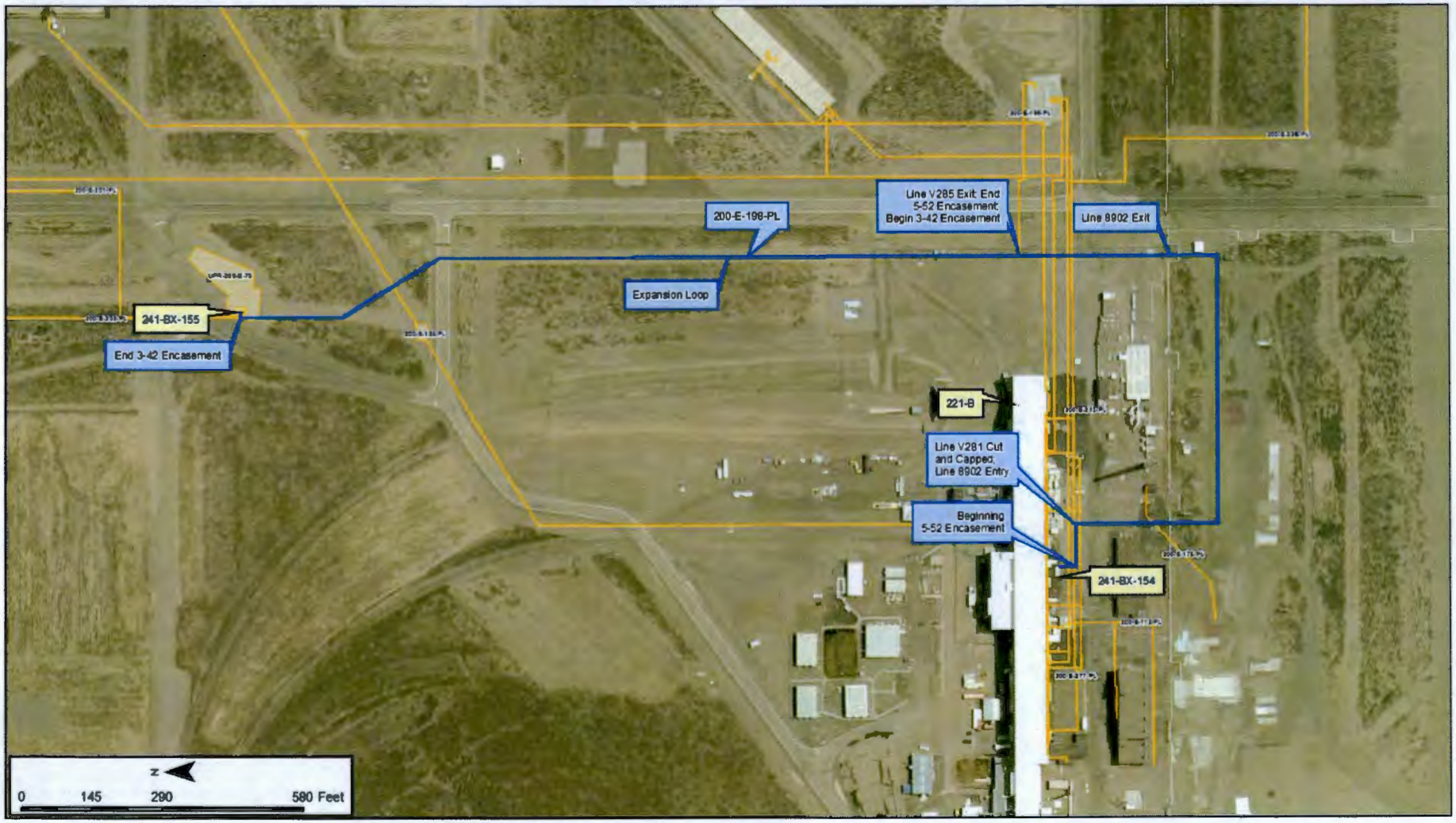
IS-200-1

- 200-E-112-PL
- 200-E-122-PL
- 200-E-175-PL
- 200-E-199-PL
- 200-E-188-PL
- 200-E-201-PL
- 200-E-202-PL
- 200-E-213-PL
- 200-E-226-PL
- 200-E-277-PL
- 200-E-78 (UPR)

No Operable Unit

- 200-E-122 (CF Bullpen - Equipment Storage Yard)

Scoping Summary: 200-E-198-PL



Scoping Summary: 200-E-199-PL

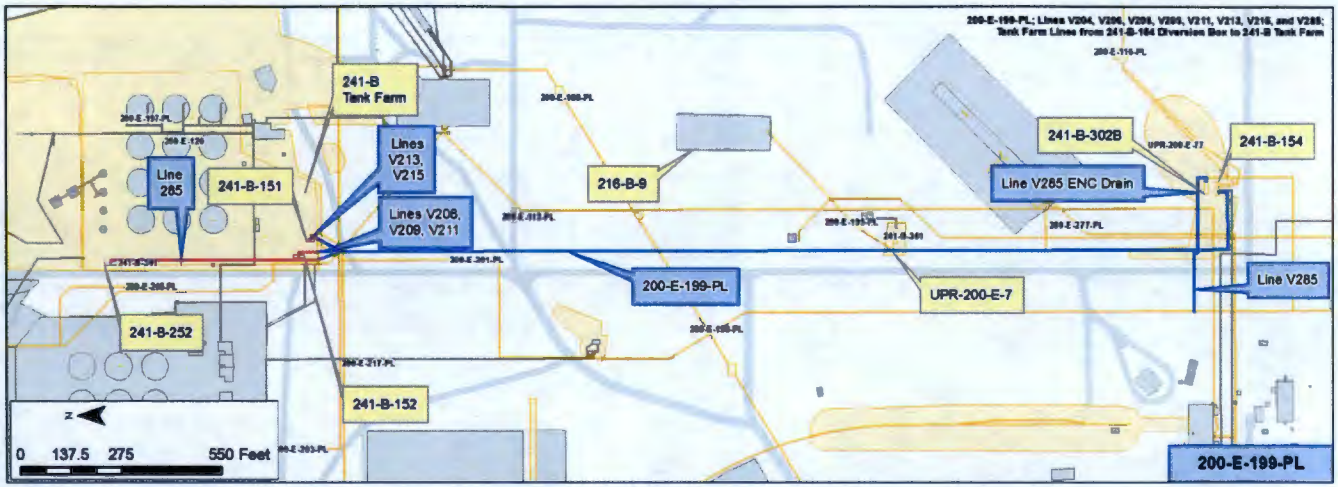
History

The 200-E-199-PL waste site is an inactive underground pipeline transfer system that was used to transfer process fluids and decontamination waste between multiple diversion boxes in the B Plant area and the B Tank Farm.

The 200-E-199-PL originates at the 241-B-154 Diversion Box and terminates at multiple points in the B Plant Area. The systems consists of eight lines: V204, V206, V208, V209, V211, V213, V215, V285.

The pipeline was constructed in 1945 and taken out of service in late 2000 when the 241-B-151 Diversion Box, the 241-B-152 Diversion Box, the 241-B-252 Diversion Box, and the 241-B-154 Diversion Box were isolated and weather sealed.

Drawings indicate line V211 was taken out a service earlier than the other 200-E-199-PL lines.



Construction

- Length:
  - V204: 1565 ft total (1088 ft within 200-E-199-PL pipe bed)
  - V206: 274 ft
  - V208: 2682 ft
  - V209: 2679 ft
  - V211: 2676 ft
  - V213: 2644 ft
  - V215: 2673 ft
  - V285: 3505 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Depth: 7 ft – 16 ft bgs (Direct Buried)
- Total Calculated Volume:
  - V204: 418 gal
  - V206: 105 gal
  - V208: 1,030 gal
  - V209: 1,029 gal
  - V211: 1,027 gal
  - V213: 1,015 gal
  - V215: 1,026 gal
  - V285: 802 gal

Features of Interest

- V285 enters from the 200-E-198-PL encasement
- Line V285 has 6 in. Pipe-in-Pipe Encasement for 1,415 ft
  - Becomes direct buried when joining 200-E-199-PL
- There is a 2 in. steel encasement drain line extending from the point where line V285 enters the 200-E-199-PL pipeline trench to the 241-B-302B Catch Tank
- 8 flange connections at 241-B-154 Diversion Box
- 2 flange connections at 241-B-151 Diversion Box
- 3 flange connections at 241-B-152 Diversion Box
- 1 flange connection at 241-B-252 Diversion Box

Relevant Characterization

- A leak in line V204 occurred in November 1954 (UPR-200-E-7)
  - This event is also associated with 200-E-195-PL
  - Approximately 5,000 gal of cell wash water from the S-9 tank in the 221-B Building (HW-60807) leaked
  - Surface dosage rates of 1.7 rad/hr were observed over an area of approximately 30 sq ft
  - The area was covered with clean soils and was posted as 'Underground Contamination'

Waste Streams

- From 1948 to 1952 200-E-199-PL pipeline transferred BiPO4 process wastes
  - The process streams included four waste streams: metal waste, coating waste, first cycle decontamination waste (1C1), and second cycle decontamination waste (2C1)
- From approximately 1968-1978 process fluids transferred through the 200-E-199-PL supported TBP waste solidification, waste fractionization to separate Cs, Sr, and other fissionable materials from tank farm wastes, and U recovery

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-B-154 Diversion Box
- 200-E-198-PL

200-IS-1
- 241-B-151 Diversion Box
- 241-B-152 Diversion Box
- 241-B-252 Diversion Box
- 200-E-195-PL

Site Intersects

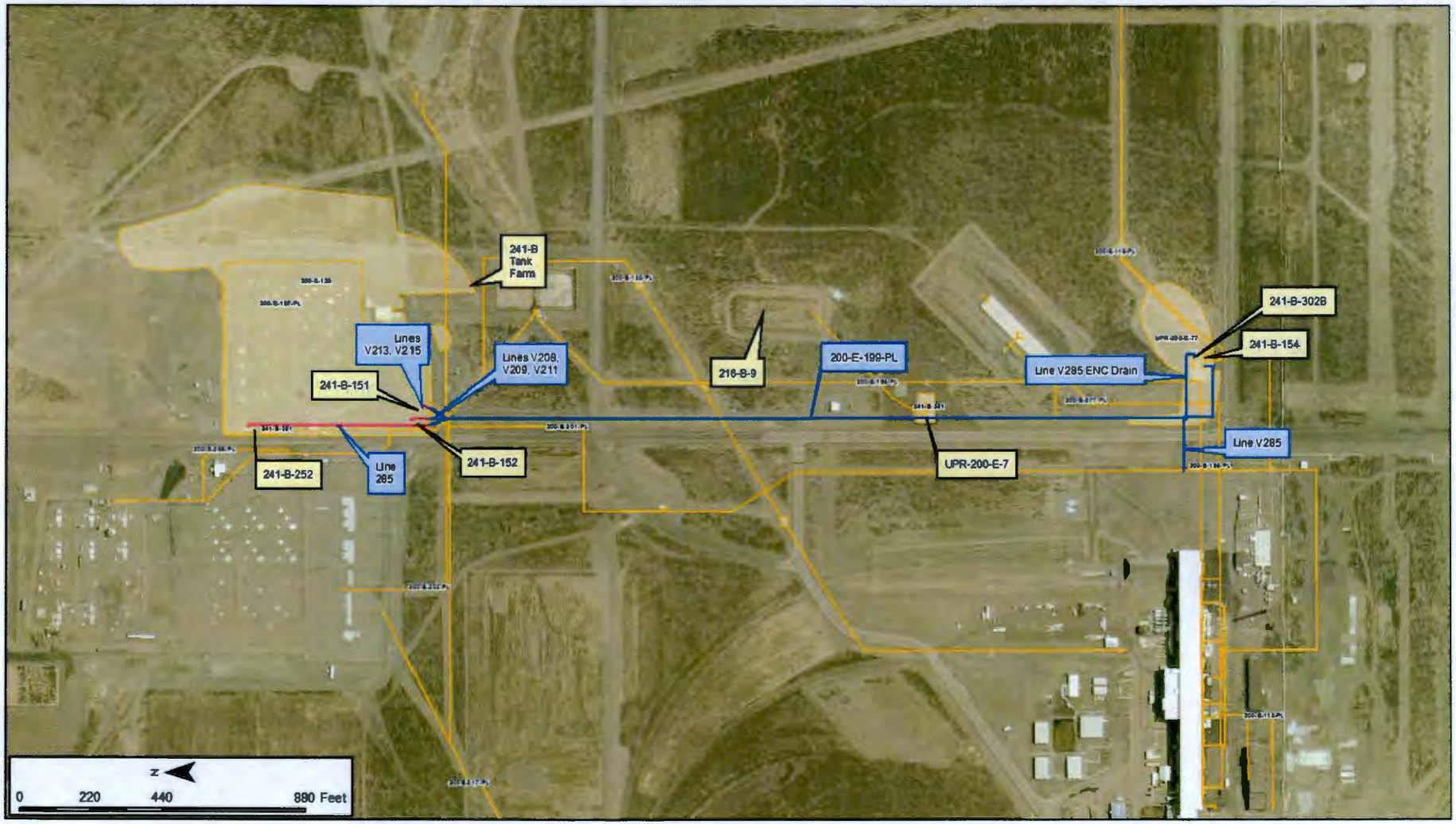
200-IS-1
- 200-E-112-PL
- 200-E-188-PL
- 200-E-201-PL
- 200-E-203-PL
- 200-E-217-PL
- 200-E-265-PL
- 200-E-277-PL
- UPR-200-E-7
- UPR-200-E-77

200-EA-1
- 241-B-361

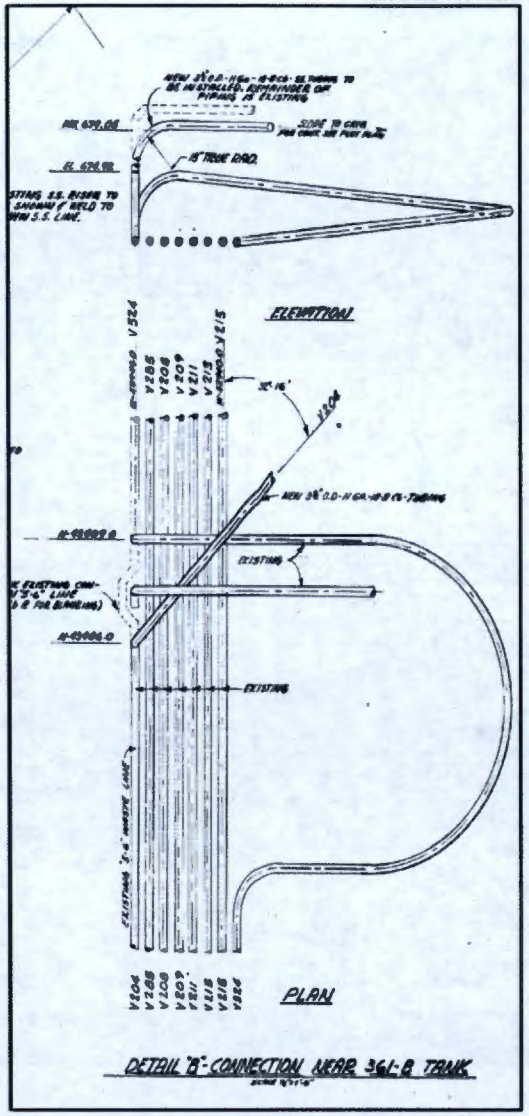
WMA B/BX/BY
- 200-E-120

Other
- 600-291-PL

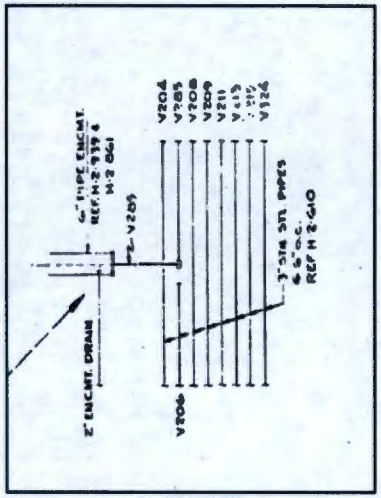
Scoping Summary: 200-E-199-PL



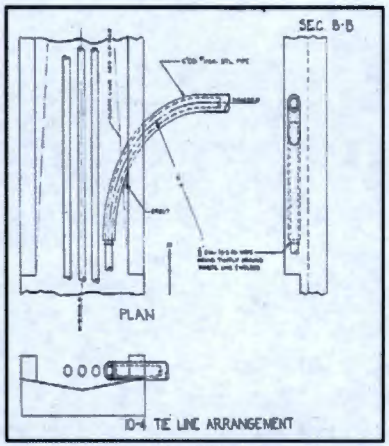
200-E-199-PL Features of Interest



From H-3-1031



From H-2-44301, SH96



From H-2-861

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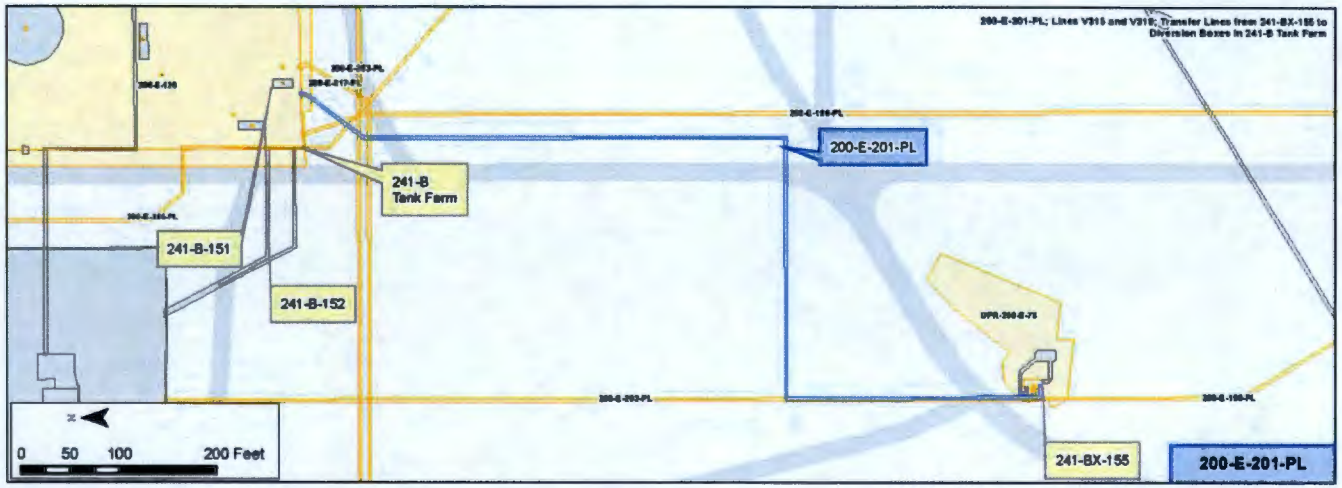
Scoping Summary: 200-E-201-PL

History

The 200-E-201-PL waste site is an inactive underground pipeline system comprised of two pipes (V315 & V319) that were used to transfer process and decontamination waste from the 241-BX-155 Diversion Box to the 241-B-151 and 241-B-152 Diversion Boxes.

The pipelines were constructed in 1946 and taken out of service in 2000 when the 241-BX-155 Diversion Box was isolated. Three additional lines, V316, V317 and V318 (200-E-202-PL), are contained in the same trench for approximately 250 feet.

No records of leaks or modifications to the pipeline were found in the historical record.



Construction

- Length: 2,140 ft (total)
  - V315: 1,040 ft
  - V319: 1,100 ft
- Diameter: 3 in.
- Pipeline Composition: Stainless Steel
- Pressurized
- Direct Buried
- Encasement Specifications: Pipe-in-Pipe
- Depth: 9 ft - 10.75 ft bgs
- Calculated Volume: 786 gal (total)
  - V315: 382 gal
  - V319: 404 gal

Features of Interest

- Flanged connections at the 241-BX-155 Diversion Box (2)
- Flanged connections at the 241-B-151 Diversion Box (1)
- Flanged connections at the 241-B-152 Diversion Box (1)
- One 90 degree bend

Relevant Characterization

- No record of releases or failures associated with 200-201-PL were identified
- The pipeline originates at 241-BX-155 Diversion Box which is associated with the 200-E-78 UPR

Waste Streams

- BiPO4 wastes were processed through this pipeline
- From 1948-1952, the process streams included four waste streams: metal waste (MW)(high U, Pu concentrations), coating waste (CW)(high Al, Zr concentrations), first cycle decontamination waste (1C), and second cycle decontamination waste (2C)
- From 1968-1978, the process streams included TBP waste solidification, waste fractionization to separate Cs, Sr, and other fissionable materials from tank farm wastes, and U recovery
  - Contained Na, Al, Fe, Cr, Bi, Pb, and Ni

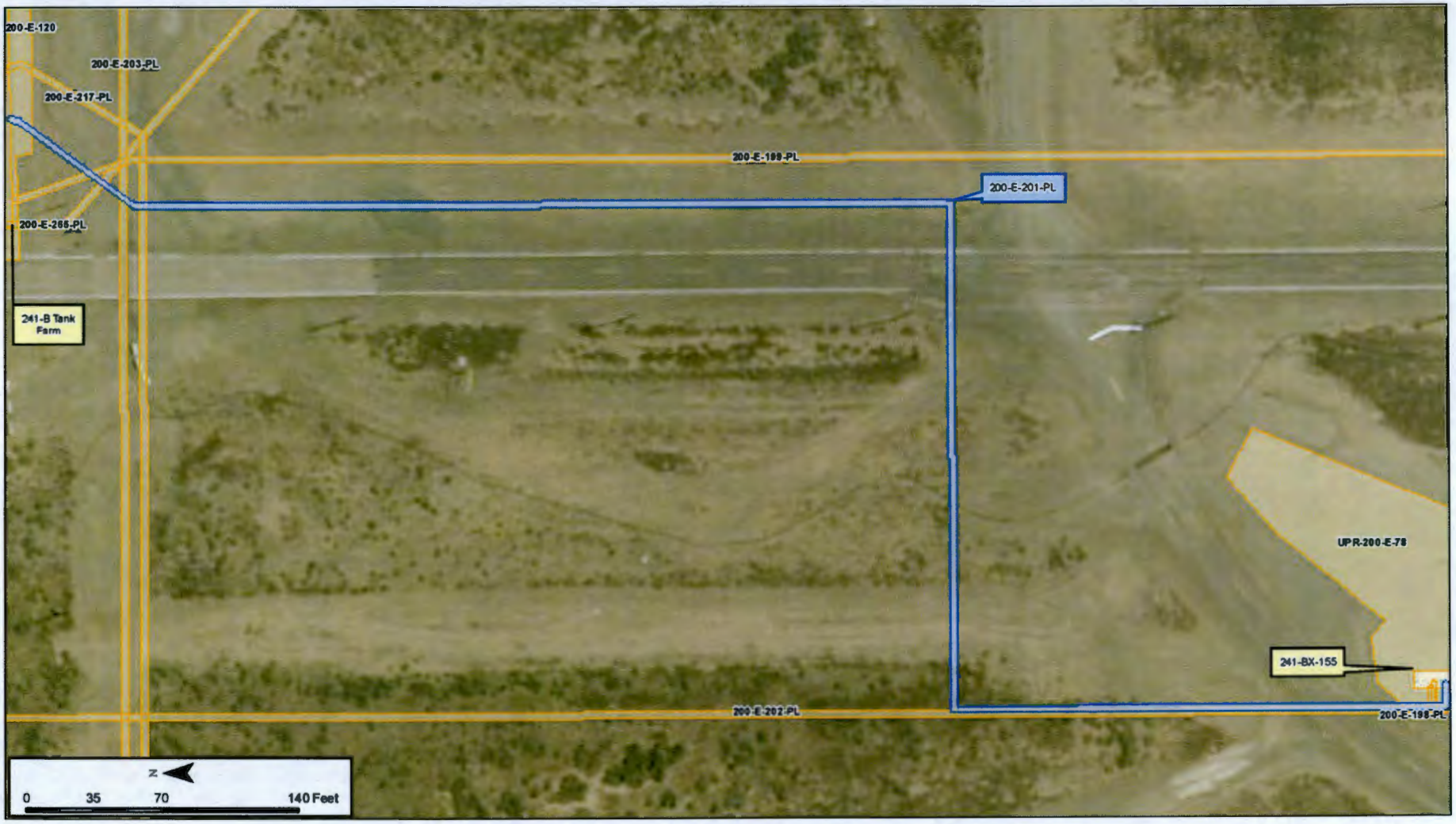
Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination 200-IS-1	Site Intersects 200-IS-1
• 241-BX-155 Diversion Box (origin)	• 200-E-198-PL
• 241-B-151 Diversion Box (terminus)	• 200-E-199-PL
• 241-B-152 Diversion Box (terminus)	• 200-E-202-PL
	• 200-E-203-PL
	• 200-E-217-PL
	• 200-E-265-PL
	• UPR-200-E-78

Scoping Summary: 200-E-201-PL



Scoping Summary: 200-E-202-PL

History

The 200-E-202-PL waste site is an inactive underground transfer system comprised of 3 pipelines (V316, V317, V318) that was used to transfer process fluids and decontamination waste between from the 241-BX-155 Diversion Box and the 241-BX-153 Diversion Box.

The system was constructed in 1947 and taken out of service in 2000, when the 241-BX-155 Diversion Box was isolated. Additional lines, V315 and V319 (200-E-201-PL) are contained in the same pipe trench for approximately 250 ft beginning at the 241-BX-155 Diversion Box.

No records of leaks or modifications to the pipeline were found in the historical record.

Construction

- Length: 1,097 ft (each)
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct buried
- Depth: 10 ft bgs
- Calculated volume: 403 gal (each); 1,209 gal (combined)

Features of Interest

- 6 Flanged connections at the 241-BX-155 and 241-BX-153 Diversion Boxes
- V315 and V319 exit the pipe bed ~240 ft north of the 241-BX-155 diversion box

Relevant Characterization

- No record of releases or failures associated with 200-E-202-PL were identified
- The pipeline originates at 241-BX-155 Diversion Box, which is associated with the UPR-200-E-78 site

Waste Streams

- The pipeline transferred wastes associated with the BiPO4 process
- From 1948-1952, the process streams included four waste streams: metal waste (MW) (high U, Pu concentrations), coating waste (CW) (high Al, Zr concentrations), first cycle decontamination waste (1C), and second cycle decontamination waste (2C)
- From 1968-1978, process fluids transferred to the 241-BX-155 Diversion Box also supported TBP waste solidification, waste fractionization, and U recovery

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

- 241-BX-155 Diversion Box (origin)
- 241-BX-153 Diversion Box (terminus)

Site Intersects

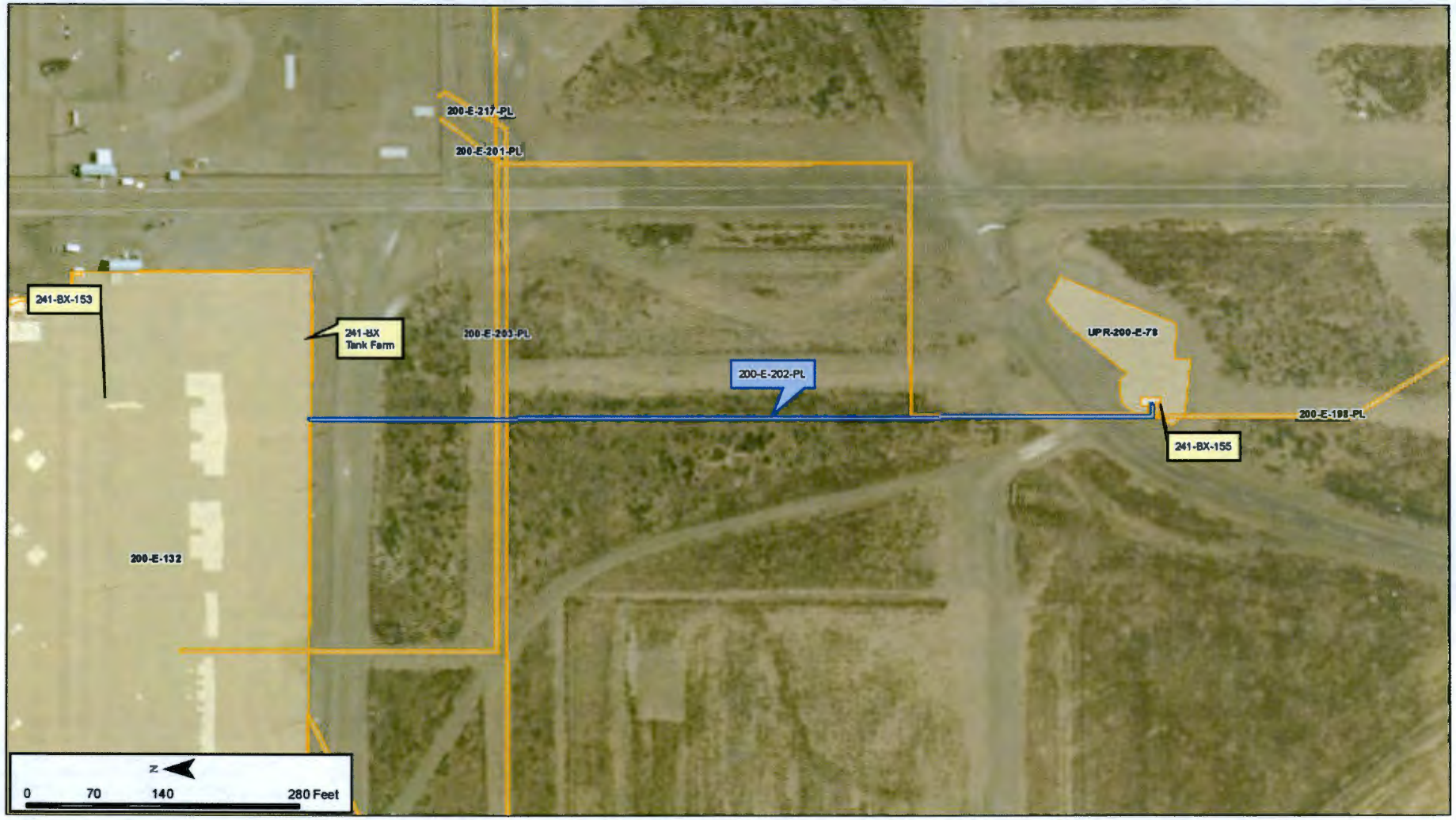
200-IS-1

- 200-E-201-PL
- 200-E-203-PL
- 200-E-217-PL
- UPR-200-E-78 (associated with the 241-BX-155 Diversion Box)

Other

- 241-BX/BY Tank Farm

Scoping Summary: 200-E-202-PL



Scoping Summary: 200-E-203-PL

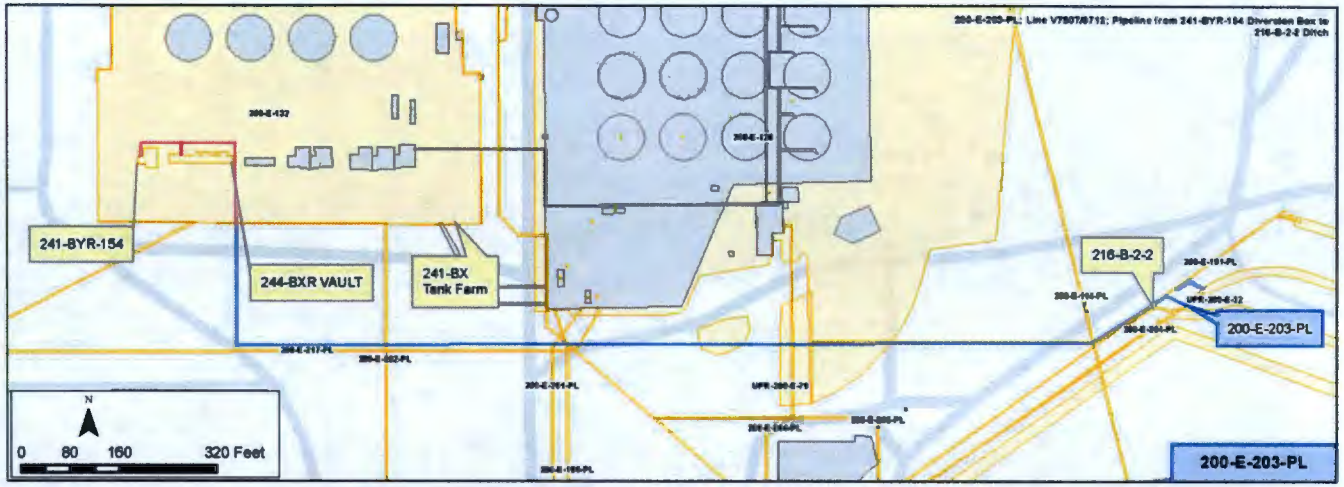
History

The 200-E-203-PL waste site is an inactive underground pipeline used to transfer processing and decontamination waste solutions to the 216-B-2-2 Ditch from the 244-BXR Vault and 241-BYR-154 Diversion Box, located inside the 241-BY tank farm.

The first segment of pipe was constructed by 1953 and connected to the vault via lines 9713 and 9714 and ran to the ditch.

By 1968, the pipe had been extended to the diversion box, and the vault connector lines were blanked.

The operational period can be correlated to the 241-BY tank farm waste stream to 216-B-2-2 ditch, circa Jan-1965 to Apr-1970. Backfilling of the ditch in 1973 confirms an end of operational period in the early 1970's.



Construction

- Length: 1,933 ft
- Diameter: 6 in.
- Composition: Carbon steel
- Flow Method: Pressurized
- Depth: At diversion box approx. 8 ft
- Encasement: None located
- Cathodic Protection: None located
- Volume: 2,839 gal

Features of Interest

- Six bends
- Connection to line 9713 going into tank BXR-002 inside the 244 BXR Vault
- Connection to line 9714 going into tank BXR-003 inside the 244 BXR Vault
- An abandoned segment of pipe connecting to 216-B-2-1 ditch is associated with this site (QMAP), waste stream history does not support this association

Waste Streams

- Jan-1965 to Apr-1970 - 241-BY tank farm in Tank Solidification (ITS) Unit 1 cooling water to 216-B-2-2 ditch
- Feb-1968 to Apr-1970 - 241-BY tank farm ITS Unit 2 waste to 216-B-2-2 ditch

Site Interfaces

Origin/Termination

WMA B
- 244-BXR Vault
- 241-BYR-154 Div. Box
- 200-E-132

200-EA-1
- 216-B-2-2 Ditch

Site Intersects

No Operable Unit
- UPR-200-E-32

200-IS-1
- 200-E-191-PL
- 200-E-199-PL
- 200-E-201-PL
- 200-E-202-PL
- 200-E-204-PL
- 200-E-217-PL
- UPR-200-E-79
- 200-E-114-PL
- 200-E-265-PL

WMA B
- 200-E-120

200-EA-1
- 216-B-2-2
- 216-B-63

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Dec-1998 radionuclides for the head of B-2-2 Ditch included: Sr-90 29.12 Years 1.19E+0; Cs-134 2.1 Years 3.42E-07; Cs-135 2.9E+6 Years 6.59E-07; Cs-137 30 Years 2.54E-01; U (Gross) 4.5E+9 Years <1.57E-05
- Dec-1998 radionuclides for the terminus of B-2-2 Ditch included: 3.48E+02 curies of Sr-90; 1.32E-06 curies of Cs-134; 2.55E-06 curies of Cs-135; 2.54E-01 curies of Cs-137

Misc./Other Relevant Information

- 80 contaminated specks and 4 soil spots found above 200-E-203. Both greater than 1,000,000 dpm per 100 sq-cm beta-gamma - added to 200-E-120, (all UPRs surrounding 241-B tank farm) Nov-20-2009
- Abandoned segment of pipe connecting to 216-B-2-1 is present in QMAP, but no other references could be located to support an association with this site

Scoping Summary: 200-E-203-PL

Scoping Summary: 200-E-204-PL

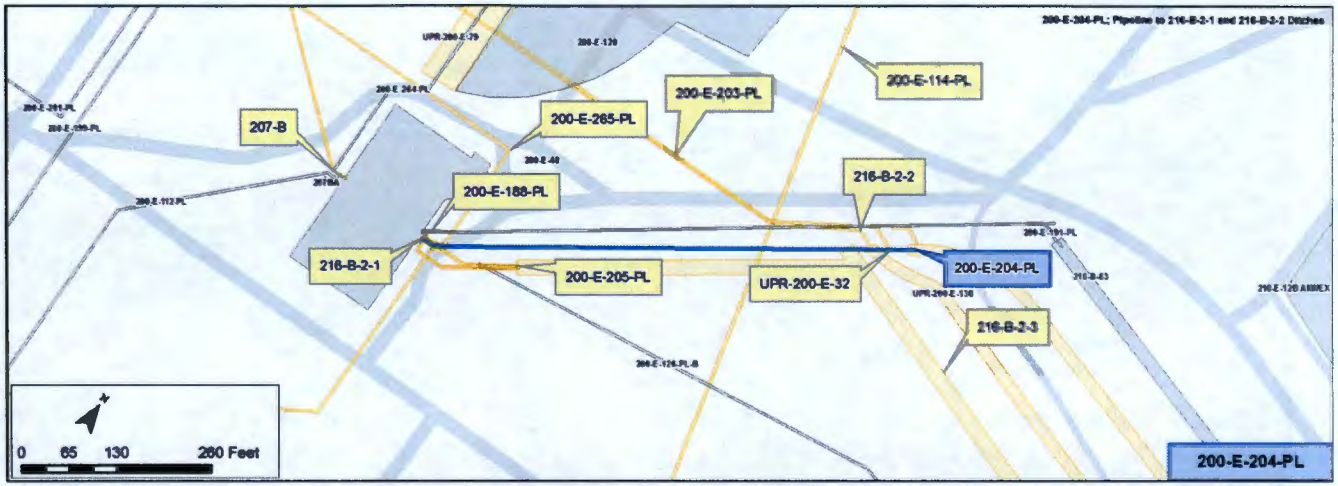
History

The 200-E-204-PL waste site is an inactive sewer drain to the 216-B-2-1 and 216-B-2-2 Ditches. The line received discharge from the 207-B Retention Basin and B-Plant chemical sewer (via the retention basin valve pit).

The pipeline was in operations starting in 1945 and consist of two subsites: 200-E-204-PL:1 and 200-E-204-PL:2.

In November 1963, there was a release of Ce-144 (half-life of 285 days; UPR-200-E-32) into the 216-B-2-1 Ditch, which was backfilled and surface stabilized. Discharge from 200-E-204-PL was then rerouted into the newly constructed 216-B-2-2 Ditch, which was also backfilled and stabilized in 1970 after a separate abnormal release event (UPR-200-E-138).

In the early 1970's, 200-E-204-PL was abandoned and discharge from 207-B to the newly constructed 216-B-2-3 ditch was run through 200-E-205-PL.



Construction

- Length:
  - 200-E-204-PL:1 - 18 ft
  - 200-E-204-PL:2 - 650 ft
- Diameter:
  - 200-E-204-PL:1 - 24 in.
  - 200-E-204-PL:2 - 30 in.
- Composition: Vitrified Clay
- Gravity fed
- Direct Buried
- Depth: ~2-15 (may have additional soil layer from the stabilization of ditches)
- Total Calculated Volume: 24,293 gal
  - 200-E-204-PL:1 - 423 gal
  - 200-E-204-PL:2 - 23,870 gal

Features of Interest

- Three abandoned covered connections to ditches: 216-B-2-1, 216-B-2-2, and 216-B-2-3
- Valve Pit - east of 207-B Retention Basin
- Rip Rap Head Wall (end of pipeline into ditch 216-B-2-1)

Relevant Characterization

- UPR-200-E-32 on Nov-1963 released 30 Ci of Cerium-144 into 216-B-2-1 Ditch
- UPR-200-E-138 on Mar-30-1970 released 950 Ci of Strontium-90, that included isotopes with low half-lives: 96 Ci of Cerium/Promethium-144 and 1 Ci Cesium-137 into the 216-B-2-2 Ditch

Waste Streams

- Process: B-Plant (Drain Waste & Cooling Water)
- Cooling water from the B Plant and WESF air compressor aftercoolers, steam condensate, sanitary water, rain water, and demineralizer effluent
- Process effluent normally containing small amounts of radioactivity
- Refer to B Plant Chemical Sewer Stream-Specific Report (WHC-EP-0342) for extensive cover of all the waste stream associated with the pipeline (summary of findings - waste stream is noted as not containing any dangerous waste)

Misc./Other Relevant Information

- No additional comments noted

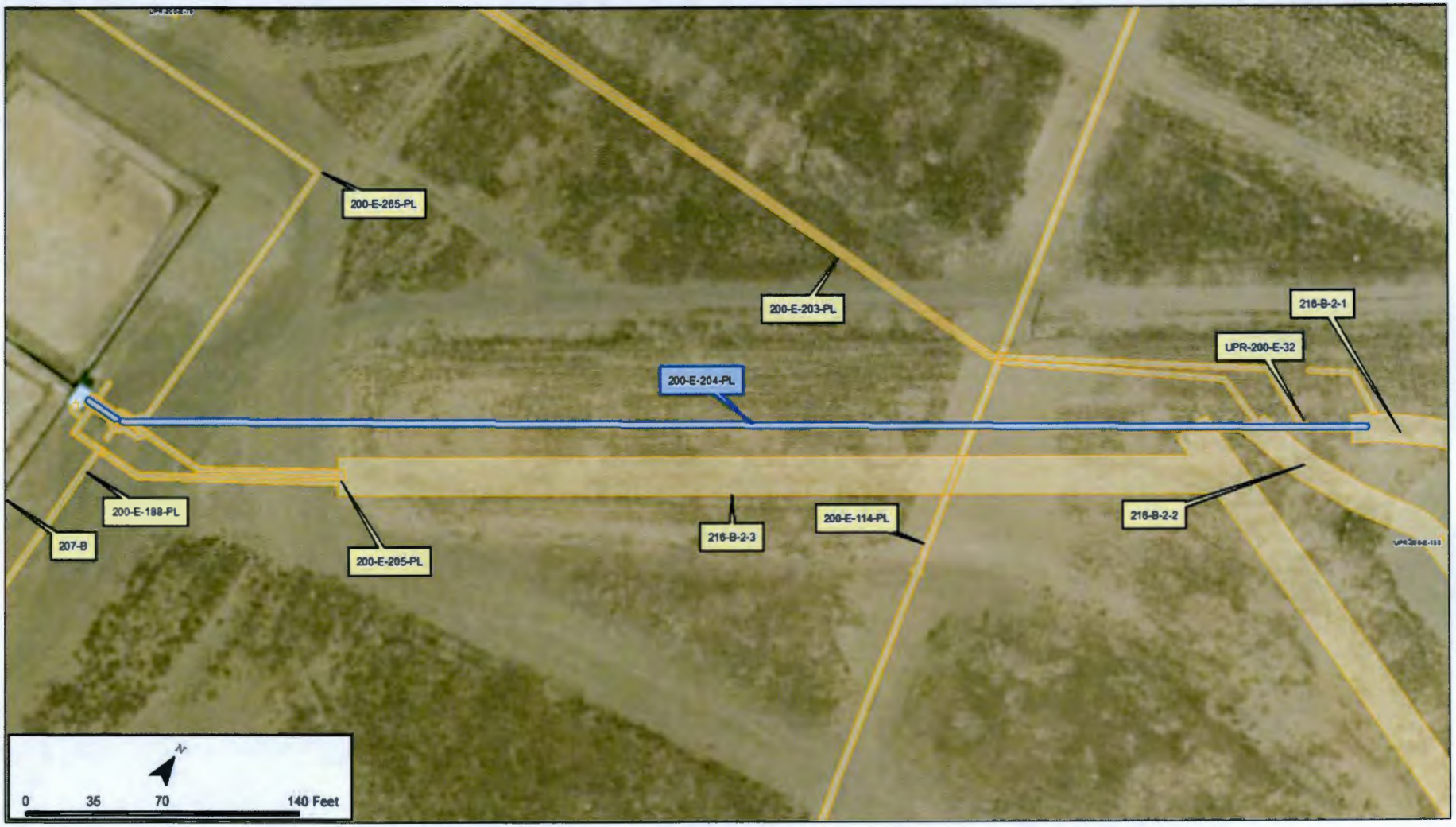
Site Interfaces

Origin/Termination:
200-EA-1
- 207-B (Retention Basin)
- 216-B-2-1 (ditch)
- 216-B-2-2 (ditch)
- 216-B-2-3 (ditch)

Site Intersects:
200-IS-1
- 200-E-188-PL
- 200-E-203-PL
- 200-E-114-PL
- 200-E-265-PL
- 200-E-126-PL-B

No Operable Unit
- UPR-200-E-32 (consolidated)
- UPR-200-E-138 (consolidated)

Scoping Summary: 200-E-204-PL



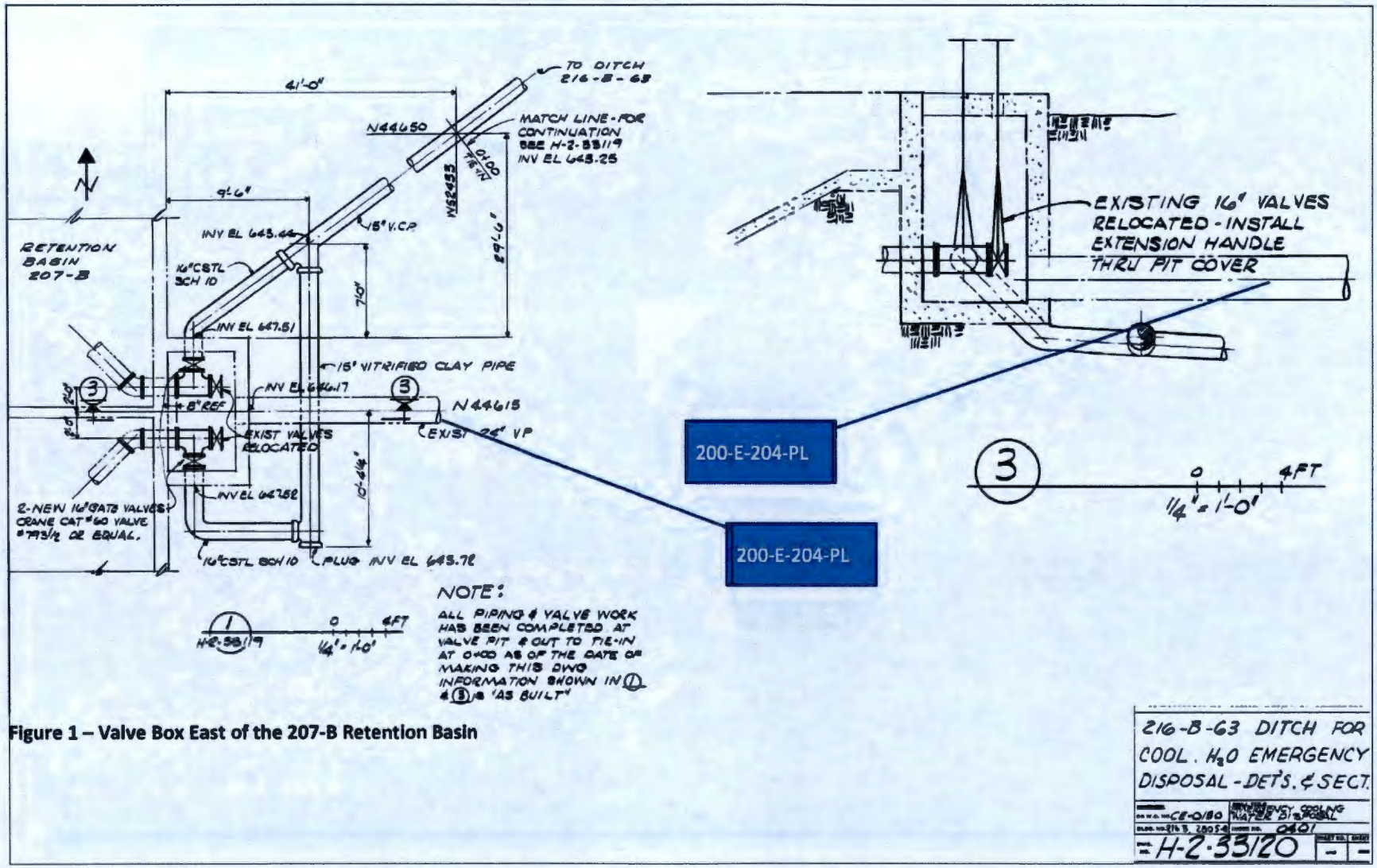


Figure 1 – Valve Box East of the 207-B Retention Basin

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Scoping Summary: 200-E-205-PL

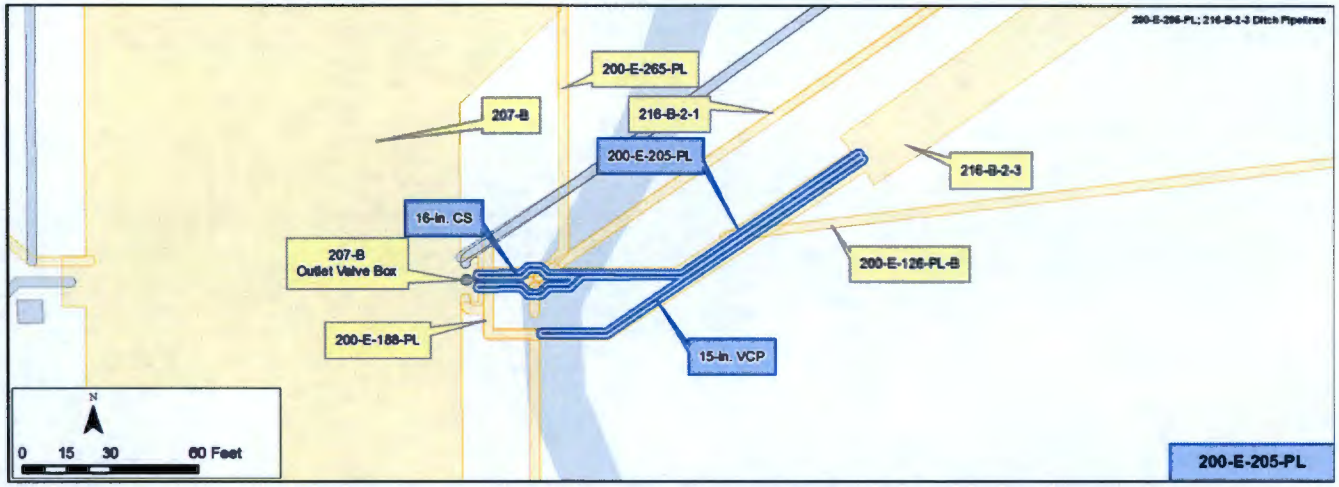
History

The 200-E-205-PL waste site is an inactive underground pipeline drain system consisting of two lines that drained to the 216-B-2-3 Ditch; the ditch, in turn, drained to the 216-B-3 Pond. One line's inlet was a tie in from the B Plant process sewer line (200-E-188-PL), while the other originated at the 207-B Retention Basin's outlet valve box.

The system was in use from 1970 to 1987.

The 216-B-2-3 Ditch was closed in 1987, and the lines were re-routed to drain via 200-E-126-PL-B, which extends to Diverter Station #2. By 1994, the 216-B-2-3 Ditch had been backfilled to grade.

In 1997, the outlet valve box of 207-B, where a portion of 200-E-205-PL originates, was backfilled with concrete as an isolation measure.



Construction

- Length: 300 ft (total)
  - Segment 1 (originates at 200-E-188-PL): 120 ft
  - Segment 2 (originates at 207-B Outlet Valve Box): 180 ft
- Diameter
  - Segment 1: 15 in.
  - Segment 2: 16 in.
- Composition
  - Segment 1: Vitrified Clay Pipe
  - Segment 2: Carbon Steel
- Encasement: Direct Buried
- Depth: 10 ft bgs
- Calculated Volume: 3,000 gal (total)
  - Segment 1: 1,120 gal
  - Segment 2: 1,880 gal

Features of Interest

- Tie-in at 200-188-PL
- Valve box at 207-B (concrete-filled in 1997)
- Potential for a Diversion Box at junction with 200-E-126-PL-B; reference materials are unclear about this tie-in

Waste Streams

- Process sewer effluent/process cooling water & 242-B Evaporator liquid via 200-E-188-PL and 207-B Retention Basin

Site Interfaces

Origin/Termination

200-EA-1
- 207-B Retention Basin
- 216-B-2-3 Ditch

200-IS-1
- 200-E-188-PL

Site Intersects

200-IS-1
- 200-E-126-PL-B
- 200-E-265-PL

200-EA-1
- 216-B-2-1

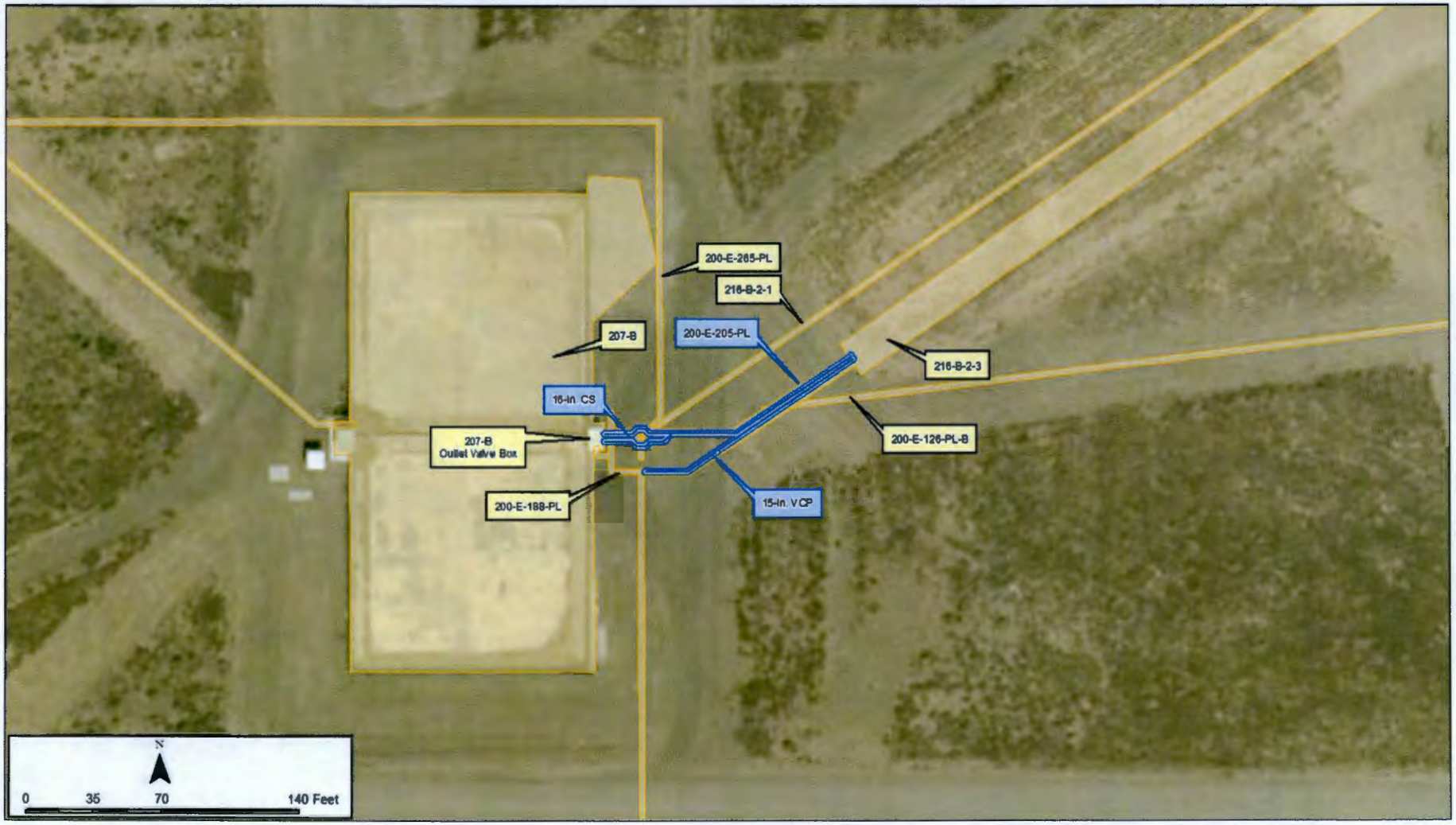
Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil have been located

Misc./Other Relevant Information

- The 207-B Retention Basin was in use from 1945 to 1997, when the outlet valve box was isolated via concrete fill

Scoping Summary: 200-E-205-PL



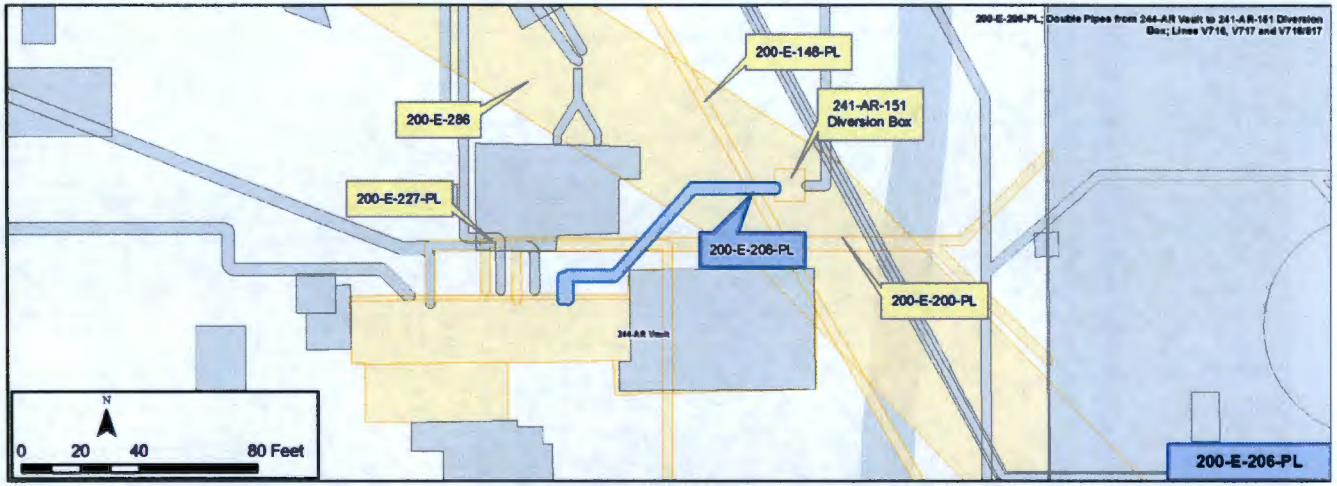
Scoping Summary: 200-E-206-PL

History

The 200-E-206-PL waste site is an inactive underground process transfer pipeline. It consists of three underground pipes buried in a single soil trench extending from the north wall of the 244-AR Vault Building to the 241-AR-151 Diversion Box.

The lines were constructed in 1983; and, have been inactive since at least 2003, when the 241-AR-151 Diversion Box had all six of its connecting pipelines flushed, isolated, and process blanks installed.

From 1976 to 2003, the diversion box was used for the transfer of liquid mixed waste from PUREX to waste tanks at the 241-AY and 241-AZ Tank Farms.



Construction

- Length: 480 ft (cumulative)
  - V716: 185 ft
  - V717: 185 ft
  - V718/817: 110 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement Specifications: Pipe-in-Pipe (6 in. outer pipe)
- Cathodic protection
- Depth: ~9 ft bgs
- Total Volume: 176 gal
  - V716: 68 gal
  - V717: 68 gal
  - V718/817: 40 gal

Features of Interest

- None identified

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.

Waste Streams

Per 241-AR-151 notes:
Waste Streams included: aging waste, first cycle B Plant waste, B Plant cesium feed waste, non-complexed, concentrated complexed, and cesium and strontium recovery waste. It is unclear which, if any, of these waste streams were diverted via this particular waste site's lines.

Misc./Other Relevant Information

- Assigned TSD status in 2008.

Site Interfaces

Origin/Termination
No Operable Unit
- 244-AR Vault
- 241-AR- Diversion Box

Site Intersects
No Operable Unit
- 200-E-227-PL
- 200-E-200-PL
- 200-E-148-PL
- 200-E-286 (rejected)

Scoping Summary: 200-E-206-PL

Scoping Summary: 200-E-207-PL

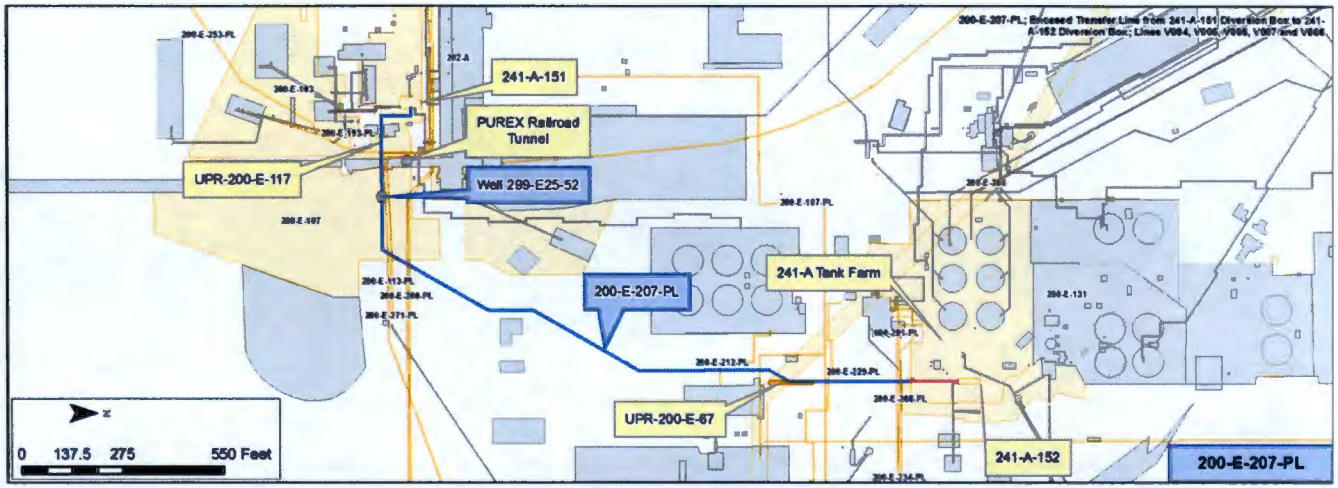
History

The 200-E-207-PL waste site is five inactive pipelines in an underground concrete encasement. The lines were constructed in 1956 and used to transfer process and decontamination waste from the PUREX facility's 241-A-151 Diversion Box to the 241-A Tank Farm's 241-A-152 Diversion Box.

Three of the five pipelines leaked and were capped prior to 1980:

- V006 leaked in Mar-1965 and was subsequently capped at both ends.
- In Apr-1972, it was discovered that V0004 had leaked waste into the encasement and surrounding soil. Approximately 2,500 gal of waste was drained and captured from the encasement and the line was capped at both ends. Impacted soils were assigned to the UPR-200-E-117 waste site, since consolidated into 200-E-103.
- V007 is recorded as a "known leaker" and is capped at both ends. The remaining lines V005 and V008 were in operation until 1980. Records indicate standard practice was to flush each line with water after a waste transfer.

Contaminated soil was discovered in 1984 during an excavation near the 200-E-207-PL encasement. This location is assigned to the



Construction

Pipeline (5 pipelines, V004, V005, V006, V007, and V008)

- Length: 1,982 ft each (Total Length - 9,910 ft)
- Diameter: 3.5 in.
- Material: Stainless Steel
- Concrete Encasement
- Pressurized Pipeline
- Depth: 10 ft bgs end-to-end (finish grade raised, where necessary to maintain depth consistency), slopes down at 1% gradient to 241-A-152
- Calculated Volume: 989 gal Each (Total - 4,945 Gallons)

Encasement

- Type: 5-52
- Length: 1,982 ft
- Calculated Volume of Concrete: 12,064 cubic ft (447 CY)

Features of Interest

- Bends (8)
- Swab Risers (3): at beginning of encasement at 241-A-151; and at either side of the PUREX railroad tunnel.

Relevant Characterization

- **May 2007** (borehole A6041) from Well 299-E25-52: Cs-137 max concentration of 10,600 pCi/g, 19 ft bgs; Co-60 and Eu-154 were also detected.
  - Releases from adjacent pipeline 200-E-113-PL may have impacted well readings here. *See Page 3 for well combination plot.*
- April 1972 dose rates in excavation atop of encasement: 2,000 mR/hr, max. In encasement after occurrence, 600 mR/hr.

Waste Streams

- PUREX processing and decontamination wastes

Misc./Other Relevant Information

- UPR-200-E-67 contamination levels ranged from 1 to 1.5 mRad/hr.
- Mud samples taken from the point where the 1972 leak occurred showed primarily Cs-137 and Sr-90, with little or no evidence of shorter-lived fission products.

Site Interfaces

Origin/Termination

200-CP-1

- 241-A-151 (origin)

WMA A/AX

- 241-A-152 (termination)

Site Intersects

200-CP-1

- 202-A
- 200-E-107

200-EA-1

- 200-E-103

No Operable Unit

- 200-E-286
- UPR-200-E-117 (consolidated into 200-E-103)

Site Intersects Con't

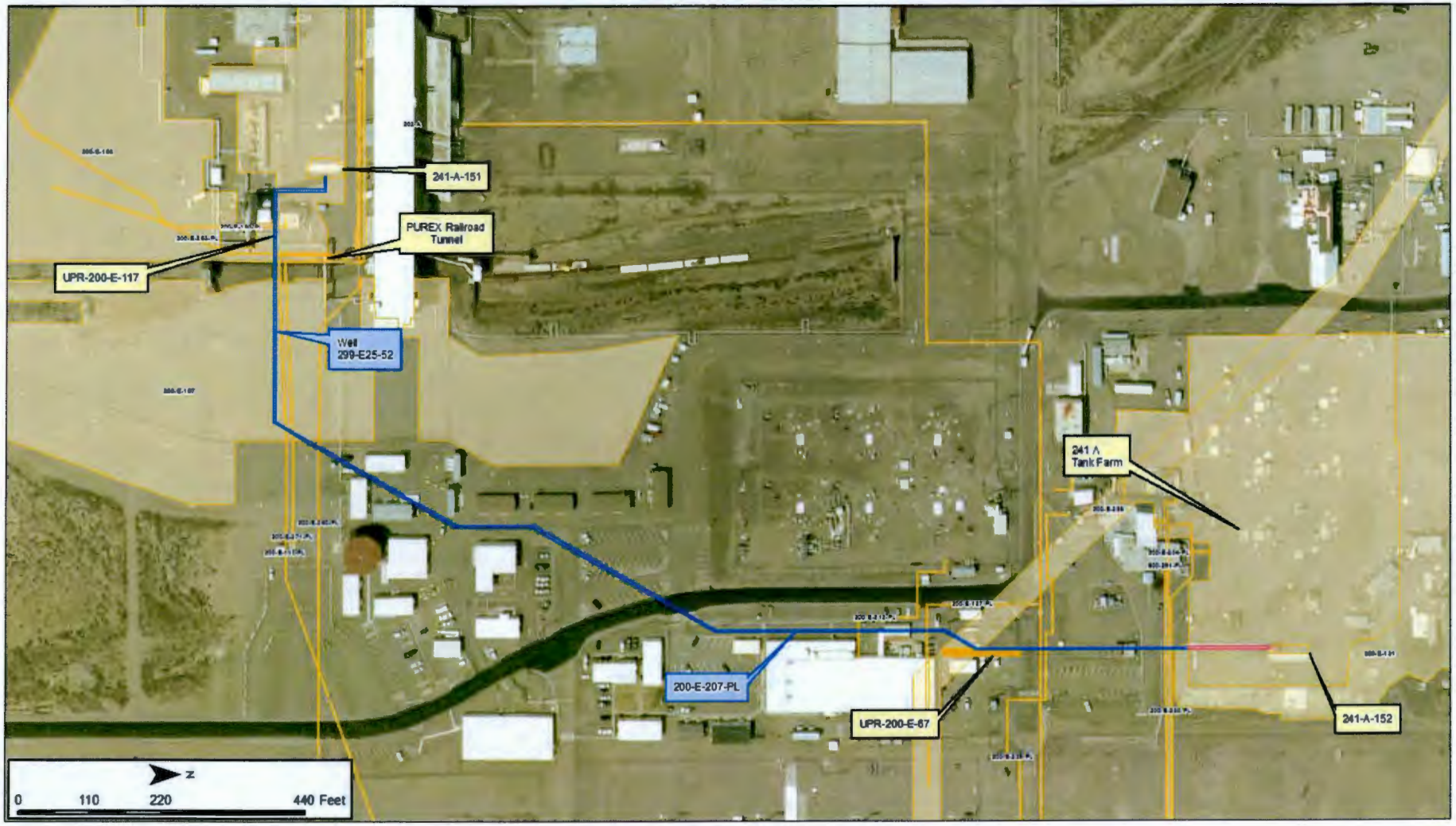
200-IS-1

- 200-E-113-PL
- 200-E-187-PL
- 200-E-193-PL
- 200-E-212-PL
- 200-E-229-PL
- 200-E-234-PL
- 200-E-253-PL
- 200-E-260-PL
- 200-E-261-PL
- 200-E-271-PL
- UPR-200-E-67

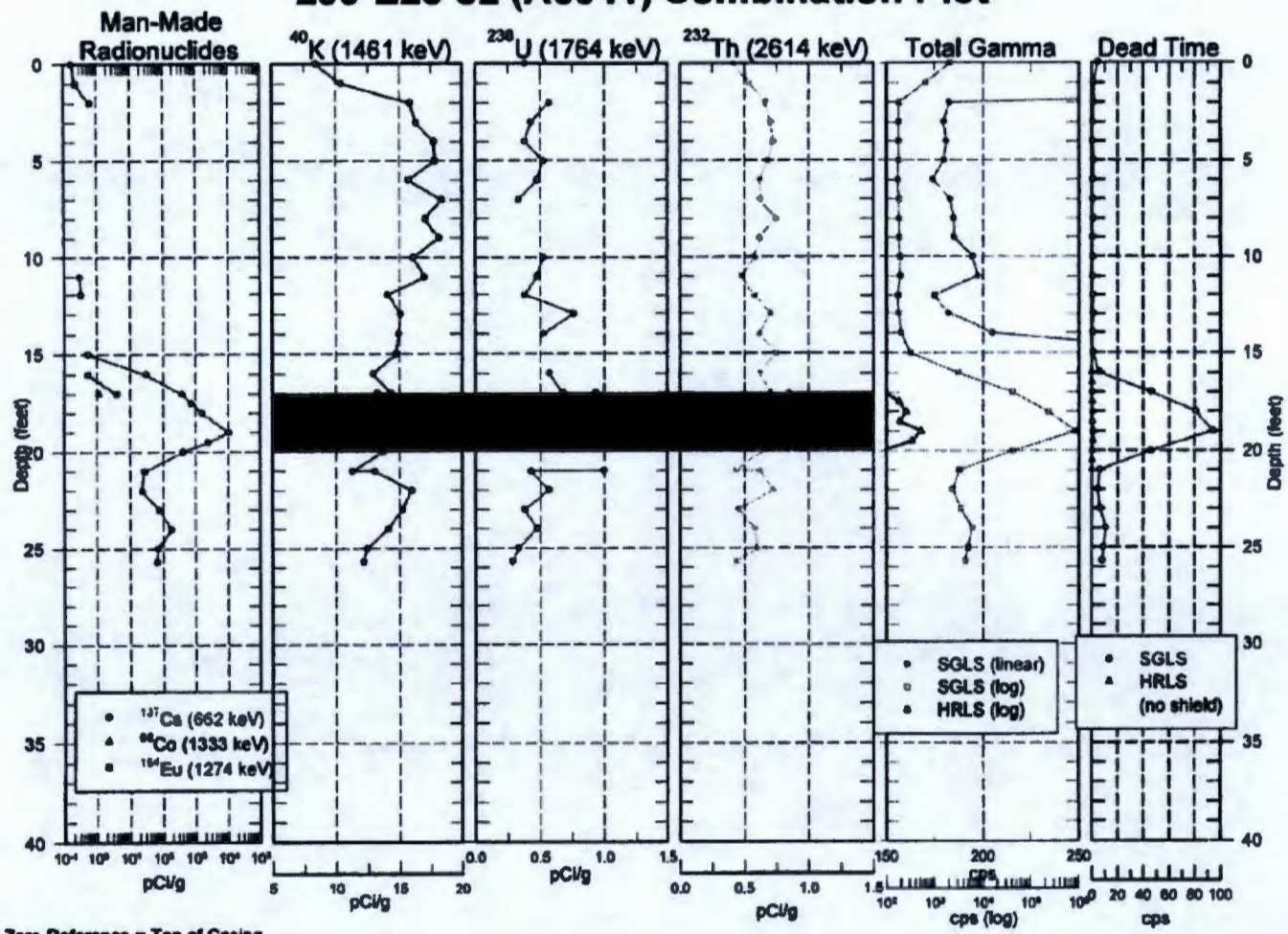
WMA A/AX

- 200-E-131

- 600-291-PL (active)
- 200-E-288-PL (active)


241-A-151
PUREX Railroad Tunnel
UPR-200-E-117
Well 299-E25-52
241 A Tank Farm
200-E-207-PL
UPR-200-E-67
241-A-152
N
0
110
220
440 Feet

299-E25-52 (A6041) Combination Plot



Zero Reference = Top of Casing

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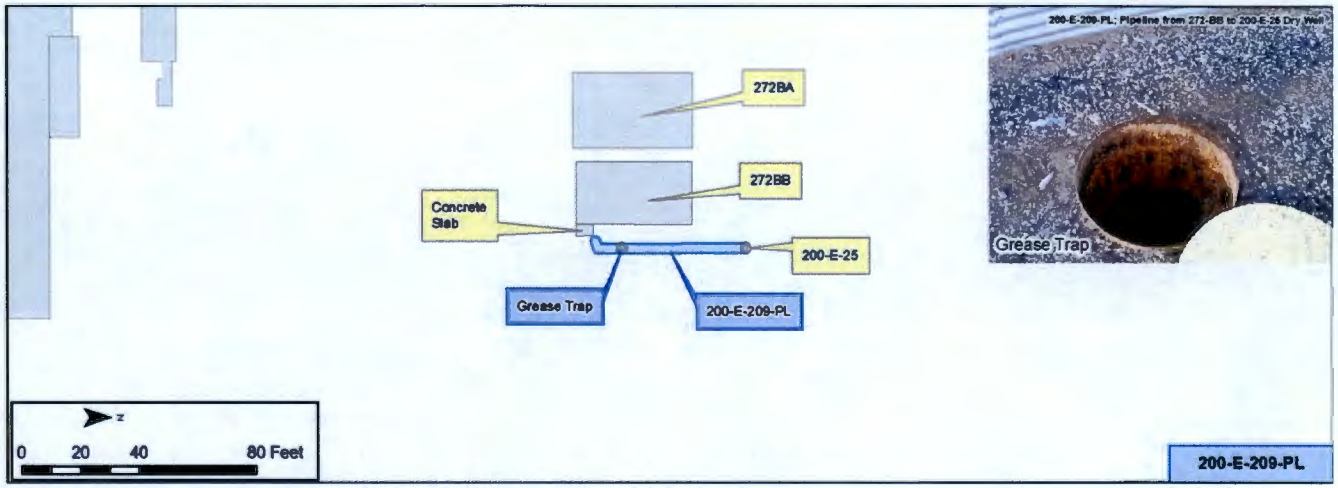
Scoping Summary: 200-E-209-PL

History

The 200-E-209-PL waste site is an inactive underground pipeline used as a process sewer between the 272-BB Insulation Shop and the 200-E-25 French Drain. The pipeline extends from the southeast side of the building and continues northward to the French Drain.

Operational start can be correlated to the construction of the 272-BB Building, circa 1971.

In 1990, percolating water around the French Drain was noted indicating a break in the line or plug in the drain itself. Isolation was circa Oct-1991 when the sink from the building was removed and the floor drain plugged with concrete.



Construction

- Length: 50 ft
- Diameter:
  - 3 in., building to grease trap (approx. 8 ft)
  - 2 in., grease trap to drain (approx. 42 ft)
- Composition: Carbon steel
- Encasement: None
- Depth: 2 ft at grease trap, 2.5 ft at French Drain
- Cathodic Protection: None
- Volume: Approx. 10 gal

Features of Interest

- 18 in. diameter, 36 in. tall grease trap with a removable cover exposed at the surface (see figure pg. 3)
- 272-BB plot plan shows a 4 ft x 6 ft concrete slab near building entrance, QMAP shows site pipeline going under the slab at this point. As-built drawings were not located to confirm this feature (see figure pg. 3)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Possible flushed materials from 272-BB include: calcium silicate, fiberglass, silicate, "airball" (insulation cover material), and latex paint
- Discussion with facility operators in 1991 indicated that a potential exists for the French drain to have received organic chemicals, oils and grease prior to 1988
- In 1991 the French drain was categorized as a Class IV injection well (used to inject dangerous or radioactive waste fluids) and isolated

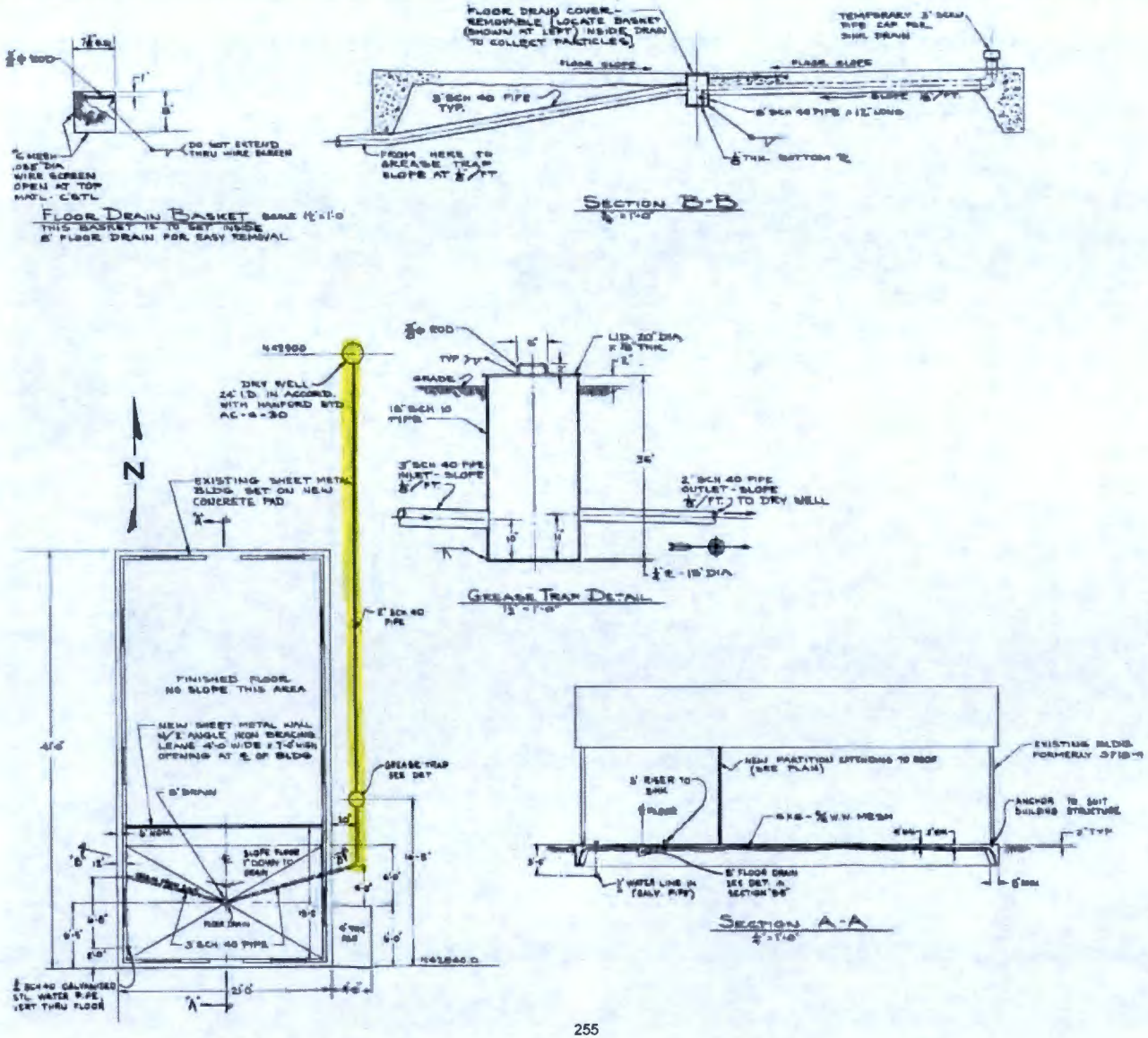
Misc./Other Relevant Information

- Inventory of a release from the 200-E-25 French drain in 1971 identified radionuclides (see figure pg. 4)

Site Interfaces

Origins/Termination	Site Intersects
200-EA-1	
• 200-E-25 French Drain	N/A
No Operable Unit	
• 272-BB Building	

272BA
272BB
Concrete Slab
200-E-25
Grease Trap
200-E-209-PL
N
0
35
70
140 Feet


FLOOR DRAIN BASKET
SECTION B-B
GREASE TRAP DETAIL
SECTION A-A
DRY WELL
EXISTING SHEET METAL BLDG. SET ON NEW CONCRETE PAD
FINISHED FLOOR NO SLOPE THIS AREA
GREASE TRAP SEE DET
N

6.1 Uncertainty in Soil Inventory Model (SIM) Data

The Hanford SIM (Corbin et al. 2005) data set was provided in a stochastic format. This data set provided inventory estimates for liquid releases for 377 waste sites. The majority of these sites are located on the Central Plateau of Hanford; however, four are located in the 300 Area. An example SIM data set for a liquid release from 200-E-25 in 1971 is provided in Table 6.1. The SIM data are represented by a 21-point cumulative probability function for the volume of the waste stream and also for each analyte in the waste stream. Analytes not present in the SIM analyses are not estimated using any fill-in rules because the SIM analysts checked for the presence of these analytes when the data were generated. Thus, for the SIM data, a missing inventory within a waste stream implies a zero inventory rather than lack of information.

200-E-25 french drain release inventory excerpt from PNNL-15829 June 2006

Table 6.1. SIM Volume and Concentration Data for 200-E-25 for 1971 Liquid Releases

Probability	Volume (m^3)	Uranium-234 (Ci/m^3)	Uranium-235 (Ci/m^3)	Uranium-238 (Ci/m^3)
0	1	4.15E-14	5.90E-16	2.32E-14
0.05	1.2	1.80E-12	4.38E-14	1.18E-12
0.1	1.32	5.65E-12	1.61E-13	3.87E-12
0.15	1.41	1.12E-11	3.46E-13	7.72E-12
0.2	1.49	1.82E-11	6.00E-13	1.27E-11
0.25	1.56	2.66E-11	9.22E-13	1.89E-11
0.3	1.62	3.66E-11	1.32E-12	2.61E-11
0.35	1.68	4.83E-11	1.79E-12	3.47E-11
0.4	1.73	6.18E-11	2.34E-12	4.45E-11
0.45	1.78	7.69E-11	2.99E-12	5.58E-11
0.5	1.83	9.44E-11	3.75E-12	6.90E-11
0.55	1.87	1.14E-10	4.63E-12	8.39E-11
0.6	1.92	1.37E-10	5.66E-12	1.01E-10
0.65	1.97	1.64E-10	6.86E-12	1.22E-10
0.7	2.03	1.96E-10	8.31E-12	1.45E-10
0.75	2.09	2.33E-10	1.01E-11	1.75E-10
0.8	2.16	2.80E-10	1.22E-11	2.11E-10
0.85	2.24	3.41E-10	1.51E-11	2.58E-10
0.9	2.33	4.25E-10	1.90E-11	3.24E-10
0.95	2.45	5.64E-10	2.56E-11	4.36E-10
1	2.65	9.82E-10	4.52E-11	7.80E-10

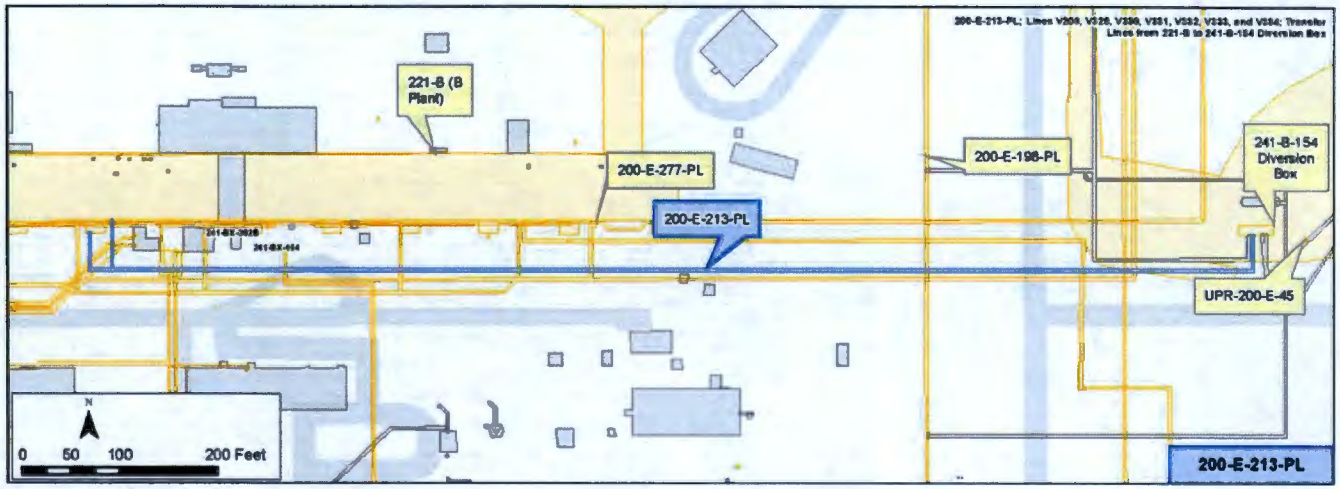
Scoping Summary: 200-E-213-PL

History

The 200-E-213-PL waste site is an inactive underground process transfer system that consists of a seven lines used to transfer wastes from B-Plant to the 241-B-154 Diversion Box.

The lines exit south of the B-Plant and run east in the same direct-buried soil trench passing beneath Baltimore Avenue en route to their termination point, the 241-B-154 Diversion Box.

These transfer lines were part of the original 1945 B-Plant construction, and most were operational until 1947, when they failed pressure tests and were subsequently taken out of service. The lines were capped at their origin points in the B-Plant and process blanks were installed.



Construction

- Length:
  - V200: 1,051 ft
  - V329: 1,003 ft
  - V330: 1,036 ft
  - V331: 1,235 ft
  - V332: 1,252 ft
  - V333: 831 ft
  - V334: 1,019 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement: Direct-buried
- Depth: ~11 ft bgs
- Cathodic Protection
- Calculated Volume of all lines: 2,725 gal

Features of Interest

Pipeline segments, distinguished by V-ID, within this system of note:

- V200: Failed in service, Jun-1947, due to corrosion
- V329: Failed in service, Jun-17-1946; a ground depression opposite the rear stairwell of Section 3 of the B-Plant indicated line failure. The leaking line was abandoned and all process waste was discharged to the ground at the diversion box. Other lines were determined to be functional; operations were re-routed and re-started
- V331: According to hand-written notes, V331 was a suspected leaker and was not serviceable, as of 1967. The location of suspected leak was not documented.

Relevant Characterization

- Rad levels detected in 1946 after identification of cave in south of B-Plant Section 3 showed >4,000 R/hr, taken Jun-18-1946 via survey with Victoreen probe (HW-7-4663, pg 2).

Waste Streams

- Process Effluent, Chemicals, Mixed, Solid and Liquid

Misc./Other Relevant Information

- System failed pressure testing in 1974; process blanks installed at B-Plant
- The seven lines that make up the system run parallel in the trench

Site Interfaces

Origin/Termination

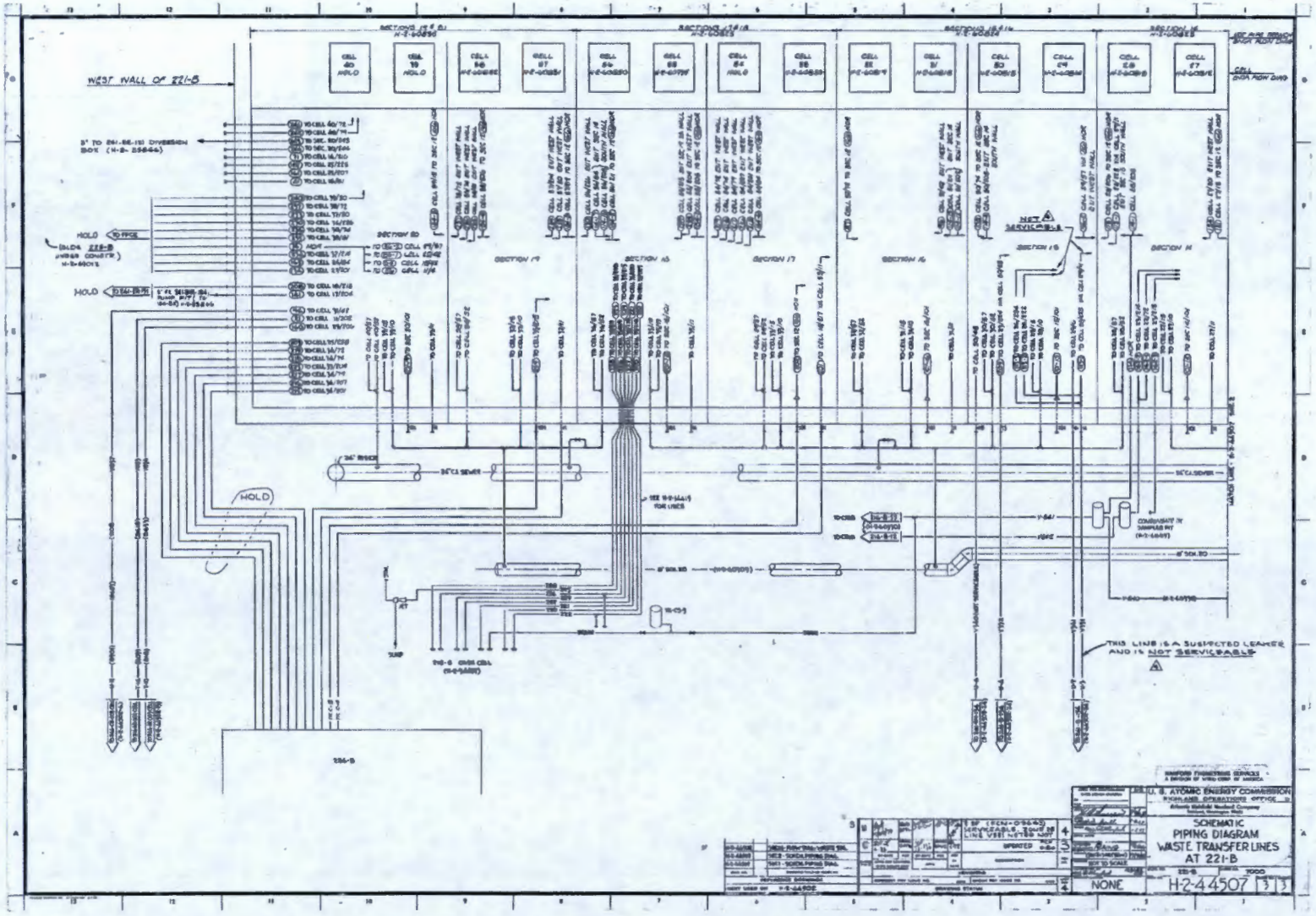
200-IS-1
- 241-B-154 Diversion Box

200-CB-1
- 221-B (B-Plant)

Site Intersects

200-IS-1
- 241-B-302B
- 200-E-277-PL
- UPR-200-E-45 (airborne release of contamination from 241-B-154)
- 200-E-198-PL

Scoping Summary: 200-E-213-PL


WEST WALL OF 221-B
HOLD
NOT SERVICEABLE
THIS LINE IS A SUSPECTED LEAKER AND IS NOT SERVICEABLE
U. S. ATOMIC ENERGY COMMISSION
SCHEMATIC
PIPING DIAGRAM
WASTE TRANSFER LINES
AT 221-B
NONE
H-2-44507

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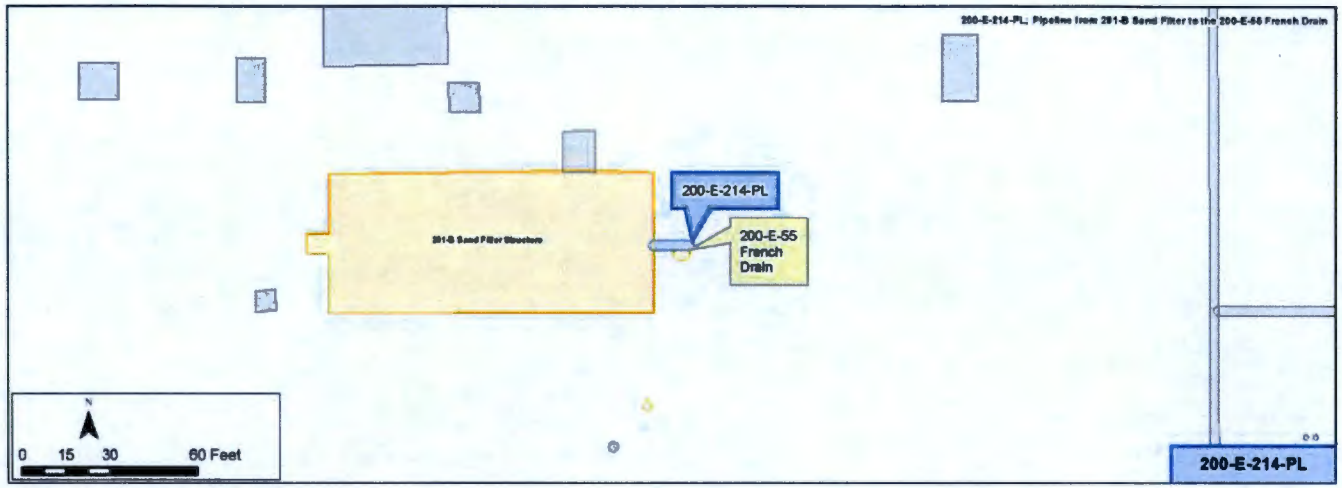
Scoping Summary: 200-E-214-PL

History

The 200-E-214-PL waste site is an inactive underground process sewer pipeline that connected the 291-B Sand Filter structure to the 200-E-55 French Drain, located just southeast of the B Plant.

It was in operation from 1945-to-1997, when the outlet to the French Drain was blanked.

The French drain received condensate from the B-Plant canyon sand filter and rain water that leaked through the sand filter structure's roof through this pipe.



Construction

- Length: 12 ft
- Diameter: 6-in
- Composition: Stainless Steel
- Gravity flow
- Direct Buried, From ground surface at sand filter to approximate 3 ft depth at French Drain
- Total Volume: 18 gal
- Sand filter outlet duct blanked, Nov-4-1997

Features of Interest

- None identified

Waste Streams

- Condensate from the B-Plant Canyon sand filter and rain water

Site Interfaces

Origin/Termination

- 291-B Sand Filter (*facility*)

<u>200-CB-1</u>

- 200-E-55 French Drain

Site Intersects

- None identified

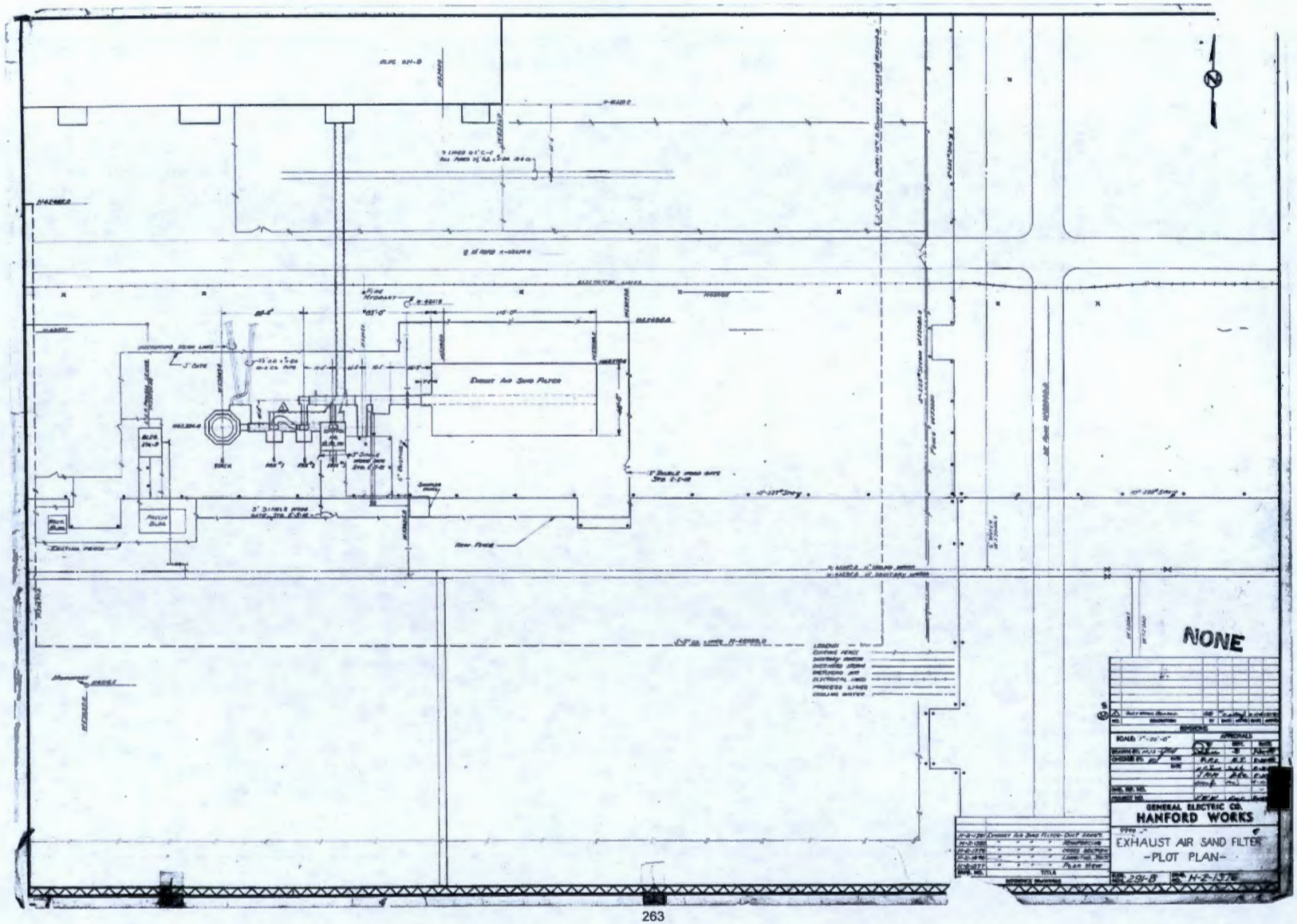
Relevant Characterization

- An auger drill sample of the French drain was collected in Sep-1994. A split spoon sample was collected 16 ft below ground surface, and maximum contamination levels in the soil read 2,000 dpm beta/gamma and 300 dpm alpha with hand-held instruments (2B-94-00634) (181745).

Misc./Other Relevant Information

- In spite of efforts to identify additional sample data to bolster Characterization information noted herein, no additional data was located beyond the count information provided

200-E-214-PL
291-B
Sand Filter
Structure
200-E-55
French
Drain
N
0
35
70
140 Feet


NONE
GENERAL ELECTRIC CO.
HANFORD WORKS
EXHAUST AIR SAND FILTER
-PLOT PLAN-

Westinghouse Hanford Company

RADIATION SURVEY REPORT

Date	Time	Survey Number	F.C.	Page
10-5-94	From 1330 To 1530	№ 181745	B	I of II

Bldg.	Area	Room
N/A	200E	N/A

Description of Job: Coverage of Auger / sampler from drill hole east of B-Plant Sand Filter.

RWP No. B-749 Location East of Sand filter

Check if appropriate. When checked, do not place unrelated information on this record.

- ☐ Personnel Contamination
- ☐ CAM/Radiation Alarm
- ☐ Establish Dose Rates
- ☐ Radiation/Contamination Incident
- ☐ High Radiation Level Work
- ☑ Special Survey*
- ☐ Property Release
- ☐ RAM Shipment

Item No.	PER (1)	Description of Work Performed, Radiation Controls, and Measurements	Meter Deflection W/O	Meter Deflection W/C	Dist.	C.F.	DOSE RATE beta (non pen) mrad/hr	DOSE RATE gamma (pen) mR/hr	DOSE RATE neutron mrem/hr	CONTAMINATION LEVELS Direct (dpm) beta	Direct (dpm) alpha	Smear 100 cm² beta (d/m)	Smear 100 cm² alpha (d/m)	mrad/hr
1		Personnel	–	–	–	–	–	–	–	<1,000	<20	–	–	–
2		Tools & Equipment	–	–	–	–	–	–	–	<1,000	<20	<1,000	<20	–
3		Sampler	–	–	–	–	–	–	–	–	–	5,000	700	–
4		Auger bits	–	–	–	–	–	–	–	<1,000	40	<1,000	<20	–

1. Check for personnel dose rate ☐ Continued on supplemental report form.

Instrument(s) Used	☐ CP	☑ G-M/Pancake	☑ PAM	☐	☐	☐
Serial No.(s)		1382 330	2341			

Respiratory Protection Worn
- ☐ Supplied Air
- ☑ Filter
- ☐ Other
- ☐ None

ESTIMATED PERSONNEL DOSE RATES

Phase of Work	Based on Measurement(s)	Average Dose Rate	Limit Applying
			WBP S E
			WBP S E
			WBP S E

RPT Exposure	Work Location Code	Signed / PR No.
Ø	19	

Did you increase or reduce RWP requirements for this work?	Did you attend a pre-job meeting for this work?	Reviewed By	Date
☑ No ☐ Yes Explain on reverse side.	☐ N/A ☐ No ☑ Yes		11-4-94

Scoping Summary: 200-E-215-PL

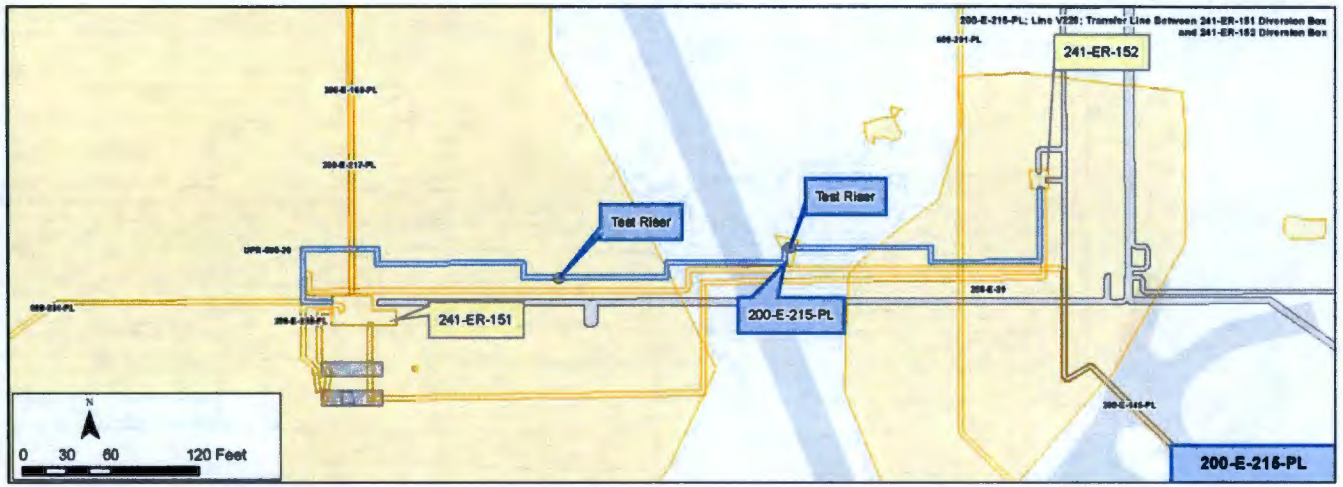
History

The 200-E-215-PL waste site is an inactive undgerground pipeline (V229) that was used to carry process wastes between the 241-ER-151 and 241-ER-152 Diversion Boxes.

There are no documented releases associated with this pipeline, however the line does pass through a portion of the 200-E-29 unplanned release, which has been attributed to the 241-ER-152 Diversion Box (release due to mice and harvester ant intrusions).

The pipeline was constructed in 1974 and most likely taken out of service in 1979 along with the other components associated with the strontium removal process at B-Plant.

In 2003, the line was officially closed as part of the isolation process for the 241-ER-152 Diversion Box. As part of this procedure, the line was flushed and process blanks were installed.



Construction

- Length: 650 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Encasement Specifications: Pipe-in-Pipe (6 in. Carbon Steel)
- Depth: 8 ft - 12 ft bgs
- Calculated Volume: 240 gal

Features of Interest

- Approximately 13 elbows/joints
- 2 test risers - Risers penetrate the carbon steel encasement but not the stainless steel pipeline

Relevant Characterization

- No relevant data or characterization information was identified for this waste site.

Waste Streams

- High level process wastes, including PUREX Supernate (PSN) were transferred through this pipeline
- Assumed to be out of service in 1979

Misc./Other Relevant Information

- The 200-E-215-PL pipe in-pipe configuration has a very low potential for release into the environment, and any fluid leaking from the line would be contained inside the 6 in. pipe and drain to the 241-ER-152 diversion box.

Site Interfaces

Origin/Termination

200-IS-1
- 241-ER-152 (Diversion Box)
- 241-ER-151 (Diversion Box)

Site Intersects

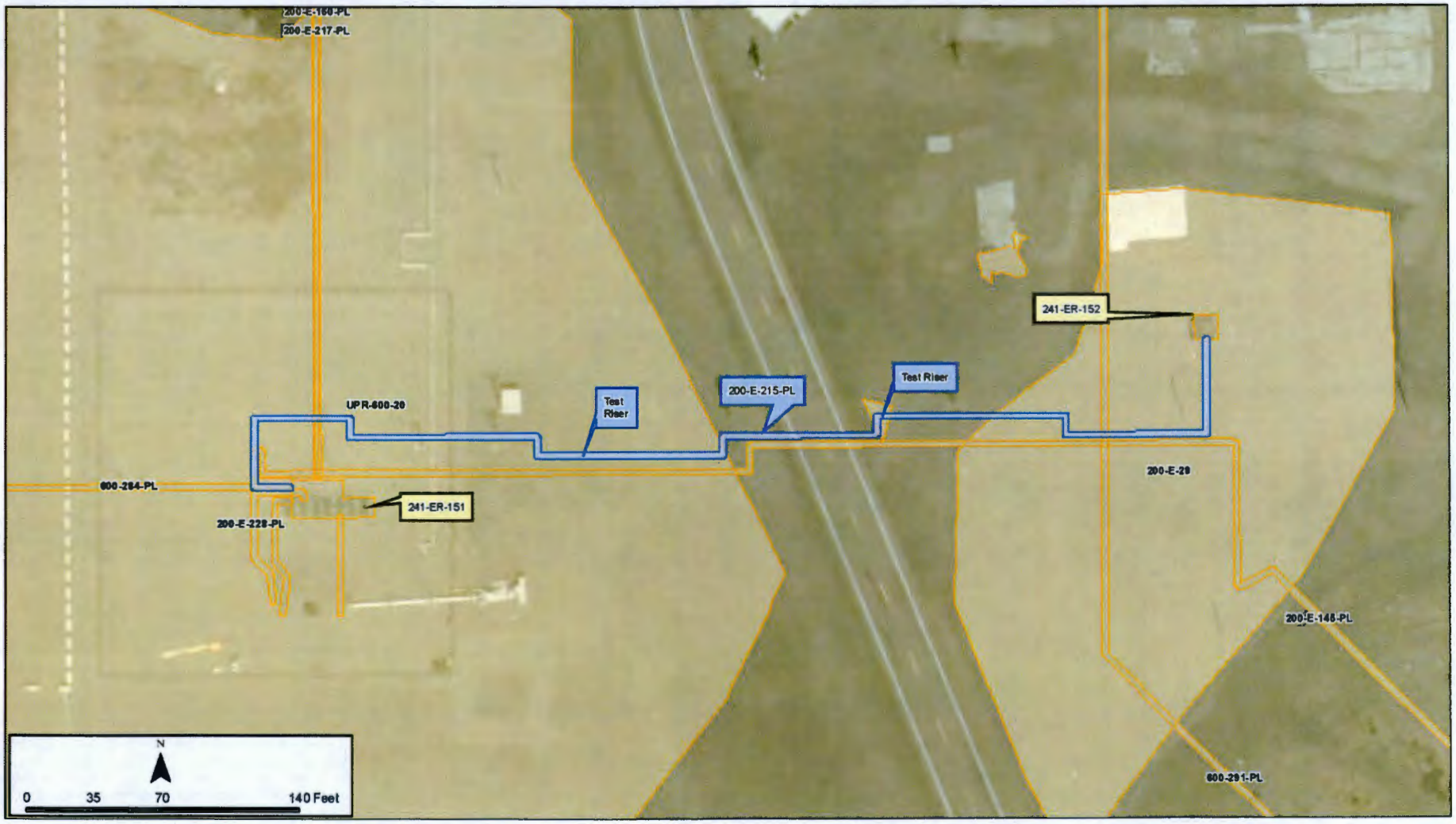
200-IS-1
- 200-E-145-PL
- 200-E-160-PL
- 200-E-217-PL
- 200-E-228-PL
- 200-E-284-PL

200-EA-1
- 200-E-29 (UPR)

200-OA-1
- UPR-600-20

No Operable Unit
- 600-291-PL

Scoping Summary: 200-E-215-PL



Scoping Summary: 200-E-217-PL

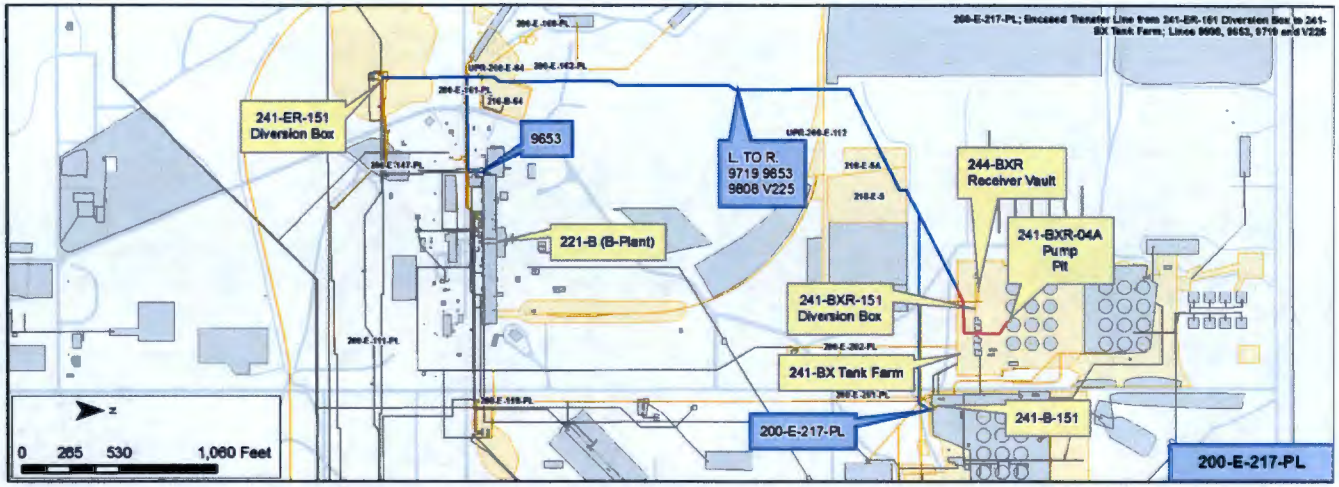
History

The 200-E-217-PL waste site is a B-Plant process transfer pipeline system that consists of four lines used for transfers from the 221-B Building (B Plant) to-and-from the 241-ER-151 Diversion Box, and, ultimately to the BX Tank Farm features. It was constructed in 1950.

The system's line segments are buried in a 4-45 concrete encasement when buried together (3-38 after V225 diverts), and route as follows:

- 9653: transfers from B Plant to 241-ER-151 DB to 241-BXR-04A Pump Pit, where it capped
- 9808: transfers from 241-ER-151 DB to 244-BXR Receiver Vault
- 9719: transfers from 241-ER-151 DB to 241-BXR-151 DB
- V225: transfers from 241-ER-151 DB to 241-B-151, inside the B Tank Farm.

In 1979, segment V225 was sealed at the nozzle to the 241-ER-151 Diversion Box. Between 2003 and 2005, process blanks were installed to and from the remainder of the Diversion Box, which was covered with a weather seal; effectively, terminating operations of any remaining lines from the 200-E-217-PL waste site.



Construction

- Length: 17,300 ft (total)
  - Segment 9653: 4,470 ft
  - Segment 9808: 4,440 ft
  - Segment 9719: 3,930 ft
  - Segment V225: 4,460 ft (final 1,100 ft exits encasement and is direct-buried)
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement Specifications: 4-45 Concrete transitioning to 3-38 Concrete
  - Total Concrete Encasement Volume: 850 cubic yards
- Cathodic Conductor runs length of system
- Depth: 10 ft bgs
- Calculated Volume: 6,350 gal (total)
  - Segment 9653: 1,640 gal
  - Segment 9808: 1,630 gal
  - Segment 9719: 1,440 gal
  - Segment V225: 1,640 gal

Features of Interest

- Where Segment 9653 joins encasement after leaving B Plant heading west, one portion of line runs north (previously Line 141), while the other runs south (previously Line 243) to the 241-ER-151 Diversion Box.

Relevant Characterization

- No direct characterization data have been located for the pipelines or adjacent soil.

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process
  - P2: High-level waste
    - P2 Acid Wastes (also identified as PUREX Acid Sludge [PAS] and PUREX Supernate [PSN]) to B-Plant (1964-1972)
- U Plant - Uranium Recovery and Scavenging (URP)
  - TBP: Tributyl phosphate waste (1952-1958)
- B Plant - Bismuth Phosphate Process (BiPO4)
  - MW1/MW2 Metals Waste (1944-1956)
  - 1C1/1C2 First cycle decontamination and coating waste (1944-1956)

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-CB-1
- 221-B (B Plant)

200-IS-1
- 241-ER-151 D. Box

WMA B/BX/BY
- 241-BXR-04A Pump Pit
- 244-BXR Receiver Vault
- 241-BXR-151 D. Box
241-B-151

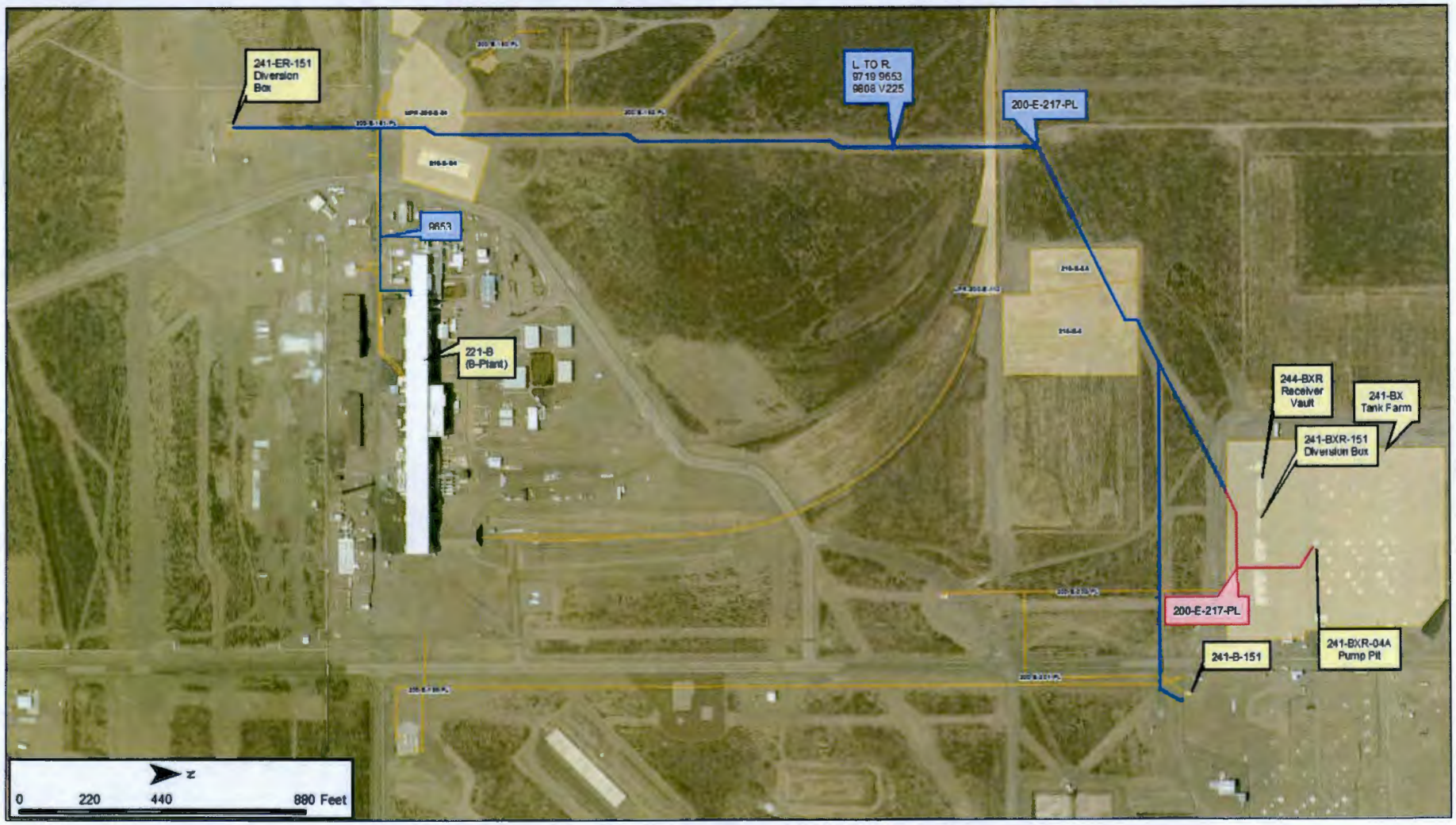
Site Intersects

200-IS-1
- 200-E-111-PL
- 200-E-147-PL
- 200-E-160-PL
- 200-E-161-PL
- 200-E-162-PL
- 200-E-199-PL
- 200-E-201-PL
- 200-E-202-PL

200-EA-1
- UPR-200-E-64
- 216-B-64
- UPR-200-E-112

200-OA-1
- UPR-600-20

200-SW-2
- 218-E-5A
- 218-E-5


241-ER-151
Diversion
Box
L TO R
9719 9653
9808 V225
200-E-217-PL
9653
221-B
(B-Plant)
244-BXR
Receiver
Vault
241-BX
Tank Farm
241-BXR-151
Diversion Box
200-E-217-PL
241-B-151
241-BXR-04A
Pump Pit
N
0
220
440
880 Feet

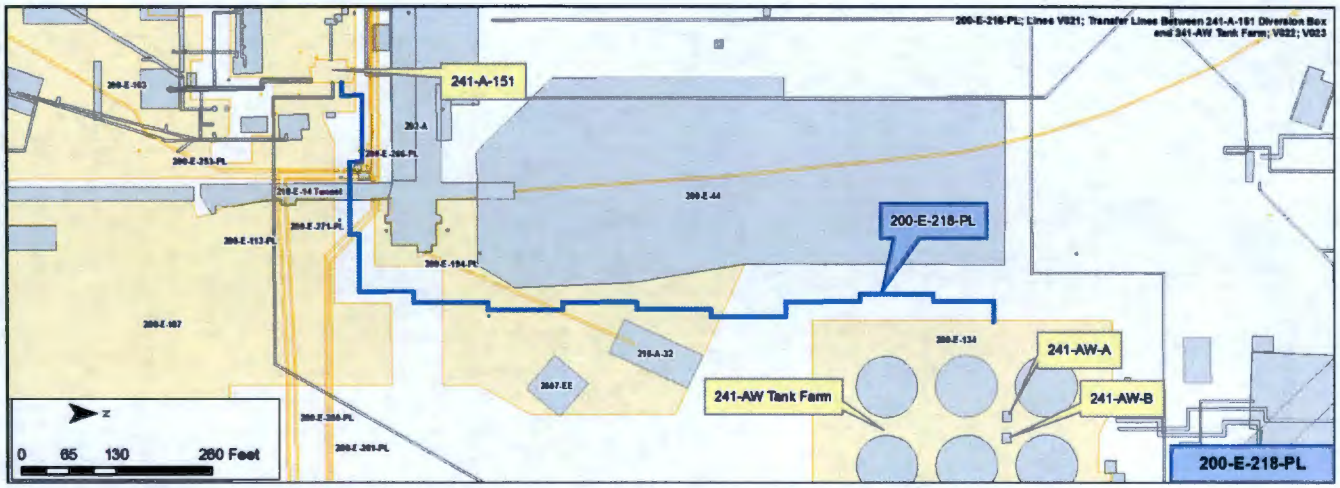
Scoping Summary: 200-E-218-PL

History

The 200-E-218-PL waste site is three inactive underground pipe in-pipe encased pipelines (V021, V022, V023) that carried effluent from the 241-A-151 Diversion Box in the PUREX area to the 241-AW Tank Farm.

The three pipelines were constructed around 1981. Line V021 connects from the diversion box to the 241-AW-A valve pit and lines V022 and V023 connect to the 241-AW-B valve pit. The section of these pipes within the tank farm boundary is not included in the 200-E-218-PL waste site.

An operational end date for the pipelines was not located. Records indicate that the lines may have been used until the mid-1990s when many of the feed lines from PUREX to the 241-A-151 diversion box were blanked at the facility. Isolation of associated waste stream structures indicate that the 241-A-151 diversion box was in operation as late as 2005 and the AW valve pits were active as of 1993.



Construction

- Length: 1,317 ft (each)
- Diameter: 3 in. contained in a 6 in.
- Composition: Stainless Steel contained inside steel
- Flow Method: Gravity
- Direct Buried
- Encasement: Pipe-in-pipe steel
- Depth: Approx. 6 ft - 16 ft bgs
- Calculated Volume
  - Per 3 in. Pipe: 484 gal
  - Per 6 in. Encasing Pipe: 1,934 gal
  - Total Volume: 7,254 gal
- Cathodic Protection: Yes

Features of Interest

- 24 bends

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- PUREX processing and decontamination waste solutions
- Known waste streams from other pipelines connected to the 241-A-151 diversion box:
  - 200-E-183-PL: organic waste including NO3, TBP, NPH, Cs-137 and U-Total (1956-1966)
  - 200-E-185-PL: HNO3, concentrated UNH, and NH4OH (1958-1971)

Misc./Other Relevant Information

- Line V714 (200-E-309-PL) shares the same soil trench as this site until lines V021, V022, and V023 turn east into the 241-AW tank farm

Site Interfaces

Origin/Termination

200-IS-1
- 241-A-151

No Operable Unit
- 241-AW-A
- 241-AW-B

Site Intersects

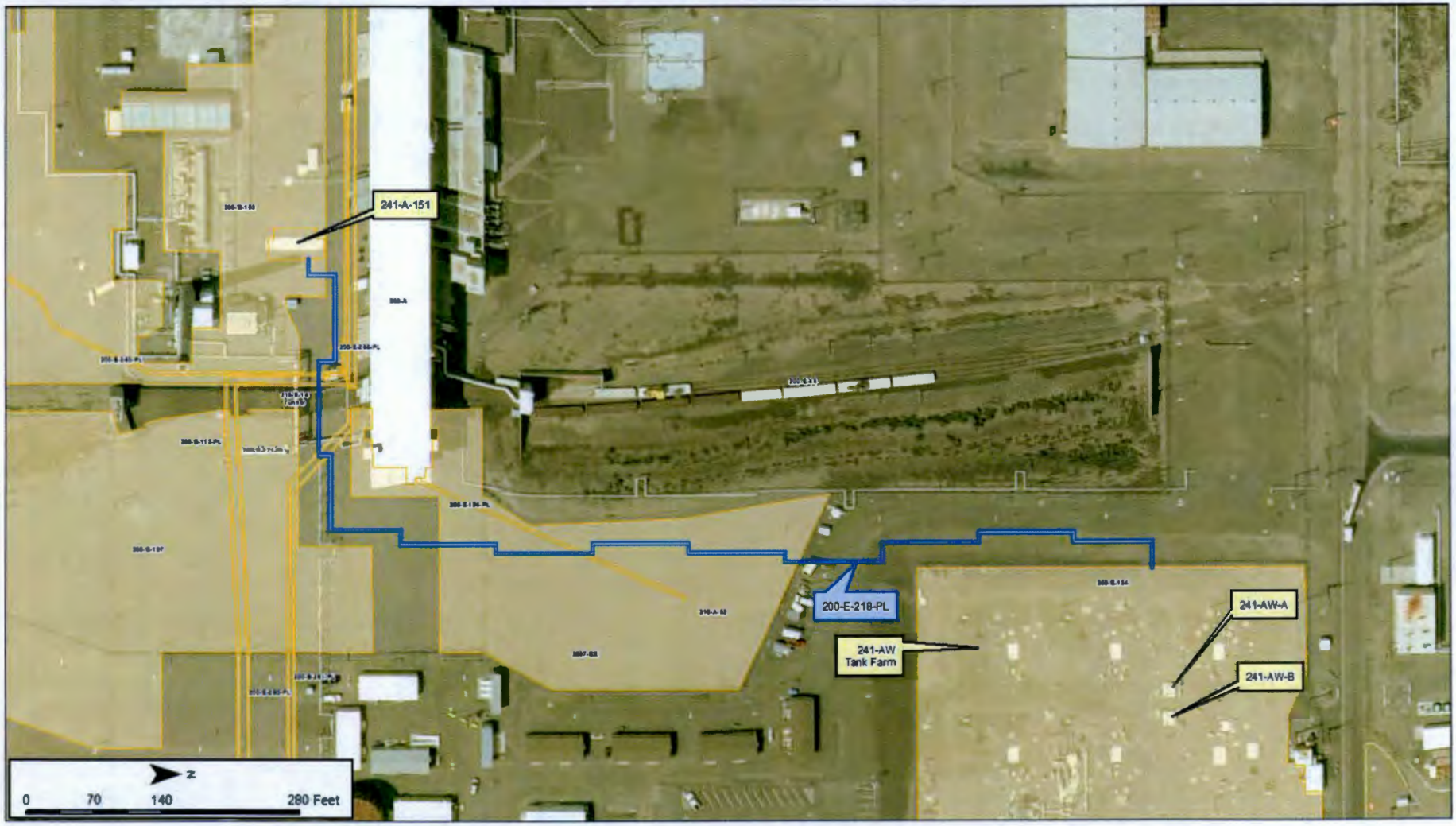
200-CP-1
- 200-E-107

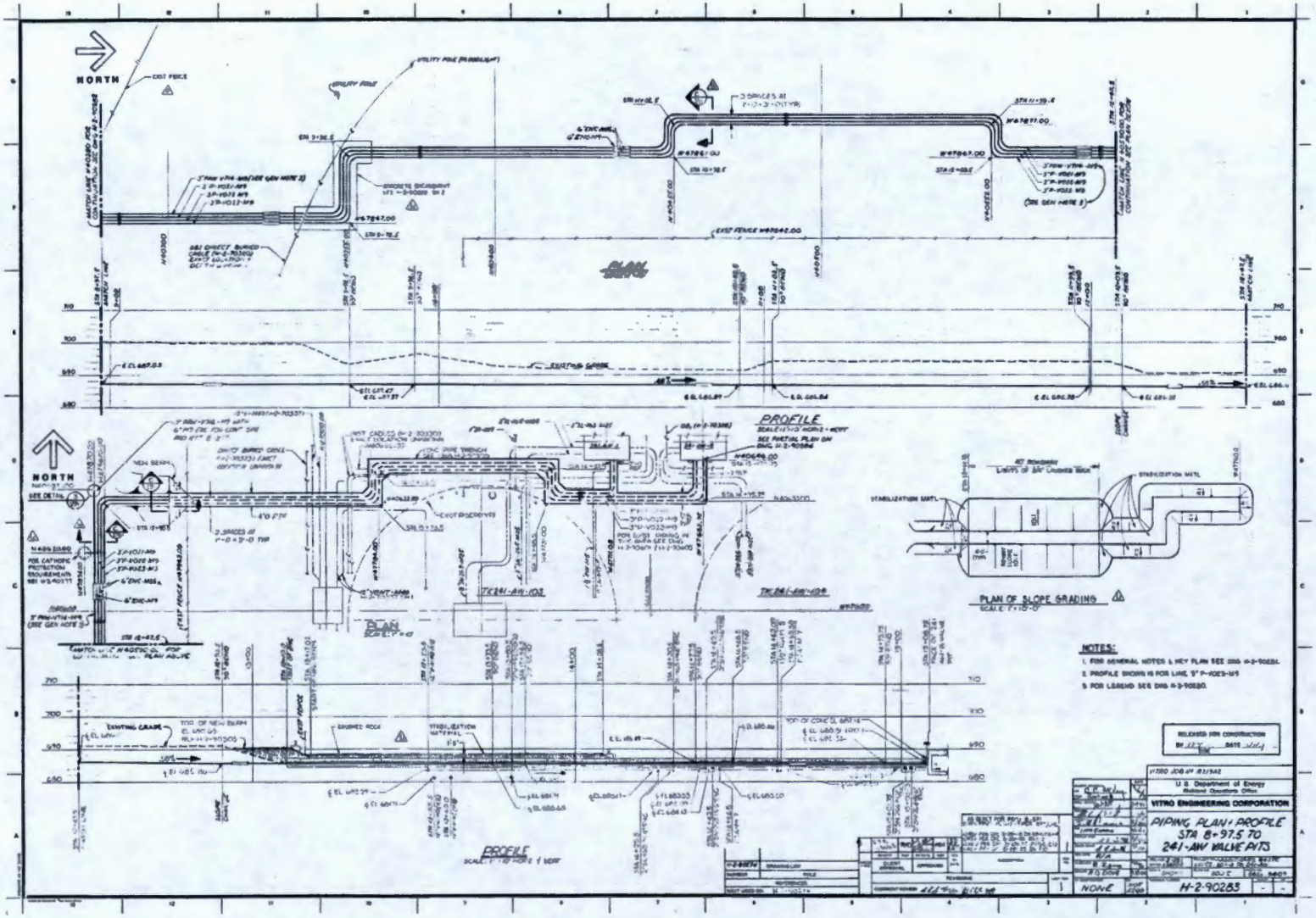
200-IS-1
- 200-E-253-PL
- 200-E-113-PL
- 200-E-194-PL
- 200-E-260-PL
- 200-E-261-PL
- 200-E-266-PL
- 200-E-271-PL

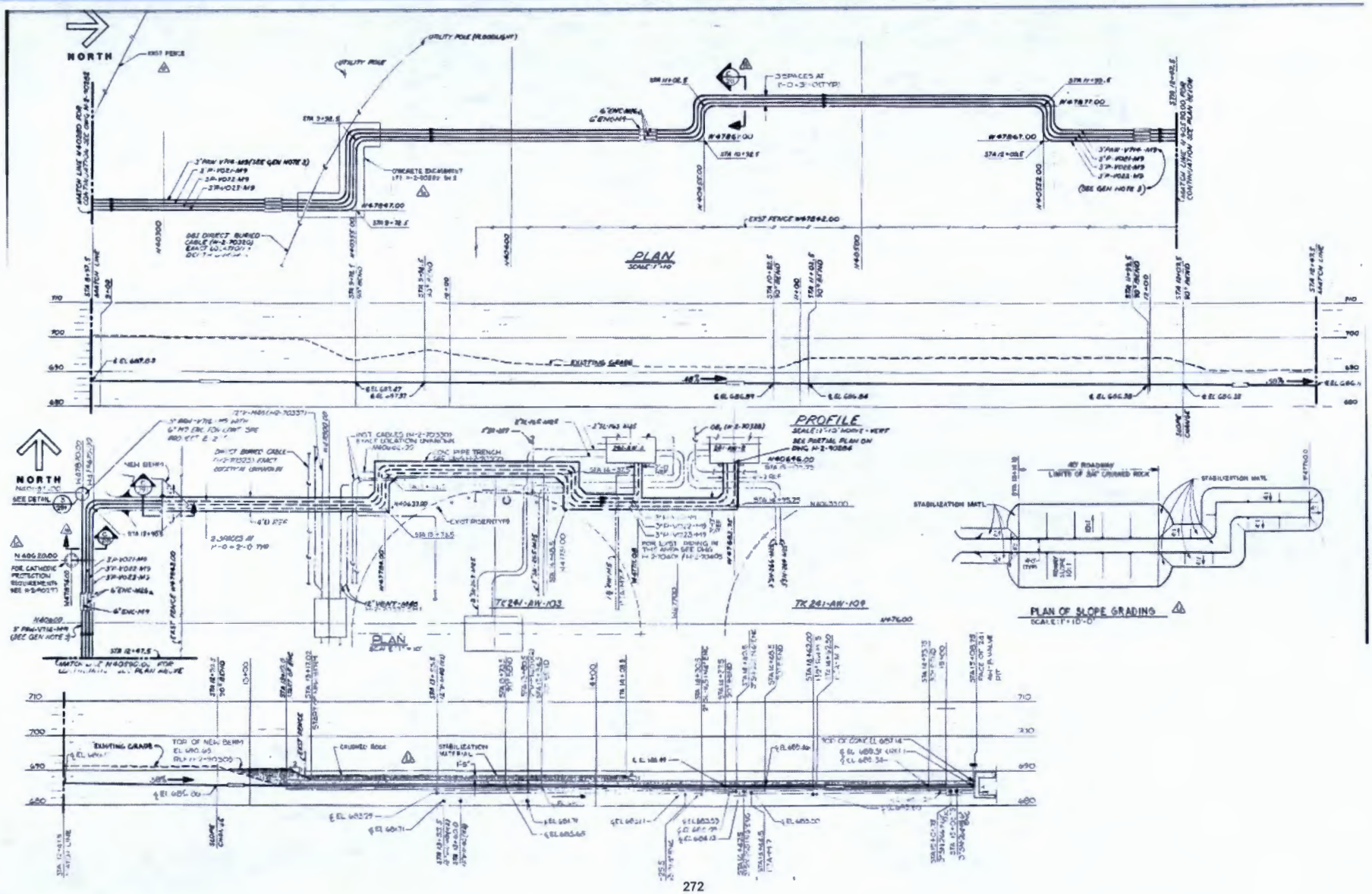
200-EA-1
- 200-E-103

No Operable Unit
- 200-E-309-PL

- 200-E-134 (potentially contaminated soil in 241-AW tank farm)


241-A-151
200-E-218-PL
241-AW Tank Farm
241-AW-A
241-AW-B
N
0
70
140
280 Feet


NORTH
PROFILE
PLAN
PLAN OF SLOPE GRADING
NOTES:
1. FOR GENERAL NOTES & KEY PLAN SEE DWG H-2-90280.
2. PROFILE SHOWN IS FOR LINE 3" P-1023-W9
3. FOR LEGEND SEE DWG H-2-90280.
U.S. Department of Energy
VITRO ENGINEERING CORPORATION
PIPING PLAN + PROFILE
STA 8+97.5 TO
241-AW VALVE PITS
NONE
H-2-90283


NORTH
PLAN
PROFILE
PLAN OF SLOPE GRADING
EXISTING GRADE
STABILIZATION MATL
CRUSHED ROCK

Scoping Summary: 200-E-219-PL

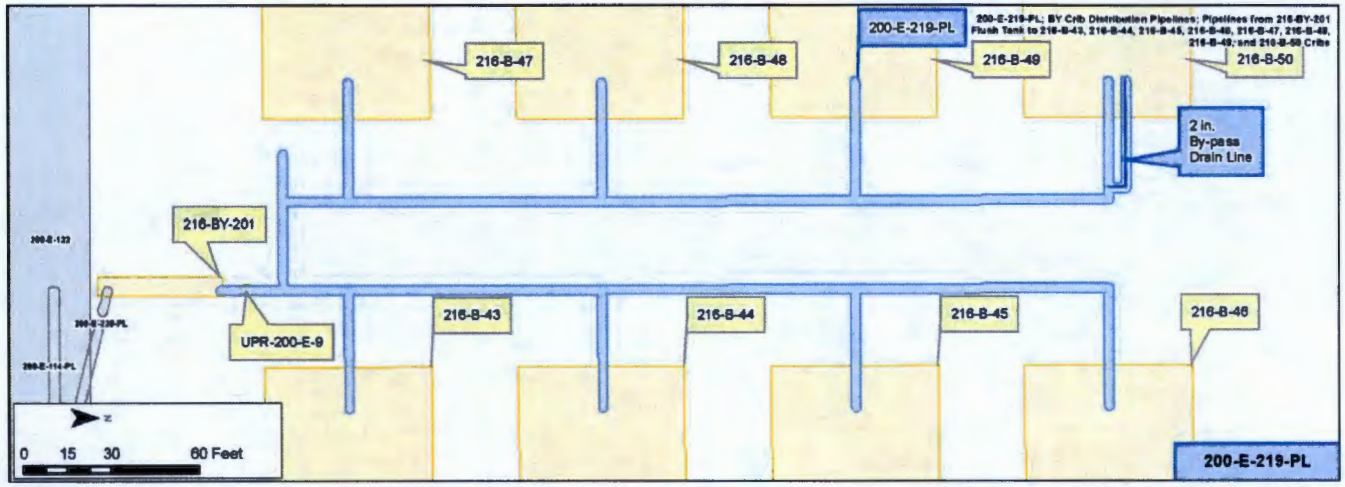
History

The 200-E-219-PL waste site is an inactive underground radioactive process sewer that transferred chemical and radiological constituents uranium recovery waste from the 216-BY-201 Flush Tank, north of the 241-BY Tank Farms, to eight Cribs (216-B-43, 216-B-44, 216-B-45, 216-B-46, 216-B-47, 216-B-48, 216-B-49, and 216-B-50).

The 200-E-219-PL consists of two subsites:

- 200-E-219-PL:1 is a 14-in. line that fed the eight cribs.
- 200-E-219-PL:2 is a 2-in. by-pass drain line.

The pipeline was constructed in 1954 and operated until 1975, when the lines to the cribs and the line draining into the flush tank were cut and capped with blind flanges. In 1991 the area above 200-E-219-PL was stabilized and covered with clean dirt.



Construction

- Length: 930 ft (primary lines); 40 ft (by-pass drain line)
- Diameter: 14 in. (primary lines); 2 in. (by-pass drain line)
- Composition: Carbon Steel
- Gravity fed
- No Encasement Specified
- Depth: 7-10 ft bgs (with additional 3-5 ft covering of soil/sand/gravel)
- Calculated Volume: 7,448 gallons

Features of Interest

- 10 Bends
- Short 2 in. diameter by-pass drain line

Relevant Characterization

- Crib characterization for 216-B-43 through 216-B-50 (HNF-1744). Estimated waste volume through 200-E-219-PL to the 8 cribs is 10.4 million gallons
- Based on historical inventory reporting of cribs 216-B-43 through 216-B-50, the highest recorded isotope readings includes: 3,640 Ci Total Beta; 1.2 Ci Total Alpha; 540 Ci Cs-137; 950 Ci Sr-90; 0.11 Ci Total U (Radionuclides decayed to 12/31/98)

Waste Streams

- Processes: U Plant - Uranium Recovery & Scavenging (URP) and Saltcakes & Salt Slurries
- Chemical constituents of nitrate, sodium, aluminum, carbonate, and hydroxide
- Radiological constituents of primarily strontium and cesium, with their associated decay products, yttrium and barium
- Small amount of saltcakes may have been deposited in the lines

Misc./Other Relevant Information

- Characterization data for 216-BY-201 includes findings for chemical and radiological constituents (HNF-2503)
- Although the UPR-200-E-9 and the UPR-200-E-89 waste sites are located in close proximity to the 200-E-219-PL pipeline and are associated with the 216-BY-201 Flush Tank and BY Cribs, they are not a result of a pipeline leak or failure.

Site Interfaces

Origin/Termination Point:

200-EA-1

- 216-BY-201

200-DV-1

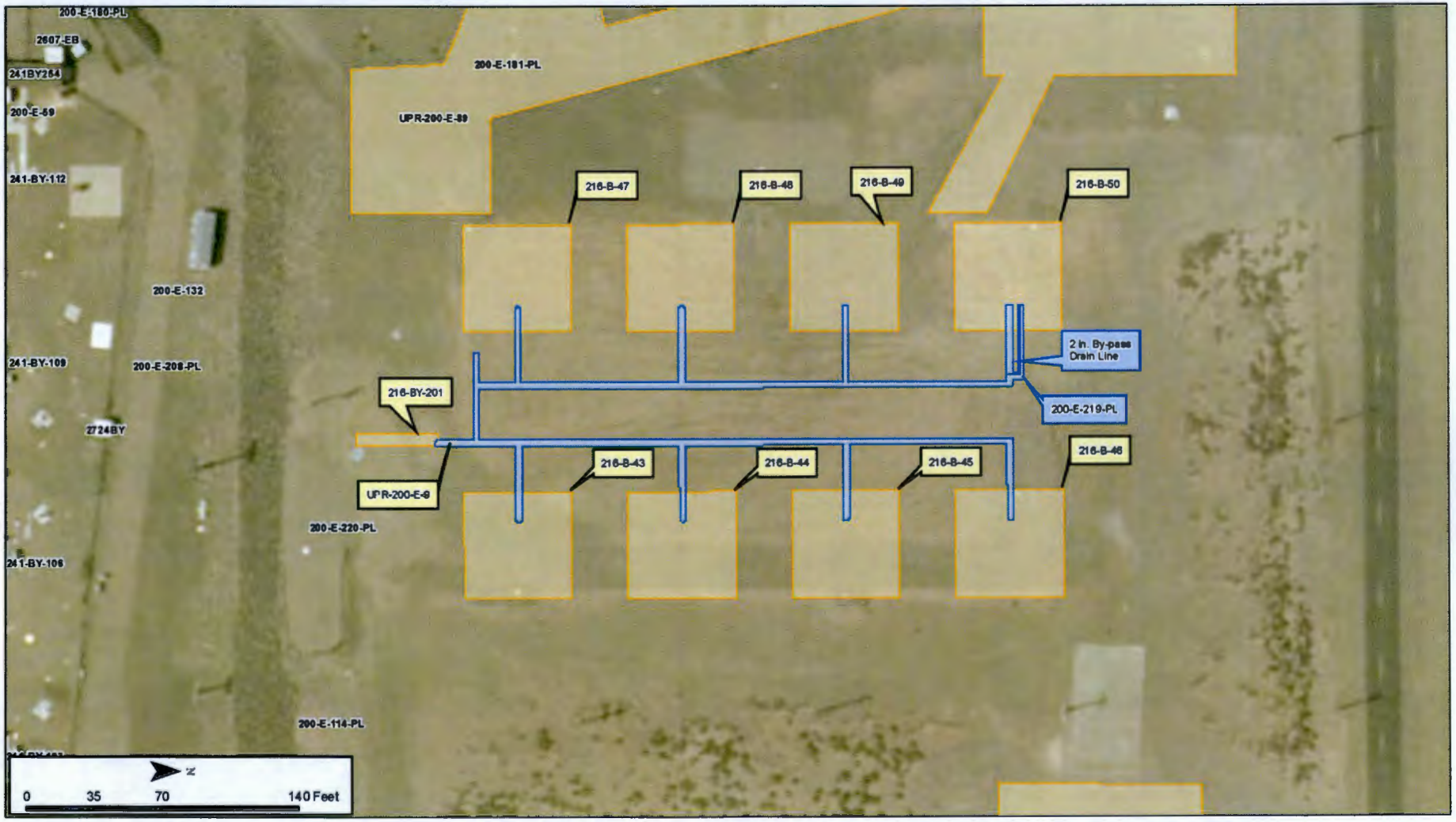
- 216-B-43
- 216-B-44
- 216-B-45
- 216-B-46
- 216-B-47
- 216-B-48
- 216-B-49
- 216-B-50

Site Intersects:

200-EA-1

- UPR-200-E-9

Scoping Summary: 200-E-219-PL

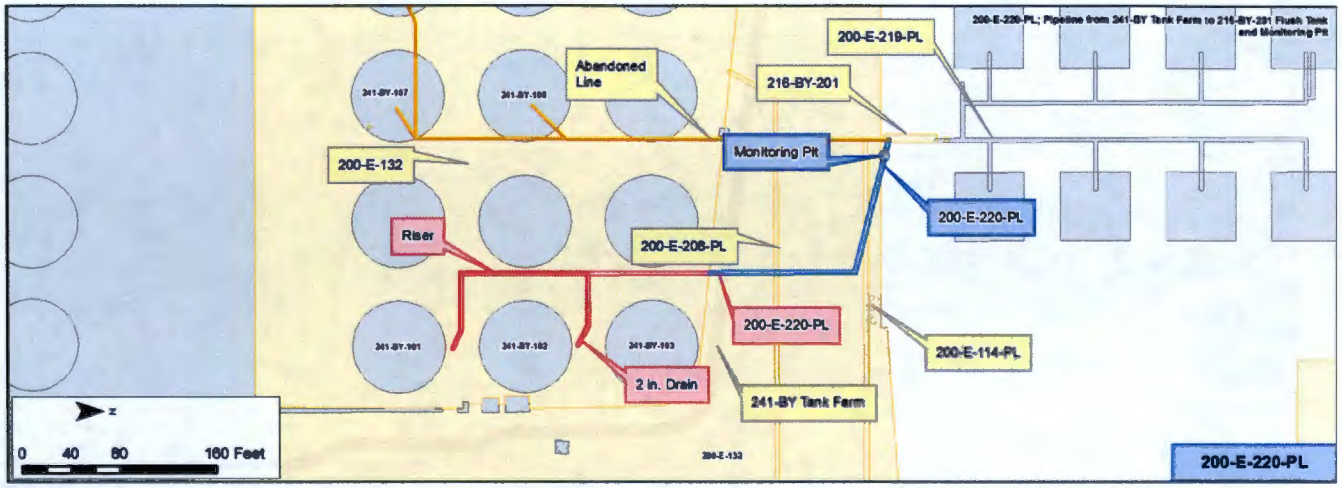


Scoping Summary: 200-E-220-PL

History

The 200-E-220-PL waste site is an inactive underground drain that transported drain waste from a trench located between the 241-BY-103 and 241-BY-102 Tanks to the 216-BY-201 Flush Tank.

The pipeline was constructed in 1962-63, and in 1967 a monitoring well was installed near the 216-BY-201 Flush Tank. By 1975, 200-E-220-PL was cut and capped near the monitoring well. Plans for re-routing the 200-E-220-PL to connect to 200-E-181-PL were made (near 216-BY-201), but the connection was not finalized.



Construction

- Length: 575 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Gravity fed
- No Encasement Specified
- Buried: 2-7 ft (additional layer of soil may be present near 216-BY-201 Flush Tank)
- Volume: 94 gallons

Features of Interest

- 1 Riser (between 241-BY-102 and 241-BY-101)
- 2 Bends
- 1 T-connection
- 1 Monitoring pit (by the 216-BY-201 Flush Tank)

Relevant Characterization

- Crib char. for 216-B-43 through 216-B-50 (HNF-1744). Estimated waste volume through 200-E-220-PL that connected to 200-E-219-PL is 10.4m gallons (all waste may not have been transferred through 200-E-220-PL)
- Based on historical inventory reporting of cribs 216-B-43 through 216-B-50, the highest recorded isotope readings includes: 3,640 Ci Total Beta; 1.2 Ci Total Alpha; 540 Ci Cs-137; 950 Ci Sr-90; 0.11 Ci Total U (Radionuclides decayed to 12/31/98)

Waste Streams

- Processes: U Plant - Uranium Recovery & Scavenging (URP) and Saltcakes & Salt Slurries
- No direct waste stream process determined due to current undefined waste source/process other than the connecting line 200-E-219-PL, which included:
  - Chemical constituents of nitrate, sodium, aluminum, carbonate, and hydroxide
  - Radiological constitituents of primarily strontium and cesium, with their associated decay products, yttrium and barium

Misc./Other Relevant Information

- Appears to be abandoned 4 in. stainless steel pipe that was constructed 1954 that connected the 216-BY-201 Flush Tank to the 241-BY Tank Farm (BY-108, BY-107, and BY-110). The 4 in. Line appears to be disconnected from 216-BY-201 when the 200-E-220-PL was connected to the flush tank in 1964.
- 11/04/08 - Tumbleweed west of 241-BY Tank Farm found and removed at 60,000 dpm/100cm2

Site Interfaces

Origin/Termination Point:

200-EA-1
- 216-BY-201

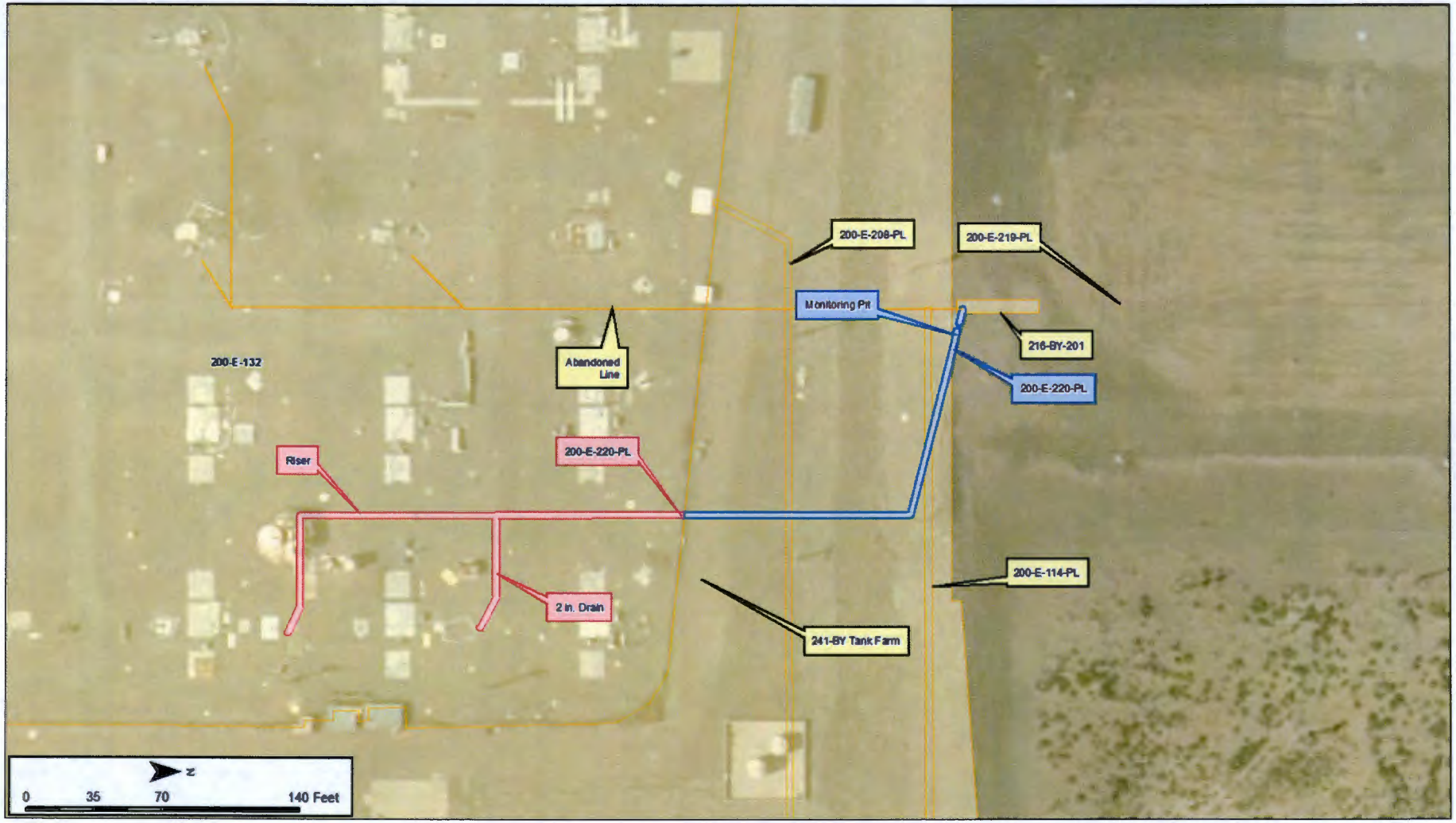
WMA B/BX/BY
- 241-BY-101
- 241-BY-102
- 241-BY-103

Site Intersects:

200-IS-1
- 200-E-114-PL

WMA B/BX/BY
- 200-E-208-PL
- 200-E-132

Scoping Summary: 200-E-220-PL



Scoping Summary: 200-E-221-PL and 200-E-222-PL

See the 200-E-114-PL scoping summary, which includes 200-E-221-PL and 200-E-222-PL.

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Scoping Summary: 200-E-223

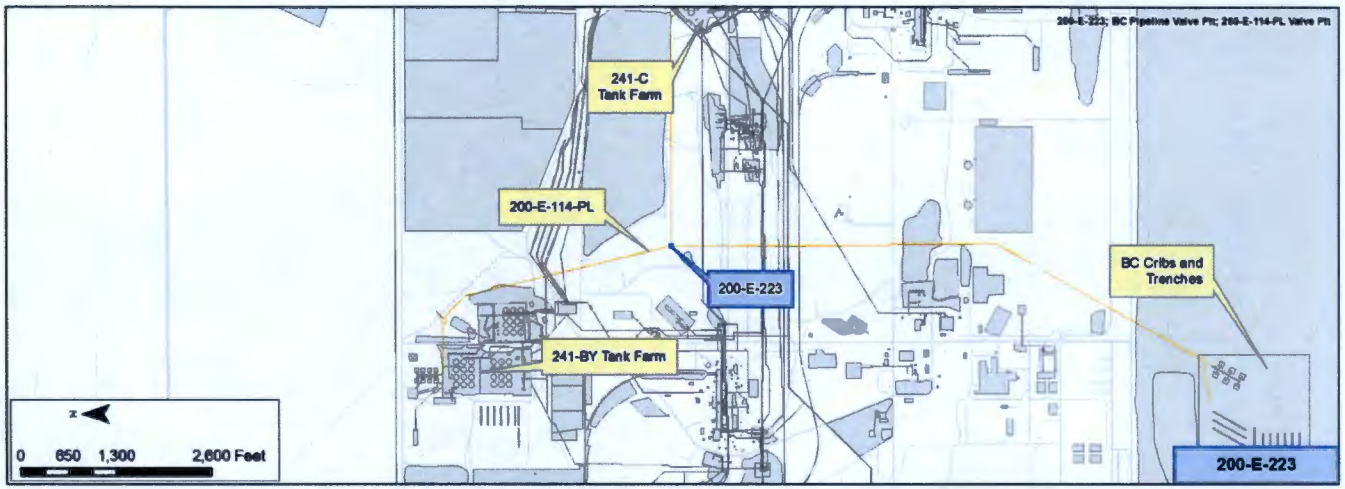
History

The 200-E-223 waste site is a valve pit associated with the 200-E-114-PL pipeline. The valve pit was constructed in 1955 concurrently with the pipeline. The valve pit contains six valves used to route scavenged tributyl phosphate (TBP) supernatant from either the 241-BY or 241-C Tank Farms to the BC Cribs and Trenches. Approximately 31 million gallons of supernate were discharged through the pipelines within this valve pit between 1956 and 1958. There is no record of releases at the valve pit or modifications to the valve pit in the historical record.

The pipelines transported TBP supernatant resulting from the 221-U uranium recovery operations to the BC Cribs and Trenches. Approximately 31 million gallons of supernate were discharged through these pipelines between 1956 and 1958.

There was no record of leaks or modifications to the valve pit found in the historical record. The valve pit is inspected annually as part of the site wide surveillance and maintenance program.

In October 2010 valve pit was sealed and area covered with six inches of gravel.



Construction

Valve Pit

- Dimensions: 8 ft long x 8 ft wide x 7 ft deep
- Depth: 4 ft of structure below ground surface
- Composition: Wooden structure, open to the ground and with a 26 gauge galvanized steel removable roof

200-E-114-PL pipelines

- 2805-E1, 2805-E2, 2805-E3, 2805-E4, 200-E-114-PL:2, 200-E-114-PL:3
- Pressurized
- Combined volume: 16 gal
- Connected with 6 iron gate valves and pass through the valve box on three sides

Features of Interest

- 6 valves located inside the box

Relevant Characterization

- 60 mR/hr at contact and 13 mR/hr at 30 cm was measured at an exposed portion of the 200-E-114-PL pipeline downstream from the valve box
- Dose rates for the pipelines within the valve box are not currently available
- Surface area around valve box has been covered with gravel due to radiological contamination in rodent dropping around the structure

Waste Streams

- Wastes associated with the processes in the BY and C Tank Farms and BC Cribs and trenches travelled through pipelines in this valve pit
- The wastes contained ferrocyanide, nitrate, phosphate, sodium, sulfate, Co-60, Cs-137, Sr-90, Ru-106, Pu and U
- From 1952 to 1958, waste containing uranium and fission products, produced by the bismuth phosphate separations process, were transported through the pipelines in the valve pit

Misc./Other Relevant Information

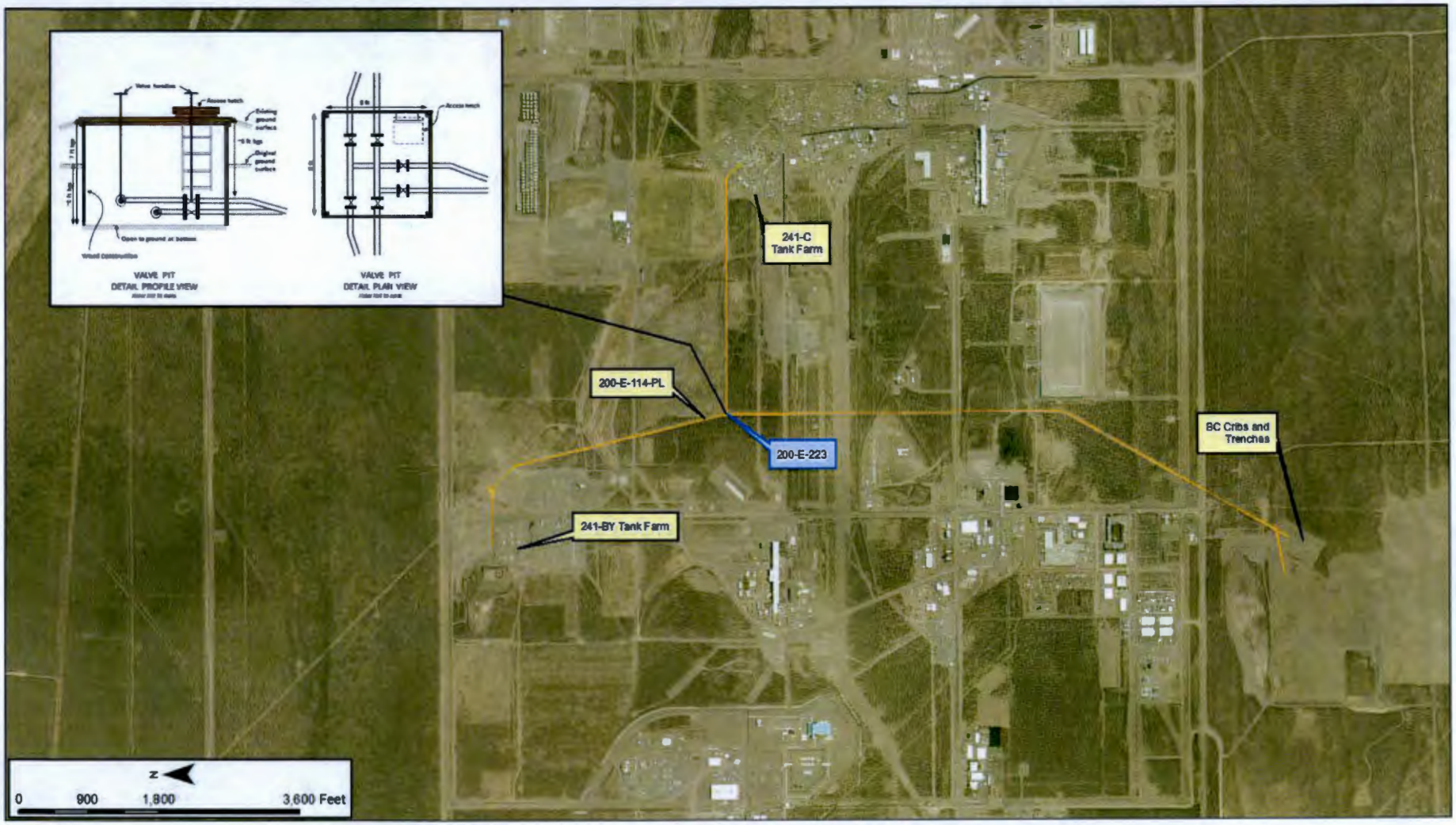
- The site was posted as a Contamination Area due to rodent droppings. In October 2010, the pit was sealed with metal tape to mitigate the rodent intrusion. The ground surface outside the pit was covered with gravel mounded up to the surface so that it could be downposted

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-114-PL


VALVE PIT
DETAIL PROFILE VIEW
VALVE PIT
DETAIL PLAN VIEW
241-C
Tank Farm
200-E-114-PL
200-E-223
BC Cribs and
Trenches
241-BY Tank Farm
N
0
900
1,800
3,600 Feet

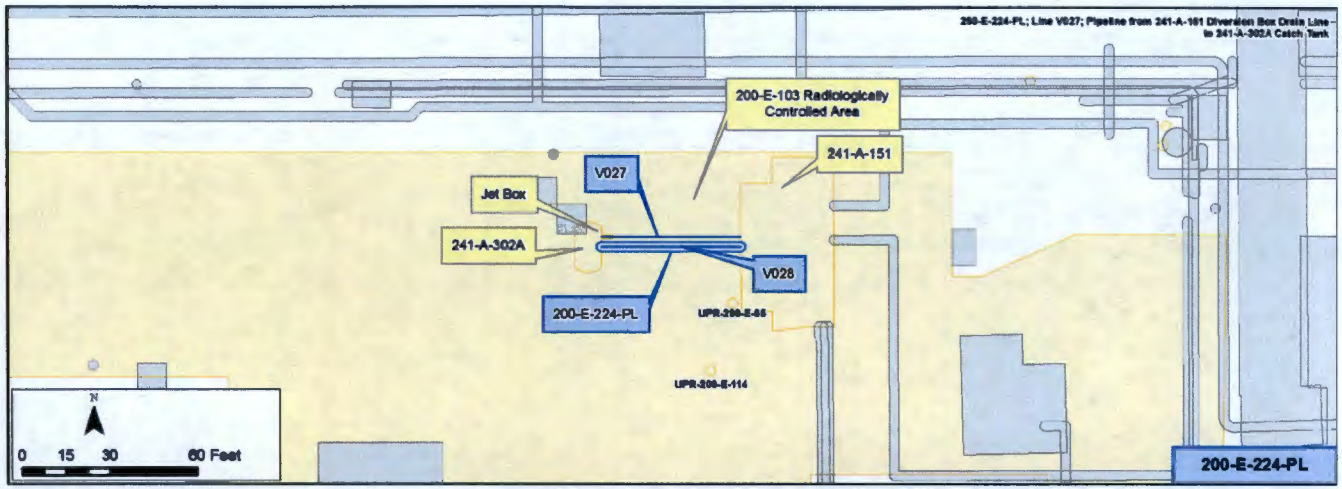
Scoping Summary: 200-E-224-PL

History

The 200-E-224-PL waste site is two inactive buried pipelines (V027 and V028) that connect the 241-A-151 Diversion Box and the 241-A-302A Catch Tank.

The diversion box routed waste from the 202-A building to the 241-A valve pits in the 241-A tank farm. Line V028 of 200-E-224-PL drained excess process effluent and leaks from the diversion box to the 241-A-302A Catch Tank. Line V027 functioned as a return line extending from the tank to a steam jet box and ending at nozzle U-4 at the 241-A-151 Diversion Box (see Page 3).

200-E-224-PL was constructed in 1954 and operation began in 1956 when the 241-A-151 Diversion Box service started. In Oct-1985, line V027 was cut and capped off near the west wall of the diversion box. The end of the site's operation can be correlated to the 241-A-302A tank service ending in 2005.



Construction

- Length: 94 ft (total)
  - V027: 47 ft
  - V028: 47 ft
- Diameter:
  - V027: 3 in.
  - V028: 4 in.
- Composition: Stainless steel
- Flow Method:
  - V027: Pressurized
  - V028: Gravity
- Direct buried
- Cathodic Protection: None
- Depth: 11 ft - 15 ft bgs
- Total Calculated Volume: 48 gal (total)
  - V027: 17 gal
  - V028: 31 gal

Features of Interest

- V027: Steam jet box (see Page 3)
- V028: Small alternate drain line from diversion box 241-A-151 with reducers at both exit points from the box (see Page 4)
- 241-A-151 is associated with the 200-E-103 PUREX radiologically controlled area and UPR-200-E-65
- 241-A-302A was partially pumped in 1992 and decommissioned in 2005

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

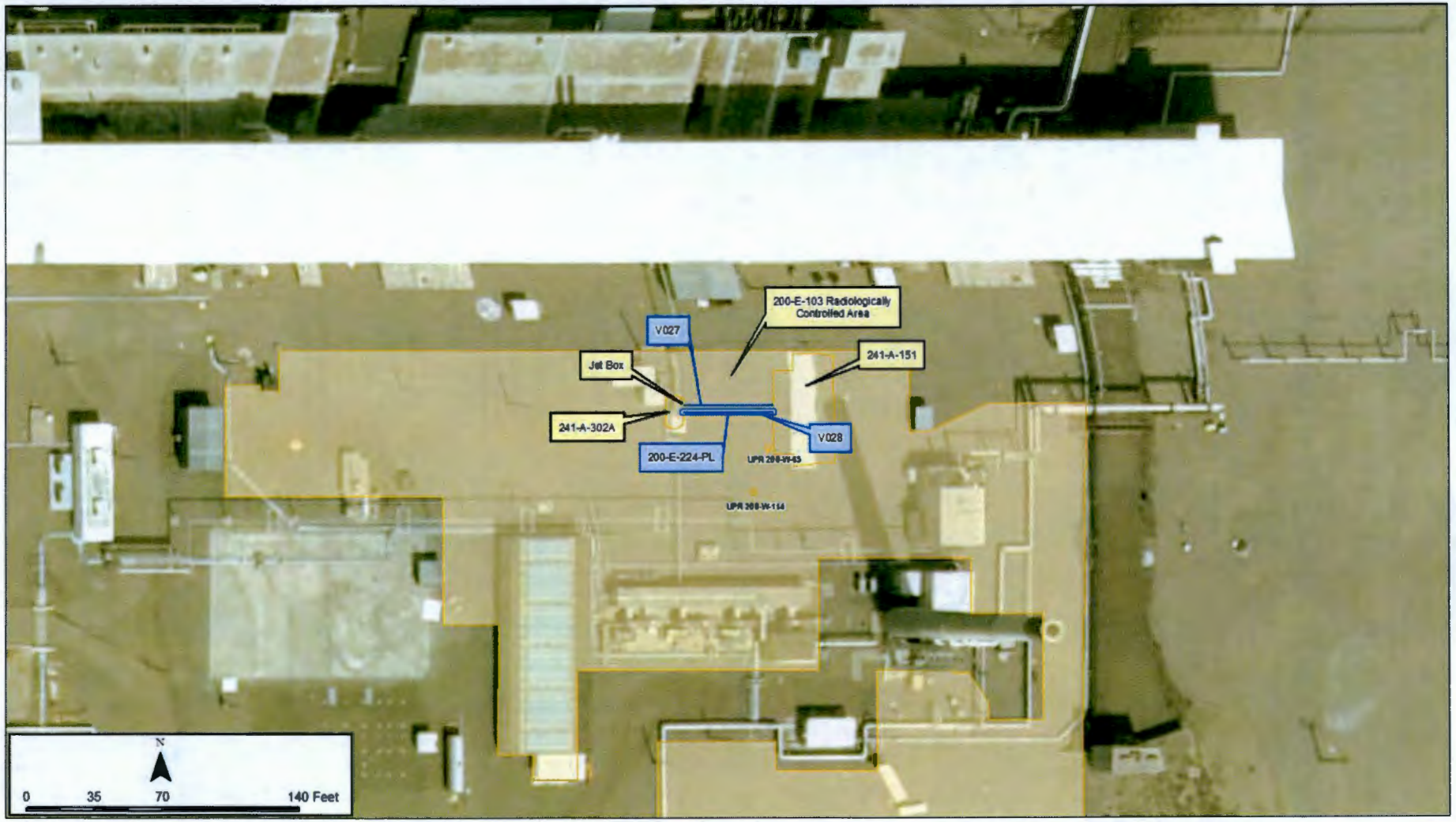
- Received drainage from the 241-A-151 diversion box waste stream, including:
  - NO3, TBP, NPH, Cs-137, U-Total, HNO3, concentrated UNH, and NH4OH
- Waste solutions from PUREX 202-A building processing and decontamination operations, including P1 and P2 wastes

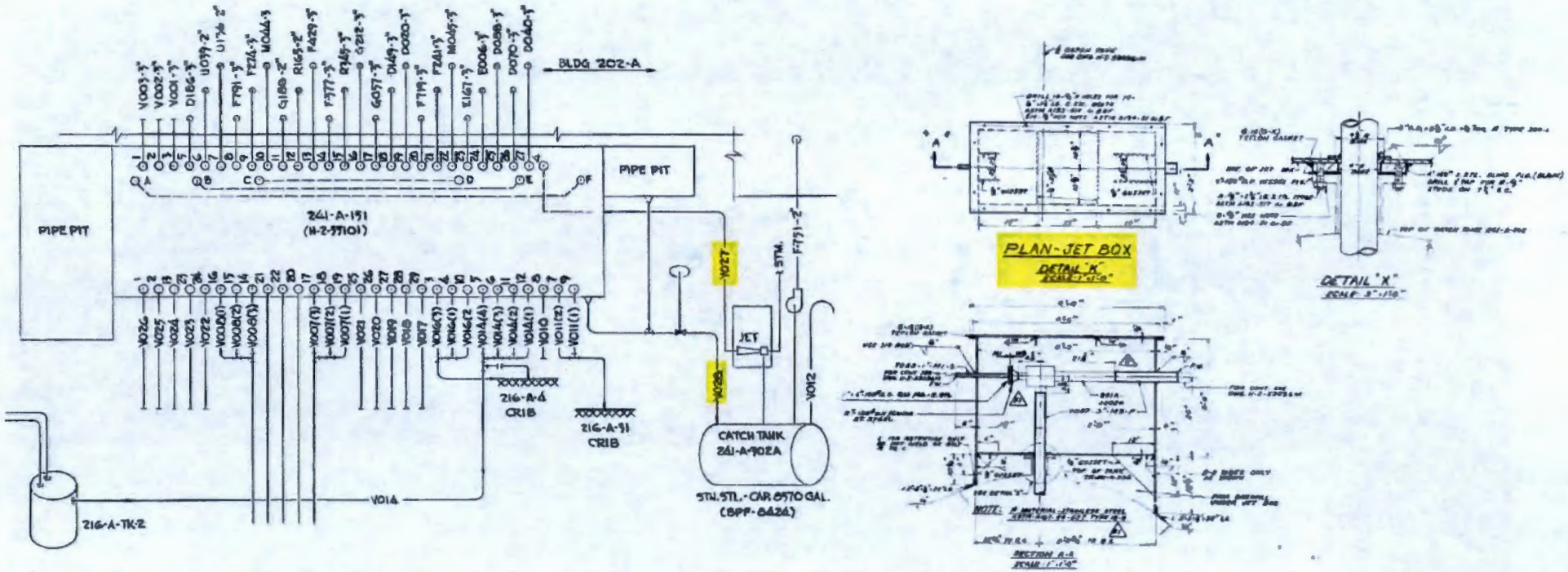
Misc./Other Relevant Information

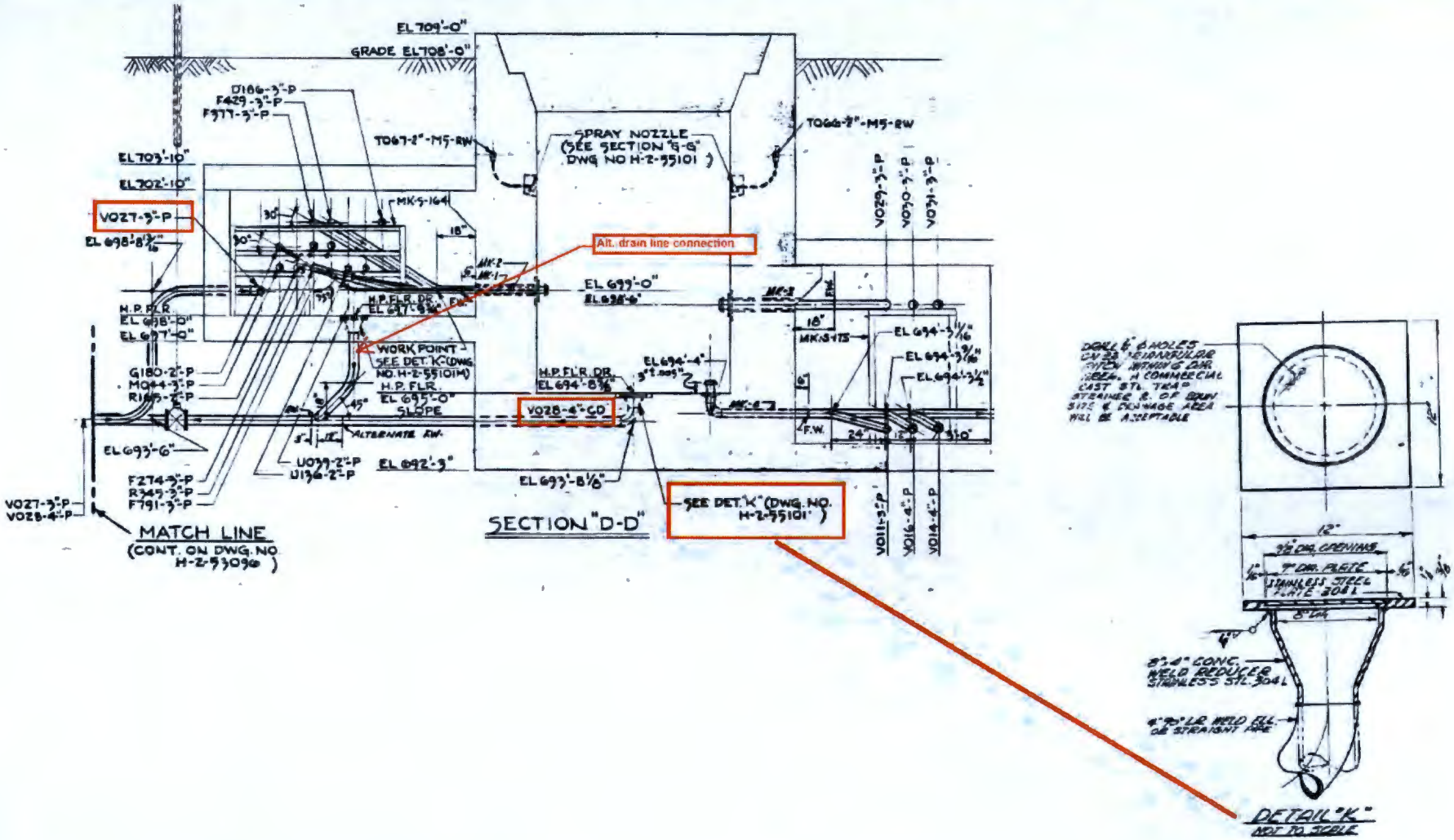
- An isolation plan (project B-231) states that 241--A-302A tank was planned to be upgraded with a new pump pit and pipe in-pipe encased pump back line that would utilize an existing portion of V027. No as-built drawings were located to confirm this upgrade

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-EA-1
• 241-A-151	• 200-E-103 (radiologically controlled area)
• 241-A-302A	


200-E-103 Radiologically Controlled Area
V027
Jet Box
241-A-151
241-A-302A
V028
200-E-224-PL
UPR 200-W-43
UPR 200-W-154
N
0
35
70
140 Feet


BLDG 202-A
PIPE PIT
PIPE PIT
241-A-151
(H-2-77101)
JET
CATCH TANK
241-A-902A
STN. STL. - CAP. 8570 GAL.
(BPP-8424)
216-A-TK-2
V014
216-A-4
CRIB
216-A-51
CRIB
PLAN - JET BOX
DETAIL "K"
DETAIL "X"
SECTION A-A


EL 709'-0"
GRADE EL 708'-0"
SPRAY NOZZLE (SEE SECTION "G-G" DWG NO H-2-55101)
Alt. drain line connection
WORK POINT SEE DET. "K" (DWG. NO. H-2-55101M)
SEE DET. "K" (DWG. NO. H-2-55101)
MATCH LINE (CONT. ON DWG. NO H-2-93090)
SECTION "D-D"
DETAIL "K"
NOT TO SCALE

Scoping Summary: 200-E-225-PL

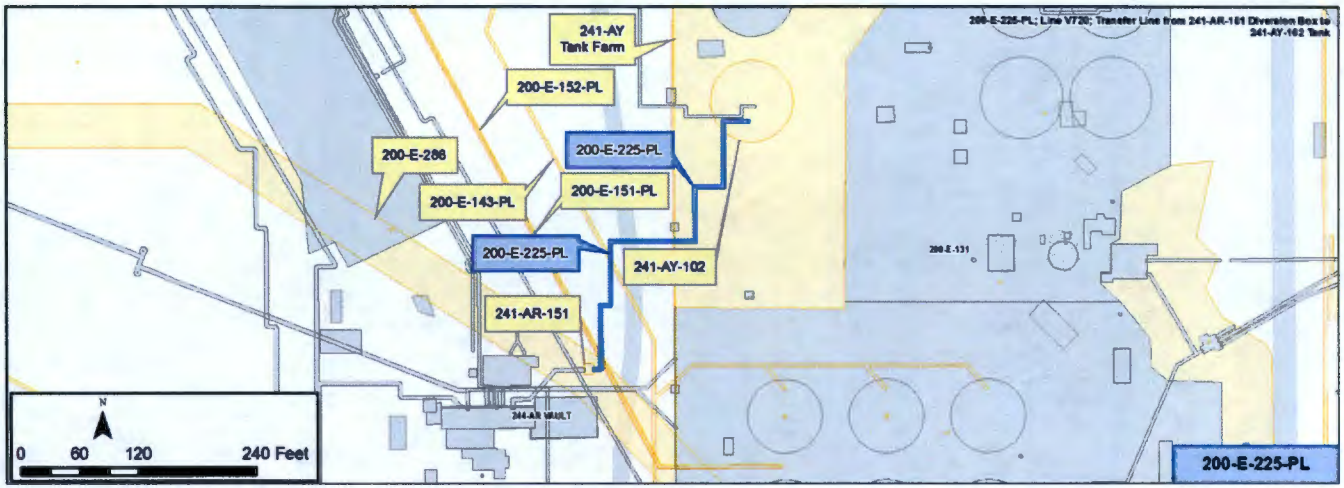
History

The 200-E-225-PL waste site is an inactive underground process transfer pipeline between the 241-AR-151 Diversion Box and the 241-AY-102 Tank, which is located partially within the WMA A-AX.

The system was used to transfer waste from the 241-AY-102 Tank to the 241-AR-151 Diversion Box, and ultimately into the 244-AR Vault.

Along its route from diversion box to tank, the pipeline crosses beneath Buffalo Avenue.

The pipeline was in use from 1976 to 2003, when the 241-AR-151 Diversion Box was last utilized. The diversion box was officially taken out of service in 2005.



Construction

- Length: 406 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Encasement: Pipe-In-Pipe (inside 6 in. Diameter Carbon Steel)
- Depth: 8 ft bgs at diversion box; 5 ft bgs at tank, slightly downhill
- Cathodic Protection
- Total Volume: 149 gal

Features of Interest

- There are eight bends in the line.
- The 241-AY-102 Tank connected to this pipeline was brought into service in 1971, was first inspected in 1999, then again in 2006. It was declared a leaking tank in 2012, and transfers to the tank are no longer allowed. It contains two distinct layers of supernate.

Waste Streams

- The 241-AY-102 Tank received a variety of supernatant waste from 1977 to 1984.
- Waste streams included aging waste, first-cycle B Plant waste, B Plant cesium feed waste, non-complexed, concentrated complexed and cesium and strontium recovery waste.

Site Interfaces

Origin/Termination

200-IS-1

- 241-AR-151 Diversion Box

WMA A-AX

- 241-AY-102 Tank

Site Intersects

200-IS-1

- 200-E-151-PL
- 200-E-152-PL
- 200-E-143-PL

No Operable Unit

200-E-286 (rejected)

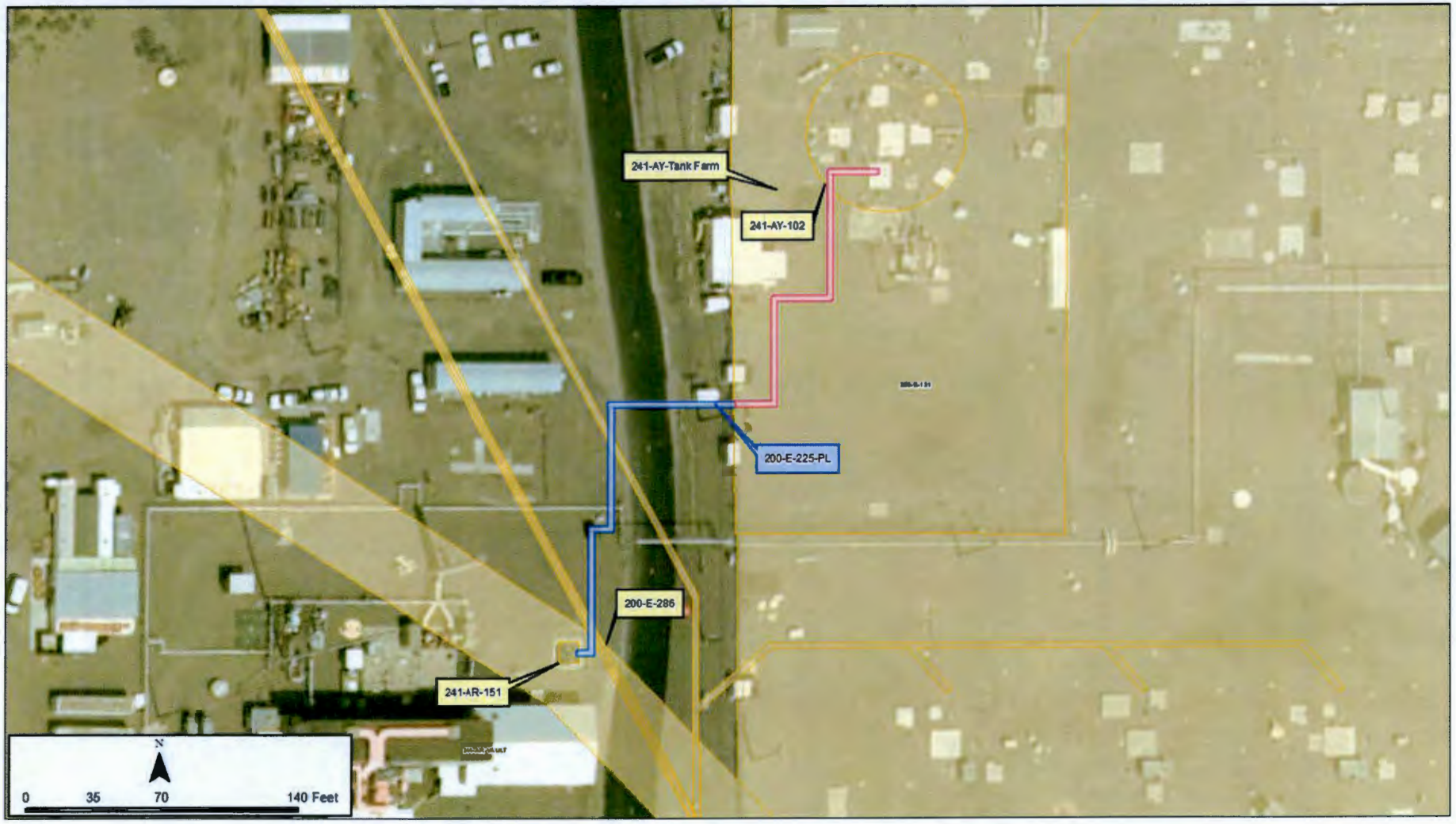
Relevant Characterization

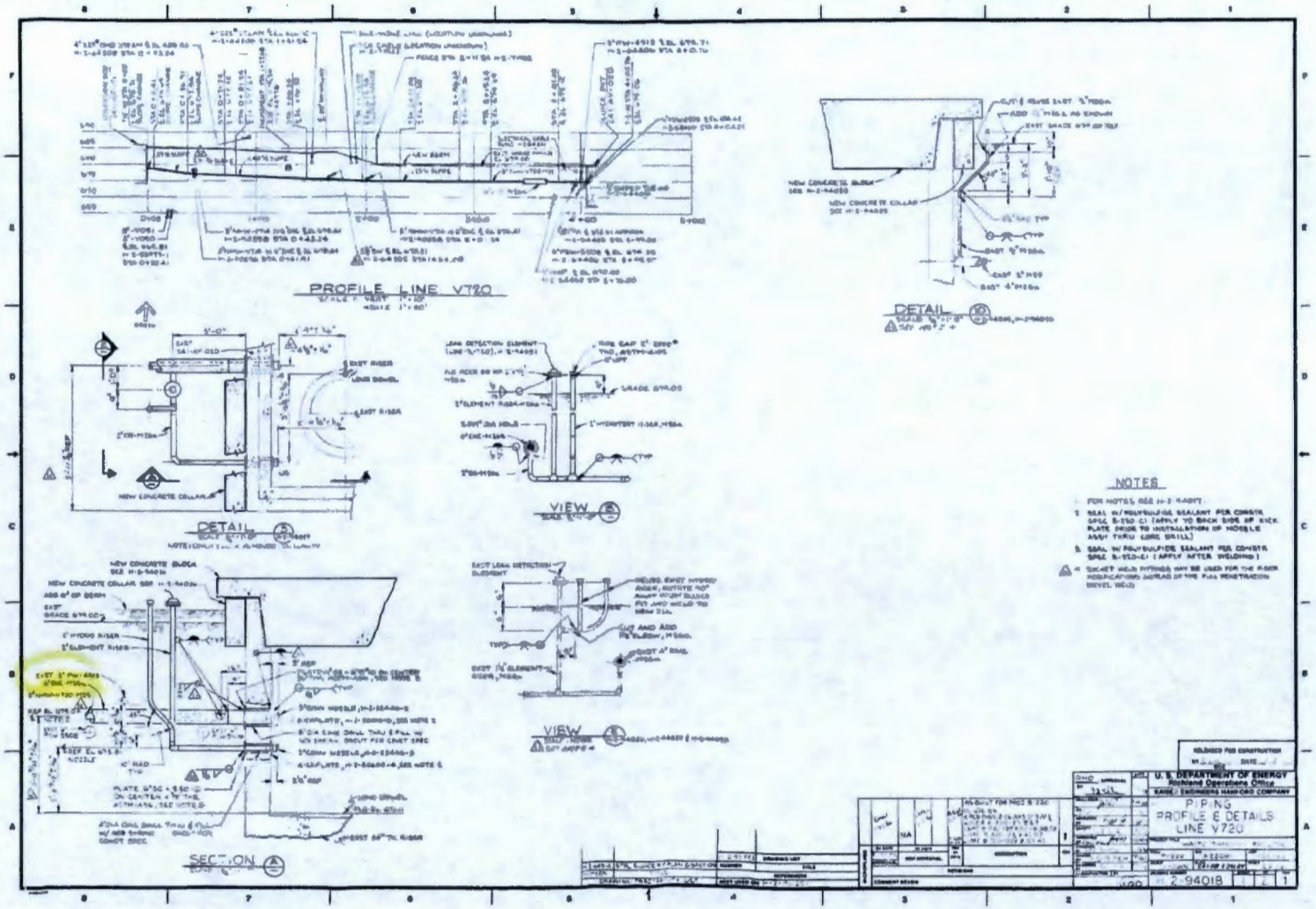
- No direct characterization data have been located for the pipeline or adjacent soil

Misc./Other Relevant Information

- The 241-AR-151 Diversion box received waste from both the 241-AY and 241-AZ Tank Farms

Scoping Summary: 200-E-225-PL




PROFILE LINE V720
DETAIL
VIEW
DETAIL
VIEW
SECTION
NOTES
U. S. DEPARTMENT OF ENERGY
Richland Operations Office
PIPING
PROFILE & DETAILS
LINE V720

10-3-84

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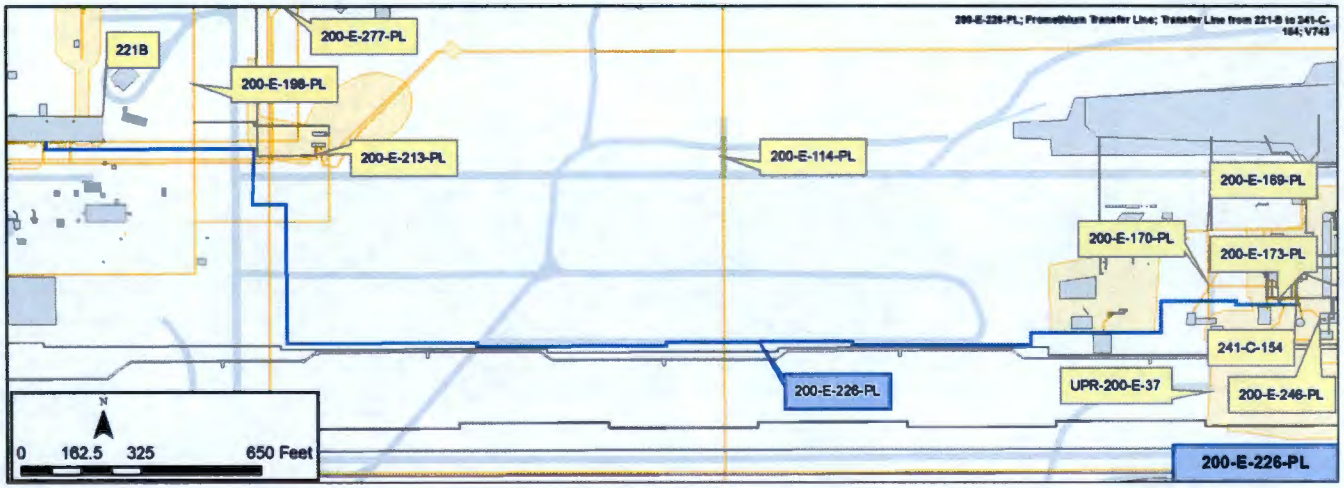
Scoping Summary: 200-E-226-PL

History

The 200-E-226-PL waste site is an inactive underground process transfer pipeline that transferred radioactive promethium solutions from the 221-B Canyon Building to the Hot Semiworks 241-C-154 Diversion Box.

It was constructed in 1965. The diversion box was decommissioned and filled with concrete in 1986. As part of this process, all lines were isolated, including 200-E-226-PL. The area around the diversion box was subsequently clean-filled in 1992.

The diversion box is posted with Underground Radioactive Material Area signs.



Construction

- Length: 4,074 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Direct-buried
- Depth: 12 ft bgs
- Calculated Volume: 665 gal

Features of Interest

- The pipeline has approximately 17 bends
- Isolated from the 241-C-154 Diversion Box, as of Sep-1986

Waste Streams

Beginning in 1963, PUREX acid waste was precipitated and concentrated, allowed to age, and later sent to Hot Semiworks via line V743 for final purification (RPP-PLAN-47559, Rev 0).

Site Interfaces

Origin/Termination

200-CB-1
- 221-B

200-IS-1
- 241-C-154 Diversion Box (Hot Semiworks)

Site Intersects

200-IS-1
- 200-E-114-PL
- 200-E-170-PL
- 200-E-169-PL
- 200-E-173-PL
- 200-E-246-PL

200-EA-1
- UPR-200-E-37

No Operable Unit
- 200-E-198-PL
- 200-E-213-PL
- 200-E-277-PL

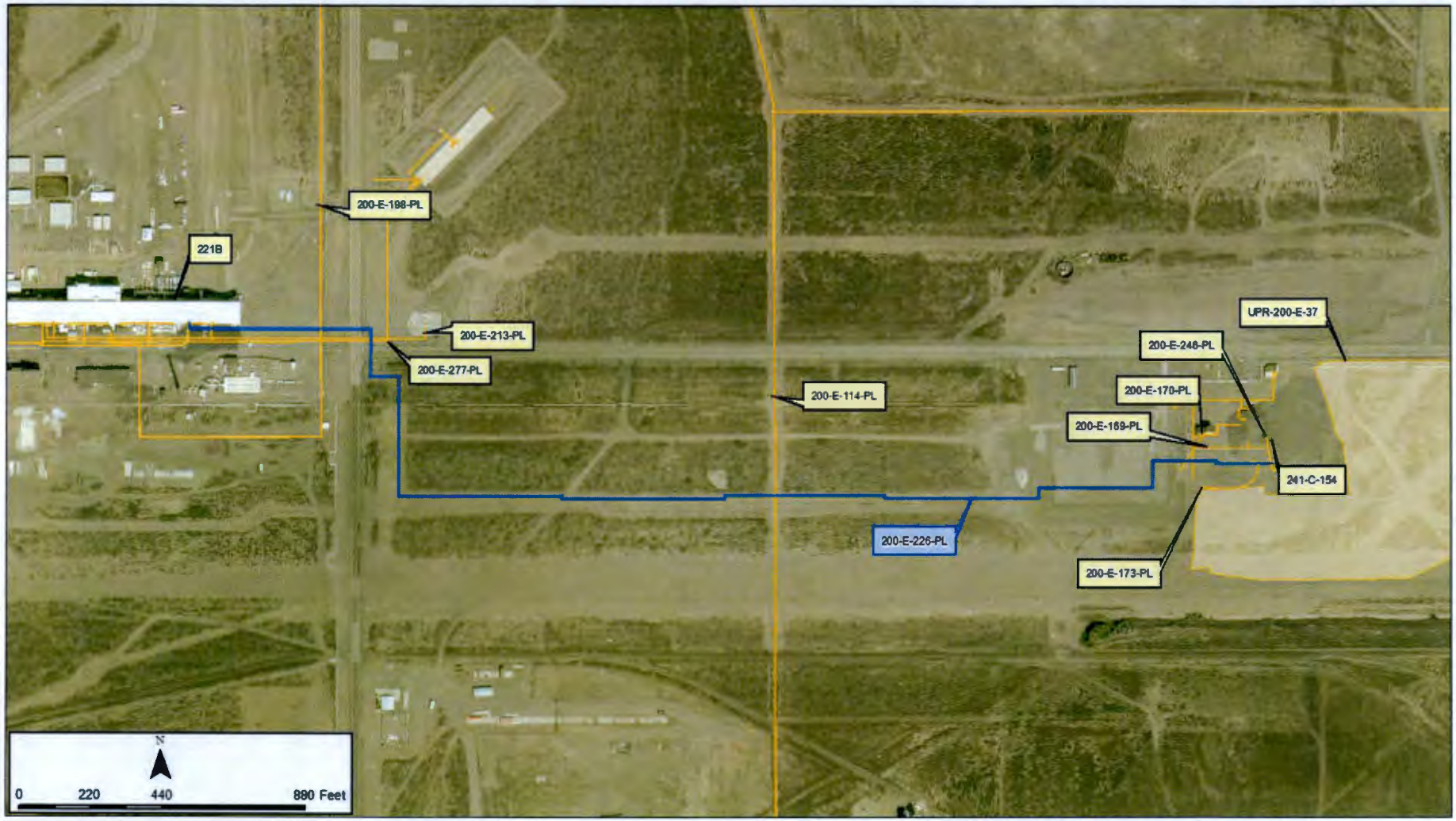
Relevant Characterization

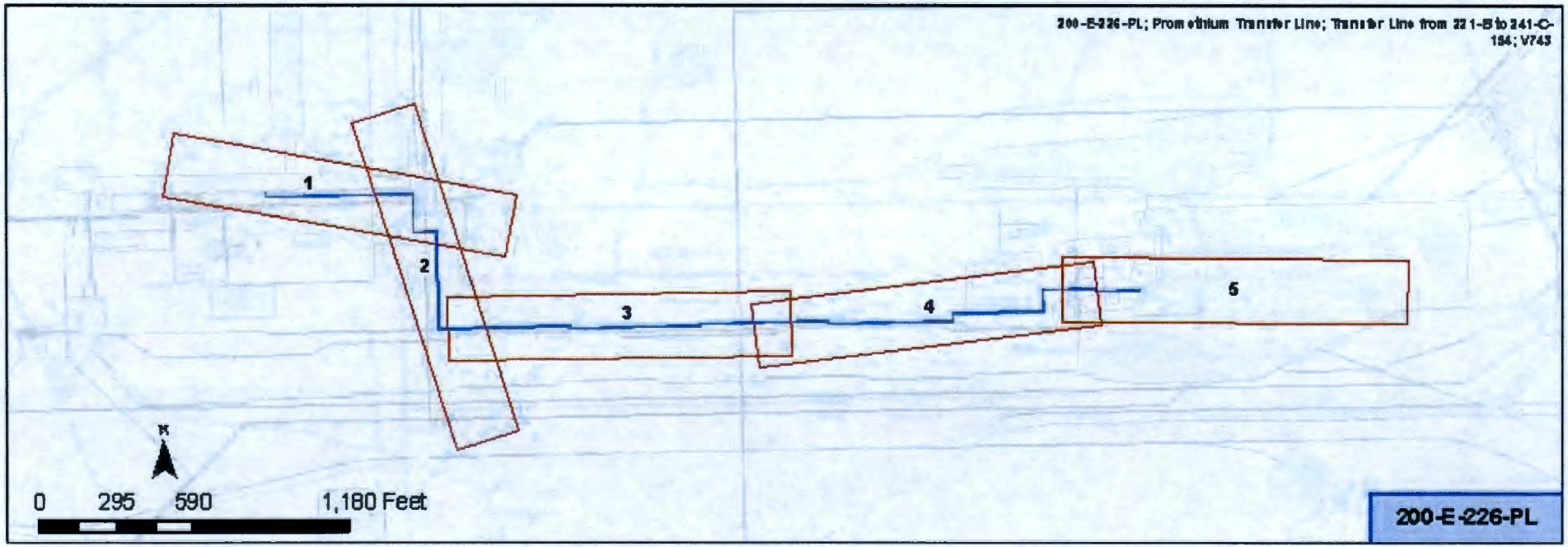
- No direct characterization data have been located for the pipeline or adjacent soil

Misc./Other Relevant Information

- The V743 data sheet (NA 1101050990) notes this line as approximately 3,740 ft, at an average depth of 6 ft, and also notes that V839 is in the same trench for a short time, south of 201-C, but this is unsubstantiated by other sources referenced herein.

Scoping Summary: 200-E-226-PL




200-E-226-PL; Promethium Transfer Line; Transfer Line from 221-B to 241-C-154; V743
1
2
3
4
5
N
0 295 590 1,180 Feet
200-E-226-PL

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Scoping Summary: 200-E-227-PL

History

The 200-E-227-PL waste site is an inactive underground waste transfer system that extends from the 241-AX-151 Diverter Station to the 244-AR Vault Facility.

The transfer lines were the sluicing system for the 241-A and 241-AX Tank Farms, and also conveyed waste from B Plant.

The pipe system was constructed in 1965 and last used in 1977, when its origin point, the 241-AX-151 Diverter Station, was bypassed.

As part of the B-231 Project in the early 1980s, the three system line segments were cut and capped, and the concrete encasement was dammed with concrete at the 241-AX-151 Diverter Station.

Construction

- Length: 1,500 ft (cumulative, three lines, ~500 ft, each)
- Diameter: 3 in. (4 in. for segment 4015)
- Composition: Stainless Steel
- Cathodic Protection: Yes
- Encasement: 2-31 concrete (segment 4005 is direct-buried)
- Depth: 5 ft - 15 ft bgs
- Encasement Length: 500 ft
- Volume of Encasement: 73 cu-yards
- Calculated Volume: 700 gal (cumulative)

Features of Interest

- Six pipe bends
- Line segment 4019 was capped at the Diverter Station during construction/installation of the line
- Flush lines for the segments were removed and abandoned in 1972

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Process effluent, mixed, solid, and liquid, including:
  - PUREX acid waste
  - B Plant neutralized high-level waste

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-IS-1

- 241-AX-151 Diverter Station
- 244-AR Vault

Site Intersects

200-IS-1

- 200-E-282-PL
- 200-E-144-PL
- 200-E-167-PL
- 200-E-111-PL
- 200-E-206-PL
- 200-E-153-PL

WMA A/AX

- 200-E-200-PL

244-AR VAULT
241-AX-151
200-E-227-PL
N
0
35
70
140 Feet

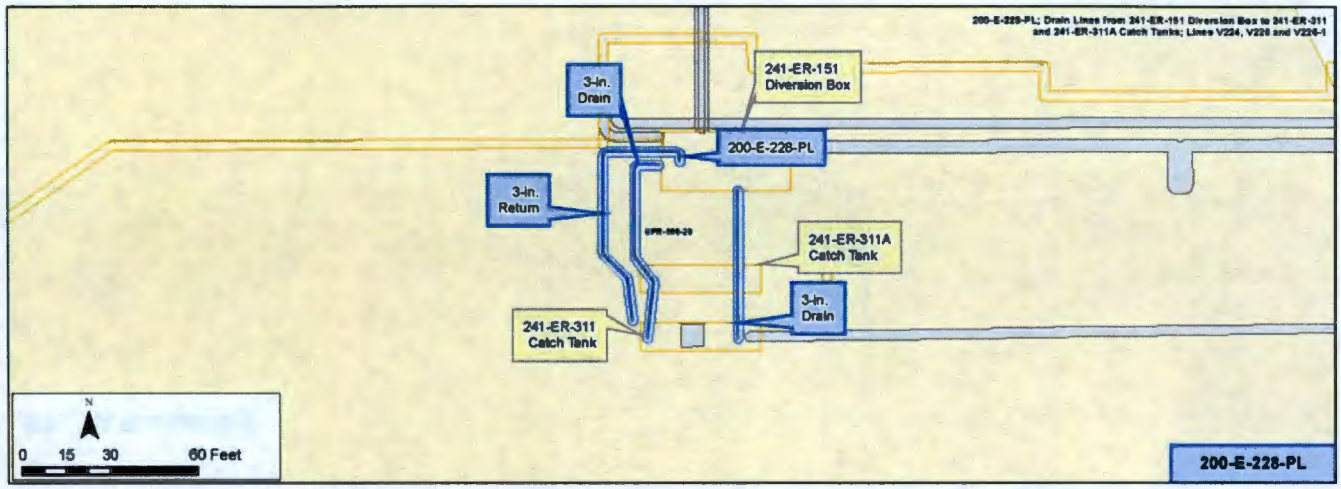
Scoping Summary: 200-E-228-PL

History

The 200-E-228-PL waste site is an inactive underground drain that consists of three lines constructed in 1950 that connect the 241-ER-151 Diversion Box to the new 241-ER-311 Catch Tank and the old 241-ER-311A Catch Tank, which was a suspected leaker.

Two of the lines drain the diversion box, while the third, segment V224, is a return line from the catch tank's pump pit to the diversion box. Each of the three lines was modified in 1980 when the old catch tank was abandoned and the new one installed.

The pipelines are southwest of B Plant inside the 241-ER-151 Diversion Box chain link fence and have not been used since at least 2006.



Construction

- Length: 220 ft (cumulative pipe)
- Diameter: 3 in. and 4 in.
- Composition: Stainless Steel
- Encasement: Direct Buried
  - One segment (V224) partially encased in 10-87 for 30 ft
  - Total Encasement Volume: 12 cubic yds
- Cathodic Protection
- Depth: 9 ft to 15 ft bgs
- Calculated Volume: 80 gal

Features of Interest

- Two 4 in. Risers in the 241-ER-311 Catch Tank
- A 3x2 in. Reducer for line segment V224 42 ft from the catch tank's pump pit
- The catch tank is greater than 15 ft bgs

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- P2 Acid Wastes from 1964-72
- TBP waste from U-plant from 1952-58
- MW1/MW2 Metals Waste and 1C1/1C2 first cycle wastes

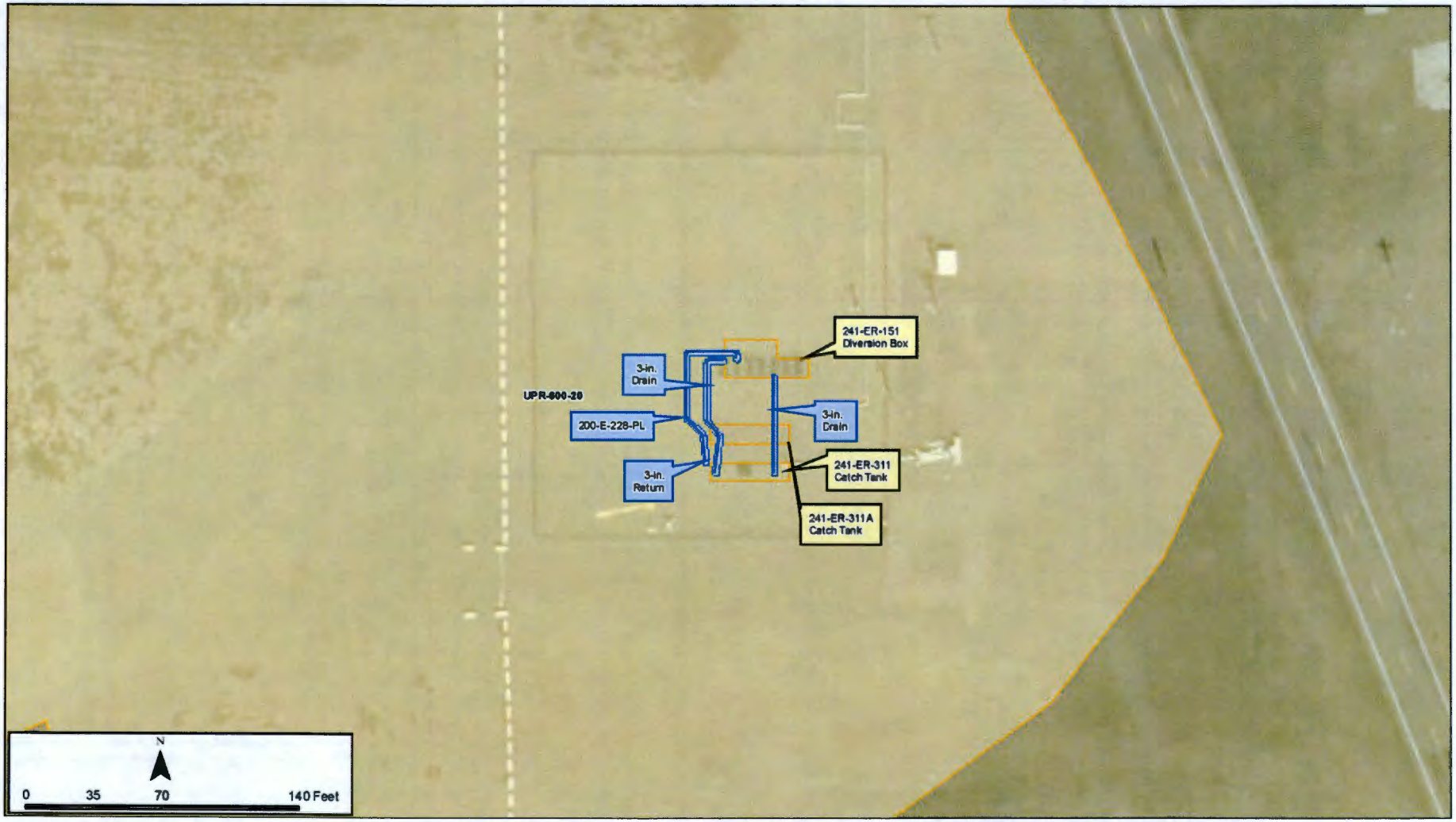
Misc./Other Relevant Information

- In 2006, Tank 241-ER-311 contents were confirmed to be greater than 99% water
- In 2007, the catch tank was empty
- UPR-600-20 encompasses the surface area and vegetation around this waste site. The release from this site is not directly associated with 200-E-228-PL; rather, the 600-284-PL

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-OA-1
• 241-ER-151 Diversion Box	• UPR-600-20
• 241-ER-311 Catch Tank	
• 241-ER-311A Catch Tank	

Scoping Summary: 200-E-228-PL

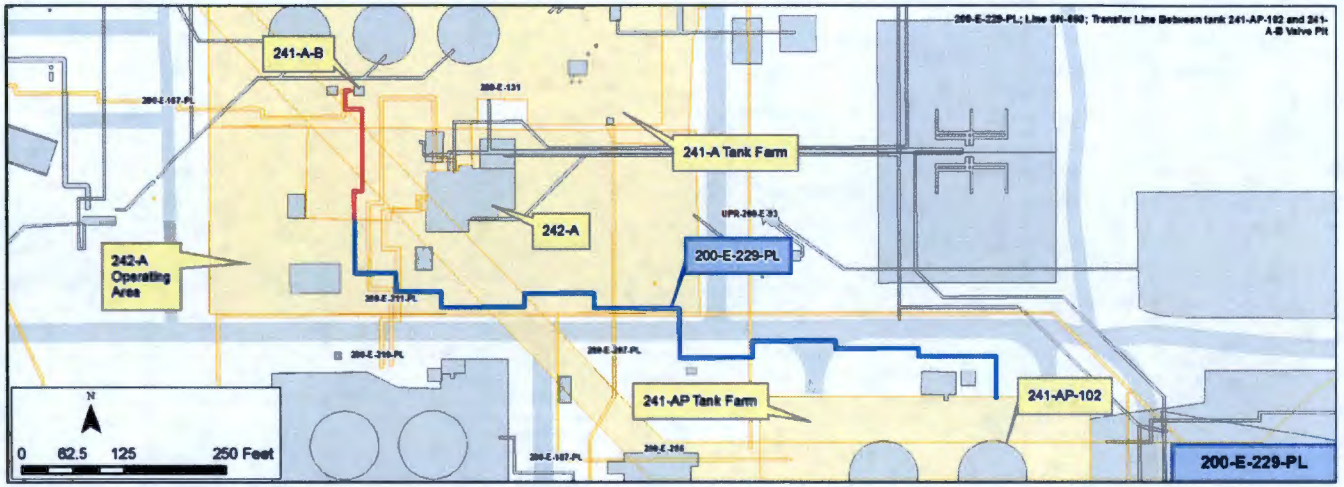


Scoping Summary: 200-E-229-PL

History

The 200-E-229-PL waste site is an inactive underground pipeline that transferred process and decontamination waste from the PUREX facility to the 241-A Tank Farm.

The pipeline was constructed in 1986 and extends from the 241-A-B Valve Pit to the 241-AP-102 Tank within the 241-A Tank Farm. The section of pipe extending into the tank farm is not included in the 200-E-229-PL waste site. The pipeline was deactivated in 1992.



Construction

Pipelines (Line SN-650)

- Diameter: 3 inches
- Material: Stainless Steel
- Length: 1,252 ft
- Encased within a 6 inch Stainless Steel Pipe
- Pressurized Pipeline
- Depth: 3 to 11 feet
- Calculated Volume: 460 gallons (1,839 gallons within encasement)

Features of Interest

- Bends (23)

Relevant Characterization

- Radiological data available from monitoring performed during maintenance of pipeline
  - Smear tests of pipeline surface and work areas were all background (100 cpm Beta, 0 cpm Alpha)

Waste Streams

- PUREX Plant - Plutonium-Uranium Extraction Process
  - Decontamination and processing wastes

Misc./Other Relevant Information

- Records indicate pipeline encasement is equipped with a leak detection device
- This pipeline runs through the 242-A Evaporator operating area (light blue outline), which is currently active and contains vibration sensitive equipment

Site Interfaces

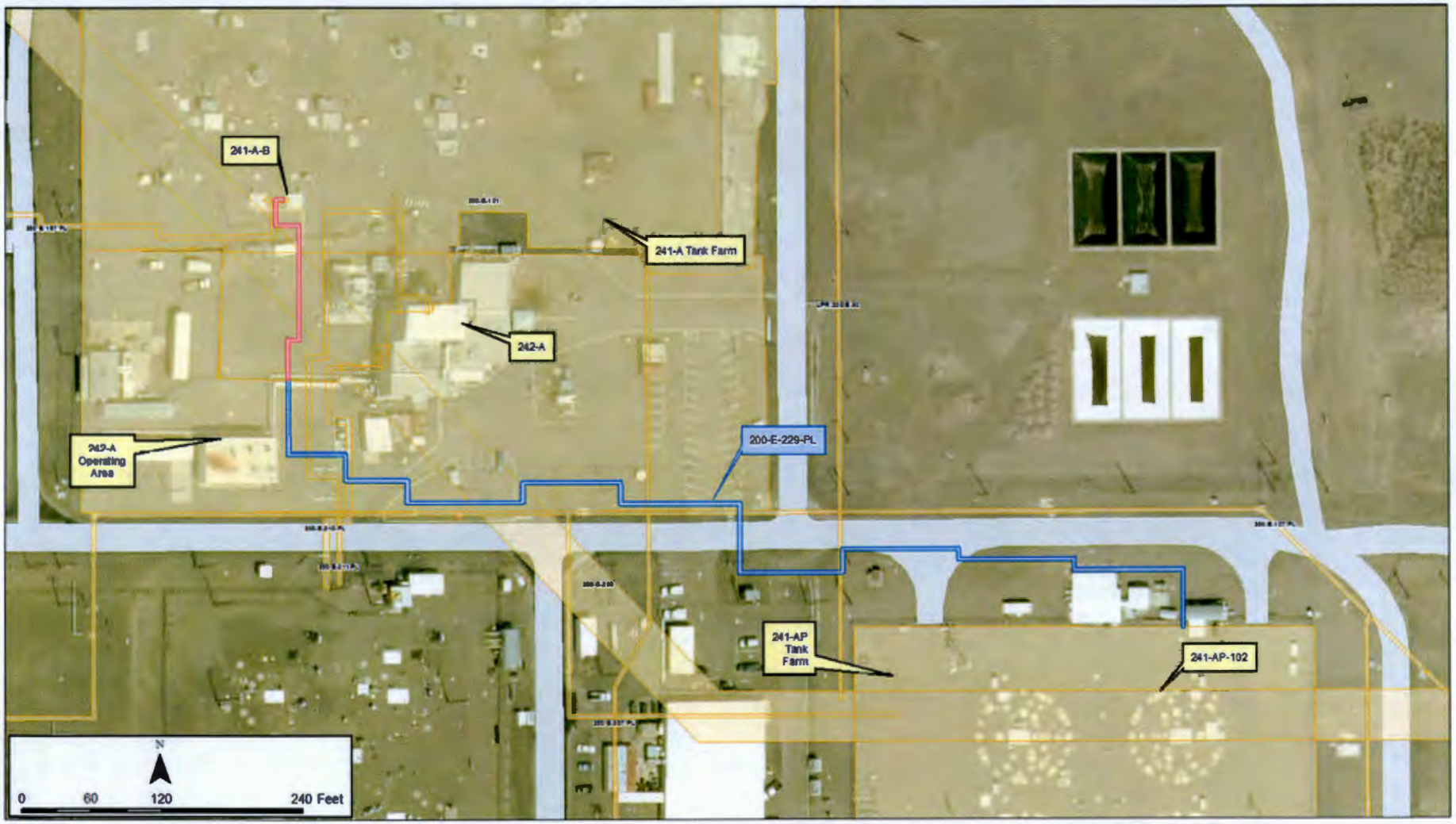
Origin
WMA A/AX
- 241-AP-102

Termination
WMA A/AX
- 241-A-B

Sites That Intersect
WMA A/AX
- 200-E-131

200-IS-1
- 200-E-187-PL
- 200-E-207-PL

No Operable Unit
- 200-E-286
- UPR-200-E-93
- 200-E-210-PL
- 200-E-211-PL


241-A-B
241-A Tank Farm
242-A
242-A Operating Area
200-E-229-PL
241-AP Tank Farm
241-AP-102
N
0
60
120
240 Feet

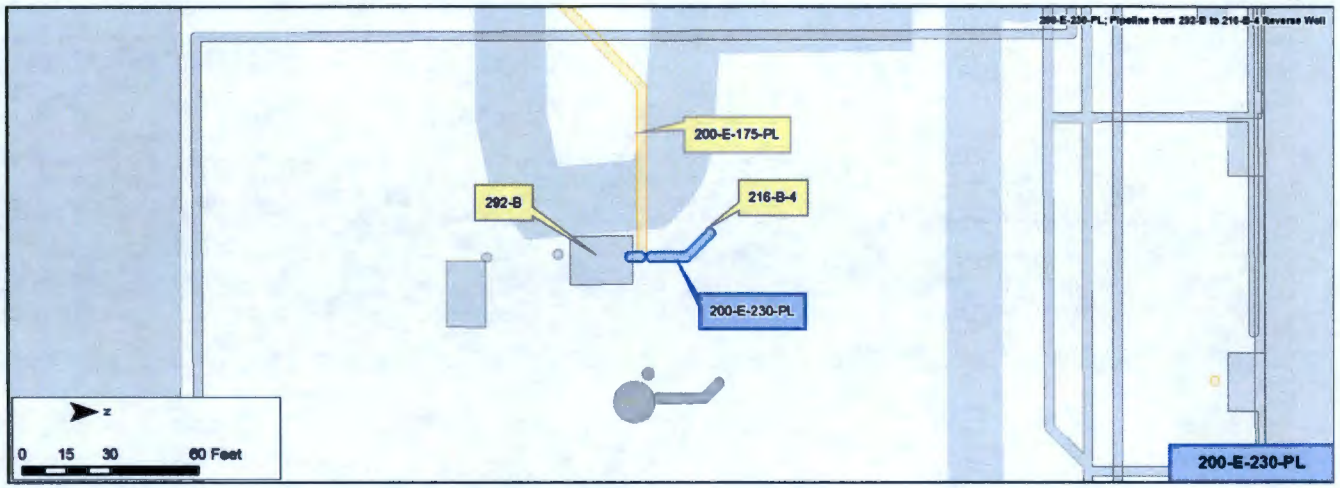
Scoping Summary: 200-E-230-PL

History

The 200-E-230-PL waste site is an inactive underground drain line used to transfer floor drainage from the 292-B Building to the 216-B-4 Reverse Well.

The drain line was in use from 1947 to 1949, when the inlet to the reverse well was disconnected.

The majority of the line was abandoned in 1949. The 200-E-175-PL pipeline was installed to replace the original drain line, and the waste was re-routed to the 216-B-10A Crib. This 200-E-175-PL pipeline was abandoned in 1974, and the system is no longer in use.



Construction

- Length: 22 ft
- Diameter: 6 in.
- Composition: Vitrified Clay Pipe (Earthen-ware)
- Gravity Flow
- Encasement: Direct Buried
- Depth: 4 ft bgs
- Calculated Volume: 32 gal

Features of Interest

- Tie-in between 200-E-230-PL and 200-E-175-PL, approximately 3 feet from 292-B

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Drain Wastes & Cooling Water
  - 292-B Stack Drain Wastes: 216-B-10 Crib
    - Floor drainage from 292-B: neutral to basic, low salt, less than one curie of total beta (1947-1949)
- The 216-B-10 Crib includes the following isotopes: Sr-90 and Cs-137

Misc./Other Relevant Information

- The 216-B-4 Reverse Well 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 two feet above ground surface

Site Interfaces

Origin/Termination

- 292-B (building)

200-CB-1

- 216-B-4

Site Intersect

200-IS-1

- 200-E-175-PL

Scoping Summary: 200-E-230-PL

Scoping Summary: 200-E-231-PL

History

The 200-E-231-PL waste site is an inactive underground pipeline that extends from the 200-E-192-PL pipeline to the 216-A-45 Crib. It was utilized to transfer process condensate waste from the 202-A Building to the crib.

The 200-E-231-PL pipeline was constructed in 1987. By Oct-1989, the line was cut and capped in 200-E-192-PL pipeline.

Construction

- Length: 1,118 ft
- Diameter: 8 in.
- Composition: Fiberglass (RTRP)
- Direct Buried
- Gravity Flow
- Depth: 30 ft - 38 ft bgs
- Computed Volume: 2,918 gal

Features of Interest

- Tie-in, 8 in. SS connection to 200-E-192-PL
- Transition, 8 in. SS to 8 in. RTRP
- 45 degree belled lateral, lateral installed vertically and capped with a 12 in. flange
- Bend, T-fitting with the south end capped with a blind flange
- Bend, 45 degree elbow
- Tie-in, 8 in. RTRP pipe enters a concrete manhole at 216-A-45 crib entrance

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process
- Waste Stream: Process condensate from the 202-A building
- A neutralization system was placed in operation (upstream of 200-E-231-PL) to keep waste pH between 2.0 and 12.5

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	
• 200-E-192-PL (origin)	N/A
200-EA-1	
• 216-A-45 (termination)	

Relevant Characterization

- Based on historical inventory reporting for the 216-A-45 the estimated waste volume is 27,000,000 gal that includes:
  - 6.74E-03 Ci Sr-90
  - 7.9E-03 Ci Cs-137
  - 2.3E-03 Ci Total U
  - 5.5E-02 Ci Total Alpha
  - 0.11 Ci Total Beta

(Radionuclides decayed to Dec-31-98)

Misc./Other Relevant Information

- No additional comments noted

Scoping Summary: 200-E-231-PL

Scoping Summary: 200-E-232-PL

History

The 200-E-232-PL waste site is an inactive underground pipeline that was used to transfer 242-A Evaporator Process Condensate from the 207-A South Retention Basin to the 216-A-37-1 Crib . The pipeline also includes two 10-ft long stubs that were constructed as spares and never used.

The stubs were constructed at the 216-A-37-1 Distribution Box (Project IAP-610) when the 216-A-37-1 Crib was built in 1967. The majority of the 200-E-232-PL pipeline was constructed in 1976 as part of Project B-100, 242-A Evaporator Crystallizer Facilities. It was operational from 1977-to-1989.

In 1982, the pipeline was rerouted beginning at the southwest corner of the Retention Basin and the original pipeline section was removed. The rerouted pipeline runs east along 4th Street and south along 4th Street Loop, where it joins with the original pipeline. A freeze protection berm was added over the original pipeline from this junction to the 216-A-37-1 Crib. The 241-AP Tank Farm overlies the former pipeline alignment. In 2007, the distribution box was filled with gravel.

Construction

- Length: 2,119 ft
- Diameter: 4 in.
- Pipeline composition: Cast Iron
- Pressurized
- Direct buried
- Depth: 3.5 ft bgs
- Calculated volume: 1,440 gal

Features of Interest

- 7 bends
- 1 elbow
- Distribution box to 216-A-37-1 Crib

Relevant Characterization

- Borehole C4106 was drilled to 278 ft below ground surface at the 216-A-37-1 Crib
  - Cs-137 was detected at a maximum 30 pCi/g at 10 ft bgs
  - Soil analysis detected ammonia, nitrate, and **inorganics** above screening levels in samples from below the crib

Waste Streams

- Waste associated with 242-A Evaporator Process Condensate was transferred through this line
- Waste streams found to be regulated mixed waste due to halogenated and non-halogenated solvents and toxicity of ammonia were transferred from 1977 to 1989

Misc./Other Relevant Information

- The pipeline also includes two 10 ft long stubs that were never used.
  - One 8 in. steel on northeast side of distribution box.
  - One 10 in. carbon steel running southeast from the distribution box. Spare for the 216-A-37-2 Crib.

Site Interfaces

Origin/Termination

200-EA-1
- 216-A-37-1 (Crib) (termination)

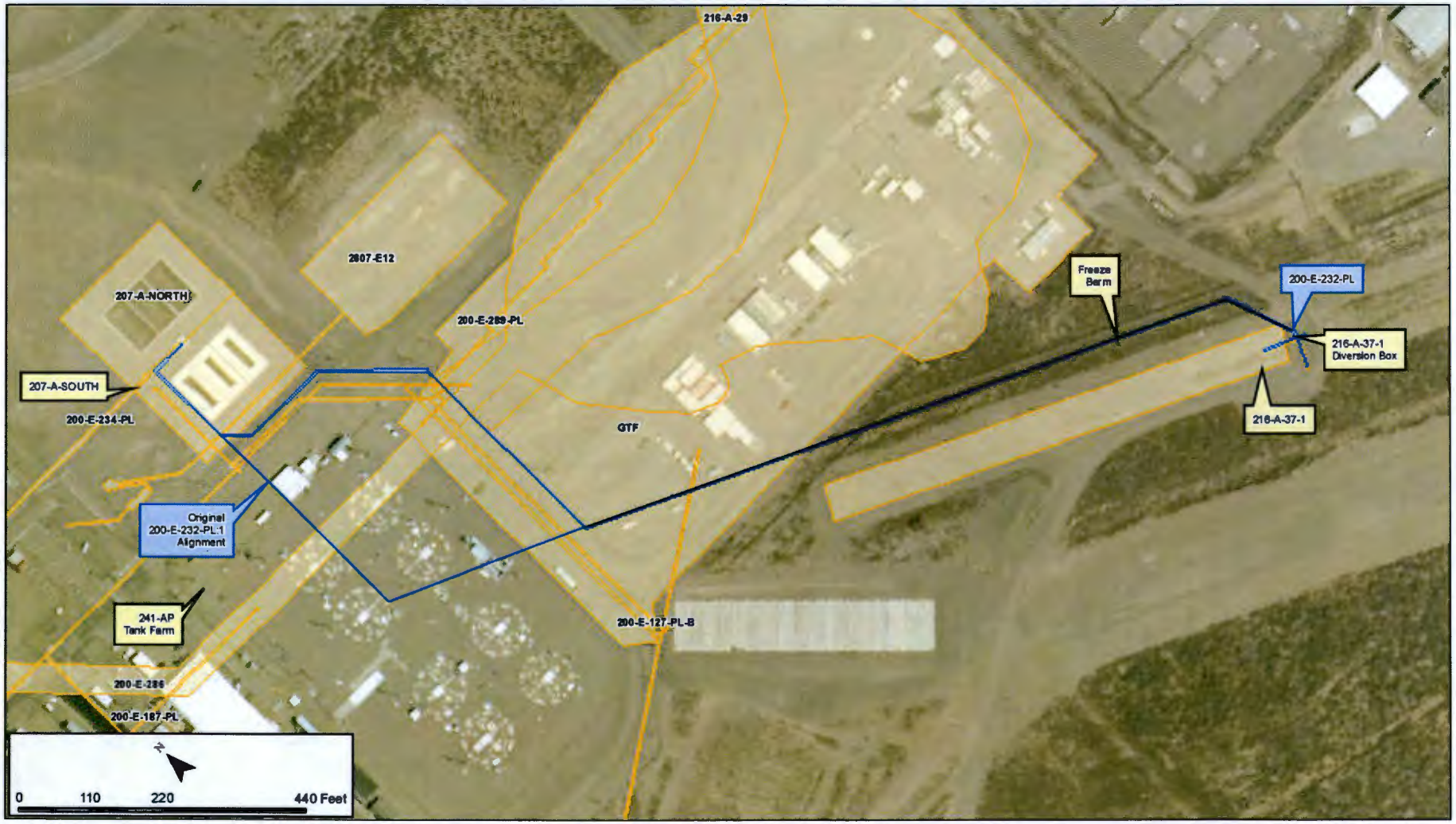
Not Assigned
- 216-A-37-1 (Crib Distribution Box) (termination)
- 207-A South (Retention Basin and Pump Pit) (origin)

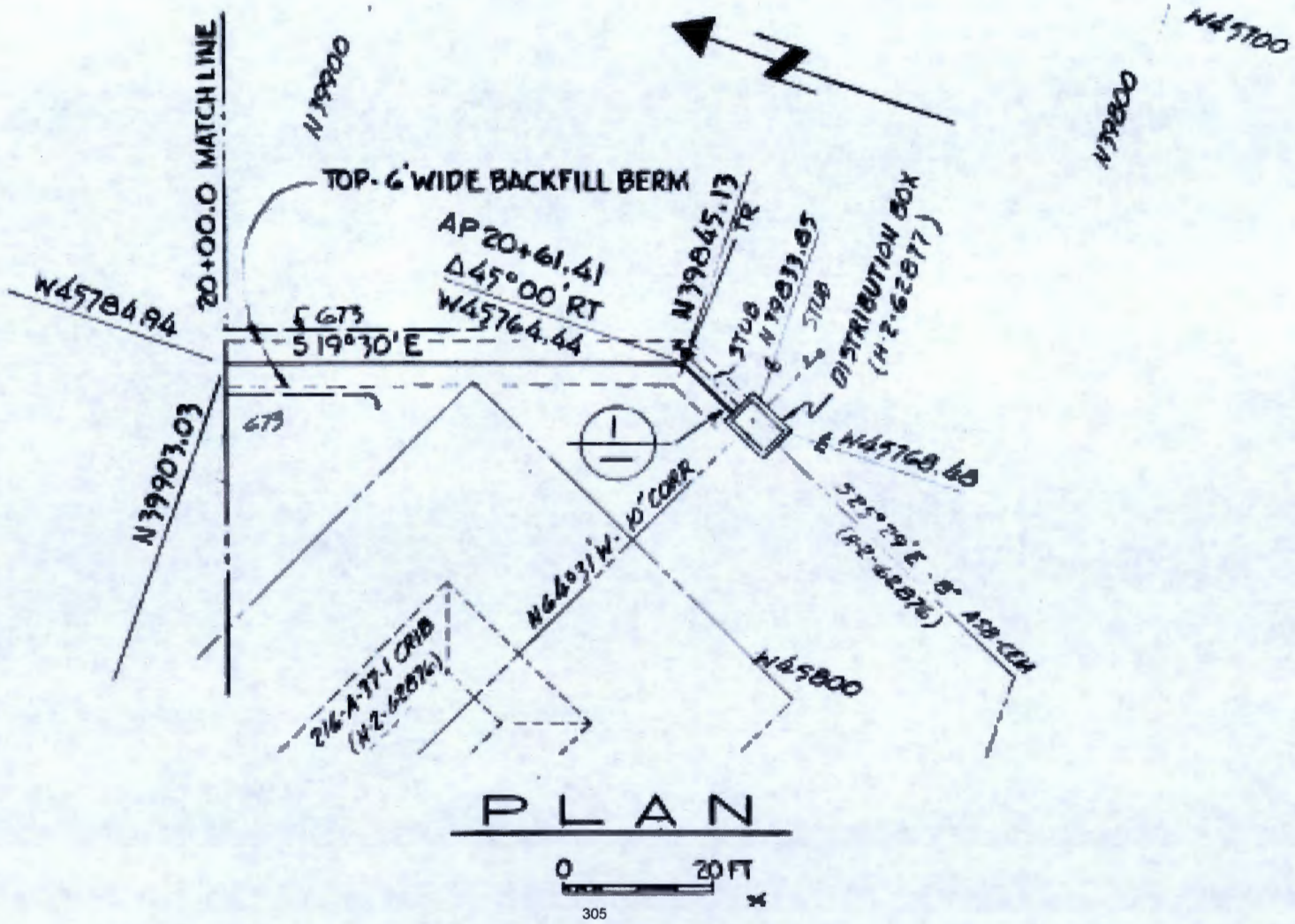
Site Intersects

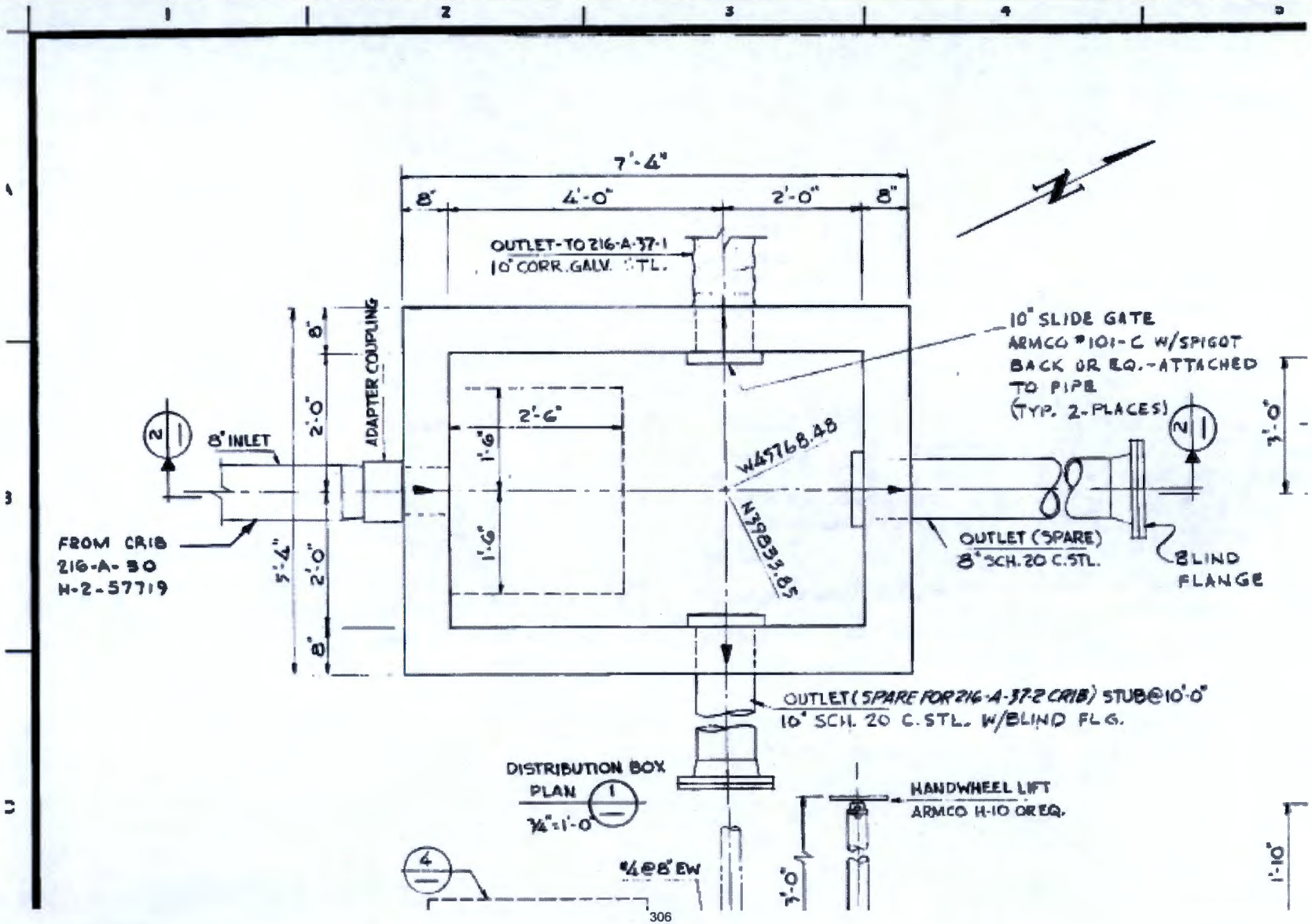
200-IS-1
- 200-E-127-PL-B
- 200-E-187-PL
- 200-E-234-PL

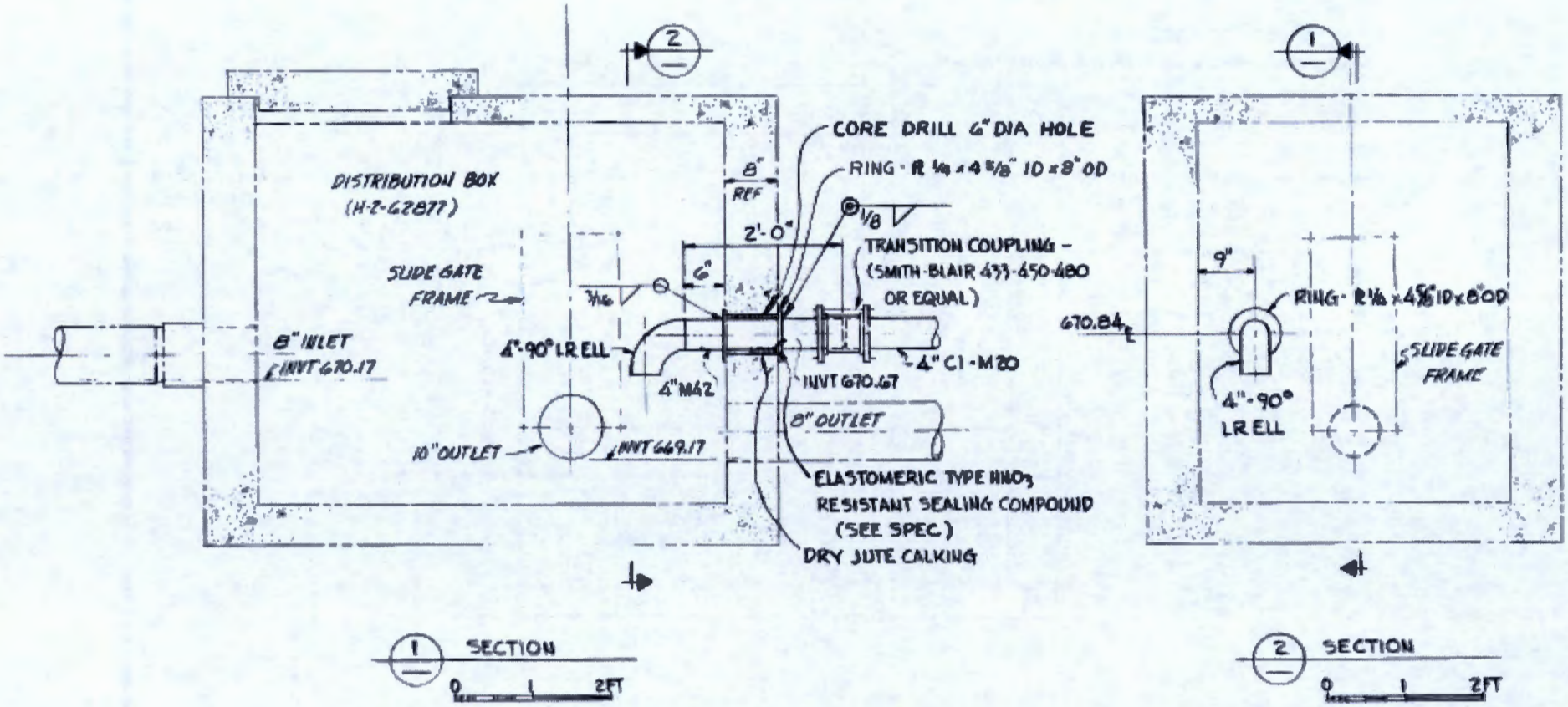
200-EA-1
- 207-A North (Retention Basin)
- 216-A-29 (Ditch)
- 2607-E12 (Septic System)

Not Assigned
- 200-E-289-PL
- 200-E-286 (A Swamp)
- 207-A South (Retention Basin)
- GTF (Grout Treatment Facility)


216-A-29
2607-E12
207-A-NORTH
200-E-289-PL
207-A-SOUTH
200-E-234-PL
GTF
Freeze Berm
200-E-232-PL
216-A-37-1 Diversion Box
216-A-37-1
Original 200-E-232-PL-1 Alignment
241-AP Tank Farm
200-E-127-PL-B
200-E-286
200-E-187-PL
N
0
110
220
440 Feet


20+00.0 MATCH LINE
N39900
TOP- 6' WIDE BACKFILL BERM
AP 20+61.41
Δ 45°00' RT
W45764.44
N39845.13
TR
STUB
N39833.05
STUB
DISTRIBUTION BOX
(H-2-62877)
W45784.94
℄ GTS
S 19°30' E
GTS
N39903.03
℄ W45768.60
S25°29' E - 8' ASB-CCH
(H2-62876)
N64°03' W - 10' CONR
W45800
216-A-37-1 CRIB
(H-2-62876)
W45700
N39800
PLAN
0
20 FT
305


7'-4"
8"
4'-0"
2'-0"
8"
OUTLET-TO 216-A-37-1
10" CORR. GALV. STL.
10" SLIDE GATE
ARMCO #101-C W/SPIGOT
BACK OR EQ.-ATTACHED
TO PIPE
(TYP. 2-PLACES)
ADAPTER COUPLING
8"
2'-0"
2'-6"
1'-6"
1'-6"
W45768.48
N39833.65
8" INLET
FROM CRIB
216-A-30
H-2-57719
5'-4"
2'-0"
8"
OUTLET (SPARE)
8" SCH. 20 C.STL.
BLIND
FLANGE
3'-0"
OUTLET (SPARE FOR 216-A-37-2 CRIB) STUB@10'-0"
10" SCH. 20 C.STL. W/BLIND FLG.
DISTRIBUTION BOX
PLAN
1/4"=1'-0"
HANDWHEEL LIFT
ARMCO H-10 OR EQ.
#4@8" EW
3'-0"
1'-10"


DISTRIBUTION BOX
(H-2-62877)
SLIDE GATE FRAME
8" INLET
INVT 670.17
10" OUTLET
INVT 669.17
4"-90° LR ELL
4" M42
8" REF
2'-0"
6"
3/16
1/8
CORE DRILL 6" DIA HOLE
RING - R 1/4 x 4 5/8" ID x 8" OD
TRANSITION COUPLING -
(SMITH-BLAIR 433-450-480
OR EQUAL)
4" C1-M20
INVT 670.67
8" OUTLET
ELASTOMERIC TYPE HNO3
RESISTANT SEALING COMPOUND
(SEE SPEC.)
DRY JUTE CALKING
9"
670.84
RING - R 1/4 x 4 5/8" ID x 8" OD
SLIDE GATE FRAME
4"-90°
LR ELL
1 SECTION
0 1 2FT
2 SECTION
0 1 2FT

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Scoping Summary: 200-E-233-PL

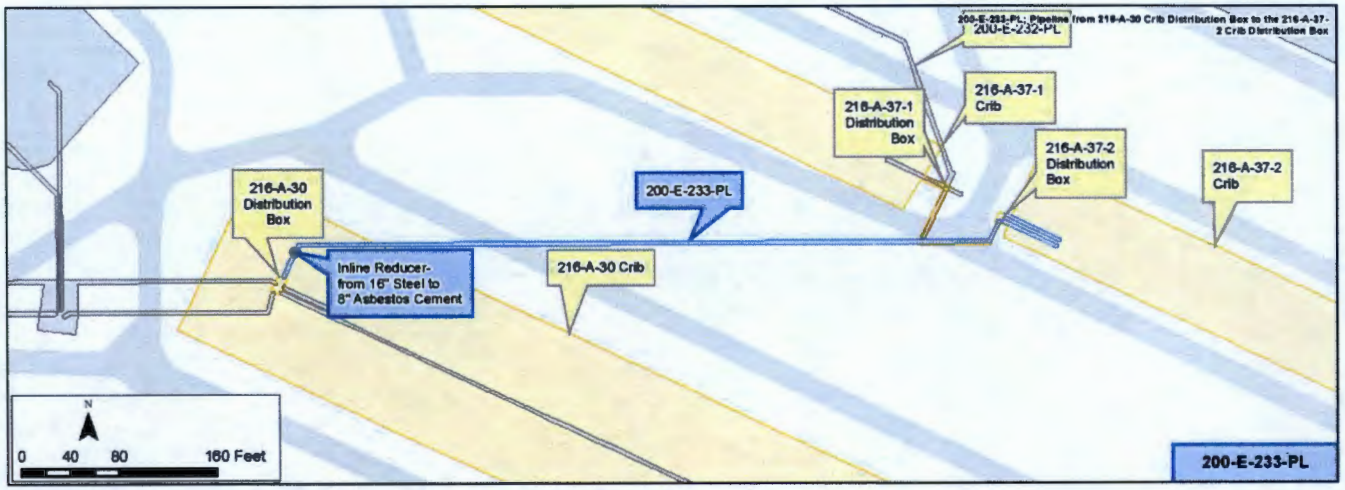
History

The 200-E-233-PL waste site is an inactive underground pipeline originally used to connect the 216-A-30 Crib Distribution Box to the 216-A-37-1 Crib Distribution Box.

It was constructed in 1967, and in 1983 the elbow to the 216-A-37-1 Crib Distribution Box was removed, the piping to the Distribution Box was capped, and new piping was added eastward then northeastward into the 216-A-37-2 Crib Distribution Box.

The 216-A-30 Crib was active from 1961 to 1992, the 216-A-37-1 Crib from 1977 to 1989, and the 216-A-37-2 Crib from 1983 to 1992.

In 1995, the 216-A-37-2 Crib Distribution Box was filled with concrete. The 216-A-30 Crib was also permanently isolated in 1995.



Construction

- Length: 638 ft
- Diameter: Primarily 8 in., with approximately 20 ft of 16 in.
- Composition: Primarily asbestos cement, some steel and cast iron
- Gravity flow line
- Direct buried under sand
- Depth: 3 ft - 4 ft bgs (or engineered berm surface)
- Calculated Volume: 1,827 gal

Features of Interest

- 2 bends
- 1 reducer
- 2 changes in pipe material
- 216-A-30 Crib Distribution Box
- 216-A-37-1 Crib Distribution Box
- 216-A-37-2 Crib Distribution Box

Waste Streams

- PUREX Steam Condensate
  - 340,000,000 gal sent to the 216-A-37-2 Crib between 1984 and 1991

Site Interfaces

Origin/Termination

200-EA-1

- 216-A-30 (Crib Distribution Box)
- 216-A-37-2 (Crib Distribution Box)

Not Assigned

- 216-A-37-1 (Crib Distribution Box)

Site Intersects

200-IS-1

- 200-E-232-PL

Relevant Characterization

- There is no characterization information available for 200-E-233-PL or the 216-A-37-2 Crib.
- Investigations and radiological surveys at the 216-A-30 Crib between 1972 and 2008 detected contamination in soil below ground surface , and contaminated tumbleweeds above the crib.
- At the 216-A-37-1 Crib, Cs-137 was detected (30 pCi/g). Soil analysis detected ammonia, nitrate, and inorganics above screening levels in samples below the crib.

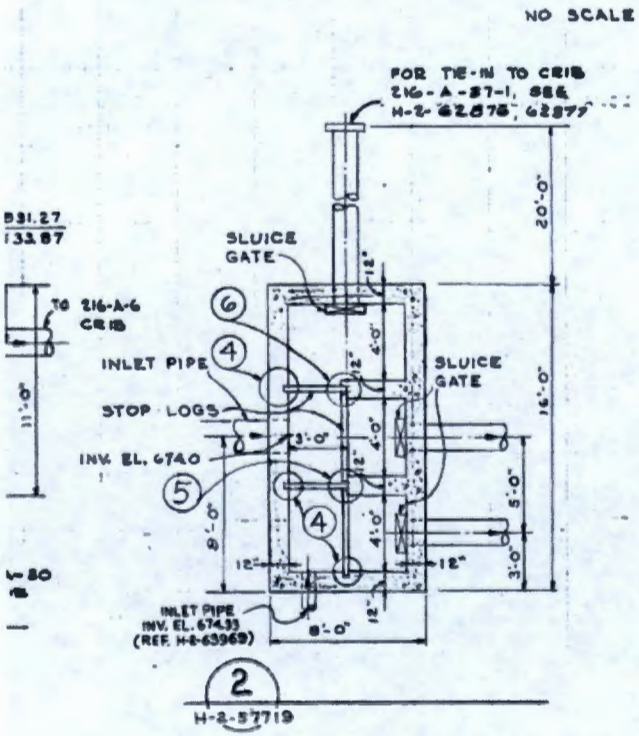
Misc./Other Relevant Information

- None

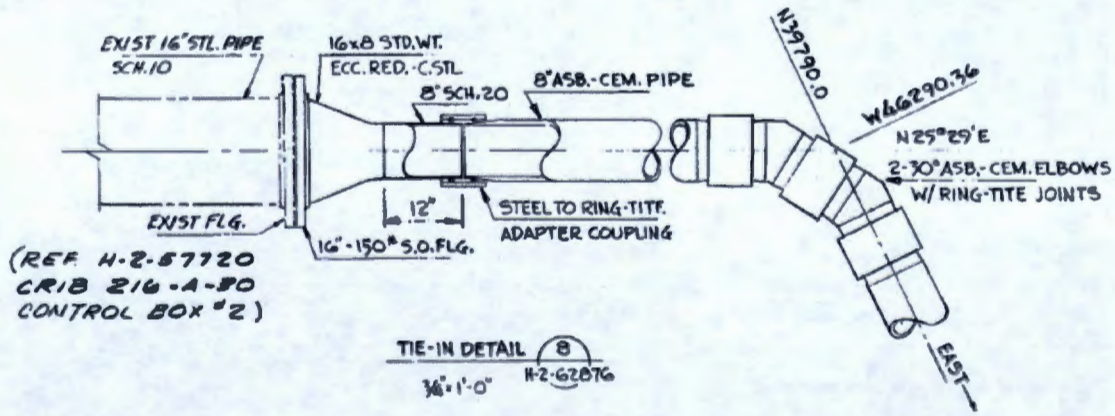
Scoping Summary: 200-E-233-PL

216-A-30 Crib Distribution Box Detail

From H-2-57720 - 216-A-30 Crib Distribution Box



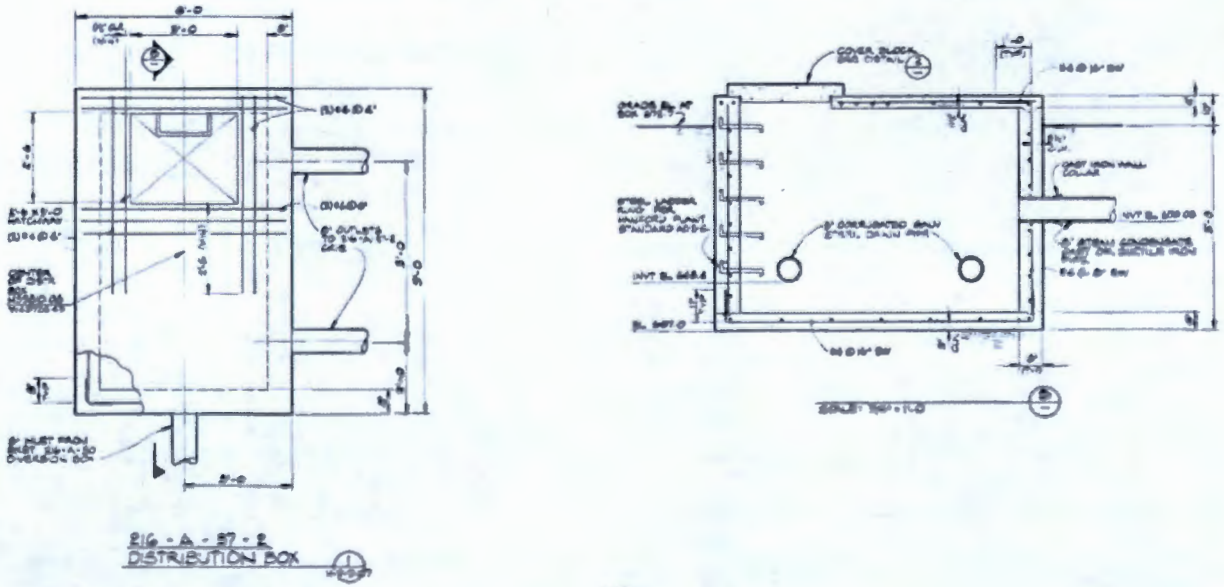
Tie-In Detail East of 216-A-30 Control Box #2 (From H-2-62877)



216-A-37-2 Crib Distribution Box Detail

1983 Addition of 216-A-37-2 Crib Distribution Box and piping (from H-2-91137)

216-A-37-2 Crib Distribution Box Construction (from H-2-91138)



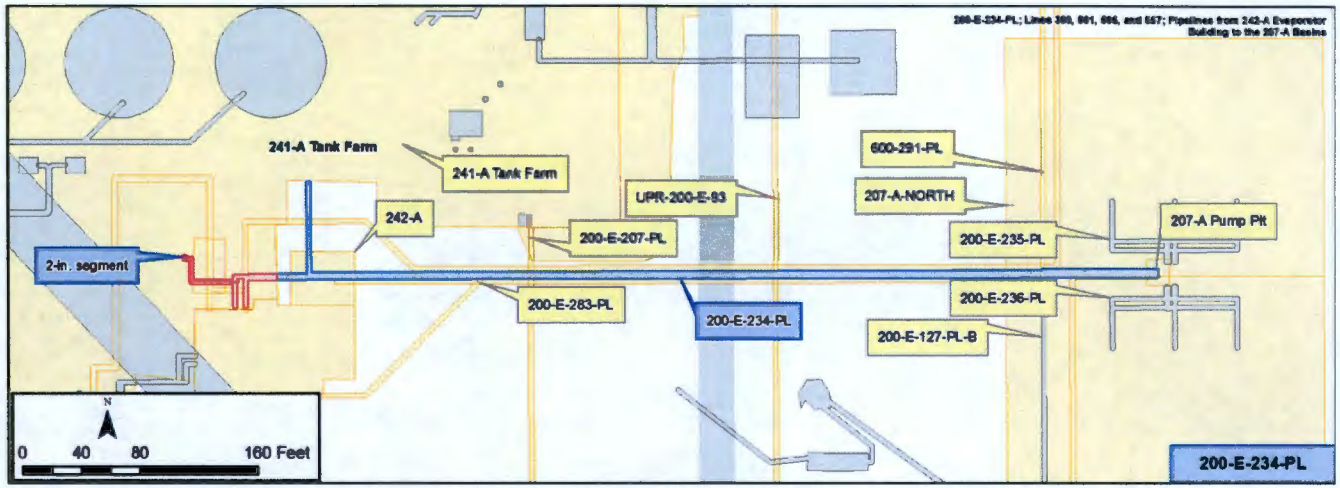
Scoping Summary: 200-E-234-PL

History

The 200-E-234-PL waste site is an inactive radioactive process sewer system. The system consists of four lines buried in the same soil trench that extends from the north end of the 242-A Evaporator Building to the 207-A Pump Pit.

The lines were active from approximately 1977 to 1989.

One of the lines is a spare and is now stubbed along with its running mate at the west end of 207-A. Another is a return line from the Basin back to the A-Tank Farm, just north of 242-A.



Construction

- Length: 2,027 ft (cumulative)
- Diameter: 4 in.
- Composition: Carbon Steel
- Encasement: Direct-buried (a small run of the system is concrete-encased, beneath the 242-A addition)
- Depth: ~10 ft bgs
- Total Volume: 1,323 gal

Features of Interest

- The westernmost segment of this system is a 2 in. diameter line that flows into a 24 in. CMP URW drain at its termination to the west.

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- The system transferred secondary waste, predominantly evaporator process condensate from 242-A to, ultimately, the 216-A-37-1 Crib. Crib data indicate waste stream included Sr-90, Cs-137, and Uranium (gross)

Misc./Other Relevant Information

- 2008: Rabbit feces near 242-A found and removed from 10,000-to-20,000 dpm/100 sq-cm
- 2010: Speck on grass outside 242-A found and removed at 4,000 dpm/100 sq-cm

Site Interfaces

Origin/Termination

- 242-A Evaporator Building

200-EA-1

- 207-A Pump Pit

Site Intersects

200-IS-1

- 200-E-207-PL
- 200-E-283-PL
- 200-E-127-PL-B

No Operable Unit

- 200-E-235-PL
- 200-E-236-PL
- 600-291-PL
- UPR-200-E-93

Scoping Summary: 200-E-234-PL

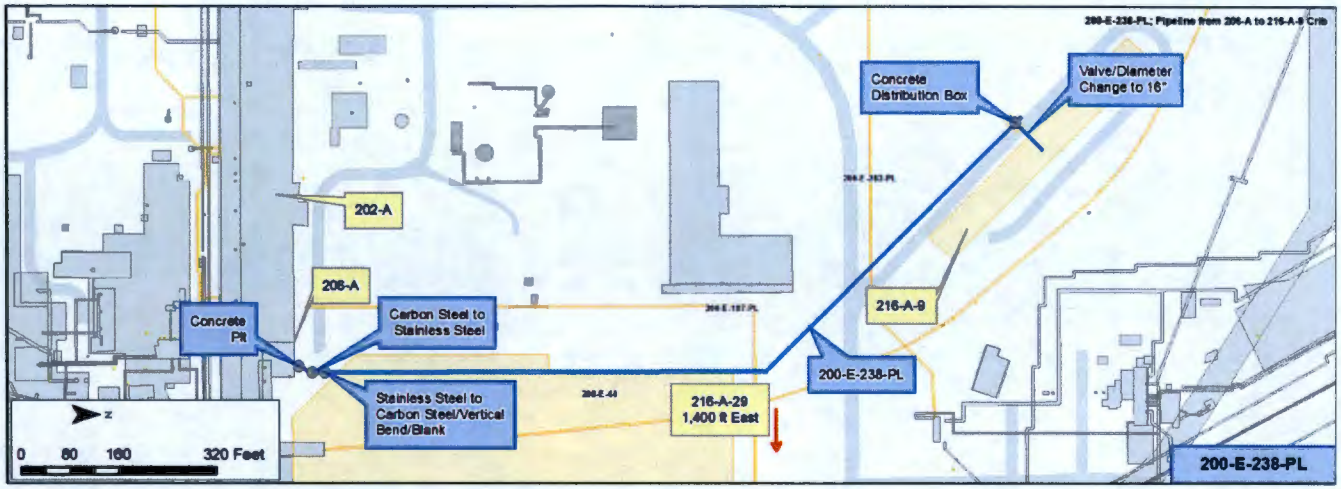
Scoping Summary: 200-E-238-PL

History

The 200-E-238-PL waste site is an inactive underground pipeline that carried PUREX acid fractionator waste from 206-A to the 216-A-9 Crib.

The operational period can be correlated to the crib, which was in service from 1956 to 1969. 200-E-238-PL was blanked and inactive Feb-1958 to Aug-1969, due to the crib exceeding capacity. During this inactive period the effluent was rerouted to the 216-A-29 ditch via the 202-A building chemical sewer.

Shortly after returning to service in 1969, 100 ft of the pipeline failed, the section was removed and replaced with stainless steel pipe (see Page 3). 200-E-238-PL was isolated in late 1969 by again blanking the line and rerouting the effluent to the 216-A-29 ditch via the 202-A building chemical sewer.



Construction

- Length: 1,402 ft (total)
  - Segment 1: 1,342 ft
  - Segment 2: 60 ft
- Diameter:
  - Segment 1: 12 in.
  - Segment 2: 16 in.
- Composition: Carbon Steel and Stainless Steel (for 100 ft of Segment 1)
- Flow Method: Gravity
- Encasement: None
- Cathodic Protection: None
- Depth: 3 ft - 11 ft bgs
- Total Calculated Volume: 8,512 gal
  - Segment 1: 7,885 gal
  - Segment 2: 627 gal

Features of Interest

- Concrete pit
- Concrete distribution box
- Approximately 100 ft of Stainless Steel replacement pipe with flanges and a blank at the transition point (see figure pg.3)
- Vertical bend with a 2 ft increase in elevation
- Diameter change to 16 in. and a valve on the segment going from the distribution box to the crib
- The 16 in. segment is tied into by two 10 in. pipes within the 216-A-9 crib

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- 1998 radionuclide curies inventory for 216-A-9 included:
  - 8.91E+00 of Sr-90
  - 1.59E-07 of Cs-134
  - 1.31E-06 of Cs-135
  - 3.77E+00 of Cs-137
  - 7.55E-05 of U Gross

Waste Streams

- PUREX acid fractionator condensate and cooling water

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

- 206-A Building (origin)

200-EA-1 OU

- 216-A-9 Crib (termination)

Site Intersects

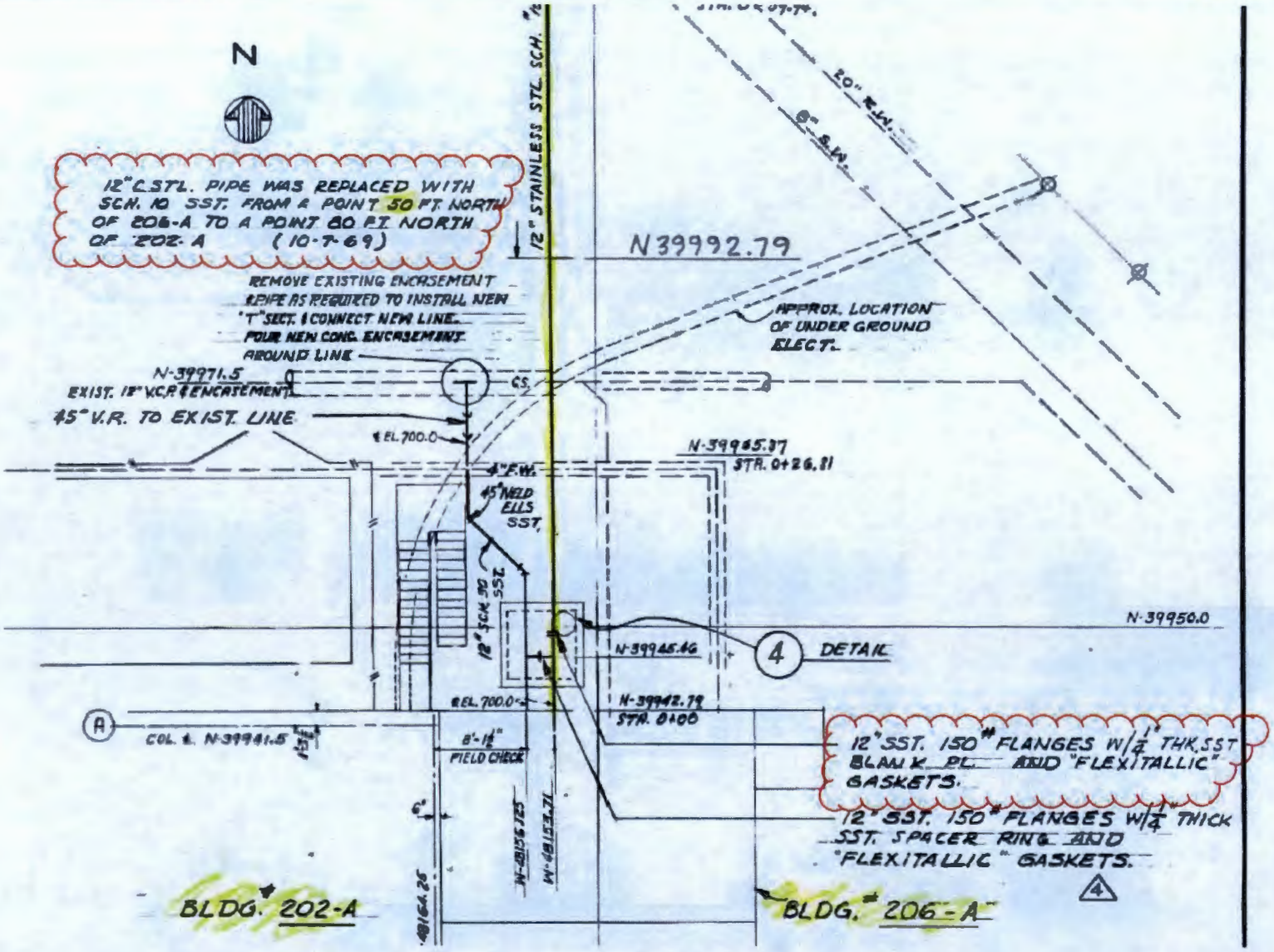
200-IS-1

- 200-E-187-PL
- 200-E-282-PL

No Operable Unit

- 200-E-44

Scoping Summary: 200-E-238-PL


N
12" C.STL. PIPE WAS REPLACED WITH SCH. 10 SST. FROM A POINT 50 FT. NORTH OF 206-A TO A POINT 80 FT. NORTH OF 202-A (10-7-69)
12" STAINLESS STL. SCH. 10
N39992.79
REMOVE EXISTING ENCASEMENT & PIPE AS REQUIRED TO INSTALL NEW "T" SECT. & CONNECT NEW LINE. POUR NEW CONC. ENCASEMENT AROUND LINE
APPROX. LOCATION OF UNDER GROUND ELECT.
N-39971.5
EXIST. 12" V.C.P. & ENCASEMENT
45° V.R. TO EXIST. LINE
℄ EL. 700.0
N-39965.37
STA. 0+26.81
4" F.W.
45° WELD ELLS SST.
12" SCH. 80 SST.
N-39950.0
N-39945.46
4 DETAIL
℄ EL. 700.0
N-39942.79
STA. 0+00
A
COL. ℄ N-39941.5
8'-1½" FIELD CHECK
12" SST. 150# FLANGES W/ ¼" THK. SST BLANK PL. AND "FLEXITALLIC" GASKETS.
12" SST. 150# FLANGES W/ ¼" THICK SST. SPACER RING AND "FLEXITALLIC" GASKETS.
4
BLDG. 202-A
BLDG. 206-A

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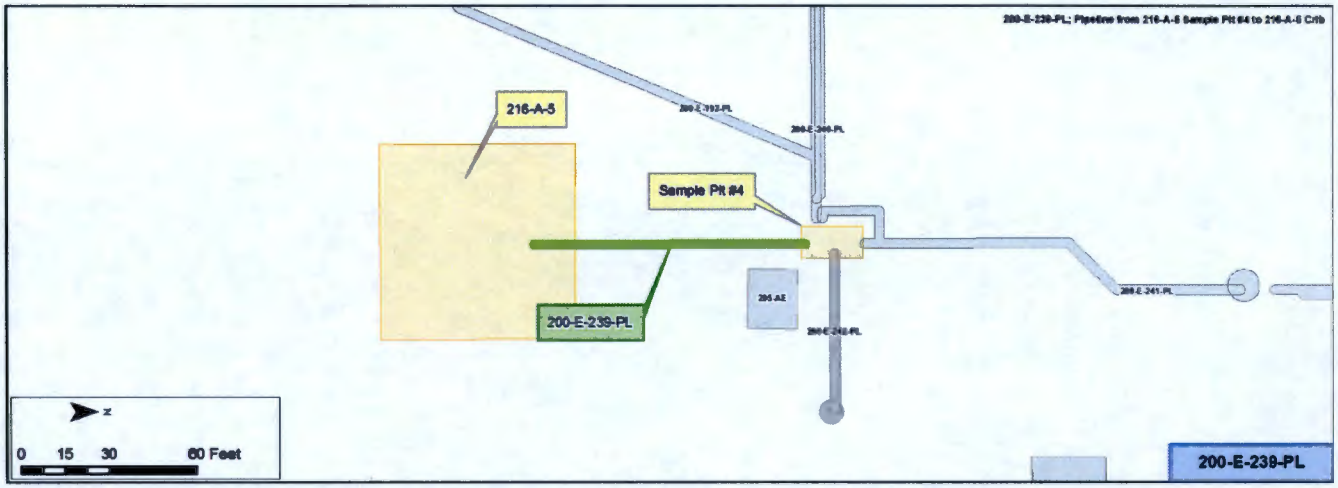
Scoping Summary: 200-E-239-PL

History

The 200-E-239-PL waste site is an inactive underground radioactive process sewer line from the Sample Pit No. 4 to the 216-A-5 Crib. The line transferred acidic process condensate originating from 202-A (PUREX) to the crib.

It was operational from 1955 to 1972, when the sample pit cover block was sealed to prevent rainwater intrusion. Its primary use occurred between 1955 and 1961, then for one month in 1966, as the 216-A-5 Crib was merely a back-up discharge location from 1961 to 1972.

In 1983, the crib was surface-stabilized and the effluent line valved out to deactivate.



Construction

- Length: 91 ft
- Diameter: 8 in.
- Composition: Stainless Steel
- Encasement: Direct Buried
- Depth: 23 ft - 25 ft bgs
- Calculated Volume: 238 gal

Features of Interest

- None identified

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil could be located
  - The line is at least 23 ft bgs
- A 1998 Radionuclide inventory of the 216-A-5 Crib included Co-60, Se-79, Sr-90, Zr-93, Tc-99, Ru-106, Pd-107, Cd-113M, Sb-125, Cs-134, Cs-135, Cs-137, Pm-147, Sm-151, Eu-152, Eu-154, Eu-155, Ra-226, and Th-232

Waste Streams

- 1955 to 1972: acidic process condensate from the 202-A PUREX plant, routed through the 200-E-58 Neutralization Tank and the Sample Pit No. 4

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Interfaces
200-EA-1	
• 216-A-5 Crib	N/A
No Operable Unit	
• Sample Pit No. 4	

Scoping Summary: 200-E-239-PL

Scoping Summary: 200-E-240-PL

History

The 200-E-240-PL waste site is an inactive underground radioactive process sewer that extends from the valve box west of Sample Pit #4 to the 216-A-38-1 Crib. Records indicate it was never used.

It was first sketched in 1966, when the 216-A-10 Crib began to show signs of Strontium-90 saturation and an alternative crib was determined necessary. The 216-A-38-1 Crib was proposed in Project IAP-606 as the PUREX Process Condensate Crib, but that project was not immediately started.

No later than 1980, this process sewer was constructed and is located approximately 33 ft bgs. In 1989, the pipelines from PUREX, including this one, were isolated.

Construction

- Length: 1,033 ft
- Diameter: 8 in.
- Composition: Stainless Steel
- Encasement: Direct Buried
- Cathodic Protection: Yes
- Depth: 33 ft bgs
- Calculated Volume: 2,700 gal

Features of Interest

Three 2 ft X 2 ft X 4 ft concrete blocks encompass and anchor key portions of the pipeline:

- One at the valve box
- One at the first wye to the west
- One near the crib

Relevant Characterization

- Routine radiation surveys have never identified surface contamination in the area of this pipeline or its crib
- No other characterization data for the pipeline or adjacent soil could be located

Waste Streams

- Research suggests this line was never utilized; however, it may have transferred process condensate from the 202-A (PUREX) facility to the 216-A-38-1 Crib sometime between 1967 and 1989, depending on construction date and unknown use history
- Records indicate the 216-A-38-1 Crib was never used

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersect
• Valve box west of Sample Pit No 4	200-IS-1 • 200-E-192-PL
200-EA-1 • 216-A-38-1 Crib	

Scoping Summary: 200-E-240-PL

Scoping Summary: 200-E-241-PL

History

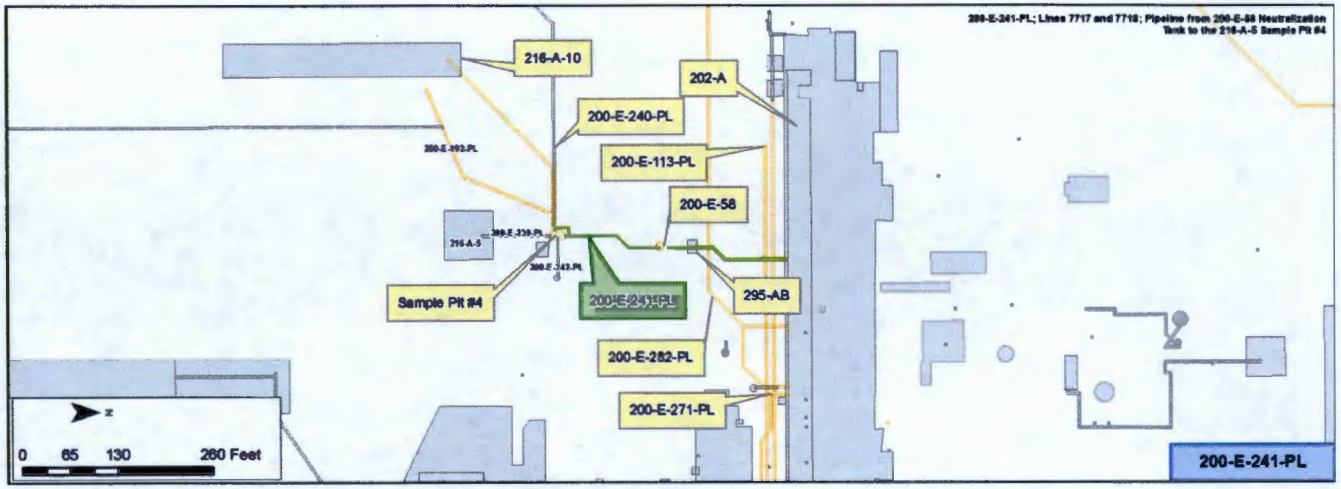
The 200-E-241-PL waste site is an inactive underground waste transfer system that extends from the 202-A (PUREX) facility to Sample Pit #4.

The line transferred acidic process condensate from PUREX to the 200-E-58 Neutralization Tank to be neutralized. The waste entered the inlet line at the base of the tank and was pushed up through a bed of neutralizing limestone before reaching the outlet near the top of the tank. The neutralized waste was then transferred from the tank to the sample pit, where it was diverted to the 216-A-5 Crib and, later, to the 216-A-10 Crib.

A bypass line around Sample Pit #4 was added to the system around 1957, which allowed effluent to be sluiced into 200-E-192-PL for disposal at the 216-A-10 Crib.

The system was in intermittent use between 1955 and 1987.

The 216-A-5 Crib was deactivated in 1983 by valving out the piping to the crib. The 216-A-10 Crib stopped receiving waste on Mar-3-1987.



Construction

- Length: 328 ft end-to-end
  - 492 ft (cumulative pipe)
- Diameter: 8 in.
- Composition: Stainless Steel
- Encasement: Direct Buried
- Depth: 15 ft - 18 ft bgs
- Cumulative Volume: 1,284 gal

Features of Interest

- The inlet line on north side of the 200-E-58 neutralization tank is at the tank's base, while the south-side outlet is near the tank's top
- There are two lines that exit the 202-A (PUREX) facility and at some point prior to reaching the neutralization tank, they are reduced down to one line. It is unclear if both lines were utilized

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil was located

Waste Streams

- 1955 to 1987: Acidic process condensate from PUREX, neutralized via a limestone push system at the neutralization tank
- The 216-A-10 Crib is expected to include the following isotopes: Sr-90, Tc-99, Cs-137, U-233, Pu-238, Pu-239/40, and Pu-241
- The 216-A-5 Crib is expected to include the following isotopes: Sr-90, Tc-99, Cs-137, and U (Gross)

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-CP-1
- 202-A (PUREX)

200-EA-1
- 216-A-5 Sample Pit No. 4

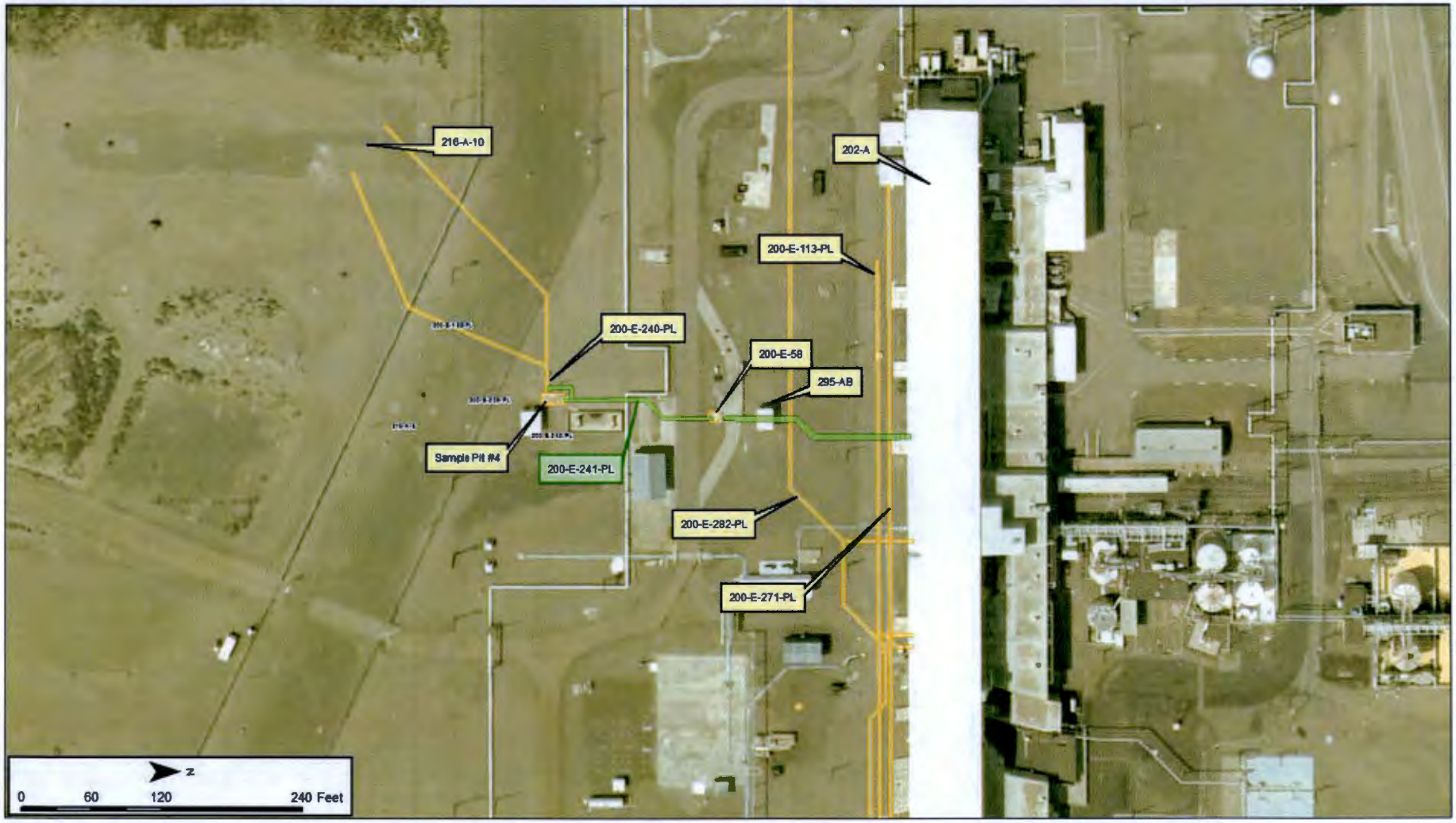
Site Intersects

200-EA-1
- 200-E-58

200-IS-1
- 200-E-271-PL
- 200-E-113-PL
- 200-E-282-PL
- 200-E-240-PL
- 200-E-192-PL

- 295-AB (building)

Scoping Summary: 200-E-241-PL



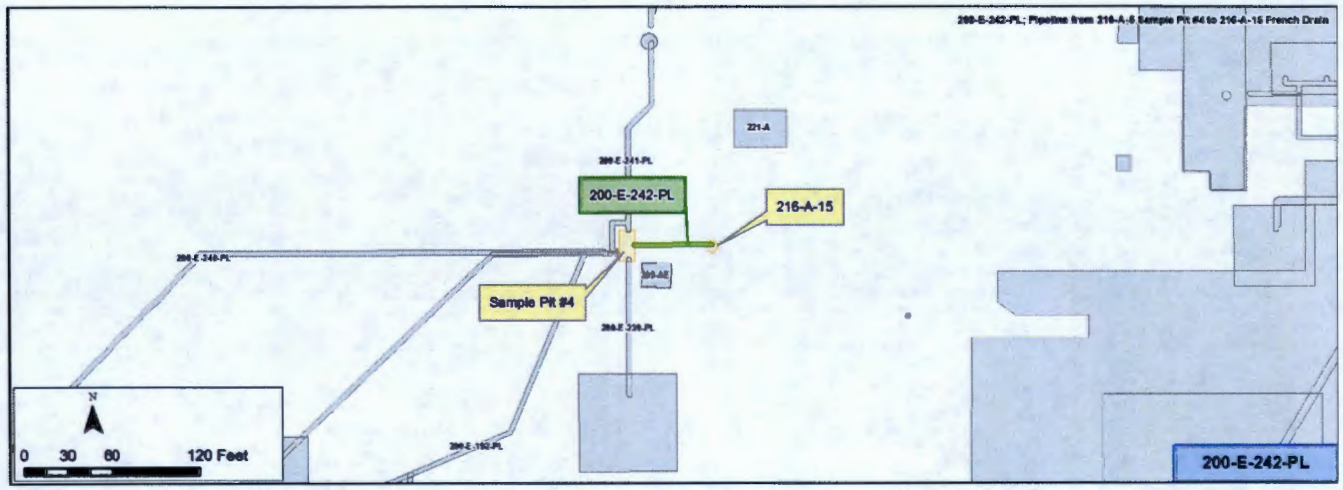
Scoping Summary: 200-E-242-PL

History

The 200-E-242-PL waste site is an inactive underground pipeline used to drain liquid from Sample Pit #4 to the 216-A-15 French Drain.

Sample Pit #4 received process condensate from the PUREX facility, as well as storm water run-off that entered through a manhole cover on the top of the sample pit. The French drain was in use from 1955 to 1972, when the sample pit cover block was sealed to prevent rainwater from entering.

In Nov-1983, the 216-A-5 Crib was surface stabilized and deactivated by valving out the effluent piping to the unit. Sample Pit drains were not capped or filled; rather, all pit penetrations were cut, and all openings sealed with aluminum plates.



Construction

- Length: 50 ft
- Diameter: 4 in.
- Composition: Stainless Steel
- Gravity Flow
- Encasement: Direct Buried
- Depth: 33 ft bgs
- Calculated Volume: 33 gal

Features of Interest

At base of Sample Pit #4:

- There is a 'pipe trap' feature to the subject drain line as it exits the sample pit

Waste Streams

- 1955 to 1972: PUREX process condensate and storm water runoff

Site Interfaces

Origin/Termination	Site Interfaces
200-EA-1	
• 216-A-15 French Drain	N/A
No Operable Unit	
• Sample Pit No. 4	

Relevant Characterization

- No direct characterization data for the drain line or adjacent soil was located
- In 2006, the 216-A-15 French Drain was considered and proposed as a no action site for a preferred alternative, based on a site inventory model that showed no substantial inventory of radiological isotopes

Misc./Other Relevant Information

- None identified

Scoping Summary: 200-E-242-PL

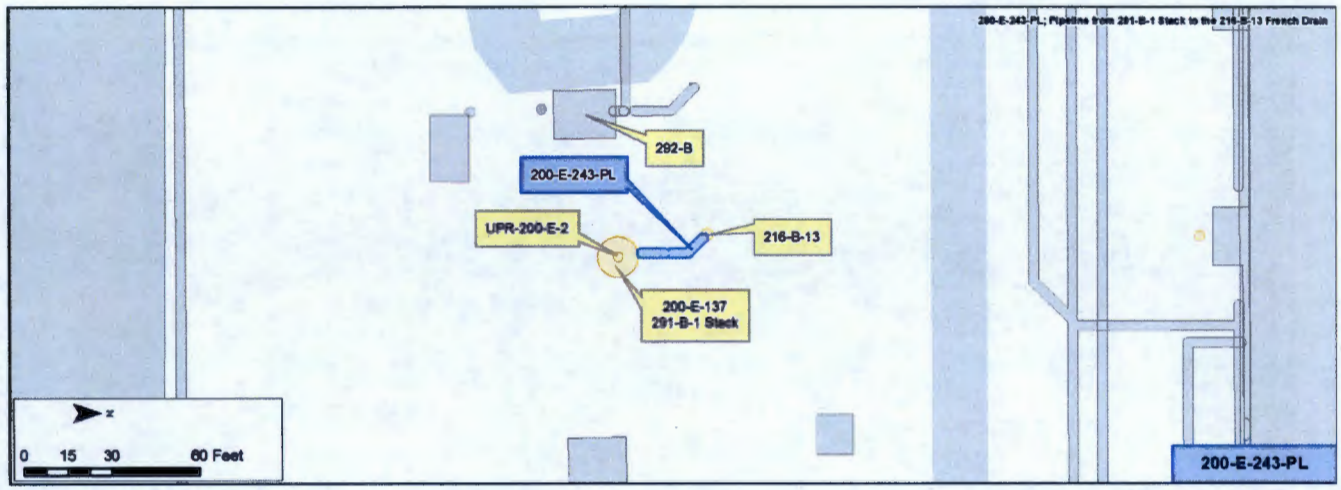
Scoping Summary: 200-E-243-PL

History

The 200-E-243-PL waste site is an inactive underground pipeline that extends from the 291-B-1 Stack to the 216-B-13 French Drain.

The pipeline was constructed in 1955 to transfer stack drainage to the French Drain. It was taken out of service in 1974, when the drain line was severed near the 291-B-1 Stack, and the pipe to the French drain was welded shut.

The stack drainage was re-routed to a cell drainage sample tank.



Construction

- Length: 33 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Flow
- Encasement: Direct Buried
- Depth: 10 ft bgs
- Calculated Volume: 12 gal

Features of Interest

- One pipe bend, where blank flange is located

Waste Streams

- 291-B-1 Stack drainage waste: low in salt, neutral to basic

Site Interfaces

Origin/Termination

- 200-E-137 (291-B-1 Stack)

200-CB-1

- 216-B-13

Site Intersect

200-CB-1

- UPR-200-E-2

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil could be located

Misc./Other Relevant Information

- The French Drain is marked with a Underground Radioactive Material sign attached to a post

Scoping Summary: 200-E-243-PL

Scoping Summary: 200-E-244-PL

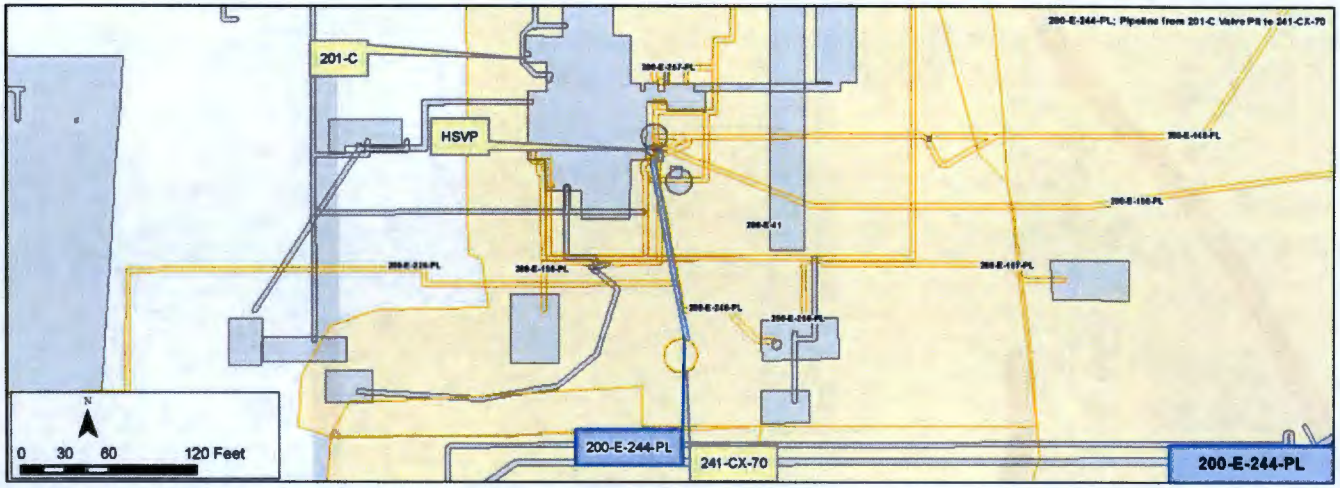
History

The 200-E-244-PL waste site is an inactive underground partially encased process sewer that transferred Strontium Semiworks Complex (SSC) waste generated from REDOX process pilot studies from the Building 201-C Hot Semiworks Valve Pit (HSVP) to Tank 241-CX-70.

The pipeline was constructed in 1950 and in service from 1952-to-1953. The line was taken out of service in 1961.

Around 1983, the line was cut and capped inside of the 201-C Building A-cell tank, as part of the decommissioning of the Strontium Semiworks Complex.

This waste site is included within the 241-CX Tank Closure Plan (DOE/RL-2008-51, Rev 1).



Construction

- Length: 145 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity Drained
- Partially encased: Origin - 64 ft of 18 in. CMP
  - Termination - 12 ft of 36 in. CMP
  - The corrugated caps are placed on concrete footings
  - Remaining direct buried
- Direct Buried
- Depth: 2.5 ft - 13.5 ft bgs
- Cathodic protection is unknown
- Calculated volume: 55 gal

Features of Interest

- Two elbows (about 90-degrees)
- One 2 in. x 3 in. stainless steel reducer at 241-CX-70

Relevant Characterization

- No sampling data was found for this capped pipeline
- No recorded leaks or blockages
- Free liquids removed from tank 241-CX-70 in 1979, and removal of the remaining sludge was completed in 1988
- Remaining tank contents were vacuum removed in 1991 and the tank and associated piping were reported as empty in 1991, with only waste "residue" remaining

Waste Streams

- Waste Process: Redox Plant
- R1 high-level process waste from pilot plant studies of the REDOX chemical separation process developed for use at S Plant from 1952 through 1953
- Spent solvents from REDOX ion change waste (RIX), primarily hexone were also transferred
- Wastes fluids contained aluminum and sodium nitrate, sodium and potassium fluoride, zirconium oxide, sodium aluminate, sodium hydroxide, chromate, sodium sulfate and fission products
- Corrosive and toxic waste codes (D002, D007, WT02) are indicated on the 241-CX-70 Tank Part A permit (potential mixed fission products)

Misc./Other Relevant Information

- 200-E-246-PL is in the same pipe trench, enclosed under the same corrugated cap, and is 8 in. from 200-E-244-PL

Site Interfaces

Origin/Termination

200-IS-1

- Hot Semiworks Valve Pit (HSVP) (origin)
- 241-CX-70 Storage Tank (termination)

Site Intersects

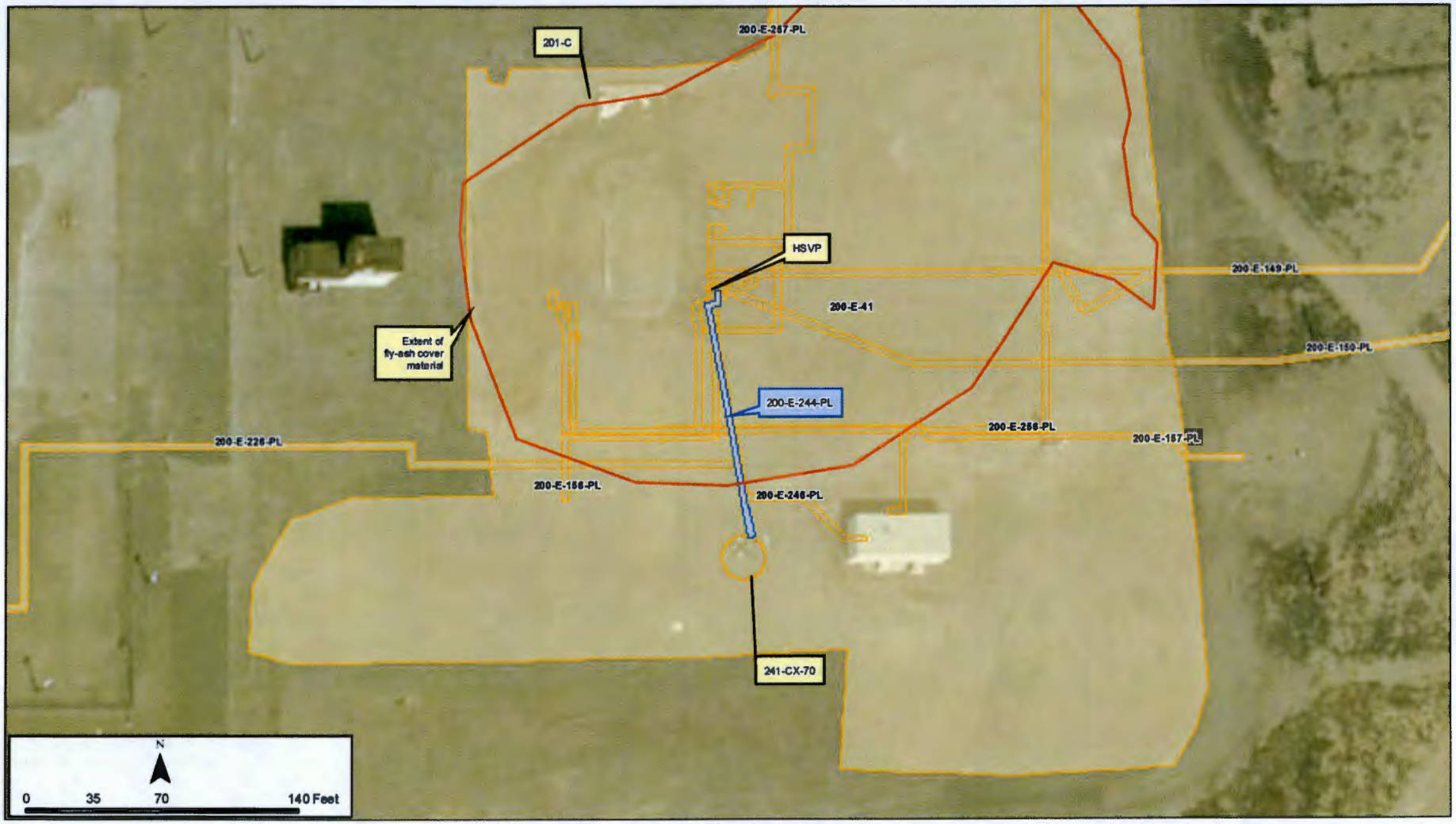
200-IS-1

- 200-E-149-PL
- 200-E-156-PL
- 200-E-157-PL
- 200-E-226-PL
- 200-E-246-PL
- 200-E-256-PL
- 200-E-257-PL

No Operable Unit

- 200-E-41 (stabilized area)

Scoping Summary: 200-E-244-PL



Scoping Summary: 200-E-245-PL

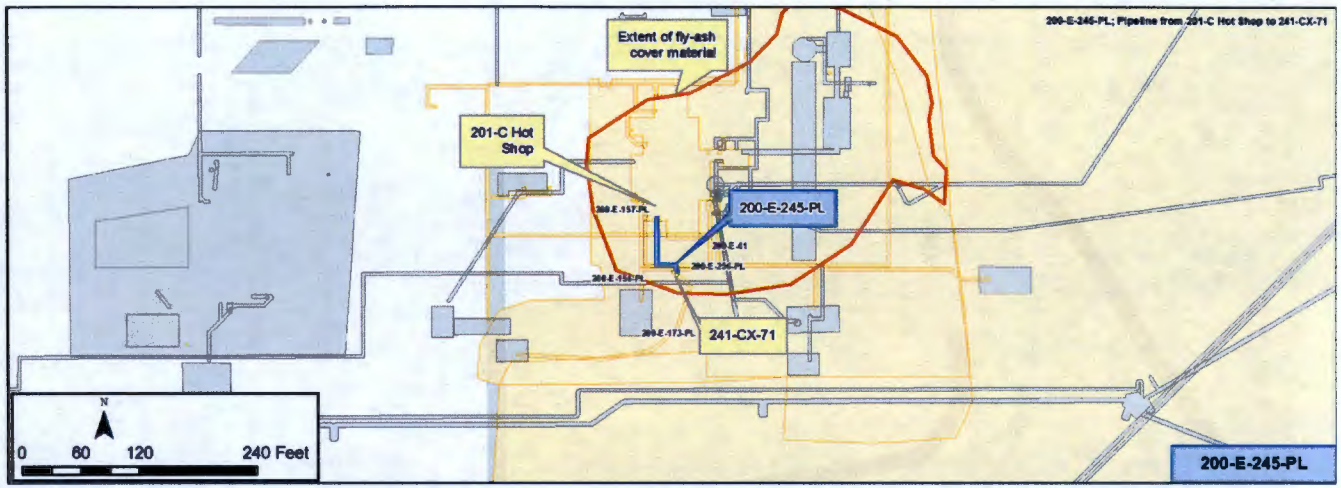
History

The 200-E-245-PL Waste Site is an inactive underground pipe that drains the 201-C Building's Hot Shop sink drain to the 241-CX-71 Tank.

The pipeline was constructed in 1950 and transferred waste from 1952 to 1957, with no recorded spill or related UPRs.

241-CX-71 was filled with low density grout in 1986. By 1985, 200-E-245-PL was capped at the 201-C Hot Shop's sink drain, and then by 1988 was covered with concrete and several feet of fly ash as part of the decommissioned Strontium Semiworks Facility (201-C).

The 200-E-245-PL is included in the closure plan for the 241-CX Tank System.



Construction

- Length: 78 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity Drained
- Direct Buried
- Encasement Specification: None
- Depth: 3 ft - 13 ft bgs (additionally under several feet of fly ash)
- Volume: 13 gal

Features of Interest

- 2 Pipe Bends
- Capped at 201-C

Relevant Characterization

- No Characterization data available for this site
- See 241-CX-71 for related characterization data (also received discharges from 200-E-156-PL)

Waste Streams

- Waste Source: Hot Semi-Works Facility
- Drain waste from the Hot Shop sinks in 201-C
- 241-CX-71 received REDOX waste (R1, R2, CWR1, CWR2, CWZr1) from 1953 - 1953; PUREX waste (CWP1, CWP2, CWZr1, OWW1, P2) from 1955 - 1956; and facility decontamination waste from 1956 - 1957 (Cyanide, MEK, xylene/toluene, Uranium, Plutonium, Cs-137, Sr-90 Characterization data available for site), but these are likely contributed from 200-E-156-PL

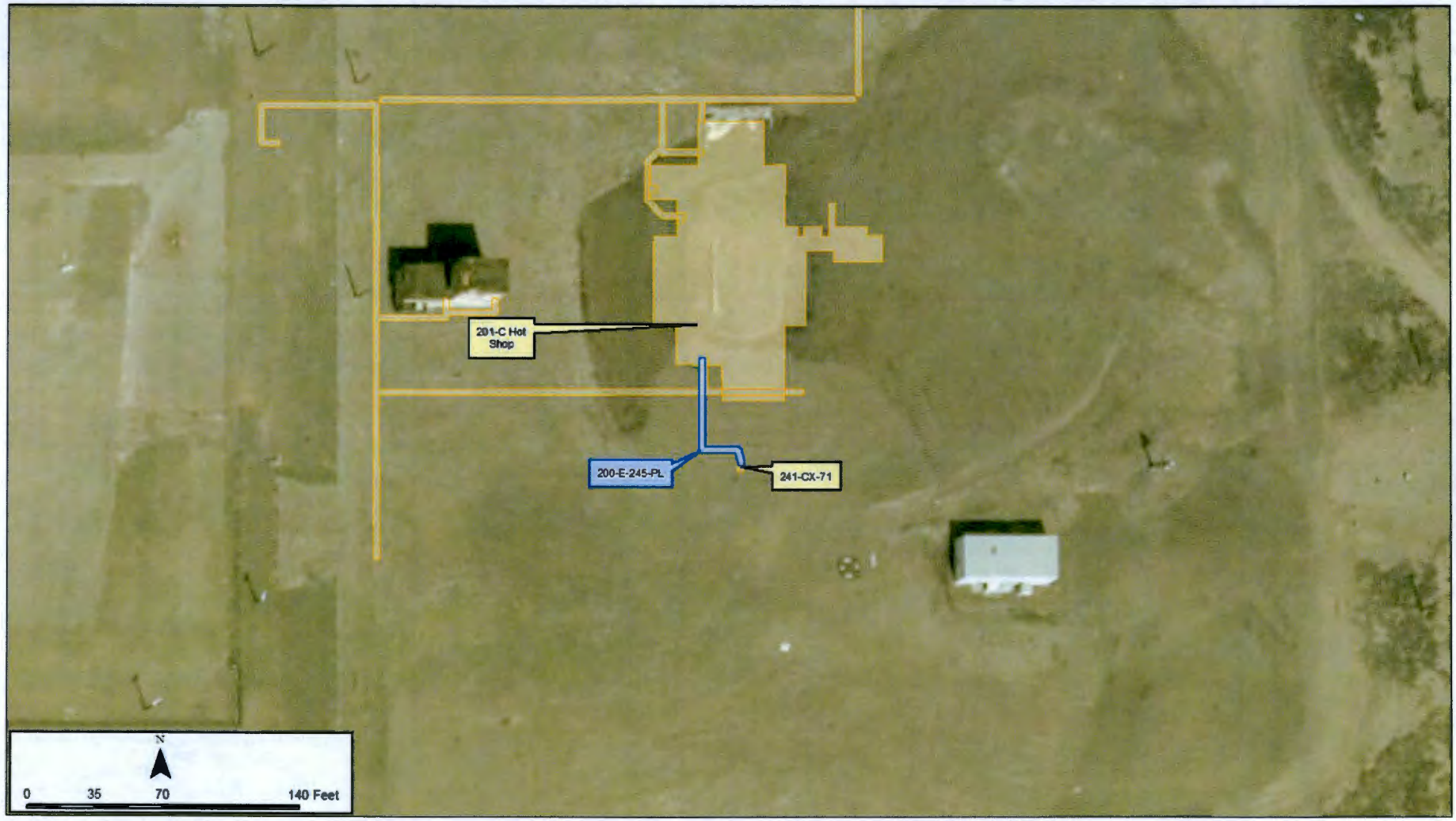
Misc./Other Relevant Information

- QMAP shows small pipe segment associated with 245-PL by 241-CX-71, but it is associated with the 241-CX closure

Site Interfaces

Origin/Termination	Site Intersects
• 201-C (facility)	200-IS-1
	• 200-E-169-PL
200-IS-1	• 200-E-256-PL
• 241-CX-71 tank	• 200-E-156-PL
	• 200-E-157-PL
	• 200-E-173-PL
	• 200-E-41 (stabilized area)

Scoping Summary: 200-E-245-PL



Scoping Summary: 200-E-246-PL

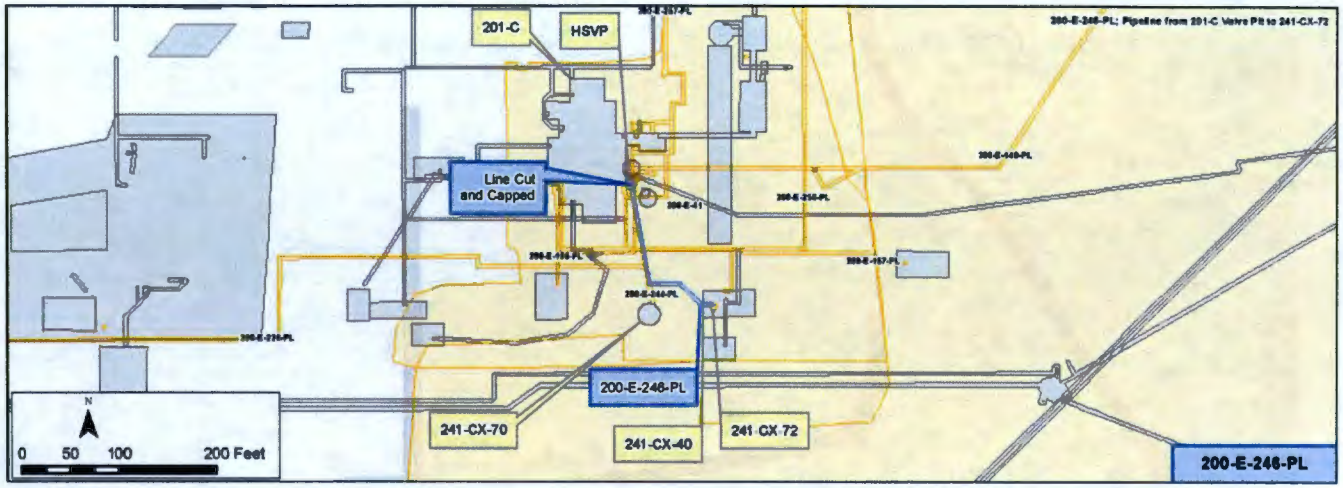
History

The 200-E-246-PL waste site is an inactive underground pipeline used to transfer Strontium Semiworks Complex (SSC) waste generated by PUREX process pilot studies from the Hot Semiworks Valve Pit (HSVP) to the 241-CX-72 Storage Tank.

Construction of the pipeline began in 1950, and it was operational from 1957-to-1958. The line was later cut and capped in 1961.

The pipeline is now located inside of the 241-CX-40 Grout Removal Building, built in 1990.

This waste site is included within the 241-CX Tank Closure Plan (DOE/RL-2008-51, Rev. 1).



Construction

- Length: 170 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity Drained
- Encasement specifications: partially encased in 18 in. corrugated pipe
- Direct buried on undisturbed or well-tamped soil
- Depth: 2 ft to 14 ft bgs
- Calculated Volume: 65.3 gal

Features of Interest

- 3 bends (all greater than 90 degrees)
- 1 elbow (connection to top of 241-CX-72 Storage Tank)

Relevant Characterization

- No sampling data was found
- There are no leaks or blockages associated with the 200-E-246-PL

Waste Streams

- Strontium Semiworks Complex (SSC), a generic PUREX process waste from pilot studies of the PUREX process
  - Waste was likely P1, but possibly CWP1
  - 2,305 gal of waste were transferred through this pipeline to the 241-CX-72 Storage Tank
  - Corrosive and toxic waste codes (D002, D004-D011; WT01, WT02) are indicated on the Tank Part A application
  - Process knowledge of PUREX waste indicates mixed fission products

Misc./Other Relevant Information

- 200-E-246-PL is in the same pipe trench and is enclosed under the same corrugated cap as 200-E-244-PL

Site Interfaces

Origin/Termination

200-IS-1

- HSVP
- 241-CX-72 Storage Tank

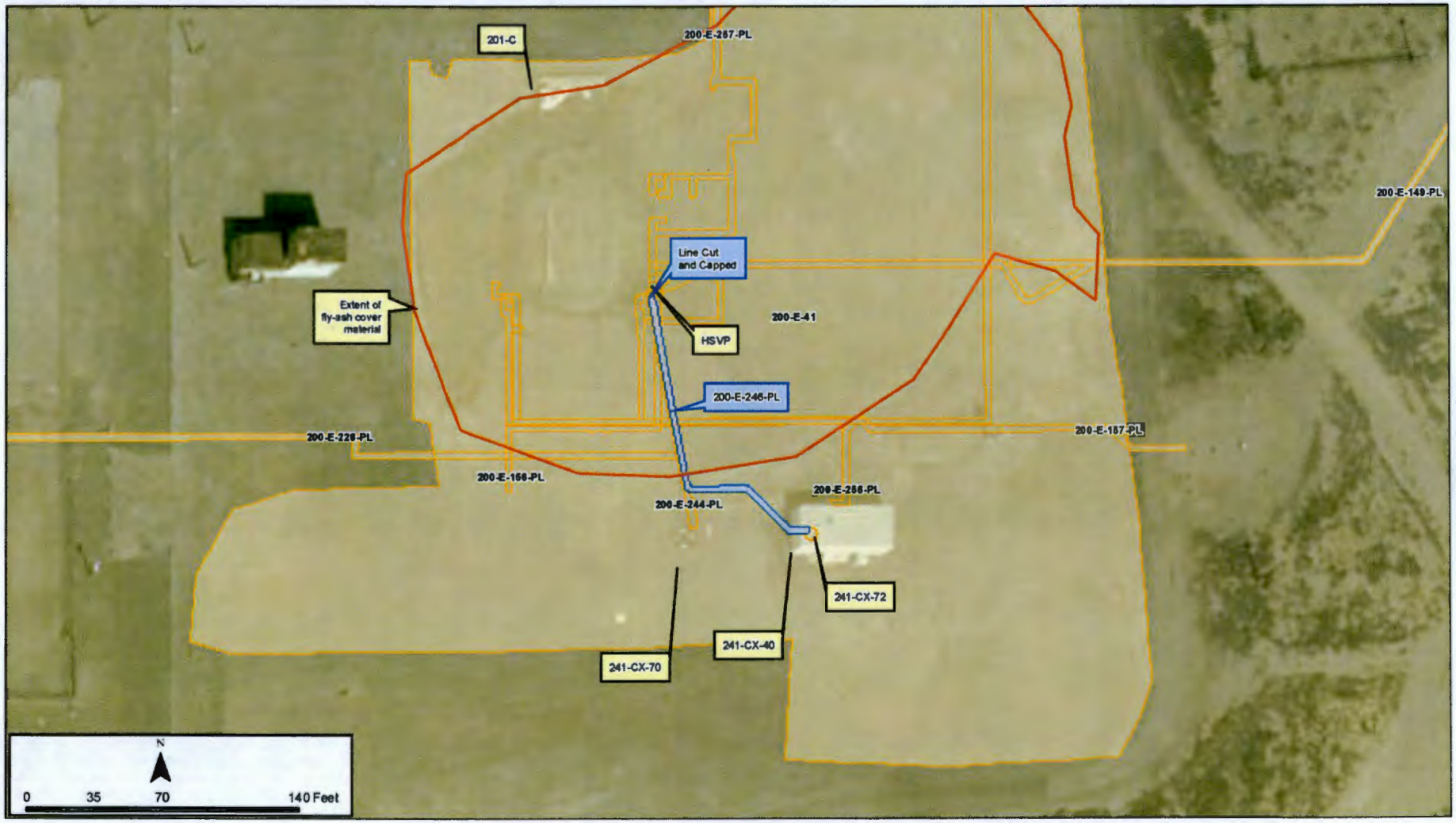
Site Intersects

200-IS-1

- 200-E-149-PL
- 200-E-156-PL
- 200-E-157-PL
- 200-E-226-PL
- 200-E-244-PL (shares an encasement)
- 200-E-256-PL
- 200-E-257-PL

- 200-E-41 (stabilized area)
- 241-CX-40 (Grout Removal Building)

Scoping Summary: 200-E-246-PL



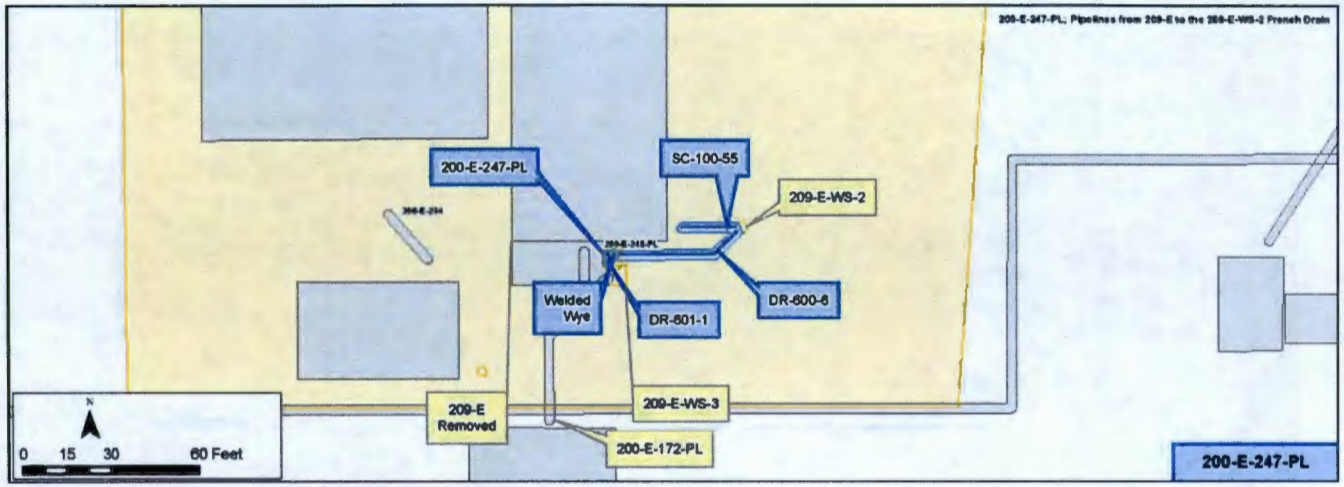
Scoping Summary: 200-E-247-PL

History

The 200-E-247-PL waste site is three inactive underground process sewer lines (DR-601-1, DR-600-6, and SC-100-55) used to carried condensate from the Critical Assembly Room (CAR), part of the Critical Mass Laboratory in Building 209-E, to the 209-E-WS-2 French Drain. The Critical Mass Laboratory performed criticality experiments and research from 1960 to 1983, but remained active until 1985.

The Lab was prepared for closure and decommissioning in 1987, and was decontaminated and demolished in Dec-2011. Documentation from the demolition of the Critical Mass Laboratory reports that mechanical and electrical piping were cut, inspected, and capped.

During the decontamination and demolition of the 209-E Building, the 209-E-WS-2 French Drain was backfilled with gravel. A gravel cap covers many other nearby waste sites, including the 209-E-WS-2 French Drain, but 200-E-247-PL is not mentioned in the WIDS list of sites entirely covered by the cap. Nevertheless, it is very likely that DR-601-1 and SC-100-55 are covered. It should be noted that 200-E-248-PL is co-located with, and even smaller than, 200-E-247-PL.



Construction

- Length:
  - DR-600-6: 3.1 ft
  - DR-601-1: 46.8 ft
  - SC-100-55: 18 ft
- Diameter:
  - DR-600-6: 1 in.
  - DR-601-1: 2 in.
  - SC-100-55: 1 in.
- Composition:
  - DR-600-6: Stainless Steel
  - DR-601-1: Stainless Steel
  - SC-100-55: Carbon Steel
- Gravity flow line
- Direct buried under sand
- Depth: 2.4 ft - 3.5 ft bgs
- Total Calculated Volume: 9.1 gal
  - DR-600-6: 0.139 gal
  - DR-601-1: 8.15 gal
  - SC-100-55: 0.808 gal

Features of Interest

- One wye connection (where DR-600-6 joins DR-601-1)
- One bend (DR-601-1)

Relevant Characterization

- No characterization data were found relating specifically to the 200-E-247-PL
- Area radiological surveys performed showed that radiological contamination associated with the building slab remained after all debris had been removed

Waste Streams

- 209-E Critical Mass Laboratory waste condensate
  - Experiments used plutonium, nitrate, and enriched uranium solutions
  - 209-E Critical Mass Laboratory waste is considered acidic

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-EA-1

- 209-E-WS-2 French Drain

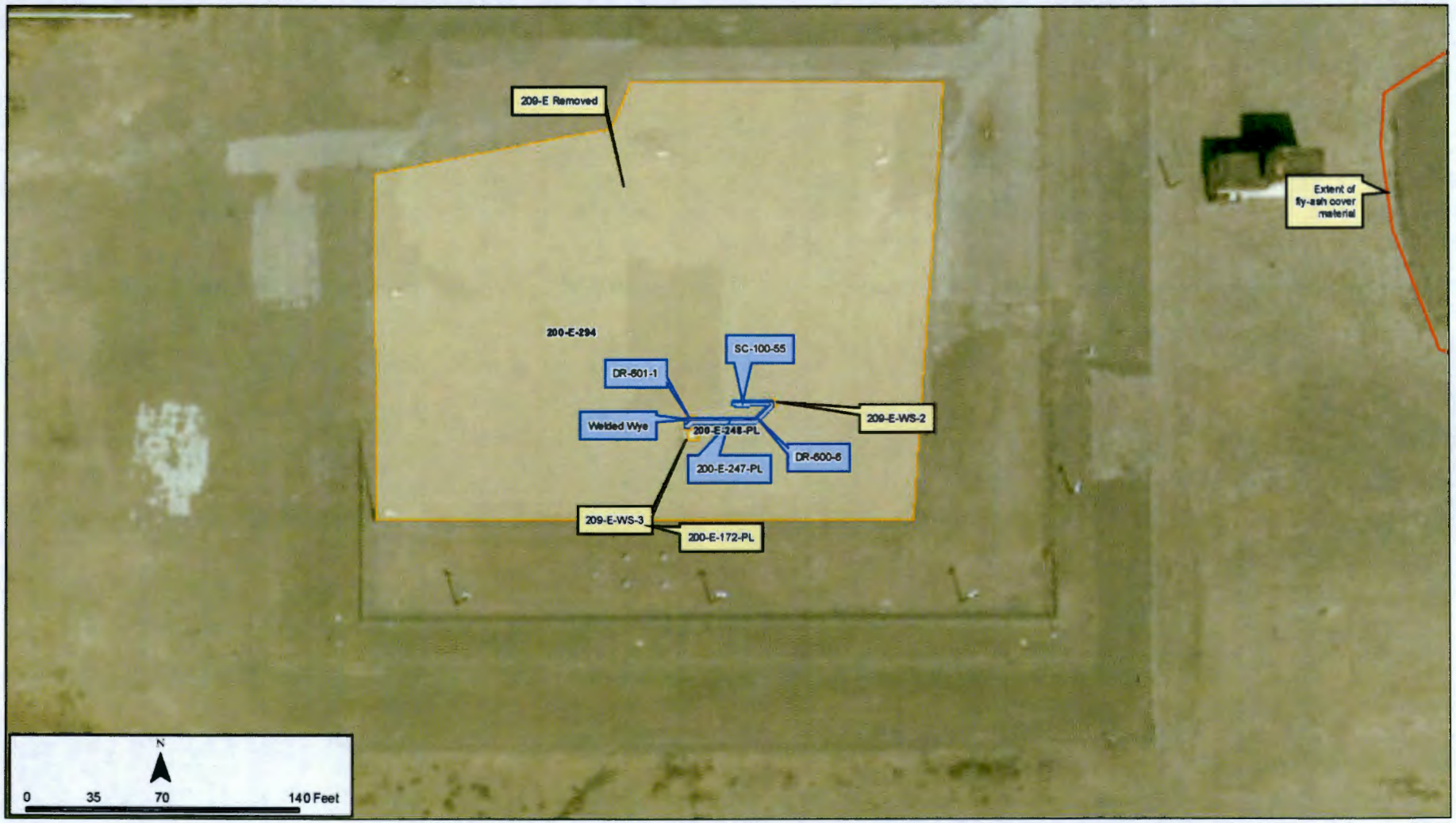
No Operable Unit

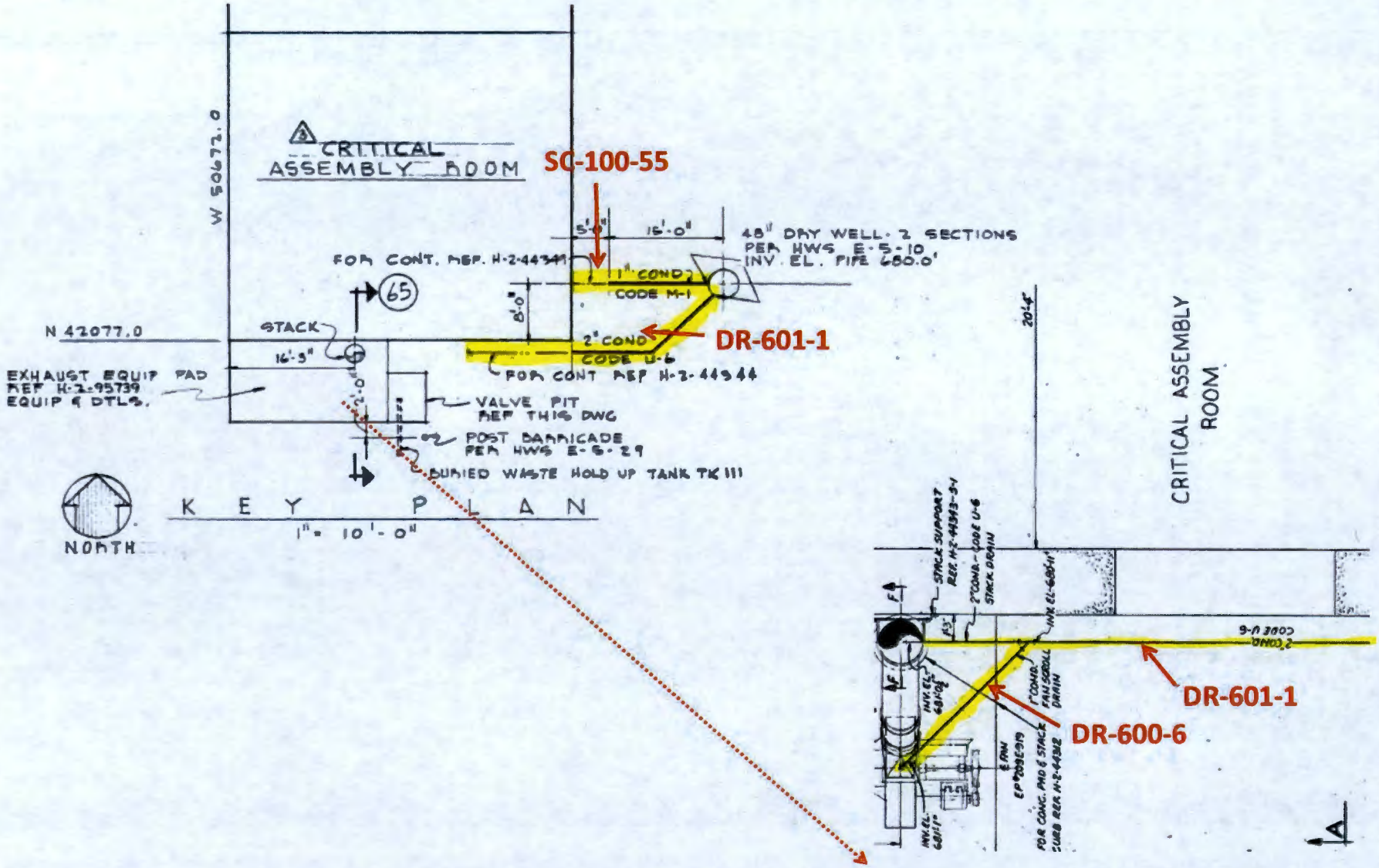
- 200-E-294 (Demolished 209-E Building)

Site Intersects

200-IS-1

- 200-E-248-PL


209-E Removed
200-E-294
SC-100-55
DR-601-1
Welded Wye
209-E-248-PL
209-E-WS-2
DR-600-6
200-E-247-PL
209-E-WS-3
200-E-172-PL
Extent of fly-ash cover material
N
0
35
70
140 Feet


CRITICAL ASSEMBLY ROOM
SC-100-55
W 50672.0
5'-0"
15'-0"
48" DRY WELL - 2 SECTIONS
PER HWS E-5-10
INV. EL. PIPE 680.0'
FOR CONT. REF. H-2-44341
1" COND.
CODE M-1
65
8'-0"
N 42077.0
STACK
16'-3"
2" COND.
CODE U-6
DR-601-1
FOR CONT REF H-2-44344
EXHAUST EQUIP PAD
REF H-2-95739
EQUIP & DTLS.
VALVE PIT
REF THIS DWG
POST BARRICADE
PER HWS E-5-29
BURIED WASTE HOLD UP TANK TK 111
NORTH
KEY PLAN
1" = 10'-0"
CRITICAL ASSEMBLY ROOM
DR-601-1
DR-600-6

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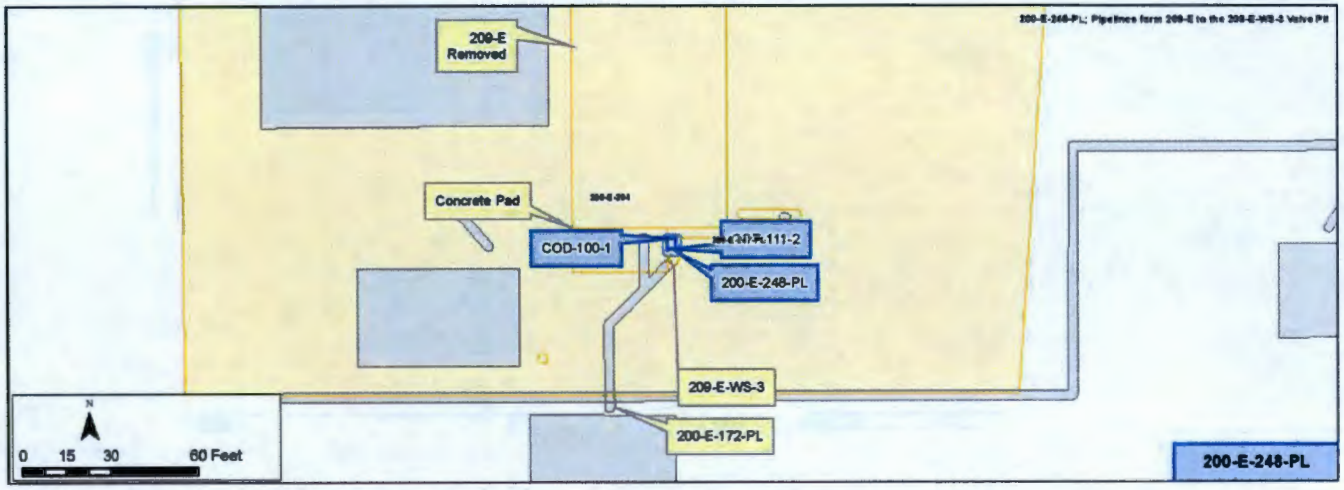
Scoping Summary: 200-E-248-PL

History

The 200-E-248-PL waste site contains laboratory drain lines (COD-100-1 and COD-111-2) used to transfer drainage from the Critical Assembly Room and the hood drains in the Mix Room of the Critical Mass Laboratory in Building 209-E, to the 209-E-WS-3 Valve Pit and Hold-Up Tank (209-E-TK-111). The Laboratory conducted criticality experiments using plutonium nitrate and enriched uranium solutions from 1960 to 1983. Discharges to the valve pit were held and settled in the Hold-Up tank before being discharged to the 216-C-7 Crib by a separate pipeline system. The Lab was prepared for closure and decommissioning in the late 1980s, and was unoccupied until it was decontaminated and demolished in December 2011. Line COD-111-2 was capped as part of the decommissioning in 1986 (H-2-96023). The slab was left when the 209-E Building was demolished; it is the 200-E-294 waste site.

Records show that both process sewers were cut, capped, and isolated in the building above the slab. All lines entering the 209-E-WS-3 Valve Pit (including COD-100-1 and COD-111-2) were cut and capped inside of the pit. Most of the area surrounding the 209-E Building has been covered in a gravel cap. The cap does not cover the 209-E-WS-3 Valve Pit; however, it is likely that the cap covers all or parts of these lines.



Construction

- Length:
  - COD-100-1: 4.5 ft
  - COD-111-2: 4.5 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity Drained
- Direct Buried
- Depth: 3 ft
- Total Calculated Volume: 1.56 gal
  - COD-100-1: .78 gal
  - COD-111-2: .78 gal

Features of Interest

- One bend in COD-111-2 (this section of the pipeline is not included in the WIDS site, but likely should be considered for this waste site - see detail drawings)
- A concrete equipment pad overlying COD-111-2
- One potentially unclaimed process sewer line, running from the Critical Mass Laboratory to the 209-E-WS-3 Valve Pit next to COD-100-1 (see detail drawings)

Relevant Characterization

- A 1990 report analyzed samples taken of the 209-E Critical Mass Laboratory Reflector Water
  - Samples were taken before the reflector water was released to the 209-E-TK-111 through COD-100-1
  - The report concludes that the waste is not dangerous
- Radiological surveys were performed of the area throughout the demolition of the Critical Mass Laboratory
  - The post-demolition survey showed radiological contamination remained

Waste Streams

- Drained the hoods and floor in the Critical Assembly Room (CAR) of the Critical Mass Laboratory in Building 209-E
  - CAR floor drains known to have primarily held 209-E Critical Mass Laboratory Reflector Water
    - Was regularly sampled and a 1990 report concluded this waste was not dangerous (WHC-EP-0342, addendum 31)
  - The composition of waste from the hood drains is unknown
  - The volume of waste transferred through these pipelines is unknown

Misc./Other Relevant Information

- Further actions taken with this waste site should consider 200-E-247-PL (due to proximity and size), 200-E-172-PL (because they carried the same waste), and the 209-E-WS-3 Valve Pit and Hold Up Tank (209-E-TK-111).
- There is a third line running from the CAR wall to the 209-E-WS-3 Valve Pit and Hold Up Tank (209-E-TK-111): P-111-1.

Site Interfaces

Origin/Termination

No Operable Unit

- 200-E-294 (Demolished 209-E Building)

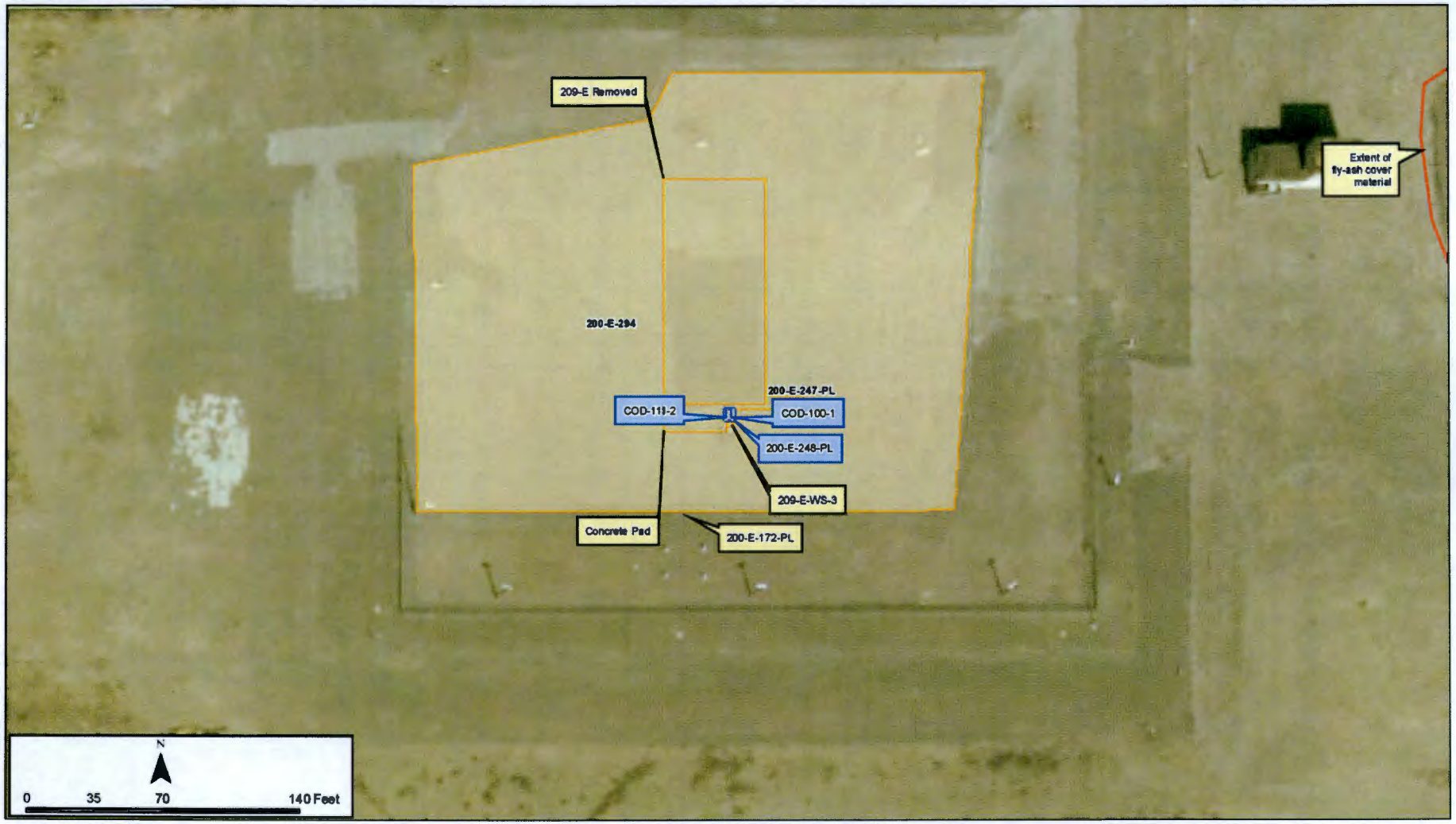
200-EA-1

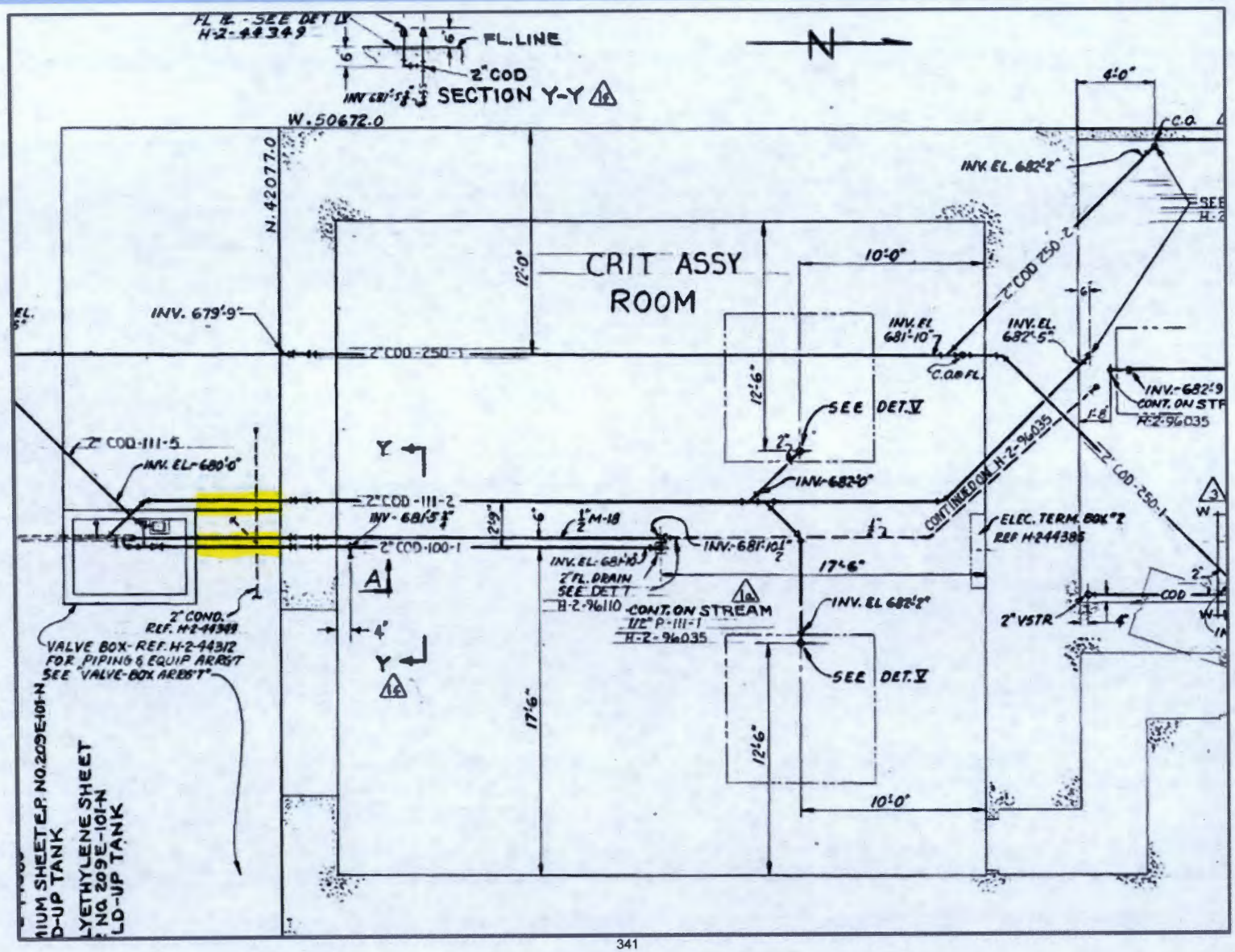
- 209-E-WS-3 Valve Pit and Hold Up Tank (209-E-TK-111)

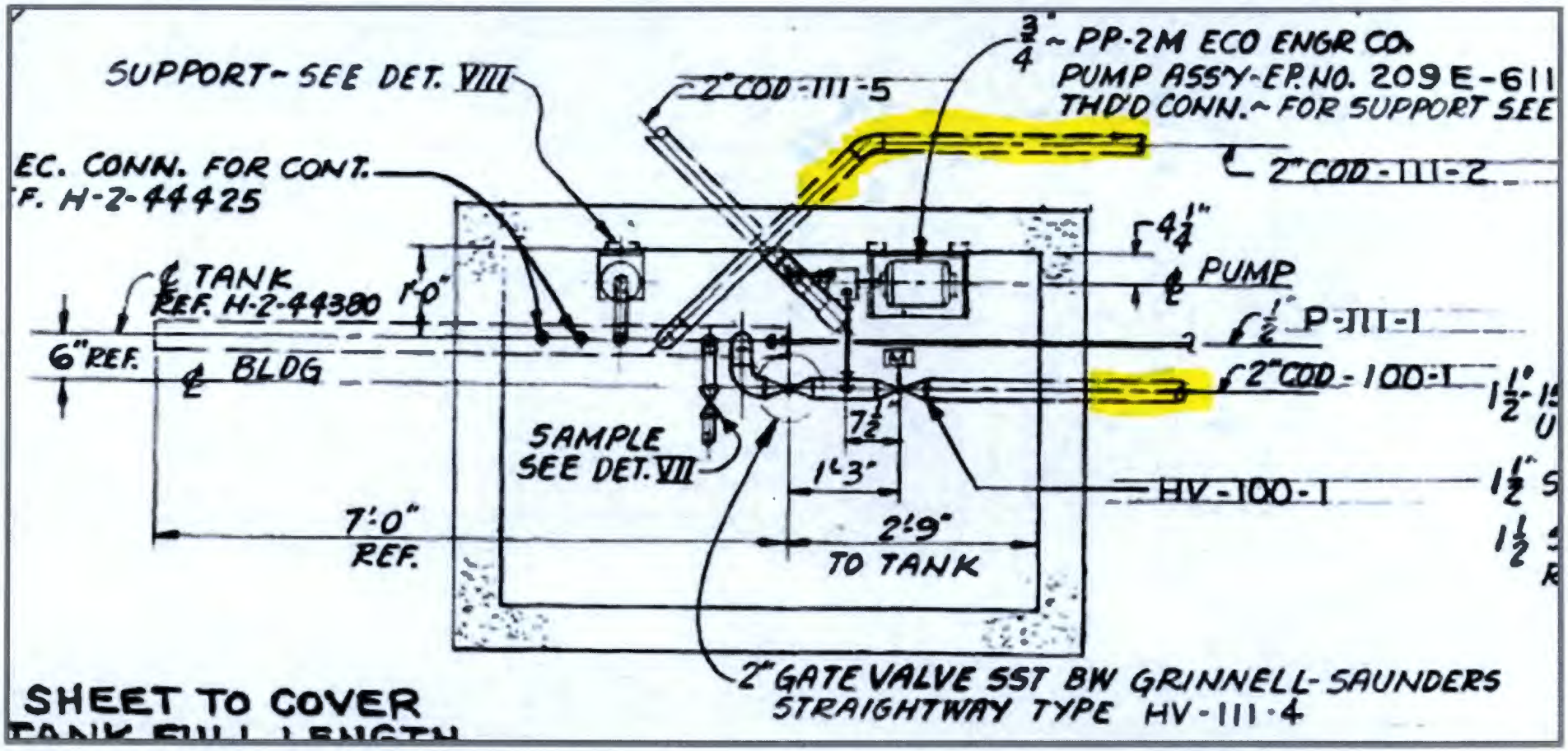
Site Intersects

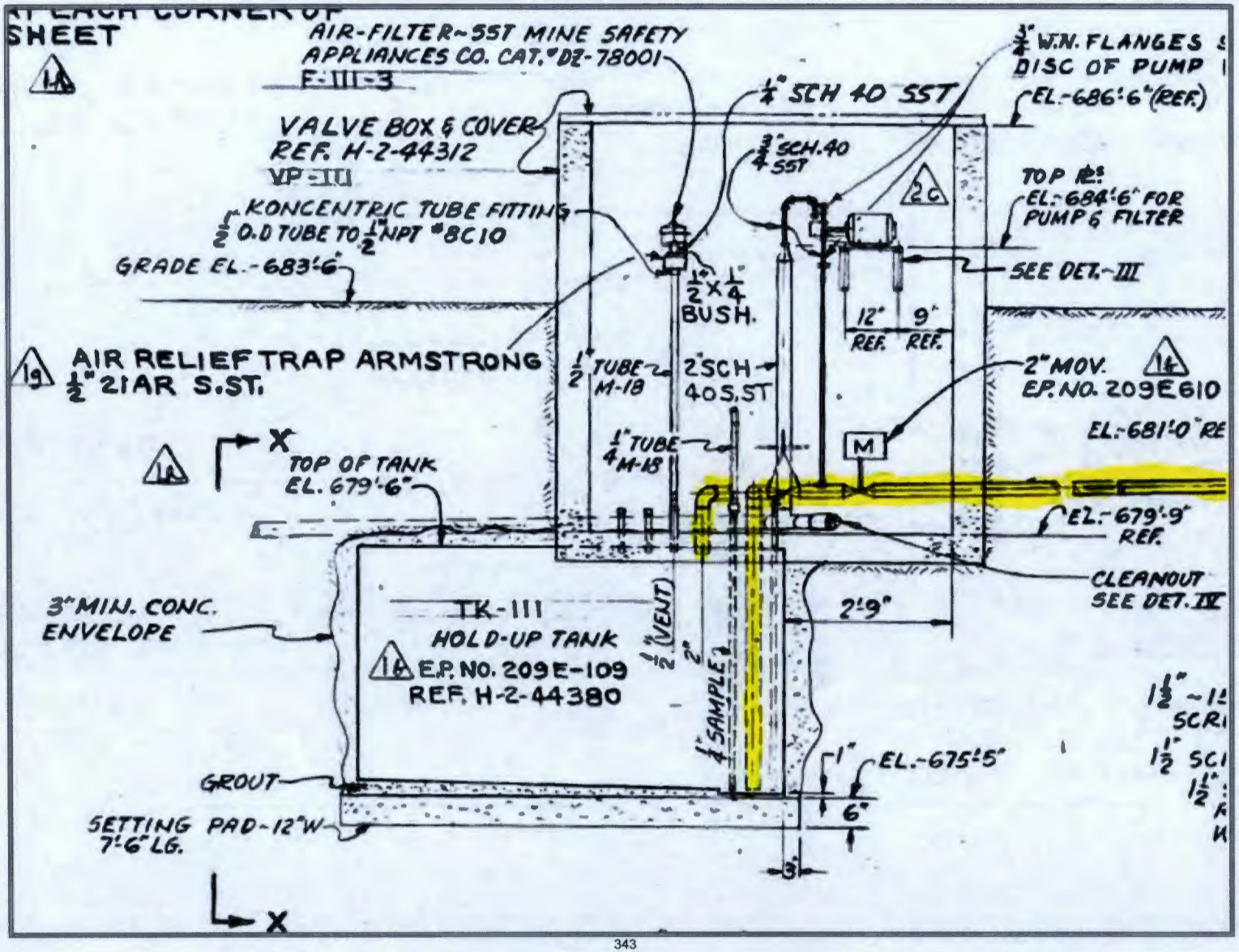
200-IS-1

- 200-E-247-PL
- 200-E-172-PL


209-E Removed
200-E-294
200-E-247-PL
COD-111-2
COD-100-1
200-E-248-PL
209-E-WS-3
Concrete Pad
200-E-172-PL
Extent of fly-ash cover material
N
0
35
70
140 Feet


FL. LINE
2" COD
SECTION Y-Y
W.50672.0
N.42077.0
CRIT ASSY ROOM
INV. 679'-9"
2" COD-250-1
2" COD-111-5
INV. EL-680'-0"
2" COD-111-2
2" COD-100-1
INV. EL. 682'-2"
INV. EL 681'-10"
INV. EL. 682'-5"
SEE DET. V
INV-682'-0"
INV-681'-10 1/2"
17'-6"
10'-0"
12'-6"
2" COD 250-2
2" COD-250-1
ELEC. TERM. BOX #2
2" VSTR
2" COND. REF. H-2-44349
VALVE BOX-REF. H-2-44312 FOR PIPING & EQUIP ARRST SEE "VALVE-BOX ARRST"
CONT. ON STREAM
YETHYLENE SHEET NO. 209E-101-N
LD-UP TANK


SUPPORT - SEE DET. VIII
2" COD - III - 5
3/4" - PP-2M ECO ENGR CO.
PUMP ASSY - EP. NO. 209 E - 611
THD'D CONN. - FOR SUPPORT SEE
EC. CONN. FOR CONT.
F. H-2-44425
2" COD - III - 2
4 1/4"
PUMP
℄ TANK
REF. H-2-44380
1'-0"
1/2" P - III - 1
6" REF.
℄ BLDG
2" COD - 100 - 1
1 1/2"
7 1/2"
SAMPLE
SEE DET. VII
1'-3"
HV - 100 - 1
1 1/2"
7'-0"
REF.
2'-9"
TO TANK
1 1/2"
2" GATE VALVE SST BW GRINNELL - SAUNDERS
STRAIGHTWAY TYPE HV - III - 4
SHEET TO COVER


SHEET
AIR-FILTER~SST MINE SAFETY APPLIANCES CO. CAT. "DZ-78001
F-III-3
VALVE BOX & COVER REF. H-2-44312
VP-III
KONCENTRIC TUBE FITTING 1/2" O.D TUBE TO 1/2" NPT #8C10
GRADE EL.-683'-6"
AIR RELIEF TRAP ARMSTRONG 1/2" 21AR S.ST.
TOP OF TANK EL. 679'-6"
3" MIN. CONC. ENVELOPE
TK-111
HOLD-UP TANK
E.P. NO. 209E-109
REF. H-2-44380
GROUT
SETTING PAD-12"W 7'-6" LG.
1/4" SCH 40 SST
3/4" SCH.40 SST
1/2"X1/4" BUSH.
1/2" TUBE M-18
2" SCH 40 S.ST
1/4" TUBE M-18
1/2" (VENT)
2"
1/4" SAMPLE
3/4" W.N. FLANGES
DISC OF PUMP
EL.-686'-6" (REF.)
TOP RE:
EL.-684'-6" FOR PUMP & FILTER
SEE DET.-III
12" REF.
9" REF.
2" MOV.
E.P. NO. 209E610
EL.-681'-0" RE
M
EL.-679'-9" REF.
CLEANOUT SEE DET. IV
2'-9"
1"
EL.-675'-5"
6"
3"

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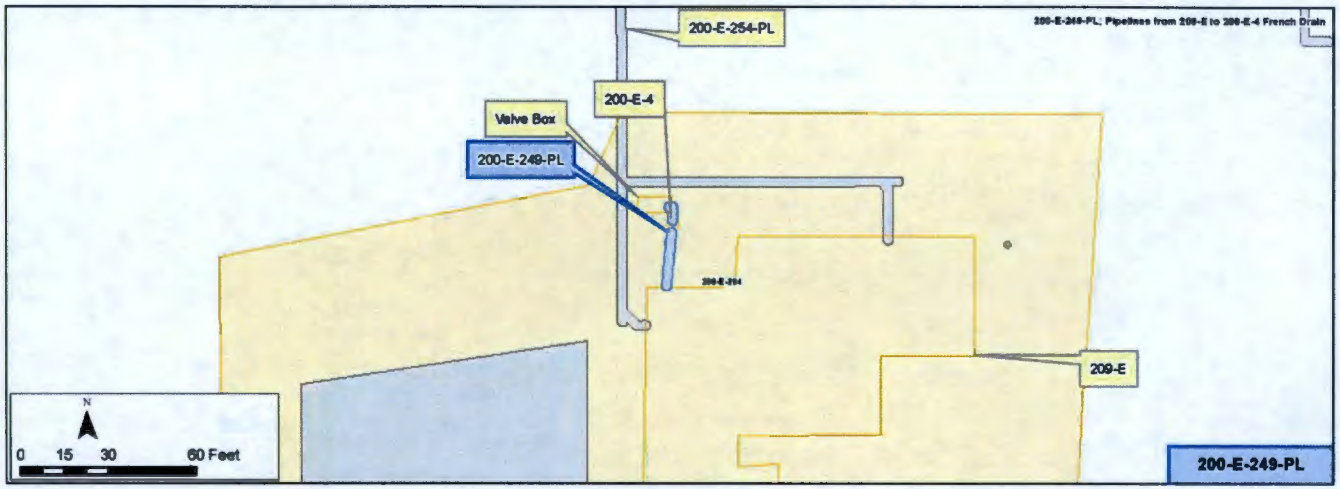
Scoping Summary: 200-E-249-PL

History

The 200-E-249-PL waste site is two inactive underground process sewer lines that carried condensate from the 209-E Critical Mass Laboratory equipment room and the steam trap in an associated valve pit to the 200-E-4 Dry Well (sometimes referred to as a French Drain).

The Critical Mass Laboratory performed criticality experiments and research in 209-E from 1960 to 1983. The 209-E Critical Mass Laboratory waste stream was active until 1985. The Lab was prepared for closure and decommissioning in 1987, and was then unoccupied until it was demolished in Dec-2011. Documentation from the demolition of the Critical Mass Laboratory shows flushing, decommissioning, and removal of tanks and equipment associated with the Lab and reports that mechanical and electrical piping were cut, inspected, and capped.

After the demolition, a gravel cap was placed over many other nearby waste sites, but 200-E-249-PL is not mentioned in the list of sites covered entirely by the gravel cap. The 200-E-4 Dry Well is not covered by the cap or backfilled and will be addressed as part of 200-EA-1.



Construction

- Length:
  - 200-E-249-PL:1 : 18.1 ft
  - 200-E-249-PL:2 : 5.9 ft
- Diameter:
  - 200-E-249-PL:1 : 1.5 in.
  - 200-E-249-PL:2 : 0.75 in.
- Composition: Carbon Steel
- Gravity flow line
- Direct Buried
- Depth: 4 ft - 6.5 ft bgs
- Total Calculated Volume: 1.8 gal
  - 200-E-249-PL:1 : 1.66 gal
  - 200-E-249-PL:2 : 0.14 gal

Features of Interest

- One elbow (200-E-249-PL:2)

Relevant Characterization

- Hollow-stem auger hole drilled through the 200-E-4 Dry Well (repository for all condensates traveling through 200-E-249-PL)
  - Between 9 ft and 11 ft bgs, beta and gamma rad screening tests returned levels of 4.6 pCi/g
  - At all other depths and with all other screening techniques, radiation was either not detected or below background levels

Waste Streams

- 200-E-249-PL carried Critical Mass Laboratory condensate
  - Both lines originate in areas free of radioactive experimentation
  - The Equipment Room is separated from the "hot" side of the Critical Mass Laboratory
  - The valve box carried fluids to and from the clean Equipment Room

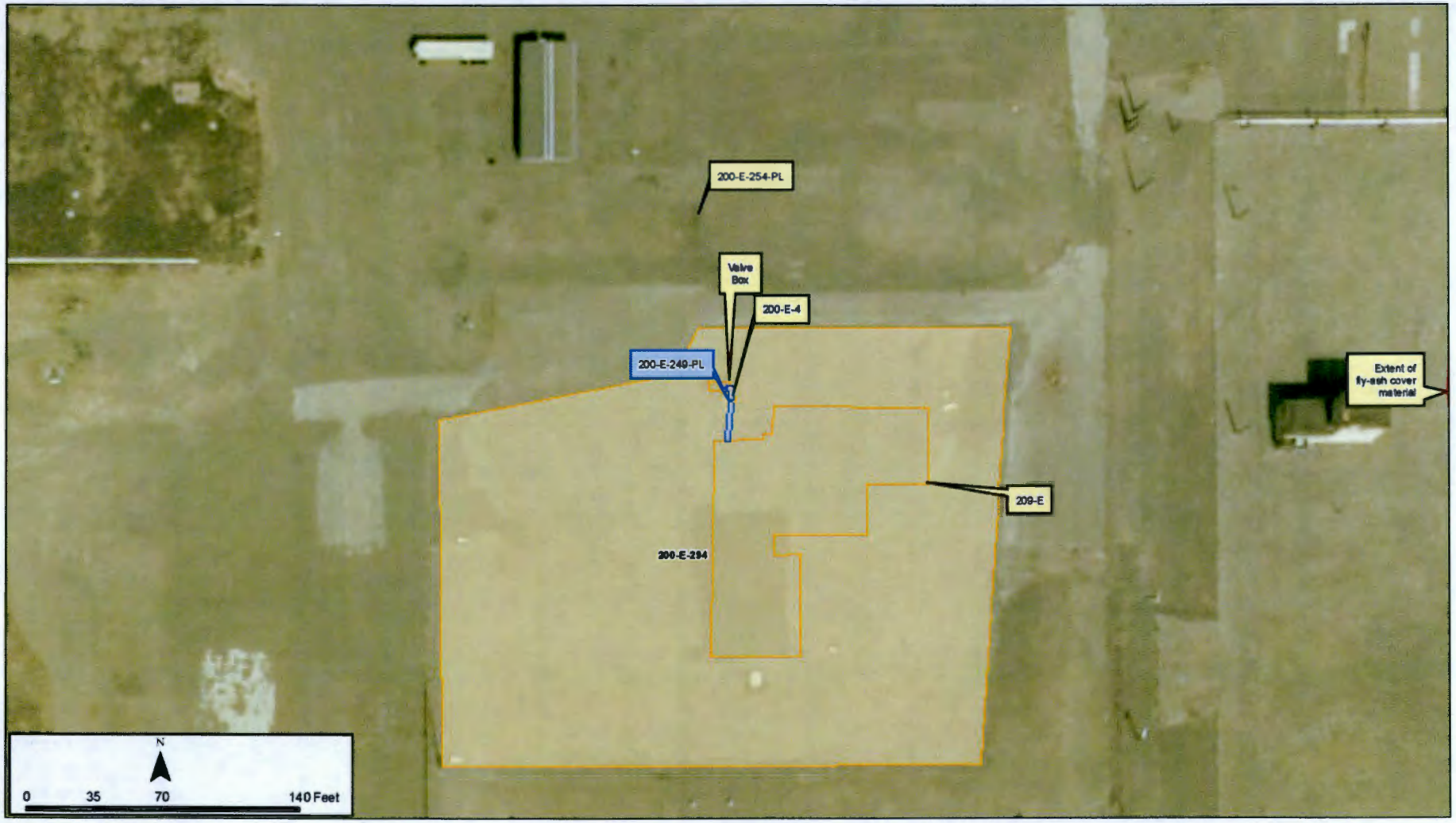
Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Interfaces
No Operable Unit	
• 200-E-294 (Demolished 209-E Building) • Valve pit serving Equipment Room in 209-E (project number CG-731)	N/A
200-EA-1	
• 200-E-4 Dry Well	

Scoping Summary: 200-E-249-PL



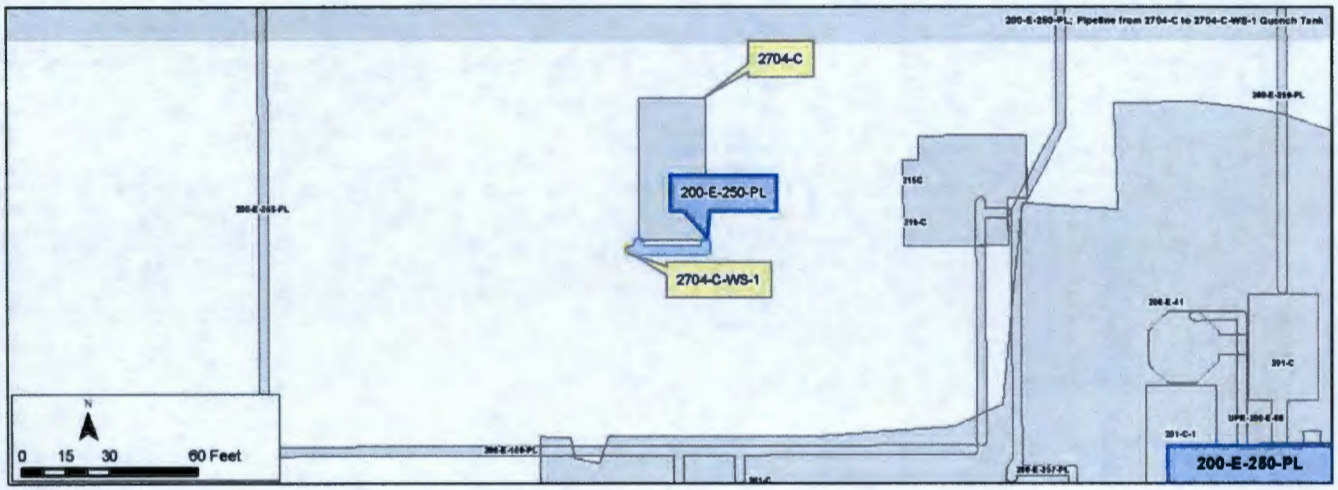
Scoping Summary: 200-E-250-PL

History

The 200-E-250-PL waste site is an inactive underground pipeline used to carry condensate from the radiators in the 2704-C Office Building and Gatehouse to the 2704-C-WS-1 quench tank located at the southwest corner of the building.

2704-C was built in 1949 to support the Hot Semiworks operations. During the 1980s, it housed the 200 East Tank Farms Health Physics Offices. The building was designated a contaminated facility before it was decontaminated and demolished in 1998. The slab remained after demolition, so the origins of 200-E-250-PL are likely capped where they previously attached to radiators within the building. A gravel barrier now covers the area.

The surface of 2704-C-WS-1 quench tank was apparently marked with radiological warning signs in 1991, but 1993 reports indicate no such warnings or labels. After the demolition, gravel was spread over the 2704-C slab and surrounding area. The quench tank is no longer visible and is now covered either by the gravel or the two dumpsters in the area. The site of the 2704-C Building is a posted URMA.



Construction

- Length:
  - Pipeline connecting to the east side of 2704-C: 27.2 ft
  - West radiator pipeline: 2.6 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Gravity drained
- Direct buried
- Depth: 0.5 ft - 2.5 ft bgs
- Total Calculated Volume: 1.3 gal
  - Pipeline connecting to the east side of 2704-C: 1.2 gal
  - West radiator pipeline: 0.12 gal

Features of Interest

- Two vertical drops (two elbows each)
- One elbow
- One tee

Relevant Characterization

- No characterization data could be found specific to 2704-C Radiator Condensate
- 2704-C Building was designated contaminated in 1998
- The quench tank that the pipelines drained to was inconsistently marked as contaminated
  - In 1991 the drain cover was painted yellow and posted with a tri-foil, indicating contamination
  - In 1993, the site was described as having no radiological posting or markings

Waste Streams

- Carried condensate (a non-contaminated liquid waste) from radiators in the 2704-C Office Building

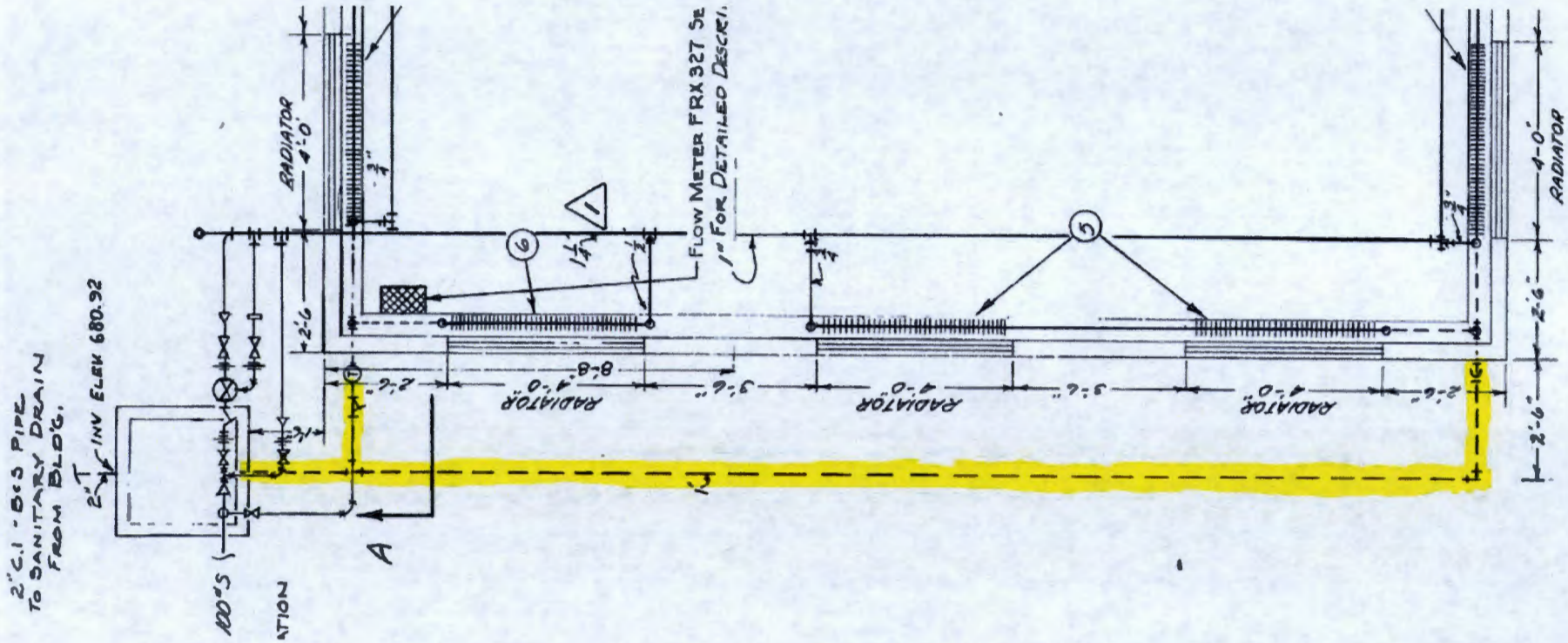
Misc./Other Relevant Information

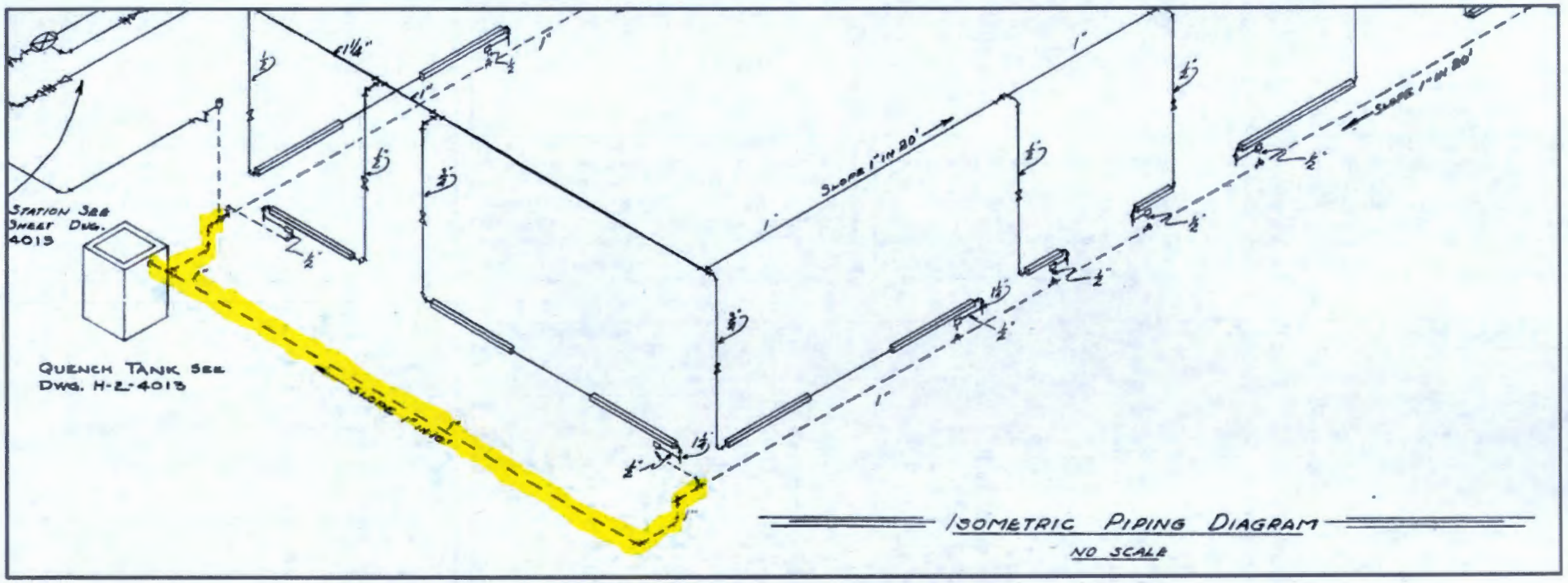
As-built drawings of the 2704-C Building and its piping from the early 1950s (H-2-4033, H-2-4012, H-2-4013) show a quench tank (2704-C-WS-1) at the southwest corner of the building. However, one drawing from 1988 (H-2-77665) shows a French drain (2704-C-WS-1) near where the quench tank was previously drawn, but shows no quench tank and no lines from the south side of the building. It is likely that the later drawing made a mistake.

Site Interfaces

Origin/Termination	Site Interfaces
• Demolished 2704-C Office and Gatehouse Building 200-EA-1 • 2704-C-WS-1 French Drain/Quench Tank	• N/A

Scoping Summary: 200-E-250-PL


2" C.I. - B&S PIPE
TO SANITARY DRAIN
FROM BLDG.
INV ELEV 680.92
2" T
100 PSI
STATION
A
RADIATOR
4'-0"
2'-6"
FLOW METER FRX 327 SE
1" FOR DETAILED DESCRIP.
RADIATOR
4'-0"
8'-8"
3'-6"
2'-6"
RADIATOR
4'-0"
3'-6"
RADIATOR
4'-0"
2'-6"
RADIATOR
4'-0"
2'-6"


STATION SEE SHEET DWG. 4013
QUENCH TANK SEE DWG. H-2-4013
SLOPE 1" IN 20'
SLOPE 1" IN 20'
SLOPE 1" IN 20'
ISOMETRIC PIPING DIAGRAM
NO SCALE

Scoping Summary: 200-E-251-PL

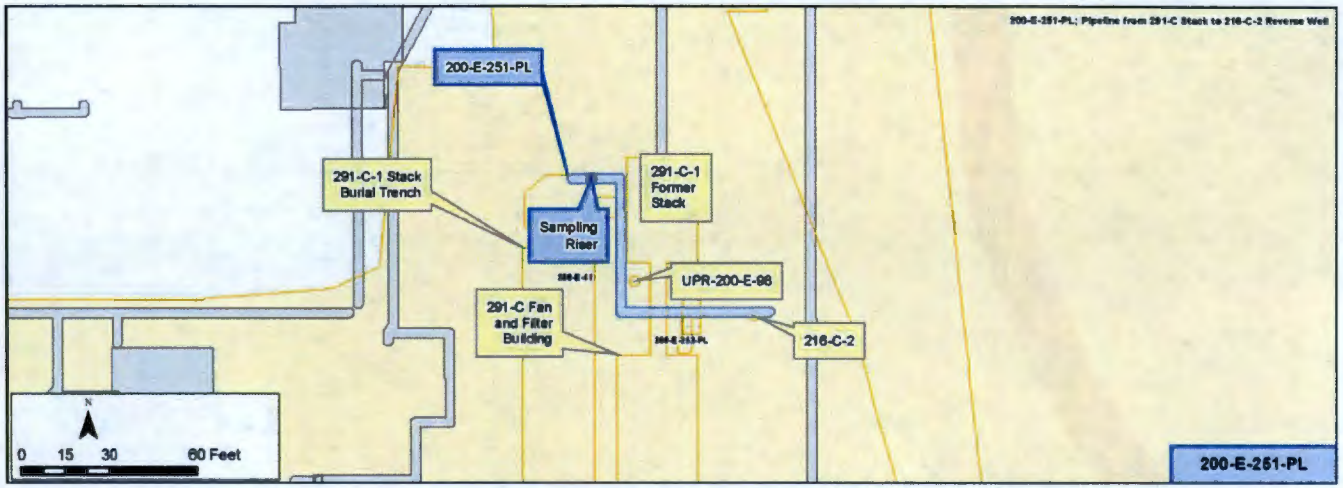
History

The 200-E-251-PL waste site is an inactive underground pipeline used to carry condensate from the 291-C-1 Stack, to disposal at the 216-C-2 Reverse Well.

It was built in 1949 and demolished in 1988. Its remnants are buried in a trench (also part of waste site 291-C-1) south of the stack's original location. Prior to demolition, the interior of the stack was decontaminated. After demolition, the stack base was filled with concrete. In the 291-C decontamination and demolition process, the 216-C-2 Reverse Well was also stabilized and sealed with concrete. 200-E-251-PL is therefore currently isolated, sealed at both ends with concrete.

After the stack's demolition, a 3 ft fly ash barrier was deposited on top of much of the Hot Semi-Works Site; this area is now known as 200-E-41. The entirety of 200-E-251-PL is under this fly ash cover.

There is one UPR near the 291-C-1 Stack and 200-E-251-PL pipeline: UPR-200-E-98, which is not related to the 200-E-251-PL pipeline.



Construction

- Length: 111 ft
- Diameter: 4 in.
- Composition: Saran-lined steel
- Gravity drained
- Direct buried
- Depth: 11 ft - 14 ft bgs (including ~3 ft fly-ash cap covering)
- Total Calculated Volume: 73 gal

Features of Interest

- Two rolled down elbows
- One flange (to short section of stainless steel before entering 216-C-2 reverse well)
- One sampling riser (consists of two flanged tees, a blind flange, and a length of 4-in diameter pipe to grade, ending in a removable blind flange) - see detail drawing

Relevant Characterization

- The Effluent Discharges report for 1988 (WHC-EP-0141-1) states that discharges to the 216-C-2 Reverse Well were not sampled or recorded for flow
- The Semi-Works Aggregate Area Management Study from 1992 (WHC-SD-EN-ES-019, rev. 0) describes the waste received by the 216-C-2 Reverse well as low-salt and neutral basic.
- No survey data could be found relating specifically to this site

Waste Streams

- 200-E-251-PL carried condensate from the 291-C-1 Stack
  - Waste was characterized as low salt and neutral basic
  - Volume of waste transferred is unknown

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-EA-1

- 291-C-1 (burial trench of demolished 291-C-1 Stack)
- 216-C-2 (Reverse Well)

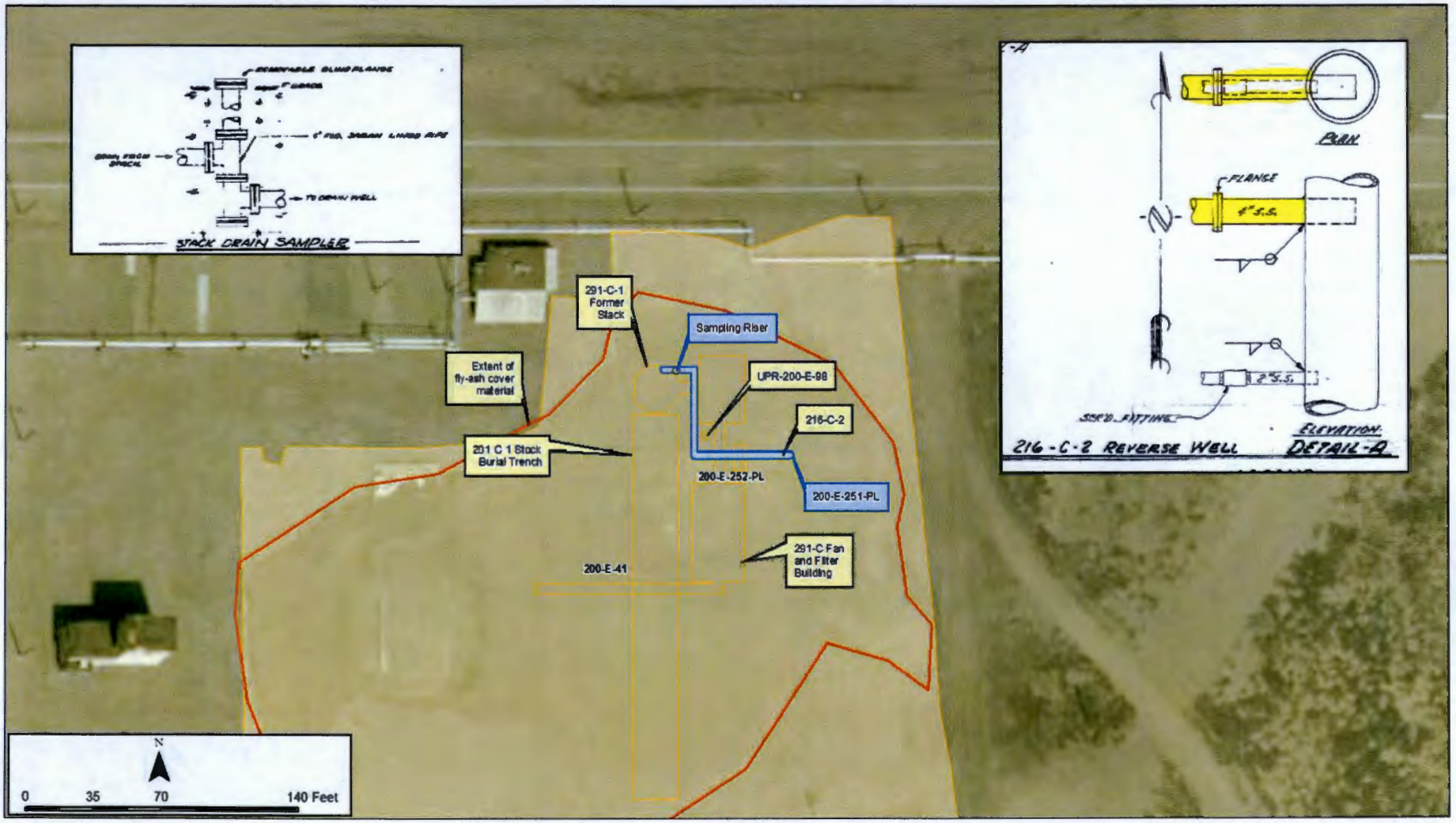
Site Intersects

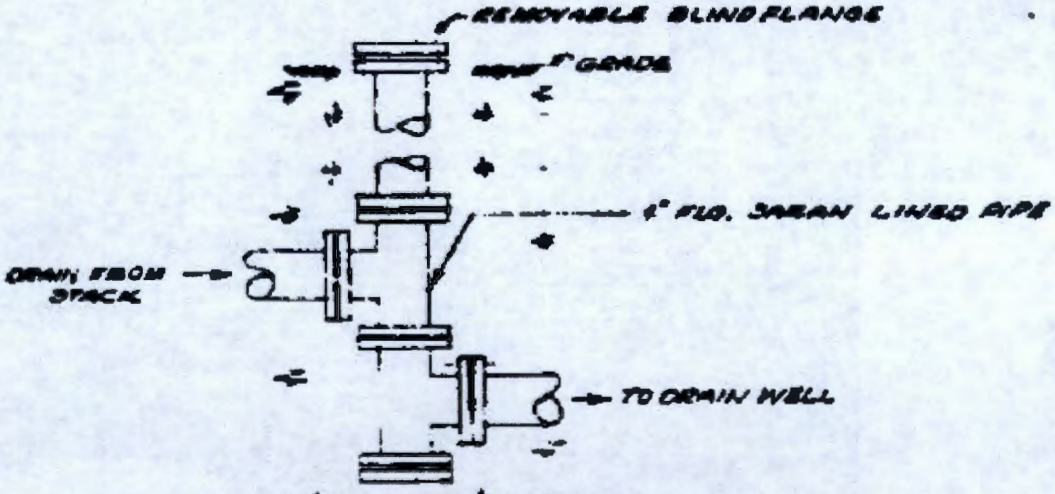
200-IS-1

- 200-E-252-PL

No Operable Unit

- 200-E-41 (Stabilized Hot Semi-Works Area)
- 291-C (Fan and Filter Building)


STACK DRAIN SAMPLER
291-C-1 Former Stack
Sampling Riser
Extent of fly-ash cover material
UPR-200-E-98
216-C-2
291 C 1 Stack Burial Trench
200-E-252-PL
200-E-251-PL
291-C Fan and Filter Building
200-E-41
N
0
35
70
140 Feet
BAR
FLANGE
4" S.S.
2" S.S.
ELEVATION
216-C-2 REVERSE WELL
DETAIL-A



STACK DRAIN SAMPLER

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Scoping Summary: 200-E-252-PL

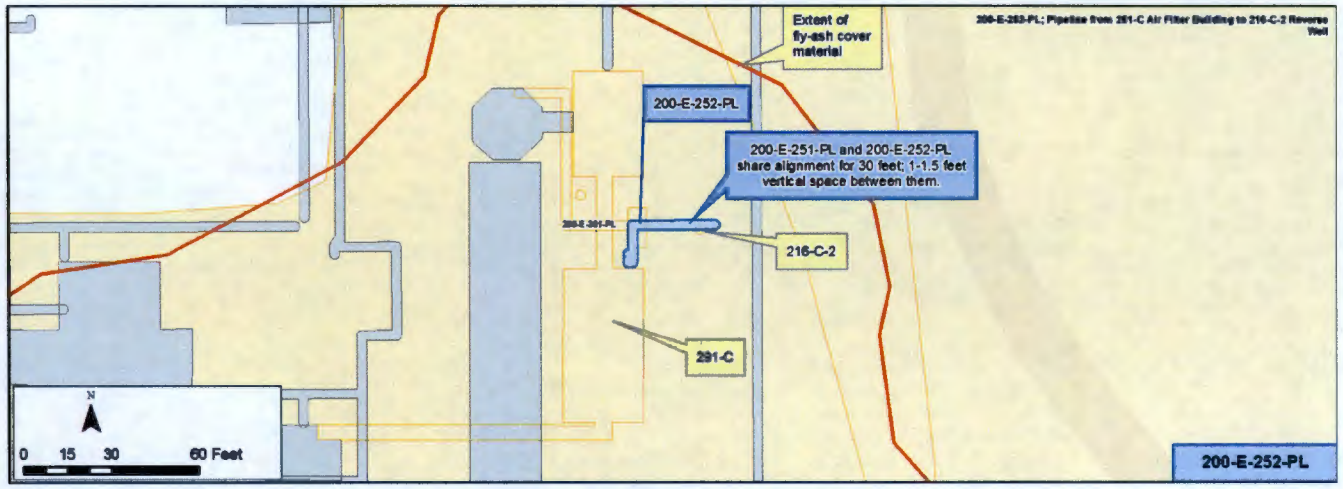
History

The 200-E-252-PL waste site is an inactive underground collection of pipelines and duct lines used to drain water from the 291-C Ventilation Filter and Fan House, to the 216-C-2 Reverse Well.

It was built in 1949 and in operation from 1949-to-1988, when the 291-C Ventilation Filter and Fan House were decontaminated and demolished. The air tunnel and seal-bypass sump were filled with grout and left in place. The 216-C-2 well was also stabilized and sealed with concrete.

200-E-252-PL is therefore isolated, having been sealed at both ends. Given the nature of the pipeline's waste source (a drain) it is likely that the site received some waste throughout the entire life span of the 291-C Ventilation Filter and Fan House.

After the stack's demolition, a 3 ft fly ash barrier was deposited on top of much of the Hot Semi-Works Site; it is now known as 200-E-41. The entirety of 200-E-252-PL is under this fly ash cover.



Construction

- Length: ~45 ft
  - 3 duct lines: 1.5 ft
  - 1 main line: 40 ft
- Diameter: 2 in.
- Composition: Cast Iron
- Gravity drained
- Direct buried
- Depth: 15 ft bgs (including 3 ft fly ash cap)
- Total Calculated Volume: 8 gal

Features of Interest

- Two shut off valves
- Two tees
- Two elbows
- One screwed fitting, connecting the downstream end of the pipeline to a short 2 in. diameter stainless steel pipe, entering the 216-C-2 Reverse Well
- One 4 in. diameter trap (two 4 in. by 2 in. reducers and four 4 in. elbows - see detail drawings for orientation)

Relevant Characterization

- No survey data could be found relating specifically to this site

Waste Streams

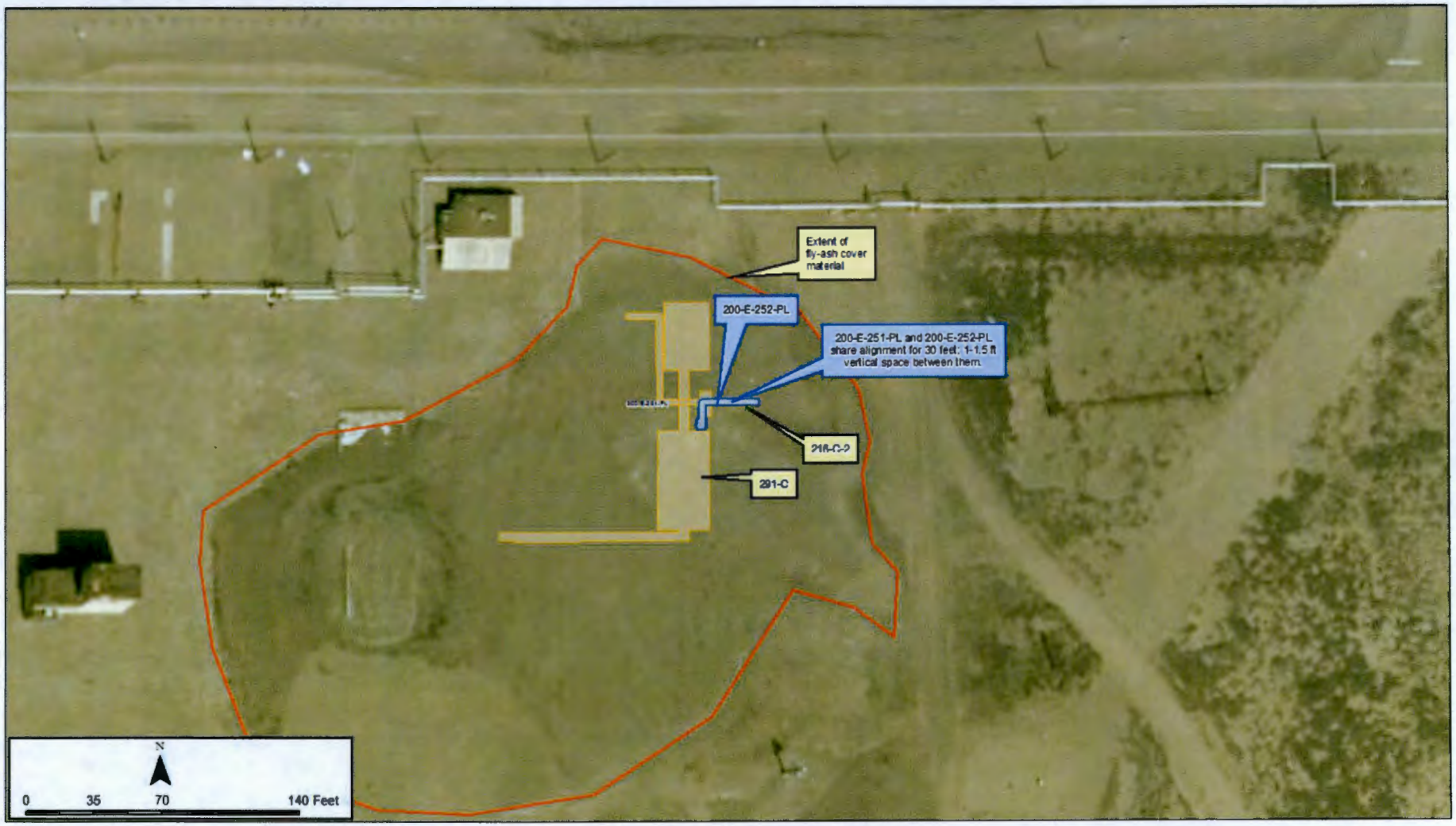
- 200-E-251-PL carried seal water from the ventilation filter on the 291-C-1 Stack
  - The Effluent Discharges report for 1988 (WHC-EP-0141-1) states that discharges to the 216-C-2 Reverse Well were not sampled or recorded for flow
  - The Semi-Works Aggregate Area Management Study from 1992 (WHC-SD-EN-ES-019, rev. 0) describes the waste received by the 216-C-2 Reverse well as low-salt and neutral basic

Misc./Other Relevant Information

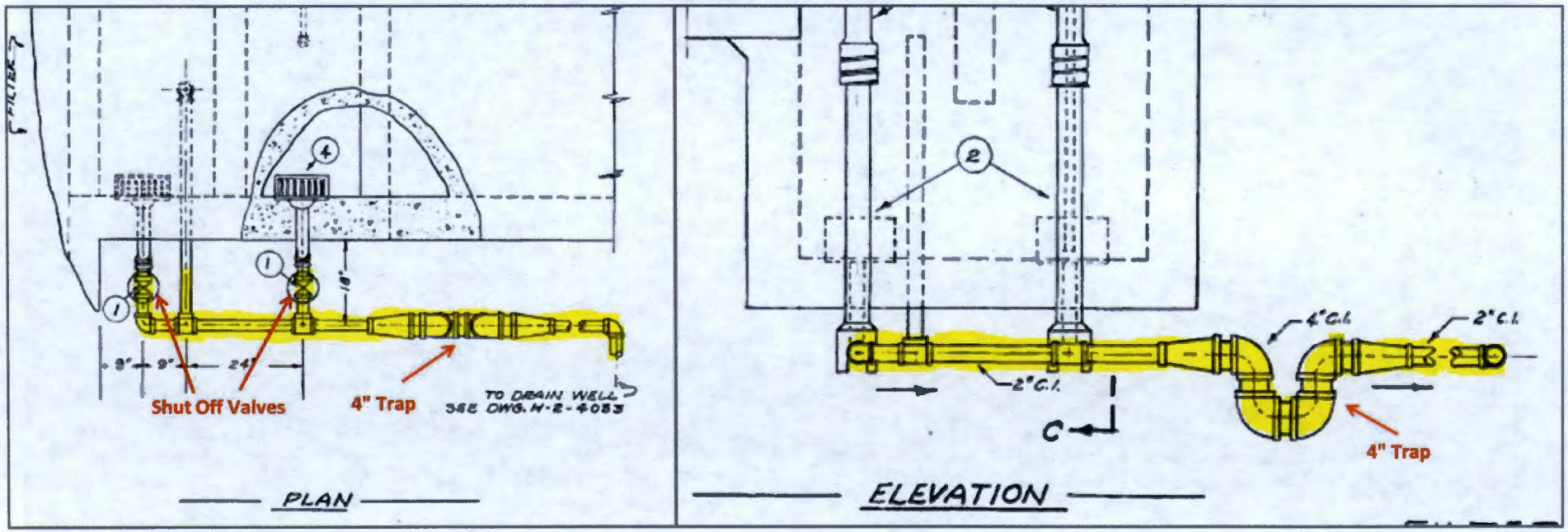
- None

Site Interfaces

Origin/Termination	Site Intersects
No Operable Unit	200-IS-1
• 291-C (Fan and Filter Building)	• 200-E-251-PL
	No Operable Unit
200-EA-1	• 200-E-41 (Stabilized Hot Semi-Works Area)
• 216-C-2 (Reverse Well)	


Extent of fly-ash cover material
200-E-252-PL
200-E-251-PL and 200-E-252-PL share alignment for 30 feet; 1-1.5 ft vertical space between them.
291-C
N
0
35
70
140 Feet

200-E-252-PL Detail Drawings



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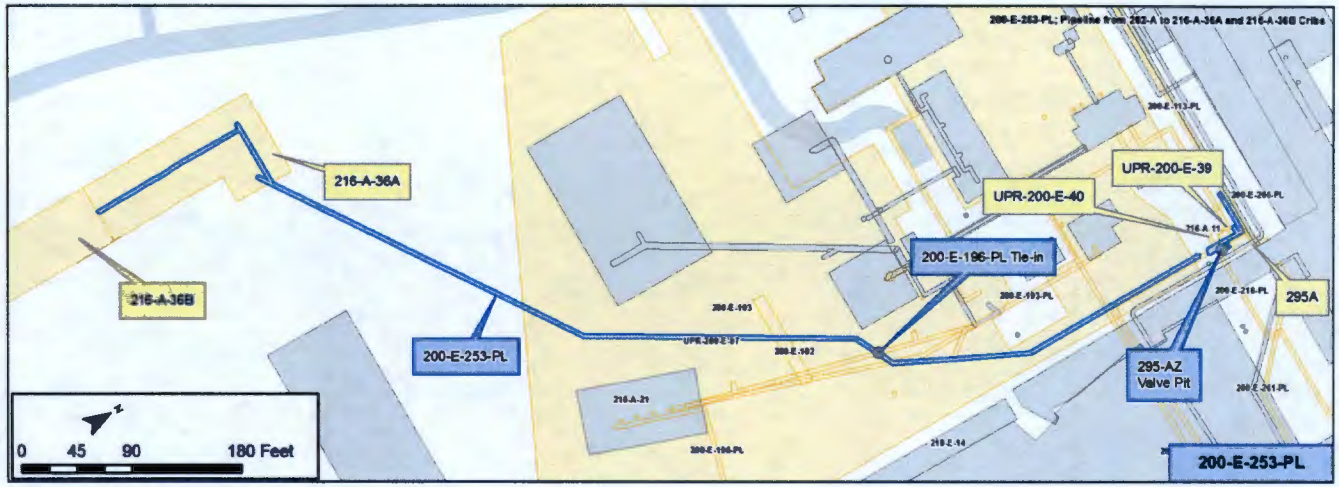
Scoping Summary: 200-E-253-PL

History

The 200-E-253-PL waste site is an inactive underground stainless steel pipeline that connected the Ammonia Scrubber Distillate (ASD) Valve Pit and 295-A Sample Station in the PUREX facility with the 216-A-36A and 216-A-36B cribs.

Service began around 1965 in correlation with the N Reactor operation's use of zirconium-clad fuel rods, which required a dissolution process that produced gaseous ammonia that was scrubbed and released as condensate via the pipeline to the cribs.

When the 216-A-36A Crib was extended to create the 216-A-36B Crib in Mar-1966, the pipe was lengthened at the end in two segments by inserting a 5 in. stainless steel pipe and then a 4 in. stainless steel pipe through the original 6 in. crib pipe in order to extend the line into the new crib (see figure page 3). Service ended in 1987 when ASD production was discontinued due to ammonium hydroxide concentration exceeding reportable quantity under CERCLA and the 216-A-36B crib was closed.



Construction

- Length: 1,110 ft
- Diameter: Primarily 6 in. with an extension of approximately 55 ft of 5 in. and 4 in. diameters
- Composition: Stainless steel
- Flow Method: Gravity
- Encasement: None
- Depth: 11 ft to 23 ft
- Cathodic Protection: None
- Volume: Approximately 1,630 gal

Features of Interest

- Blind flange on the 45 degree lateral segment going into 216-A-36A crib
- When the extensions were installed a tee was constructed in the pipe just before crib entrance, approximately 20 ft depth with a weld neck flange and blind flange
- One 6x5 reducer and one 5x4 reducer before 5 in. encased line enters 216-A-36B crib
- A branch of 200-E-196-PL ties to this 200-E-253-PL (see figure page 4)
- 1966 a 95 ft concrete dam was placed between the two crib sections

Relevant Characterization

- 1990 - four ammonia scrubber samples (WHC-EP-0342)
  - 1966-1987 radiological data of effluent released Alpha, Beta, 90 Sr, 106 Ru, 103 Ru, 137 Cs, 147 Pm, 3 H, 241 Am, 241 Pu, 239 Pu, U (Gross), 129 I, 113 Sn
- 216-A-36B sampling found ammonia scrubber distillate, neutral to basic, low salt, large amounts of uranium
  - 1999 Radionuclide inventory found 2.68E+02 curies of Sr-90, 2.84E+02 curies of Cs-137, 3.97E-02 of U (gross), and 2.20E-01 of Am-241

Waste Streams

- ASD was required for the N Reactor's use of zirconium-clad fuel rods, which required a zirflex dissolution process using ammonium fluoride and ammonium nitrate and produced large quantities of gaseous ammonia. The ammonia was scrubbed from the offgas with water, resulting in a solution that was boiled to remove radionuclides, condensed to form the ASD and was released to the crib.
- Waste stream influenced by a tie in to 200-E-196-PL, which carries effluent from the 216-A-4 Sample Building and 291-A Fan Control House to the 216-A-21 Crib

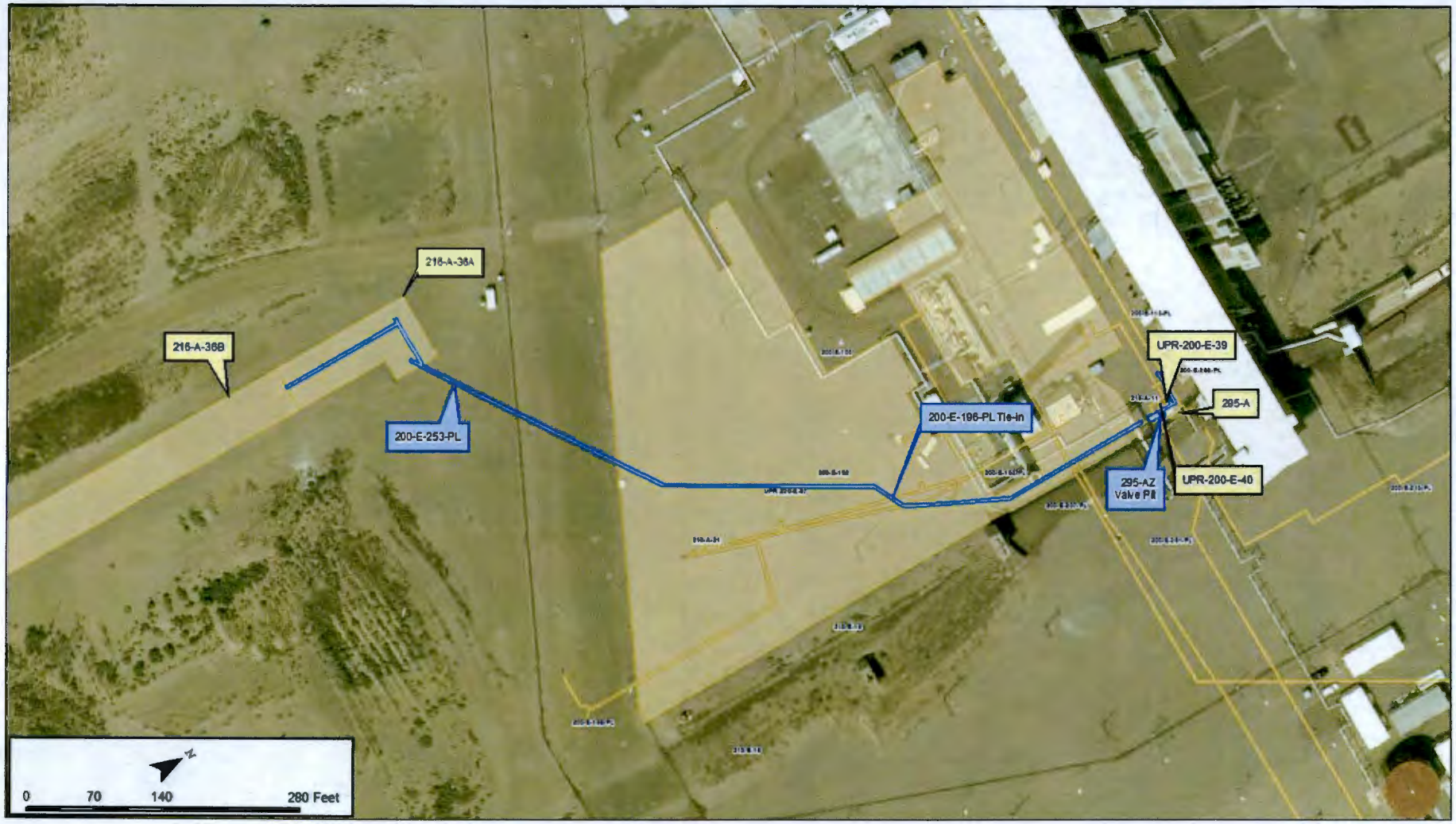
Misc./Other Relevant Information

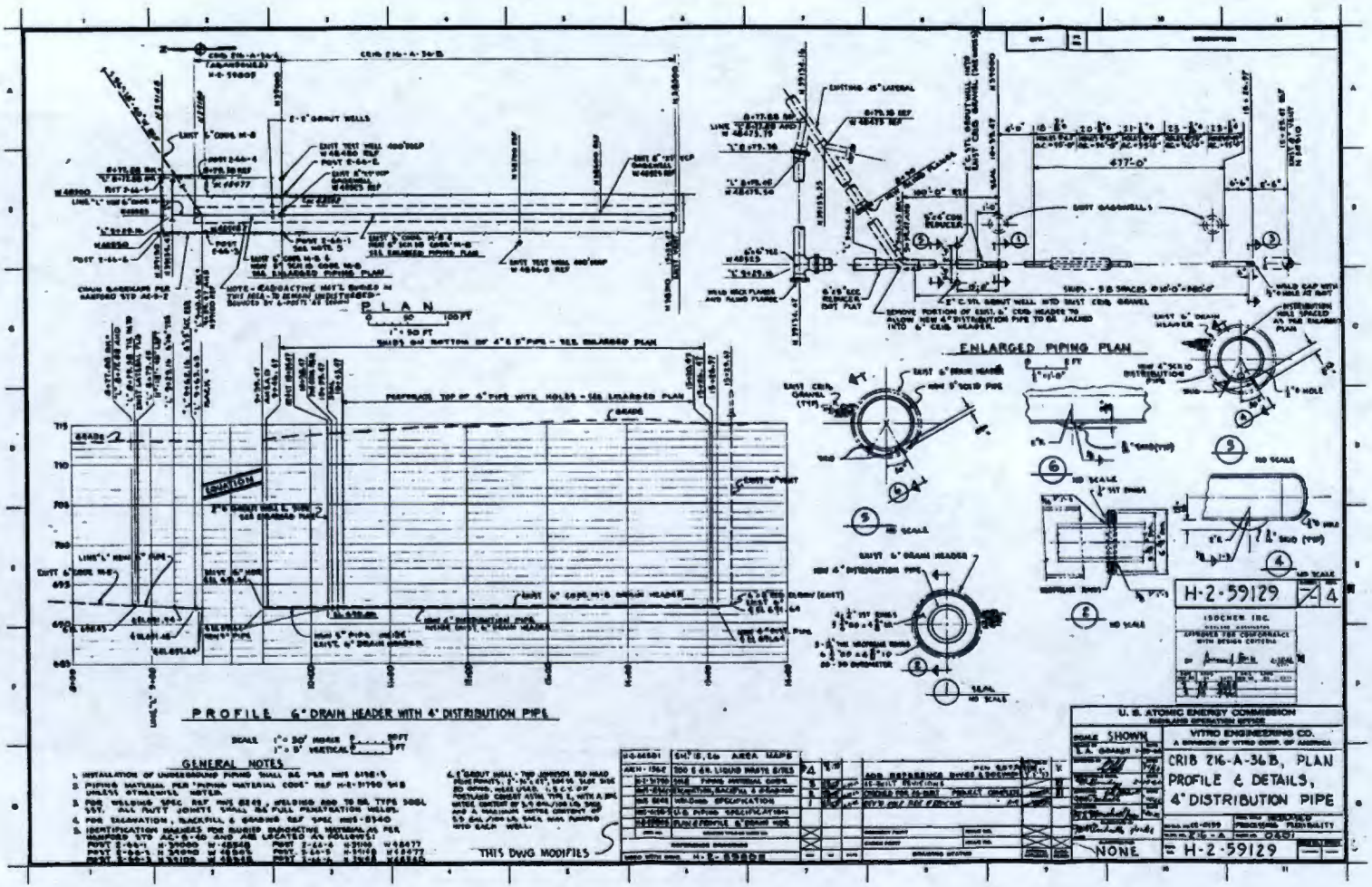
- Feb-6-1968 UPR-200-E-39 ammonia scrubber liquid was spewing from 295-A vent filter, contamination ranged from 20 to 450 millirad/hour.
- Jan-1999 surface contaminated area south of PUREX covered with clean gravel and assigned as 200-E-103
- Aug-5-1968 UPR-200-E-40 (consolidated with 200-E-103) liquid spewed from 295-A vent, maximum contamination was 150 millirad/hour.

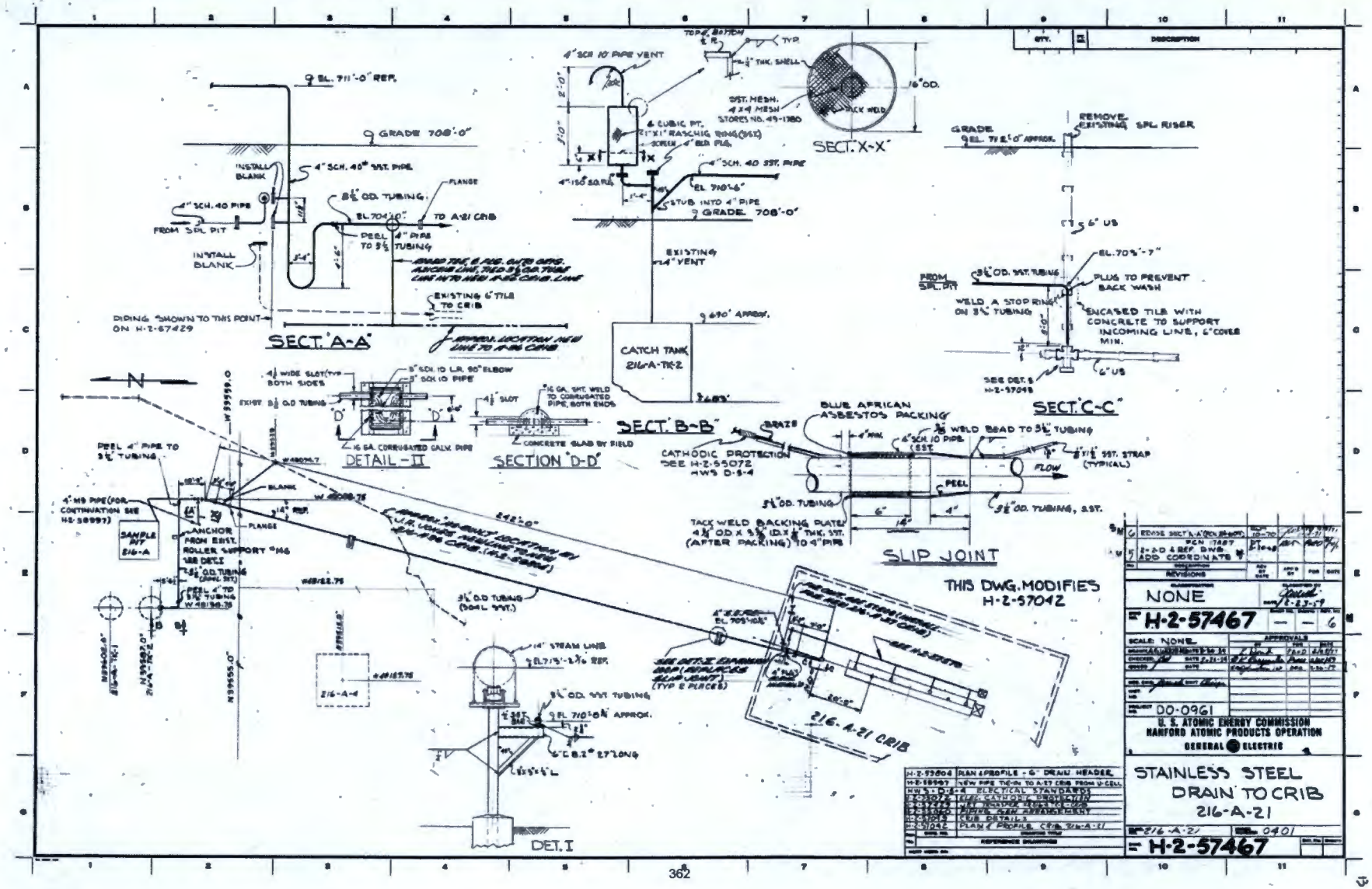
Site Interfaces

Origin/Termination	Site Intersects
	Not Located
• 295-A Building	• 200-E-196-PL
200-EA-1	200-IS-1
• 216-A-36A Crib	• 200-E-193-PL
• 216-A-36B Crib	• 200-E-113-PL
	• 200-E-261-PL
	• 200-E-266-PL
	200-CP-1
	• UPR-200-E-39
	200-EA-1
	• UPR-200-E-40
	• 200-E-103 Stabilized Area

Scoping Summary: 200-E-253-PL




PLAN
ENLARGED PIPING PLAN
PROFILE 6" DRAIN HEADER WITH 4" DISTRIBUTION PIPE
GENERAL NOTES
THIS DWG MODIFIES
H-2-59129
U. S. ATOMIC ENERGY COMMISSION
HANFORD OPERATIONS OFFICE
WYNO ENGINEERING CO.
CRIB 216-A-36B, PLAN
PROFILE & DETAILS,
4" DISTRIBUTION PIPE
SHOWN
NONE
H-2-59129


SECT. A-A
SECT. X-X
SECT. B-B
SECT. C-C
DETAIL - II
SECTION D-D
SLIP JOINT
DET. I
CATCH TANK 216-A-TK-2
216-A-21 CRIB
THIS DWG. MODIFIES H-2-57042
NONE
H-2-57467
DO-0961
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
STAINLESS STEEL DRAIN TO CRIB 216-A-21
216-A-21
0401
H-2-57467

Scoping Summary: 200-E-254-PL

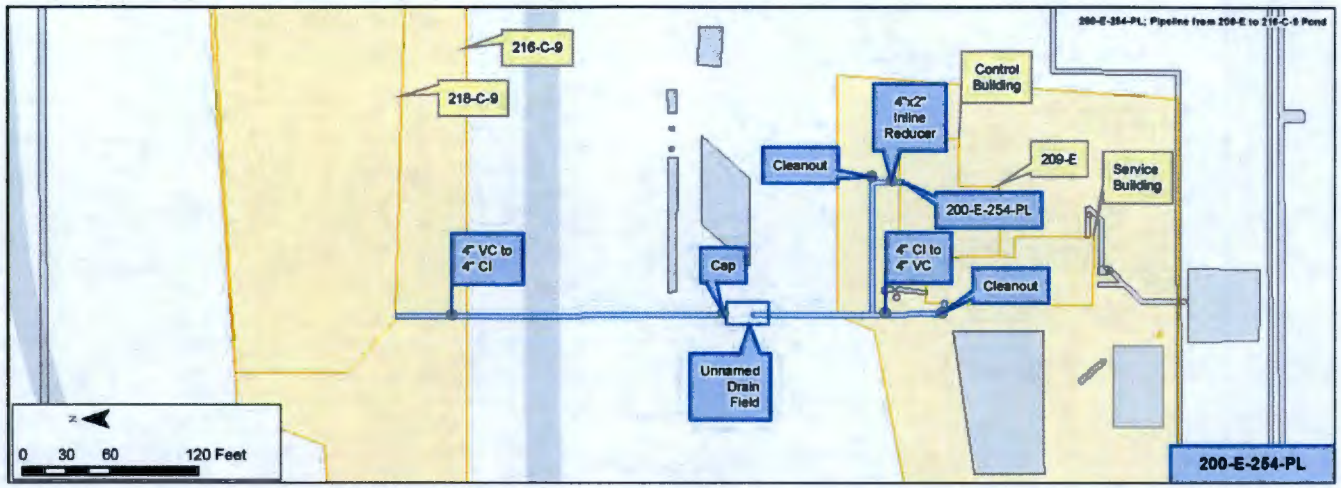
History

The 200-E-254-PL waste site is a set of inactive underground pipelines used to convey waste cooling water (WCW) from the 209-E Critical Mass Laboratory (CML) to the 216-C-9 Pond. It was built in 1959.

The CML performed criticality experiments and research in 209-E from 1960-1983. The Lab was prepared for closure and decommissioning in 1987, and was then unoccupied until it was decontaminated and demolished in Dec-2011.

At some point between 1970 and 1988, 200-E-254-PL was cut and capped, and the length of pipe extending to the 216-C-9 Pond was abandoned. The WCW was then expelled to an unnamed drain field south of the 216-C-9 Pond (see figure). It was not possible to determine whether the line was capped before or after operations ceased at the CML, so it is unclear how much (if any) waste was expelled to the unnamed drain field.

Documentation from the demolition of the CML shows flushing, decommissioning, and removal of tanks and equipment associated with the Lab, and reports that mechanical and electrical piping were cut, inspected, and capped at the slab.



Construction

- Length: 484 ft (Total Length)
  - Segment 1: 53 ft
  - Segment 2: 85 ft
  - Segment 3: 113 ft
  - Segment 4: 233 ft
- Diameter:
  - Segment 1, Segment 2, and Segment 4: 4 in.
  - Segment 3: Part 4 in. (109 ft), part 2 in. (4 ft)
- Composition:
  - Segment 1: Cast Iron
  - Segment 2: Vitrified Clay
  - Segment 3: Vitrified Clay
  - Segment 4: Part Vitrified Clay, Part Cast Iron
- Gravity Drained
- Direct Buried
- Depth: 3 ft – 6.5 ft bgs
- Total Calculated Volume: 322 gal (Total Volume)
  - Segment 1: 32 gal
  - Segment 2: 58 gal
  - Segment 3: 75 gal
  - Segment 4: 157 gal

Features of Interest

- One 4 in. to 2 in. reducer on the 209-E Control Building line (east)
- One 4 in. x 4 in. tee, connecting the lines from the service and control buildings
- Two clean outs - one on each line (service and control buildings)
- Two wyes - associated with the clean outs
- Two bends, both 45 degrees - associated with the clean outs
- An unnamed drain field where condensate drained after the section of pipeline ending at the 216-C-9 Pond was capped and abandoned

Relevant Characterization

- No characterization data was found relating specifically to these pipelines or the surrounding soil

Waste Streams

- Waste Cooling Water (WCW) from the CML was transported through this pipeline
- Some of the WCW originated in Change Rooms and Mix Rooms of the CML, both of which were at least partly radiologically contaminated
- Wastes were transported from 1960-1988

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

No Operable Unit

- 200-E-294 (Demolished 209-E Building) (origin)

200-SW-2

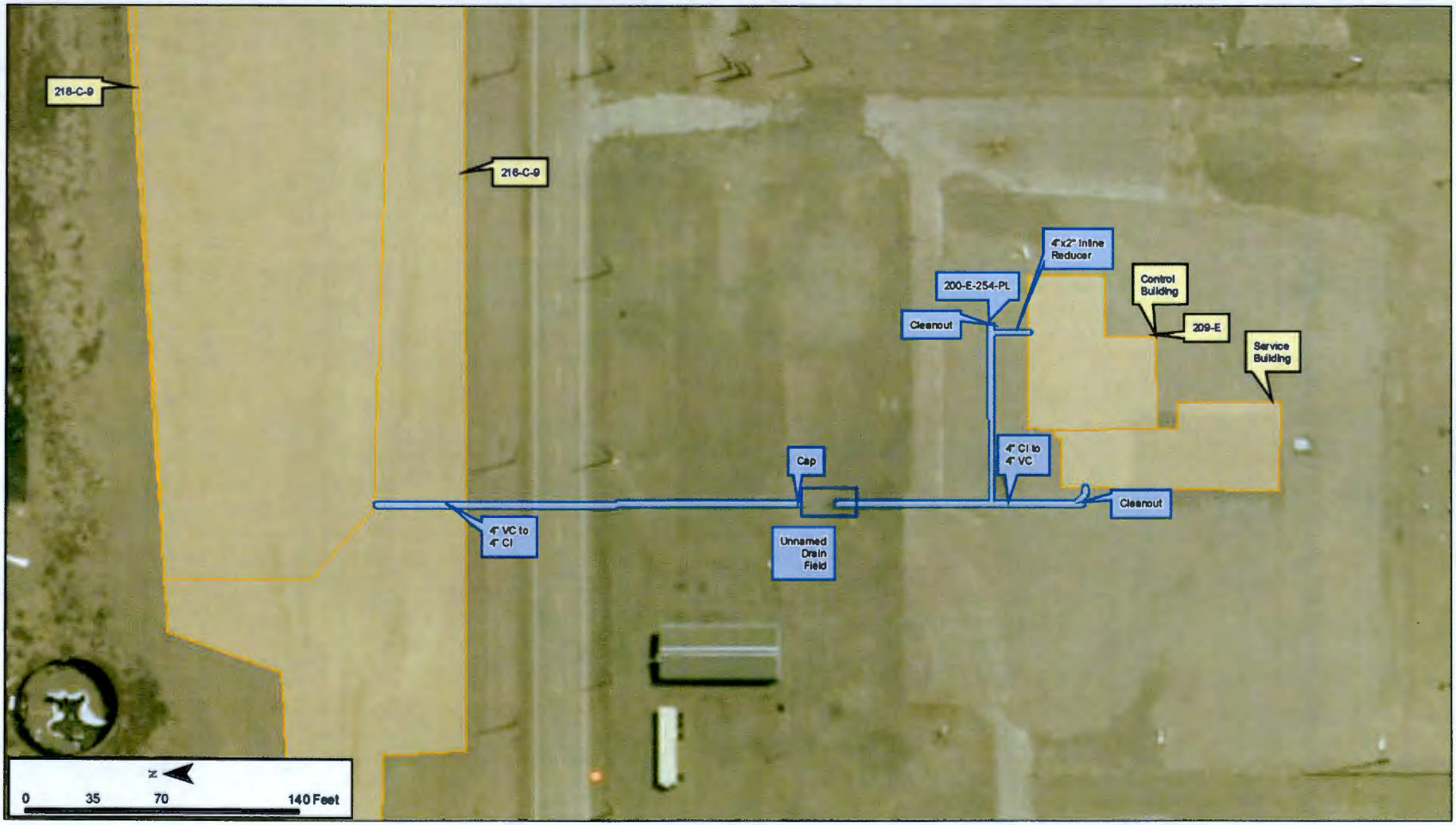
- 216-C-9 (Semi-Works Pond) (termination)

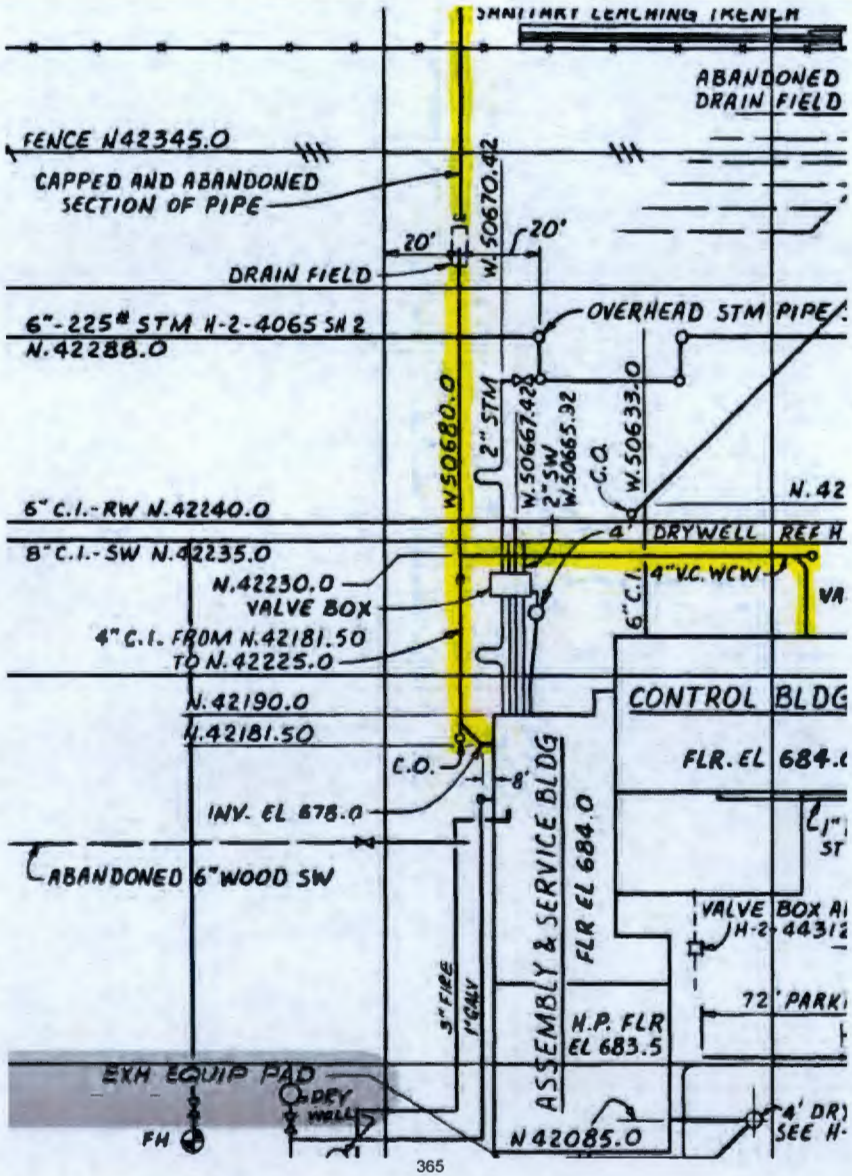
Site Intersects

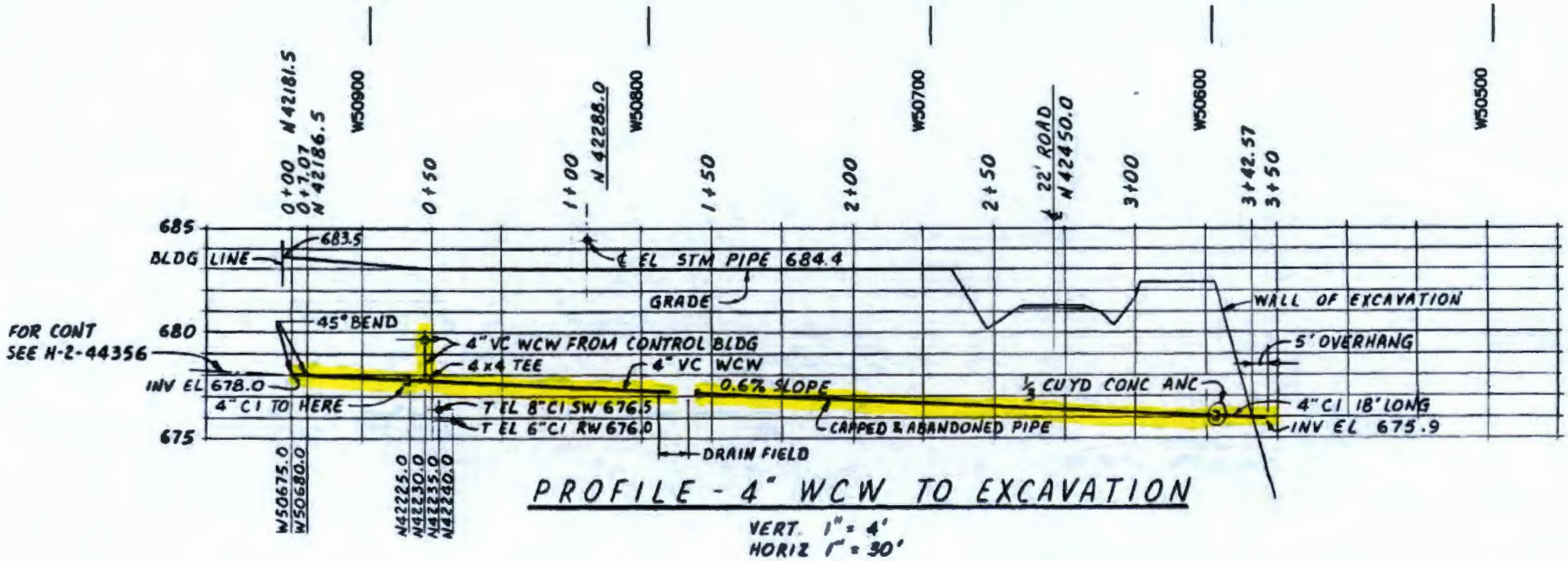
200-SW-2

- 218-C-9 (Semi-Works Burial Ground)

Scoping Summary: 200-E-254-PL




ABANDONED DRAIN FIELD
FENCE N42345.0
CAPPED AND ABANDONED SECTION OF PIPE
20'
20'
W.50670.42
DRAIN FIELD
6"-225# STM H-2-4065 SH 2
N.42288.0
OVERHEAD STM PIPE
W50680.0
2" STM
W.50667.42
2" SW
W.50665.32
C.O.
W.50633.0
6" C.I.-RW N.42240.0
4' DRYWELL
8" C.I.-SW N.42235.0
N.42230.0
VALVE BOX
4" V.C. WCW
4" C.I. FROM N.42181.50
TO N.42225.0
CONTROL BLDG
N.42190.0
N.42181.50
C.O.
FLR. EL 684.0
INV. EL 678.0
ABANDONED 6" WOOD SW
ASSEMBLY & SERVICE BLDG
FLR EL 684.0
VALVE BOX
72' PARK
3" FIRE
1" GALV
H.P. FLR EL 683.5
EXH EQUIP PAD
DRY WELL
FH
N 42085.0


0+00 N 42181.5
0+7.07 N 42186.5
W50900
0+50
1+00 N 42288.0
W50800
1+50
2+00
W50700
2+50
℄ 22' ROAD N 42450.0
3+00
W50600
3+42.57
3+50
W50500
685
BLDG LINE
683.5
℄ EL STM PIPE 684.4
GRADE
WALL OF EXCAVATION
FOR CONT SEE H-2-44356
680
45° BEND
4" VC WCW FROM CONTROL BLDG
4x4 TEE
4" VC WCW
5' OVERHANG
INV EL 678.0
0.67% SLOPE
⅓ CU YD CONC ANC
4" CI TO HERE
T EL 8" CI SW 676.5
T EL 6" CI RW 676.0
CAPPED & ABANDONED PIPE
4" CI 18' LONG
INV EL 675.9
675
DRAIN FIELD
W50675.0
W50680.0
N42225.0
N42230.0
N42235.0
N42240.0
PROFILE - 4" WCW TO EXCAVATION
VERT. 1" = 4'
HORIZ 1" = 30'

Scoping Summary: 200-E-255-PL

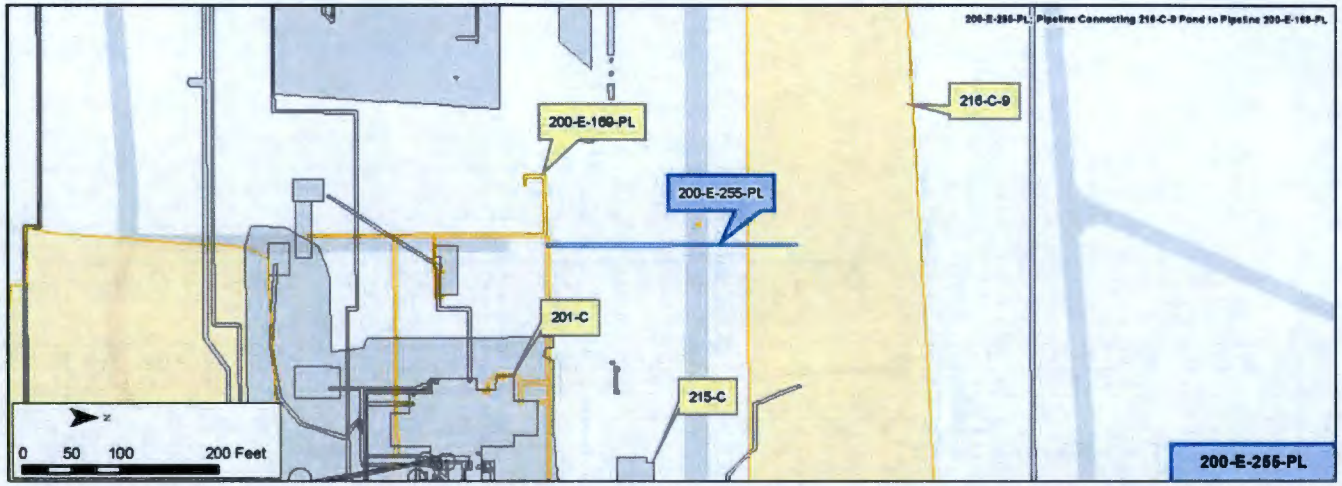
History

The 200-E-255-PL waste site is an inactive underground pipe connecting 200-E-169-PL to the 216-C-9 Pond.

The 200-E-255-PL pipeline was installed after the original 200-E-169-PL sewer system to allow discharges to the pond from the 201-C and 215-C facilities.

The pipeline may have also transported wastes received from a floor drain in the 271-C Building.

The specific operational timeframe for this waste site could not be located, but is likely to correspond with the Jun-1953 to 1983 timeframe of operations for the 216-C-9 Pond.



Construction

- Length: 250 ft
- Diameter: 6 in.
- Composition: Vitrified Clay
- Gravity drained
- Direct Buried
- Depth: ~4 ft
- Computed volume: 367 gal

Features of Interest

- None noted

Relevant Characterization

- All Semiworks facility discharge pipes were isolated in 1983 along with decommissioning.

Waste Streams

- C Plant - Cesium & Strontium Recovery
  - HS: Hot Semiworks strontium purification waste
    - Cooling water from the 201-C Semiworks Facility (June 1953 - 1967)
    - Potentially received wastes from a floor drain in the 271-C Building
    - Potentially received acid wastes from the 215-C Building

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	N/A
• 200-E-169-PL (origin)	
Via 200-E-169-PL	
• 201-C (facility) (origin)	
• 215-C (facility) (origin)	
• 276-C (building) (origin)	
200-SW-2	
• 216-C-9 Pond (termination)	

Scoping Summary: 200-E-255-PL

Scoping Summary: 200-E-257-PL

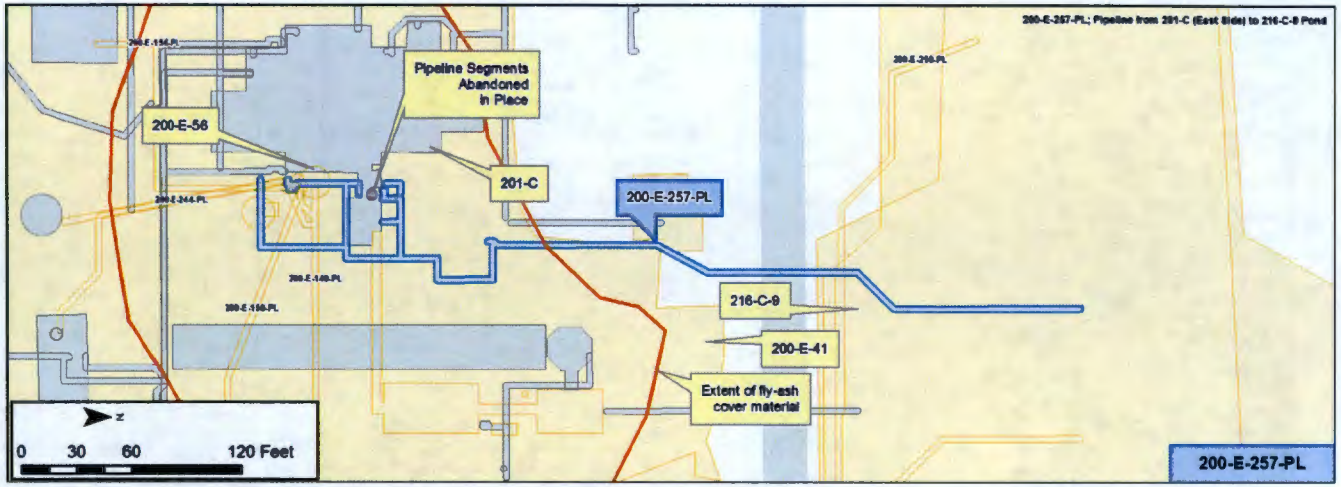
History

The 200-E-257-PL waste site is an inactive underground pipe that transported process condensate from the 201-C Facility to the 216-C-9 Pond.

Dates of operation could not be located, but the line appears to have been in place for the duration of 216-C-9's operation from Jun-1953 through 1985.

Portions of the pipeline adjacent to the 201-C Facility were associated with waste leak 200-E-56 and were abandoned in place following the discovery of contamination from leaking gaskets. These connections were replaced by a bypass line connecting to the south side of the 201-C Facility at an unknown date.

The 201-C Facility was demolished; subsurface voids were filled with concrete; and an engineered cover of fly ash was applied to the area in 1987. 200-E-257-PL's connections to the 201-C Facility were isolated as a result of this process. The portion of 200-E-257-PL near the 201-C Facility is beneath the fly ash applied during the decommissioning of the 201-C Facility.



Construction

- Length: 691 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Drained
- Direct Buried
- Depth: Unknown
- Calculated Volume: 254 gal

Features of Interest

- Portions of 200-E-257-PL that may have been associated with waste leak 200-E-56 were abandoned in place. New pipe was installed to bypass the abandoned segments near the 201-C Facility.

Relevant Characterization

- 200-E-56. Flanges on underground waste lines leaked, causing contamination with radiation readings of greater than 100 rad/hour at a depth of 12 ft in 1957. The lines were abandoned and bypass sections installed.
- 1998 radionuclide curies inventory of the 216-C-9 pond included:
  - 1.96+00 of Sr-90
  - 5.70E-01 of Cs-137
  - <3.05E-04 of U Gross

Waste Streams

- C Plant - Cesium & Strontium Recovery
  - HS: Hot Semiworks strontium purification waste
    - Process condensate from the 201-C Facility to the 216-C-9 Pond (1953-1985)

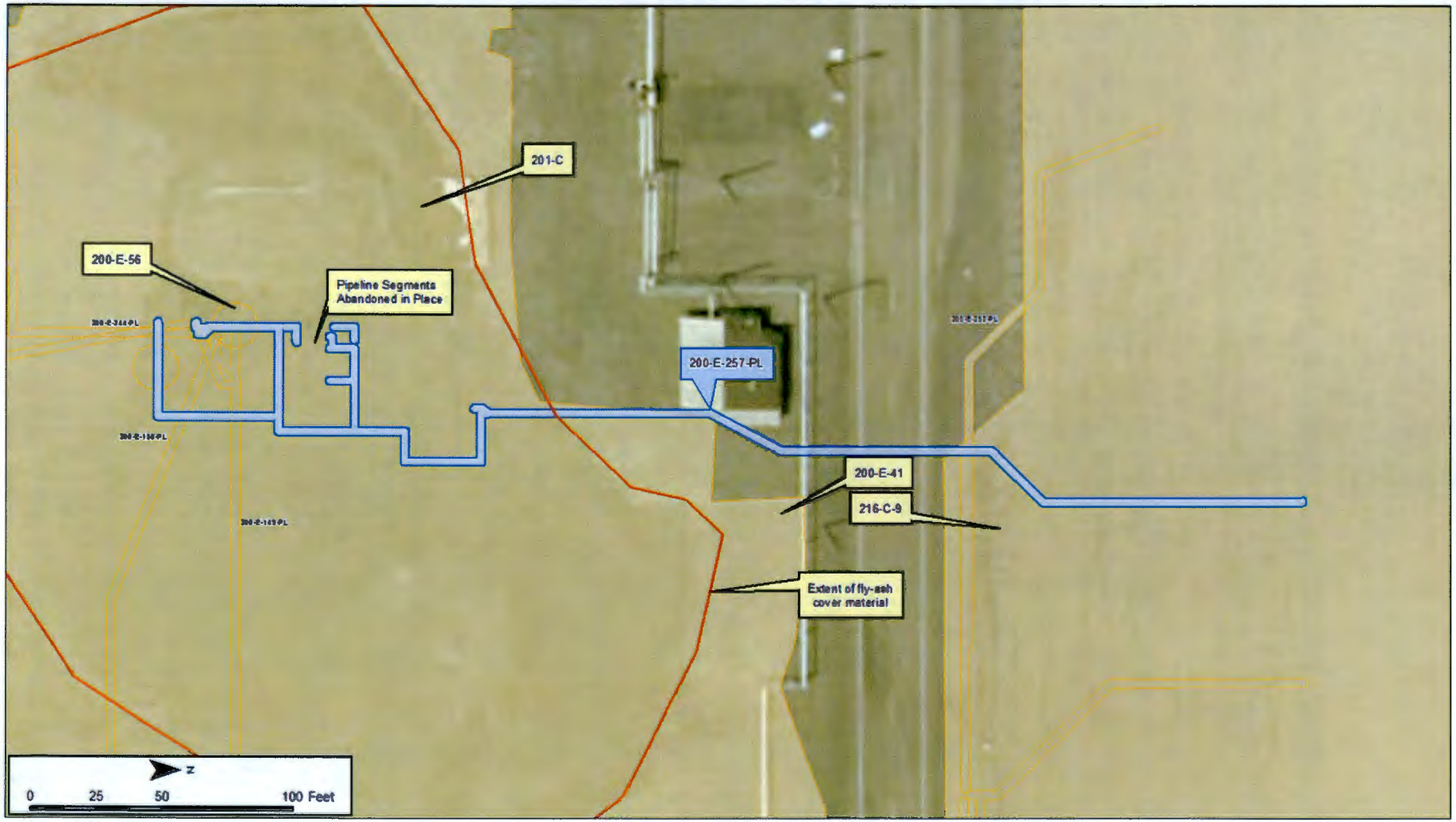
Misc./Other Relevant Information

- 200-E-41 (1949-1992) Decommissioned area including 201-C building covered with fly ash. Chained and posted as Underground Radioactive Material. Portions 200-E-257-PL are within the area of the UPR.

Site Interfaces

Origin/Termination	Site Intersects
• 201-C (facility)	200-IS-1 • 200-E-149-PL • 200-E-150-PL • 200-E-156-PL • 200-E-244-PL • 200-E-258-PL
200-SW-2 • 216-C-9 Pond	200-EA-1 • 200-E-56 (contaminated area) • 200-E-41 (stabilized area)

Scoping Summary: 200-E-257-PL



Scoping Summary: 200-E-258-PL

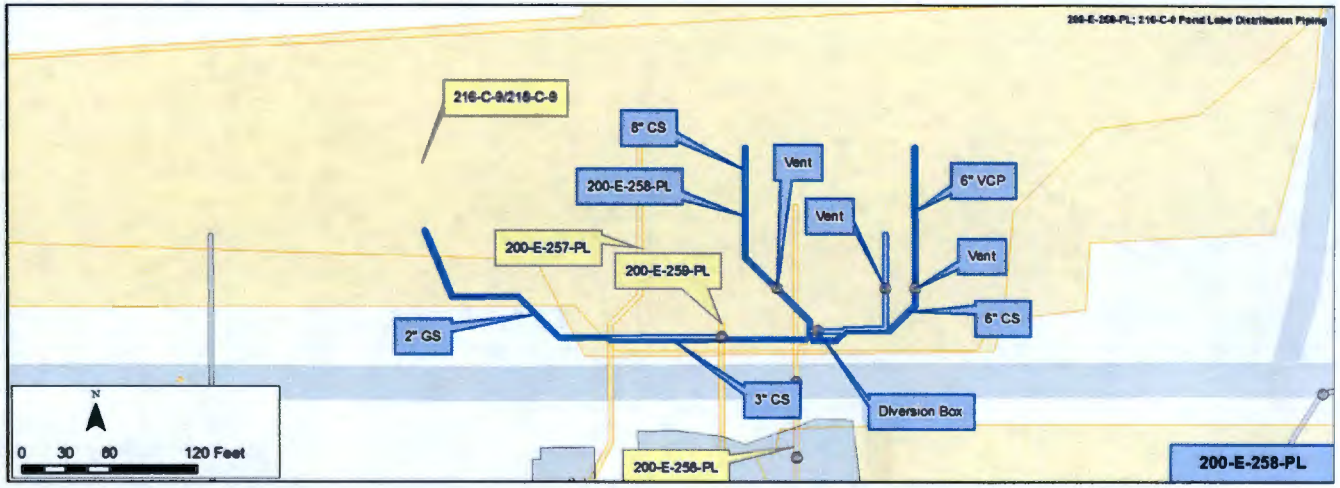
History

The 200-E-258-PL waste site is an inactive underground radioactive process sewer. It was the pipe network within the 216-C-9 Pond responsible for distribution throughout the pond's various lobes of the process cooling water from the 201-C, 215-C, 271-C, 276-C building floor drains, and miscellaneous waste water from the 209-E Building and Hot Semiworks facility via three separate feeder pipelines: 200-E-256-PL, 200-E-257-PL, and 200-E-259-PL.

Prior to 1964, the three feeder lines emptied directly into the 216-C-9 Pond. When the new distribution network was constructed, the feeder lines were tied into the new infrastructure through a series of gate valves, and then abandoned beyond the junction points.

This distribution network was in use from approximately 1964 to 1985. For much of this time, 1967-to-1983, the Hot Semiworks Facility was in standby mode.

As part of the Hot Semiworks decommissioning, all pipes in the 216-C-9 Pond were isolated between 1983 and Dec-1985. The area was backfilled to grade and surface-stabilized in 1989; it is now marked as an Underground Radioactive Materials area.



Construction

- Length: 819 ft
- Diameter: 6 in., 2 in., 8 in., and 3 in.
- Composition: Carbon Steel, Galvanized Steel, and VCP
- Encasement: Direct Buried
- Depth: Less than 10 ft bgs, ~3-to-7 ft bgs at discharge to pond
- Calculated Volume: 500 gal

Features of Interest

- Three Vents
- 11 pipe Bends
- The 216-C-9 Diversion Box, which is listed as a 4 ft x 4 ft x 8 ft concrete box with 8 in. thick walls

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Based on data from 216-C-9, the Semi-works Pond, isotopes remaining in the process sewer system likely include: Sr-90, Tc-99, Cs-137, and Sm-151

Waste Streams

- 1953 to 1960: Cooling water from 201-C, 215-C, 271-C, and 276-C floor drains
- 1960-to-1969: Addition of miscellaneous wastewater from 209-E
- 1969-to-1985: Miscellaneous wastewater from Hot Semiworks Facility

Misc./Other Relevant Information

- The 216-C-9 Pond was decommissioned in 1983; it was re-named the 218-C-9 burial ground in 1985, when a portion of this area was used to store solid waste from the Hot Semiworks Facility D&D

Site Interfaces

Origin/Termination

200-SW-2

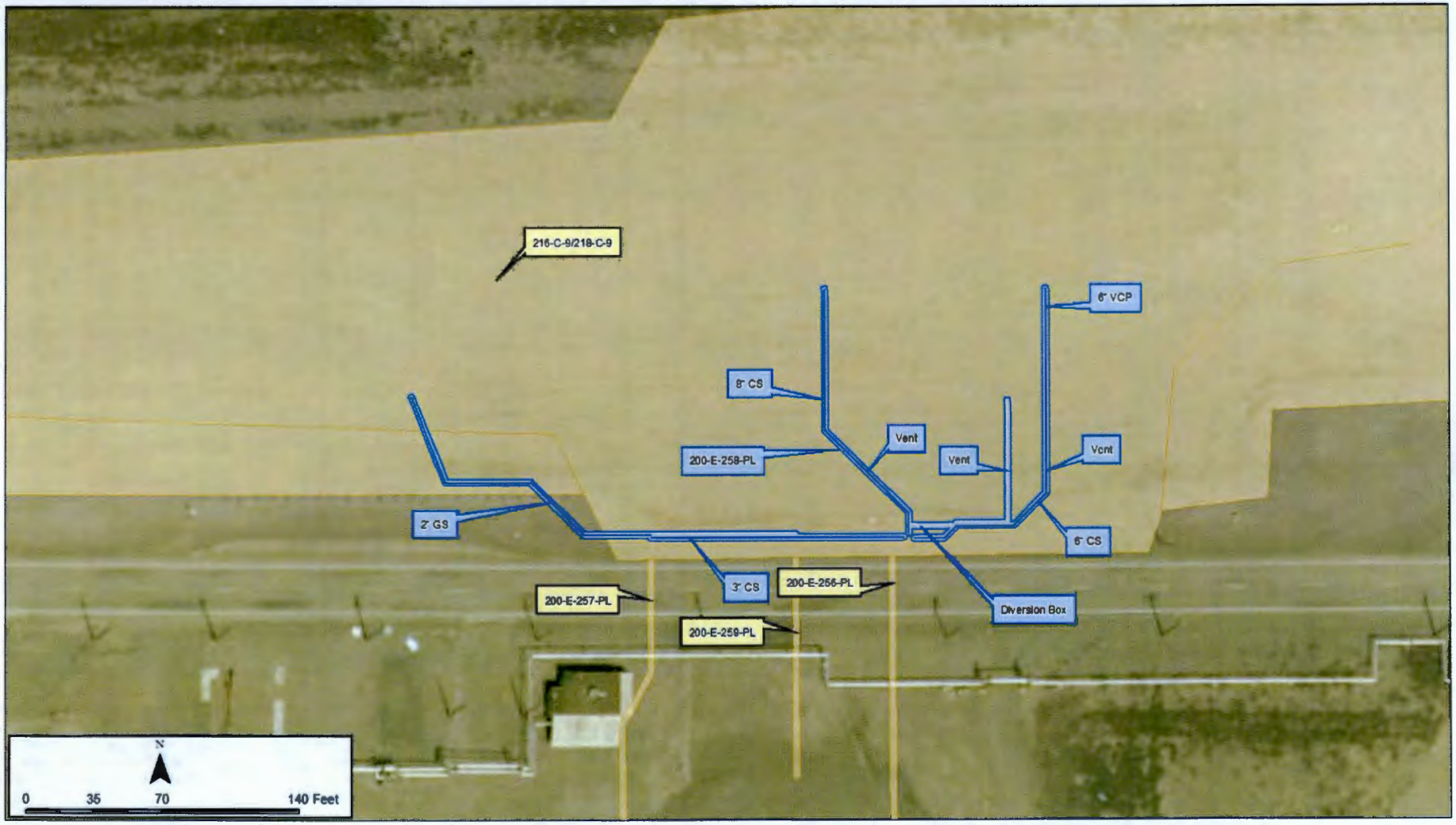
- 216-C-9/218-C-9

Site Intersects

200-IS-1

- 200-E-256-PL
- 200-E-257-PL
- 200-E-259-PL

Scoping Summary: 200-E-258-PL



Scoping Summary: 200-E-259-PL

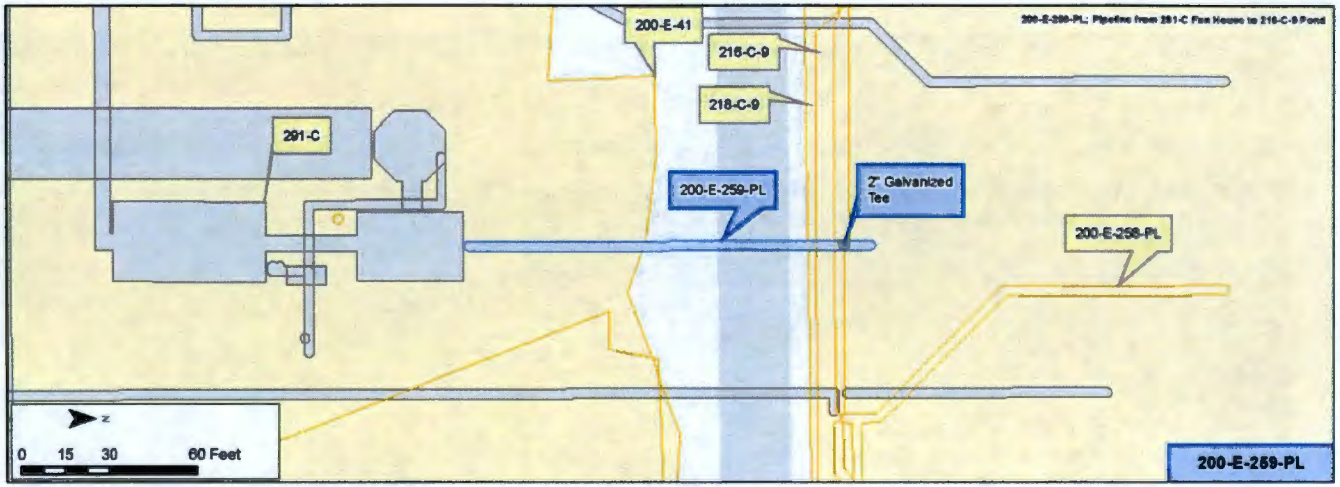
History

The 200-E-259-PL waste site is an inactive radioactive process sewer from the former 291-C Fan House to the 216-C-9 Pond.

The 291-C Fan House was constructed in 1949 and in operation until 1967, when Hot Semiworks action ceased. It provided exhaust air ventilation for the operating cells and process vessel vents of 201-C. The 291-C Fan House was dismantled and removed as part of the Hot Semiworks decommissioning in 1988. This waste site was cut-and-capped sometime prior, between 1983 and 1984, when all liquid discharge pipes in the Hot Semiworks area were isolated.

Prior to 1964, 200-E-259-PL emptied directly into the 216-C-9 Pond. When the new distribution network (200-E-258-PL) was constructed, the drain line was tied into the new infrastructure with a galvanized tee, and then abandoned beyond the junction point.

As part of the Hot Semiworks decommissioning, all pipes in the 216-C-9 Pond were isolated between 1983 and December 1985. The area was backfilled to grade and surface-stabilized in 1989; it is now marked as an Underground Radioactive Materials area.



Construction

- Length: 135 ft
- Diameter: 2 in.
- Composition: Carbon Steel
- Encasement: Direct Buried
- Depth: Less than 10 ft bgs
- Calculated Volume: 22 gal

Features of Interest

- A 2 in. galvanized tee at the intersect where 200-E-259-PL adjoins 200-E-258-PL

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Ventilation system drain waste
- The 216-C-9 Pond radionuclides include Sr-90, Cs-137, Total Alpha at 2.07E-02, and Total Beta at 6.24E+00

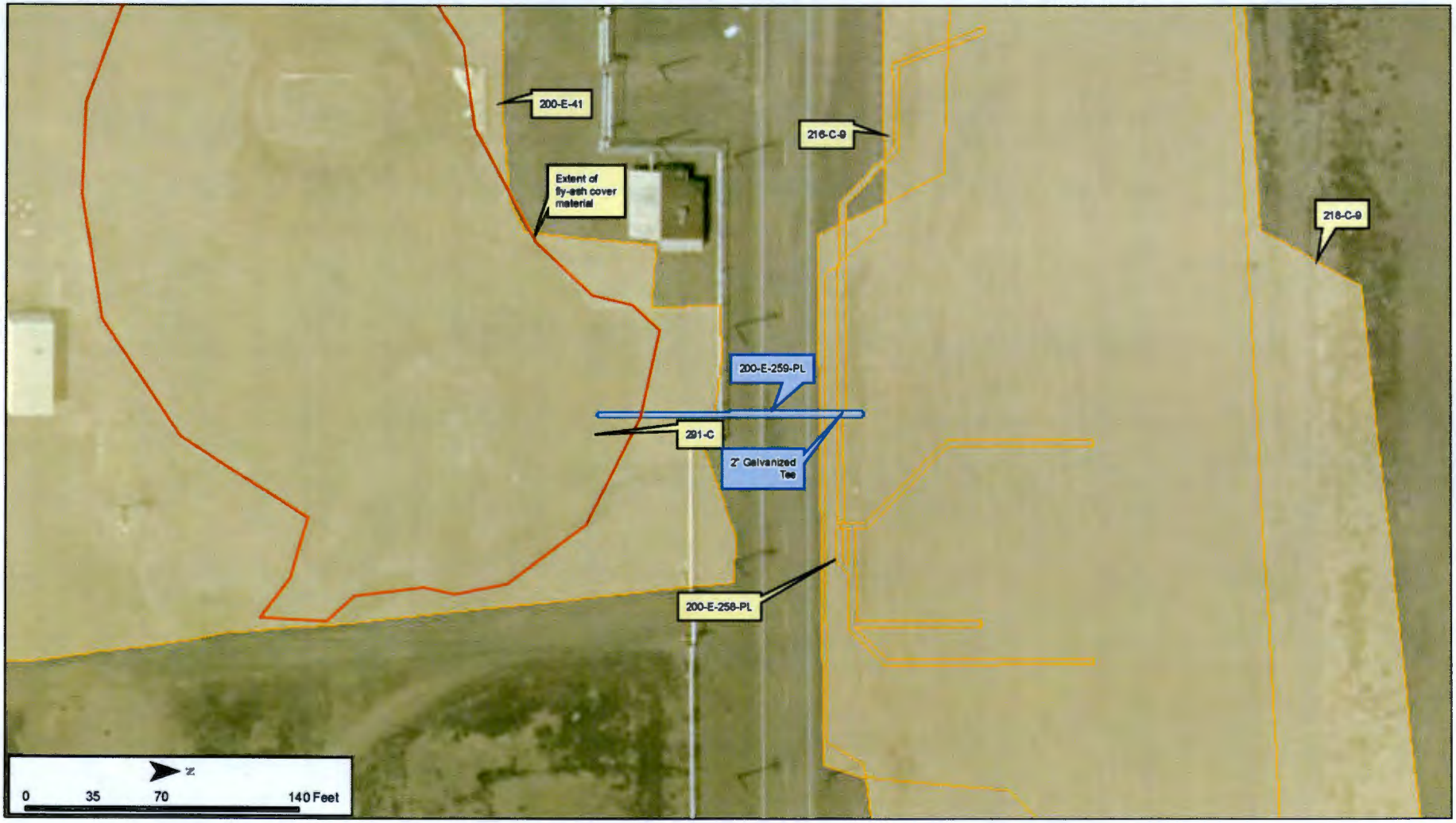
Misc./Other Relevant Information

- 200-E-41 (1949-1992) is a decommissioned area including 201-C building covered with fly ash
- The area shown on the included images is approximate
- Chained and posted as Underground Radioactive Material

Site Interfaces

Origin/Termination	Site Intersects
• 291-C Fan House (dismantled)	200-IS-1
	• 200-E-258-PL
200-SW-2	Unassigned
• 216-C-9	• 200-E-41

Scoping Summary: 200-E-259-PL



Scoping Summary: 200-E-260-PL

History

The 200-E-260-PL (8824A) waste site is an inactive underground bypass pipeline used to carry steam condensate waste from the 202-A-417 Steam Condensate Pump Pit to the 216-A-30 Crib.

The pipeline and pump pit were constructed in 1973 to replace part of an existing line (8824) and caisson known to be leaking and damaged by corrosion. It was operational from 1973 to 1992.

Distribution Box #2 was filled with concrete in 1995. The 216-A-42C Diversion Valve Box was added in 1976 to divert condensate testing above concentration limits to the 216-A-42 Retention Basin. The valve box was backfilled and stabilized in 2001.

Construction

- Length: 2,024 ft
- Diameter: 6 in.
- Composition: Carbon steel (1,725.5 ft) and cast iron (298.5 ft)
- Pressurized
- Depth: 1.5 ft – 12.1 ft
- Calculated Volume: 4,940 gal

Features of Interest

- 4 elbows
- 3 bends
- 1 reducer
- 216-A-42C Diversion Valve Box
- Distribution Box #2

Waste Streams

- Steam condensate from the PUREX Plant (202-A).
  - Multiple pipelines fed this waste stream to the 200-E-260-PL pipeline

Site Interfaces

Origin/Termination

200-EA-1

- Distribution Box #2 (at 216-A-30 Crib)

Unassigned

- 202-A-417 Steam Condensate Pump Pit
- 216-A-42C Diversion Valve Box

Site Intersects

200-IS-1

- 200-E-113-PL
- 200-E-127-PL-B
- 200-E-207-PL
- 200-E-218-PL
- 200-E-261-PL
- 200-E-266-PL
- 200-E-271-PL
- 200-E-282-PL

200-CP-1

- 202-A (PUREX Canyon and Service Facility)
- 200-E-107 (UPR), (source: multiple, operations)
- UPR-200-E-28 (UPR), (source: release at PUREX trap pit)

Relevant Characterization

- In 2001 the 216-A-42C Diversion Valve Box was backfilled and stabilized and posting changed to URM.
- Investigations and radiological surveys between 1972 and 2008 detected contamination in soil to 156 ft bgs at the 216-A-30 Crib
- In 2000, contaminated tumbleweeds over the pipeline were discovered over a 230 sq ft area just west of the 216-A-42C Diversion Valve Box.
- The original 16 in. steam condensate header leaked

Misc./Other Relevant Information

Note: A 12 in. diameter steam condensate replacement header pipe (unnumbered pipe), constructed in 1965, runs parallel to and is directly beneath the 6 in steam bypass line between the 202-A-417 Steam Condensate Pump Pit and the Building 202-A Railroad Tunnel. Pipeline details are discussed in the 200-E-113-PL Scoping Summary

202-A
200-E-282-PL
UPR-200-E-28
200-E-218-PL
200-E-268-PL
202-A-417
200-E-207-PL
200-E-271-PL
200-E-127-PL-B
200-E-261-PL
200-E-113-PL
216-A-42
Diversion Box #2
216-A-30
200-E-260-PL
216-A-42C Diversion Valve Box
202-A Road Tunnel
200-E-107
N
0
145
290
580 Feet

(Reference drawing H-2-63982; Also see drawing H-2-63970)

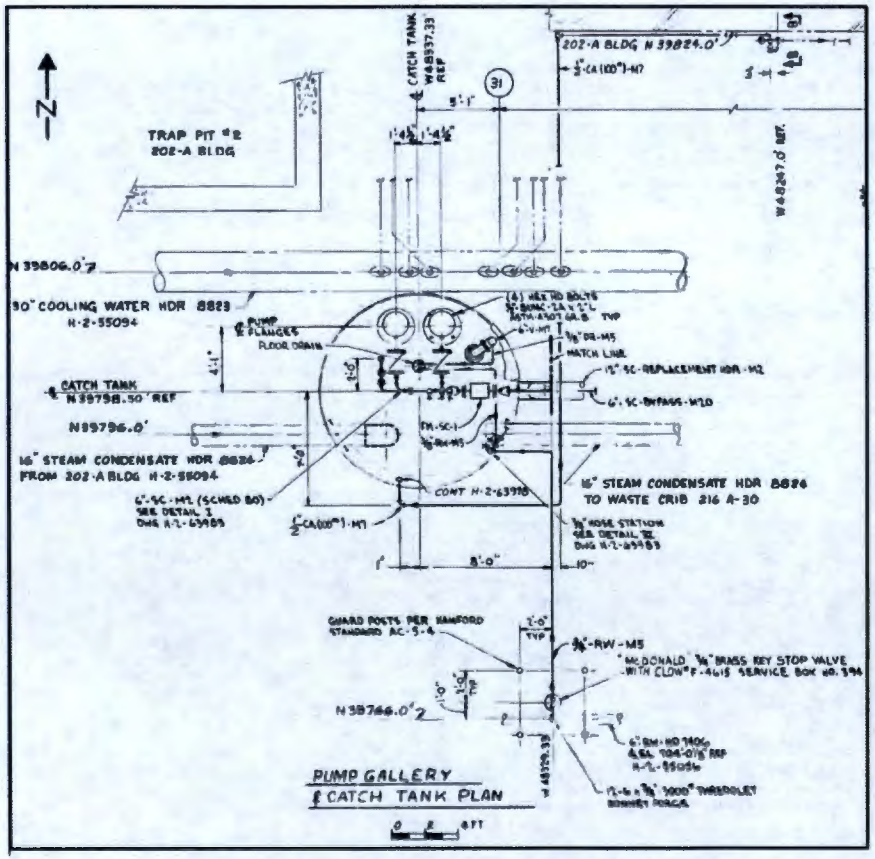


Figure 1: 202-A-417 Steam Condensate Pump Pit Plan View

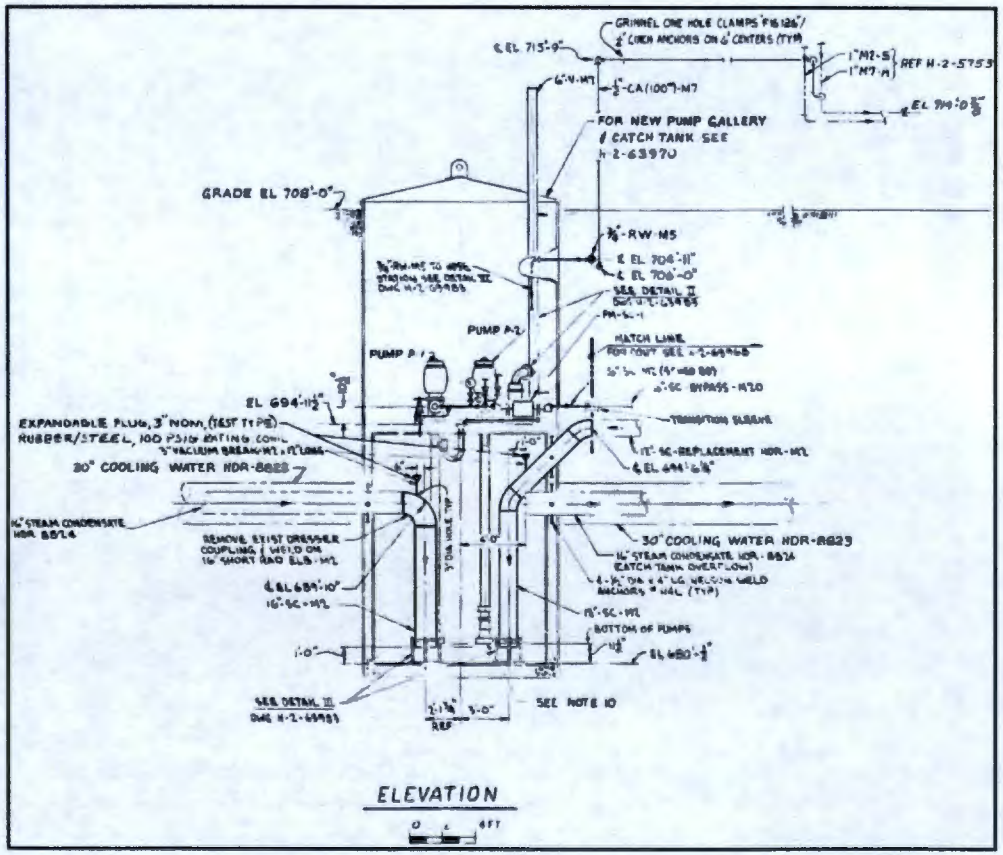
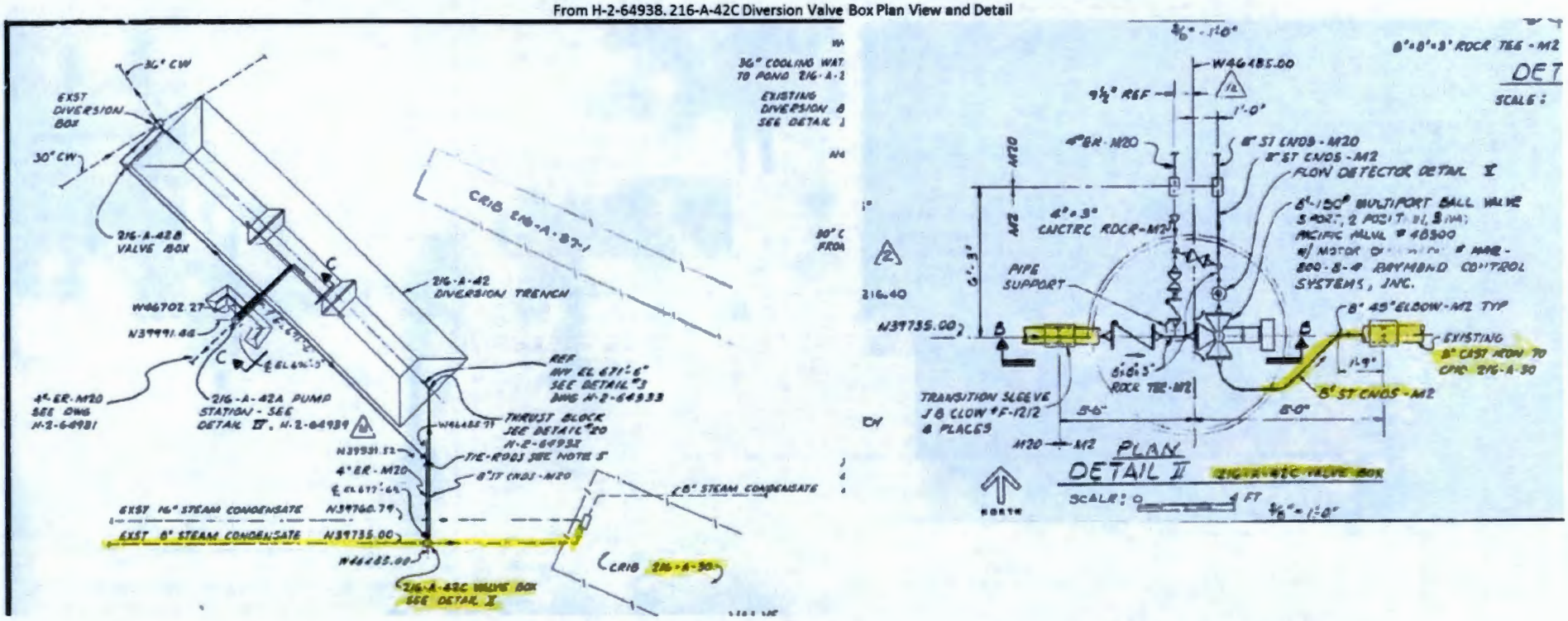


Figure 2: Steam Condensate Pump Pit Cross Section

From H-2-64938. 216-A-42C Diversion Valve Box Plan View and Detail



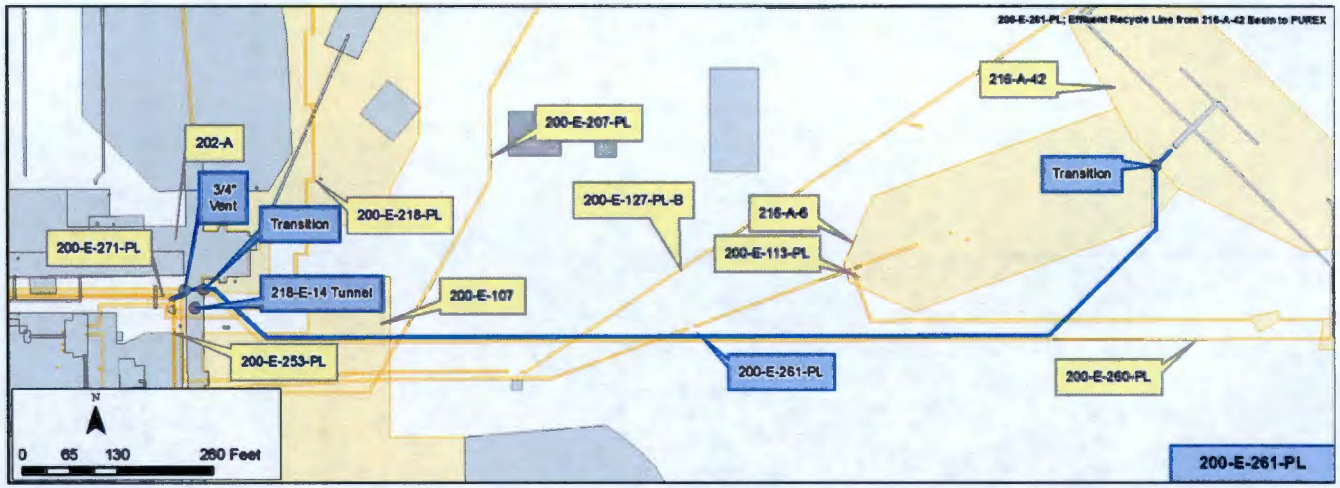
Scoping Summary: 200-E-261-PL

History

The 200-E-261-PL waste site is an inactive pipeline that was used to return contaminated effluent from the 216-A-42 Basin back to the 202-A PUREX Facility. Historically, the 216-A-42 Basin was used to hold cooling water or steam condensate that was contaminated above standard release limits.

A section of the pipeline is exposed where it crosses over the top of the 218-E-14 Tunnel (i.e., Tunnel #1).

This pipeline was constructed in 1977 and isolated in 1997. It was separated from the 216-A-42A Pump Station and sealed, to prevent further use.



Construction

- Diameter: 4 in.
- Composition: Cast Iron
- Length: 1,507 ft
- Direct Buried
- Pressurized Pipeline
- Depth: 0 ft - 2.5 ft bgs
- Calculated Volume: 982 gal

Features of Interest

- Transitions (2), material change from Carbon Steel to Cast Iron
- Bends (7), directional changes in pipeline
- Reducer (1), 4 in. to 3 in. diameter reducer
- Vent (1), 0.75 in. vent pipe connected to top of 3 in. effluent recycle pipeline

Relevant Characterization

- No direct characterization data for this pipeline was located

Waste Streams

- Effluent, primarily cooling water or steam condensate contaminated above standard release limits otherwise allowable for discharge to Gable Mountain Pond and the B Pond systems

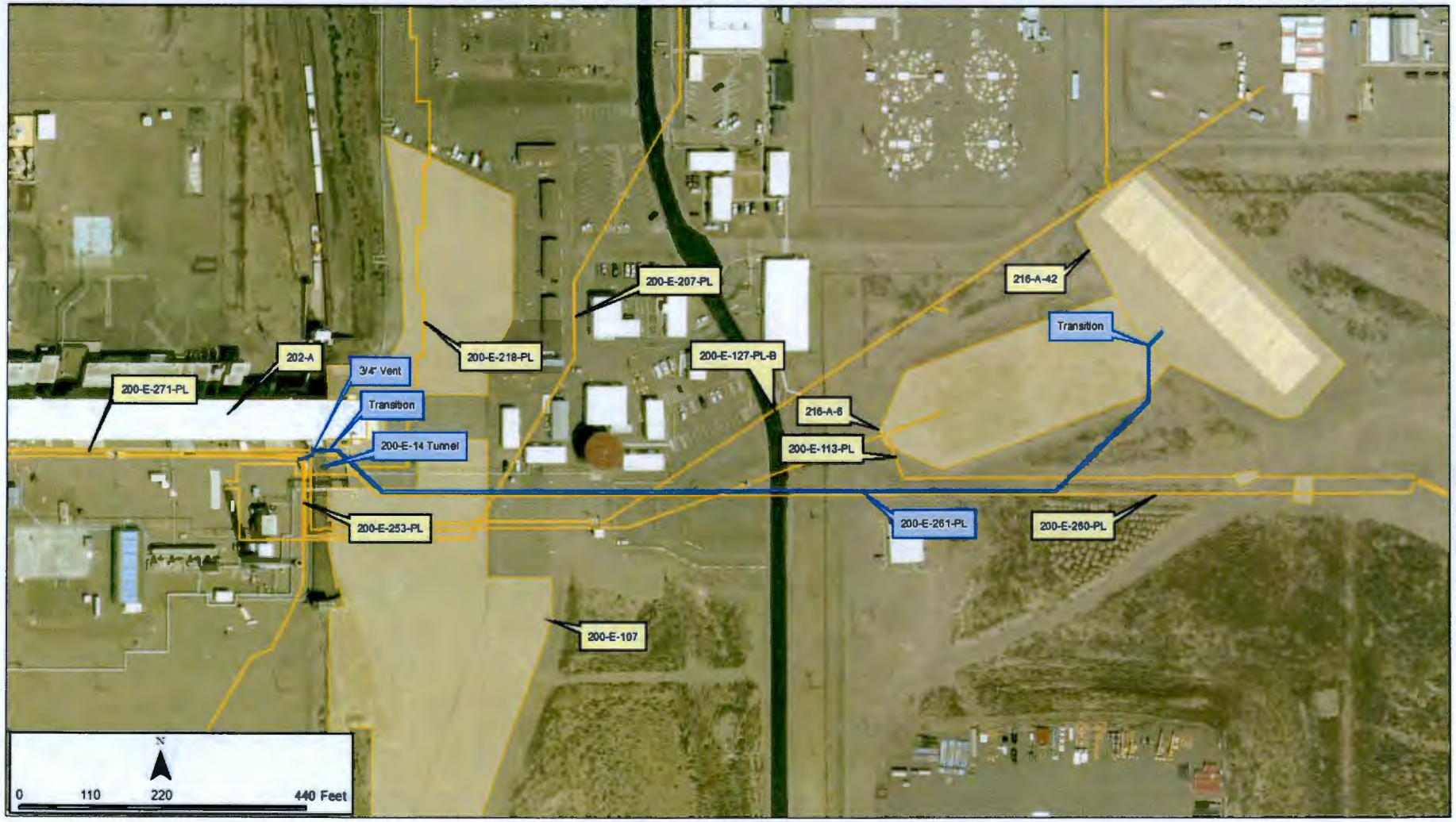
Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersects
200-EA-1	200-IS-1
•216-A-42	•200-E-113-PL
	•200-E-127-PL-B
200-IS-1	•200-E-207-PL
•200-E-253-PL	•200-E-218-PL
	•200-E-260-PL
	•200-E-271-PL
	200-EA-1
	•216-A-6
	200-CP-1
	•202-A
	•200-E-107

Scoping Summary: 200-E-261-PL



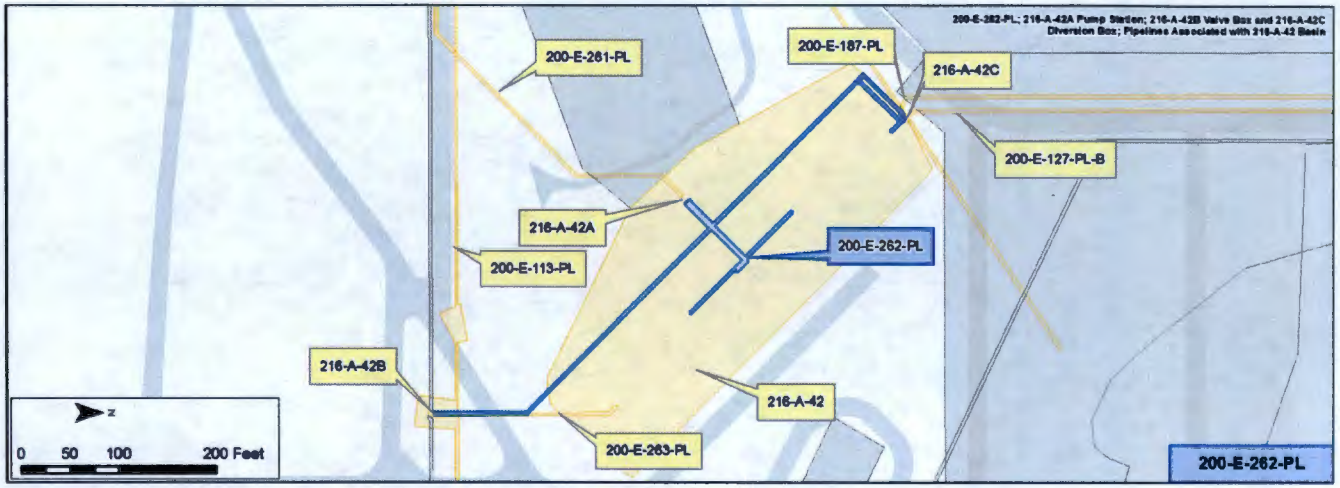
Scoping Summary: 200-E-262-PL

History

The 200-E-262-PL waste site is an inactive underground pipeline constructed in 1977 to distribute effluent amongst the 216-A-42 holding cells and transfer effluent out of the 216-A-42 Retention Basin.

The West line connects the 216-A-42A Pump Station to the 216-A-42B valve box and 200-E-127-PL-B for discharge to Gable and B Ponds. Three center lines connect the 216-A-42A Pump Station to the three separate cells within the 216-A-42 Retention Basin. The 216-A-42A Pump Station connects to 200-E-261-PL for transfer of effluent out of the basin back to PUREX for reprocessing. The East line connects the 216-A-42A Pump Station to the 216-A-42C Diversion Box and 200-E-113-PL where effluent above discharge limits in 200-E-113-PL could be diverted into the 216-A-42 Retention Basin via the 200-E-262-PL.

In Apr-1997, the lines were isolated and the pump station sealed. In Jul-2001, the fence surrounding the basin was removed and the area was leveled and backfilled with clean dirt. It was posted with Underground Radioactive Material (URM) signs. The 216-A-42A Pump Station, 216-A-42B Valve Box, and 216-A-42C Diversion Box were also filled with clean dirt and reported as URMs.



Construction

- Length: 1,166 ft
- Diameter: 4 in. (West and East lines) 3 in. (Central lines)
- Composition: Cast Iron (sections are Carbon Steel)
- Direct Buried
- Flow: Pressurized
- Depth: 9 ft (at 216-A-42A valve box), basin has been leveled and may exceed 20 feet (depth of former basin)
- Calculated Volume: 648 gal

Features of Interest

West Pipeline

- Transitions (6), Material transitions from Carbon Steel to Cast Iron
- Bends (2), Direction change of pipeline
- Connection (1), Connection to 36 in. diameter chemical sewer line

Center Pipelines (3)

- Bends (9), Direction changes of pipeline segments

East Pipeline

- Transitions (2), Material transitions from Carbon Steel to Cast Iron
- Bends (2), Direction change of pipeline
- Reducer (1), 4 in. to 3 in. diameter reducer

Relevant Characterization

- UPR-200-E-66 - Nov-7-1984, a radiation survey identified both inside and outside of the area posted as a radiation zone around the perimeter of the 216-A-42 basin. At the time of this release, contamination levels were 40,000 cpm on the ground within the retention basin fence. Smears of the wall and bottom of the basin ranged from 200 to 100,000 cpm. The area outside the retention basin fence revealed specks with a maximum level of 3,000 cpm located between the road and the fence.

Waste Streams

- Chemically- or radioactively-contaminated diversions from the PUREX chemical sewer line, cooling water line, and steam condensate lines
- Based on data from the Gable Mountain Pond, this system is likely to include the following isotopes: Sr-90, Tc-99, Cs-135, Cs-137, and Eu-154

Misc./Other Relevant Information

- The pipeline connection points are 216-A-42A pump station, 216-A-42B valve box, and the 216-A-42C diversion box. These features are associated with the 216-A-42 Basin in WIDS.
- The 200-E-262-PL pipeline lies almost entirely within the 216-A-42 retention basin which has been backfilled.

Site Interfaces

Origin/Termination

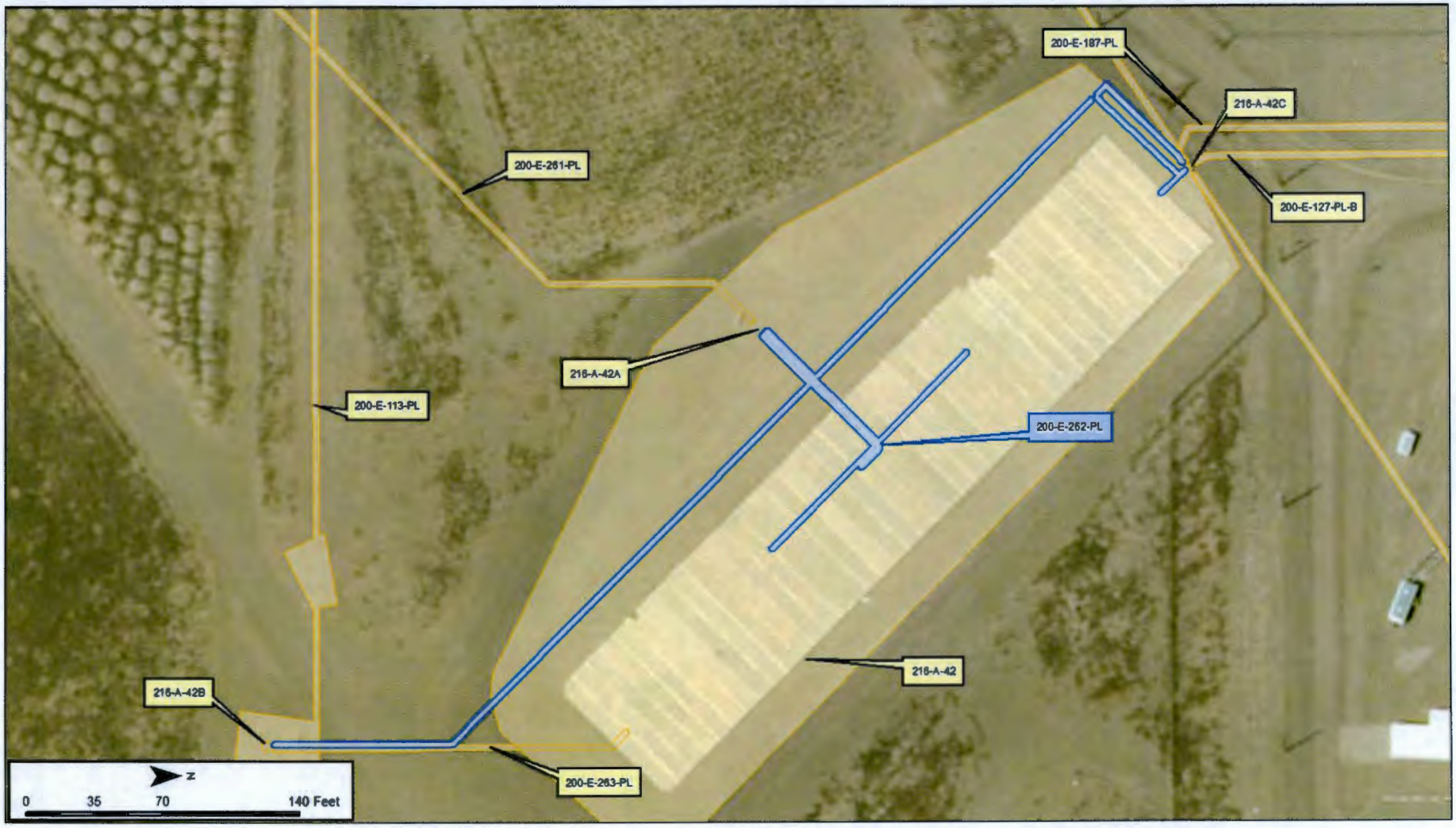
200-EA-1
216-A-42 Retention Basin

200-IS-1
- 200-E-113-PL
- 200-E-127-PL-B

Site Intersects

200-IS-1
- 200-E-187-PL
- 200-E-263-PL

Scoping Summary: 200-E-262-PL



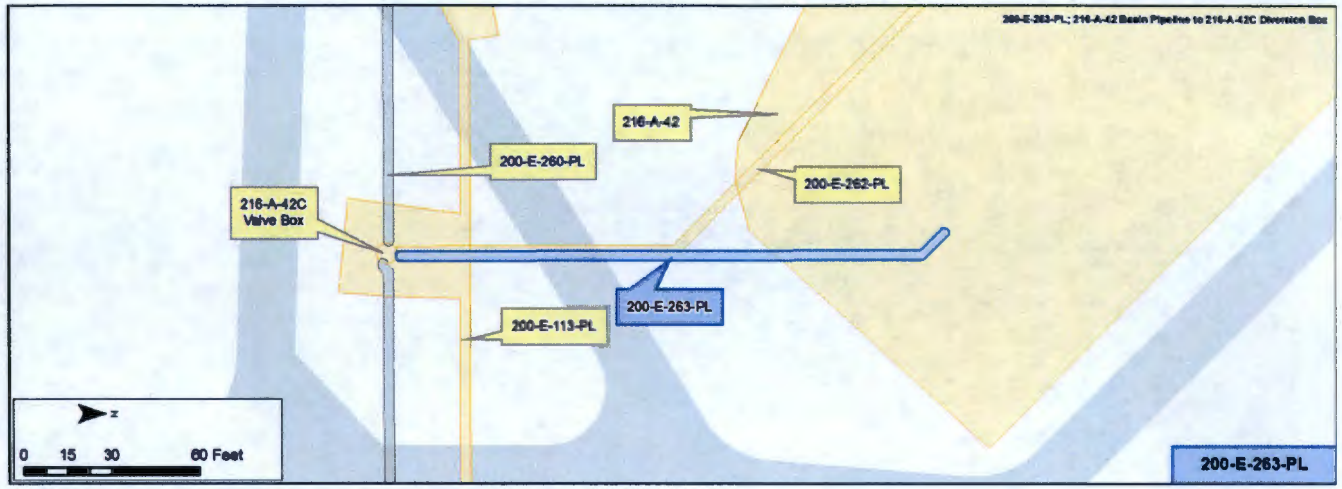
Scoping Summary: 200-E-263-PL

History

The 200-E-263-PL waste site is an inactive underground pipeline that transferred steam condensate from the 216-A-42C Valve Box to the 216-A-42 Retention Basin.

The pipeline was constructed in 1977. Later that same year, it was isolated from the 216-A-42 Retention Basin.

In Jul-2001, the Retention Basin was backfilled and graded, and the 216-A-42C Valve Box (connection point for 200-E-263-PL to 200-E-113-PL) was filled with clean dirt and reposted Underground Radioactive Material Area.



Construction

- Length: 186 ft
- Diameter: 8 in.
- Composition: Cast Iron
- Direct Buried
- Pressurized
- Depth: 9 ft bgs at 216-A-42 basin to 4 ft bgs at 216-A-42C valve box (Area around 216-A-42 has been leveled with clean dirt and may have increased depth to pipe).
- Calculated Volume: 486 gal

Features of Interest

- Transition (1), Material transition from Carbon Steel to Cast Iron at the 216-A-42C valve box intersect
- Bend (1), Direction change of pipeline

Relevant Characterization

In 2008 two test pits and four direct push borings were dug near 200-E-113-PL. One sample with cesium-137 had concentrations above background levels.

There is radiological data for the 216-A-42 basin area which is adjacent to this site.

Waste Streams

- PUREX facility steam condensate
- In the 216-A-42 Retention Basin, liquids were tested and either recycled to the PUREX plant or sent to the Gable and B ponds for disposal
- Based on isotopes discovered in the Gable Mountain Pond, this pipeline may have transferred: H-3, Sr-90, Zr-93, Tc-99, Pd-107, Cs-137, Pm-147, Sm-151, and Eu-154

Misc./Other Relevant Information

- The 216-A-42C Valve Box is included in the 200-E-113-PL waste site

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-113-PL (feed line to 216-A-42C Valve Box)

200-EA-1

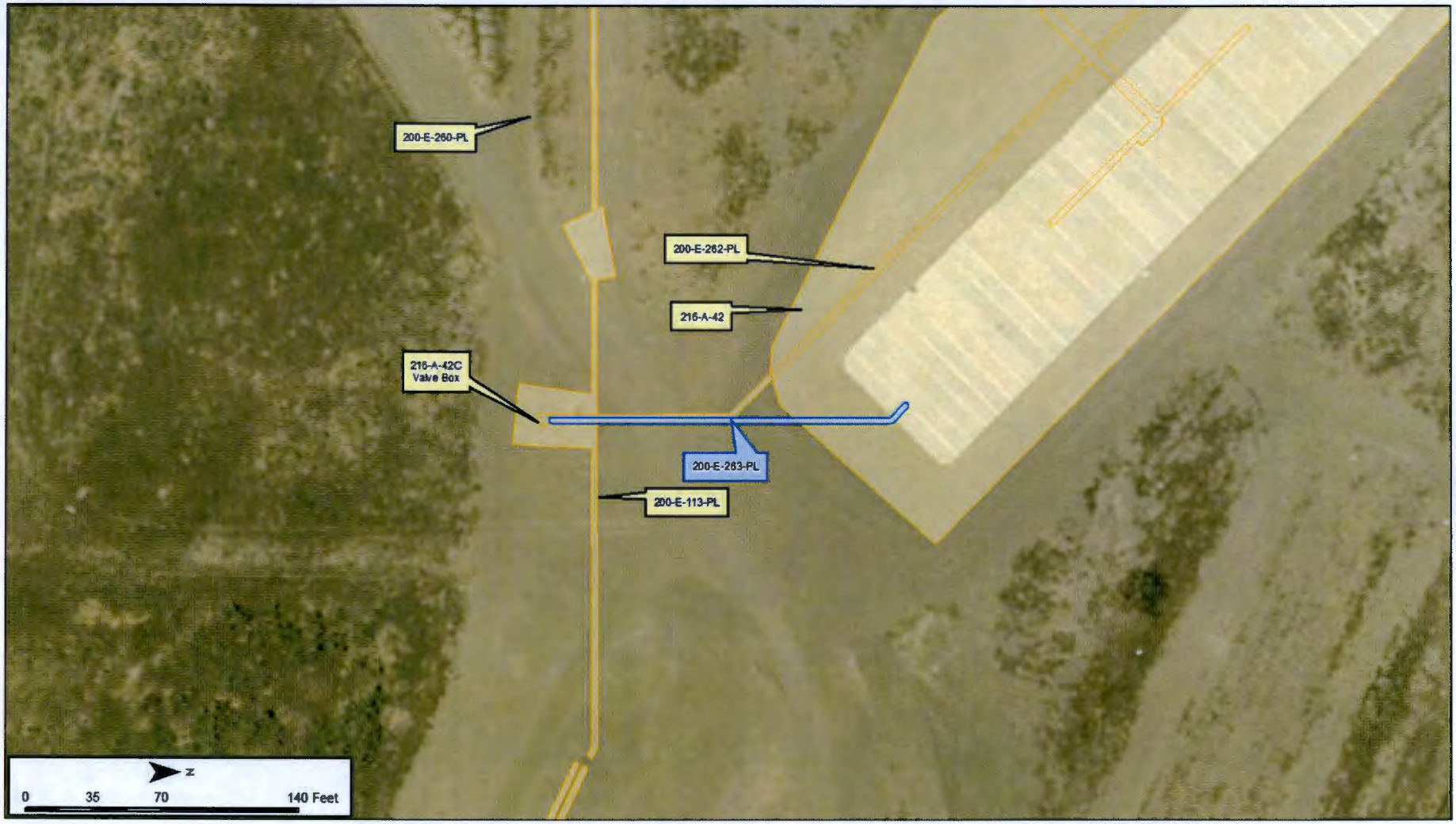
- 216-A-42 Retention Basin

Site Intersects

200-IS-1

- 200-E-133-PL
- 200-E-262-PL

Scoping Summary: 200-E-263-PL



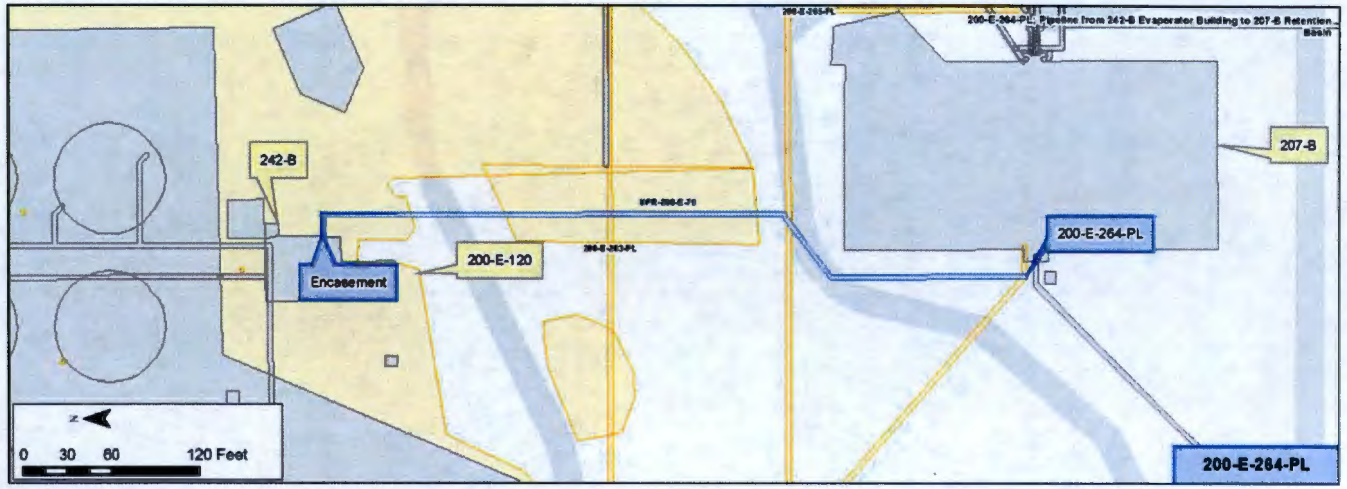
Scoping Summary: 200-E-264-PL

History

The 200-E-264-PL was site is an inactive underground pipeline used to transfer radioactive process waste from the 242-B Evaporator building to the 207-B Retention Basin.

The pipeline was constructed in approximately 1952, and was abandoned and capped at the south end at an undetermined date prior to 1962.

Five leaks of radioactive process waste were discovered in the pipeline in Jun-1953; however, no specific locations are documented. These leaks are addressed in the unplanned release waste site UPR-200-E-79.



Construction

- Length: 506.5 ft
- Diameter: 4 in.
- Composition: Cast Iron
- Pressurized
- Encasement Specifications: Steel (61.5 ft)
- Direct buried
- Depth: 2 ft – 4 ft bgs
- Total Calculated Volume: 1,320 gal

Features of Interest

- One (1) 90-degree bend
- Two (2) 45-degree bends
- Capped at south end to permit installation of 200-E-265-PL
- Five leaks discovered in Jun-1953 (UPR-200-E-79); specific locations unknown

Relevant Characterization

- The pipeline is associated with UPR-200-E-79, which addressed five leaks of radioactive process waste discovered in Jun-1953
- Radiological surveys conducted in Sep-1981, Mar-1986, and Mar-1997 identified multiple areas of soil contamination directly above and adjacent to the primary north-south run of the pipeline
  - Roughly midway between the 242-B Evaporator building and the 207-B Retention Basin

Waste Streams

- 242-B Evaporator building was used to evaporate cladding/first cycle waste and reduce waste volume
  - Evaporator treatment unit received byproduct cake solution and waste solution from the first decontamination waste cycle
  - Processed 7,172,000 gal of waste
  - Unclear what portion of the total waste stream was transported to the 207-B Retention Basin through pipeline 200-E-264-PL
- A radionuclide inventory taken in Mar-1986 near the pipeline (for UPR-200-E-79; formerly UN-216-E-7) measured 0.56000 curies of tritium (H-3) and total beta radioactivity of 5.40000 curies

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-EA-1

- 207-B Retention Basin (terminus)

No Operable Unit

- 242-B Evaporator (origin)

Site Intersects

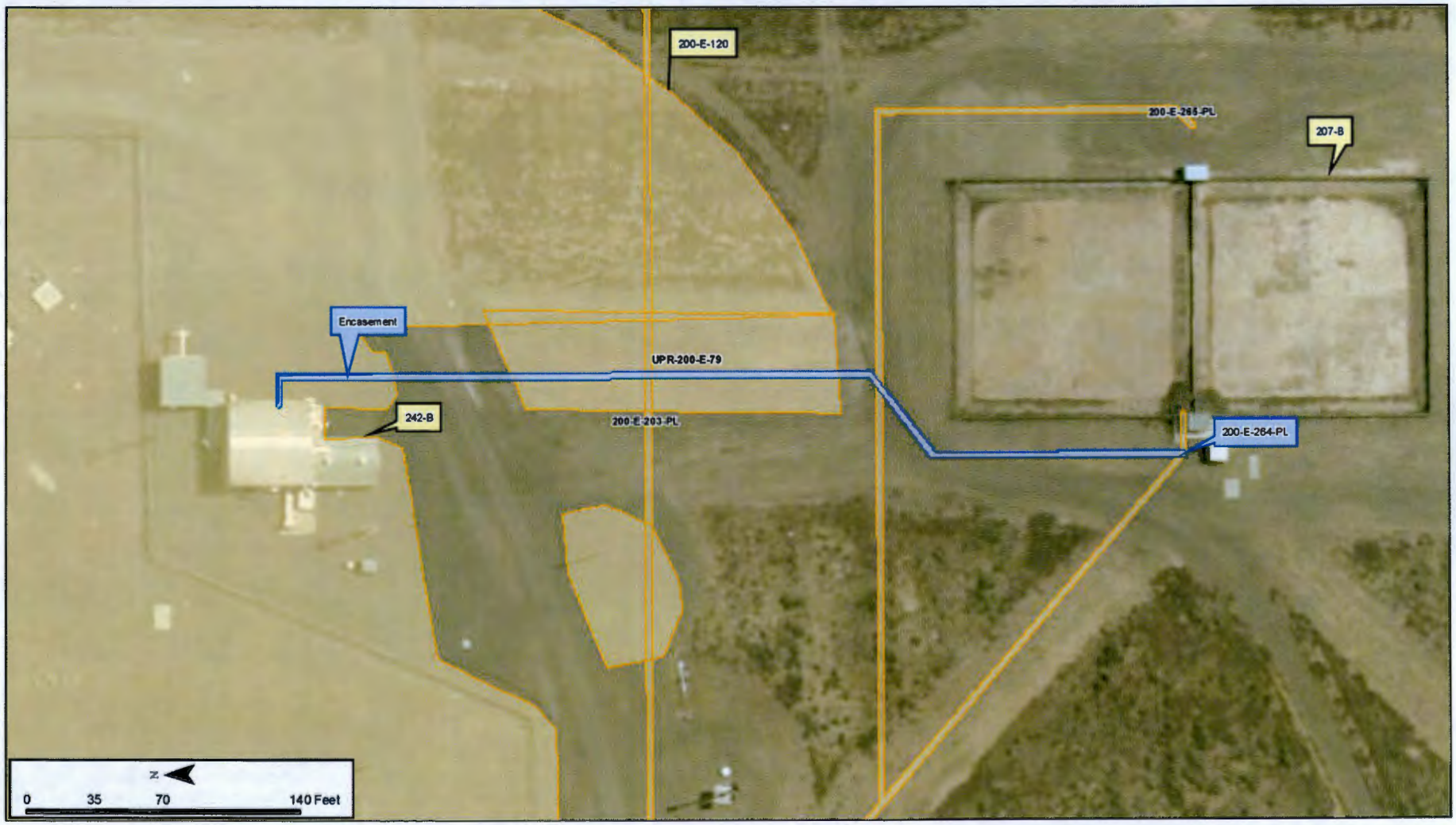
200-IS-1

- UPR-200-E-79
- 200-E-203-PL
- 200-E-265-PL

WMA B/BX/BY

- 200-E-120 Contamination Migration Beyond 241-B Fence

Scoping Summary: 200-E-264-PL



Scoping Summary: 200-E-265-PL

History

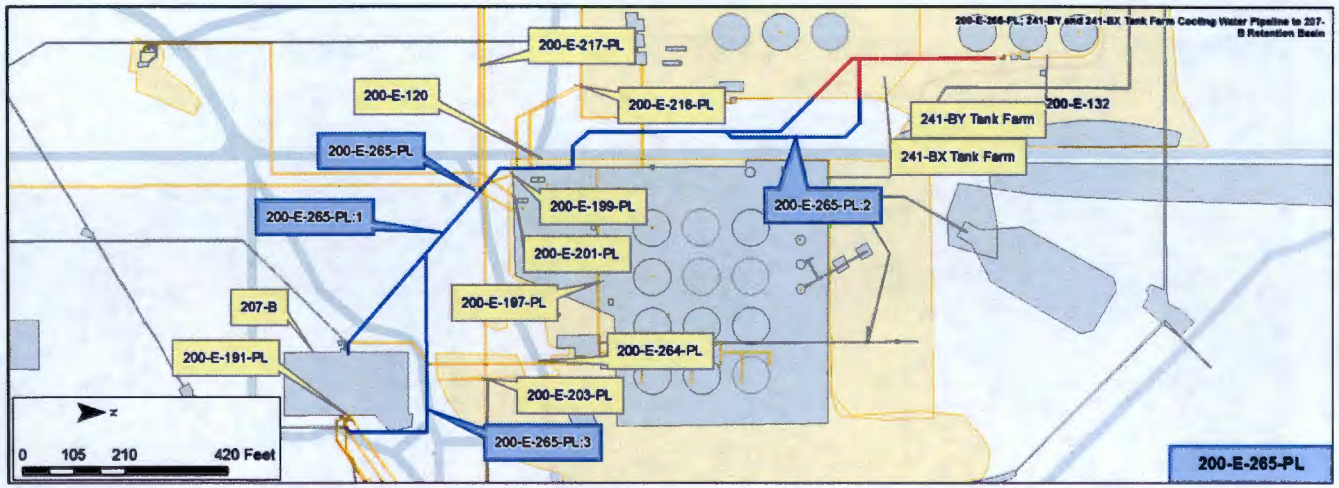
The 200-E-265-PL waste site is an inactive underground pipeline connecting the 241-BY Tank Farm to the 207-B Retention Basin and B ditches. The pipeline transferred cooling water from the In Tank Solidification (ITS) process. The waste site is divided into three subsites: 200-E-265-PL:1, 200-E-265-PL:2, and 200-E-265-PL:3.

200-E-265-PL:1 - Original pipeline from the 241-BY Tank Farm to the West side of the 207-B Retention Basin.

200-E-265-PL:2 - Relocated section of pipe encased within a 6 inch pipe installed to bypass a broken section of the 200-E-265-PL:1 pipeline.

200-E-265-PL:3 - Section of pipeline installed to bypass the 207-B Retention Pond directly to the B ditches.

The original pipeline (200-E-265-PL:1) was constructed in 1962, subsite 200-E-265-PL:3 was connected in 1965. Subsite 200-E-265-PL:2 was installed on an unknown date to bypass a broken section of pipe.



Construction

- Length: 2,548 ft total
  - Segment 1: 1,603 ft
  - Segment 2: 415 ft
  - Segment 3: 530 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Direct Buried (except for Segment 2 which is encased in a 6 in. Carbon Steel pipe)
- Flow: Gravity
- Depth: 5 ft bgs
- Calculated Volume: 1,662 gal

Features of Interest

- Y-branch (2)
- Bends (14)
- Capped Ends (2)
- Broken Section of pipe (1), located in section bypassed by 200-E-265-PL:2

Relevant Characterization

- No characterization data was located for this pipeline

Waste Streams

- The 200-E-265 pipeline transferred cooling water from the In Tank Solidification process and is designated as a radioactive process sewer

Misc./Other Relevant Information

- No additional information identified

Site Interfaces

Origin/Termination

WMA B/BX/BY
- 241-B Tank Farm

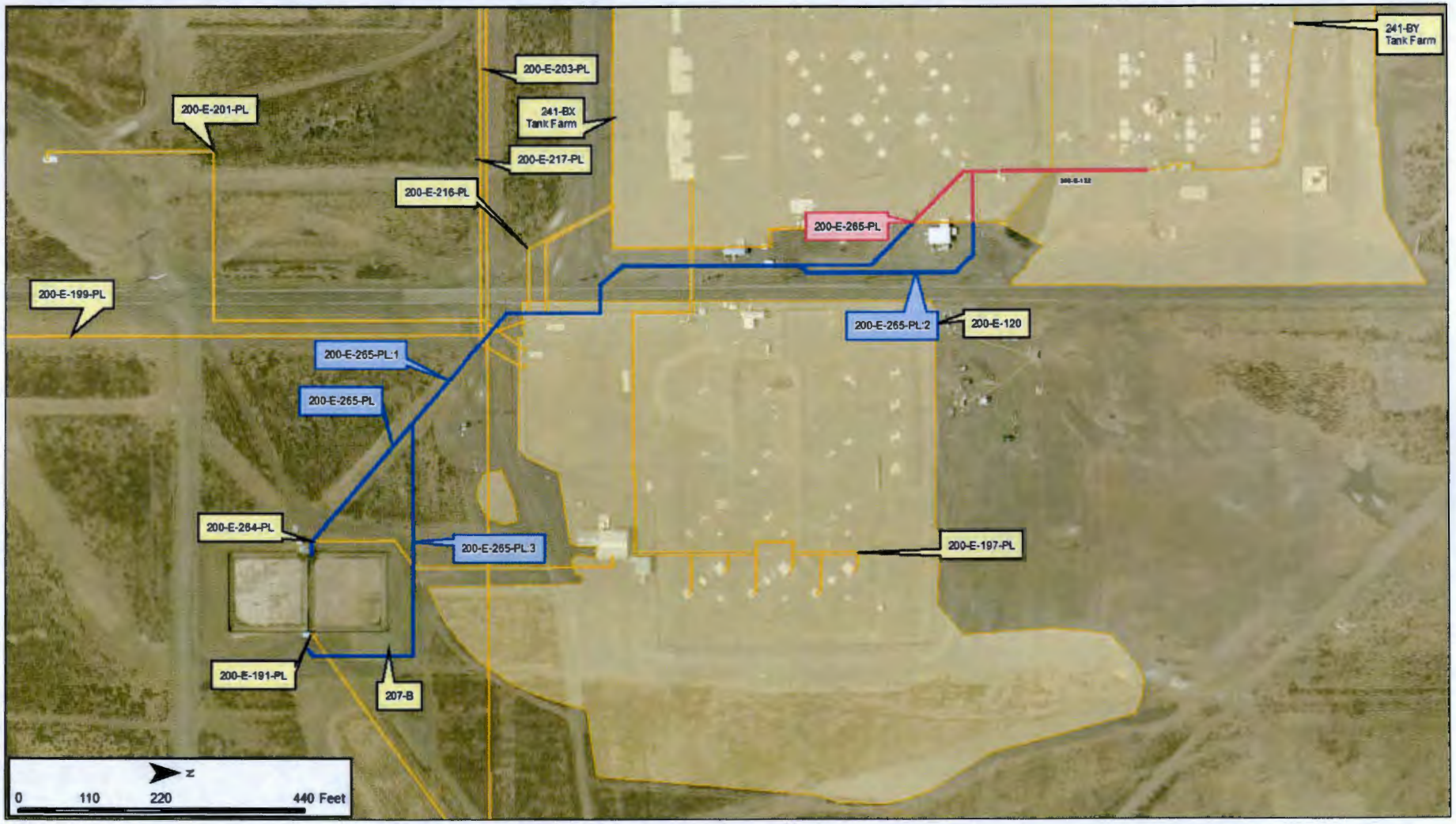
200-EA-1
- 207-B
- B Ditches

Site Intersects

200-IS-1
- 200-E-199-PL
- 200-E-201-PL
- 200-E-203-PL
- 200-E-217-PL
- 200-E-264-PL
- 200-E-191-PL

WMA B/BX/BY
- 200-E-120 (241-B Tank Farm Contaminate Soil)
- 200-E-197-PL
- 200-E-216-PL

Scoping Summary: 200-E-265-PL



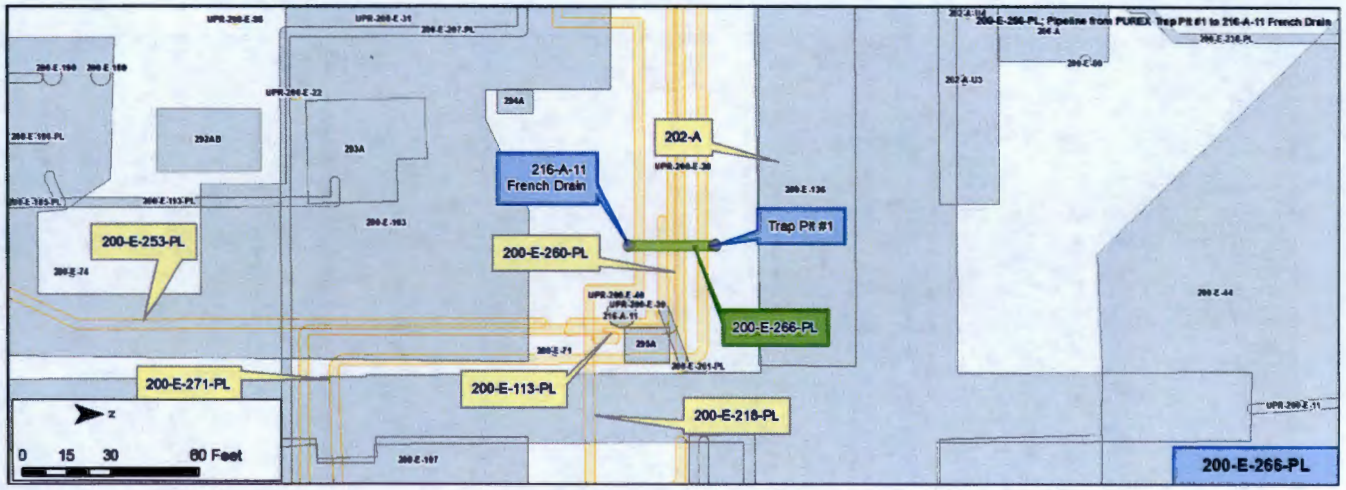
Scoping Summary: 200-E-266-PL

History

The 200-E-266-PL waste site is an inactive underground radioactive process sewer that drained steam condensate and equipment leakage from Trap Pit #1 (southeast corner of the 202-A Building) into the 216-A-11 French Drain.

The pipeline was constructed in 1954 and started transferring waste in 1955.

In 1993, the PUREX Deactivation Project (including 202-A Building) was initiated and in 1998 the 216-A-11 French Drain was sealed to eliminate any rain water entering the structure.



Construction

- Length: 30 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried Depth: 16-26 ft
- Calculated Volume: 20 gallons

Features of Interest

No noted features of interest

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process; Drain Waste and Steam Condensates from Trap Pit #1 connected to the 202-A building
- Waste Types: Low-salt, neutral to basic with radionuclide content less than 50 total curies of beta

Misc./Other Relevant Information

- There is some uncertainty to the exact location of 216-A-11. Historical descriptions place the french drain south of trap Pit #1, but all mapped images place 216-A-11 to the southeast.

Site Interfaces

Origin/Termination Point:

200-CP-1

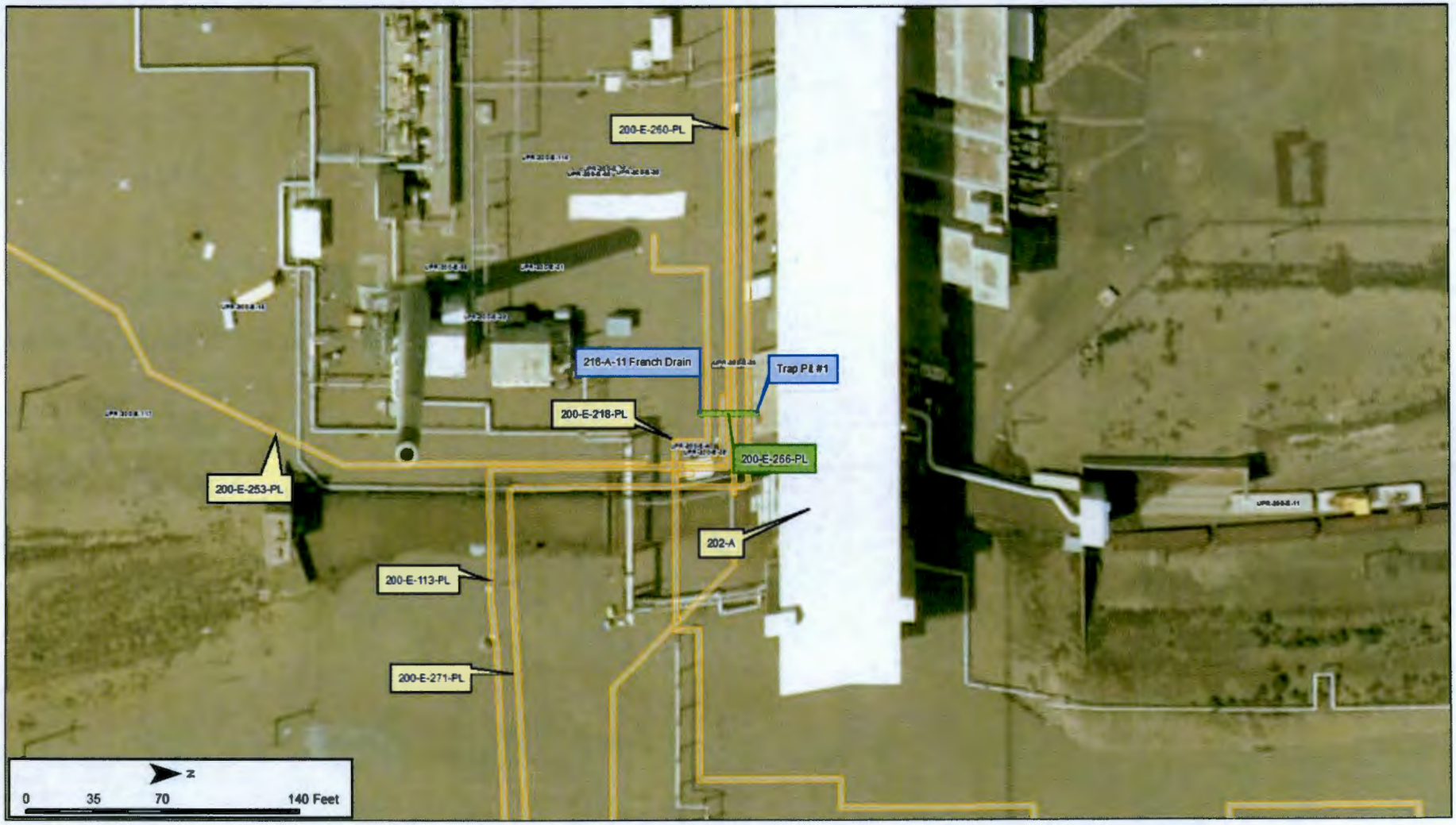
- 202-A (Building, trap pit #1)
- 216-A-11 (French Drain)

Site Intersects:

200-IS-1

- 200-E-260-PL
- 200-E-113-PL
- 200-E-218-PL
- 200-E-271-PL
- 200-E-253-PL

Scoping Summary: 200-E-266-PL



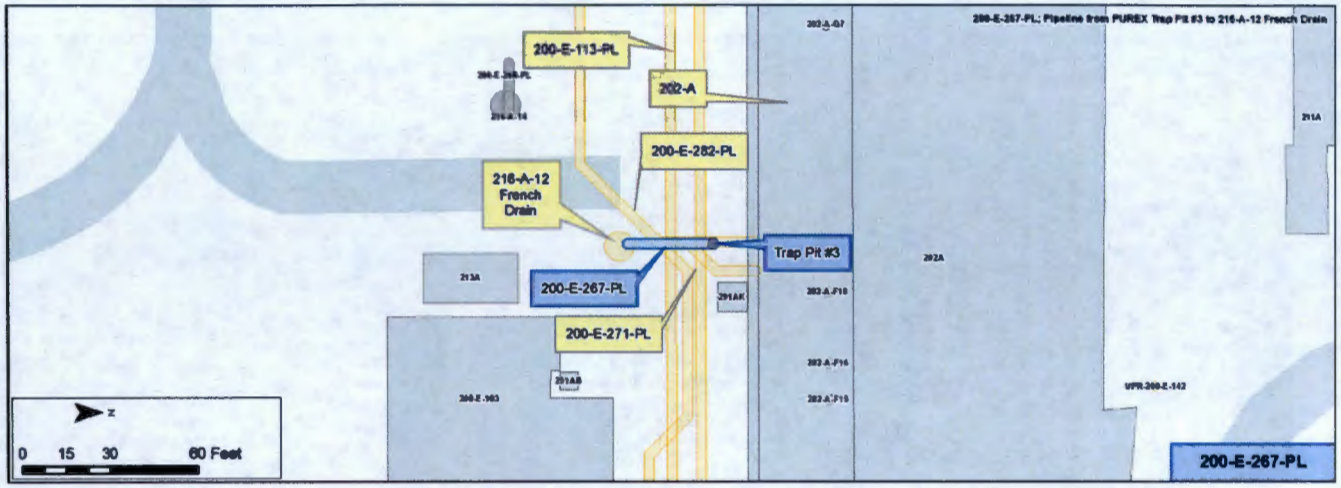
Scoping Summary: 200-E-267-PL

History

The 200-E-267-PL waste site is an inactive underground radioactive process sewer line that drained steam condensate and equipment leakage from PUREX Trap Pit #3 (center of the south side of the 202-A Building) into the 216-A-12 French Drain.

The pipeline was constructed in 1954 and started transferring waste in 1955-56.

In 1993 the PUREX Deactivation Project (including 202-A Building) was initiated and in 1998 the 216-A-12 French Drain was sealed to eliminate any rain water entering the structure.



Construction

- Length: 30 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried Depth: ~5 ft
- Calculated Volume: 20 gallons

Features of Interest

No noted features of interest

Relevant Characterization

- Radionuclide content less than 50 total curies of beta
- Total volume disposed that is reported in 1986 is 26,400 gallons and 100 kg of Nitrate

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process; Drain Waste and Steam Condensates from Trap Pit #3
- Waste Types: Low-salt, neutral to basic

Misc./Other Relevant Information

No additional comments noted

Site Interfaces

Origin/Termination Point:

200-CP-1

- 216-A-12 (French Drain)

200-CP-1

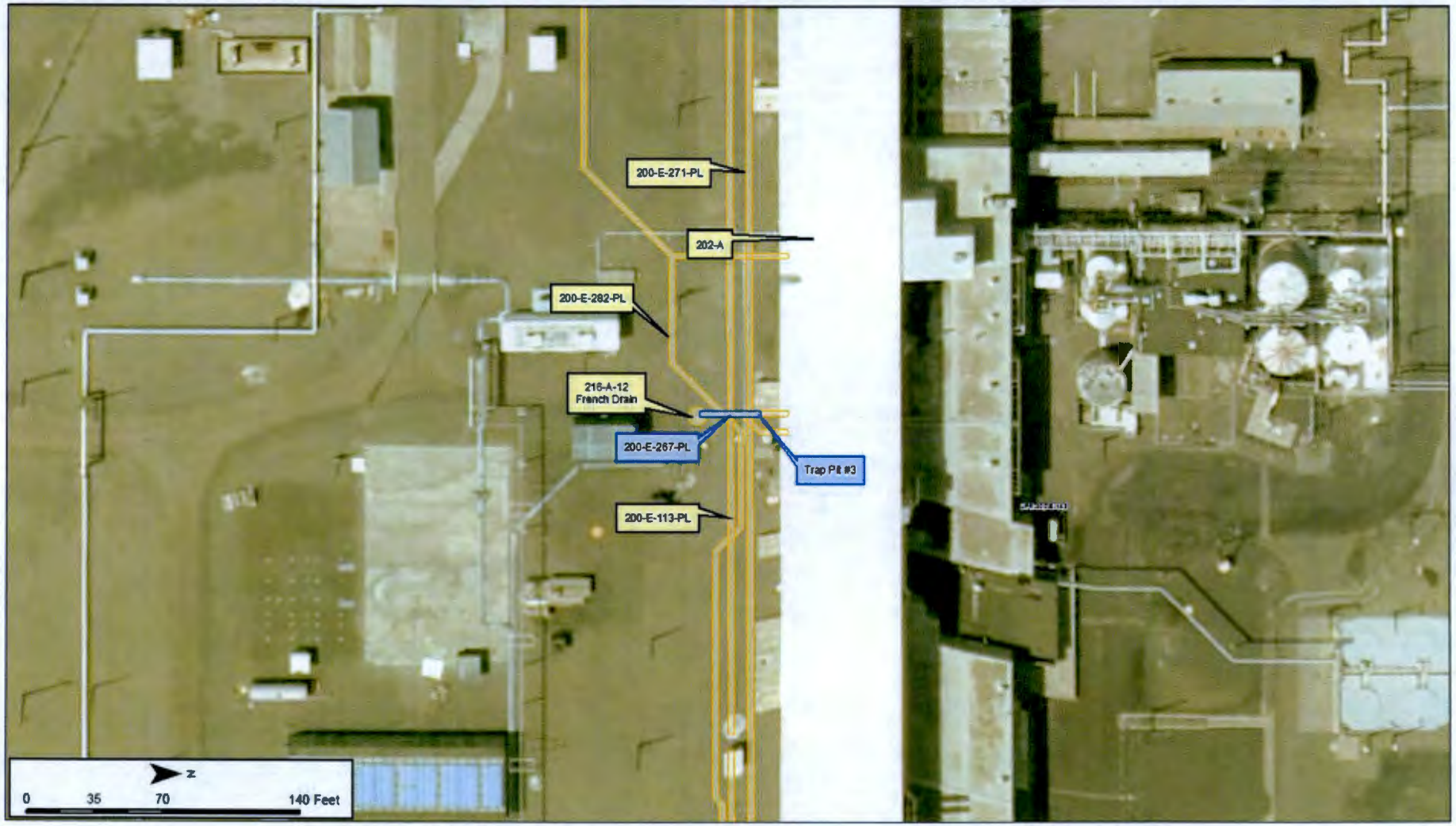
- Trap Pit #3 (202-A)

Site Intersects:

200-IS-1

- 200-E-282-PL
- 200-E-113-PL
- 200-E-271-PL

Scoping Summary: 200-E-267-PL



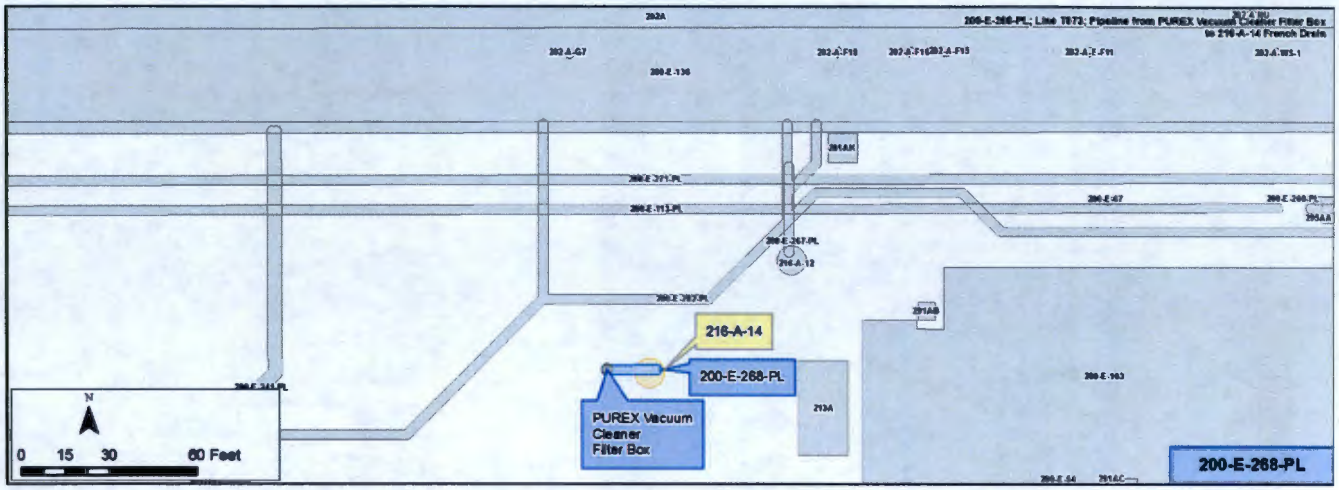
Scoping Summary: 200-E-268-PL

History

The 200-E-268-PL waste site is the inactive underground line that drained steam condensate, stormwater and equipment leakage from PUREX Vacuum Cleaner Filter Box (center of the south side of the 202-A Building) into the 216-A-14 French Drain.

It was constructed in 1954 and started transferring waste in 1955-56.

In 1993 the PUREX Deactivation Project (including 202-A Building) was initiated and in 1998 the 216-A-14 French Drain was sealed to eliminate any rain water entering the structure.



Construction

- Length: ~20 ft
- Diameter: 1.5 in.
- Composition: Carbon Steel
- Gravity Fed
- Cathodic Protection: None Observed
- Direct Buried
- Depth: 9.7 ft - 26.3 ft bgs
- Calculated Volume: 2 gal

Features of Interest

- 3 Drain Connections to Vacuum Filter Box
- 2 Valves (near the Vacuum Filter Box)
- 4 Pipe Bends (near the Vacuum Filter Box)
- See Figure 1 for detailed layout of the three short lines that connect to the Vacuum Filter Box and merge together into one line

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process; Drain Waste and Steam Condensates from the Blower Pit and Exhaust Filter Pit

Site Interfaces

Origin/Termination	Site Interfaces
200-CP-1	
• 216-A-14 (French Drain)	N/A
• PUREX Vacuum Cleaner Filter Box (202-A Facility)	

Relevant Characterization

- Waste Types: Low-salt, neutral to basic with radionuclide content <1 Ci Beta
- Total estimated volume discharged to the 216-A-14 crib in 1986 is 265 gal and 1-kg of nitrate

Misc./Other Relevant Information

- Sometime in the 1980s, the pipe connection to the Blower Pit and Exhaust Filter Pit may have been sealed with a blind flange, but confirmation cannot be made, based on conflicting documentation (BWHC-16J00-98-056 and SD-RE-ES-015)

216-A-14
PUREX Vacuum Cleaner Filter Box
200-E-268-PL
N
0
35
70
140 Feet

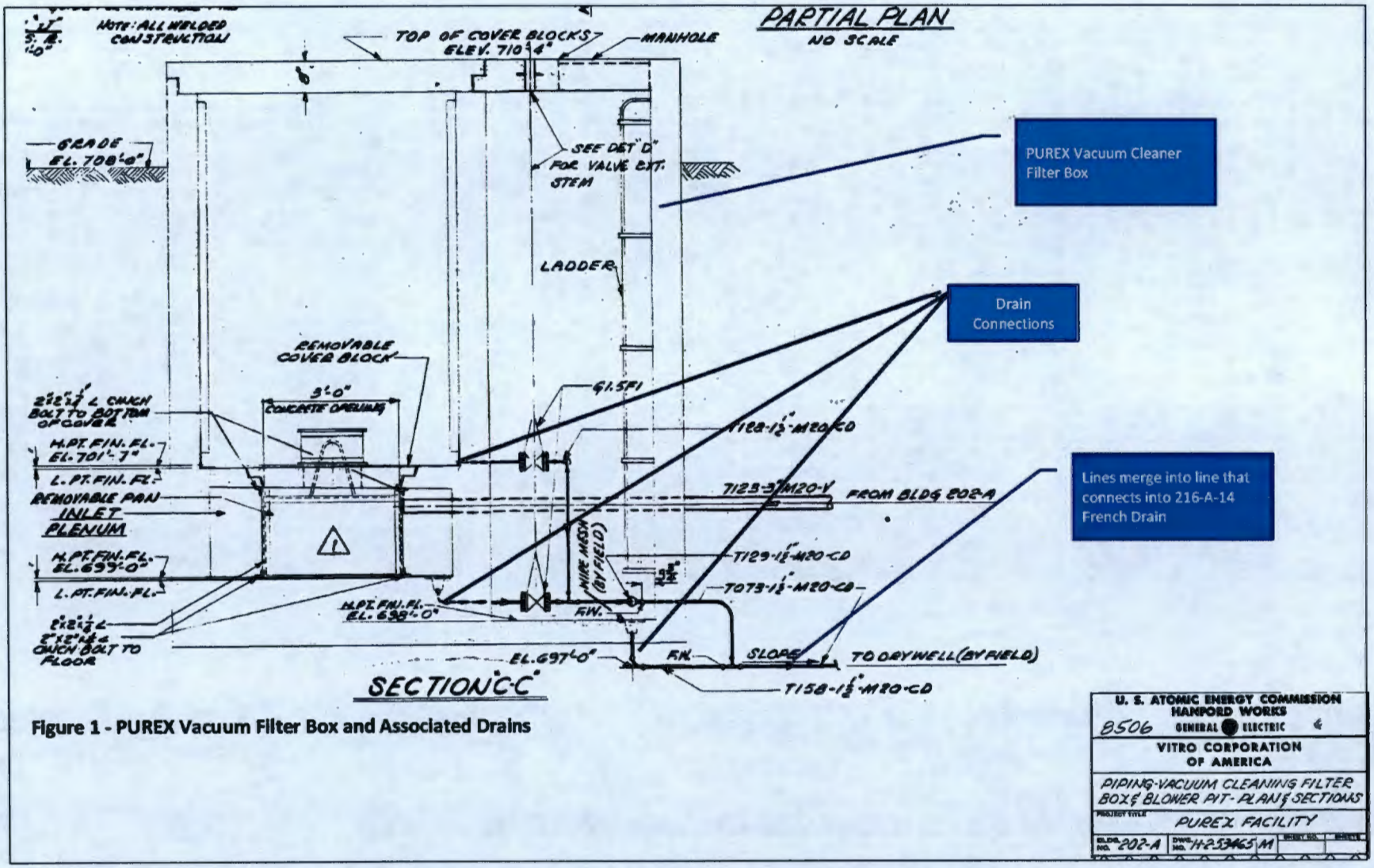


Figure 1 - PUREX Vacuum Filter Box and Associated Drains

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Scoping Summary: 200-E-269-PL

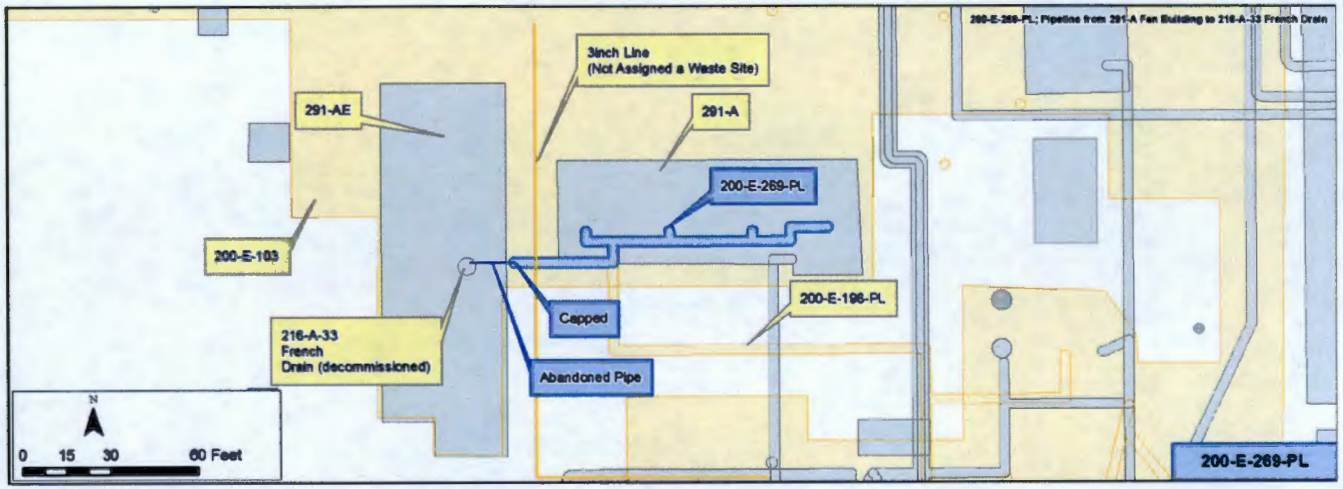
History

The 200-E-269-PL waste site is an inactive underground process sewer line that was used to drain bearing coolant waste from the 291-A-1 Stack electrical exhaust fans into the 216-A-33 French Drain (Dry Well).

The pipeline was constructed in 1954 and started transferring waste in 1955.

In Jul-1964, 200-E-269-PL was deactivated by capping the line on the south side of the 291-A-1 exhaust fans because water was no longer used as a coolant for electrical fans.

In 1982, the building structure 291-AE was built over the abandoned 216-A-33 French drain, as well as the small section of abandoned pipe (may have been removed) apart of the 200-E-269-PL line and was capped outside the boundary of the 291-AE facility.



Construction

- Length: 156 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity Fed
- Cathodic Protection: None Observed
- Direct Buried
- Depth: ~5 ft bgs
- Calculated Volume: 26 gal

Features of Interest

- 4 Funnel Drain 4 in. x 2 in. reducer; connections south of each of the four fans
- 2 T-Connections
- 5 Pipe Bends

Waste Streams

- Process: Cooling Water
- Waste Type: Bearing coolant waste/water from the 291-A-1 Stack electrical exhaust fans

Site Interfaces

Origin/Termination	Site Intersects
• 291-A-1 Stack (electrical exhaust fans)	200-EA-1 • 200-E-103
200-EA-1 • 216-A-33 French Drain	No Operable Unit • 200-E-196-PL • 291-AE (Facility)

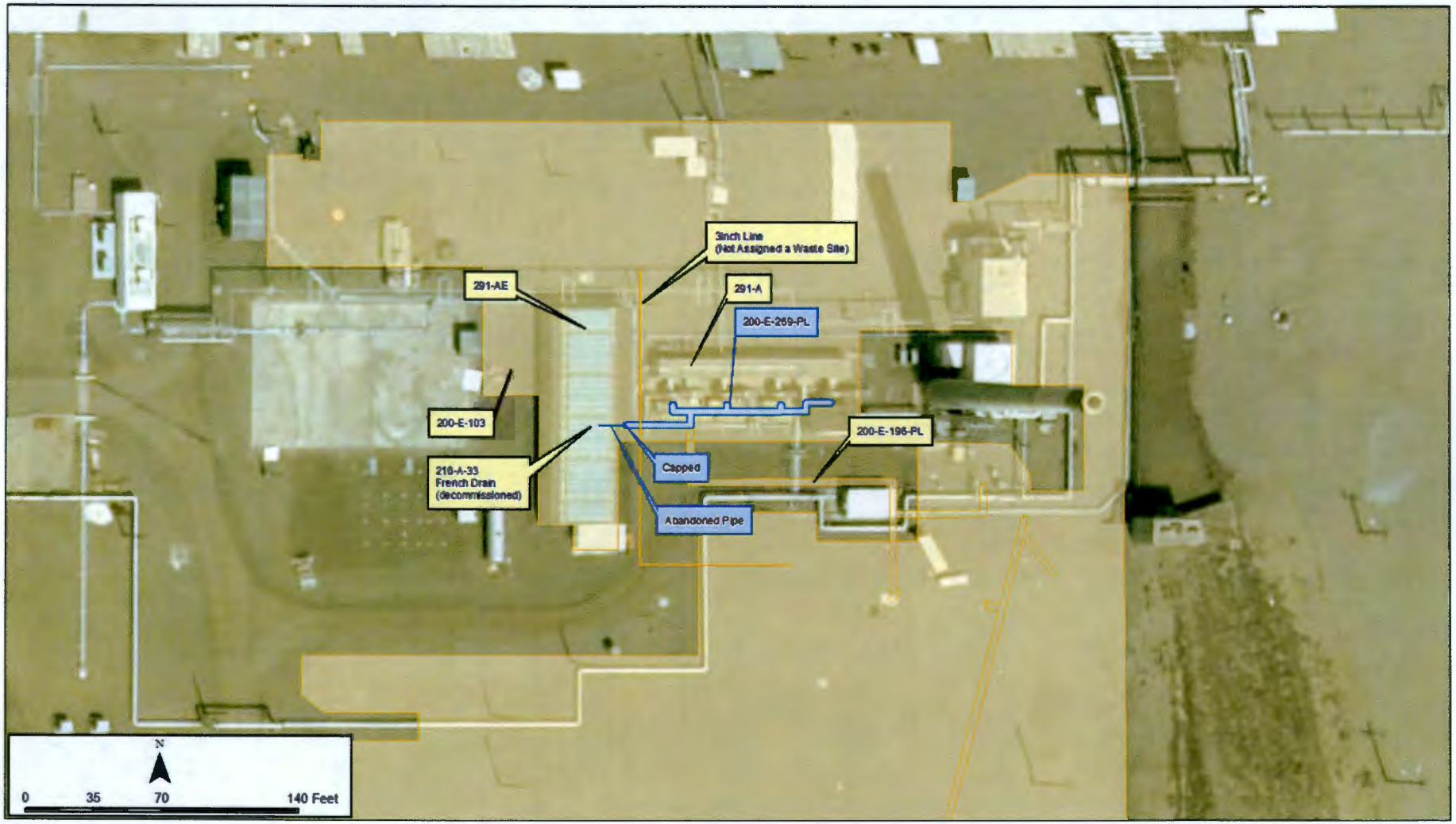
Relevant Characterization

- The 216-A-33 French Drain waste was low salt, neutral/basic, and contains <1 Ci of total beta activity

Misc./Other Relevant Information

- It is reported that there is no contamination in the 216-A-33 French Drain in a survey completed in 1990 and 200-E-269-PL appears to be the only line connected to the French Drain (BHI-00178)
- Refer to drawing H-2-55036 for the unassigned 3 in. line

Scoping Summary: 200-E-269-PL



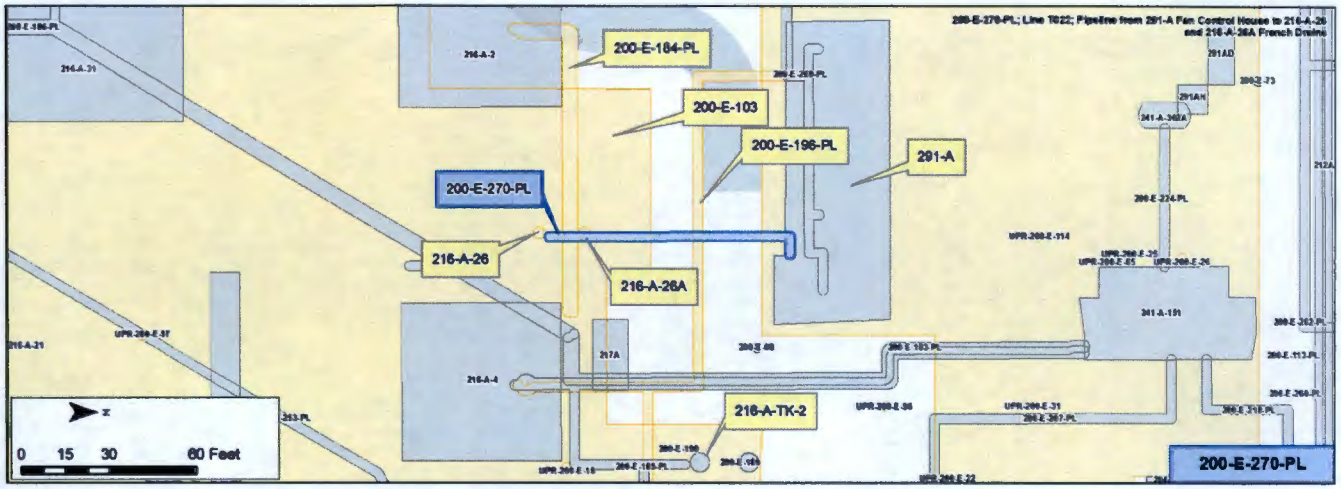
Scoping Summary: 200-E-270-PL

History

The 200-E-270-PL pipeline waste site is an inactive underground pipe that connected two floor drains located inside the 291-A Fan Control Building to the 216-A-26 and 216-A-26A French Drains.

The pipeline was constructed in 1954 and became operational in 1959. The 200-E-270-PL pipeline was disconnected in 1964 from the original 216-A-26A French Drain and connected 15 ft south to the new 216-A-26 French Drain encasement.

In the 1980's, the 216-A-26 and 216-A-26A French Drains were isolated and the 200-E-270-PL was routed to drain into the 216-A-TK-2 Catch Tank via the 200-E-196-PL. In 1993, the PUREX Deactivation Project was initiated, including the 291-A Building and by 1998 the deactivation had been completed.



Construction

- Length: ~120 ft
- Diameter: 4 in.
- Composition: Stainless Steel
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried
- Depth: ~1 ft - 5 ft bgs
- Calculate Volume: 79 gal

Features of Interest

- 2 plugged floor drains into the 291-A Fan Control Building
- 291-A Fan Control Building was epoxy filled and fixed, dut to a contamination event
- 1 pipe bend
- 1 riser

Waste Streams

- Process: Floor Drainage
- Waste Stream: Floor drainage from the 291-A fan house, which included steam condensate water from the oil cooler for the exhaust fan bearing cooling system, and water when the building is hosed down; low salt, neutral/basic

Site Interfaces

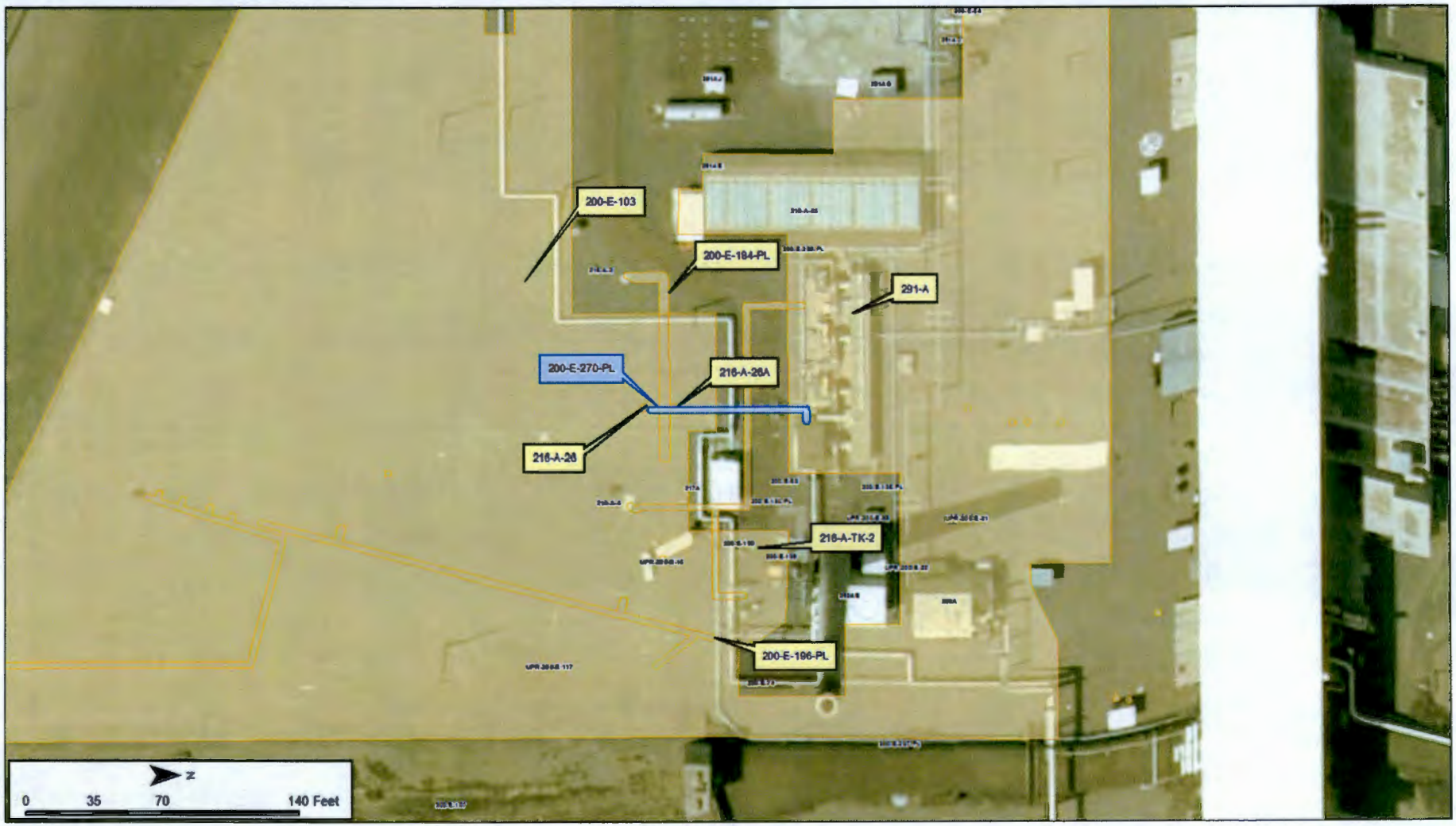
Origin/Termination	Site Intersects
200-EA-1	200-IS-1
• 216-A-26 (French Drain)	• 200-E-184-PL
• 216-A-26A (French Drain)	200-EA-1
	• 200-E-103
291-A Building	No Operable Unit
• 291-A Fan Control Building	• 200-E-196-PL

Relevant Characterization

- < 1 Ci Total Beta in the 216-A-26 and 216-A-26A French Drains

Misc./Other Relevant Information

- 1990 radiological surveys did not identify any surface contamination around 216-A-26 and 216-A-26A French Drains
- 216-A-26A French Drain encasement is stated as being removed (ARH-1562), but in future reports is implied that it still remains


200-E-103
200-E-184-PL
291-A
200-E-270-PL
216-A-26A
216-A-26
216-A-TK-2
200-E-196-PL
N
0
35
70
140 Feet

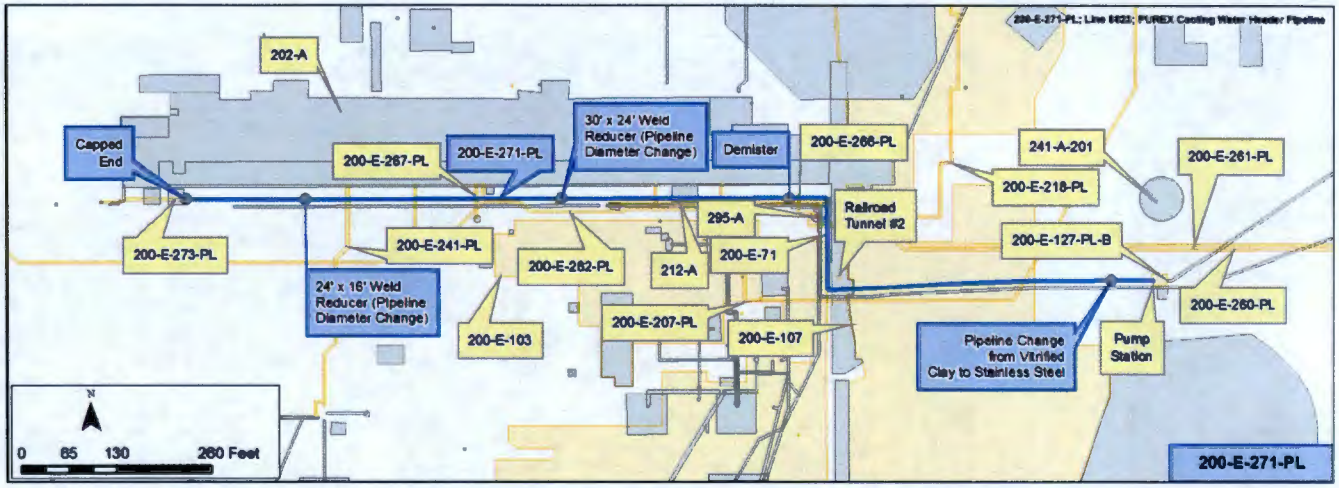
Scoping Summary: 200-E-271-PL

History

The 200-E-271-PL waste site is an inactive underground pipeline that was constructed in 1953-54 to transfer cooling water from the 202-A Building to the pump station south of the 241-A-201.

In 1956, the pipeline was connected to the Railroad Tunnel #2 door drain. Waste from the drain was transferred to the pump station via this pipeline.

By 1992, the cooling water stream into 200-E-271-PL pipeline was shut down. In 1993, the PUREX Deactivation Project was initiated and by 1998, the endpoints for deactivation were achieved according to WHC-SD-WM-TPP-053, PUREX Deactivation End Points (there is no recorded deactivation date for the Railroad Tunnel #2 door drain).



Construction

Vitrified Clay Pipe

- Length: 122 ft (16 in.); 353 ft (24 in.); 772 ft (30 in.)
- Gravity Pipeline
- Direct Buried
- Depth: ~8 ft - 20 ft bgs
- Total Calculated Volume: 37,919 gal

Stainless Steel Pipe

- Length: 60 ft
- Diameter: 30 in.
- Gravity Pipeline
- Direct Buried
- Depth: ~20 ft bgs
- Total Calculated Volume: 2,203 gal

Features of Interest

- 79 connections where 202-A operations discharged to pipeline, some abandoned connections
- 1 - 24 in. x 16 in. Welded Reducer
- 1 - 30 in. x 24 in. Welded Reducer
- 1 - Demister

Relevant Characterization

- No analyses with concentrations above detection limits that are on EP toxic list were found in PUREX Plant Cooling Water Stream-Specific Report (1989-90)
- Based upon analytical result of samples taken as a part of the waste stream report it was determined that waste stream in the 200-E-271-PL did not contain any dangerous waste, as defined in WAC 173-303-070 (WHC-EP-0342)

Waste Streams

- Process: Drain Wastes & Cooling Water
- Waste Types: Cooling water from PUREX Plant process and liquid from the railroad tunnel door drain
- Cooling water line received discharges from: uranium concentrator (E-K4), concentrator condensers, dissolver down-draft towers, PUREX plant tunnel's water fillable doors, and miscellaneous process tanks

Misc./Other Relevant Information

- Figure 1 shows the details of the demister that is located as a part of 200-E-271-PL
- Figure 2 shows the capped end of 200-E-271-PL

Site Interfaces

Origin/Termination

200-CP-1

- 202-A (PUREX Building)

Facility

- Pump Station (South of 241-A-201)

Site Intersects

200-IS-1

- 200-E-207-PL
- 200-E-218-PL
- 200-E-241-PL
- 200-E-260-PL
- 200-E-261-PL
- 200-E-266-PL
- 200-E-267-PL
- 200-E-273-PL
- 200-E-282-PL

200-CP-1

- 200-E-71
- 200-E-107

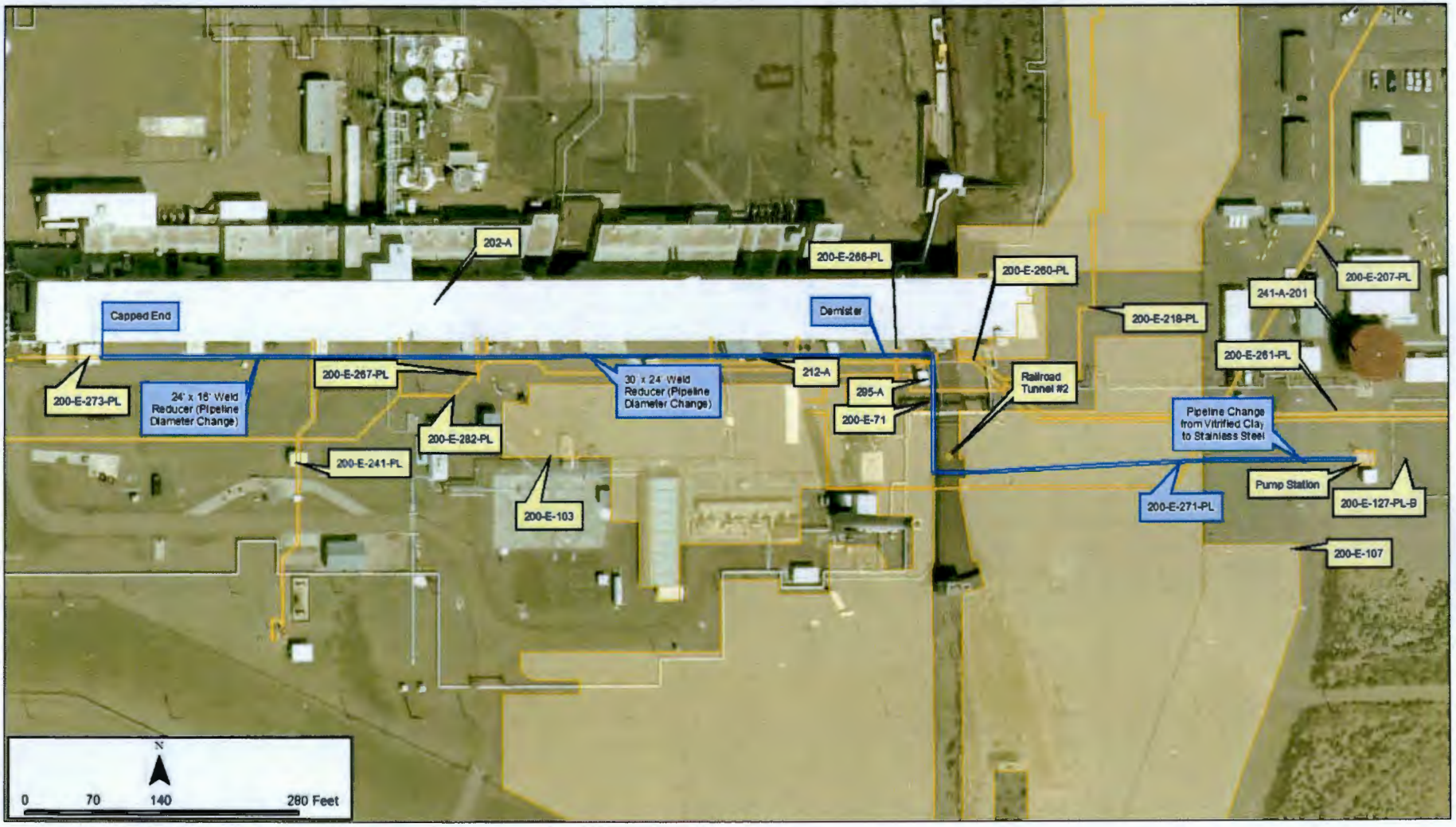
200-EA-1

- 200-E-103

Facility

- 212-A Building
- Railroad Tunnel #2

Scoping Summary: 200-E-271-PL



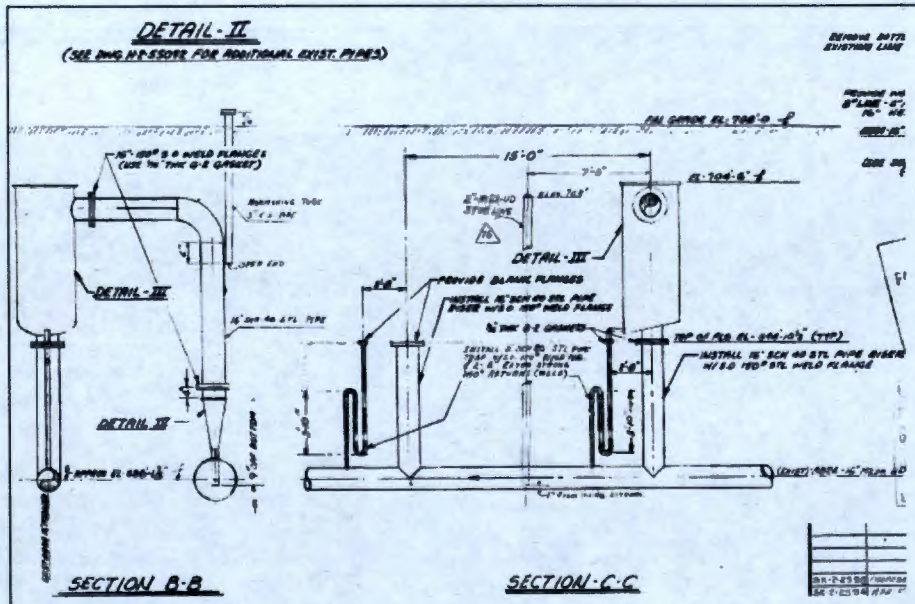


Figure 1 - Demister off of 200-E-271-PL (H-2-3998)

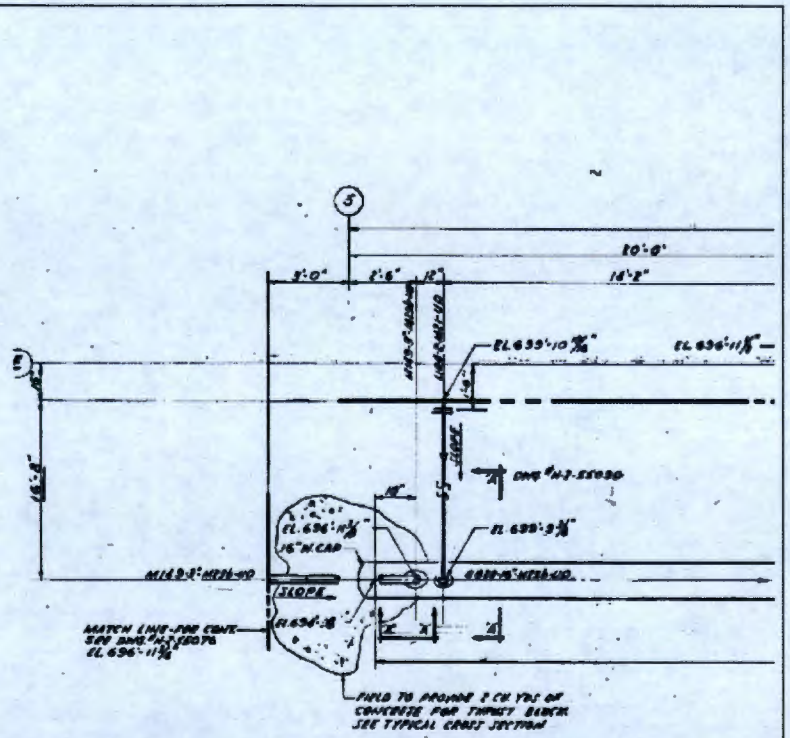


Figure 2 – Capped end of 200-E-271-PL (H-2-55098)

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Scoping Summary: 200-E-272-PL

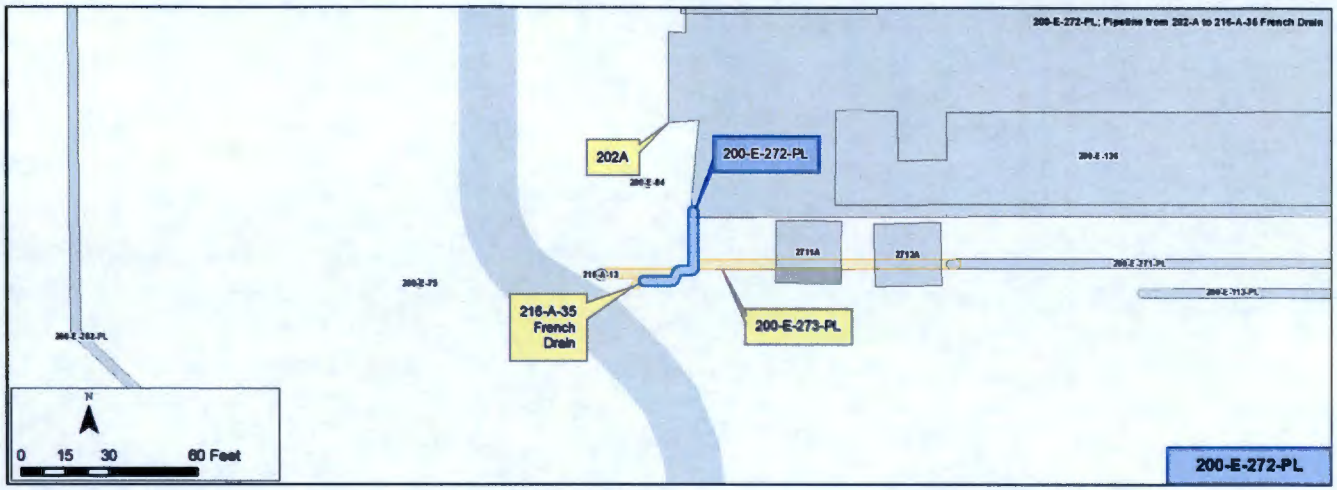
History

The 200-E-272-PL waste site is an inactive underground pipeline that drained seal cooling water from the air sampling vacuum pumps in the 202-A Building (southwest corner of the 202-A Building) into the 216-A-35 French Drain.

The 200-E-272-PL pipeline was constructed in 1954 and initially transferred effluent into the 200-E-273-PL, which transferred it to the 200-E-271-PL waste site. In 1956, 200-E-272-PL was routed directly to the 216-A-13 French Drain, and the section of pipe connecting to the 200-271-PL pipeline was capped.

In 1963, the 216-A-13 French Drain was retired and the 200-E-272-PL pipeline was rerouted to the 216-A-35 French Drain. In 1966, the 216-A-35 French Drain was retired, and the effluent was rerouted into the 202-A Building chemical sewer.

The pipeline segments that were connected to the 216-A-13 French Drain and the 200-E-271-PL pipeline were isolated and capped, and have been assigned to the 200-E-273-PL waste site.



Construction

- Length: 40 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Cathodic Protection: None Observed
- Gravity Fed
- Direct Buried
- Depth: ~10.5 ft bgs (Depth is based on the WIDS summary report for 216-A-35)
- Total Calculated Volume: 15 gal

Features of Interest

- 3 pipe bends
- 2 capped pipe connection points that are the result of rerouting from 216-A-13 French Drain and 200-E-271-PL

Relevant Characterization

- <1 Ci total beta activity to the 216-A-13 and 216-A-35 cribs

Waste Streams

- Process: Cooling Water
- Waste Streams: Cooling water from the air sampler vacuum pumps, chemical sewer waste, and the acid fractionator condensate from the 202-A Building
- Waste site is low salt, neutral/basic, and contains less than 1 Ci total beta activity

Misc./Other Relevant Information

- No additional comments noted

Site Interfaces

Origin/Termination

200-CP-1

- 202-A Building (air sampler vacuum pumps)
- 216-A-35

Site Intersects

200-IS-1

- 200-E-273-PL

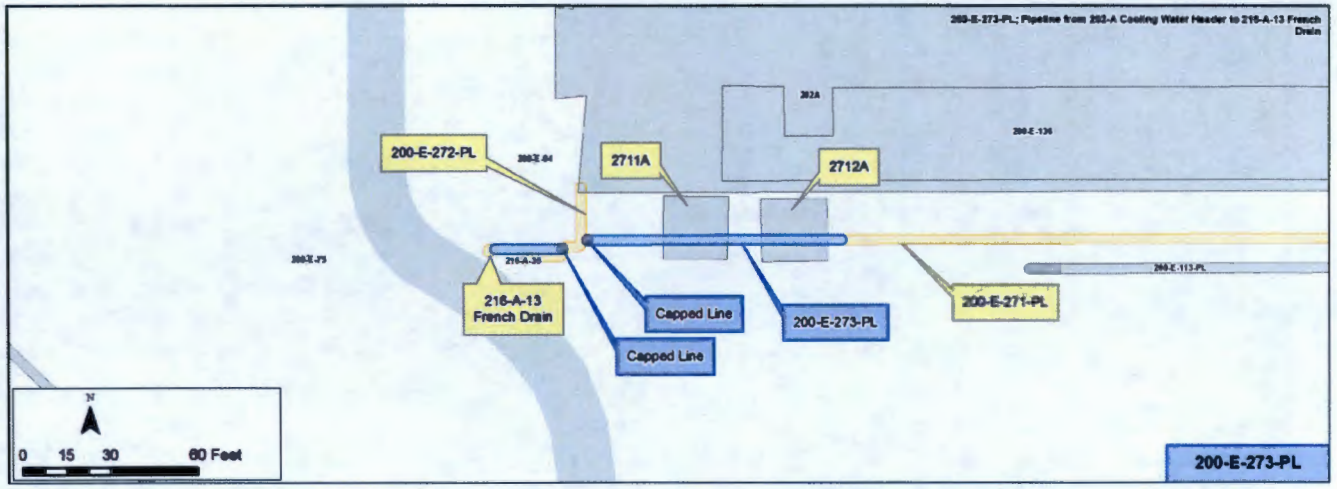
Scoping Summary: 200-E-272-PL

Scoping Summary: 200-E-273-PL

History

The 200-E-273-PL waste site originated from 200-E-272-PL waste site, which is directly connected into the 202-A Building. The line drained seal water from the air sampler vacuum pumps in the 202-A Building (southwest corner of the 202-A Building) and tied into the PUREX Cooling Water Header pipeline (200-E-271-PL) and the 216-A-13 French Drain.

200-E-273-PL was constructed in 1954 and initially transferred effluent into the 200-E-271-PL waste site. In 1956, the line was routed into the 216-A-13 French Drain and the section of pipe connecting into 200-E-271-PL was capped. In 1962, the 216-A-13 French Drain was retired after the effluent flowrate exceeded the infiltration capacity and the remaining line of 200-E-273-PL was capped.



Construction

- Length: 108 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Gravity Fed
- Direct Buried
- Cathodic Protection: None Observed
- Depth: ~5 ft (based on depth of french drain)
- Total Calculated Volume: 42 gal

Features of Interest

- 2 capped pipe segments
- 2711-A building crossing
- 2712-A building crossing

Relevant Characterization

- The 216-A-13 French Drain waste site is low salt, neutral/basic, and contains less than 1 total curies of beta

Waste Streams

- Process: Cooling Water
- Waste Streams: Cooling water from the air sampler vacuum pumps in the 202-A Building

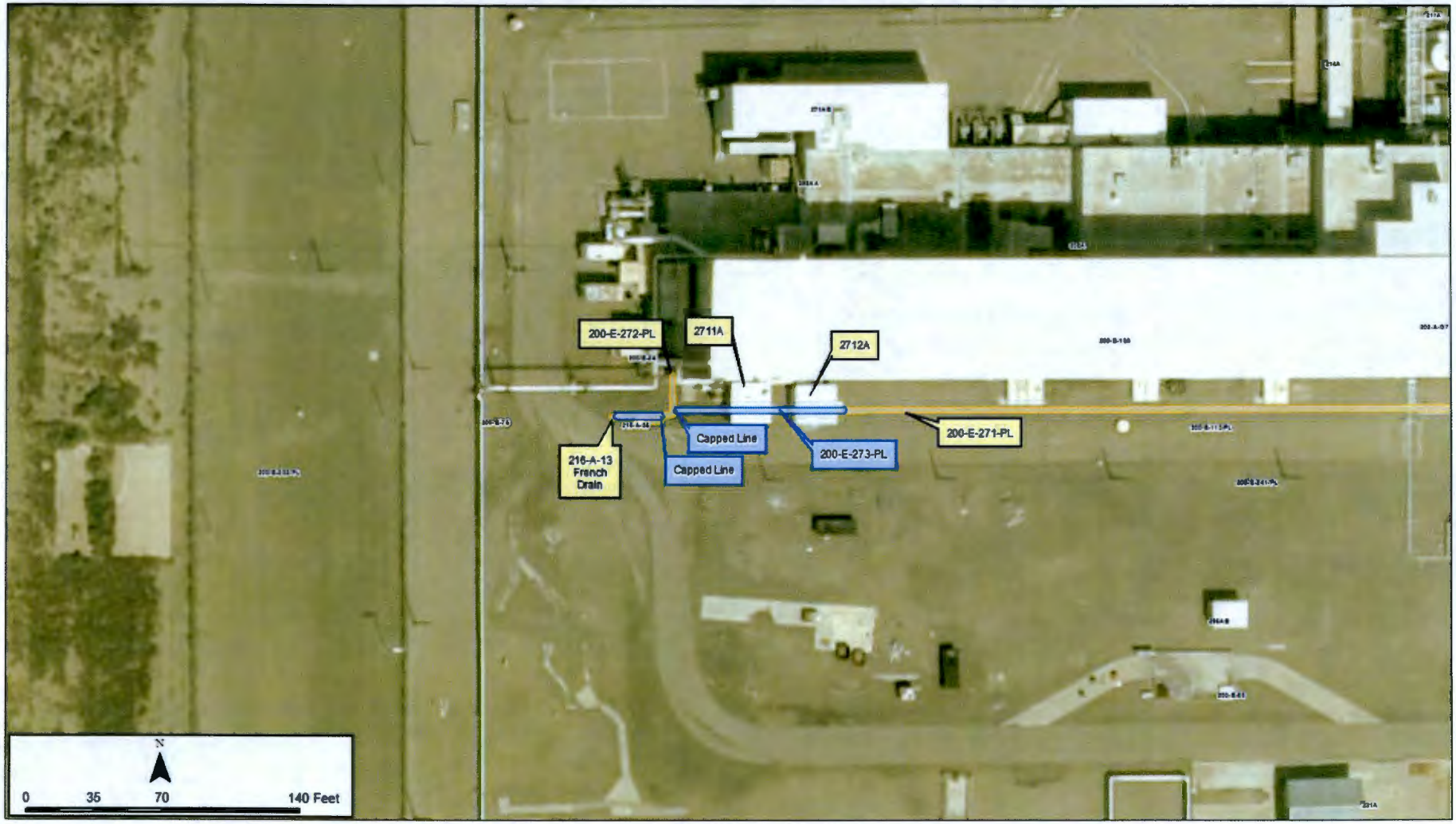
Misc./Other Relevant Information

- No additional comments noted

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	Facility
• 200-E-272-PL	• 2711-A Building
• 200-E-273-PL	• 2712-A Building
200-CP-1	
• 216-A-13	

Scoping Summary: 200-E-273-PL



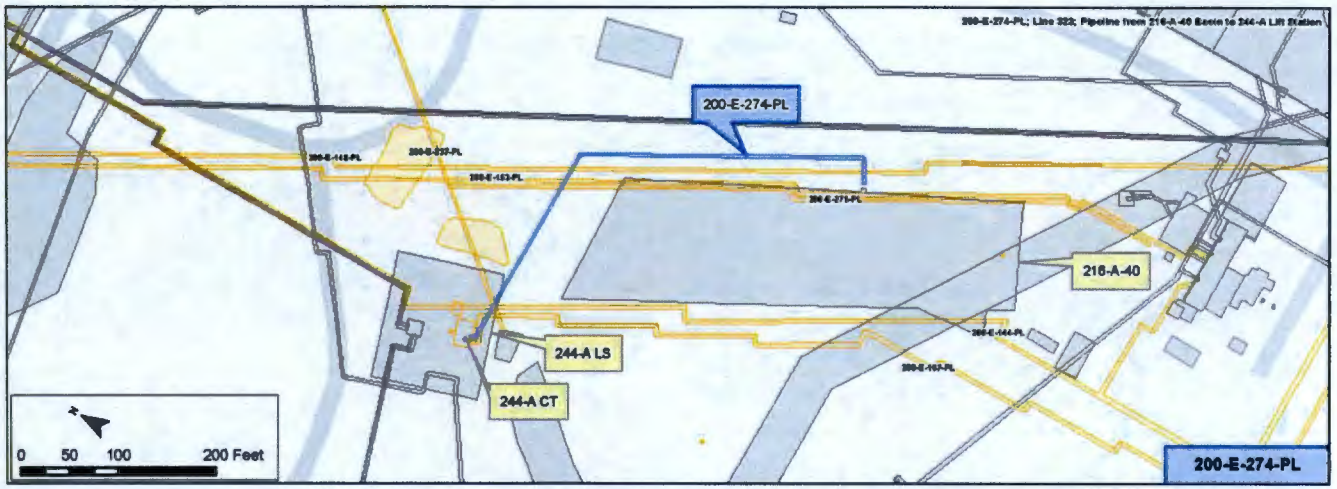
Scoping Summary: 200-E-274-PL

History

The 200-E-274-PL is a carbon steel process sewer line used to transfer radioactive waste from the 216-A-40 pump pit to the 244-A lift station. After the 216-A-40 retention basin bladders failed in 1979, the 200-E-274-PL was built and started operation around 1981.

The 244-A lift station was constructed to remove, treat and transfer PUREX tank farm sludge to B-Plant for fission product removal and provide interim storage for PAW feed to 221-B, and to receive and distribute 221-B Neutralized High Level Waste.

In 1994 the 200-E-274-PL (Line #323) stopped operation, isolated, cut, and capped at the 216-A-40 pump pit. A schematic of the associated 216-A-40 pump pit and 216-A-40 retention basin is attached.



Construction

- Length: 528 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Gravity
- Encasement: None
- Slopes down 2 ft from its starting position to finish
- Calculated Volume: 194 gal

Features of Interest

- 3 bends
- 2 control valves

Waste Streams

- 200-E-274-PL is associated with waste from the PUREX facility
- It received steam condensate and cooling water from 244-AR vault
  - COPCs related to this are Cs-137, Sr-90, U-238, and Tc-99
  - Metals associated with the 200-E-274-PL (line # 323) are As, Cd, Pb, Hg, Se, PCB (Aroclor-1254)

Site Interfaces

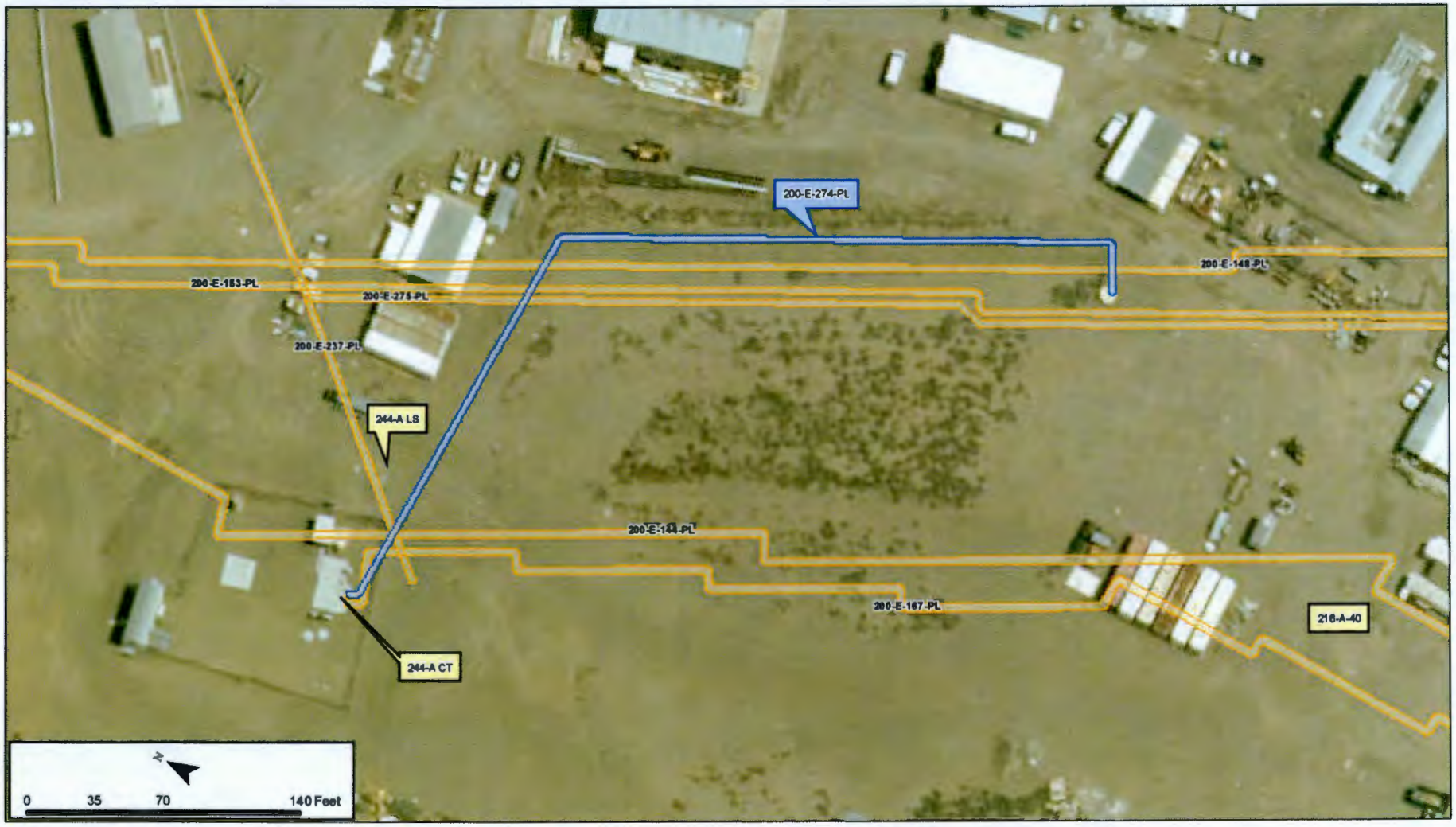
Origin/Termination	Site Intersects
200-EA-1	200-IS-1
• 216-A-40 Retention Basin (origin)	• 200-E-144-PL
	• 200-E-148-PL
	• 200-E-153-PL
200-IS-1	• 200-E-167-PL
• 244-AR Lift Station (termination)	• 200-E-237-PL
	• 200-E-275-PL

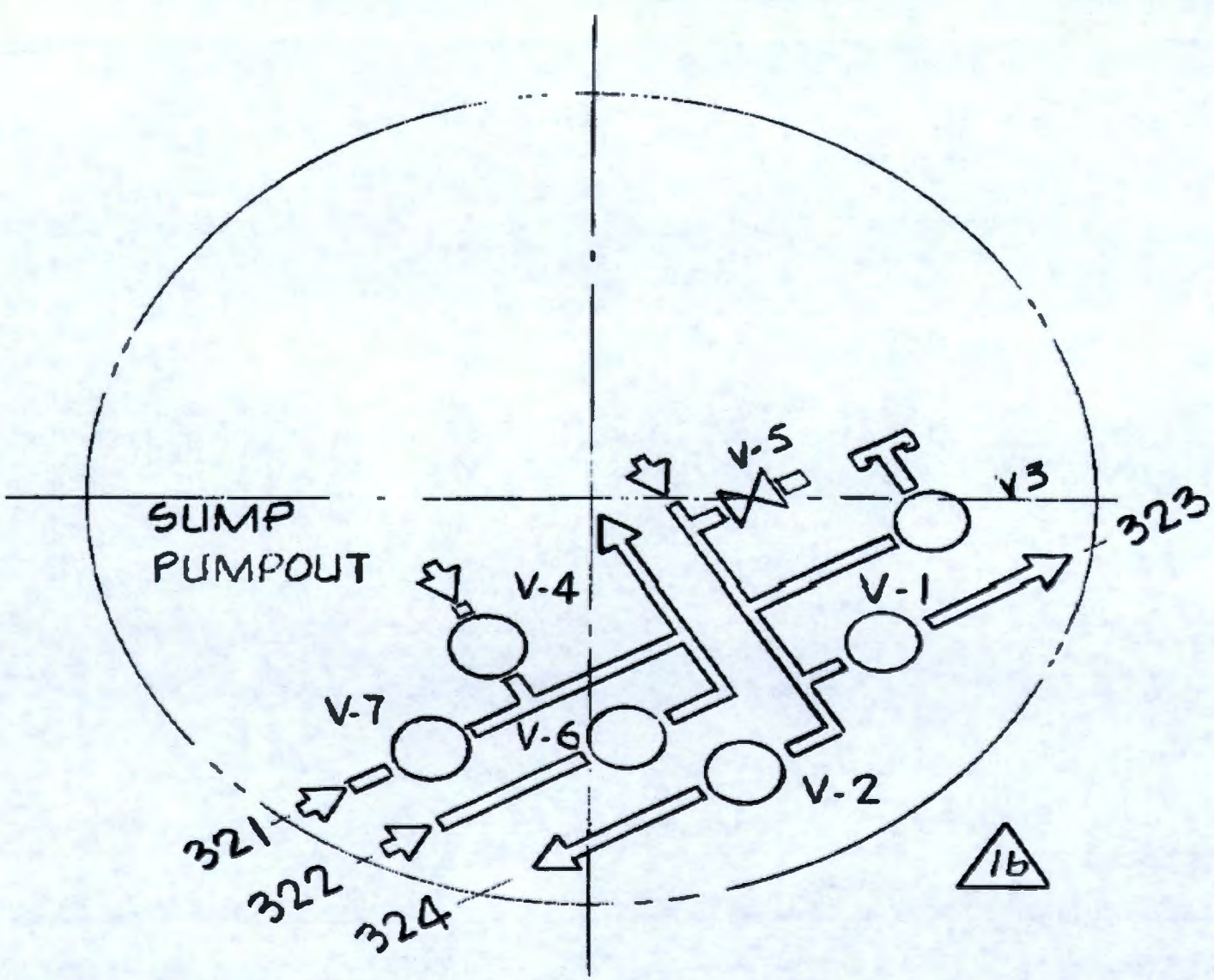
Relevant Characterization

- May-23-1979 a mud sample collected from 216-A-40
  - Sample number E&OS - 1440 showed 1.2 x 10-4 microcuries per gram of Cs-137 and 1.16 x 10-4 microcuries per gram of Co-60
  - Water sample number E&OS-353 collected from the 216-A-40 bladder had a total beta activity of 4.94 x 10-5 microcuries per mL
- A RAD survey reading at the 216-A-40 retention basin in Apr-1998 showed activity of 50 cpm

Misc./Other Relevant Information

- 200-E-274-PL was constructed when the 216-A-40 retention basin ended its operations in 1979.
- 200-E-274-PL has two control valves to direct waste to the 244-A lift station or to allow waste to flow back through 200-E-274-PL (Line #323) into line #324
- The 200-E-274-PL (Line #323) is connected to the 244-A lift station catch tank using a jumper assembly connected to a valve extension


200-E-274-PL
200-E-148-PL
200-E-153-PL
200-E-275-PL
200-E-237-PL
244-A LS
200-E-141-PL
200-E-167-PL
216-A-40
244-A CT
N
0
35
70
140 Feet


NORTH
SUMP
PUMPOUT
V-5
V3
323
V-4
V-1
V-7
V-6
V-2
321
322
324
1b

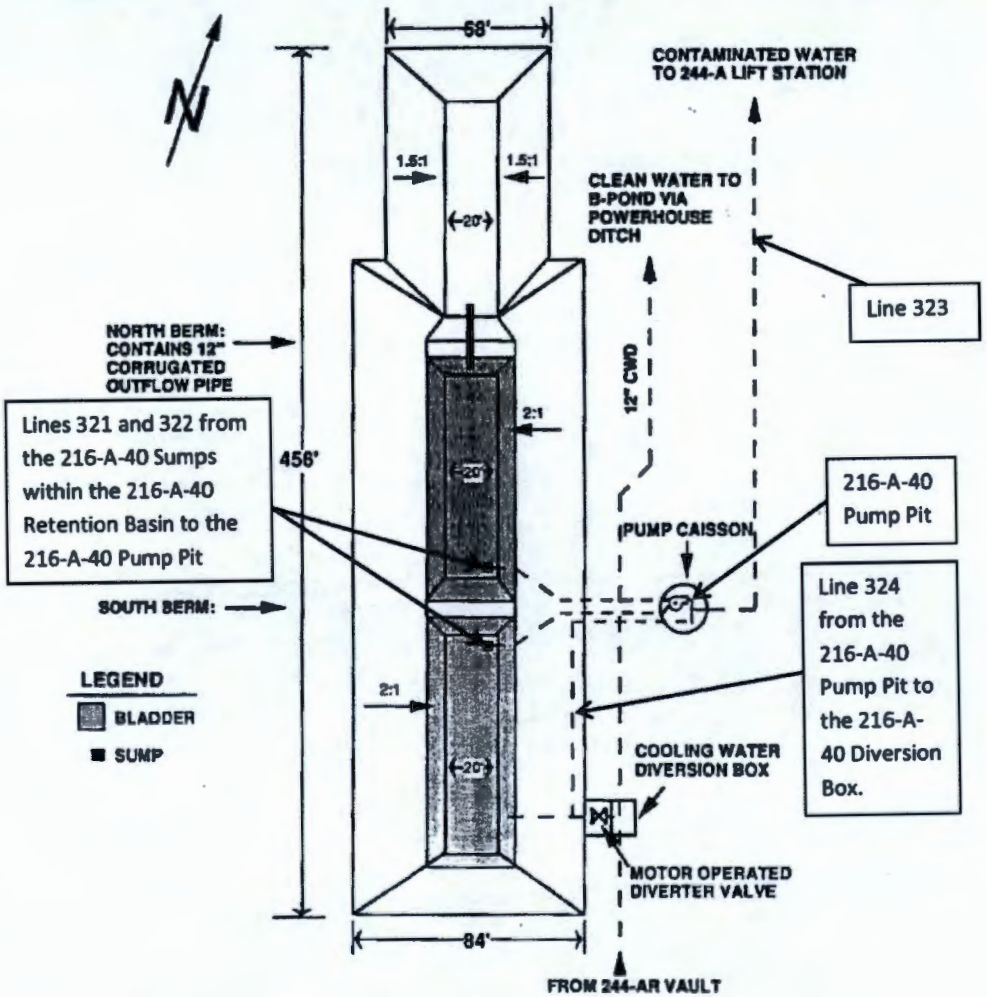


Figure 1: 216-A-40 RETENTION BASIN

PLAN - N.T.S.

Scoping Summary: 200-E-275-PL

History

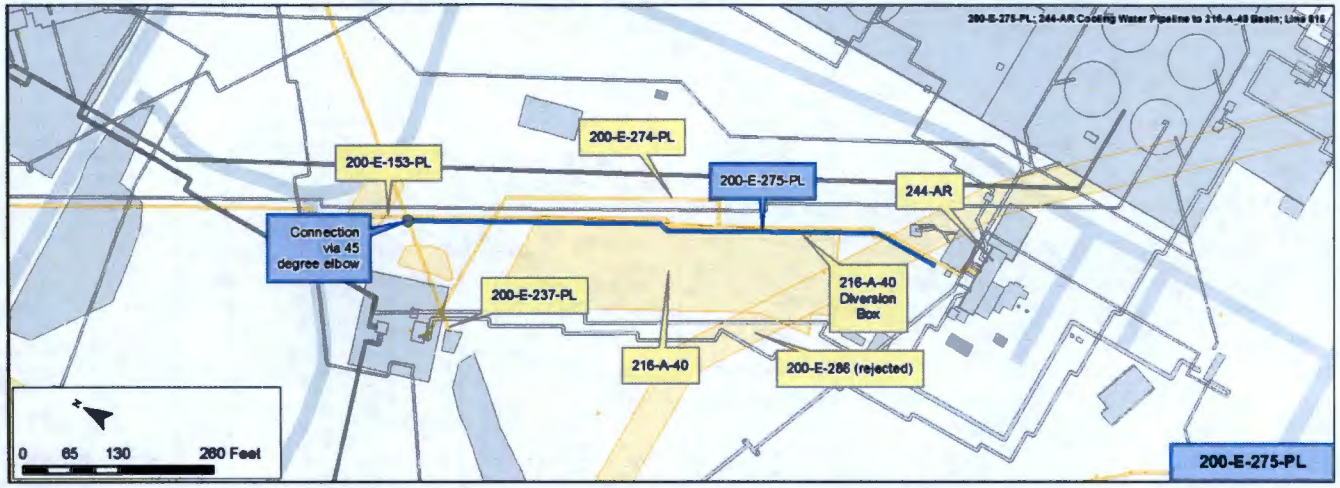
The 200-E-275-PL waste site is an inactive underground cooling water sewer line that fed the 216-A-40 Basin, or the Powerhouse Ditch. It originates from the radiation monitor just north of the 244-AR Vault.

This line diverted effluent to the 216-A-40 Basin when discharges of 244-AR Vault cooling water were above standard release limits for water otherwise sent to the 216-B-3 or 216-A-25 Ponds.

The sewer line was in use between 1968, when the 216-A-40 Basin was built, to 1978, when the 244-AR Vault was placed in standby mode. In 1996, the 244-AR Vault was isolated from steam and water.

The 200-E-237-PL, where the subject waste site terminates, is considered active. It conveys 216-A-40 ditch drainage to the 216-B-3 ditches and ponds.

The 216-A-40 Basin experienced a rubber bladder failure in 1979 and was taken out of use. It was demolished, filled to grade, and partially gravel-capped in 1994. It is currently marked as Underground Radioactive Material; its pump pit and diversion box remain.



Construction

- Length: 717 ft
- Diameter: 12 in.
- Composition: Concrete
- Encasement: Direct Buried
- Depth: 10 ft to 12 ft bgs
- Calculated Volume: 4,212 gal

Features of Interest

- 45 degree elbow and concrete seal adjoining 200-E-275-PL to 200-E-237-PL
- Sewer enters/exits 216-A-40 diversion box
- Sewer passes beneath 200-E-153-PL at its two intersect points

Relevant Characterization

- 1998 Radiation Survey from the former 216-A-40 retention basin showed activity at 50 cpm

Waste Streams

- Contaminated cooling water from the 244-AR Vault
- The 216-B-3 Ditch includes Sr-90, Tc-99, Cs-137, Sm-151, U (Gross), Total Alpha at 1.29E-01, and Total Beta at 3.54E+03

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-IS-1
- 244-AR Vault

200-EA-1
- 216-A-40

Site Intersects

- 200-E-286 (rejected)
- 200-E-237-PL (discovery status)

200-IS-1
- 200-E-274-PL
- 200-E-153-PL

Scoping Summary: 200-E-275-PL

Scoping Summary: 200-E-276-PL

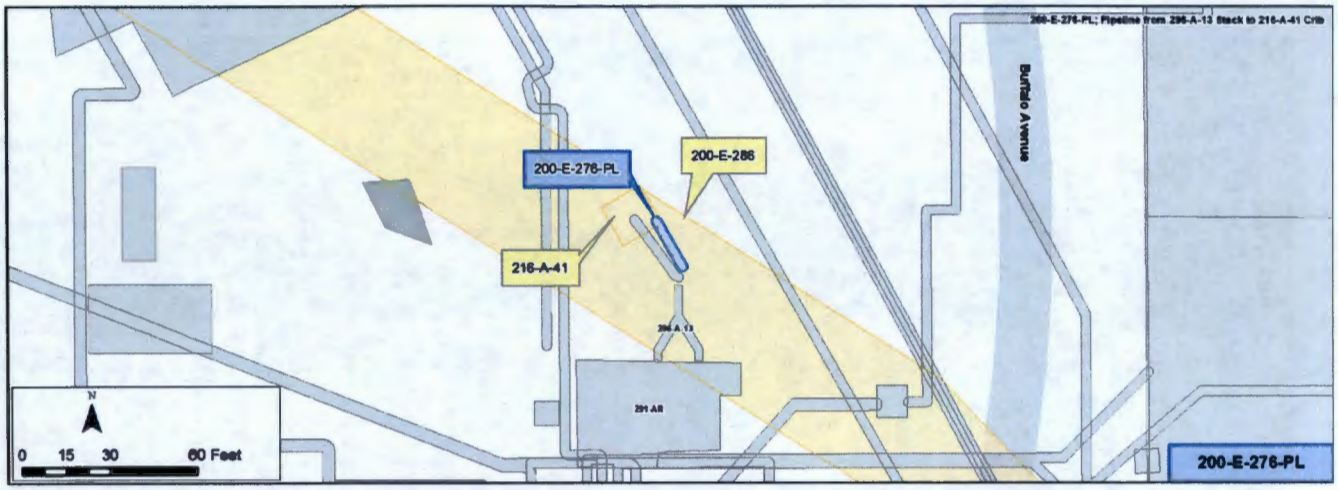
History

The 200-E-276-PL waste site is an inactive drain pipe that extends from the 296-A-13 Stack to the 216-A-41 Crib. The drain line was in use from 1968 to 1974.

At least one reference document states the stack drainage piping from the 296-A-13 Stack to the 216-A-41 Crib was subsequently removed in 1974. The stack drainage was then re-routed to the vessel vent seal pot system of the 244-AR Building.

In 1997, the 296-A-13 Stack was taken out of service and filled with grout; the suction fans were blanked from the filter system.

In 1999, a site walk down was conducted in the area of the 216-A-41 Crib coordinates. No markings or fencing of any kind was posted here. The area is currently covered with gravel and vehicles travel over the location.



Construction

- Length: 17 ft
- Diameter: 4 in.
- Composition: VCP (extra-strength)
- Direct Buried
- Encasement: None
- Depth: 4 ft bgs
- Calculated Volume: 11 gal

Features of Interest

- None identified

Relevant Characterization

- No direct characterization data has been located for the pipeline or adjacent soil

Waste Streams

- Steam Condensate

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

- 296-A-13 Stack (building)

<u>200-EA-1</u>

- 216-A-41

Site Intersects

- 200-E-286 (rejected)

200-E-286
200-E-276-PL
216-A-41
N
0
35
70
140 Feet

Scoping Summary: 200-E-277-PL

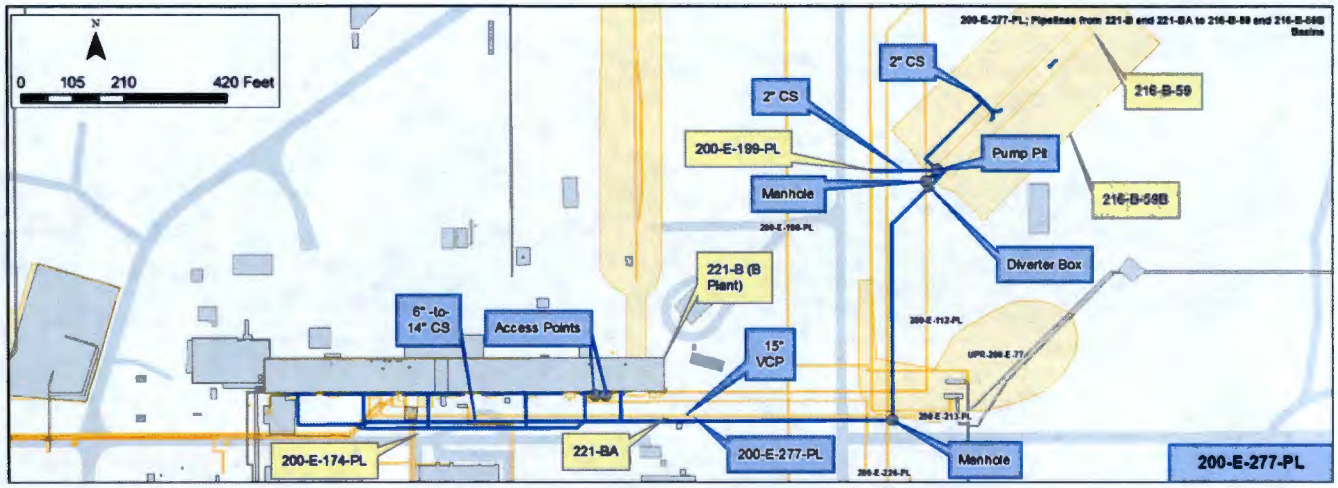
History

The 200-E-277-PL waste site is an inactivve radioactive process sewer that drained cooling water from 221-B (B Plant) and the 221-BA structure to the 216-B-59 Trench and 216-B-59B Retention Basin. The system was constructed in approximately 1966.

In 1968, the system was used for the first time, to drain cooling water from B Plant into the 216-B-59 Trench. In 1974, the trench was updated and a hypalon liner was added; it was re-named the 216-B-59B Retention Basin.

In 1978, the system was amended at the diverter box immediately southwest of the Retention Basin, and an east-west line was added and extended to 200-E-199-PL to allow for effluent from the basin to be transferred to the 241-B Tank Farm. The Basin was again updated in 1983, when a concrete liner and cover were added.

The system remained in use until 1997, when the diverter box and nearby manhole were intentionally filled with concrete to isolate; the valve and extension handle were removed from the discharge line, and blind flanges were added at both ends of the pipe.



Construction

- Length: 3,721 ft (cumulative pipe)
- Diameter: 15 in. VCP; 2 in., 6 in., and 14 in. CS
- Composition: VCP from 221-BA to Diverter Box; otherwise, CS
- Encasement: Direct Buried
- Depth: 17 ft bgs at 221-BA to 8 ft bgs at Diversion Box
- Calculated Volume: 25,000 gal

Features of Interest

- Diverter Box at SW entrance to 216-B-59
- Original Valve Pit just beyond Diverter Box (removed and line blanked in 1978)
- 1978 Valve Pit due north of Diverter Box
- Two system access points south of B Plant (filled with gravel as caps in 2014)
- Two Manholes (one near Basin filled with concrete in 1997)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Radioactive Cooling Water from B Plant
- Based on data from the 216-B-59 Trench, this line is likely to include the following isotopes: Sr-90, Tc-99, Cs-137, and Total Beta at 8.32E-02

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-EA-1
- 216-B-59
- 216-B-59B Retention Basin

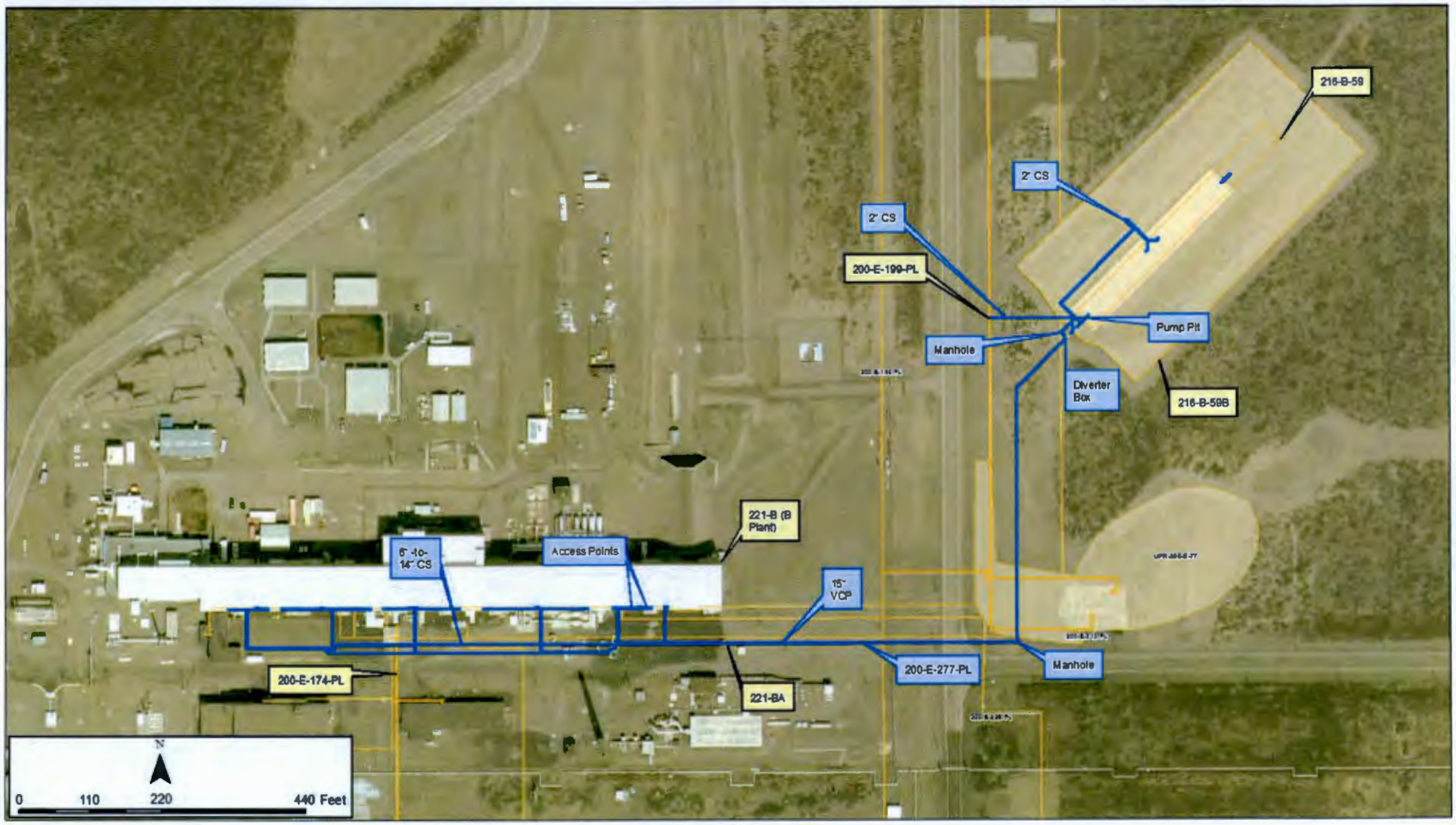
200-CB-1
- 221-B (B Plant)

200-IS-1
- 200-E-199-PL

Site Intersects

200-IS-1
- UPR-200-E-77
- 200-E-112-PL
- 200-E-213-PL
- 200-E-226-PL
- 200-E-198-PL
- 200-E-174-PL

Scoping Summary: 200-E-277-PL

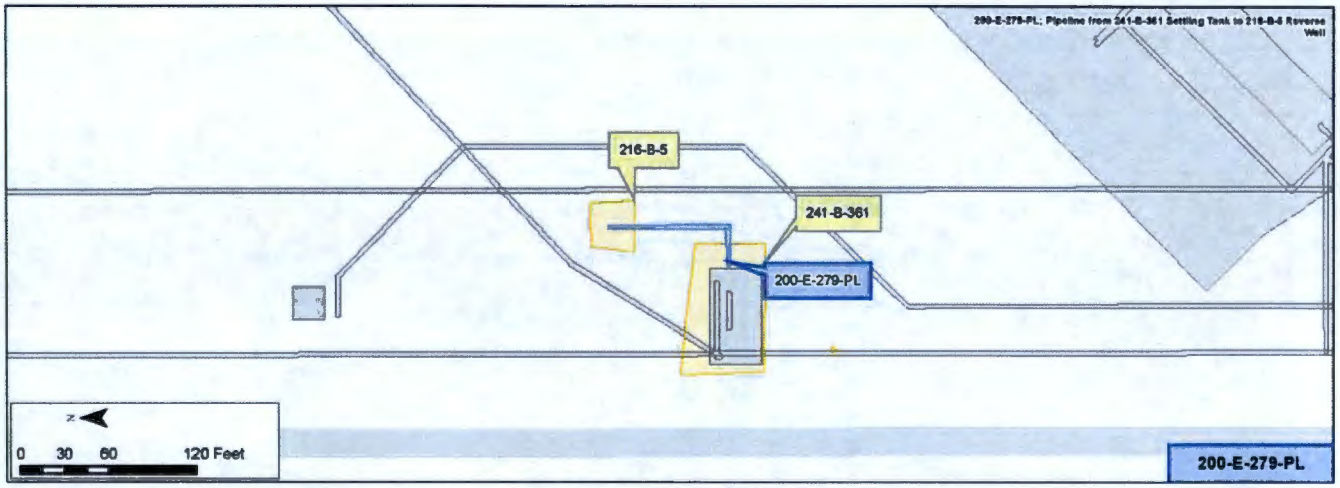


Scoping Summary: 200-E-279-PL

History

The 200-E-279-PL waste site is an inactive underground radioactive process sewer pipeline that transferred B-Plant wash waste supernatant from the 241-B-361 Settling Tank to the 216-B-5 Reverse well.

The pipeline operated from 1945 to 1947. In 1947, the 241-B-361 Settling Tank, the 216-B-5 Reverse Well and 200-E-279-PL were removed from service. No leaks or loss of fluids were identified in the historical record.



Construction

- Length: 105 ft
- Diameter: 2 in.
- Composition: Stainless Steel
- Gravity flow
- Direct Buried
- Depth: 11.5 ft - 13 ft bgs
- Calculated volume: 18 gal

Features of Interest

- 3 in. x 2 in. reducer at the outlet of 241-B-361 Settling Tank
- 90-degree bend

Waste Streams

- Low-salt radioactive BiPO4 wash waste which originated in the 5-6W cells in the 221-B building ran through this pipeline
- Wash waste which included 4,270 g Pu, 3,800 Ci β, 75.6 Ci Sr-90, 80.7 Ci Cs-137, 163 Ci Ru-106, ran through the pipeline
- 8.08 million gallons of process fluids passed through 200-E-279-PL to the 216-B-5 Reverse well

Site Interfaces

Origin/Termination	Site Interfaces
200-TW-2 • 241-B-361 Settling Tank (origin) • 216-B-5 Reverse Well (termination)	None Identified

Relevant Characterization

- Two characterization summaries were done, the first in 1948 and the second in 1980
- Characterization focused on groundwater in the vicinity of 216-B-5 Reverse well, and determined that there were no leaks

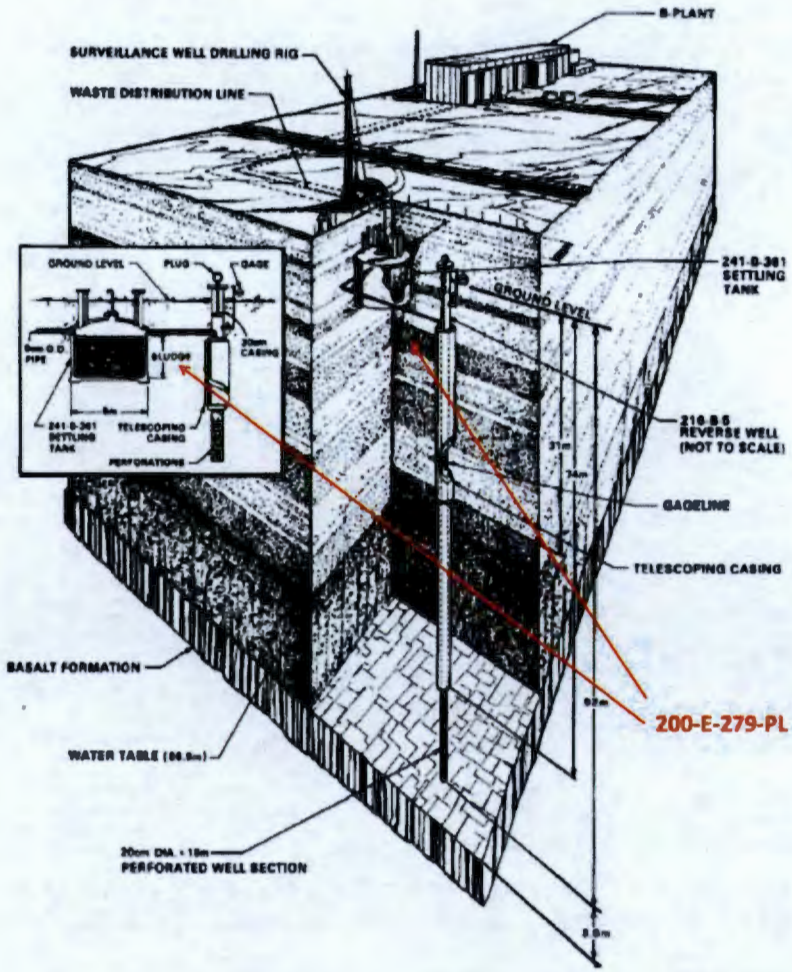
Misc./Other Relevant Information

- None

216-B-9
216-B-5
200-E-279-PL
241-B-361
N
0
35
70
140 Feet

200-E-279-PL Features of Interest
(Reference: WMP-31915)

Figure 15. Three-Dimensional View of 241-B-361 Settling Tank and Reverse Well.



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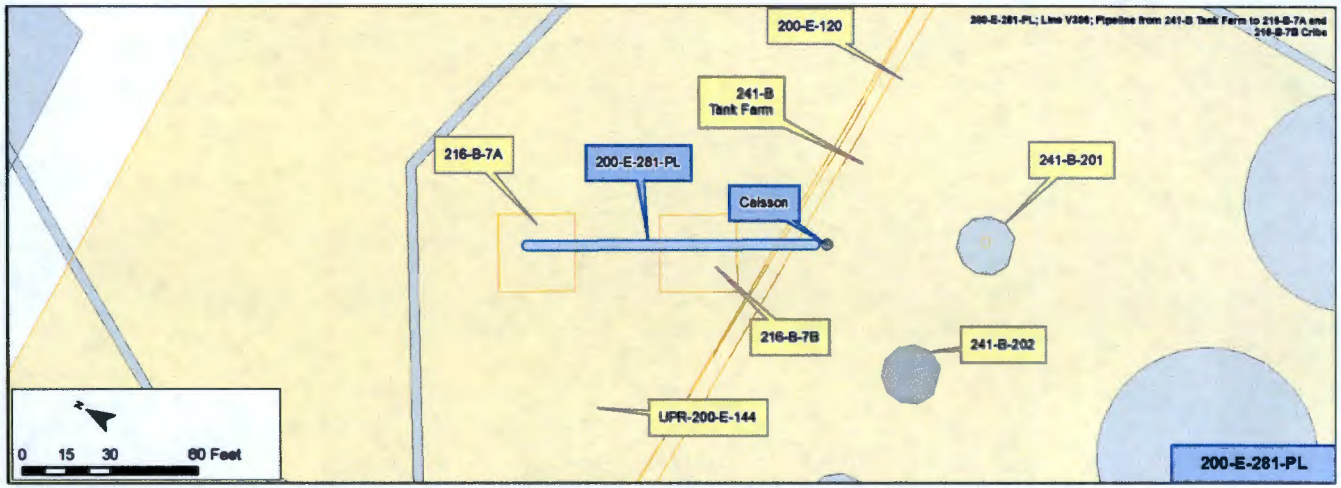
Scoping Summary: 200-E-281-PL

History

The 200-E-281-PL waste site is an inactive underground pipeline that connected the Caisson at the 241-B Tank Farm boundary (connected to 241-B-201 and 202 settling tanks) to the disposal cribs 216-A-7A and 216-A-7B.

The pipeline was originally constructed in 1946 and transferred waste until 1967.

The pipeline was temporarily inactive from 1951 until 1954. The pipeline was made permanently inactive in 1967 when the destination cribs were determined to have reached their radionuclide capacity.



Construction

- Diameter: 3 inch
- Material: Stainless Steel
- Length: 100 feet
- Direct Buried
- Pressurized Flow
- Depth: 8 to 13 feet
- Computed Volume: 35 gallons

Features of Interest

- Branch, T-branch 3 inch SS to 3.5 inch SS capped end.
- Branch, T-branch 3 inch SS
- Caisson, in Qmap described as break in line without a pipe section inside

Waste Streams

- Processes: Tank Farm and Basin Wastes
- Waste Streams: effluent from the 201-B settling tanks; process effluent from 221-B and 224-B was routed to settling tanks from 1946 to 1967
- In 1951 cell drainage from 221-B was rerouted from this line; 1954 224-B waste was rerouted from this line; waste transferred after 1958 included Cs-137 and Sr-90
- Approximately 13,000,000 gallons of waste flowed through pipeline containing 4,300 grams of plutonium and 5,400 curies of beta/gamma emitters

Site Interfaces

Origin

WMA B/BX/BY
- 241-B-201
- 241-B-202

Termination

Caisson connected to200-DV-1
- 216-B-7A
- 216-B-7B

Sites That Intersect

200-EA-1
- UPR-200-E-144

WMA B/BX/BY
- 200-E-120

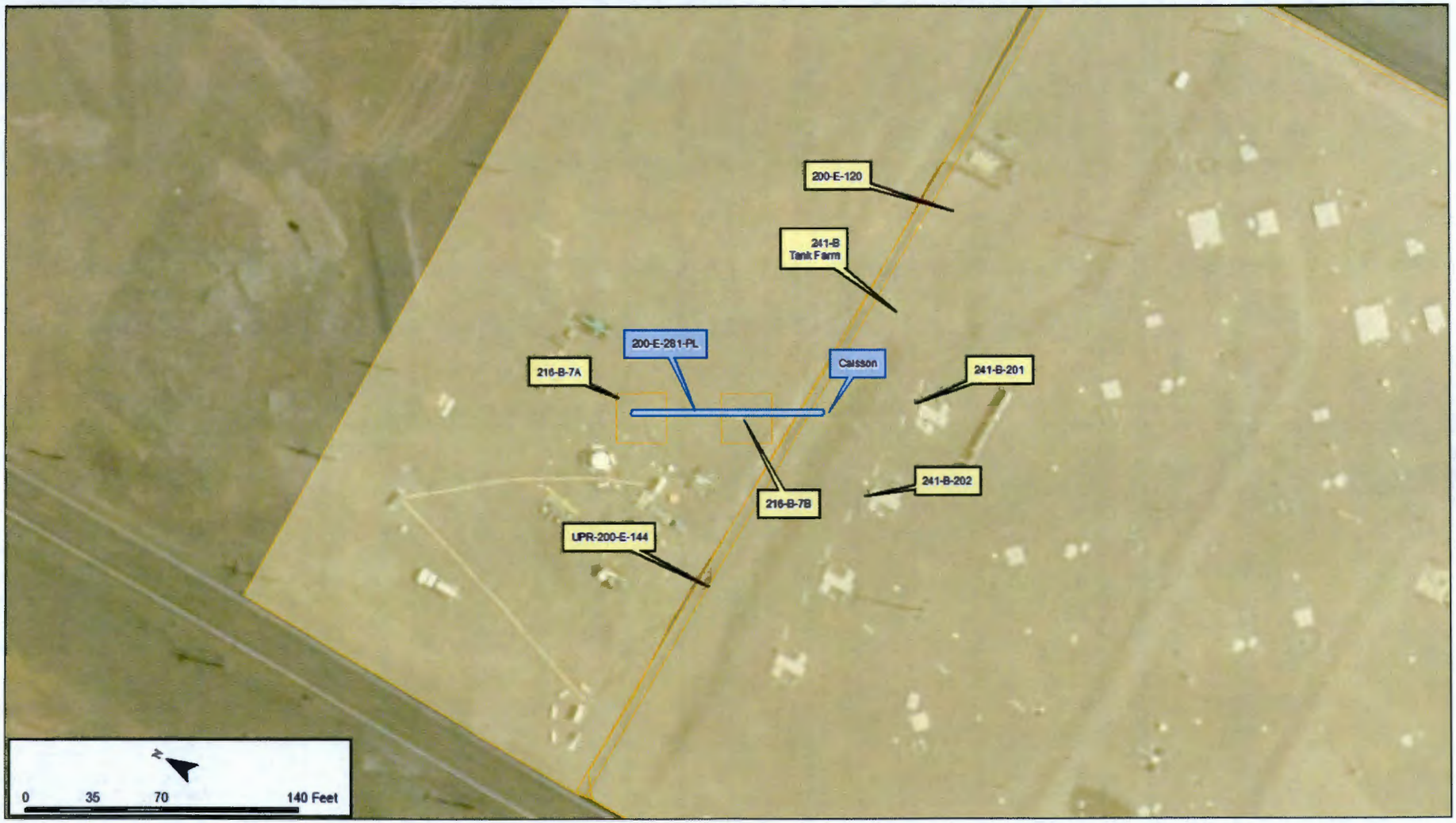
Relevant Characterization

- Estimated radionuclide content in 216-B-7 (A and B) cribs: 1,780 Ci Sr-90; 35 Ci Cs-137; 0.06 Ci Total U; 264 Ci Total Alpha; 4,490 Ci Total Beta (radionuclides decayed to 12/31/98)

Misc./Other Relevant Information

- Cesium, cobalt, tritium, and alpha contamination was detected in groundwater samples taken from well 299-E33-18 in 1967 which monitors cribs 216-B-7A and 216-B-7B.

Scoping Summary: 200-E-281-PL



Scoping Summary: 200-E-282-PL

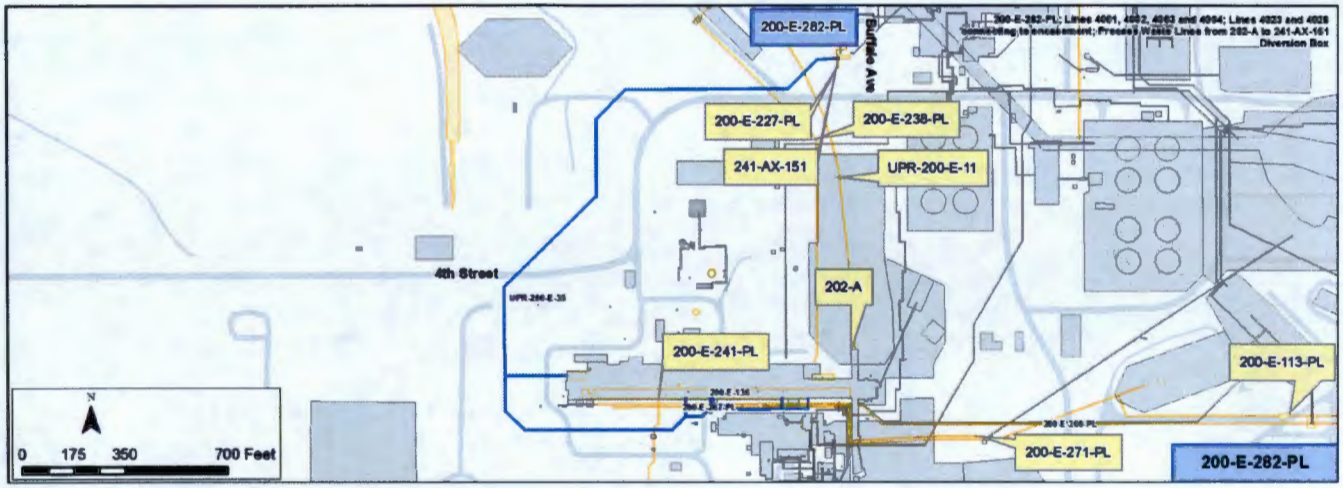
History

The 200-E-282-PL waste site is an inactive underground radioactive process transfer system that consists of six pipelines utilized to transport PUREX self-boiling waste from the 202-A Canyon Building (PUREX) to the 241-AX-151 Diversion Box.

This system was constructed in 1965 as part of an improved PUREX Essential Waste Routing System, and in use thru 1974, when it was taken out of service.

Four of the lines are concrete-encased from the 202-A Canyon Building to the diversion box; the other two lines tie into two of the lines within the encasement.

As part of the B-231 Project and B-181 Project, Addendum 1, in the early 1980s, this system was isolated: the process lines were blanked and the encasement was intentionally dammed.



Construction

- Diameter: 3 in.
- Length: 3,280 ft (end-to-end)
- Total Pipe Length: 14,000 ft (six pipes)
- Encasement: 4-45 concrete
  - Two sections, Direct-buried
- Depth: 8-to-15 ft, 12 ft on average
- Composition: Stainless steel
- Calculated Volume: 1,200 gal
- Encasement Volume: 4,030 cubic ft
- Cathodic Protection: Yes

Features of Interest

- Two pipelines in this system are direct-buried: the segment that extends from the west end of the PUREX facility; and, the middle segment that extends from the south end of the facility. Both direct-buried lines tie-in to other lines within the encasement.

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.
- Based on historical sample data (1988) from the 241-AX-151 Diversion Box, this waste site is expected to include the following radioisotopes: Cs-137 and Sr-90.

Waste Streams

- PUREX process waste, including acid waste. Approximately 15 billion gallons of waste were transferred between 1965 and 1974. After each waste transfer, water was flushed through the lines.

Misc./Other Relevant Information

- Based on a 2006 video inspection of the 241-AX-151 Diversion Box and its piping, the lines comprising this waste site appear to be in excellent condition.

Site Interfaces

Origin/Termination:

200-CP-1 OU

- 202-A

200-IS-1 OU

- 241-AX-151

Site Intersects:

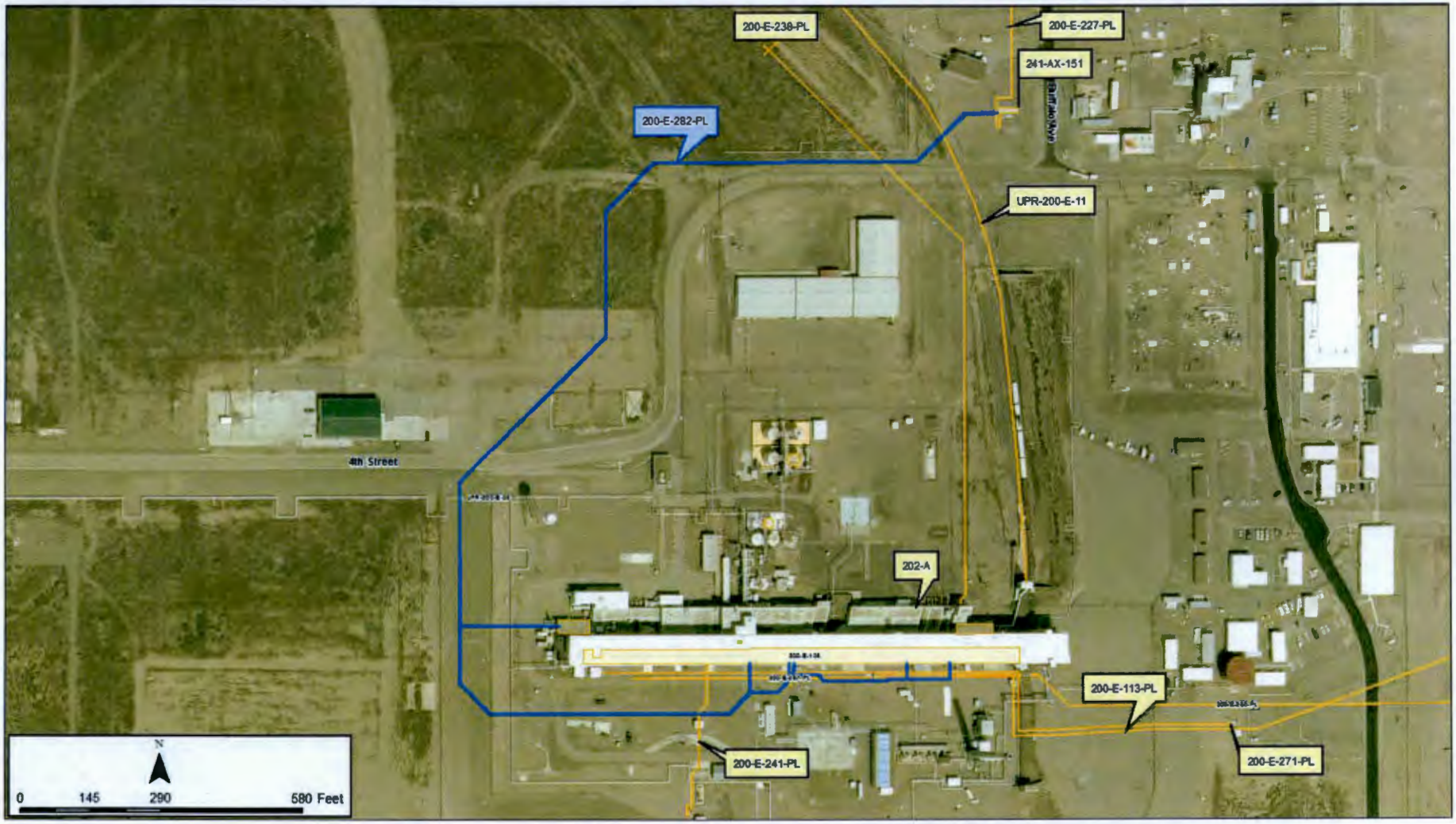
200-IS-1 OU

- 200-E-227-PL
- 200-E-238-PL
- 200-E-241-PL
- 200-E-271-PL
- 200-E-113-PL

200-OA-1 OU

- UPR-200-E-11

Scoping Summary: 200-E-282-PL



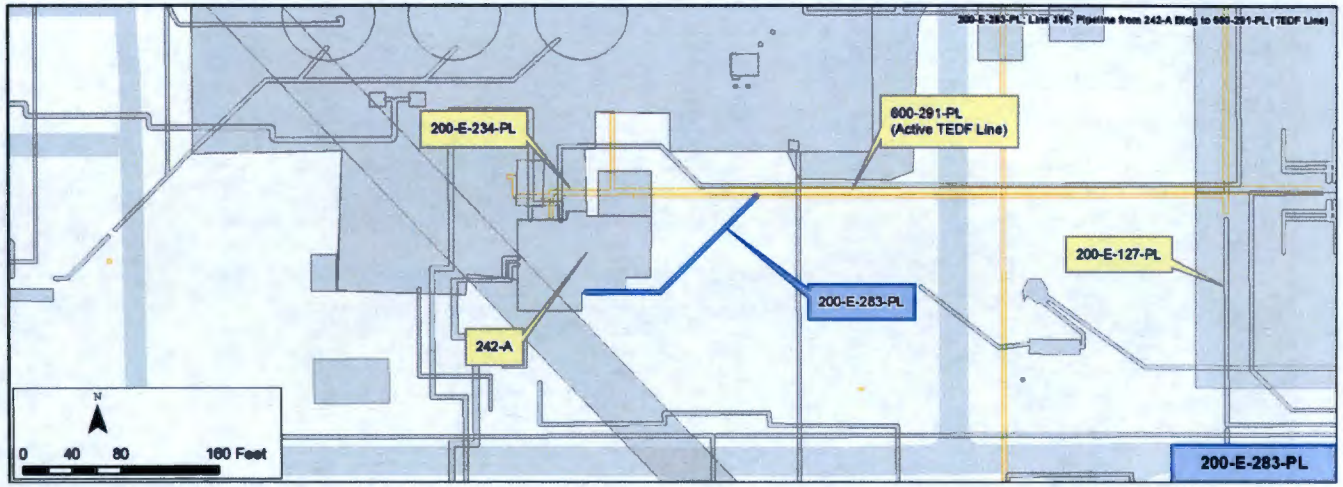
Scoping Summary: 200-E-283-PL

History

The 200-E-283-PL waste site is an inactive underground radioactive process sewer line that extends from the 242-A Evaporator Building to the 600-291-PL pipeline, an active line also known as the Treated Effluent Disposal Facility (TEDF) line that terminates at 200-A-TEDF.

The subject waste site was originally constructed in in 1976 and extended from the 242-A Evaporator Building to the 200-E-127-PL line, which terminated at the Gable Mountain and B Ponds. The line was later re-routed to the TEDF line.

The pipeline is listed as inactive based on a review of drawings for active lines in the area, circa 2007, but no date of line inactivity or more formal abandonment has been established.



Construction

- Diameter: 6 in.
- Composition: Carbon Steel
- Length: 169 feet
- Direct Buried
- Depth: 5 to 9 feet bgs
- Computed Volume: 248 gal
- Gravity

Features of Interest

- Bend (1)

Relevant Characterization

- No direct characterization data for the pipeline or adjacent soil could be located.
- Based on data from the Gable Mountain Pond and B Ponds, the following radioisotopes are likely to be encountered in this pipeline: Sr-90, Tc-99, Cs-137, Uranium, Pu-239/40, and Am-241.

Waste Streams

- This pipeline was associated with transferring cooling water, steam condensate, and process condensate from the 242-A Evaporator Building to the Gable and B Ponds.

Misc./Other Relevant Information

- 600-291-PL connects to 200-E-127-PL-B which is Operable Unit 200-IS-1.

Site Interfaces

Origin/Termination:

- 242-A Facility (Building)
- 600-291-PL (Active)

Scoping Summary: 200-E-283-PL

Scoping Summary: 200-E-285

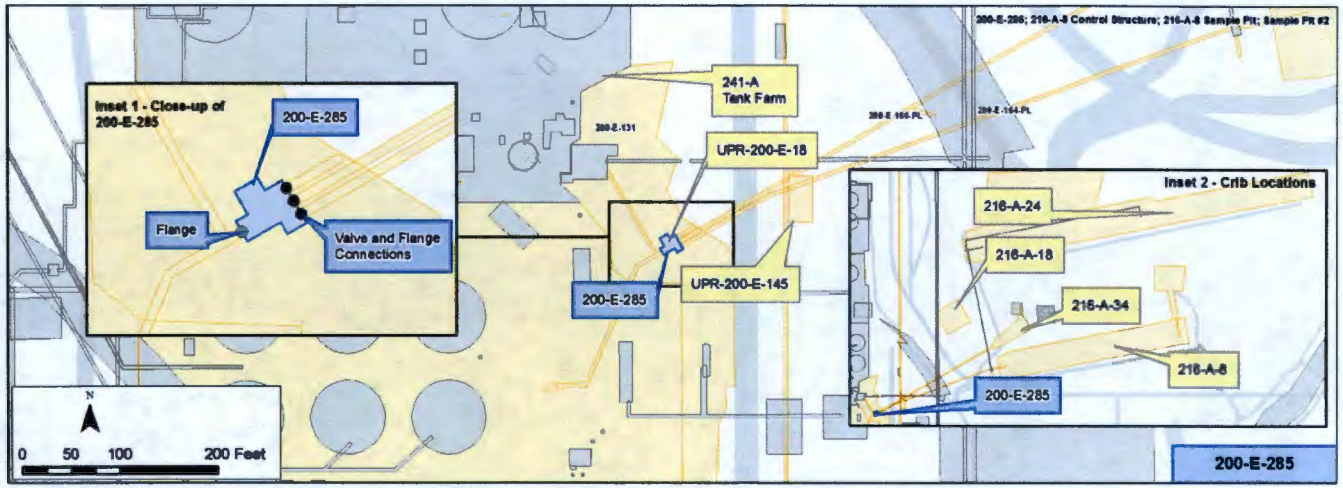
History

The 200-E-285 control structure (valve pit, proportional sampler and metering facility) was used to measure and record the radioactivity and flow rate of condenser effluent water. It contains valves that route the effluent to cribs 216-A-8, 216-A-18, 216-A-24 and 216-A-34.

It was constructed in 1955 as part of Project CA-513 (PUREX Facility) and began operation in 1956. It was operated until 1958 and then again intermittently from 1966 to 1985.

The 200-E-285 control structure is located on the east side of 241-A tank farm, outside the tank farm fence. The area is surrounded with post and chain with Underground Radioactive Material and Contamination Area signs.

In 1959, moisture was noticed dripping from a vent pipe bonnet at the 200-E-285 control structure contaminating the ground around the cement pad. The surface contamination has been identified as UPR-200-E-18.



Construction

200-E-285 Control Structure

- Dimensions: 13.5 ft long x 8.5 ft wide x 23.7 ft deep
- Composition: Reinforced concrete
- 3 valves connected to crib lines: 200-E-164-PL (connects to the 216-A-8 and 216-A-24 cribs), 200-E-166-PL (connects to 216-A-34 crib), and 200-E-164-PL (connects with the 216-A-18 crib).
- Components: four flanges, two vent stacks, and one curved metal bonnet extending from the structure

Pipelines

- Length
  - 200-E-164-PL (Segment 1 and Segment 2 1): 1,120.51 ft
  - 200-E-166-PL: 679 ft
- Diameter
  - 200-E-164-PL (Segment 1 and Segment 2): 16 in.
  - 200-E-166-PL: 15 in.
- Composition
  - 200-E-164-PL (Segment 1 and Segment 2): Carbon Steel
  - 200-E-166-PL: Vitrified Clay
- All lines are gravity drained

Features of Interest

- 3 valves
- 4 flanges
- 2 vent stacks
- 1 - vent pipe bonnet (dripping condensation from this vent caused the UPR-200-E-18)

Relevant Characterization

- From Nov-1955 to Jun-1958 more than 1 billion liters of liquid flowed via 200-E-285 to the 216-A-8 crib containing 368 kg U, 49 g Pu, and 10,300 Curies beta particle emitters
- 1981 tests found Sr-90 as the major beta component
- On October 27-30, 1983, ~35,000 gal of water at a total beta exceeding Table I guidelines was released
- Jun-2005: Radioactive contaminants found to 264.5 ft bgs in Borehole C4545. Only C-14 and tritium were detected above background levels at 49 ft-51.5 ft

Waste Streams

- 241-A-431, and 241-A & 241-AX were the associated waste processes
- Condenser cooling water was transported from 1955-1958
- Condensate from waste storage tanks was transported from 1955-1983
- Depleted uranium waste from the cold start-up run at the 202-A Bldg. was transported from 1955-1956
- The last waste stream to be transported was condensate from waste storage tanks in 1983
- Flows varied from 400 to 3,000 gallons per minute

Misc./Other Relevant Information

- The UPR-200-E-18 waste site originated from a leaking vent pipe bonnet associated with the 200-E-285 waste site. This release was discovered in 1959. The amount of contaminated soil is unknown. The area is covered with gravel and asphalt

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-164-PL
- 200-E-166-PL

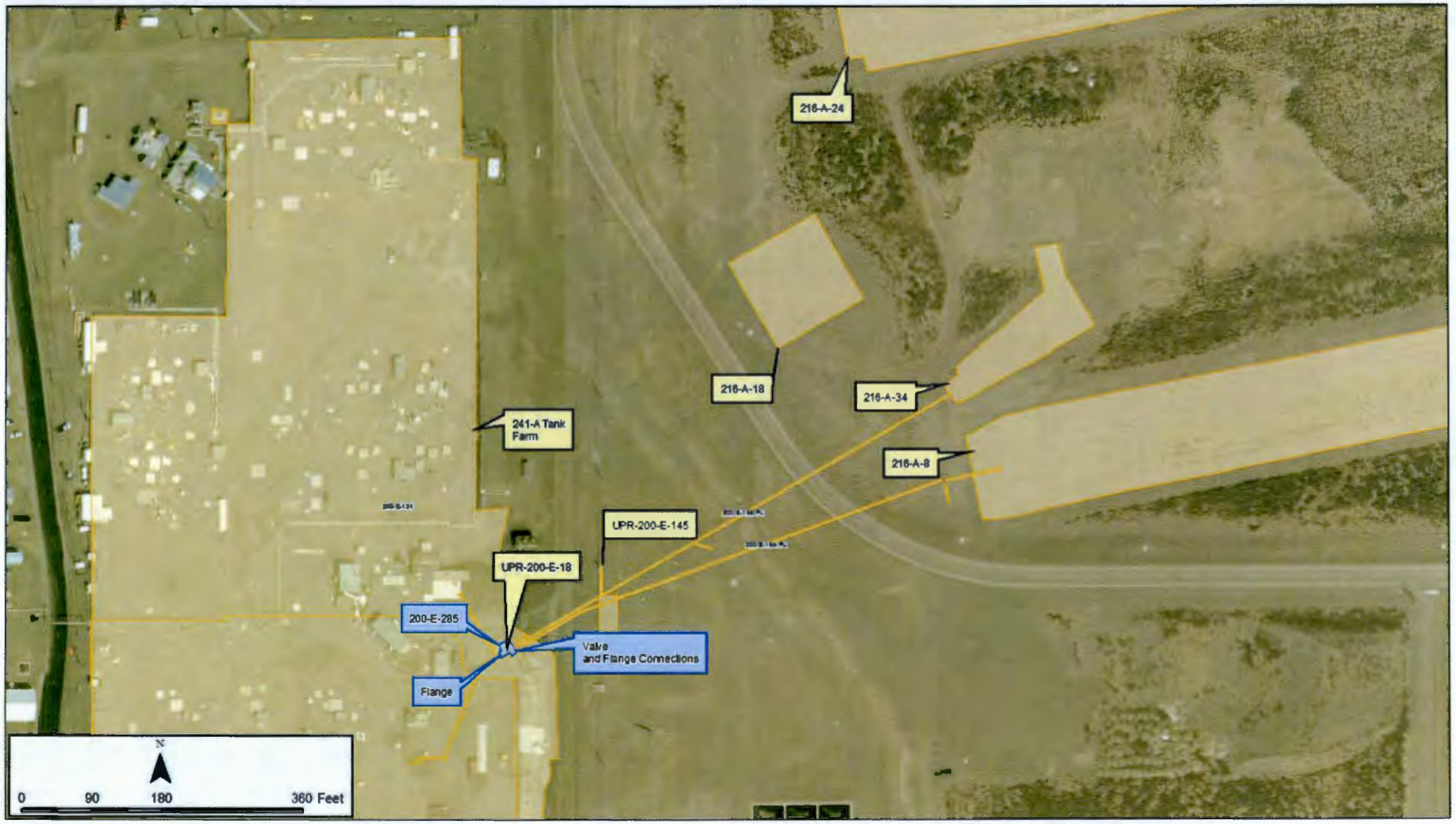
Site Intersects

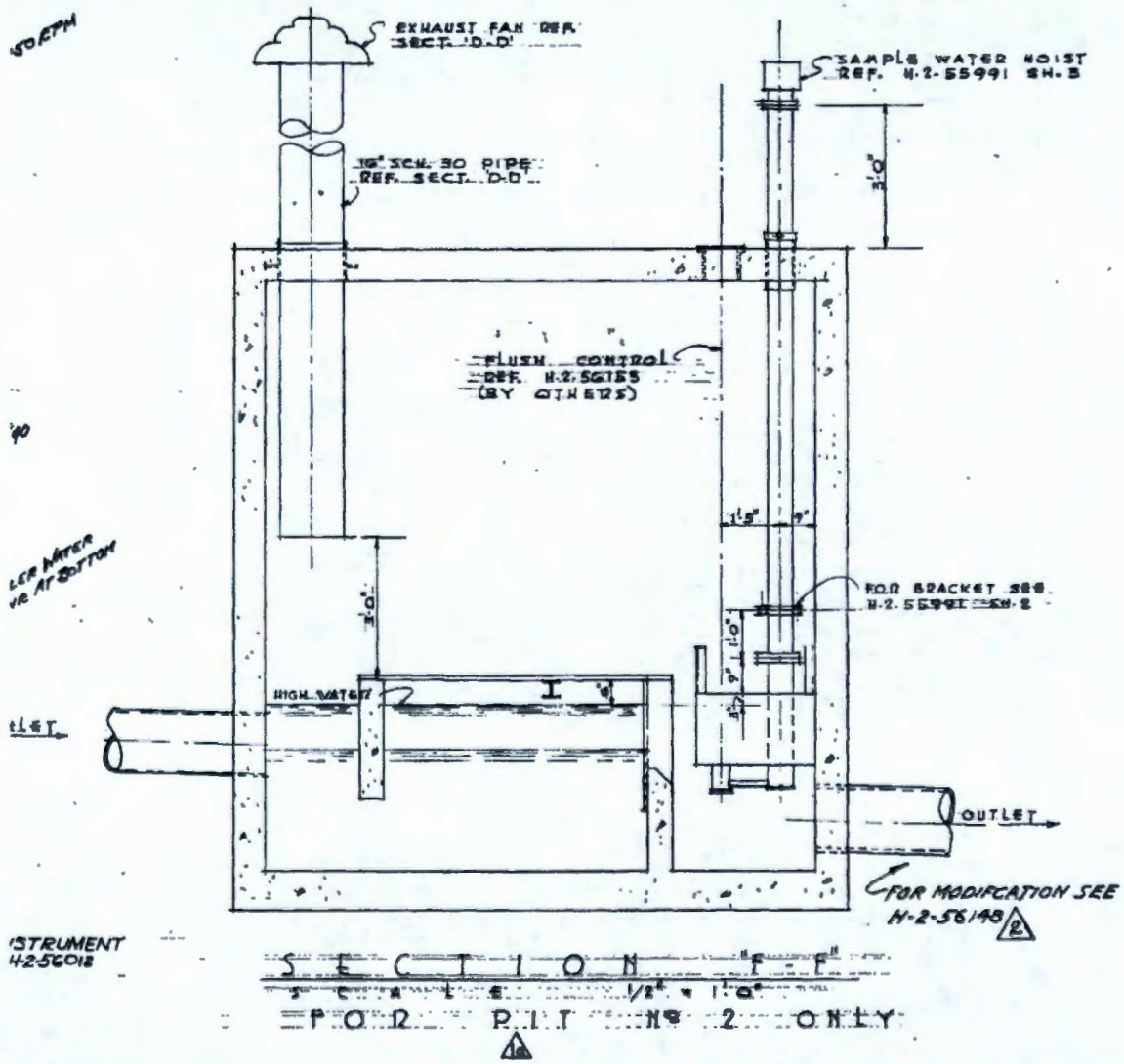
WMA A/AX

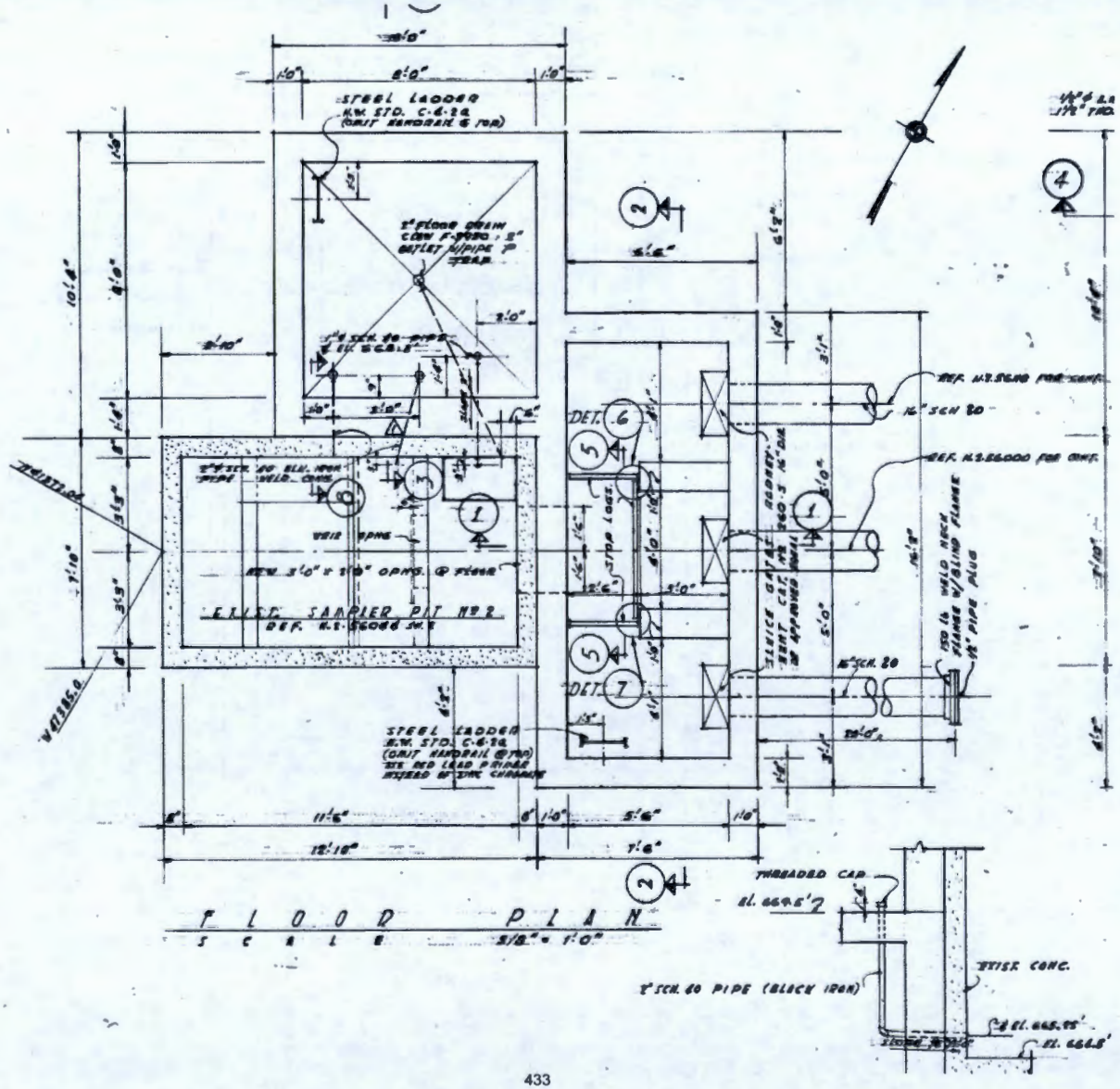
- 200-E-131 (UPR)

200-IS-1

- UPR-200-E-18


216-A-24
216-A-18
216-A-34
216-A-8
241-A Tank Farm
UPR-200-E-145
UPR-200-E-18
200-E-285
Valve and Flange Connections
Flange
N
0
90
180
360 Feet


EXHAUST FAN REF. SECT. D-D'
SAMPLE WATER HOIST REF. H-2-55991 SH. 3
16" SCH. 30 PIPE REF. SECT. D-D'
FLUSH CONTROL REF. H-2-56155 (BY OTHERS)
FOR BRACKET SEE H-2-55991 SH. 2
HIGH WATER
OUTLET
FOR MODIFICATION SEE H-2-56148
SECTION "F-F"
SCALE 1/2" = 1'-0"
FOR PIT No 2 ONLY


STEEL LADDER
FLOOD PLAN
SCALE 3/8" = 1'-0"
SAMPLER PIT NO. 2
STEEL LADDER
THREADED CAP
2" SCH. 80 PIPE (BLACK IRON)
REF. H.S.-55000 FOR CONT.
16" SCH 80
DET. 6
DET. 7

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Scoping Summary: 200-E-291-PL

History

The 200-E-291-PL waste site is an inactive underground transfer system that consists of two pipes (SN-100 and SN-200) used to transfer Solid Sludge and Dilute Non-Complexed liquid waste between the 241-C-106 and 241-AY-102 Tanks, inside the 241-C and 241-AY Tank Farms, respectively.

The lines were constructed in 1996 and operational from 1998 to 2003. The SN-100 pipe was isolated at the 241-C-106 tank pump pit and the SN-200 pipe pump was electrically isolated.

The system intersects an Underground Radioactive Materials Area associated with the 241-C Tank French Drain (i.e., 216-C-8).

Construction

- Length: 1,702 ft (each)
- Diameter: 4 in.
- Composition: Stainless steel
- Pressurized
- Direct Buried
- Encasement Specifications: Pipe-in-Pipe (6 in. Carbon Steel)
- Depth: 3.5 ft to 5 ft bgs (or engineered berm surface)
- Calculated volume: 1,111 gal (each)

Features of Interest

- 11 horizontal elbows
- 1 horizontal bend (~135°)
- 11 vertical bends (130° - 175°) outside the WMA-C and WMA-A tank farm footprints
- Each line encased in 6 in. carbon steel pipes in straight sections and encased in 8 in. carbon steel pipe around each elbow (i.e., eleven 90° and one ~135° elbows).

Relevant Characterization

- No analytical data was found for 200-E-291-PL waste site.
- The lines SL-100 and SN-200 were included in the 2005 Double Shell Tank (DST) Integrity Assessment Report and no evidence of loss of integrity was identified.

Waste Streams

- Wastes associated with the C Tank Farm and AY Tank Farm were transported through this pipeline
- Double-Shell Sludge/Single-Shell Tank (DSS/SST) Solids Sludge and Dilute Non-Complexed were the wastes transported from 1998-2003
- Waste from tank 241-C-106 was classified as high heat and Transuranic (TRU) waste due to Strontium decay and greater than 100 nanocuries per gram

Misc./Other Relevant Information

- Overlain by an engineered berm for 1,120 ft.
- Lowest elevation of the line is at the connection to the 241-C-106 tank
- Runs from the 241-C-106-06C Sluice Pit to the 241-AY-102-02E Sluice Pit

Site Interfaces

Origin/Termination	Site Intersects
WMA-C •241-C-106-06C Sluice Pit •241-C-106-A Pump Pit	200-IS-1 •200-E-154-PL •200-E-155-PL
WMA-AY •241-AY-102-02A Pump Pit •241-AY-102-02E Sluice Pit	WMA-A •200-E-131 (a.k.a. 241-A Tank Farm)
	WMA-C •216-C-8 (French Drain) •200-E-133 (a.k.a. 241-C Tank Farm)
	No Operable Unit •200-E-237-PL •600-269-PL (resides in both 200-E and 200-W)

Scoping Summary: 200-E-291-PL

Scoping Summary: 200-W-7

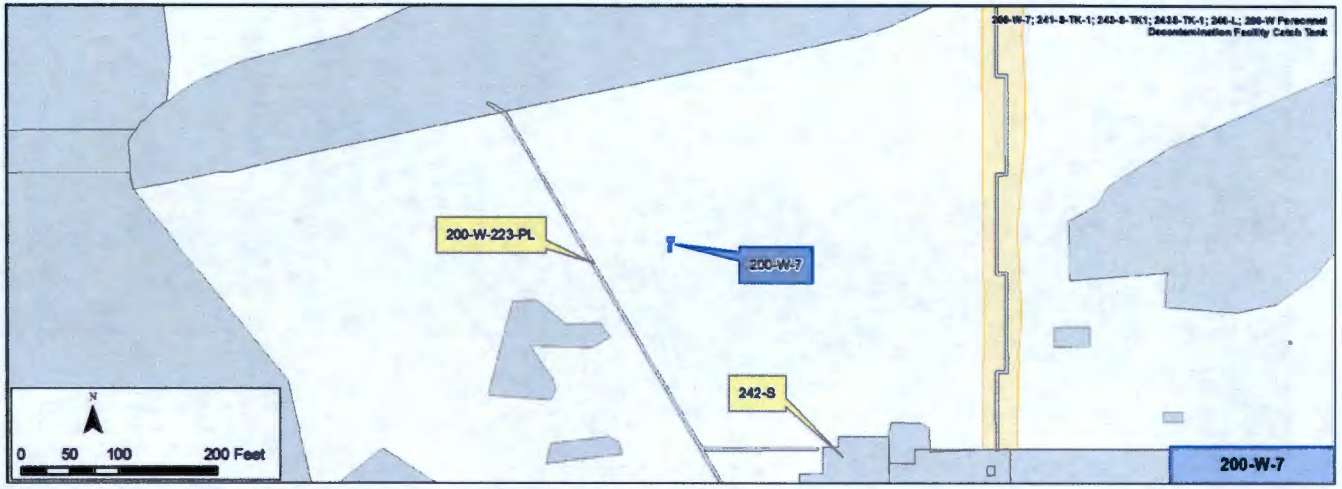
History

The 200-W-7 waste site is a single, direct buried, inactive, 550 gal fiberglass catch tank previously connected to the MO-326 trailer. The MO-326 trailer was formerly used as a personnel decontamination facility for the 200 West Tank Farms. The trailer has been removed, but the inlet line is believed to be in place.

The MO-326 trailer contained a sink and a shower both connected to the 200-W-7 Catch Tank. The 200-W-7 Catch Tank is located in the 200 West Area approximately 200 ft. northwest of the 242-S Evaporator. It has been referred to by various identifiers including: 246-L, 241-S-TK-1, 243-S-TK-1 and the 20-W Personnel Decontamination Facility Catch Tank.

The tank was constructed in 1978 and, based on personnel interviews, was removed from service in 1988. The documented tank contents are soap, water, and decon solution with low level radionuclides. Interviewees reported the tank contents were pumped to a tank truck and the tank is believed to be empty.

The 200-W-7 Catch Tank is not associated with any known releases or waste sites.



Construction

- Dimensions: 6 ft 6-5/8 in. long x 5 ft diameter, horizontal
- Capacity: 550 gal
- Material: 5/16 in. thick fiberglass with 50 mil corrosion resistant wrapping
- Four tank penetrations - tank gauge; trailer sewage connection; cap; and HEPA vent filter.
- Buried depth: Top 3 ft bgs.; bottom 8 ft bgs; direct buried with backfill of 1 ft on sides and bottom, 3 ft on top

Features of Interest

- PVC plastic pipe lines for HEPA filter and sewage intake PVC plastic pipe sewage intake line running approximately 9.5 ft
- 4 in. steel risers for gauge and screw cap

Relevant Characterization

- No sampling data was located for the 200-W-7 and the tank
- Trailer has been removed and the location is marked by 3 ft x 3 ft chained area with Inactive Miscellaneous Underground Storage Tank (IMUST) sign and radiological posting

Waste Streams

- Soap, water, and decon solution with low level radionuclides from 200 West Tank Farms Personnel Decontamination Trailer MO-326

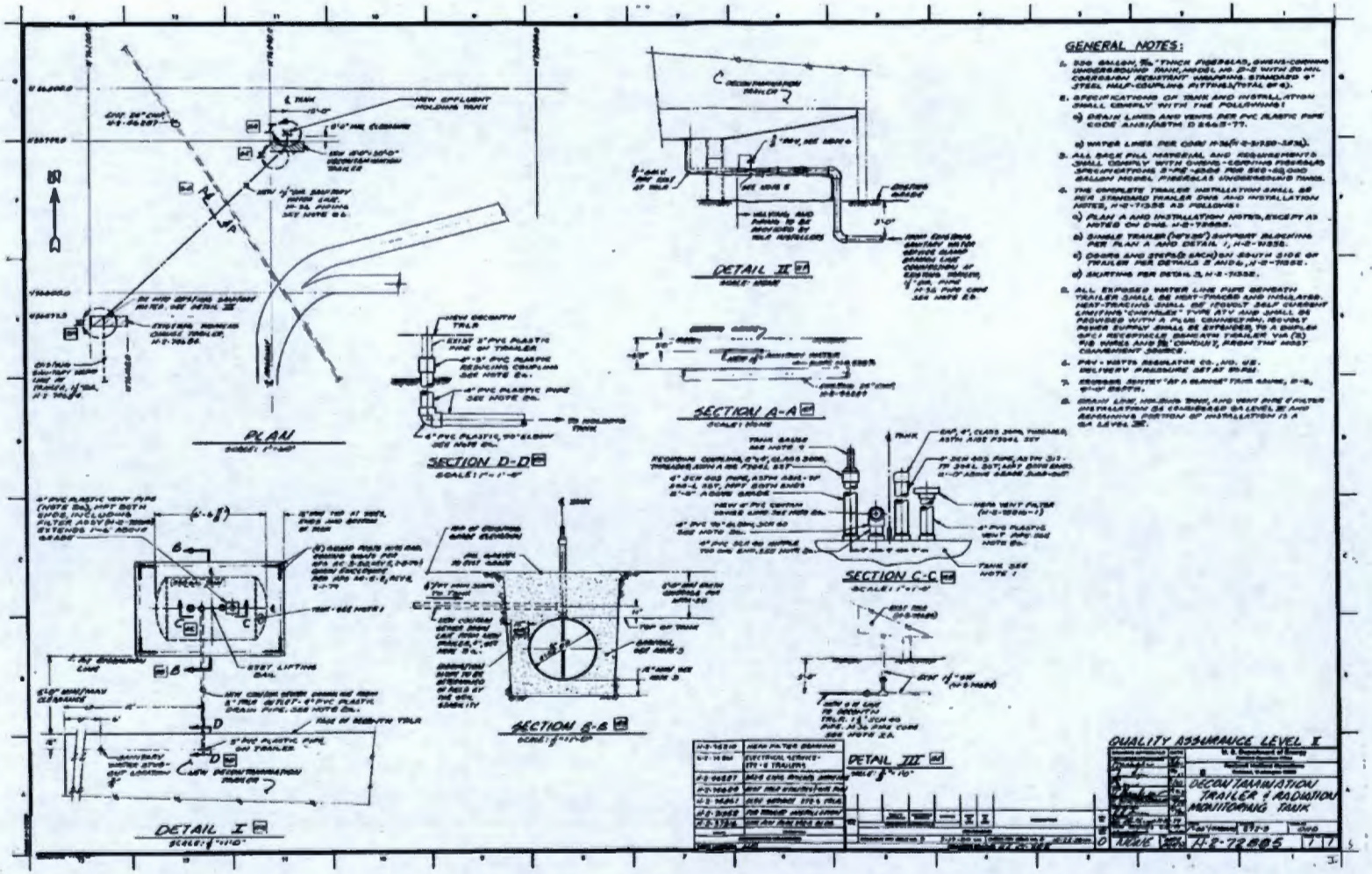
Misc./Other Relevant Information

- The 200-W-7 Catch Tank is not associated with any known releases or waste sites

Site Interfaces

Origin/Termination	Site Interfaces
N/A	None

200-W-7
200-W-223-PL
242-S
N
0
70
140
280 Feet


GENERAL NOTES:
PLAN
DETAIL II
SECTION A-A
SECTION D-D
SECTION C-C
SECTION B-B
DETAIL I
DETAIL III
QUALITY ASSURANCE LEVEL I
DECONTAMINATION TRAILER & RADIATION MONITORING TANK

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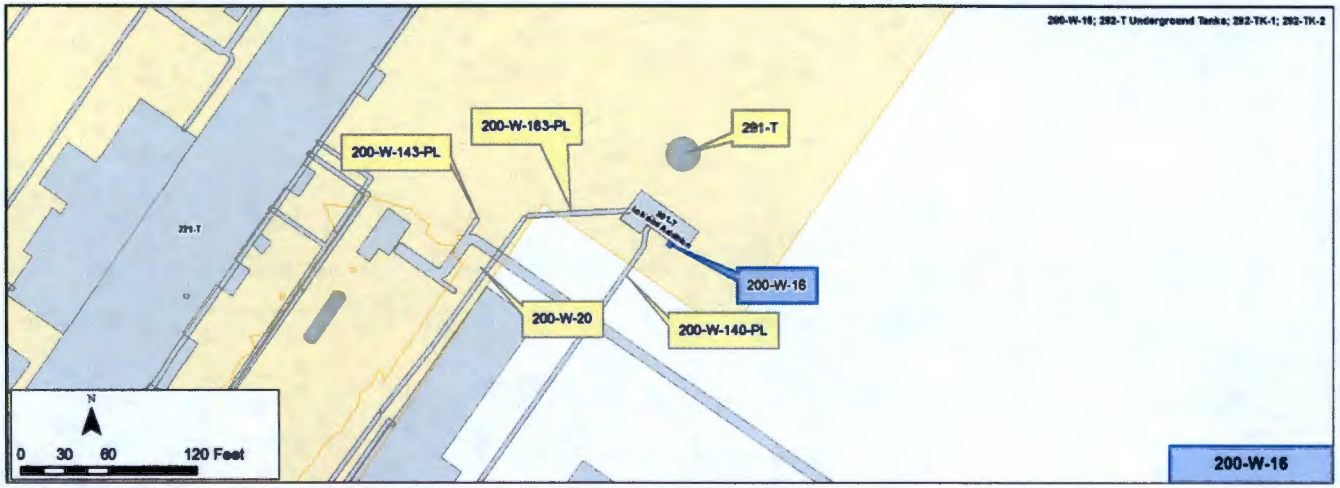
Scoping Summary: 200-W-16

History

The 200-W-16 waste site is two underground, stainless steel, 55 gal drums, buried side-by-side encased in a concrete block with lifting eyes. The drums are known as 292-TK-1 and 292-TK-2.

They were in use from 1944 to 1970 for disposal of various small volume waste streams from T Plant. The volume of waste in the tanks is unknown and the tanks are expected to contain any waste that was added to the tanks for terminal disposal. Two metal riser pipes extend about 1.5 ft above grade near the southeast corner of the 292-T building addition. Both risers are capped and one appears to have a pressure relief vent. 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.



Construction

- Dimensions - 36 in. high x 22 in. diameter wide, (each); vertical and encased in concrete
- Capacity - 110 gal combined
- Material – Stainless Steel
- Tank penetrations – One 2 in. riser in each tank; one riser capped, the second has a vent
- Connections – tanks filled through risers, no external piping; terminal disposition.
- Buried depth - not known

Features of Interest

- 292-TK-1 and 292-TK-2 were relocated during the construction of 292-T lab addition in 1966 and continued to be used until 1970 in the new location adjacent to the 292-T addition.
- 2 riser pipes, 2 in. diameter stainless steel pipes with caps

Relevant Characterization

- A radiological survey was performed during 1995 and revealed a 2 mrem/hr. dose rate above the tanks. The surface area around the tanks undergoes routine radiological surveys by T Plant personnel.
- Current State: One riser has a solid cap; the other has a pressure relief vent
- Tank area covered with gravel and surrounded with a chain-link fence
- Fence is marked Access Restricted

Waste Streams

- Early use of the tanks were for storage of 291-T Stack condensate and 221-T off-gas monitoring systems/condensate. There are no records documenting the amount and kind of materials generated through those processes; It is estimated at less than 50 gal total.
- From 1966 to 1970 tanks received liquid waste resulting from fuel failure experiments
- Waste included furnace slag (from the furnace where N Reactor fuel was heated until it failed) dissolved in nitric acid then neutralized with sodium hydroxide

Misc./Other Relevant Information

- 200-W-16 is located adjacent 292-T Laboratory

Site Interfaces

Origin/Termination	Site Interfaces
N/A	No Operable Unit • 200-W-20 (T Plant Complex) • 200-W-40 (292-T Stack Gas Sampling Building)

221-T
291-T
200-W-163-PL
291-T
Lab and Addition
200-W-16
200-W-140-PL
200-W-20
200-W-143-PL
N
0
35
70
140 Feet

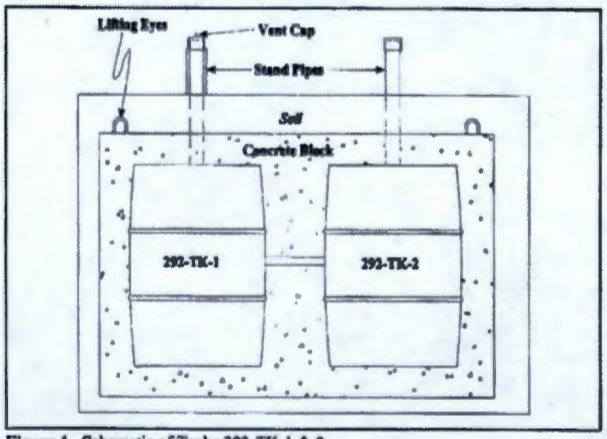
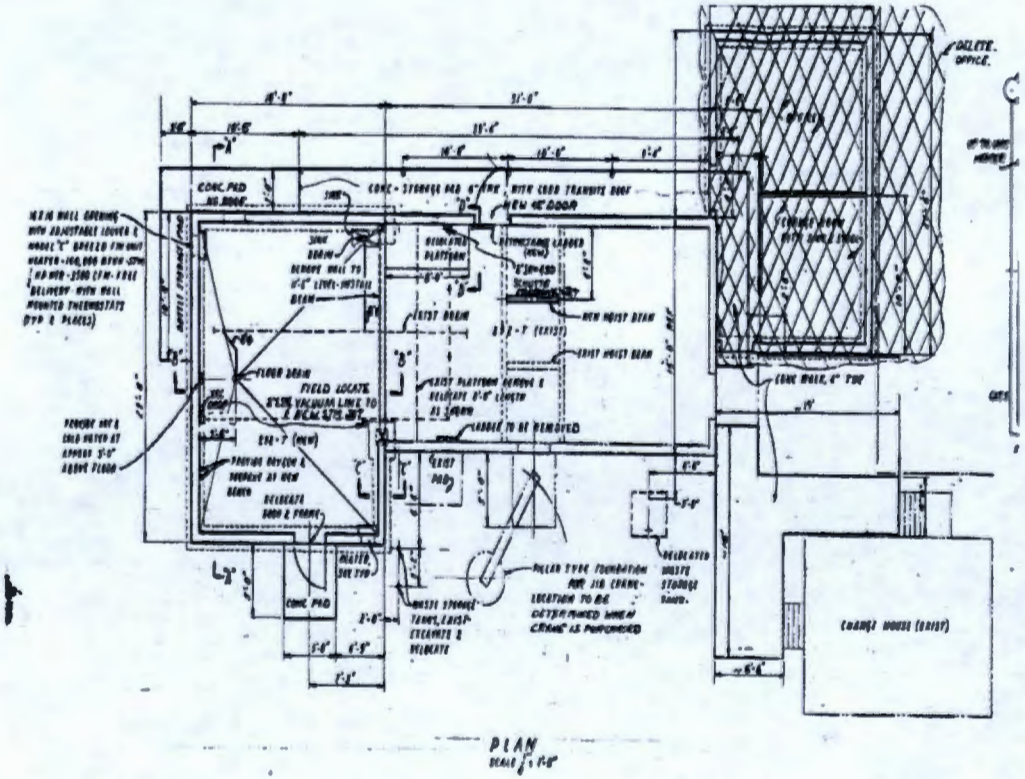


Figure 1. Schematic of Tanks 292-TK-1 & 2



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Scoping Summary: 200-W-58

History

The 200-W-58 waste site is a valve pit (Z-Plant Diversion Box #1) that routed neutralized, radiological liquid process waste from the 241-Z-361 Settling Tank to several 216-Z cribs.

No construction date could be found for the 200-W-58 valve pit. The 241-Z-361 Settling Tank and 216-Z cribs were active from 1949-to-1973.

200-W-210-PL routed waste from the valve pit to the 216-Z-1, 216-Z-2, and/or 216-Z-3 Cribs. Alternatively, 200-W-208-PL routed waste from the 200-W-58 valve pit to the downstream 200-W-59 (Z-Plant Diversion Box #2) valve pit, and on to the 216-Z-12 Crib.

200-W-58 is posted as an Underground Radioactive Materials Area.

The 200-W-58 waste site is located in the vicinity of PW1,3,6/CW5 waste sites. Response actions under that project may impact the 200-W-58 waste site.

Construction

200-W-58 Valve pit

- Dimensions: 7 ft long x 7 ft wide x 9 ft deep
- Composition: Concrete
- Depth: Buried 9 ft bgs

Pipelines

- Length
  - Segment 1: 5 ft (Connects to Segment 2)
  - Segment 2: 20 ft (Connects to a 20 ft x 20 ft drain field that is 1 ft deep)
- Diameter
  - Segment 1: 4 in.
  - Segment 2: 12 in.
- Composition: VCP
- Gravity Drained
- Direct Buried
- Calculated Volume
  - Segment 1: 3 gal
  - Segment 2: 118 gal

Features of Interest

- Has a 0.5 ft thick concrete lid and the
- Floor is 1 ft reinforced concrete slab that is sloped to a floor drain

Relevant Characterization

- Characterization of 241-Z-361 identified Np, Pu, Am, Sr, Tc, and U (HNF-8735)
- 1976: Characterization of 216-Z-12 found alpha activity 17 17 ft bgs in each well. The max Pu-239/240 activity was 2.5 x 10 ^5 pCi/g at 5.5 m bgs in the well just north of the crib. Soil contamination ranged from 2,500 to 10,000 dpm. This contamination was from the 200-W-208-PL pipe connecting 200-W-59 and 216-Z-12, not leaks from 200-W-59.

Waste Streams

- Active from 1949 - 1973
- A total of 131.6 million gal was disposed at 216-Z-1, 216-Z-2, 216-Z-3, and 216-Z-12 cribs, which represents the maximum volume that was transferred through the 200-W-58 Valve pit
- Associated Waste Stream Processes: Radiological liquid waste from the 241-Z-361 Settling Tank to 241-Z cribs; wastes from 234-5Z; uranium waste from 236-Z; aqueous and organic wastes from 236-Z aqueous; and organic waste from 242-Z
  - The primary COCs include plutonium, americium, uranium, fluoride, nitrate, and carbon tetrachloride

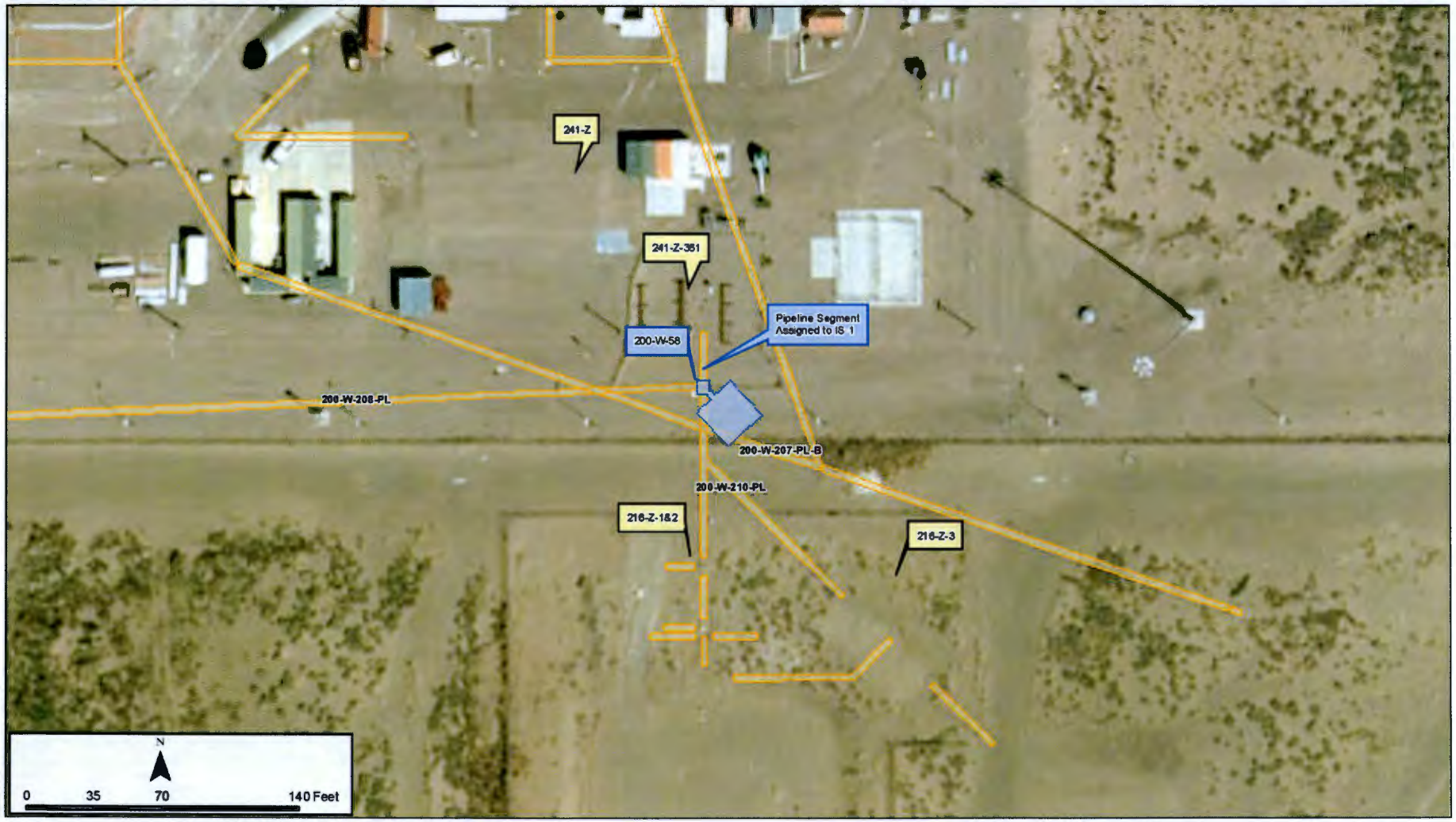
Misc./Other Relevant Information

Characterization Summary Con't

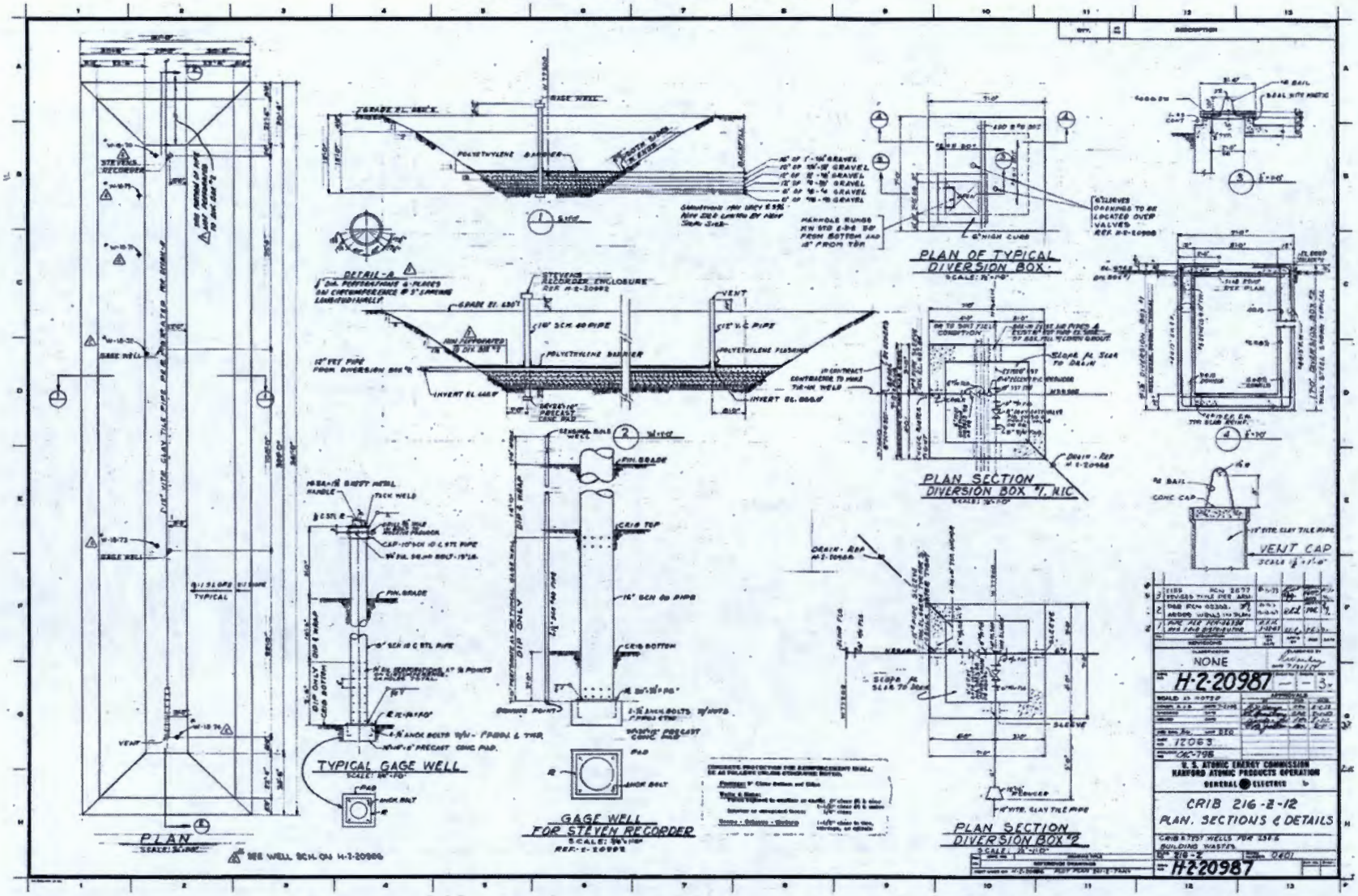
- 216-Z-12, RHO-5T-44 reported Pu up to 5 x 10^6 pCi/g at 10 ft below the crib. Pu was 1,000 pCi/g at 10 ft and decreased to <1 pCi/g at 39 ft below the crib
- Carbon tetrachloride at 216-Z-12 crib was investigated in the 200-PW-1 RI (DOE/RL-2006-51). Soil vapor sampling with a cone penetrometer found carbon tetrachloride at 18 ppmv from a location north of the head end of 216-Z-12, at 72 ft bgs.

Site Interfaces

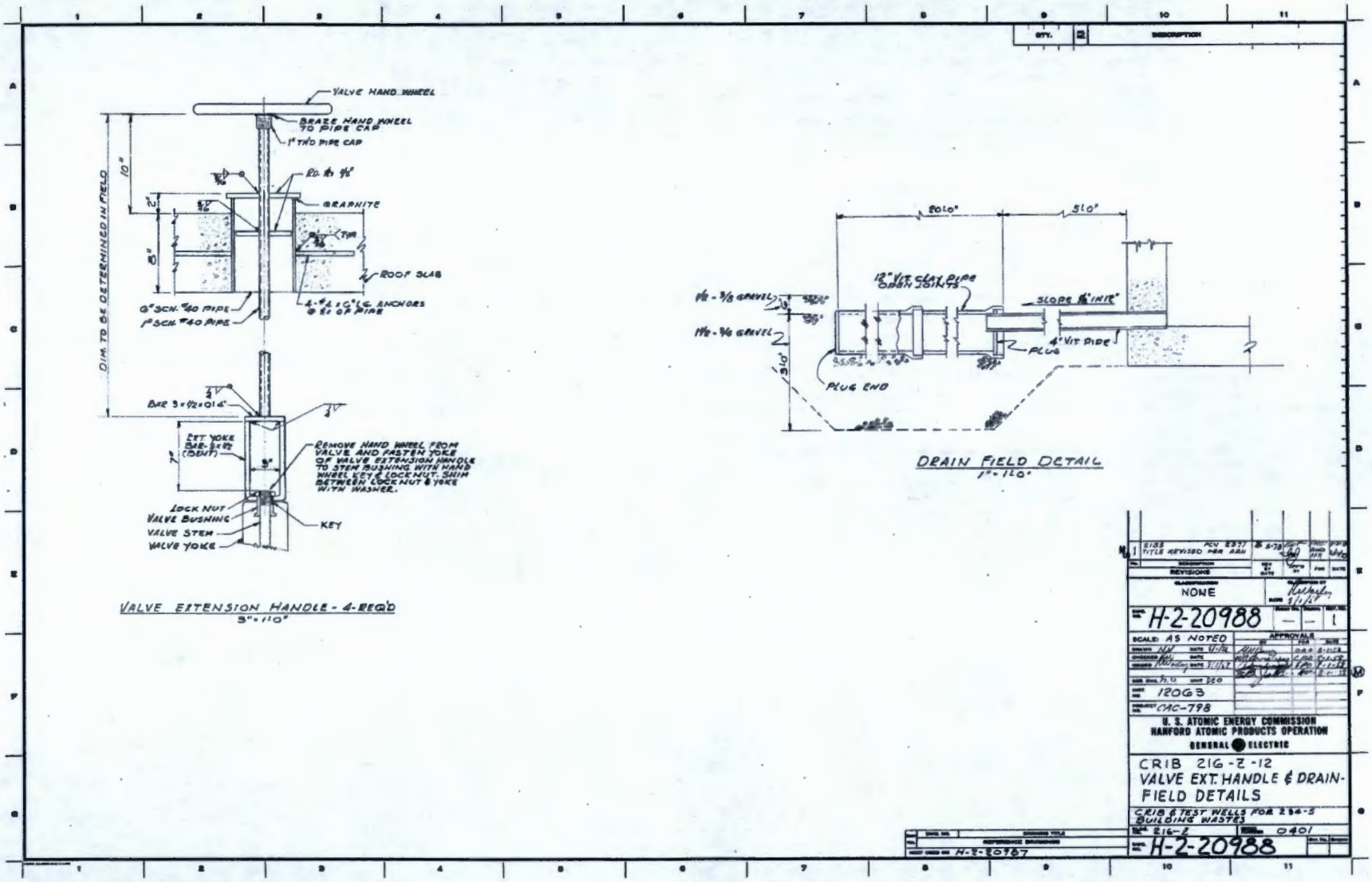
Origin/Termination	Site Intersects
Not Applicable	OU to be assigned • 200-W-208-PL • 200-W-210-PL


241-Z
241-Z-351
Pipeline Segment Assigned to IS 1
200-W-58
200-W-208-PL
200-W-207-PL-B
200-W-210-PL
216-Z-1&2
216-Z-3
N
0
35
70
140 Feet

200-W-58 Valve Pit Select Features of Interest (1 of 2)



200-W-58 Valve Pit Select Features of Interest (2 of 2)



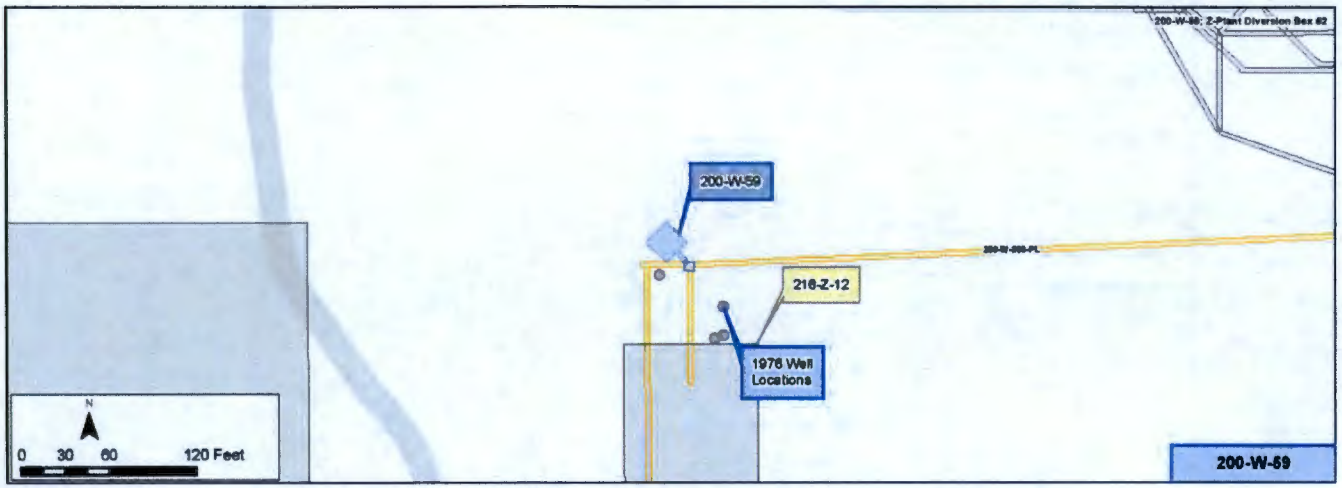
Scoping Summary: 200-W-59

History

The 200-W-59 valve pit (Z-Plant Diversion Box #2) routed neutralized, radiological liquid process waste received from the 241-Z-361 Settling Tank via 200-W-208-PL, to the 216-Z-12 Crib. It was constructed in 1958 as part of Project CAC-798, Crib & Test Wells for 234-5 Building Wastes. The 216-Z-12 Crib was active from 1959 to 1973.

200-W-59 is posted as an Underground Radioactive Materials Area.

The 200-W-59 waste site is located in the vicinity of PW1,3,6/CW5 waste sites. Response actions under that project may impact the 200-W-59 waste site.



Construction

200-W-58 Valve Pit

- Dimensions: 7 ft long x 7 ft wide x 17 ft deep
- Composition: Concrete
- Depth: 9 ft bgs

Pipelines

- Length
  - Segment 1: 5 ft
  - Segment 2: 20 ft
- Diameter
  - Segment 1: 4 in.
  - Segment 2: 12 in.
- Composition: VCP
- Gravity Drained
- Direct Buried
- Calculated Volume
  - Segment 1: 3 gal
  - Segment 2: 118 gal

Features of Interest

- Pipes entered the valve pit through an opening reinforced with a 8 in. pipe sleeve
- 20 ft x 20 ft drain field that was fed by a 12 in. VCP pipe with open joints
- Valve pit has a 0.5 ft thick concrete lid and the floor is 1 ft slab of reinforced concrete that is sloped to a floor drain.
- The gravel filled drain field is 1 ft in depth, for a final depth of 18 ft bgs

Relevant Characterization

- Radionuclide characterization of 241-Z-361 tank sludge identified Np, Pu, Am, Sr, Tc, and U (HNF-8735).
- 4 wells were drilled between 200-W-59 and 216-Z-12 crib in 1976. Of the wells, the maximum Pu-239/240 activity at 5.5 m was 2.S2 x 10^5 pCi/g in well 299-W18-154. Soil contamination readings at the wells ranged from 2,500 DPM to 10,000 DPM (at well 154). RHO-ST-44 determined that the contamination found in these wells was likely to due leaks in the 200-W-208-PL:2 pipeline joints.

Waste Streams

- 200-W-59 valve pit transferred neutralized, radiological liquid waste, aqueous and organic wastes, and uranium wastes from the Z Plant
- The wastes were transferred from 1959-1973
- Incinerator caustic off-gas scrubber solution and liquid waste streams from PFP, Waste Treatment Facility, and PFP laboratory were piped to 241-Z-361 settling tank
- Total of 74 million gal was disposed at the 216-Z-12 crib. This represents the maximum volume transferred through the 200-W-59 valve pit

Misc./Other Relevant Information

Characterization Summary Con't

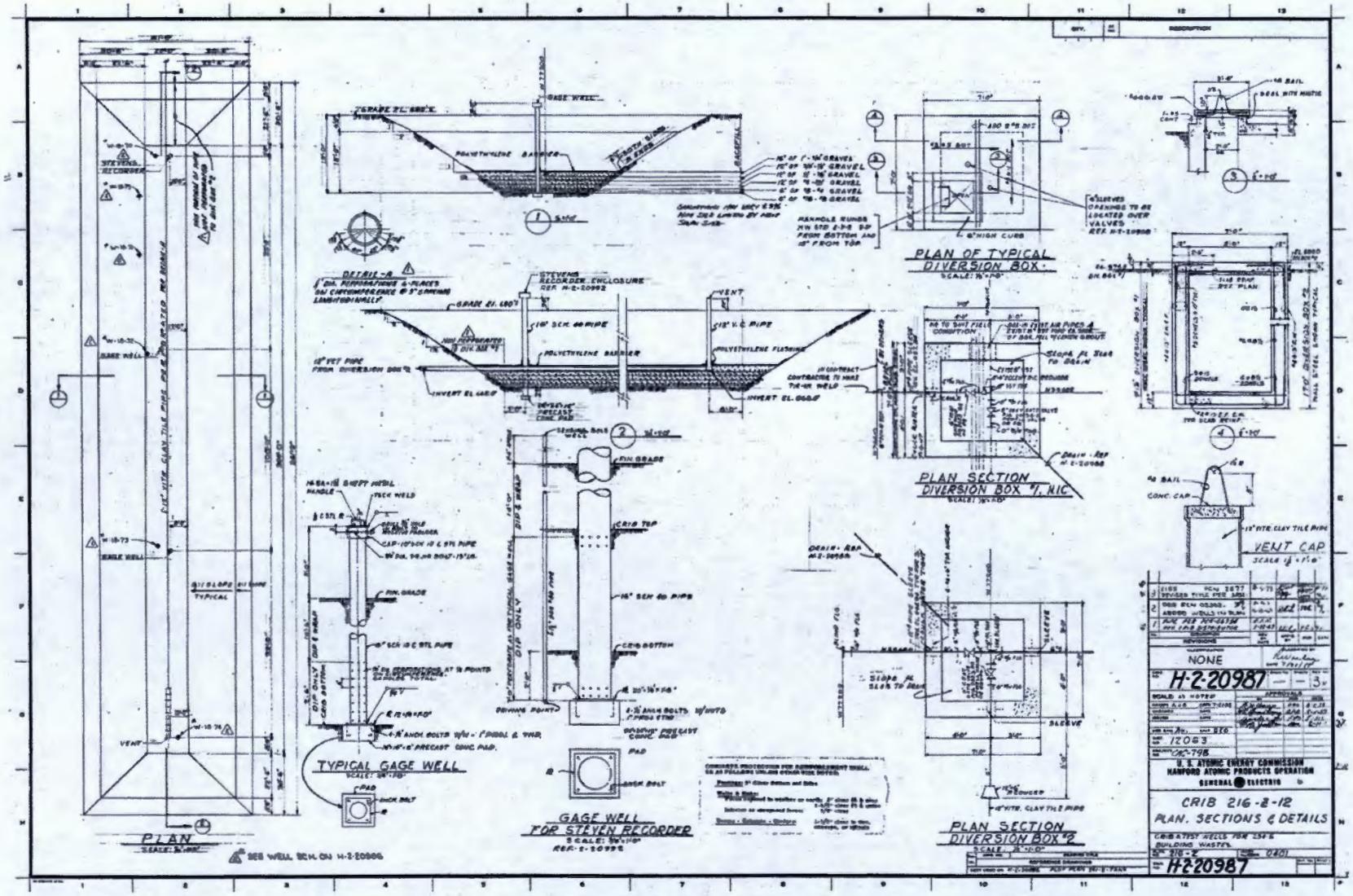
- At 216-Z-12, RHO-ST-44 reported Pu up to 5 x 10^6 pCi/g at 10 ft below the crib. Pu was 1,000 pCi/g at 10 ft and decreased to <1 pCi/g at 39 ft below the crib
- Carbon tetrachloride at 216-Z-12 crib was investigated in the 200-PW-1 RI (DOE/RL-2006-51). Soil vapor sampling with a cone penetrometer found carbon tetrachloride at 18 ppmv from a location north of the head end of 216-Z-12, at 72 ft

Site Interfaces

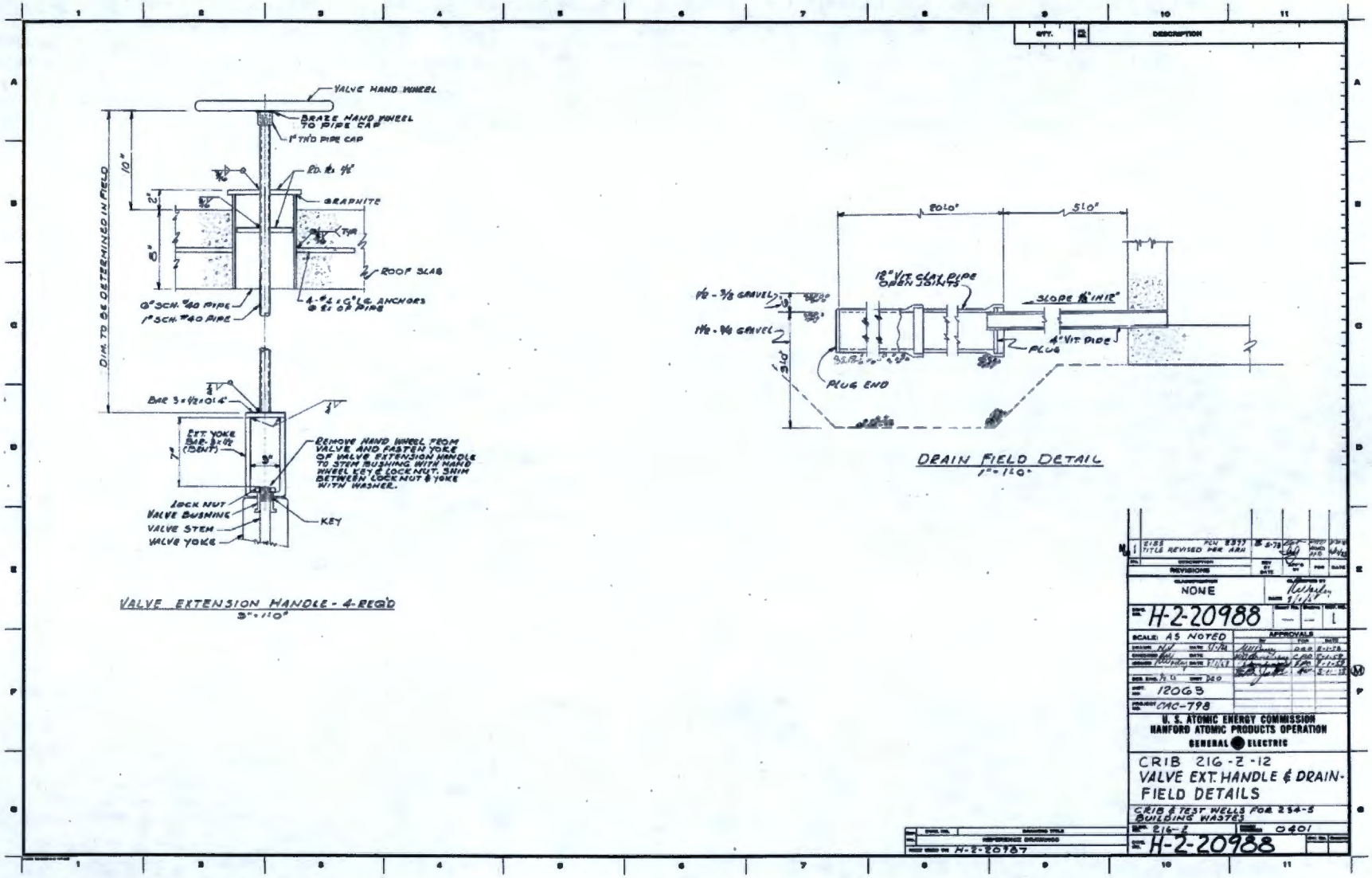
Origin/Termination	Site Intersects
Not applicable	OU to be assigned • 200-W-208-PL • 200-W-210-PL

200-W-59
1976 Well Locations
216-Z-12
200-W-208-PL
N
0
35
70
140 Feet

200-W-59 Valve Pit Select Features of Interest (1 of 2)



200-W-59 Valve Pit Select Features of Interest (2 of 2)



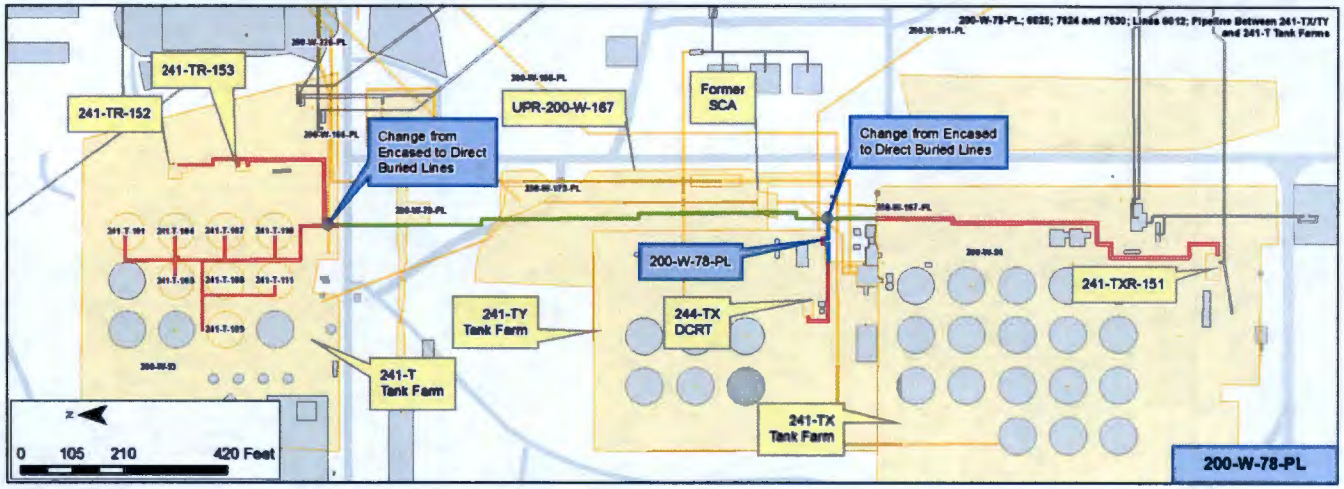
Scoping Summary: 200-W-78-PL

History

The 200-W-78-PL waste site consists of four lines (6025, 7624, 7630, 6012) that originally connected 241-TXR-151 Diversion Box (DB) (241-TX Tank Farm) and 241-TR-152 DB or 241-TR-153 DB (Booster Pump Pit) (241-T Tank Farm). The lines were installed in 1953 as part of Project C-362, Waste Metal Recovery Process, and remained active until 2005.

In 1979, lines 6012 and 7624 were reconfigured to transfer waste from single shell tanks 241-T-101, T-104, T-105, T-107, T-109, T-110, and T-111 to 244-TX DCRT as part of Project B-180, Salt Well Receiver Vessels. 244-TX-DCRT was in service until 2005 and was used to provide temporary storage for accumulated radioactive liquid awaiting transfer to waste concentration.

UPR-200-W-167 is a former SCA identified in 1985 and associated with 200-W-78-PL. The contamination was located north and east of 241-TY Tank Farm and was assumed to be the result of migration from 241-TY over time. Surface contamination was scraped and disposed in 1986 and all markings and postings were removed. Investigation is ongoing to determine if it is correctly associated with 200-W-78-PL.



Construction

- Length:
  - 6012: 3,125 ft
  - 6025: 2,386 ft
  - 7624: 3,270 ft
  - 7630: 2,257 ft
- Diameter:
  - 6012: 2 in. and 6 in.
  - 6025: 3 in.
  - 7624: 2 in. and 6 in.
  - 7630: 6 in.
- Composition: Carbon Steel
- Pressurized
- Concrete Encasement
- Depth: 17 ft – 21 ft bgs
- Total Calculated Volume:
  - 6012: 3,412 gal
  - 6025: 876 gal
  - 7624: 3,427 gal
  - 7630: 3,315 gal

Features of Interest

- 88 pipe bends
- A former SCA overlying a portion of 200-W-78-PL is located east of the 241-TY Tank Farm. An SCA was identified in 2000 based on a drive by observation of a posted contamination area. The area is currently posted as a URMA.

Relevant Characterization

Other than the former SCA located east of the 241-TY tank farm, there is no located history of leaks, failures, or characterization data related to the pipelines. The former SCA was identified in 2000 based on a drive-by observation of a posted contamination area. No survey or supporting information was reported.

Waste Streams

- 200-W-78-PL carried the following waste streams
  - Process Effluent (1944 – 2005)
  - 241-T-111 salt well (1981 – 2005)
  - 241-T-109 salt well (1981 – 2005)
  - 241-T-101 salt well
  - T Tanks (1945-1975)

Misc./Other Relevant Information

- Lines 6012 and 7624 were modified from the original connection between 241-TRX-151 and 241-TR-152
  - The lines were cut and capped to connect the 244-TX DCRT and 241-T tank salt wells
  - These 2 locations are the transition point between the original concrete encased lines and direct buried lines extending within the 241-T tank areas and to 244-TX DCRT

Site Interfaces

Origin/Termination

WMA TX/TY
- 241-TXR-151
- 241-TR-152
- 241-TR-153
- 244-TX DCRT

WMA T
- 241-T-101
- 241-T-104
- 241-T-105
- 241-T-107
- 241-T-109
- 241-T-110
- 241-T-111

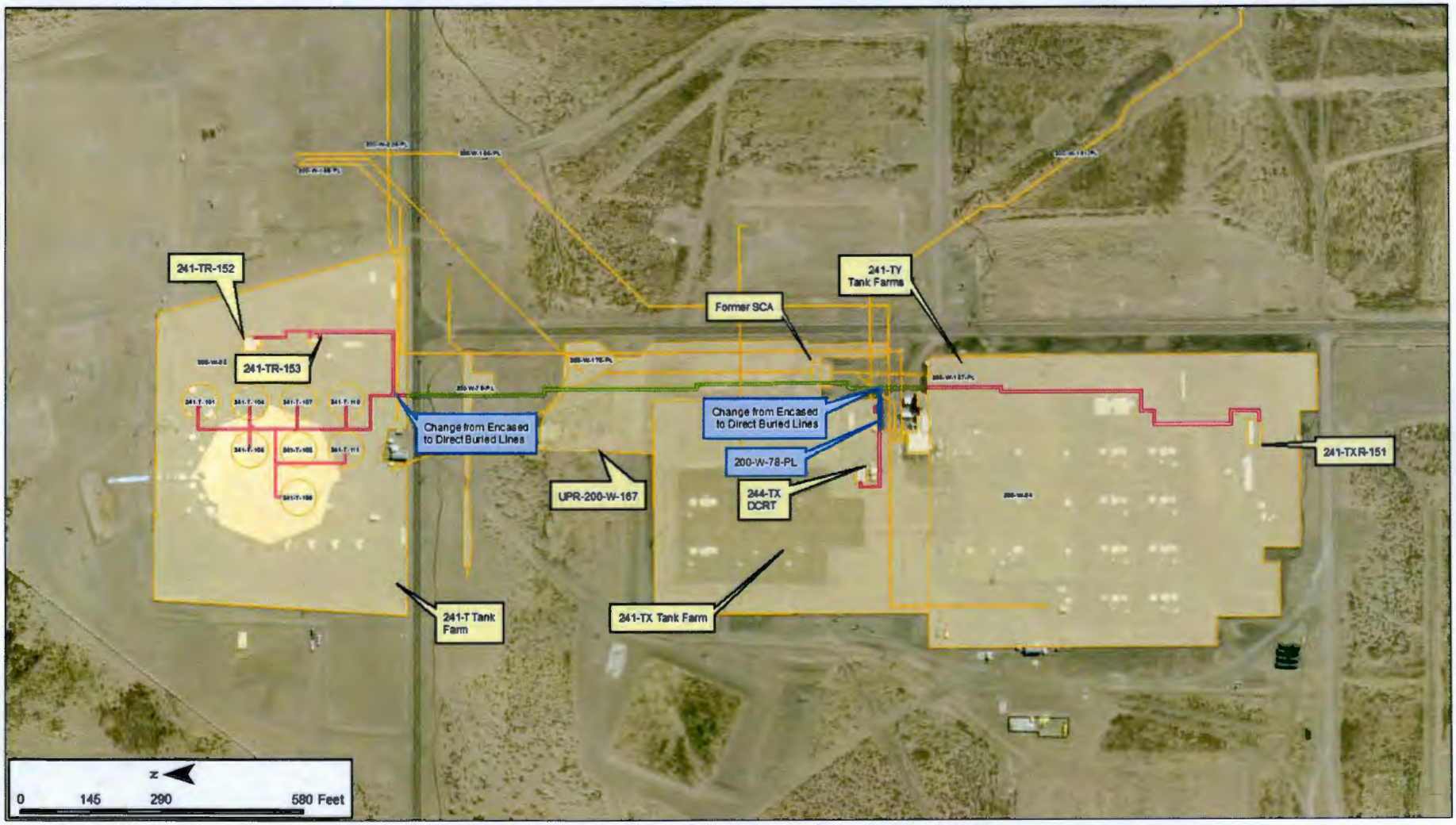
Site Intersects

200-IS-1
- 200-W-79-PL
- 200-W-165-PL
- 200-W-166-PL
- 200-W-167-PL
- 200-W-175-PL
- 200-W-191-PL
- 200-W-226-PL
- UPR-200-W-167

WMA-T
- 200-W-93

WMA TX/TY
- 200-W-94

Scoping Summary: 200-W-78-PL



Scoping Summary: 200-W-79-PL

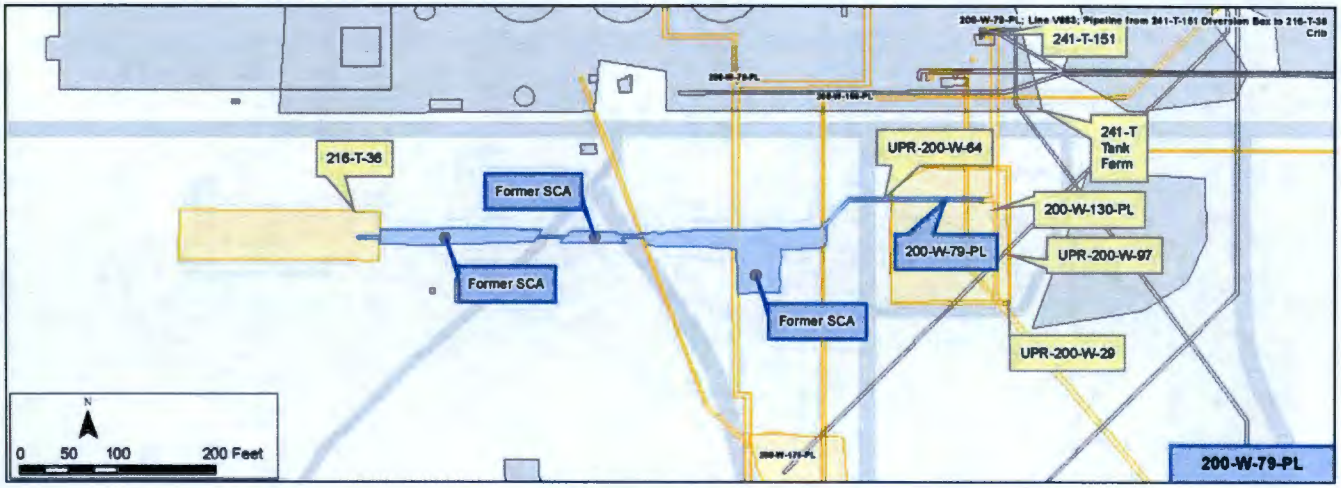
History

The 200-W-79-PL waste site is an inactive underground pipe that transferred waste from the 241-T-151 Diversion Box to the 216-T-36 Crib.

In 1967, this VCP line was added onto the existing stainless steel (SS) spare line V663 (200-W-130-PL) to begin operation of the crib. Both the SS spare line and the VCP line to 216-T-36 are considered V663.

Operation of 216-T-36 began in 1967. The end date for crib operation is unclear and the shutdown occurred between 1970 and 1973. Therefore, the operation dates for 200-W-79-PL is assumed to be 1967-to-1973.

200-W-79-PL includes three former soil contamination areas (SCAs) overlying much of pipeline. These areas were stabilized by topping with a bio-barrier and gravel in 2000 and then down-posted. The locations are currently posted as URMAs.



Construction

- Length: 643 ft
- Diameter: 4-in
- Composition: Vitrified Clay
- Gravity Drained
- Direct Buried
- Depth: 11 ft bgs
- Total Calculated Volume: 420 gal

Features of Interest

- The 4 in. VCP 200-W-79-PL was modified to connect to the existing 3 in. V663 SS pipe (200-W-130-PL) at the south end of the pipe. A 90 degree elbow and reducer were installed at the connection points of the pipelines.
- The west section of the V663 VCP line is within the 216-T-36 Crib waste site. The section of pipe in the 216-T-36 waste site includes the distribution line. The distribution line within the crib comprises 58, 0.5 in. holes along the pipe and a 1.8 in. drain hole near the end of the pipe for drainage.
- 3 former SCAs/current URMAs are associated with 200-W-79-PL.

Relevant Characterization

- No records of a release from this pipeline were found.
- Three former SCAs/current URMAs with a combined area of 16,950 sq ft are associated with 200-W-79-PL
  - RHO-CD-673 (1978) presented estimates of the radionuclides in the 216-T-36 crib based on process knowledge (discharge data)
- ARH-ST-156 (1977) documents that two wells monitored radionuclide contamination in the 216-T-36 area prior to construction of the crib

Waste Streams

- All waste associated with the 200-W-79-PL was conveyed to the 216-T-36 Crib, and is referred to as 221-T Decontamination Facility Waste: 216-T-36 Crib
  - The crib received waste steam condensate, decontamination waste, and miscellaneous waste from 221-T and 221-U Buildings and decontamination waste from 2706-T Building
  - Between 1967 and 1968 216-T-36 crib received 276,000 gal of waste in from T Plant decontamination
  - U Plant waste disposed to 216-T-36 consisted of low level waste generated during storage and trans-shipping of 100-N fuels

Misc./Other Relevant Information

- The 200-W-79-PL only consists of the VCP portion of line V663. V663 was originally a spare SS pipe from the 241-T-151 DB.
- 200 ft of the VCP portion of V663 (200-W-79-PL) extend into the crib site boundary; however, the 200-W-79-PL site only extends 23 ft into the crib boundary
- SK-2-21661 and ISO-636 incorrectly indicate that the line to 216-T-36 (200-W-79-PL) was stainless steel

Site Interfaces

Origin/Termination

200-WA-1
- 216-T-36

200-IS-1
- 200-W-130-PL

Site Intersects

200-IS-1
- UPR-200-W-29
- UPR-200-W-64
- UPR-200-W-97
- 200-W-78-PL
- 200-W-130-PL
- 200-W-166-PL
- 200-W-175-PL

Scoping Summary: 200-W-79-PL

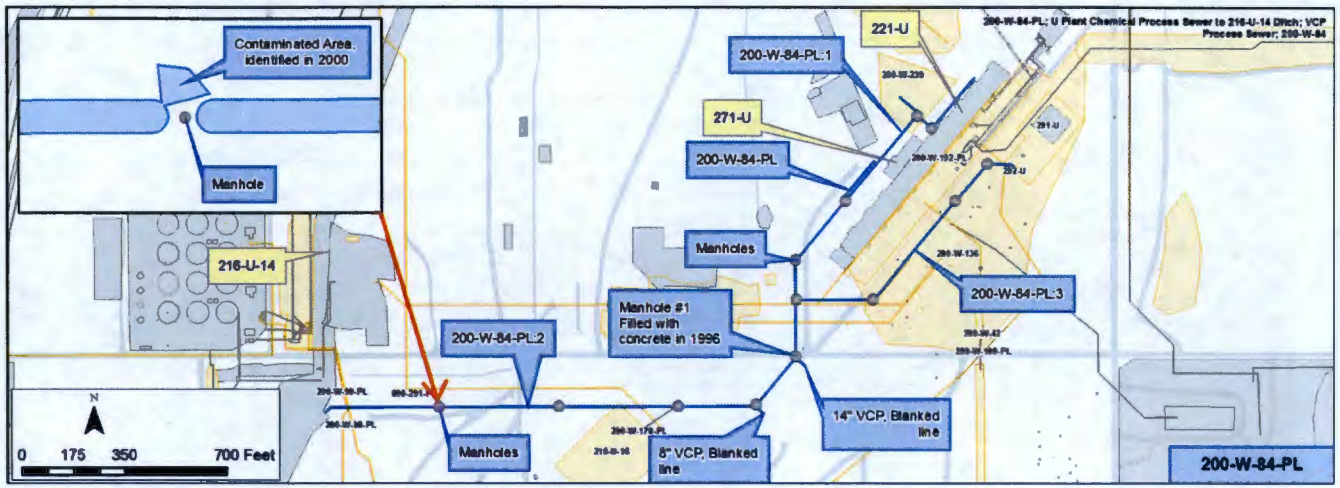
Scoping Summary: 200-W-84-PL

History

The 200-W-84-PL waste site is an inactive underground process sewer line network extending from the northwest side of the 221-U Building to the 216-U-14 Ditch. The line runs south, under 16th Street, and turns to the west until it intersects with the 216-U-14 Ditch.

In addition to the 221-U Building, the line transferred waste from the 222-U, 224-U, 271-U, and 292-U facilities. This line was constructed to carry non-tributyl phosphate waste from the 221-U Building.

The pipeline was in service from Jan-1952 through Jul-1984; however, given the various sources and the associated junctions, some feed lines were constructed or removed from service at various times throughout that span. 222-U was demolished in 2005 and 224-U was demolished in 2010.



Construction

- Length: 3,914 ft total
  - 200-W-84-PL:1: 587 ft, plus 167 ft feed line to 271-U, 86 ft feed line from 211-U, and 211 ft at eastern end of 221-U
  - 200-W-84-PL:2: 1,927 ft
  - 200-W-84-PL:3: 936 ft
- Diameter: Various
  - 200-W-84-PL:1: 12 in. VCP
    - 271-U feed line: 8 in. steel
    - 211-U feed line: 6 in. stainless steel
    - Eastern 211-U Segment: 6 in. VCP to 8 in. VCP to 10 in. VCP connecting to PVC
  - 200-W-84-PL:2: 18 in. VCP
    - Two blanked and unused VCP stubs at the southeast corner of the run; one is 14 in. VCP, the other is 8 in. VCP.
  - 200-W-84-PL:3: 8 in. VCP
- Composition: Primarily VCP with acid-proof joints (variations described above)
- Gravity Flow
- Direct Buried
  - Subsite 3 is encased in 6 in. thick concrete as it passes under 16th street and for the subsequent 205 ft to the south.
- Depth: 3 ft - 8 ft bgs
- Calculated Volume: 31,365 gal

Features of Interest

- Approximately six 'T' and/or 'Y' joints
- Four junctions with material change (i.e. VCP to PVC (x2), VCP to Steel, and PVC to Steel)
- Approximately 13 manholes, which are located above joints/material changes, and some elbows/bends in the line.
- Approximately 14 bends/elbows

Relevant Characterization

- A remotely operated crawler (with video camera and gamma detection equipment) was sent through the 221-U process sewer. Though not part of 200-W-84-PL, results are expected to be similar.
- Average dose rate inside the sewer was ~100 mrem/hr.
- Two samples of thin layers of dried, small-grain material were taken, detecting radionuclides including:
  - Strontium-89/90, Cesium-137, Americium-241, Europium-154, Uranium-238, and Plutonium Isotopes

Waste Streams

- Non-tributyl phosphate waste generated in U-Plant by the uranium recovery process
  - Included fission products, sulphate, nitrate, and phosphate ions in aqueous solution
- Steam condensate from several buildings, primarily 221-U and 224-U (1952-1984)
  - These condensates were generally considered non-toxic

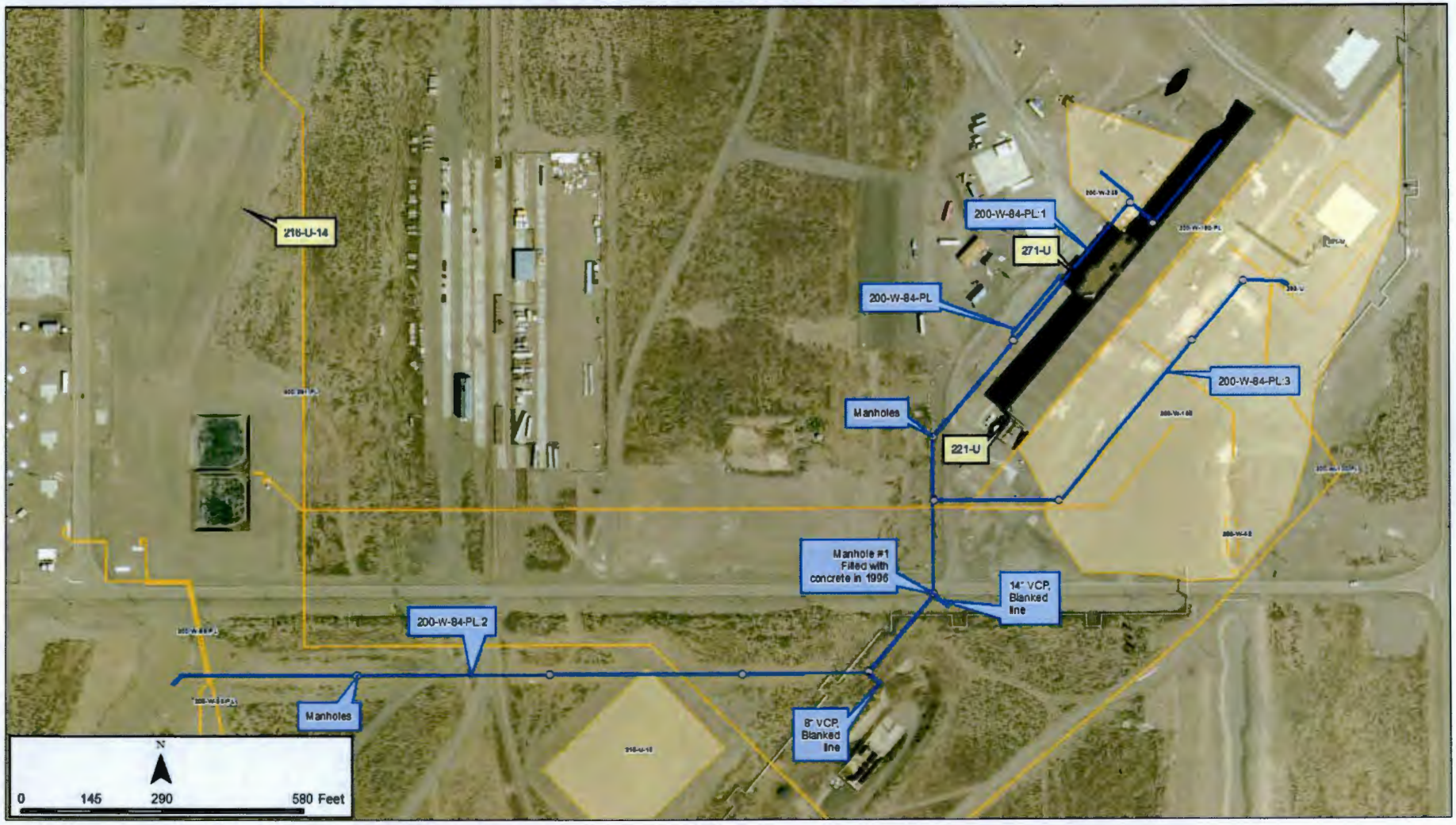
Misc./Other Relevant Information

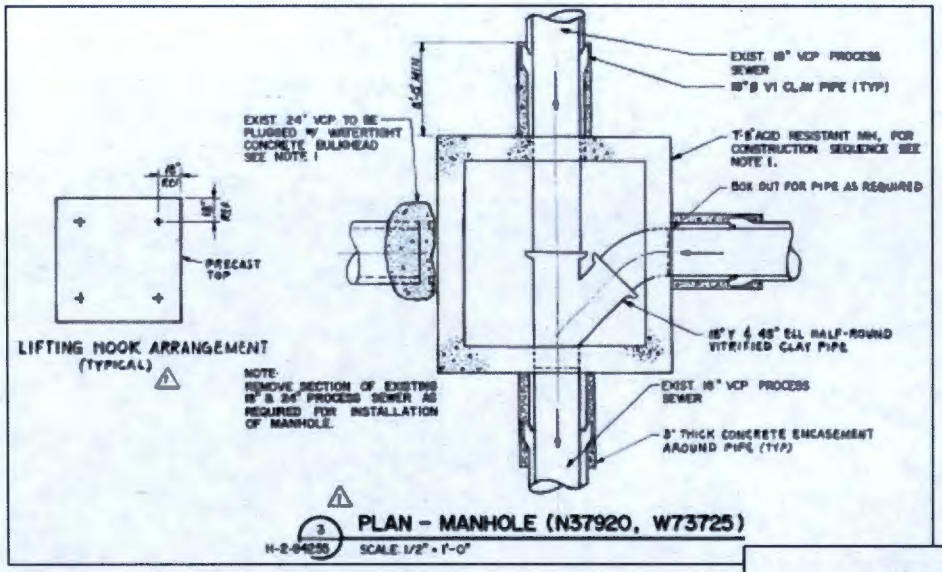
- In 1983, the 50 ft section of pipe in Subsite 1 was modified from 12 in. VCP to 8 in. PVC. The manholes and fittings on either side of this pipe run were replaced. PVC piping was pushed/pulled through the existing VCP and space around the PVC line was filled with acid-proof concrete
- In 2000, a 5 ft x 5 ft Contamination Area was identified west of the 216-U-16 Crib. The area and the associated manhole are part of 200-W-84-PL

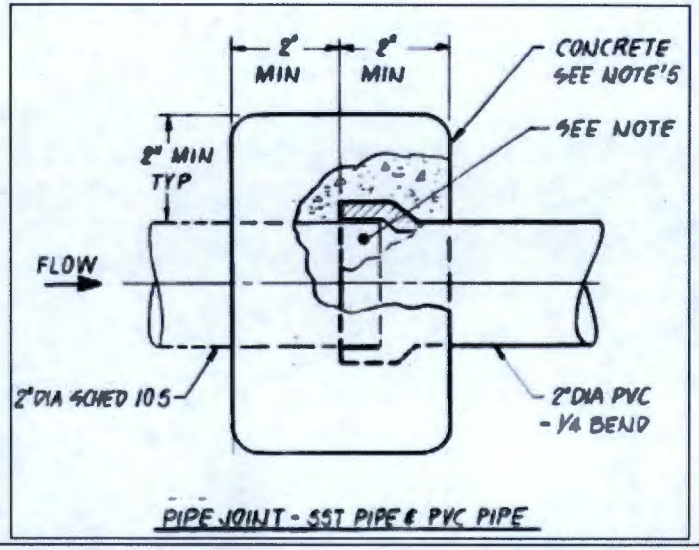
Site Interfaces

Origin/Termination	Site Intersects
U-Plant Facility	200-IS-1
• 221-U	• 200-W-98-PL
• 222-U (Demolished)	• 200-W-99-PL
• 224-U (Demolished)	• 200-W-170-PL
• 271-U	• 200-W-192-PL
• 292-U	• 200-W-103-PL
200-WA-1	200-WA-1
• 216-U-14 (Ditch)	• 200-W-42 (Process Sewer)
	• 216-U-16 (Crib)
	No Operable Unit
	• 200-W-136 (URMA)
	• 200-W-239 (UPR)
	• 600-291-PL

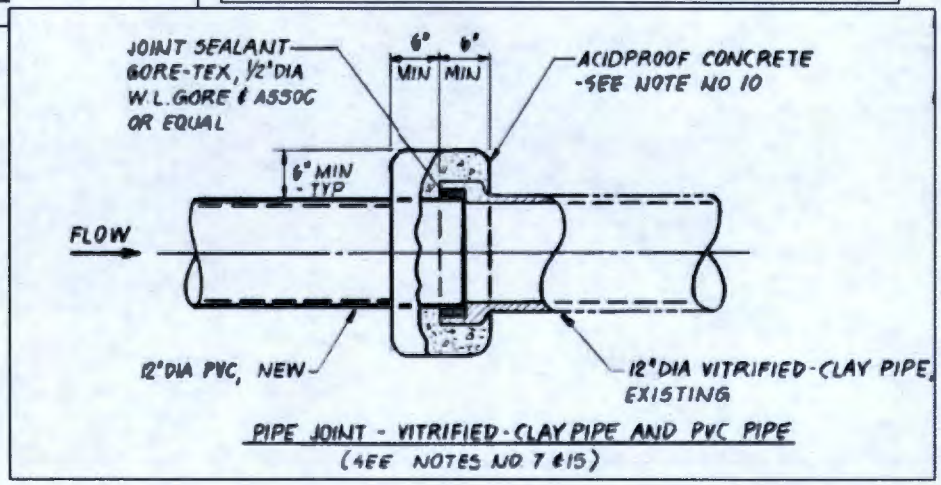
Scoping Summary: 200-W-84-PL

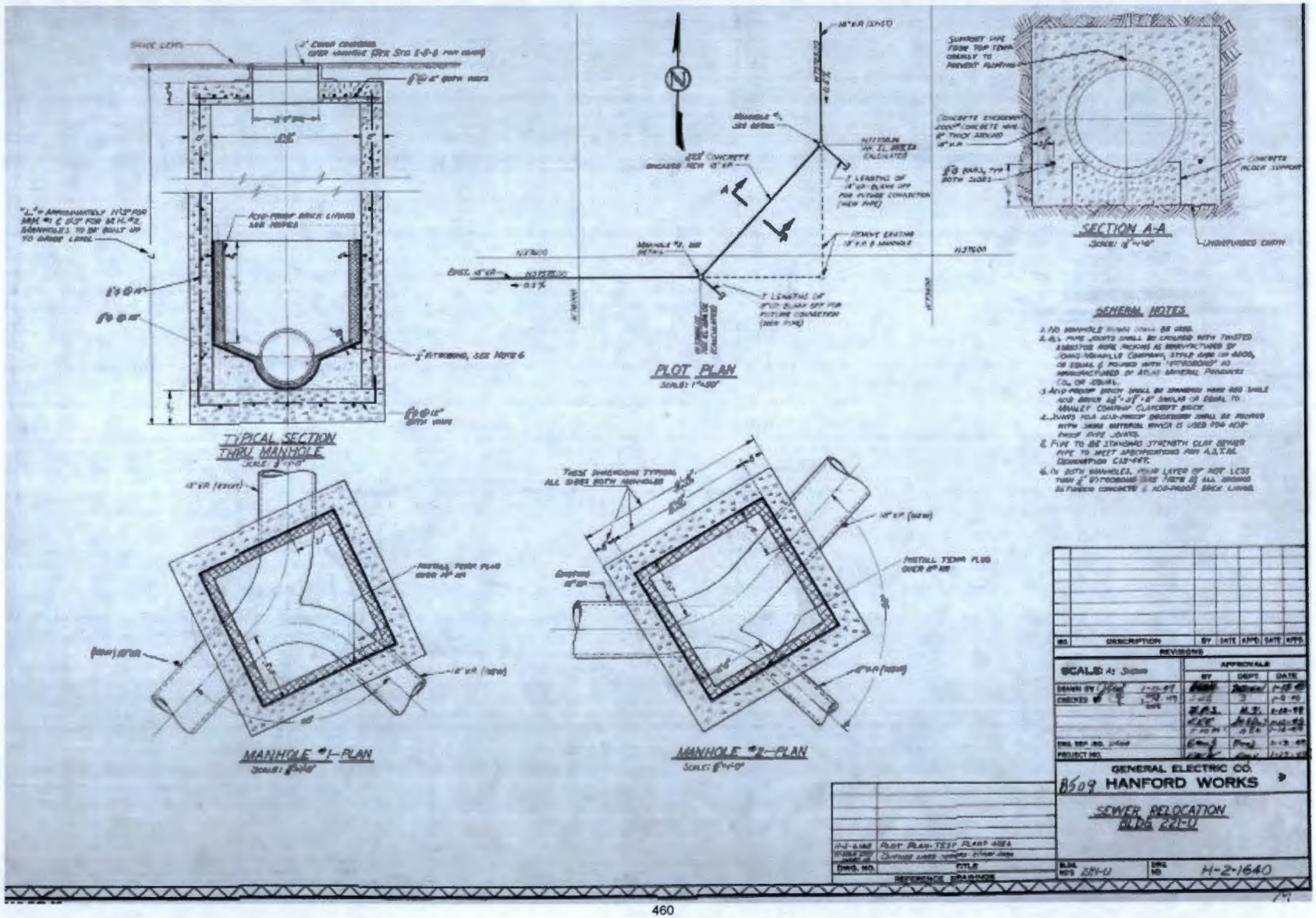






Note: the manhole detail drawing above is specific to manholes installed with the PVC piping in 1983.




TYPICAL SECTION THRU MANHOLE
PLOT PLAN
SECTION A-A
GENERAL NOTES
MANHOLE #1-PLAN
MANHOLE #2-PLAN
GENERAL ELECTRIC CO.
HANFORD WORKS
SEWER RELOCATION
H-2-1640

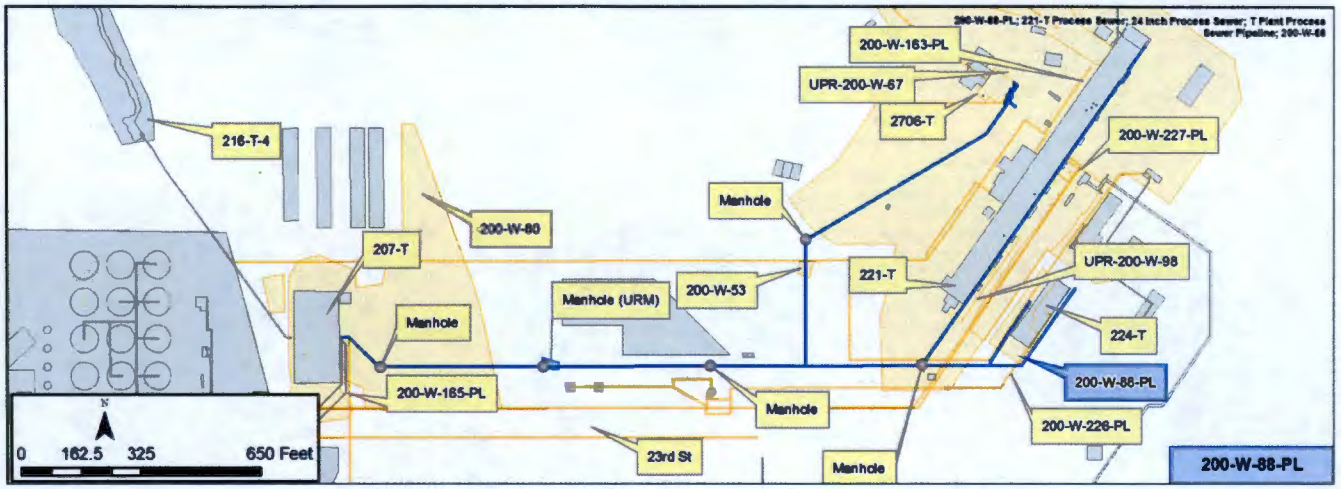
Scoping Summary: 200-W-88-PL

History

The 200-W-88-PL waste site is an inactive underground T-Plant radioactive process sewer system. The main line originates at the 221-T Canyon Building and extends west to the 207-T Retention Basin. Feed lines originate from various support facilities, including 224-T and 2706-T; each feeder connects to the main line.

The system was in use from 1944 to 1995.

The main line is now sealed with concrete at its termination point, the 207-T Retention Basin. This basin was backfilled with clean fill in 1996, at which point the basin inlet structure was isolated.



Construction

- Length: 4,896 ft (cumulative)
- Diameter: 2 ft
- Composition: Vitrified Clay Pipe
- Gravity Drained
- Direct Buried
- Depth: 8 ft to 12 ft bgs
- Total Volume: 115,059 gal

Feeder Line Variations:

- North-South Feeder West of 221-T: 6 in. VCP
- SW Feeder running length of 221-T: 24 in. Cast Iron
- SW Feeder running length of Rear 224-T: 10 in. Cast Iron
- SW Feeder running from NW of 224-T: 4 in. Carbon Steel
- Feeder from 2706-T: 6 in. VCP

Features of Interest

- Five 4 ft diameter manholes along pipeline system
- Former Surface Contamination Area adjacent/around one man hole, surface-stabilized in 2002 and now posted Underground Radioactive Material (labeled on figure). 2002 rad survey showed less than background for alpha, beta/gamma rads

Relevant Characterization

- Sep-1985: 500 gal of aqueous 5% sodium hydroxide solution containing 219 pounds of sodium hydroxide was released from T Plant to 207-T Retention Basin via 200-W-88-PL

Waste Streams

- This process sewer system transferred process cooling water, air conditioning condensate, and floor drain waste from the buildings to the retention basin

Misc./Other Relevant Information

- 207-T Retention Basin: Activity levels in historic waste streams were normally low, and the water was discharged to the 216-T-4 Pond via the 216-T-4 Ditch
- None of the UPRs that intersect this waste site are specifically associated with it

Site Interfaces

Origins/Termination

- 221-T
- 224-T
- 2706-T

200-WA-1

- 207-T Retention Basin

Site Intersects

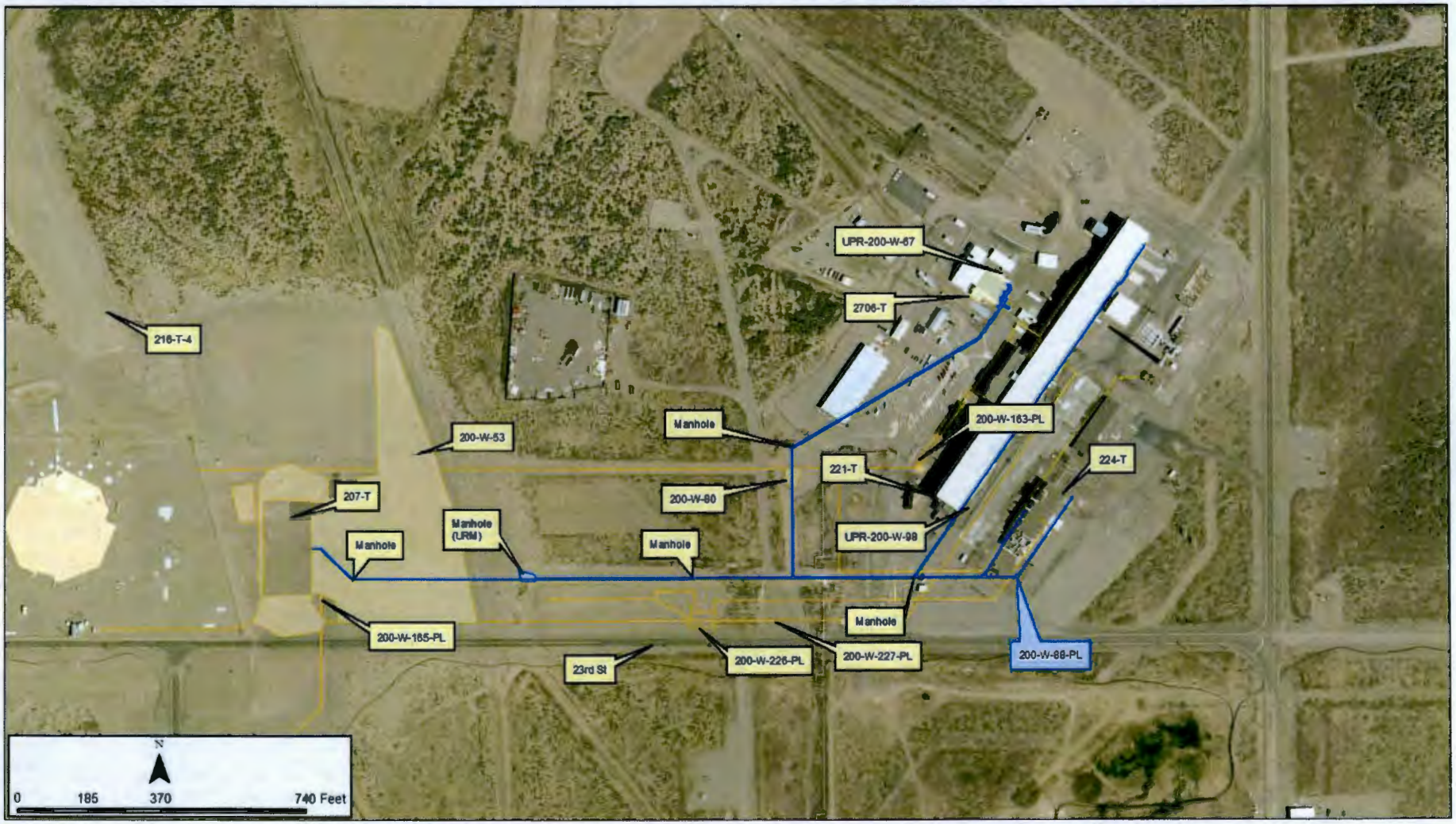
200-IS-1

- 200-W-165-PL
- 200-W-163-PL
- 200-W-226-PL
- 200-W-227-PL
- UPR-200-W-98

200-WA-1

- UPR-200-W-67
- 200-W-53
- 200-W-80

Scoping Summary: 200-W-88-PL



Scoping Summary: 200-W-97-PL

History

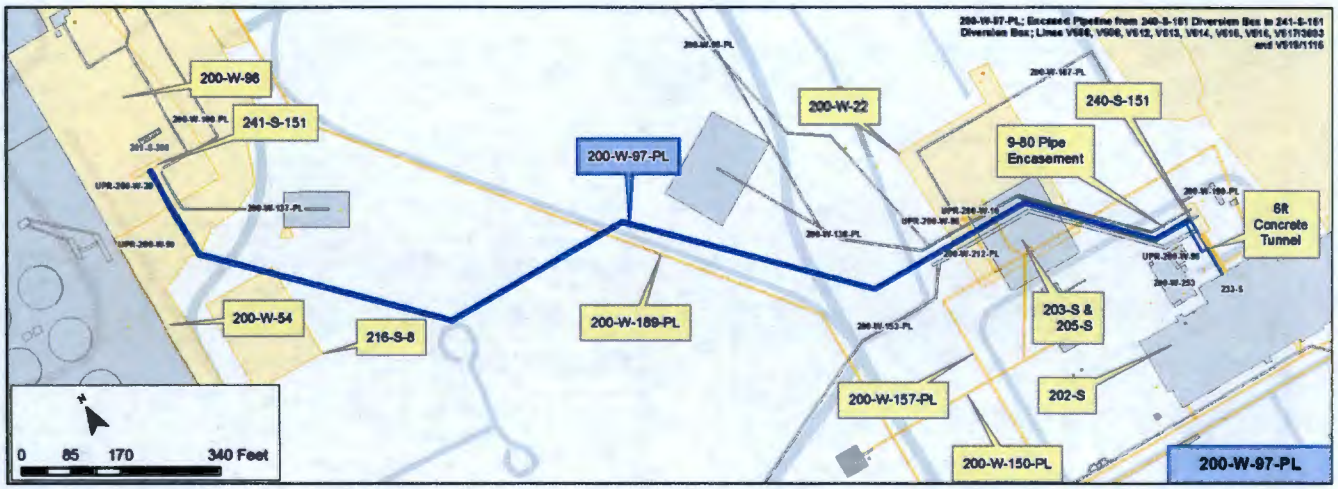
The 200-W-97-PL waste site is an inactive radioactive process sewer that consists of eleven waste transfer lines in a underground concrete encasement from the 202-S Facility (REDOX) and the 240-S-151 Diversion Box to the 241-S-151 Diversion Box in the 241-S/SX Tank Farm..

It was constructed in 1950.

Two lines (3603 and 1115) extend from the 202-S facility to the 240-S-151 Diversion Box. The remaining nine lines V508, V509, V512, V513, V514, V515, V516, V517, and V519 extend from the 240-S-1S1 Diversion Box to the 241-S-151 Diversion Box.

In the early 1980s, two lines inside the concrete tunnel between REDOX and the 240-S-151 Diversion Box were rerouted into two lines in the 9-80 encasement south of the diversion box (See Figure 1).

The last recorded waste transfer to 241-S-151 Diversion Box was 1980, and 1987 for the 240-S-151 Diversion Box. By 1988, all lines connecting into the 240-S-151 Diversion Box were capped.



Construction

Pipelines: 11 lines (V508, V509, V512, V513, V514, V515, V516, V519/1115, V517/3603, 3603, and 1115)

- Total Length: 17,840 ft
  - 3 in. Diameter: 17,550 ft = 1,950 ft/line * 9 lines in the 9-80 encasement
  - 3.5 in. Diameter: 290 ft = 145 ft/line * 2 lines from 202-S into 9-80 encasement
- Composition: Stainless Steel
- Cathodic Protection Observed
- Gravity Flow
- Buried Depth: 9.5 ft - 19 ft bgs
- Total Calculated Volume: 8,880 gal

Encasements

- 9-80 (lines: V508, V509, V512, V513, V514, V515, V516, V519/1115, and V517/3603)
  - Length: 1,950 ft; Concrete Volume: 19,656 cu ft
- 6 ft Diameter Pipe Tunnel (lines: 3603 and 1115)
  - Length: 90 ft
- 8 in. & 6 in. Pipe Encasement (lines: V519/1115, and V517/3603)
  - Length: 57 ft

Features of Interest

- Yellow swab risers are located along the pipeline. One swab riser has been surrounded with posts and chain and posted Soil Contamination Area
- 9 bends, with test risers
- Two line conversion nozzles from 2 in. to 3 in., just south of the 240-5-151 Diversion Box
- 4 abandoned capped segments off 240-S-151
- 9 capped ends into 240-S-151

Relevant Characterization

- Shallow and deep radiological surveys in 2016 measured readings at <5 mrem/hr and removable beta <1,000 dpm/100 sq-cm and removable alpha <20 dpm/100 sq-cm
- Low-level dilute laboratory waste containing 0.021 mol/L Na, >0.01 mol/L OH, >0.011 mol/L NO-2, and 7.8 x10-5 g/l total plutonium

Waste Streams

- Processes: REDOX Plant - Reduction and Oxidation Process
- Low-level dilute laboratory waste from the 222-5 laboratory

Misc./Other Relevant Information

- A Oct-1-2001 Radiation Survey discovered radioactive tumbleweed fragments and soil with readings up to 20,000 cpm beta-gamma in an 8 ft x 8 ft area around a swap riser approximately 100 yards northwest of 202-S
- UPR-200-W-20 and UPR-200-W-50 occurred near the 241-S-151 Diversion Box, with radiological activity readings from 5,000 c/m to 8,000 c/m

Site Interfaces

Origin/Termination

200-IS-1
- 240-S-151

200-CR-1
- 202-S

WMA S/SX
- 241-S-151

Site Intersects

200-IS-1
- 200-W-150-PL
- 200-W-157-PL

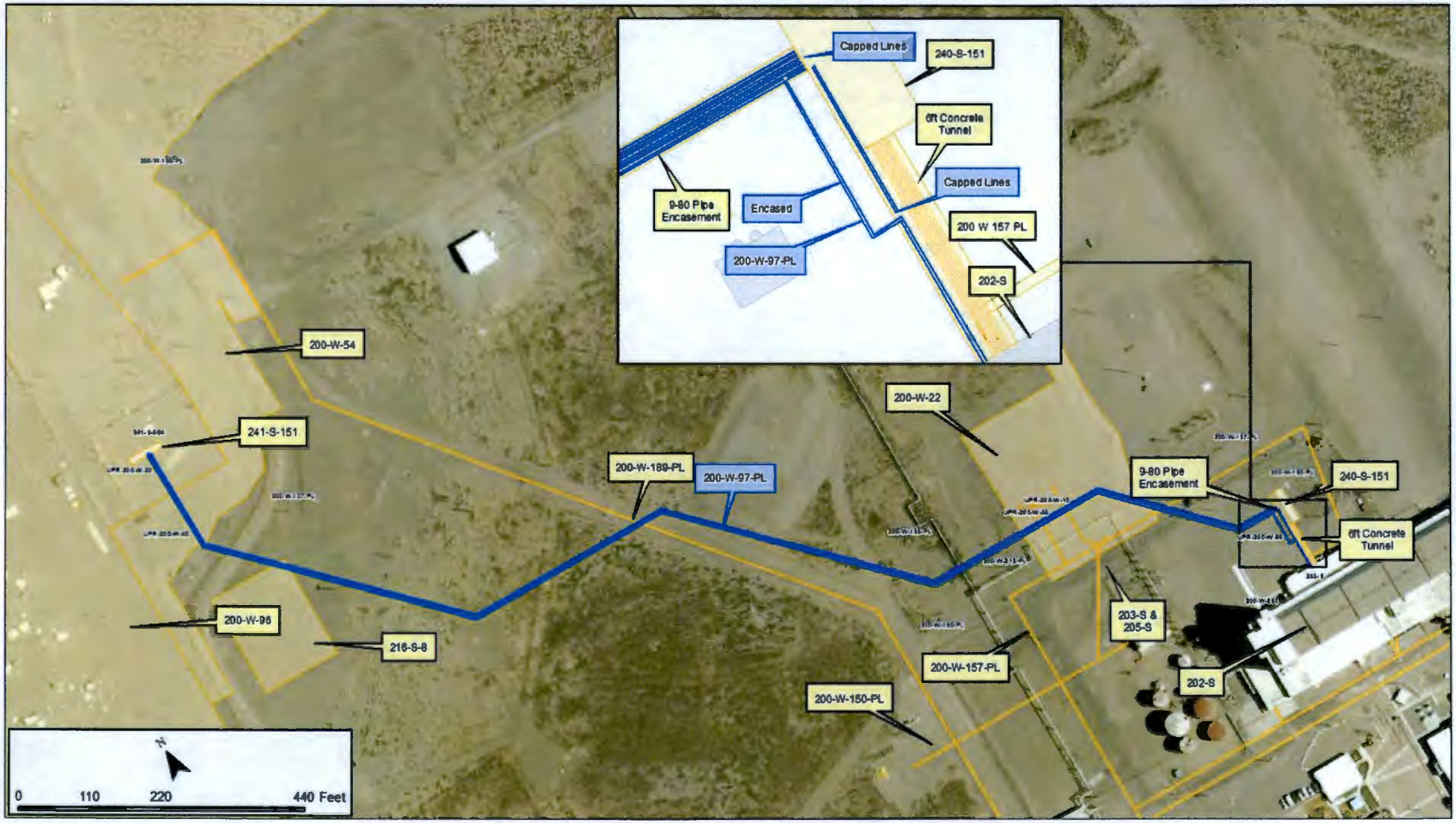
200-WA-1
- 200-W-22
- 200-W-54

200-SW-2
- 216-S-8

200-CR-1
- 203-S (Facility)
- 205-S (Facility)

No Operable Unit
- UPR-200-W-50
- UPR-200-W-20

- 200-W-189-PL (Active)


Capped Lines
240-S-151
6ft Concrete Tunnel
Capped Lines
9-80 Pipe Encasement
Encased
200 W 157 PL
200-W-97-PL
202-S
200-W-54
200-W-22
241-S-151
200-W-189-PL
200-W-97-PL
9-80 Pipe Encasement
240-S-151
6ft Concrete Tunnel
203-S & 205-S
200-W-96
216-S-8
200-W-157-PL
202-S
200-W-150-PL
N
0
110
220
440 Feet

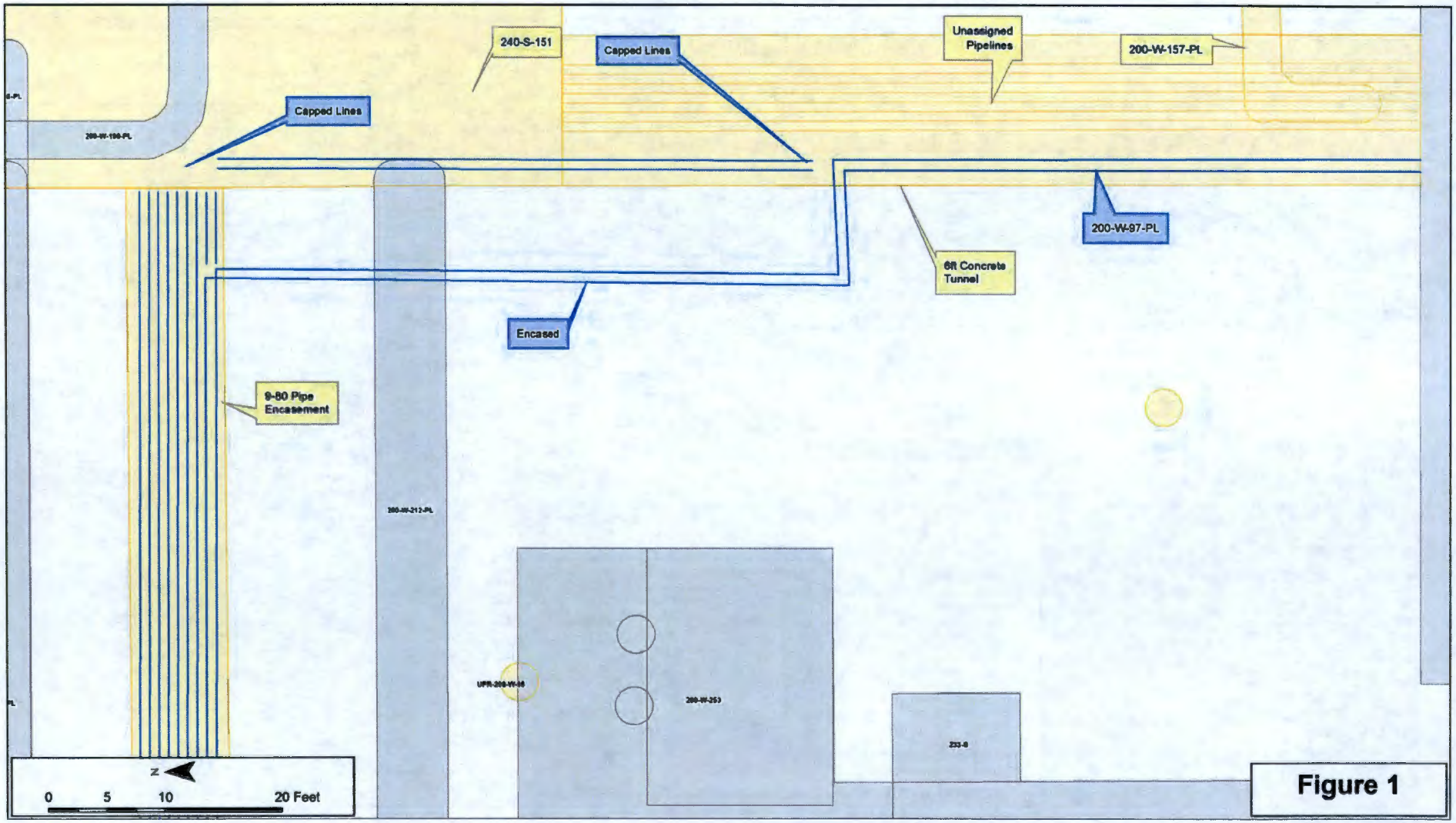

240-S-151
Capped Lines
Unassigned Pipelines
200-W-157-PL
Capped Lines
200-W-97-PL
6ft Concrete Tunnel
Encased
9-80 Pipe Encasement
N
0
5
10
20 Feet

Figure 1

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Scoping Summary: 200-W-98-PL

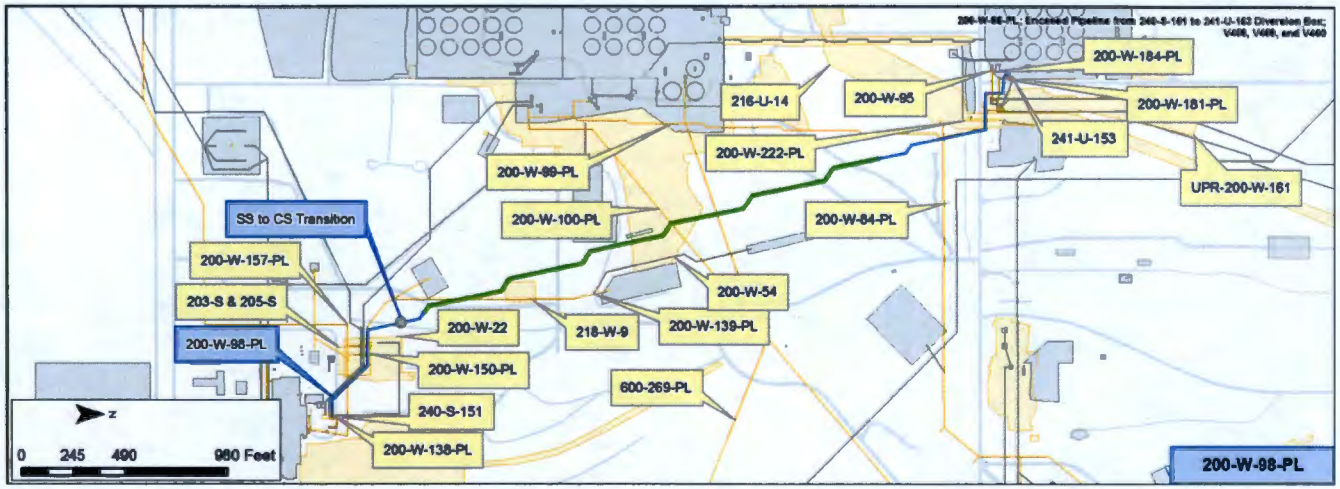
History

The 200-W-98-PL waste site is an inactive underground transfer system that consists of three pipelines in a concrete encasement running from the 240-S-141 Diversion Box to 241-U-153 Diversion Box.

The three lines are identified as V458, V459, and V460. They were constructed and started operations in 1950 to transfer REDOX process effluent.

There is a large section of the pipelines that is buried at a depth greater than 15 ft bgs (see green section of pipelines on attached plan view and aerial for approximate locations).

No documented releases were found associated with this site. The last recorded transfer in the 240-S-151 was in 1980 and 1981 for 241-U-153.



Construction

- Diameter: 3 in.
- Composition: Stainless Steel and Carbon Steel
- Length: 3,972 ft each
  - 464 ft of SST (beginning of each line)
  - 3508 ft of Carbon Steel
- Pressurized Pipeline
- Depth: 12 - 22 ft
- Total Calculated Volume: 4,375 gallons
- Cathodic Protection
- Encasement
  - Type 3-38 encasement: 3,508 ft
    - -Calculated Volume of Concrete: ~16,320 cubic feet
  - Type 5-32 encasement: 464 ft
    - -Calculated Volume of Concrete: ~2,825 cubic feet

Features of Interest

- Bends (23x3), direction changes for 3 pipes
- Transition (3), Material change from SST to CS for 3 pipes
- Diversion Boxes (2), 240-S-151 (Origin) and 241-U-153 (Termination)

Relevant Characterization

The ground surface above the pipelines has been surveyed periodically. The most recent survey 6/16/2015 showed readings at background levels for the area, 300 cpm Beta.

Waste Streams

- Process: REDOX Plant - Reduction and Oxidation Process
- Waste Streams: process effluent from the REDOX process and decontamination operations to tank farms

Misc./Other Relevant Information

No Information Identified.

Site Interfaces

Origin
WMA U
- 241-U-153

Termination
200-IS-1
- 240-S-151

Sites Intersects
200-IS-1
- 200-W-84-PL
- 200-W-99-PL
- 200-W-100-PL
- 200-W-138-PL
- 200-W-139-PL
- 200-W-150-PL
- 200-W-157-PL
- 200-W-181-PL
- 200-W-184-PL
- 200-W-222-PL
- UPR-200-W-71

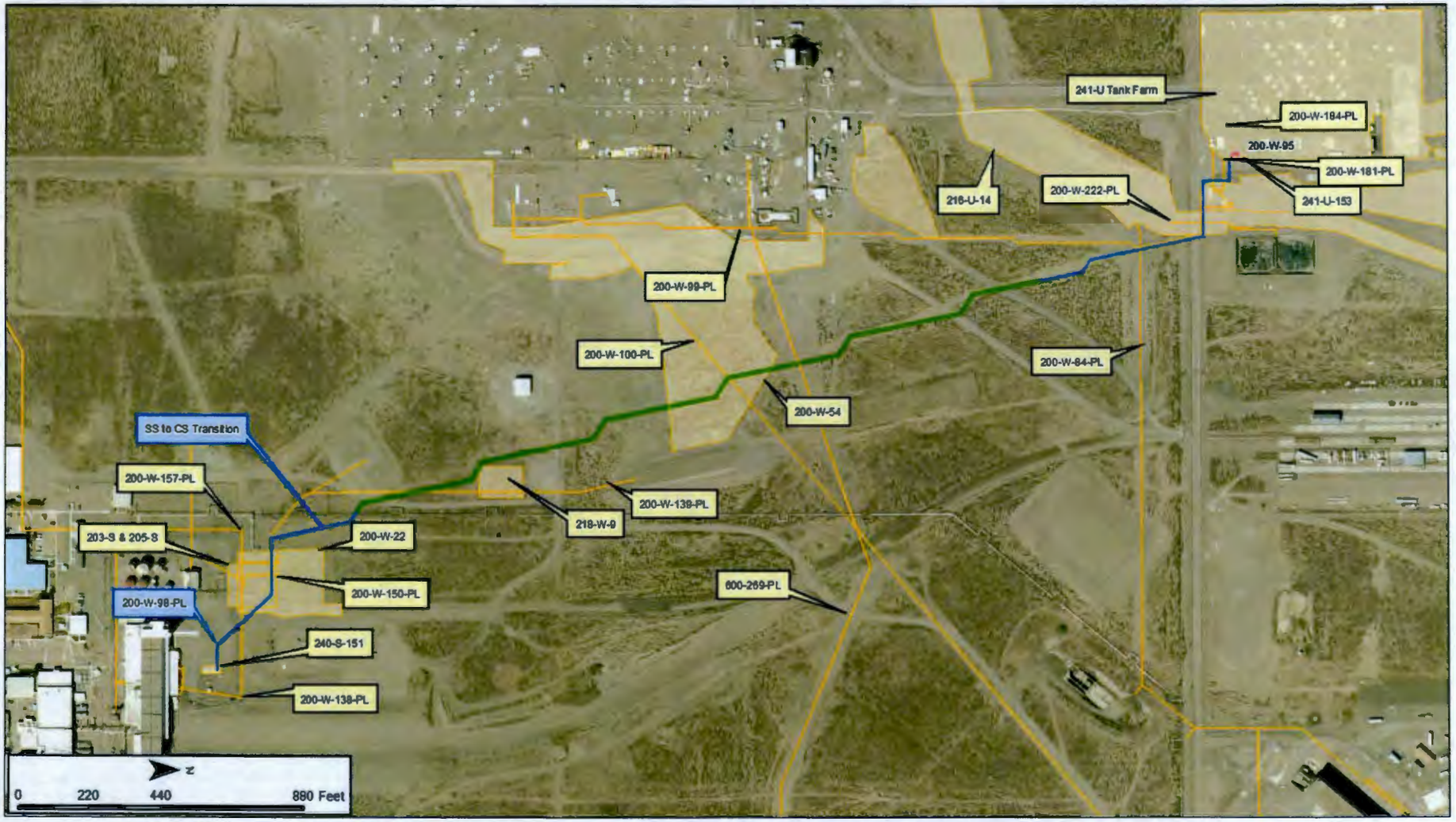
Sites Intersects
200-WA-1
- 200-W-22
- 200-W-54
- 216-U-14
- 218-W-9

Facilities
- 203-S
- 205-S

WMA U
- 200-W-95

- 600-269-PL (Active Line)

Scoping Summary: 200-W-98-PL



Scoping Summary: 200-W-99-PL

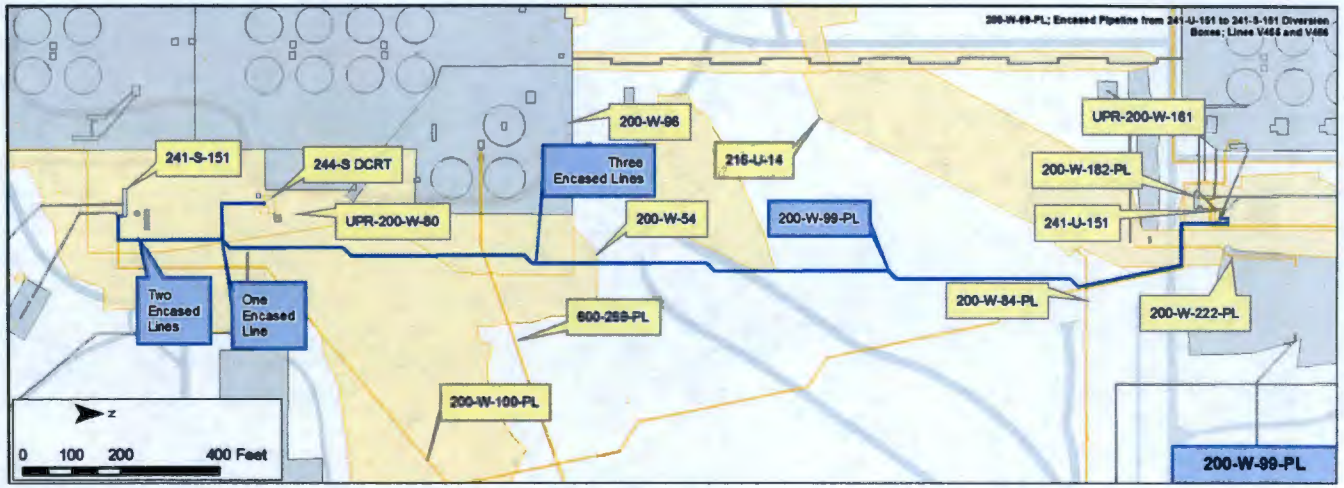
History

The 200-W-99-PL waste site consists of three inactive underground tank farm pipelines. The three pipes originate from the 241-U-151 Diversion Box and are enclosed in a concrete encasement from there to the 241-S-151 Diversion Box. Roughly three quarters of the way to the 241-S-151 Diversion Box, one pipe turns to the west, then runs north to the 244-S Catch Station (244-S DCRT).

A plan to remove the section running west from the branch to the bottom of the north running segment to 244-S and cap the remaining pipe ends was located, but confirmation that the plan was executed could not been located.

The pipeline designs were approved in 1953. Operational dates are unknown.

The site has been assigned TSD number S-2-4.



Construction

- Length: ~1950 ft waste site length, ~5,775 ft cum. length
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Drained
- Buried at 10 ft - 20 ft bgs
- Calculated Volume: 2,120 gal in pipelines, 5,725 cu ft of concrete, 300 cu ft of tile

- From 141-U-151 to tee
- Length: ~1525 ft x 3 lines
- Encased in 3-38 concrete encasement
- Buried Depth: 10 ft - 15 ft bgs
- Calculated volume: 1,680 gal in pipelines, 7,190 sq ft concrete

- From tee to 244-S
- Length: ~300 ft x 1 line
- Encased in 6 in. M26a pipe
- Buried Depth: 10 ft - 20 ft bgs
- Calculated volume: 110 gal

- From tee to 241-S-151
- Length: ~450 ft x 2 lines
- Encased in 3-30 T concrete and tile encasement
- Buried Depth: 10 ft - 15 ft bgs
- Calculated Volume: 330 gal in pipelines, 575 cu ft concrete, 300 cu ft of tile

Features of Interest

- The 200-W-99-PL Waste Site includes 12 test risers along the primary north-south segment. The test risers are each located at a 45 degree bend in the pipe.

Relevant Characterization

- The 200-W-99-PL Waste Site is marked with URM - Pipeline signs.

Waste Streams

- Various wastes were transferred between the 241-U-151 Diversion box and the 241-S/SX Tank Farms, via 241-S-151 and 244-S. These waste streams included process effluent from Bismuth Phosphate process, REDOX, and PUREX operations and decontamination efforts.

Misc./Other Relevant Information

- Portions of the waste site are located within waste sites UPR-200-W-161, 200-W-54, and 200-W-96. These sites are associated with several contamination releases due to spills, leaking single shelled tanks, and windborne contamination. Various actions were taken to address the contamination, including tank isolation, soil removal, and burial beneath soil and gravel.

Site Interfaces

Origin/Termination

200-IS-1
- 241-U-151 (origin)

WMA S/SX
- 244-S (termination)
- 241-S-151 (termination)

Site Intersects

200-IS-1
- 200-W-84-PL
- 200-W-100-PL
- 200-W-182-PL
- 200-W-222-PL
- UPR-200-W-161 (Windborne contamination from 241-U Tank Farm)

Site Intersects

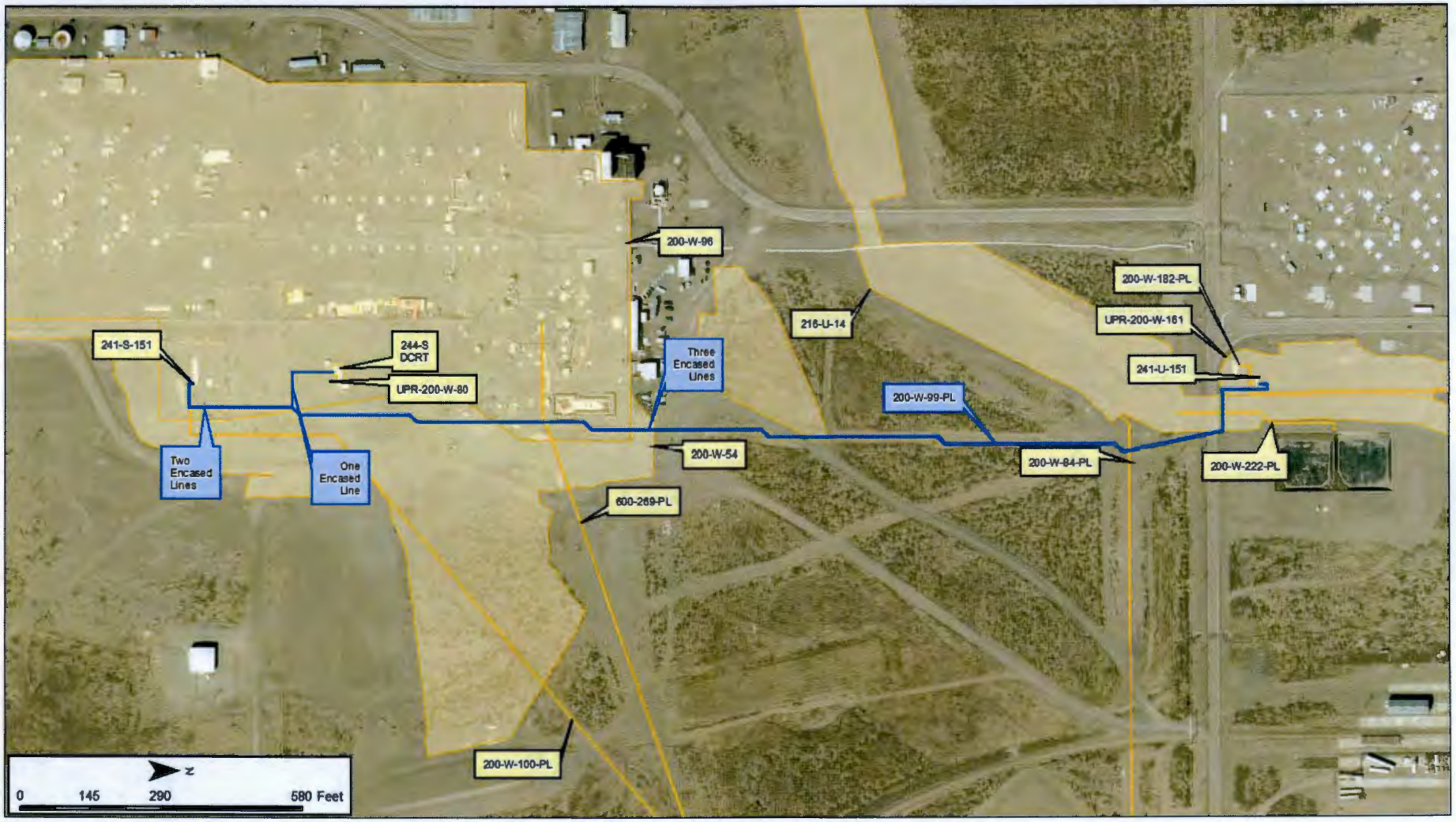
200-WA-1
- 200-W-54 (Contamination Migration from 241-SX Tank Farm)
- 216-U-14

WMA S/SX
- 200-W-96 (Contaminated Soil at 241-S/SX/SY Tank Farm)

Active
- 600-269-PL

Consolidated
- UPR-200-W-80 (Contamination Migration from 241-S/SX Tank Farms)

Scoping Summary: 200-W-99-PL



Scoping Summary: 200-W-100-PL

History

The 200-W-100-PL waste site is an inactive underground encased tank farm pipeline beginning near the 221-U Building at the 241-UX-154 Diversion Box and terminating at both the 241-SX-152 and 241-S-151 Diversion Boxes located on the east side of the 241-S/SX Tank Farm.

The pipeline was constructed in 1970 to facilitate the transfer of waste between the S/SX Tank Farms and the 241-UX-154 Diversion Box. These lines were used for this process from 1971 through roughly 1972, and then remained in use until approximately 1976, as the S/SX tank farm wastes were evaporated and pumped elsewhere.

The lines have been flushed and are considered to be empty (RPP-10466), excluding any residual liquid that may have accumulated at the low points in the line.

Construction

- Length:
  - V762/4853: 3,967 ft
  - V503/4700: 3,927 ft
  - V505/4701: 3,927 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Encasement specifications:
  - 5.5 in. thick concrete floor
  - 5 in. thick side walls
  - Covered with 36 in. wide carbon steel plating (.25-in thick)
  - 5 in. concrete top over steel plating
  - 4,360 ft total encasement length
  - Drain line to 241-UX-154 Diversion Box
- Depth: 1 ft - 13 ft bgs
- Total Calculated Volume: 4,537 gal

- Both the 241-S-151 and 241-SX-152 Diversion Boxes sit at the lowest elevation of the pipe run. If any residual liquids existed in the line, both locations could accumulate liquid. The slope of the lines suggest more residual liquids would have settled at the 241-S-151 Diversion Box.

Features of Interest

- 11 Expansion loops
- 13 Test Risers
- 7 bends/joints (not co-located with expansion loops)

Relevant Characterization

- Since no identified leaks are associated with this pipeline, characterization data for the waste site has not been collected.

Waste Streams

- Line V762/4853 flowed west to east, sending RSN from 241-SX-152 to 241-UX-154 (and ultimately to B Plant)
- Line V505/4701 flowed east to west, sending RSNW from 241-UX-152 to 241-S-151.
- Specific waste stream and flow direction for line V503/4700 is unidentified, but likely the same as the other two lines given its designed purpose
- Supported transfer of S/SX tank farm waste evaporation process (1972-1976)

Misc./Other Relevant Information

- When the encasement reaches the 241-S/SX Tank Farms, it branches. One branch carries the V762/4853 line to 241-SX-152 Diversion Box. The other carries lines V503/4700 and V505/4701 to the 241-S-151 Diversion Box.
- At 241-UX-154 Diversion Box, 200-W-100-PL shares an encasement with 200-W-105-PL waste site for less than 25 ft before entering the diversion box.

Site Interfaces

Origin/Termination

200-IS-1
- 241-UX-154

WMA S/SX
- 241-SX-152
- 241-S-151

Site Intersects

200-IS-1
- 200-W-84-PL
- 200-W-98-PL
- 200-W-99-PL
- 200-W-105-PL
- 200-W-141-PL
- 200-W-151-PL
- 200-W-195-PL
- 600-W-284-PL

Site Intersects

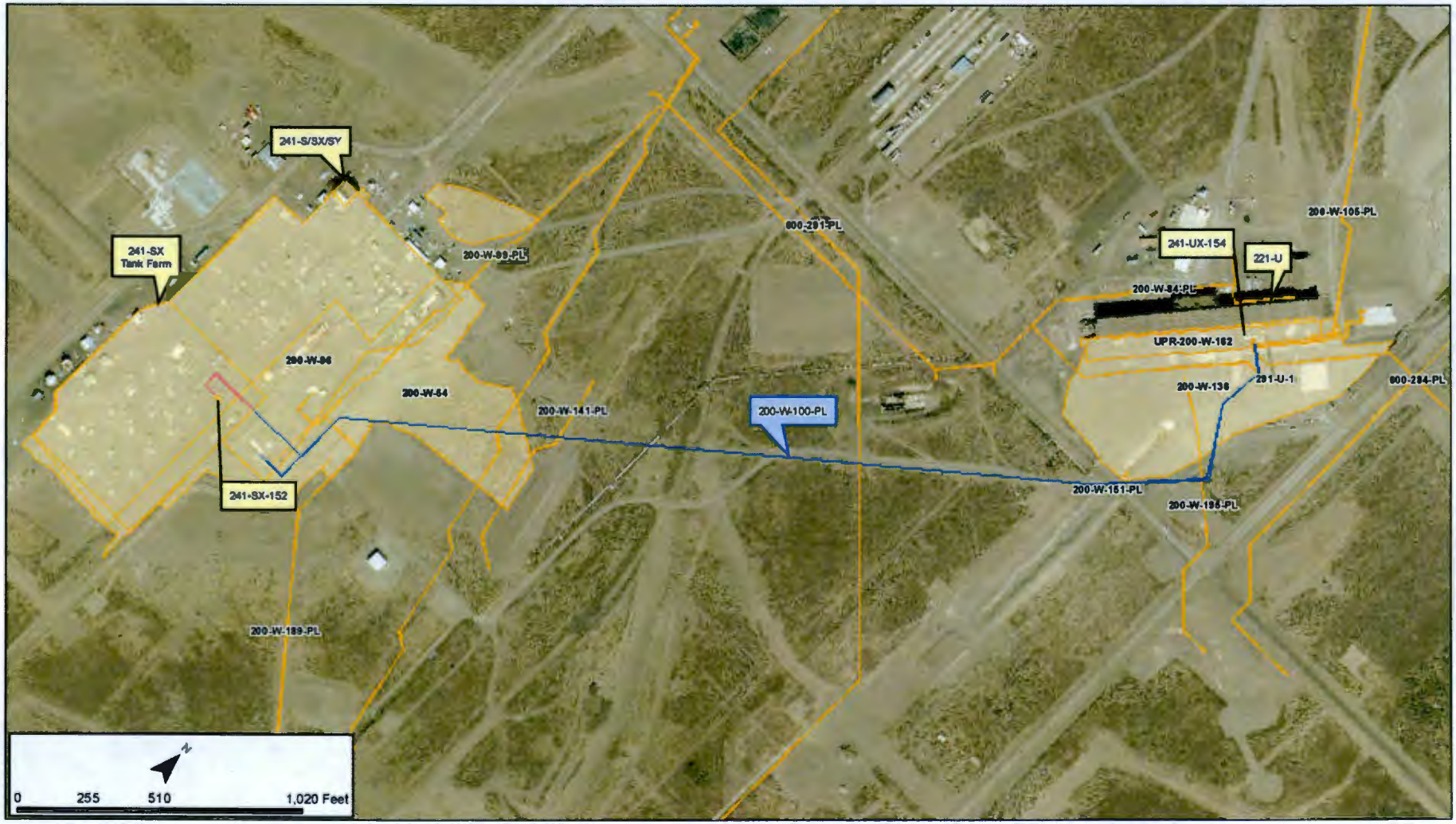
WMA S/SX
- 200-W-96 (UPR)

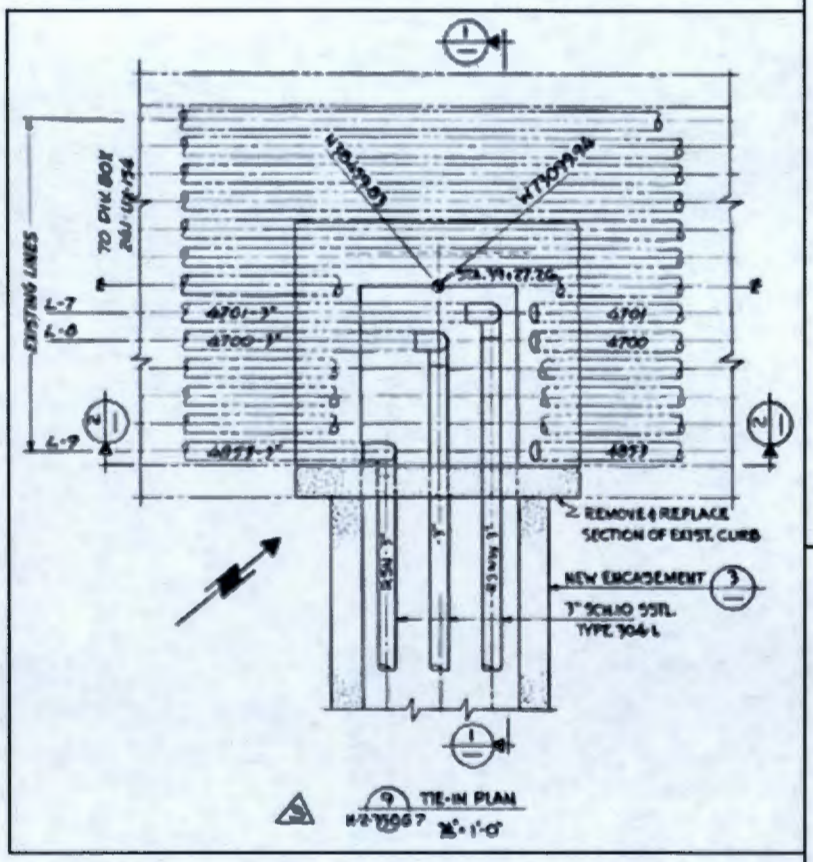
No Operable Unit
- 200-W-136 (UPR)
- 200-W-189-PL
- 600-269-PL
- 600-291-PL

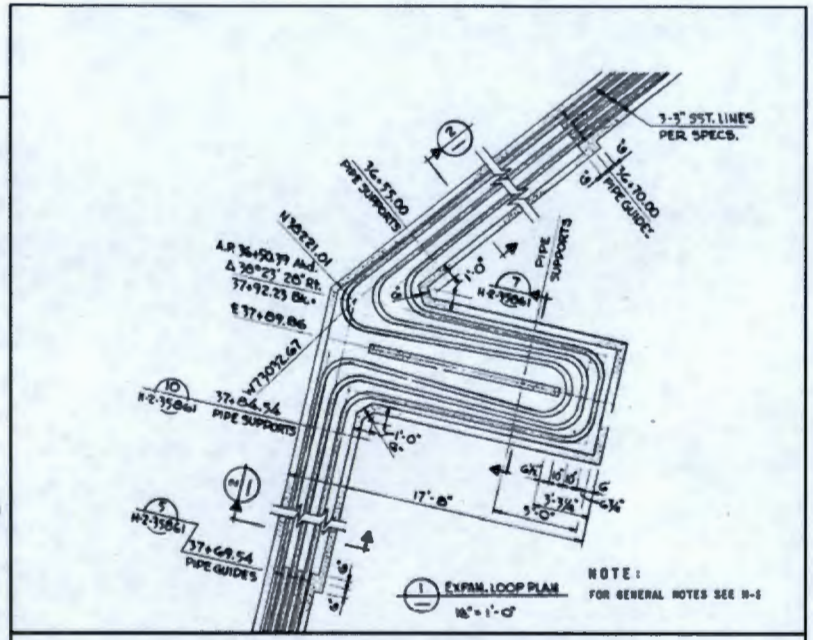
200-WA-1
- 200-W-54 (Contamination Migration)
- UPR-200-W-162

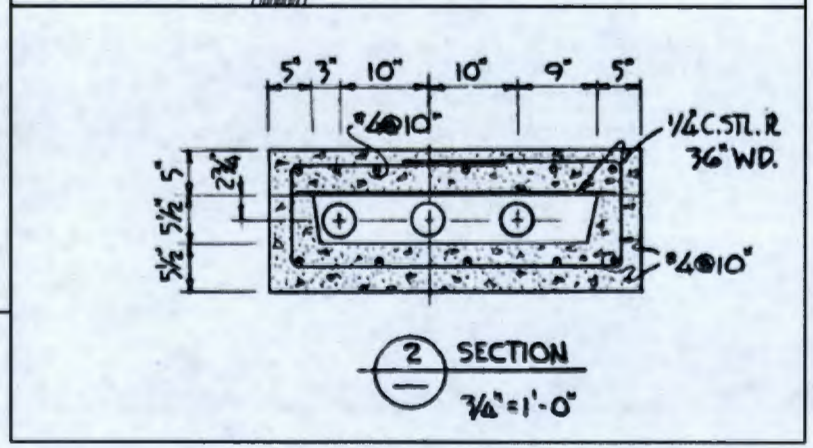
200-CU-1
- 291-U (Fan Control House)

Scoping Summary: 200-W-100-PL




EXISTING LINES
TO DYE BOX
REMOVE & REPLACE
SECTION OF EXIST. CURB
NEW ENCASEMENT
3" SCH.10 SST.
TYPE 304L
TIE-IN PLAN


3-3" SST. LINES
PER SPECS.
PIPE SUPPORTS
PIPE GUIDES
EXPAN. LOOP PLAN
NOTE:
FOR GENERAL NOTES SEE H-5


5" 3" 10" 10" 9" 5"
#4@10"
1/4 C.STL. R
36" WD.
SECTION
3/4"=1'-0"

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Scoping Summary: 200-W-105-PL

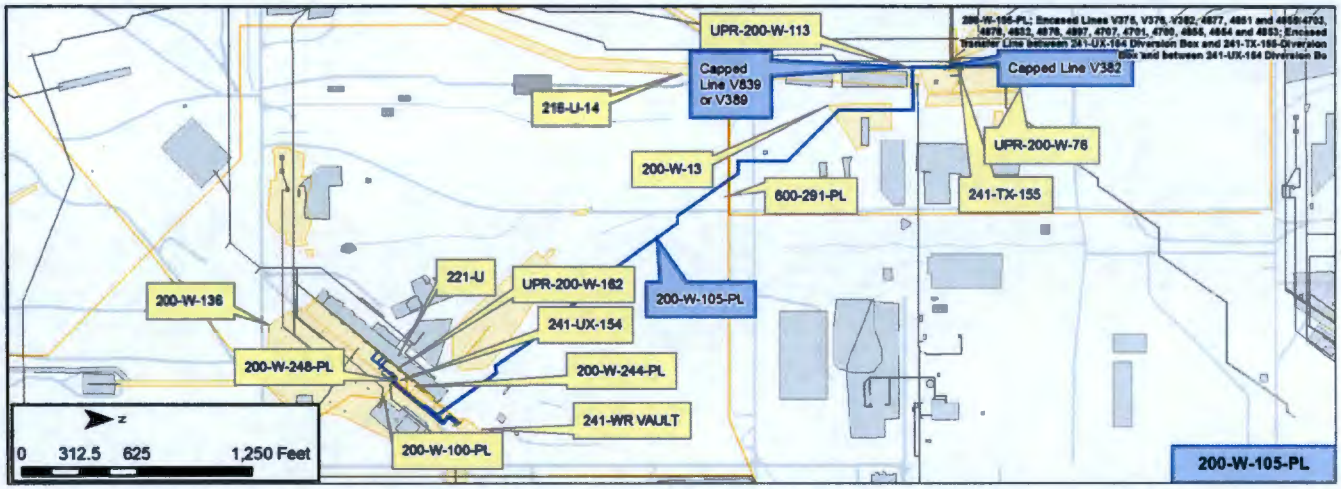
History

The 200-W-105-PL waste site transferred Uranium process fluids through multiple encased stainless steel lines from the 221-U Building and 241-UX-154 Diversion Box to the 241-WR-Vault (contained PUREX and REDOX supernates) and 241-TX-155 Diversion Box.

The first set of pipes was constructed and operational between 1946-to-1950 with multiple lines connecting to 241-UX-154, 241-WR-Vault, and 241-TX-155. Waste was transferred between the Vault and 241-UX-154. The remaining lines terminated at 241-TX-155.

By 1970, six of the lines connected to 241-WR-Vault and four of the lines connected to 241-TX-155 were capped. In 1970, three lines connecting to 241-UX-154 were rerouted to the 200-W-100-PL to support Redox Supernate Transfer System, and the three remaining lines were capped. 241-WR Vault ceased operation in 1976, 241-TX-155 last received waste in 1980, and 241-UX-154 was out of service by 2005.

UPR-200-W-113 is a related release, while all other documented releases nearby relate to the vault or diversion boxes.



Construction

21 Pipes: 4700, 4701, 4702, 4703, 4851, 4851(4857), 4853, 4854, 4855, 4857, 4859, 4859(4703), 4860, 4876, 4877, 4878, Stub V382, Stub V389/V839, V375, V376, and V382

- Length: 33,250-ft
- Diameter: 3.5-in. (Line 4878 has small section of 3-in.)
- Composition: Stainless Steel
- Gravity (Appears that all lines are gravity fed)
- Encasement specifications: 10 Separate Encasement Sections: Two 14-115, Two 9-80, 7-56, 6-59, 3 pipe encasement, and Three single 6 in. encasements
- Buried and encased: 7-ft - 16-ft bgs
- Cathodic protection: None Located
- Volume: 16,624-gal
- Capped Lines: 4700, 4701, 4703, 4851, 4853, 4857,4876, 4877, 5859, stub V383, and stub V389/V839

Features of Interest

- Line 4851(4857) documented failure in 1971 (H-2-2338)
- Y Connection, southeast of the 241-WR Vault
- 22 Elbows/bends
- Crossing under building structures that appear to have been decommissioned, south of 2713WB Building
- 1 Reduction point for line 4878

Relevant Characterization

- Aug-17-2010 - An Ant Mound was found on top of pipeline and removed at 20,000 dpm/100 sq-cm; Rotting Rabbit Brush Fragments found on top of pipeline and removed at 18,000 dpm/100 sq-cm
- 1977- Radioactive rabbit feces found near diversion box; after soil removal radioactivity increased and source believed to be a leak in a waste transfer line (Acid spill from diversion box catch tank a possible influence) Area has been stabilized

Waste Streams

- Waste Processes: REDOX, PUREX, and U Plants
- Waste Streams: TBP: Tributyl phosphate waste (1952 – 1958), nitric acid and thorium from REDOX and PUREX, and uranyl nitrate hexahydrate from U Plant, and REDOX supernates to B-Plant for cesium recovery (waste by-product was disposed through lines connected to Vault)
- Following termination of uranium recovery operations in 1958, 241-WR Vault was used to store nitric acid and thorium from the REDOX and PUREX processes.

Misc./Other Relevant Information

- In 1986, 241-WR Vault isolated and estimated to include contamination burden of 60 curies beta
- WIDS does not show the 3 lines coming off the 221-U building and the single line that crosses under the Y connection

Site Interfaces

Origin/Termination

200-IS-1
- 241-UX-154
- 241-TX-155

200-WA-1
- 241-WR Vault

U- Plant
- 221-U (Sections 11, 12, & 13)

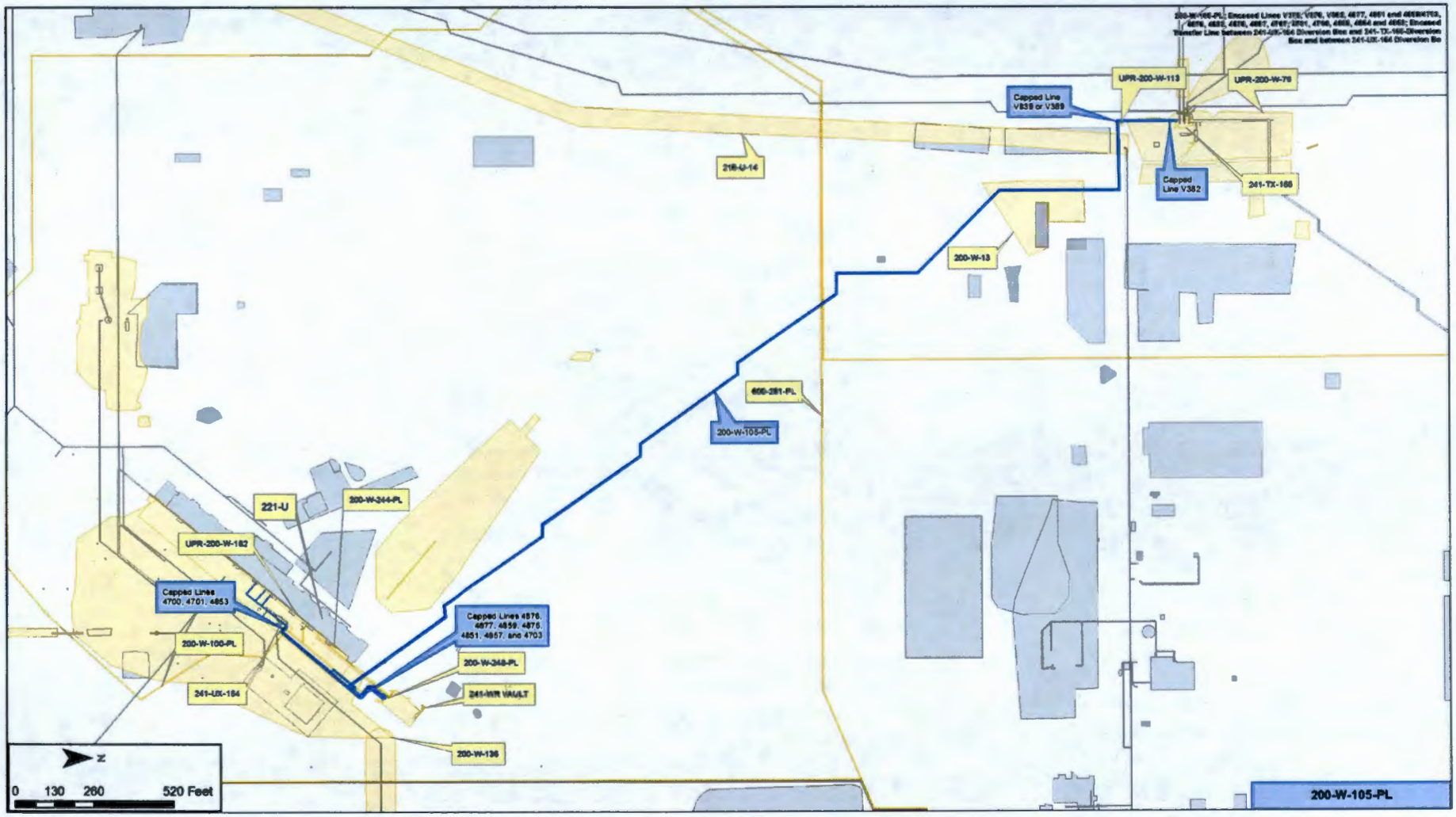
Site Intersects

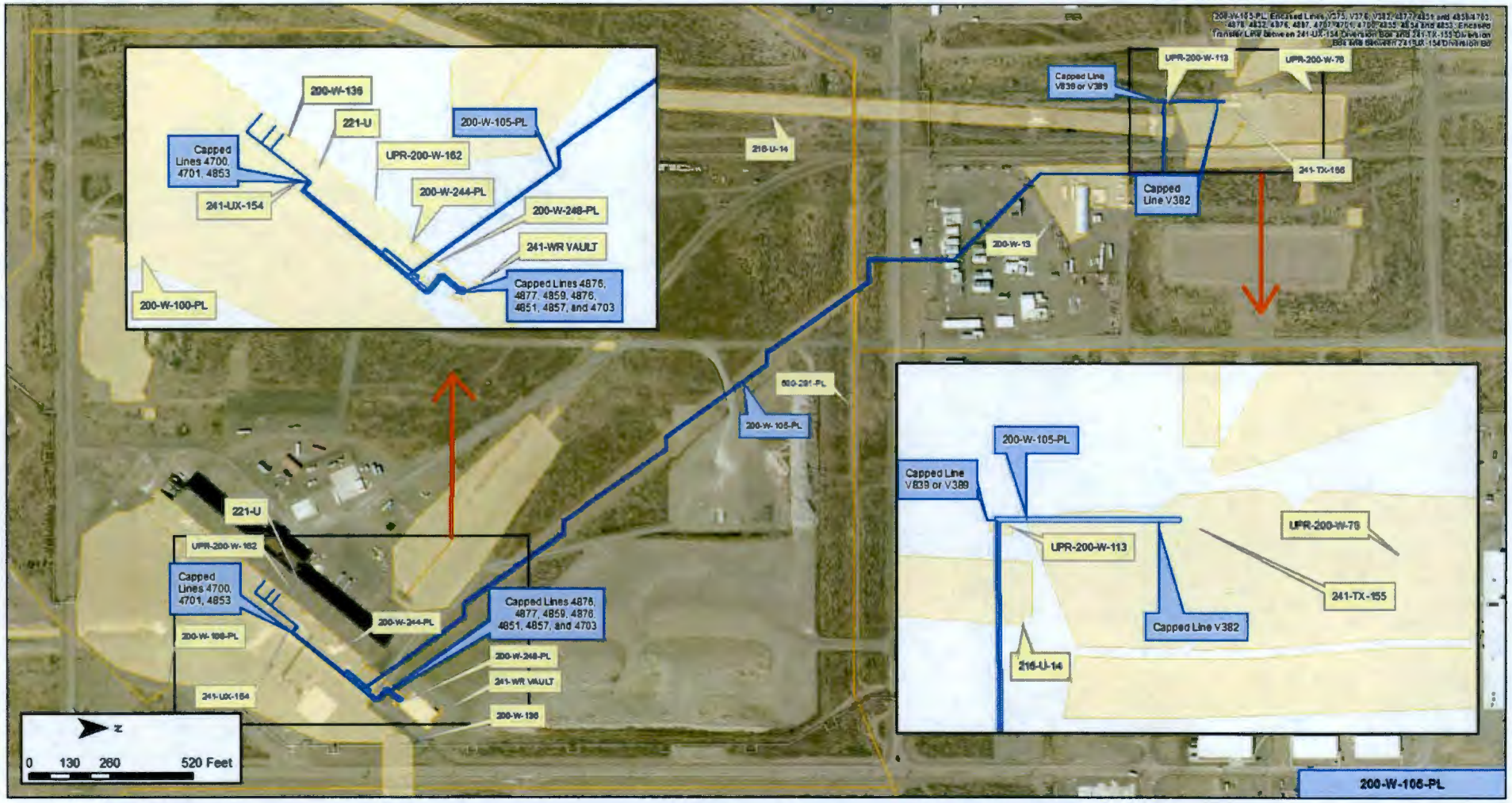
200-IS-1
- 200-W-100-PL
- UPR-200-W-113

200-WA-1
- 200-244-PL
- 200-248-PL
- 200-W-13
- 216-U-14 (Ditch)
- UPR-200-W-76
- UPR-200-W-162

No Operable Unit
- 600-291-PL (Active)
- 200-W-136 (TBD)

Scoping Summary: 200-W-105-PL




200-W-136
221-U
200-W-105-PL
Capped Lines 4700, 4701, 4853
UPR-200-W-162
200-W-244-PL
241-UX-154
200-W-248-PL
241-WR VAULT
Capped Lines 4876, 4877, 4859, 4876, 4851, 4857, and 4703
200-W-100-PL
UPR-200-W-113
UPR-200-W-76
Capped Line V839 or V389
216-U-14
241-TX-156
Capped Line V382
200-W-13
200-W-105-PL
Capped Line V839 or V389
UPR-200-W-113
UPR-200-W-76
241-TX-155
Capped Line V382
216-U-14
0 130 260 520 Feet
200-W-105-PL

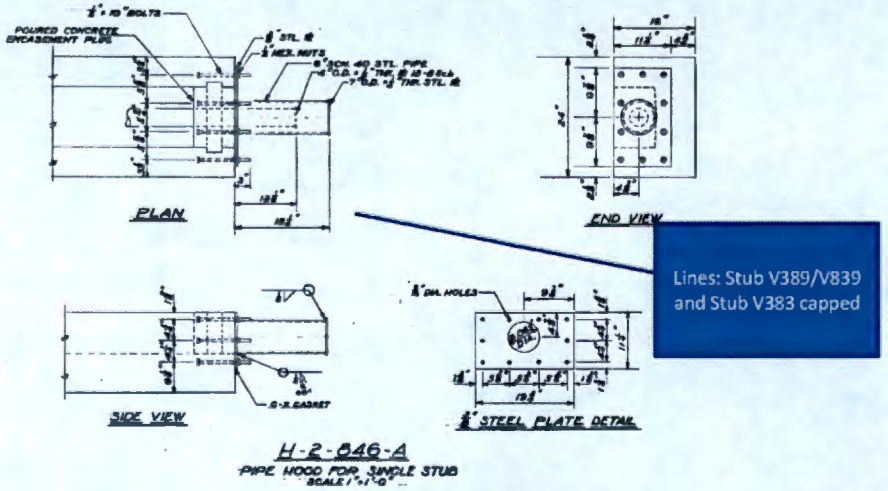


Figure 1 – Capping of the Lines Stub V398/V839 and Stub V383

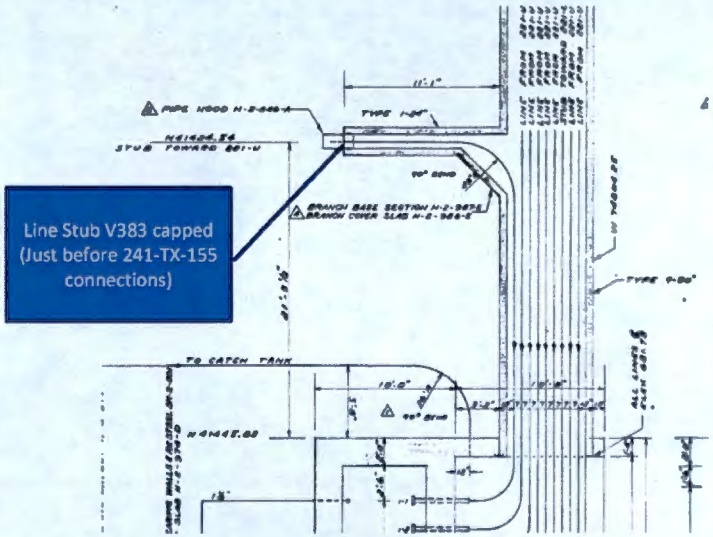


Figure 2 – Capping of the Line Stub V383

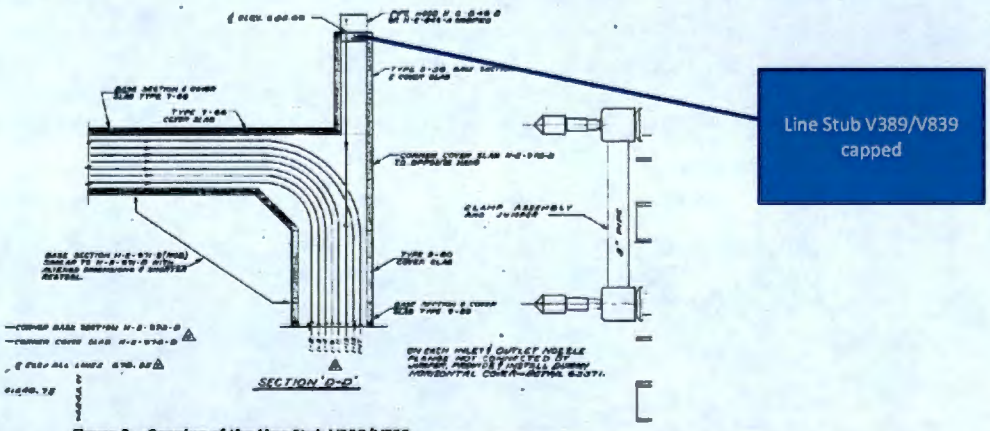


Figure 3 – Capping of the Line Stub V398/V839

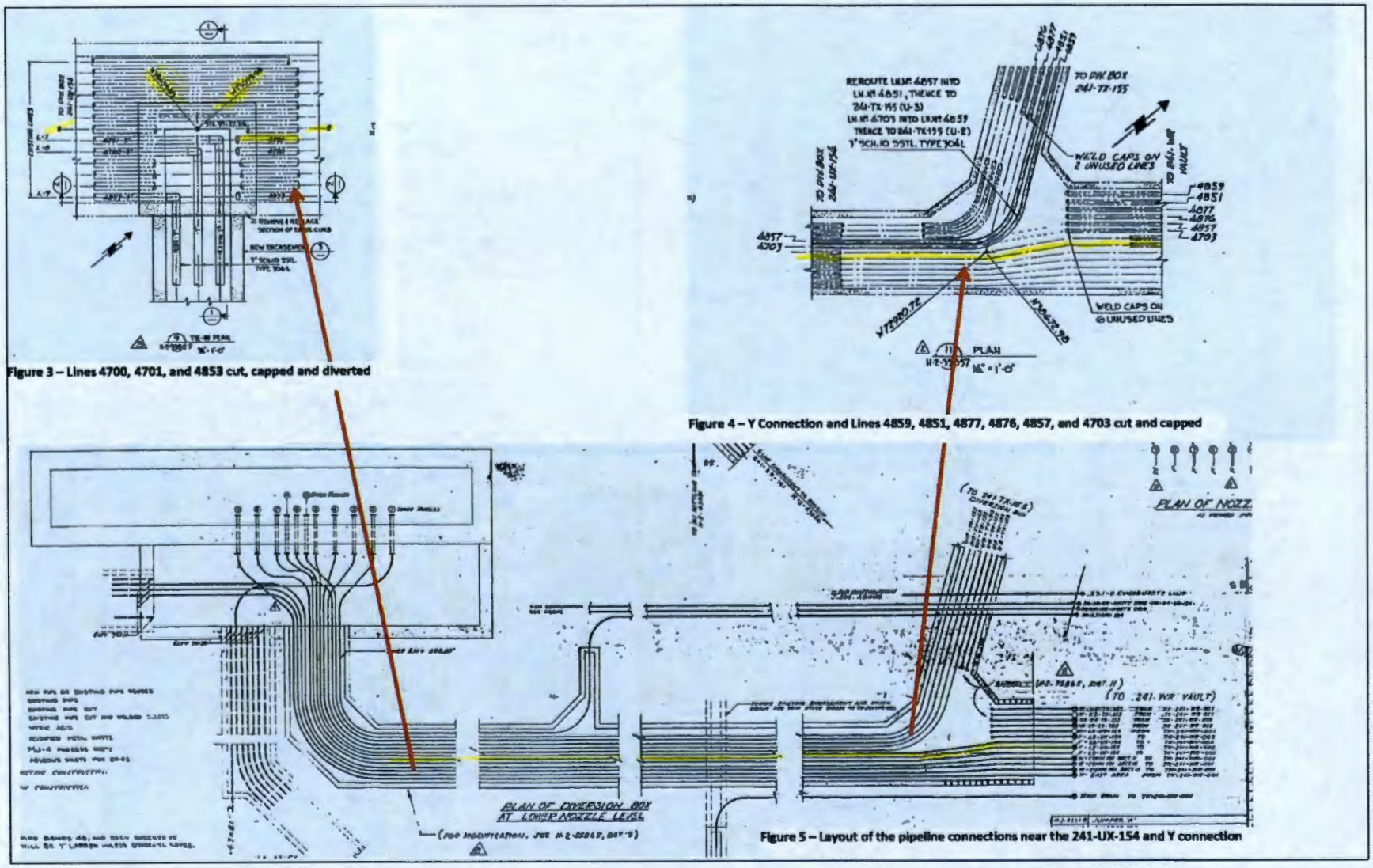


Figure 3 – Lines 4700, 4701, and 4853 cut, capped and diverted

Figure 4 – Y Connection and Lines 4859, 4851, 4877, 4876, 4857, and 4703 cut and capped

Figure 5 – Layout of the pipeline connections near the 241-UX-154 and Y connection

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Scoping Summary: 200-W-125-PL

History

The 200-W-125-PL waste site is an inactive underground process sewer pipeline that transferred multiple waste stream effluents from the 231-Z Building to the Z ditches area and 216-Z-20 Crib. The line was operational from 1944 to 1995, when the crib was deactivated. Deactivation and stabilization of the overlapping Z ditches began in 1981 and was reposted as one collective Underground Radioactive Materials Area.

The site has three segments that extended the pipeline over time:
1. 1944: From the 231-Z building to a manhole at the head of the north portion of the Z-1 ditch (8 in. VCP)
2. Jul-1949: From the same manhole, southeast around the 234-Z5 facility security fence to a concrete headwall where it emptied into the south portion of the Z-1 ditch as well as the Z-11 and Z-19 ditches as they were excavated. This segment was installed to replace the abandoned and backfilled northern portion of the Z-1 ditch (18 in. VCP).
3. 1978: Connects to the second segment via a manhole and extends south where it terminates at a final manhole at the head end of crib 216-Z-20. This segment was installed when the Z ditches were discontinued to divert the effluent to the crib, which was later isolated by filling the head end manhole with concrete (15 in. PVC)

Construction

- Length: 2,015.99-ft (total length)
  - Segment 1: 150-ft (From 231-Z building to a manhole)
  - Segment 2: 1,680-ft (from manhole to concrete headwall)
  - Segment 3: 186-ft (Segment 2 to Crib 216-Z-20)
- Diameter
  - Segment 1: 8-in.
  - Segment 2: 18-in.
  - Segment 3: 15-in.
- Composition
  - Segment 1/Segment 2: Vitrified Clay
  - Segment 3: Polyvinyl chloride
- Direct Buried
- Partially Encased
  - Segment 2: 65-ft over water lines and 30-ft over street
- Depth: 4-ft - 7.5-ft bgs
- Total Calculated Volume: 24,299-gal
  - Segment 1: 392-gal
  - Segment 2: 22,195-gal
  - Segment 3: 1,712-gal

Features of Interest

- Connection of VCP pipe with PVC pipe
- Four manholes marked with circles, three at pipe segment connection points shown on plan view 2
- Bends from east to southeast and again due south
- 18-in. VCP segment pipe enters and exits concrete encasements at two points, approximate locations shown on plan view 2

Relevant Characterization

- 2002 remedial investigation (DOE/RL-2003-11) collected smear samples via a manhole. Detected per sample:
- Pu-238 - 23.5 pCi
- Pu-239/240 - 1,210 pCi
- Am-241 - 226 pCi and 813 pCi
- Condition of the pipeline documented with video, which was not located
- Air sampling, VOC and radiation monitoring performed

Waste Streams

- Liquid waste from 231-Z Plutonium Isolation Plant, potential process source terms - 905r, 137Cs, 238Pu, 239Pu, 241Pu, 241Am
- Cooling water, steam condensate, storm sewer, building drain, chemical drains, laboratory drains, and miscellaneous drain waste (acidic potential)
- Approximate average daily volume of effluent from 231-Z to 216-Z-20 crib was 7,250-gal
- Potential it received an unknown amount of plutonium in the 1960's from a Space Nuclear Auxiliary Power program that operated in Z-Plant producing purified Np-237 and Pu-238

Misc./Other Relevant Information

- PL1 - 4-in. Vitrified Clay Pipe and PL2 - 10-in. Wrought Iron Pipe are present in QMap and site drawings, no further information beyond diameter and composition could be located
- PL3 - 10-in. Wrought Iron Pipe and PL4 - 8-in. Vitrified Clay Pipe; are present in Qmap only, no further information beyond diameter and composition could be located

Site Interfaces

Origin/Termination

No Operable Unit
- 231-Z Building (origin)

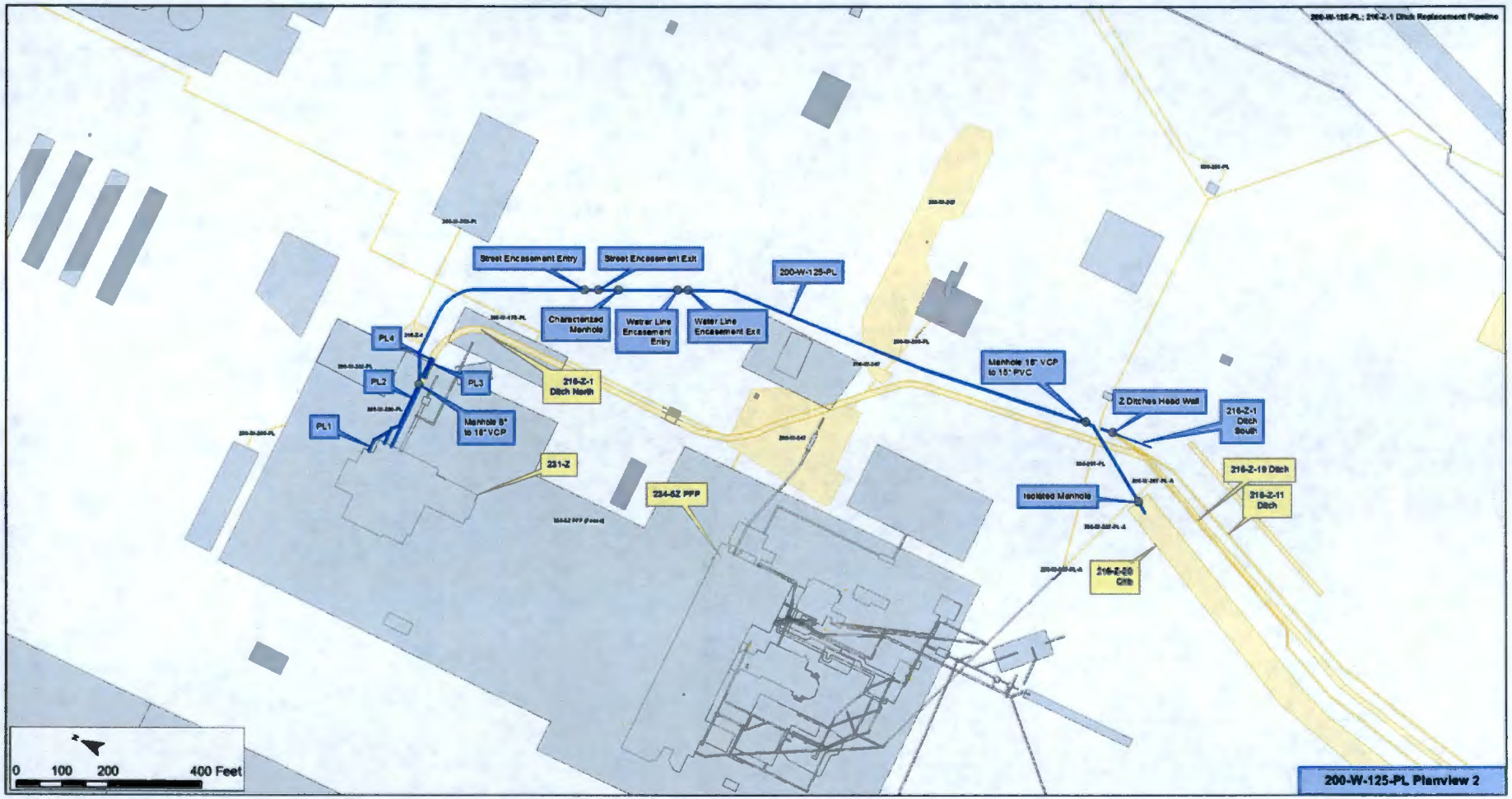
200-CW-5
- 216-Z-20 Crib (termination)
- 216-Z-1 Ditch (termination)
- 216-Z-11 Ditch (termination)
- 216-Z-19 Ditch (termination)

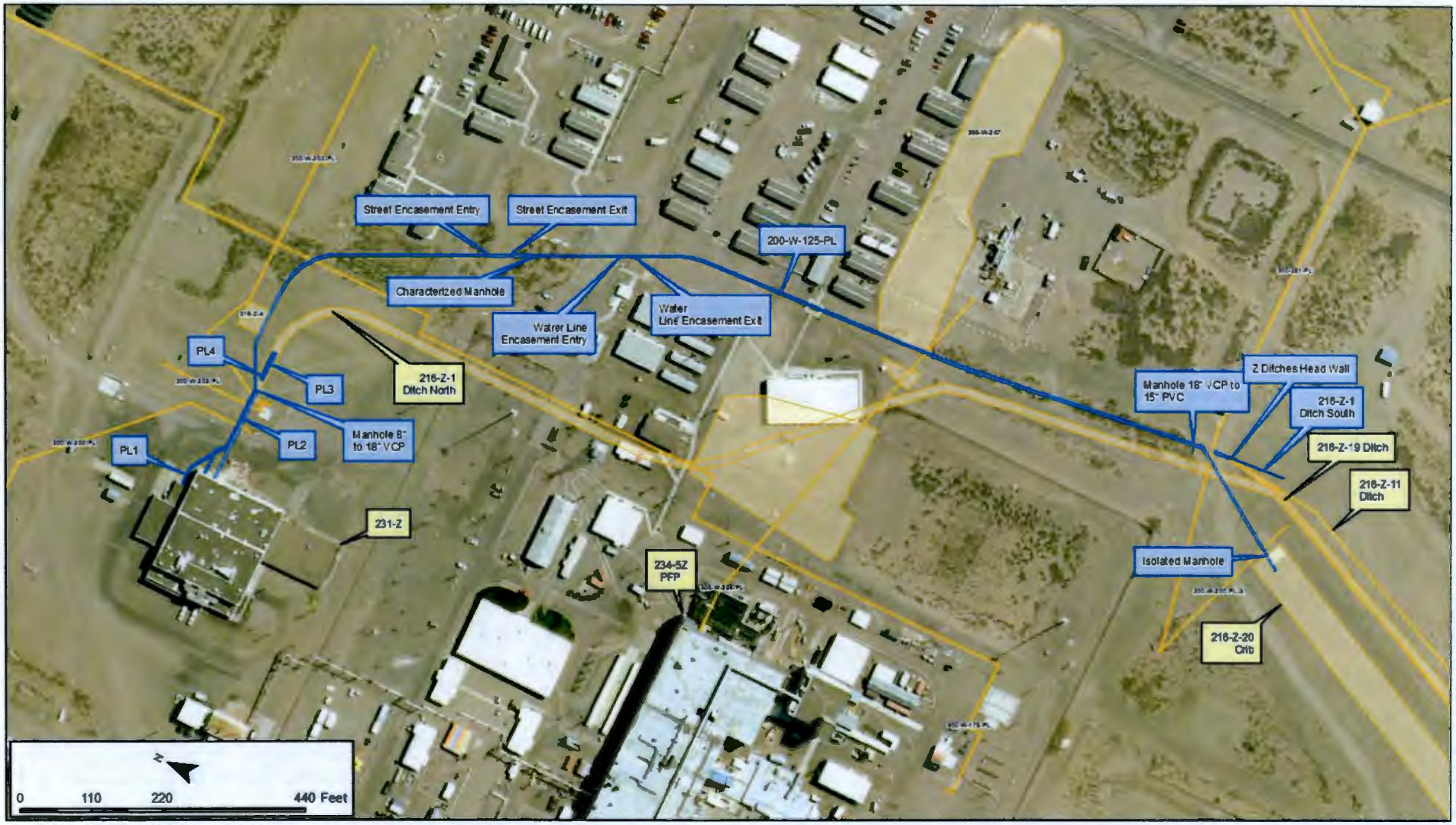
Site Intersects

No Operable Unit
- 200-W-200-PL
- 200-W-206-PL
- 200-W-207-PL-A
- 600-291-PL
- 200-W-247

200-IS-1
- 200-W-203-PL
- 200-W-202-PL
- 200-W-178-PL

200-WA-1
- 216-Z-4


Street Encasement Entry
Street Encasement Exit
200-W-125-PL
Characterized Manhole
Water Line Encasement Entry
Water Line Encasement Exit
PL4
PL2
PL3
PL1
Manhole 8" to 18" VCP
216-Z-1 Ditch North
231-Z
234-5Z PFP
Manhole 18" VCP to 15" PVC
Z Ditches Head Wall
216-Z-1 Ditch South
216-Z-19 Ditch
216-Z-11 Ditch
Isolated Manhole
216-Z-20 Ditch
0 100 200 400 Feet
200-W-125-PL Planview 2


Street Encasement Entry
Street Encasement Exit
200-W-125-PL
Characterized Manhole
Water Line Encasement Exit
Water Line Encasement Entry
PL4
PL3
PL2
PL1
216-Z-1 Ditch North
Manhole 6" to 18" VCP
231-Z
234-5Z PFP
Manhole 18" VCP to 15" PVC
Z Ditches Head Wall
216-Z-1 Ditch South
216-Z-19 Ditch
216-Z-11 Ditch
Isolated Manhole
216-Z-20 Crib
0
110
220
440 Feet

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Scoping Summary: 200-W-129-PL

History

The 200-W-129-PL waste site consists of three lines (V399, V405 and V411) contained in a concrete encasement running from the 241-TX-155 Diversion Box to the 241-T-151 and 241-T-152 Diversion Boxes.

Just prior to connection with T-151/T-152 there are four layers of cover blocks placed over the encased pipelines.

The lines were constructed in 1950 as part of Project C-163, 241-TX Tank Farm. They carried transfer waste solutions from the 241-TX-155 Diversion Box to the 241-T Tank Farm between 1965 and 1974. The waste site is posted as an Underground Radioactive Materials Area.

Construction

- Length:
  - V399: 2080 ft
  - V405: 2080 ft
  - V411: 2122 ft
- Diameter:
  - V399: 3 in.
  - V405: 3 in.
  - V411: 3 in.
- Composition: Carbon Steel
- Pressurized
- Encasement Specifications: Concrete
- Depth: 9.8 ft – 13.15 ft bgs
- Total Calculated Volume: 2307.7 gal
  - V399: 764.1 gal
  - V405: 764.1 gal
  - V411: 779.5 gal

Features of Interest

- Eight bends ~135 degrees in each line
- Three 90 degree elbows in each line (within T-Farm footprint)

Relevant Characterization

- No characterization data relating directly to the 200-W-129-PL waste site were found
- Footprints for UPR-200-W-76, UPR-200-W-113, 200-W-127 (UPR), and UPR-200-W-135 overlap the 200-W-129-PL, they are not believed to be associated with the 200-W-129-PL

Waste Streams

- 200-W-129-PL carried at least 7,480-kgal of the following waste streams between 1965 and 1974
  - DW (1974)
  - BL (1972 to 1974)
  - SRR, identified as IX and RIX, (1972 to 1974)
  - CWP2, identified as CW, (1965 to 1974)
  - T2SlgCk, identified as EB, (1974)
  - 224-T, 5-6 Cell Drain & 2nd Cycle Wastes (1974)
  - Most of this stream was sent to cribs, some was transferred with 2C2 between the T and S tanks.
  - BNW (1974)
  - HLO (1968)

Misc./Other Relevant Information

- 200-W-127 UPR seems to identify two different geographic areas in Qmap. One (UPR-200-W-UPR) associated with S-Farm and the other (200-W-127 Unplanned Release) on the 200-W-129-PL line Southeast of the T-Farm. Significant distance separates the two areas.
- The Qmap lines near the 241-T-151 and 241-T-152 diversion boxes appear to be incorrect, see plan view vs. Diagrams-1

Site Interfaces

Origin/Termination

200-IS-1
- 241-TX-155 Div Box

WMA T
- 241-T-151 Div Box
- 241-T-152 Div Box

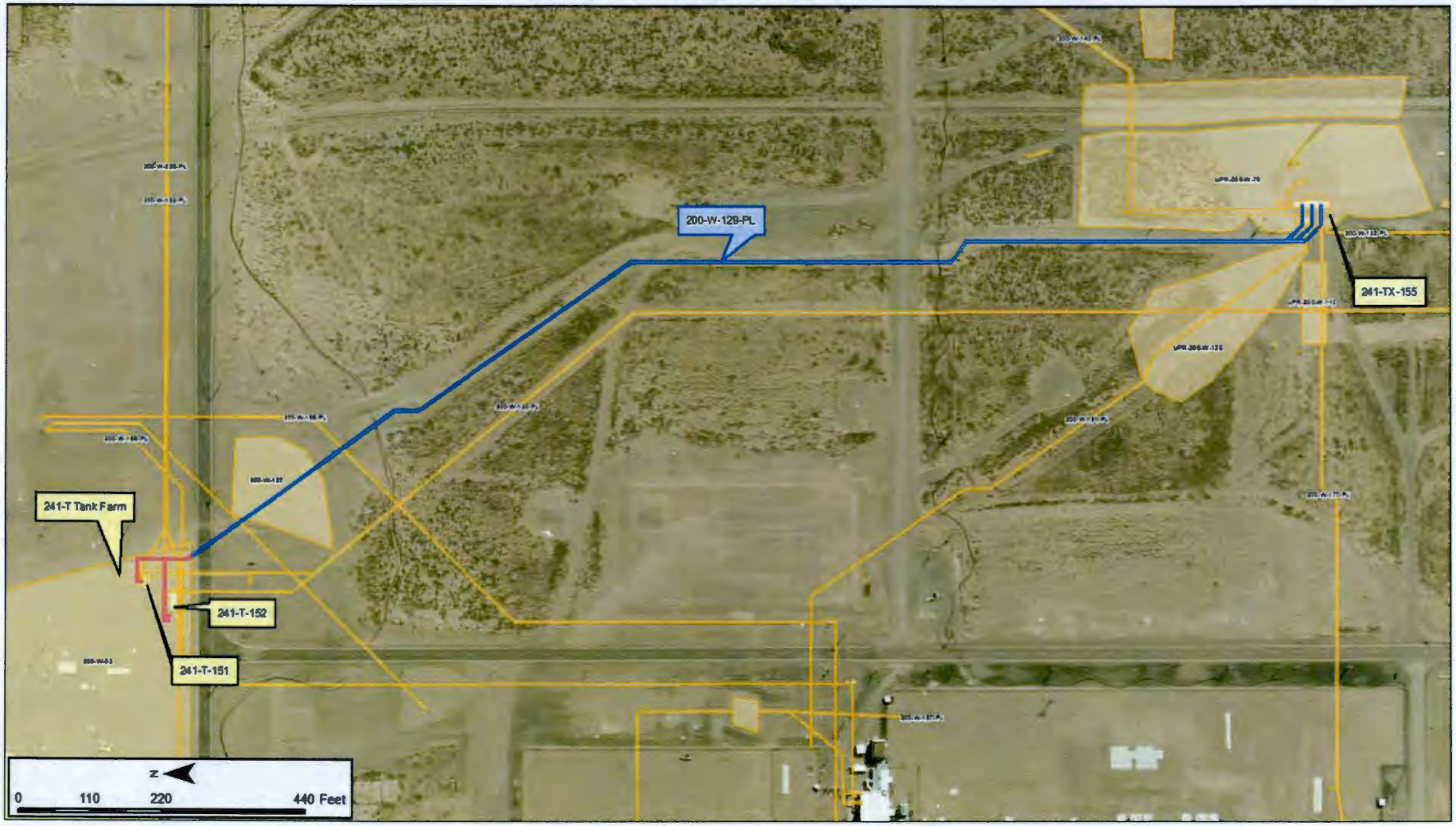
Site Intersects

200-IS-1
- 200-W-130-PL
- 200-W-132-PL
- 200-W-143-PL
- 200-W-165-PL
- 200-W-166-PL
- 200-W-167-PL
- 200-W-176-PL
- 200-W-177-PL
- 200-W-182-PL
- 200-W-191-PL
- 200-W-226-PL
- UPR-200-W-113
- UPR-200-W-135

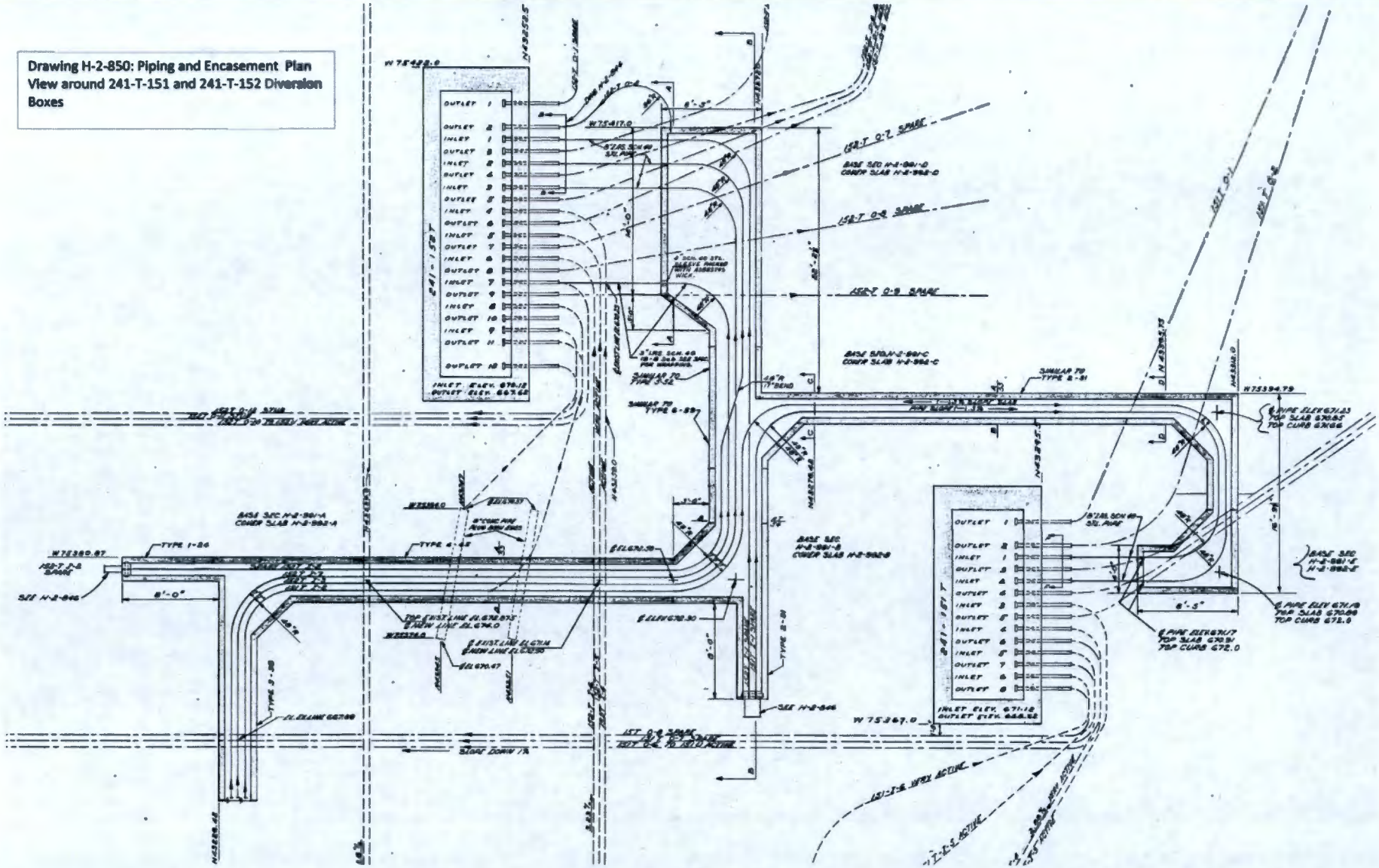
No Operable Unit
- 200-W-127 (UPR)
- UPR-200-W-76

WMA-T
- 200-W-93 (UPR)

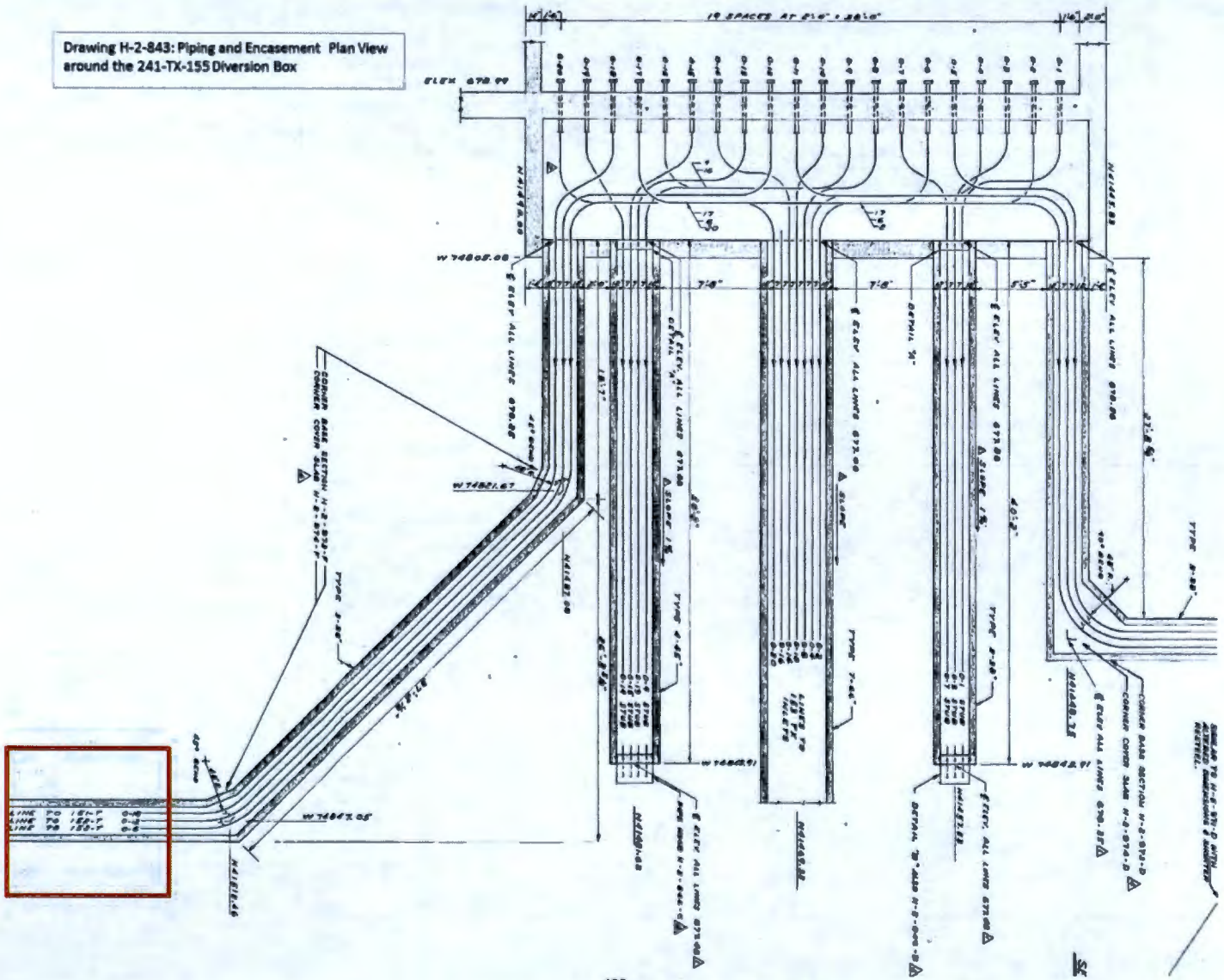
Scoping Summary: 200-W-129-PL



Drawing H-2-850: Piping and Encasement Plan View around 241-T-151 and 241-T-152 Diversion Boxes



Drawing H-2-843: Piping and Encasement Plan View around the 241-TX-155 Diversion Box



Scoping Summary: 200-W-130-PL

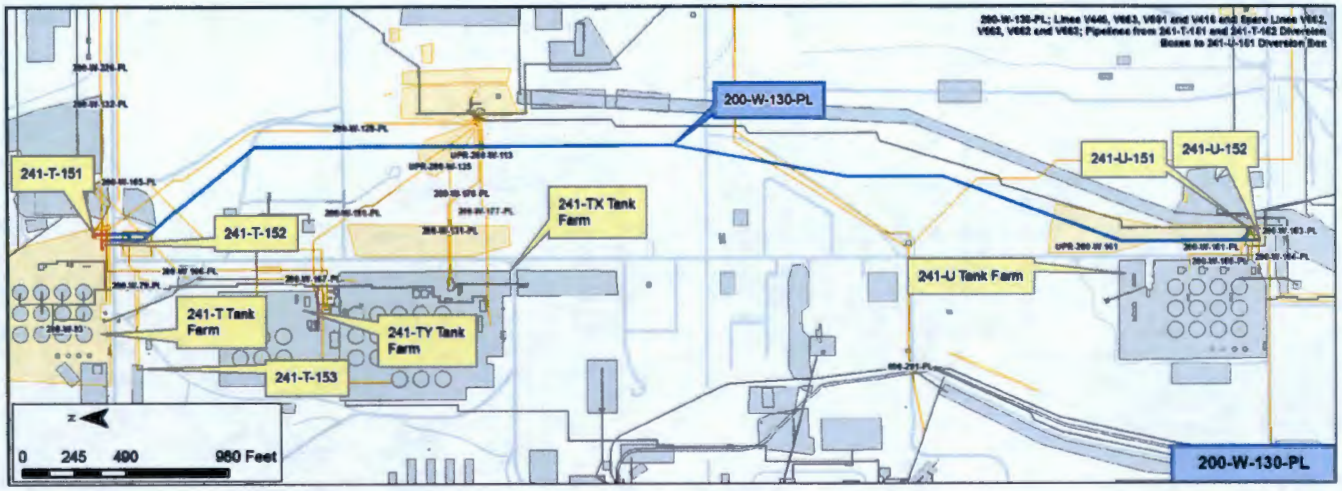
History

The 200-W-130-PL waste sites is an inactive underground collection of six lines used to transfer wastes from the 241-T-151 and 241-T-152 Tanks to 241-U-151 and 241-U-152 Diversion Boxes, respectively.

It was constructed by 1950 and active until about 1985. There were two primary lines and 4 spare lines: V445 originated from 241-T-151 and had spare lines V662 and V663; V601 originated from the 241-T-152 Diversion box, and had spare lines V682 and V683; V662, V663, V682, and V683 were initially stubbed off immediately outside the T Tank farm.

In 1950, V601 was cut and diverted to the 241-TX-153 Diversion Box, with new segment V416 added from the 241-TX-153 to the 241-U-152 Diversion Box. These lines were designated as the 200-W-131-PL.

In 1954, V601 leaked about 1,000 gal of tank bottom sludge (UPR-200-W-29), so it was taken out of service in 1955; a similar leak occurred in 1966 when the same line was mistakenly used again. In 1967, spare line V663 was extended to the 216-T-36 Crib, and is now waste site 200-W-79-PL.



Construction

- Length:
  - V445: 5601 ft
  - V601/V416: 5639 ft
- Diameter:
  - V445: 3 in.
  - V601/V416: 3 in.
- Composition: Stainless Steel
- Pressurized
- Encasement Specifications: Concrete, only under roads
- Depth: 9.5 ft – 12 ft bgs
- Direct Buried
- Total Calculated Volume: 4,129 gal
  - V445: 2,057.5 gal
  - V601/V416: 2,071.5 gal

Features of Interest

- 9 bends (V445)
- 11 bends (V601/V416)
- 4 Stainless to stainless welds (line V601/V416 - 2 radius segments added during conversion to 200-W-131-PL)
- 30 ft of 6 in. pipe-in-pipe concrete encasements under roads

Relevant Characterization

- Line V601 leaked approximately 1000 gallons in 1954
  - The leak was south from the 241-T-152 Diversion Box and designated UPR-200-W-29
  - The release was 1C supernatant containing yttrium, cesium, antimony, cerium, ruthenium, niobium, and tellurium
  - Measured dose rate up to 11.5 rad/hr at 5 cm, and 3.5 rad/hr were measured over the run-off
  - Near the cave in area, 4.5 rad/hr were discovered

Waste Streams

- 200-W-130-PL was built to handle the BiPO4 wastes (MW1, CW1, 1C, 2C, MW2, CW2, and 1C2)
  - V601/V416 transferred BiPO4 tank supernatants
  - V445 line was involved with TBP and uranium recovery/REDOX wastes from 1962-1966 (TBP, PFeCN1, PFeCN2, 1CFeCN, and R1, CWR1)
- Waste scavenging and volume reduction processes PUREX (P1, CWP1, OWW1) and other 200 East wastes
- T Plant tool and equipment decontamination wastes (DW, 1967-1976) were low level and used as evaporator feed
- The last waste stream through the 200-W-130-PL, via line V445, was Z Plant related salt cake

Misc./Other Relevant Information

- In 1950, V601 and V416 were constitute pipeline 200-W-131-PL. However, the 200-W-130-PL still maintains ownership of those two lines. It is suggested that all of line V601 and line V416 should be converted to 200-W-131-PL
- The same suggestion should be made for the V663, which should be transferred to 200-W-70-PL from the 200-W-130-PL inventory.

Site Interfaces

Origin/Termination

200-IS-1

- 241-U-151 Diversion Box
- 241-U-152 Diversion Box
- 241-T-151 Diversion Box
- 241-T-152 Diversion Box

Site Intersects

200-IS-1

- 200-W-129-PL
- 200-W-132-PL
- 200-W-165-PL
- 200-W-166-PL
- 200-W-167-PL
- 200-W-176-PL
- 200-W-181-PL
- 200-W-183-PL
- 200-W-184-PL
- 200-W-185-PL
- 200-W-191-PL
- 200-W-226-PL

Not Assigned

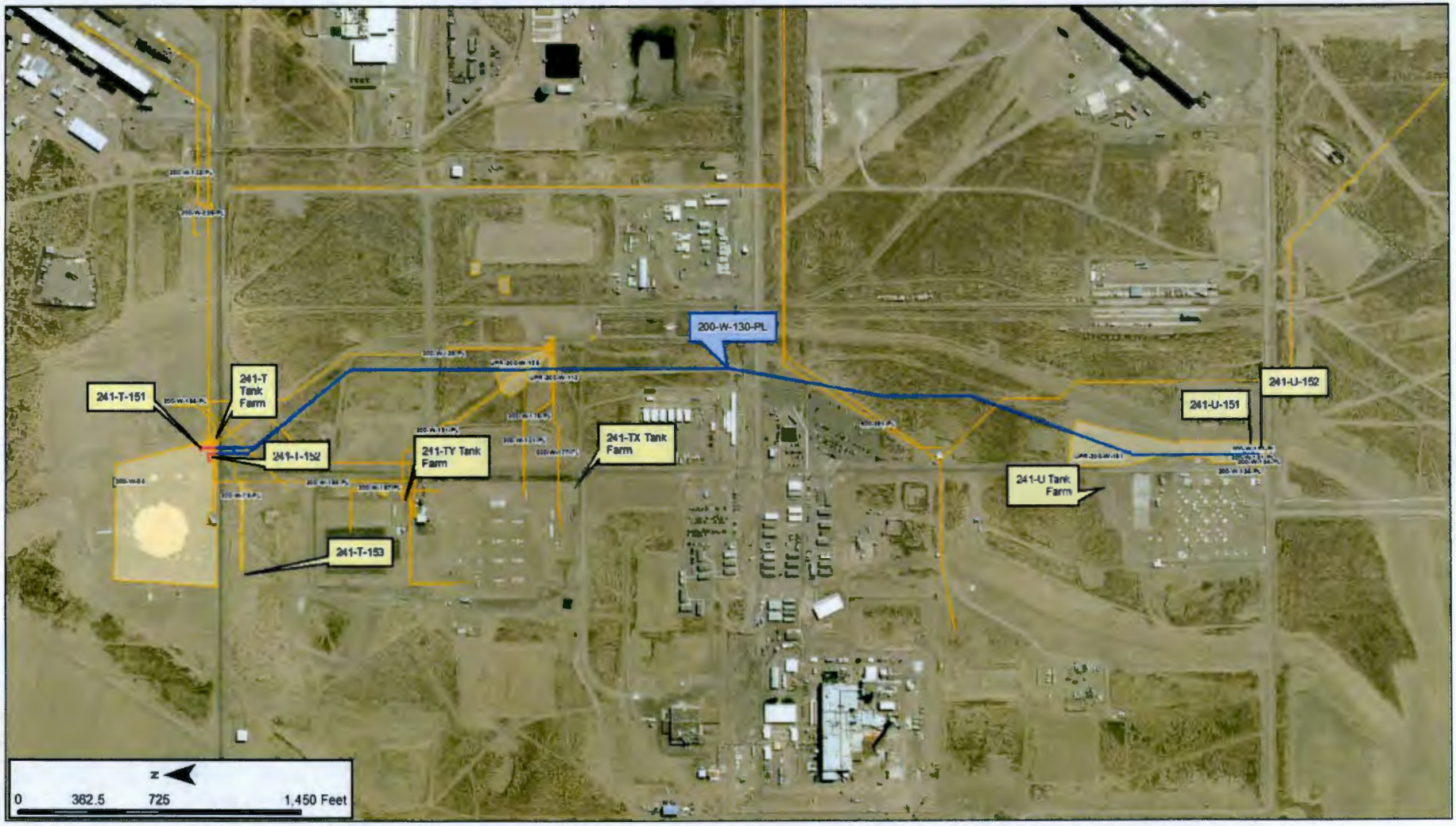
- 600-291-PL

200-IS-1

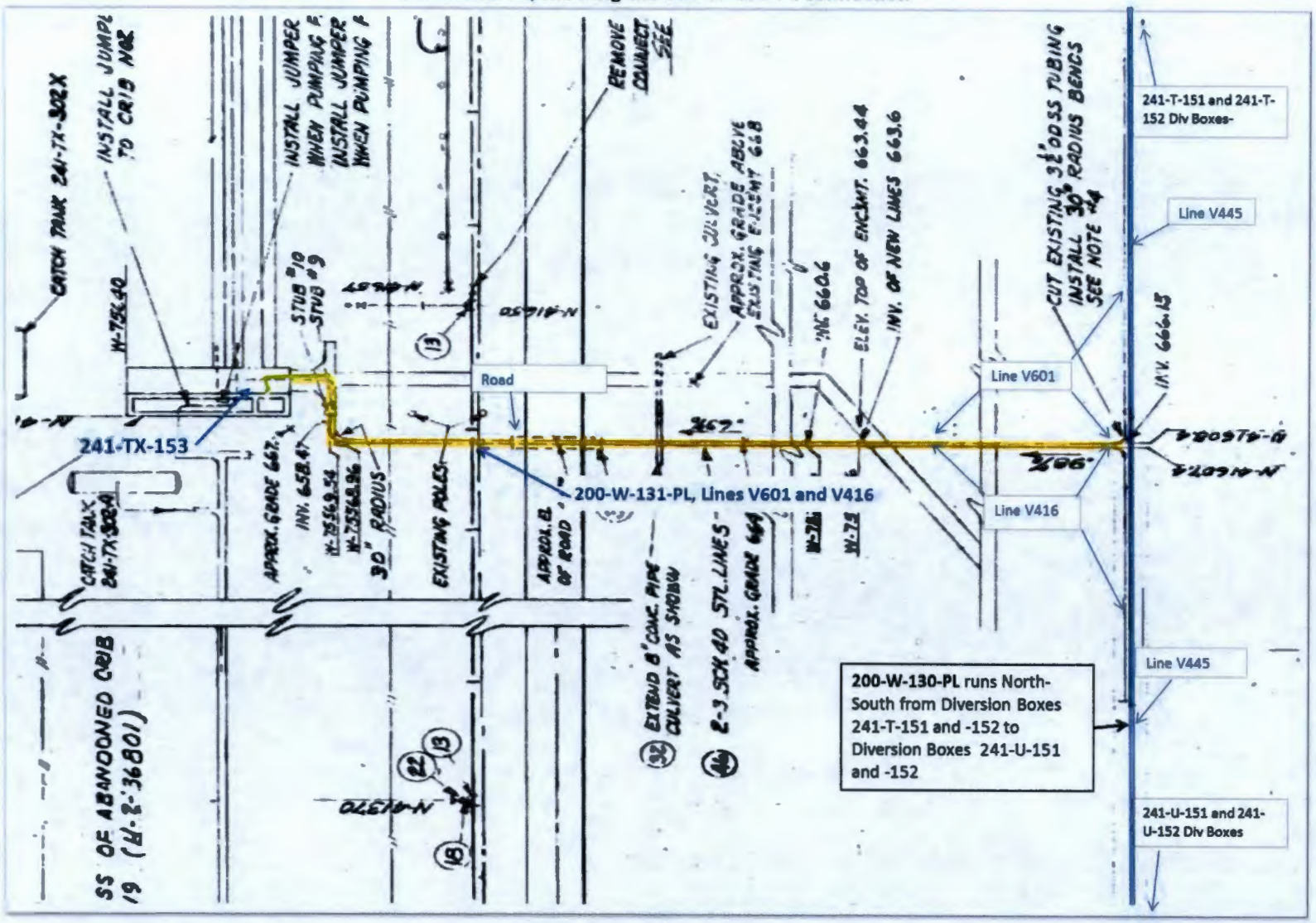
- UPR-200-W-29

WMA T

- 200-W-93; T Tank Farm


200-W-130-PL
241-T-151
241-T Tank Farm
241-T-152
241-T-153
241-TY Tank Farm
241-TX Tank Farm
241-U-151
241-U-152
241-U Tank Farm
N
0
362.5
725
1,450 Feet

200-W-130-PL, showing the 200-W-131-PL connection



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Scoping Summary: 200-W-131-PL

History

The 200-W-131-PL waste site is an inactive underground pipeline system comprised of two lines, V601 and V416, used as a tank farm transfer between the T-Tank Farm and the 241-U-151 and 241-U-153 Diversion Boxes to support evaporator waste reduction.

The pipeline was constructed in 1950 and remained operational until about 1980.

200-W-131-PL is a westerly trending pipeline added via a "T" to the 200-W-130-PL (constructed in 1944). Pipeline 200-W-131-PL ends at the 200-W-130-PL and drains to the 241-TX-153 Diversion Box.

Construction

- Length:
  - V601: 674.6 ft
  - V416: 674.6 ft
- Diameter:
  - V601: 3 in.
  - V416: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Encasement Specifications: Encased in concrete at all road crossings
- Depth: ~12 ft – ~13 ft bgs
- Total Calculated Volume: 793 gal

Features of Interest

- 8 total bends
- T: two 90 degree, 30 in. radius stainless steel pipes installed in line 200-W-130-PL
- 30 ft encasement 6 in. pipe-in-pipe under the road
- Encasement for two bends before entering the 241-TX-153 Diversion Box
- Two 90 degree bends with 30 in. radius each welded to 200-W-130-PL cuts

Relevant Characterization

- No characterization data was located

Waste Streams

- 200-W-131-PL carried waste generated by processes for uranium and plutonium recovery
  - BiPO4, REDOX, PUREX, and feed streams and waste products derived from waste fractionization
- The Waste Streams were MW, CW, 1C and 2C, followed by mixed solid and liquid wastes

Misc./Other Relevant Information

200-W-131-PL was installed to permit wastes from the T and U Diversion Boxes to the TX Tank Farm. A 3"ID stainless steel line V601 (200-W-130-PL) was severed. A 90 degree, 30 in. radius piece was added to the pipe, and continued to the 241-TX-153 Diversion Box. The 3 in. SS line (V601) was direct buried in soil to the encasement for the 241-TX-153 Diversion Box. V416 was installed into the same soil trench where the V601 exited. V416 and V601 continue to 200-W-130-PL.

Site Interfaces

Origin/Termination

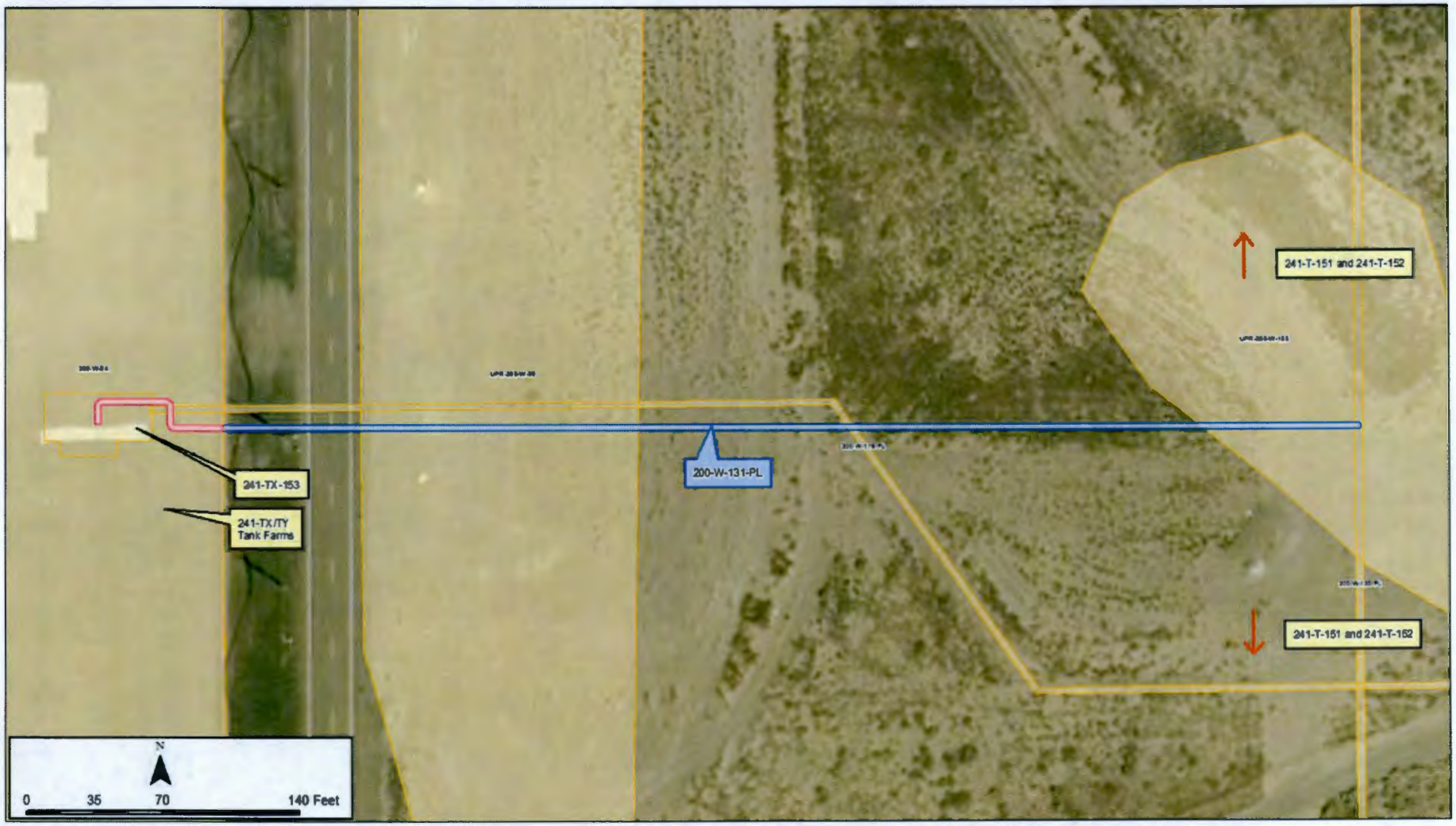
200-IS-1

- 200-W-130-PL
- 241-TX-153

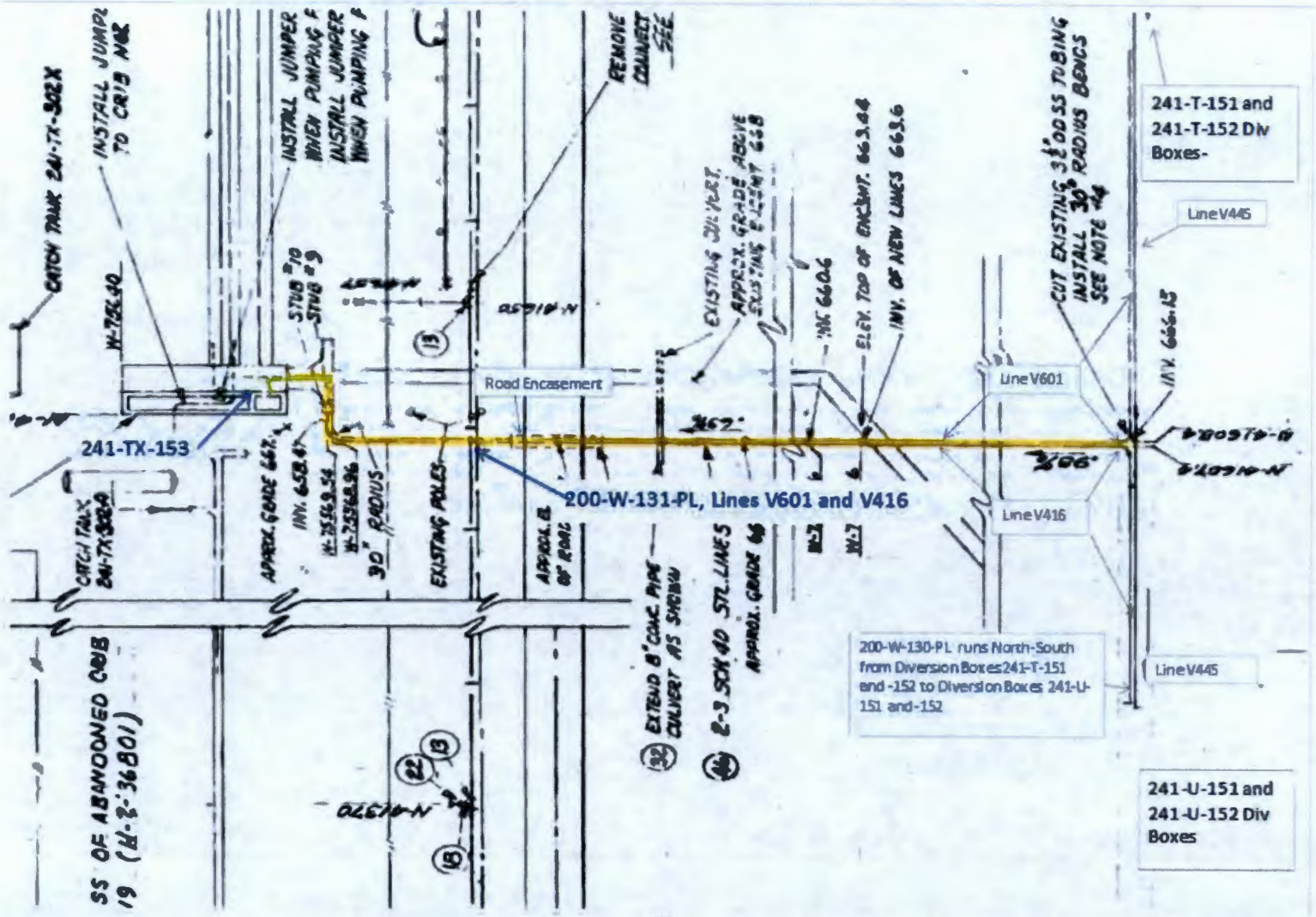
Site Intersects

200-IS-1

- UPR-200-W-99 (241-TX-153 Div Box)
- UPR-200-W-135 (241-TX-155 Div Box)
- 200-W-176-PL
- 200-W-94


241-T-151 and 241-T-152
241-TX-153
241-TX/TY
Tank Farms
200-W-131-PL
241-T-151 and 241-T-152
N
0
35
70
140 Feet

200-W-131-PL Plan View Drawing



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Scoping Summary: 200-W-132-PL

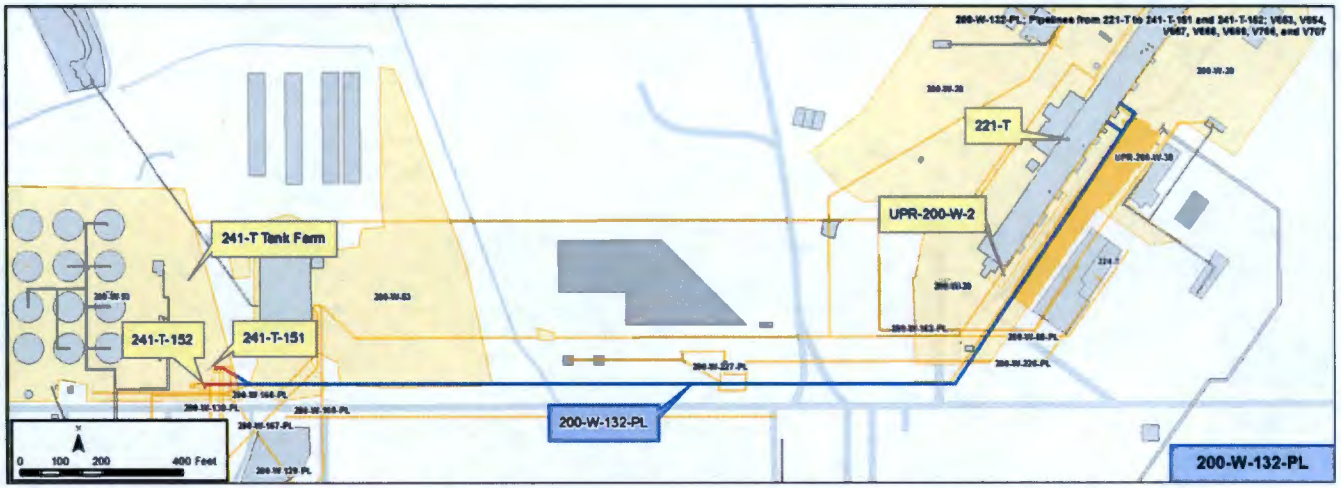
History

The 200-W-132-PL waste site is an inactive underground pipeline transfer system that consists of six tank farm pipelines that transported waste from the 221-T Canyon Building to the 241-T-151 and 241-T-152 diversions boxes inside the 241-T tank farm.

Operations began in 1945 and the end of service can be correlated with the isolation of the diversion boxes in 1980 and 1983.

200-W-132-PL had three documented failures:

- In Jul-1947 line V654 failed a pressure test due to a ground cave in at 221-T that resulted in discharge to the ground. Contamination measured 10 ft - 11 ft bgs (UPR-200-W-2) and the line was replaced.
- In Jul-1953 line V667 failed due to another cave in at 221-T, the line was discontinued and the exposed contamination was stabilized with emulsified asphalt.
- In 1954 line V669 failed a hydrostatic test, likely due to corrosion.



Construction

- Length: 15,676 ft (cumulative)
  - V653 and V654: ~2,536 ft (each)
  - V676, V668, V669, V707: ~2,651 ft (each)
- Diameter: 3 in.
- Composition:
  - V653 and V654: Stainless Steel
  - V667, V668, V669, and V707: Carbon Steel
- Flow Method: Not Specified
- Encasement: None - unlined soil trench
- Cathodic Protection: None located
- Depth: 9 ft - 12 ft bgs
- Calculated Volume: 5,756 gal (cumulative)

Features of Interest

- N/A

Relevant Characterization

- Line V667 July 1953 a radiation survey showed up to 5 R/hr at 8 in. from the bottom of the cave in. The earth in the cave in was damp with signs of liquid flow
- The site is posted with Underground Radioactive Material and Pipeline signs

Waste Streams

- Processing and decontamination waste from 221-T, a bismuth phosphate plutonium separations facility

Misc./Other Relevant Information

T Plant Origins to Diversion Boxes

- V653 - Section 10 of 221-T to 241-T-151
- V654 - Section 9 of 221-T - to 241-T-151
- V667 - Section 5 of 221-T to 241-T-152
- V668 - Section 15 of 221-T to 241-T-152
- V669 - Section 15 of 221-T to 241-T-152
- V707 - Section 10 of 221-T to 241-T-152

Site Interfaces

Origins/Terminations

- 221-T (facility)

WMA-T

- 241-T-151 (diversion box)
- 241-T-152 (diversion box)

Site Intersects

No Operable Unit

- 200-W-20 (T Plant Complex)

WMA T

200-W-93 (T Tank Farm soil)

Site Intersects Con't

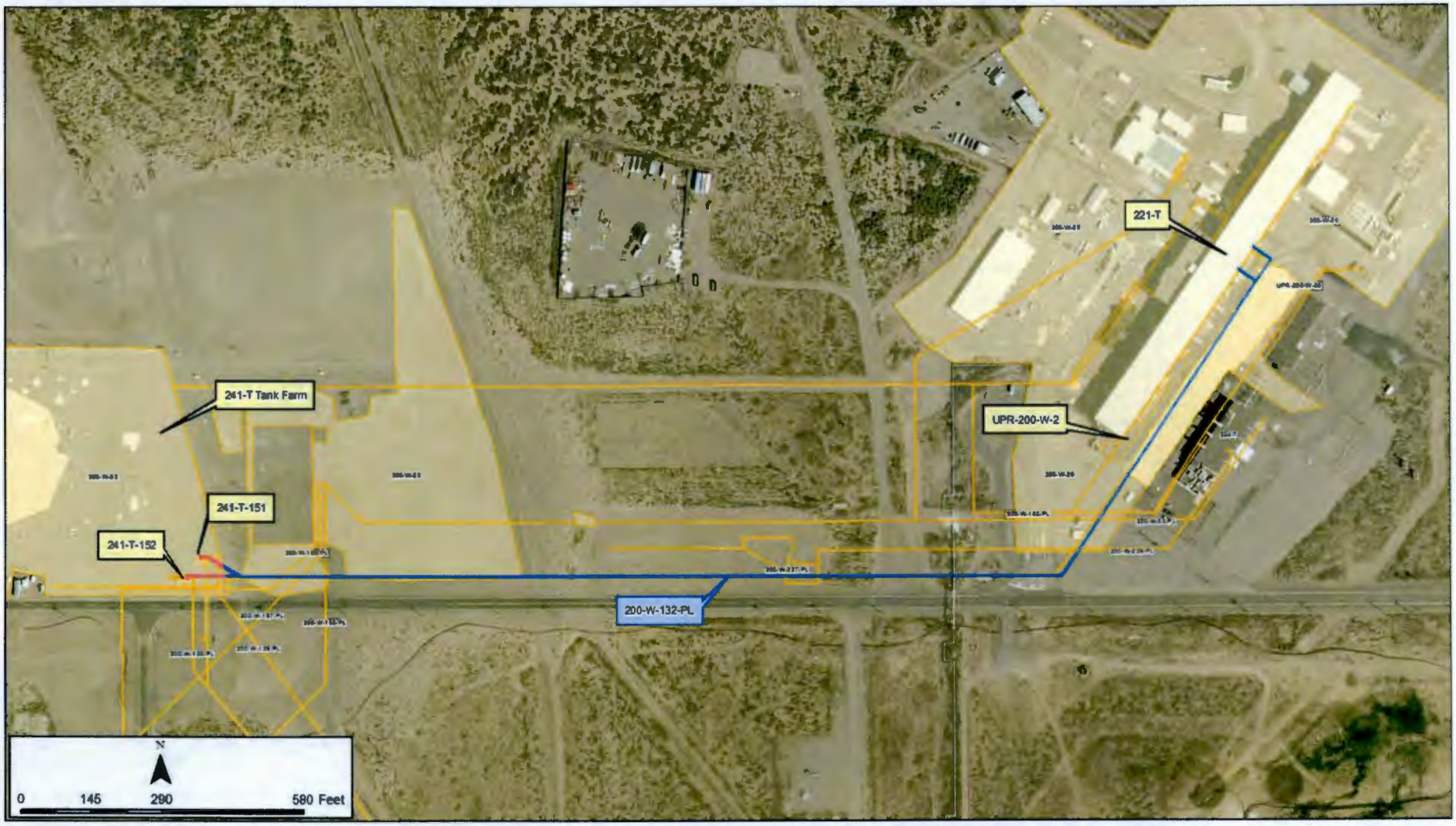
200-WA-1

- 200-W-53 (T Tank Farm releases)

200-IS-1

- 200-W-88-PL
- 200-W-130-PL
- UPR-200-W-38
- 200-W-129-PL
- 200-W-163-PL
- 200-W-165-PL
- 200-W-166-PL
- 200-W-167-PL
- 200-W-226-PL
- 200-W-227-PL
- UPR-200-W-2

Scoping Summary: 200-W-132-PL



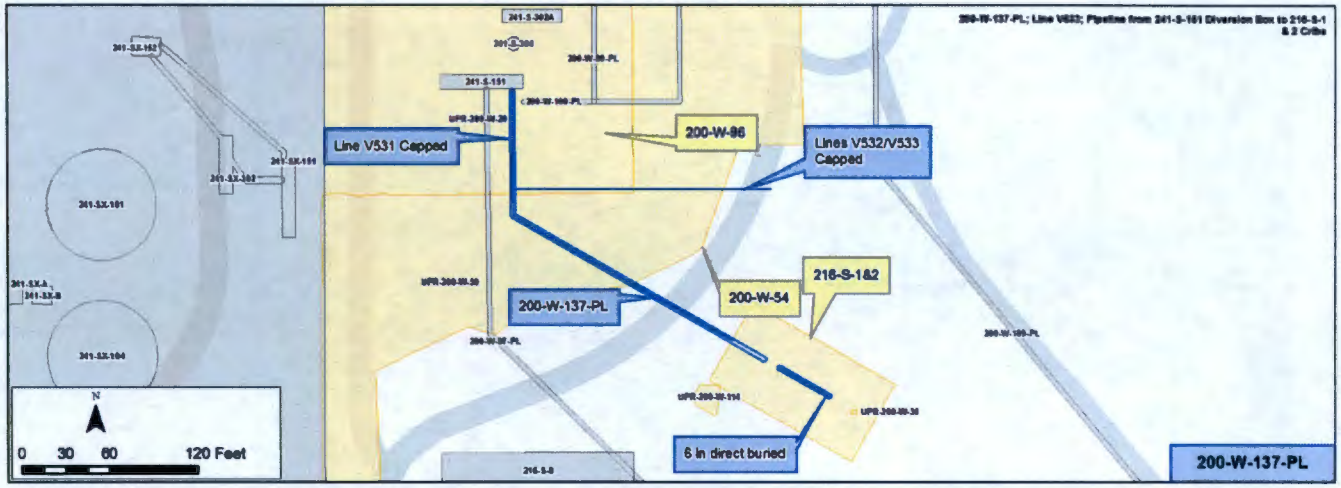
Scoping Summary: 200-W-137-PL

History

The 200-W-137-PL waste site is an inactive underground pipeline that transferred REDOX cell drainage and process condensate from the 241-S-151 Diversion box to the 216-S-1 & 2 Cribs.

Constructed in 1949, the steel pipeline exits the diversion box in a three-line encasement. Two spare lines divert to the east and were stubbed at the end of the lines. One, double contained (pipe in pipe), pipeline extends to the crib, which also includes a line connecting the S-1 & 2 Cribs.

In Aug-1955, there was a release of process vapors from a monitoring well near the cribs (UPR-200-W-36). Due to the failure, the cribs were deactivated and 200-W-137-PL was capped near the diversion box in Jan-1956.



Construction

3 Pipes: V531, V532, and V533

- Total Length: 670 ft (3.5 in.); 40 ft (6 in. line connecting the two cribs 216-S-1 and 216-S-2)
- Diameter: 3.5 in. (Line V531 has small section of 6 in.)
- Composition: Stainless Steel
- Gravity fed
- Encasement specifications: 3-38 (V531, V532 & V533; starts at 241-S-151 and ends at pipe bend), 2-31 (V532 & V533; line that runs east connecting into the 3-38 encasement), and Pipe-in pipe (V531; 3.5 inch in 6 inch stainless steel; from the pipe bend to 216-S-1&2)
- Direct Buried
- Depth: 12 ft - 21 ft bgs
- Cathodic Protection
- Total Calculated Volume: 710 gallons

Features of Interest

- 40 ft of 6 in. stainless steel pipe connecting the 216-S-1 & 2 cribs
- 1 pipe bend
- 1 T-connection (transition from 3-38 encasement to 2-31 encasement)
- 216-S-2 collapsed during drilling
- All Lines capped

Relevant Characterization

- Waste had a pH of 2.1 in the 216-S-1 & 2 crib (1952-56)
- 42 million gallons of waste containing 750,000 curies of mixed fission products are estimated to have passed through 200-W-137-PL (line V531)

Waste Streams

- Process: REDOX Plant - Reduction and Oxidation Process
- Waste Steams: Cell drainage from D-1 Receiver Tank and process condensate from the D-2 Receiver Tank in the 202-S Building

Misc./Other Relevant Information

- UPR-200-W-36 had a dose rate of 4 rad per hour on the well cap (1955)

Site Interfaces

Origin/Termination:

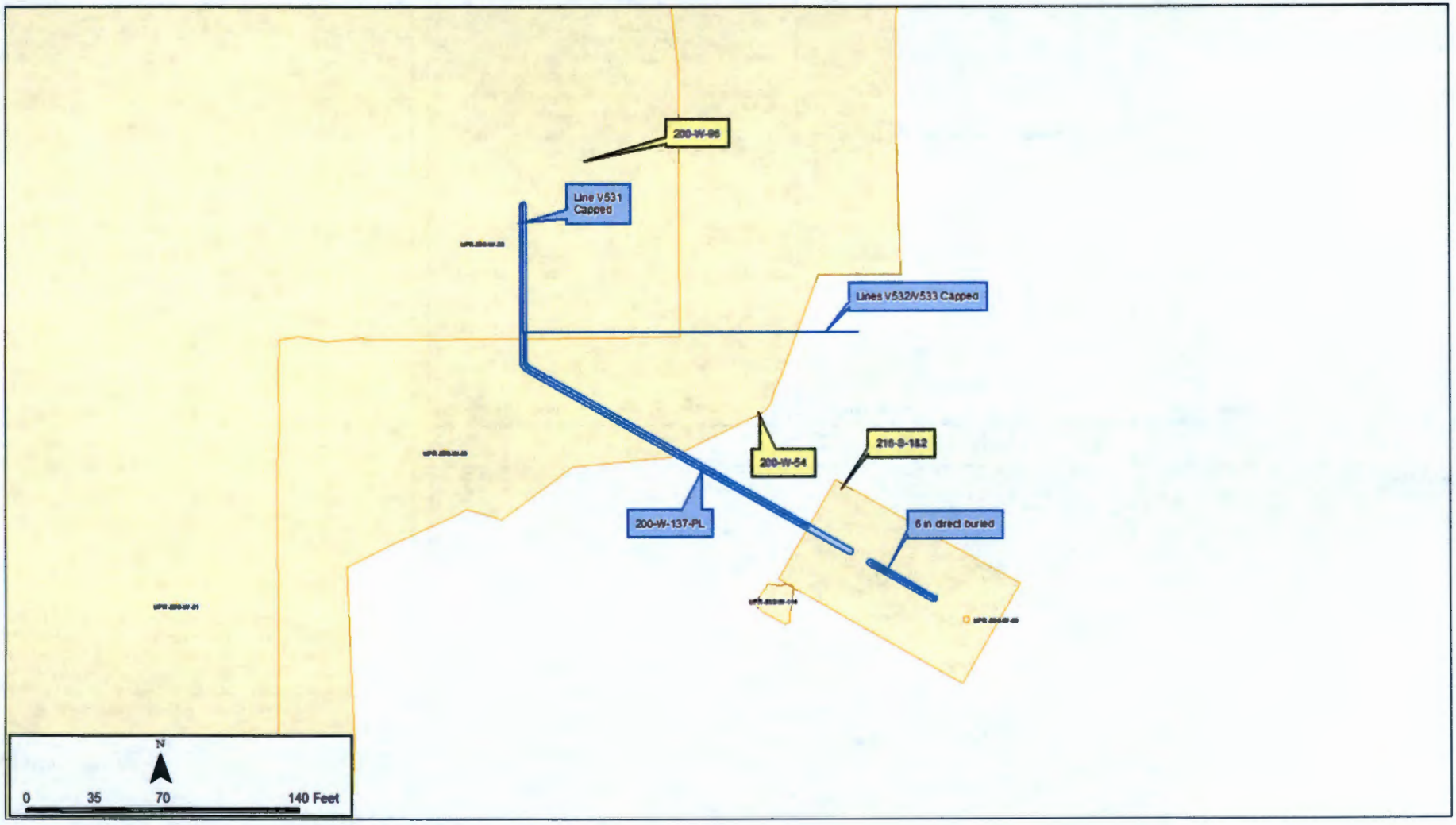
S/SX
- 241-S-151

200-WA-1
- 216-S-1&2 (Crib)

Site Intersects:

200-WA-1
- 200-W-54
- UPR-200-W-36

S/SX
- 200-W-96


200-W-86
Line V531 Capped
Lines V532/V533 Capped
200-W-54
216-S-182
200-W-137-PL
6 in direct buried
N
0
35
70
140 Feet

Scoping Summary: 200-W-138-PL

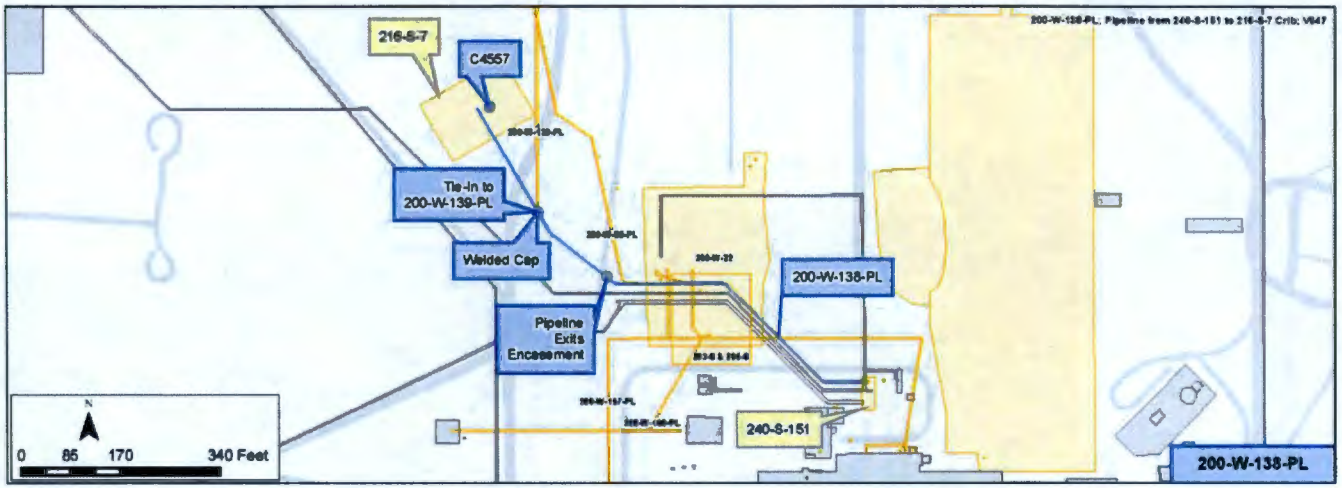
History

The 200-W-138-PL waste site is an inactive underground pipeline initially used to transfer process waste from the 240-S-151 Diversion Box to the 216-S-7 Crib.

It was built in 1955, and the entire pipeline was used while the 216-S-7 Crib was active from 1956 to 1965.

After the 216-S-7 Crib was retired in 1965 and a section of the pipeline to the 216-S-7 Crib isolated, the remaining portion of the pipeline was used until 1972 to transfer process waste from the 240-S-151 Diversion Box to replacement cribs 216-S-9 and 216-S-23 (via 200-W-139-PL). The 216-S-9 Crib was active from 1966 to 1969 and the 216-S-23 Crib was active from 1969 to 1972.

In the 1975, the piping at the 216-S-7 Crib was blanked below ground level.



Construction

- Length: 860.6 ft
- Diameter: 3.5 in.
- Composition: Stainless Steel
- Gravity
- Direct Buried (portions)
- Encasement Specifications: Partially in concrete
- Depth: 12 ft - 15.5 ft bgs
- Total Calculated Volume: 430 gal

Features of Interest

- 4 bends
- 1 tie in/expansion joint
- welded cap
- exits encasement - direct buried

Waste Streams

- The 200-W-138-PL pipeline transferred REDOX process condensate
  - 103,000,000 gallons of waste were sent to the 216-S-7 Crib
  - 13,300,000 gallons of process condensate from the D-2 Receiver Tank was sent to the 216-S-9 Crib
  - 8,980,000 gallons of process condensate from the D-2 Receiver Tank was sent to the 216-S-23 Crib

Site Interfaces

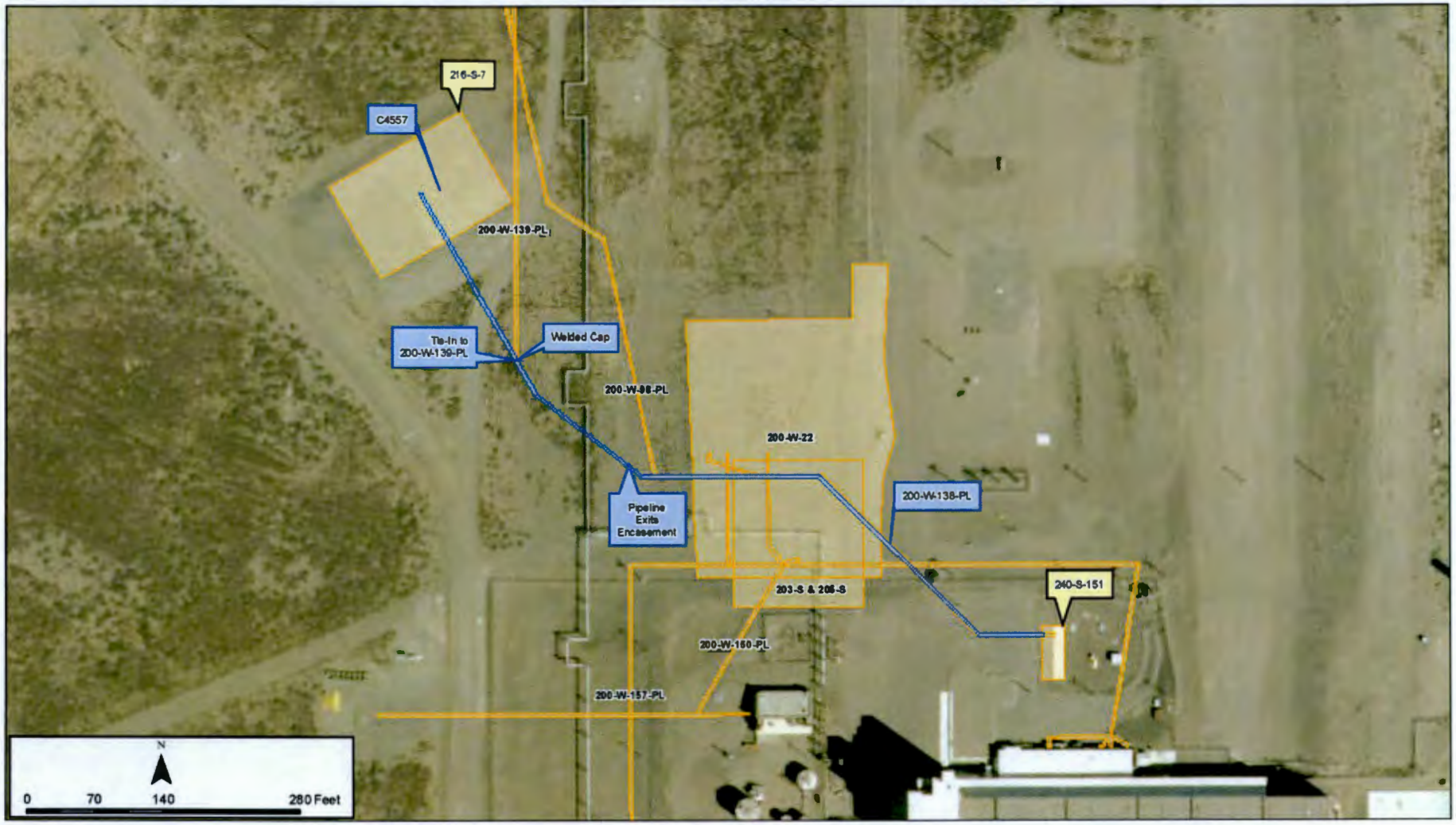
Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 240-S-151 (diversion box)	• 200-W-98-PL
• 200-W-139-PL	• 200-W-150-PL
	• 200-W-157-PL
200-WA-1	200-WA-1
• 216-S-7 (crib)	• 200-W-22 (UPR)

Relevant Characterization

- Logging found low or non-detect Cs-137 and total gamma concentrations at locations outside or at the edges of the crib (A7837, A7838, A7839)
- Cs-137 and total gamma concentrations were elevated in shallow soil at borings drilled inside the crib (A7851, A7852, C4557)
- Data for below 15 ft at C4557 (drilled to 235 ft bgs) show radionuclides detected above background levels
- Contamination below 125 ft was minimal

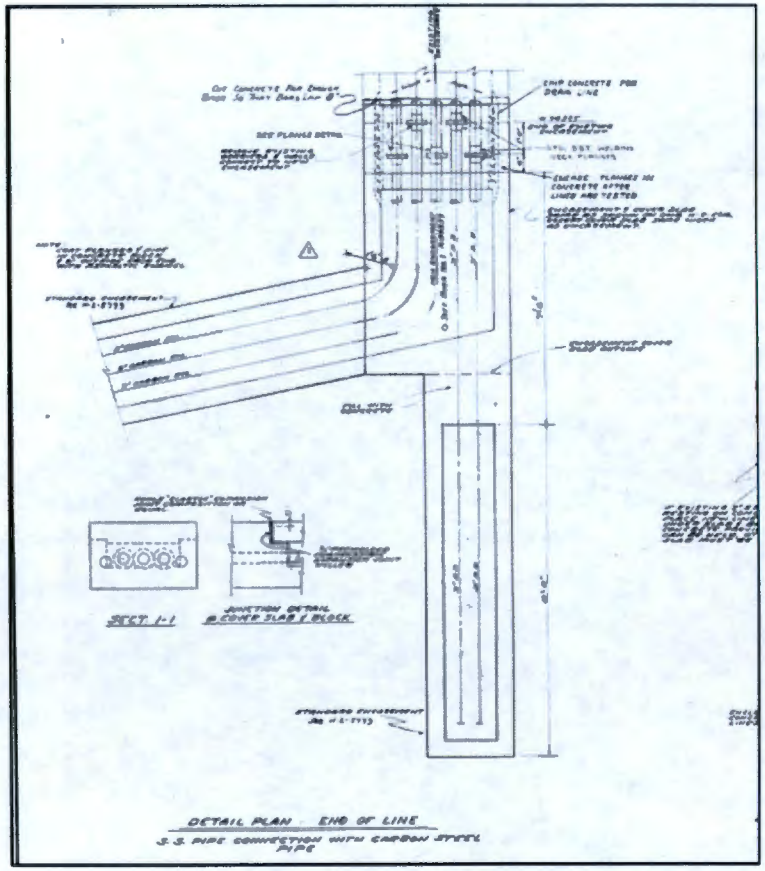
Misc./Other Relevant Information

- None

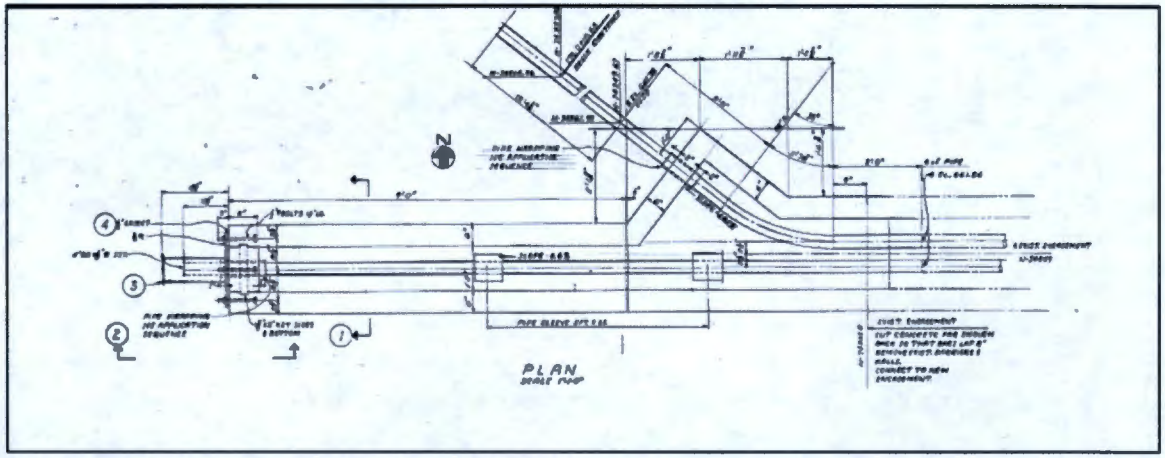

216-S-7
C4557
200-W-139-PL
Tie-In to 200-W-139-PL
Welded Cap
200-W-98-PL
200-W-22
Pipeline Exits Encasement
200-W-138-PL
203-S & 205-S
240-S-151
200-W-160-PL
200-W-157-PL
N
0
70
140
280 Feet

200-W-138-PL Schematics 1

From H-2-5588 - Detail Plan for the 200-W-98-PL Connection

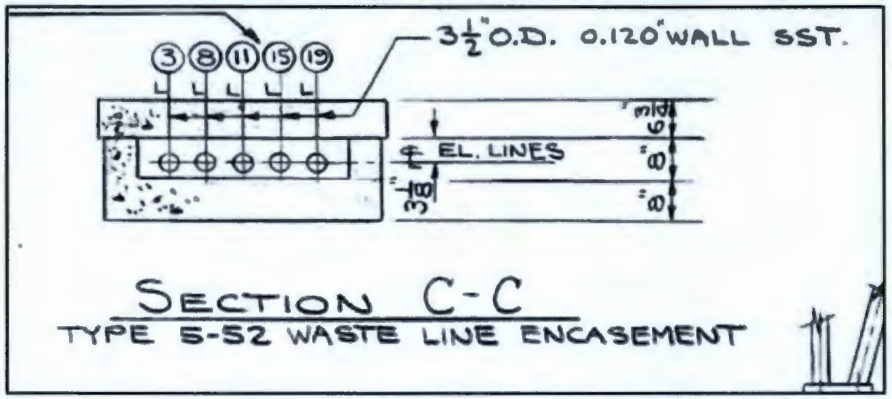


From H-2-30140 - Encasement tie-in to 216-S-7

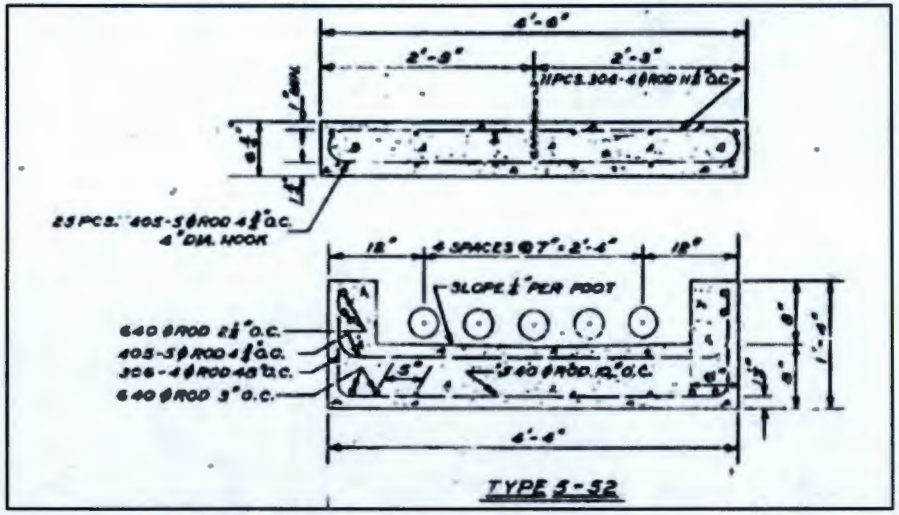


200-W-138-PL Schematics 2

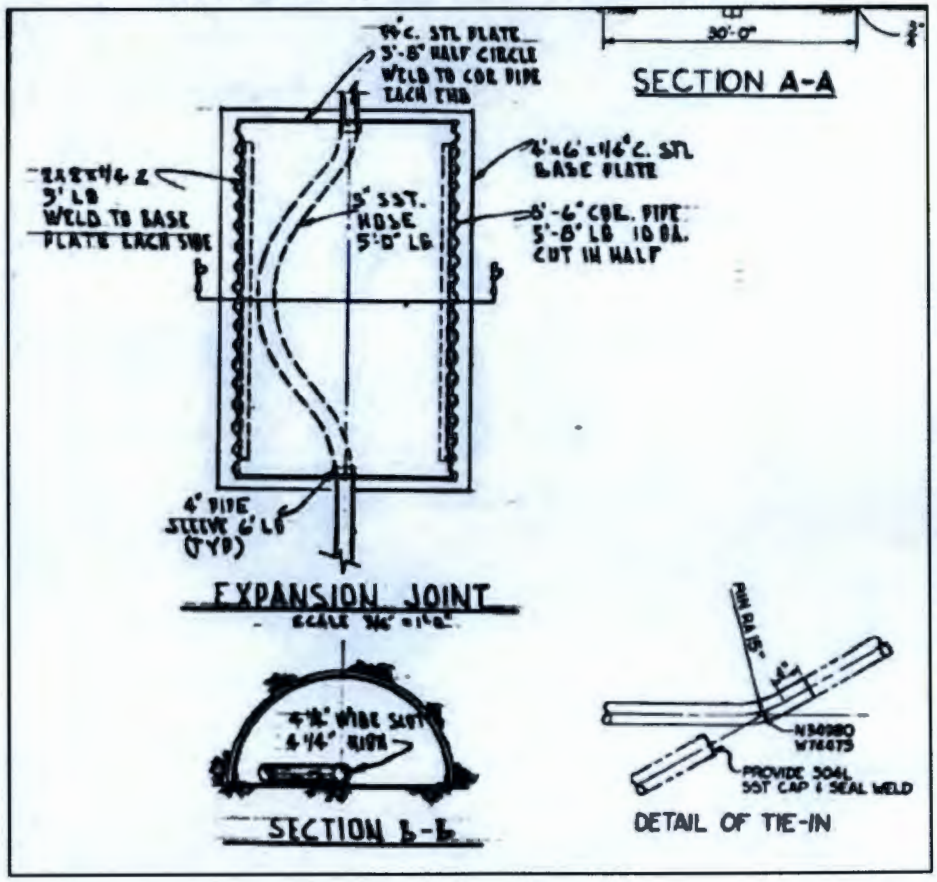
From H-2-5200 - Type 5-52 waste line encasement



From H-2-5216 - Type 5-52 waste line encasement



From H-2-32363 - Expansion Joint and Tie-in to 200-W-139-PL



Scoping Summary: 200-W-139-PL

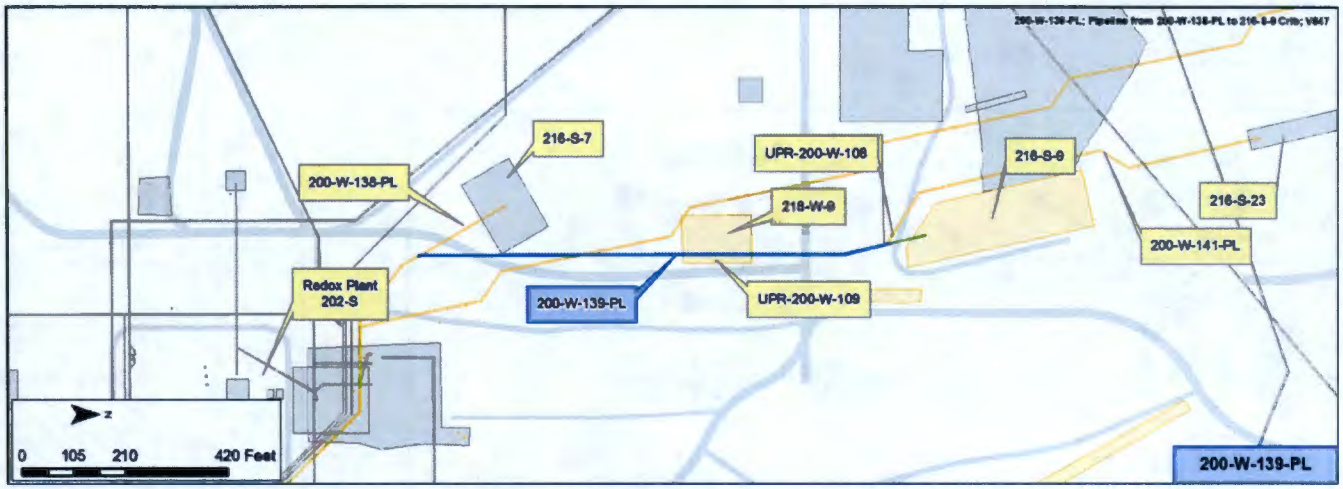
History

The 200-W-139-PL waste site is an inactive underground pipeline originally used to transfer process wastes to the 216-S-9 Crib from the REDOX Plant, by way of a tie-in to the 200-W-138-PL line.

The pipe was constructed in 1964 and transferred waste to the crib until 1969, when the 216-S-9 Crib was deactivated. The 200-W-141-PL pipeline was then connected to the 200-W-139-PL to transfer waste to the 216-S-23 Crib. That crib was deactivated in 1972.

Two recorded leaks impacted this pipeline: UPR-200-W-108 occurred in Jan-1969 during the tie-in that diverted waste to the 216-S-23 Crib when a buckled line was discovered. It was also noted that during the tie in of 200-W-141-PL, approximately 30 gal of waste solution was discharged into a 20 ft deep hole.

UPR-200-W-109 occurred later in Jan-1969. It was discovered when repairing the buckled portions of the waste line near the 216-S-9 Crib, and a pressure test indicated an additional leak in the line. Hydrostatic testing forced water to bubble to the surface inside the radiation zone marking the 218-W-9 burial trench. Excavation of the liquid bubble site disclosed a vertical buckle in the pipeline with a sizable break in the line at that point.



Construction

- Length: 1,018 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Depth: 12 ft – 16 ft bgs
- Calculated Volume: 374 gal

Features of Interest

- Tie-in: 3.5 in. to 3 in. SST to 200-W-138-PL
- Two - Encasements surrounding Expansion Modules
- Tie-in to 200-W-141-PL
- Isolation Flange preventing flow to crib 216-S-9
- Two - Expansion Modules
- Bend (from a N/S run to NNW/SSE run)

Waste Streams

- 1965-1972: REDOX Plant process condensate
- Based on data from the 216-S-9 Crib, this line transferred the following isotopes: Co-60, Se-79, Sr-90, Zr-93, Tc-99, Cs-137, Pm-147, Sm-151, Eu-154, and U

Site Interfaces

Origin/Terminations

200-IS-1
- 200-W-138-PL
- 200-W-141-PL

200-DV-1
- 216-S-9

Site Intersects

200-IS-1
- UPR-200-W-108
- UPR-200-W-109
- 200-W-98-PL

200-WA-1
- 218-W-9

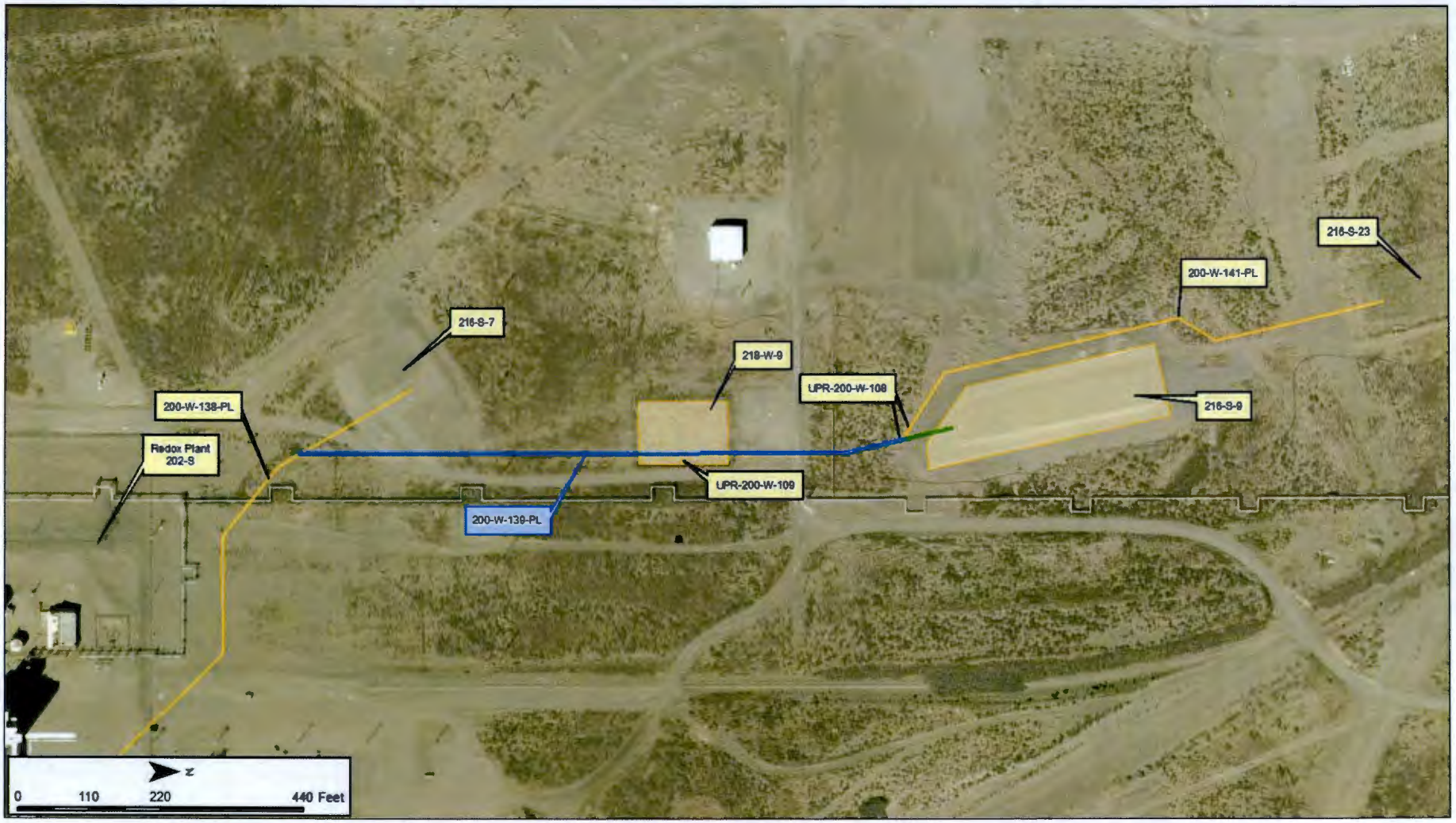
Relevant Characterization

- 1969: Approximately 30 gal of waste solution was discharged into a hole 20 ft bgs
  - Radiological surveys performed during UPR responses indicated 450 mrem/hr from liquid waste
  - However, as the water sank back into the soil, the dose rate dropped to 20 mrem/hr
- Oct-2009: A radiologically-contaminated sagebrush was found near this waste site. The area was subsequently posted with Soil Contamination Area signs

Misc./Other Relevant Information

- It is assumed the line is direct buried and pressurized, but that could not be confirmed

Scoping Summary: 200-W-139-PL



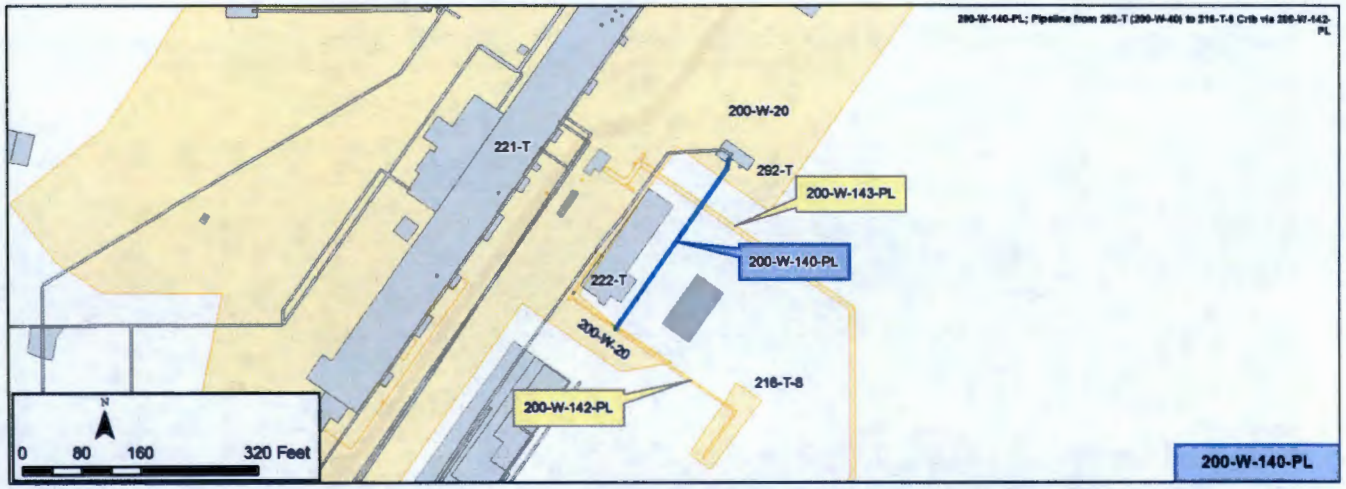
Scoping Summary: 200-W-140-PL

History

The 200-W-140-PL waste site is an inactive underground process sewer for the 292-T Building.

Installed east of the 222-T Building in 1949, the pipeline connects the 292-T building (200-W-40 Emission Control Lab) to the 200-W-142-PL, which drained to the 216-T-8 Crib.

The line was operational from 1950 to 1951, when the Crib was deactivated.



Construction

- Length: 277 ft
- Diameter: 3 in.
- Composition: Stainless steel
- Gravity Flow Line
- Direct Buried
- Depth: 4 ft bgs
- Cathodic Protection: None
- Calculated Volume: 102 gal

Features of Interest

- 6 bends at origin, 1 bend at termination
- Joint at termination bend is 4 ft deep, pipe turns vertically and continues 2 ft deeper to connect with 200-W-142-PL

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- 292-T was constructed to support T Plant's mission of extracting Plutonium from N Reactor irradiated fuel rods. The original building housed the 291-T stack gas sampling system
- 216-T-8 crib received 222-T decontamination sink waste and sample slurper waste via 200-W-142-PL
- The liquid waste discharged to 216-T-8 crib contained sulfuric acid, nitric acid and sodium dichromate
- Dec-1998 radionuclides for 216-T-8 crib included:
  - 4.57E-09 curies of Cs-134; 6.27E-06 curies of Cs-135; 3.25E-01 curies of Cs-137; 3.04E-01 curies of Sr-90; 1.50E-03 curies of U Gross

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

Operable Unit Not Located

- 292-T Building (origin)

200-IS-1

- 200-W-142-PL (termination)

200-WA-1

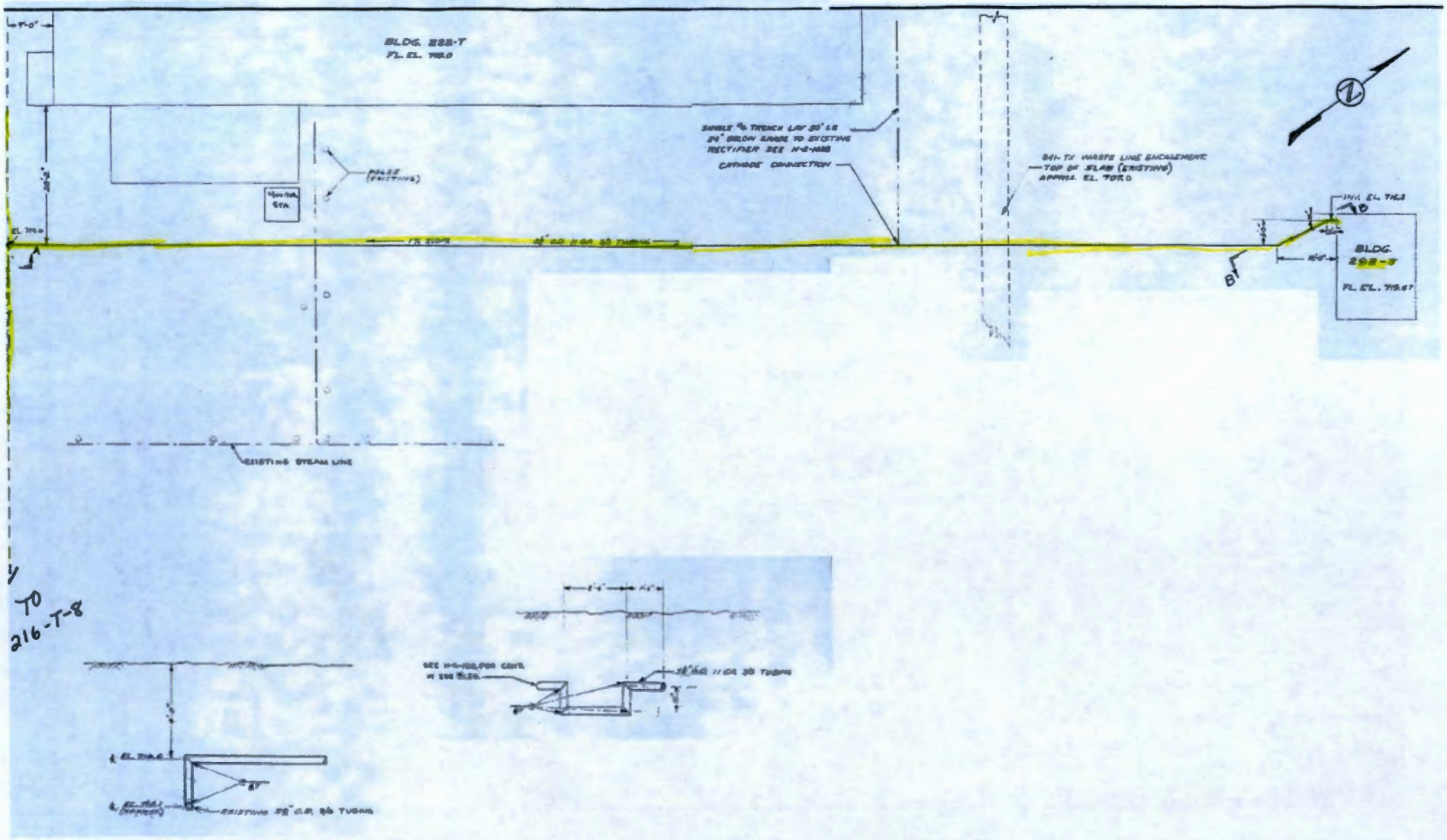
- 216-T-8 Crib (termination)

Site Intersects

200-IS-1

- 200-W-143-PL

221-T
200-W-20
292-T
200-W-143-PL
222-T
200-W-140-PL
200-W-20
200-W-142-PL
216-T-8
N
0
60
120
240 Feet


BLDG. 222-T
FL. EL. 719.0
CATHODIC CONNECTION
TOP OF SLAB (EXISTING)
APPROX. EL. 709.0
BLDG.
FL. EL. 719.67
EXISTING STEAM LINE
TO
216-T-8

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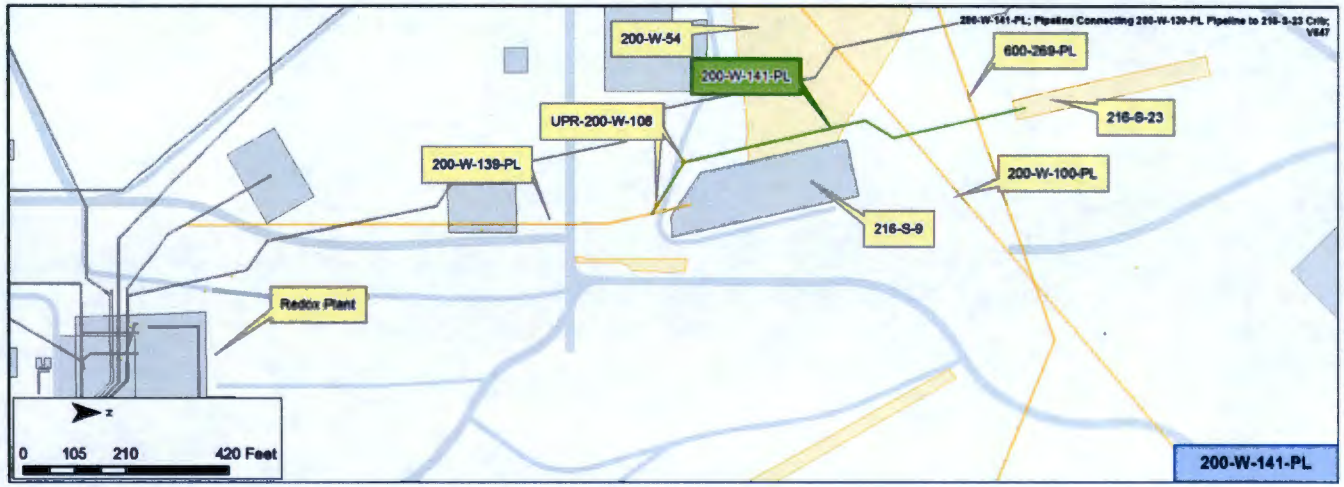
Scoping Summary: 200-W-141-PL

History

The 200-W-141-PL waste site is an inactive underground radioactive process sewer line that transferred waste from the REDOX Plant, beginning at a tie-in from waste site 200-W-139-PL, to the 216-S-23 Crib.

The pipeline was constructed in 1969 and operated until 1972, when the 216-S-23 Crib was taken out of service.

UPR-200-W-108 was discovered during the tie-in process when a buckled section of pipe in the 200-W-139-PL line was located near the tie in location. It was also noted that during the tie-in of 200-W-141-PL to 200-W-139-PL approximately 30 gal of waste solution was discharged into a hole 20 ft below the ground surface.



Construction

- Length: 837 ft
- Diameter: 6 in.
- Composition: Cast Iron (lined with concrete)
- Gravity flow
- Direct Buried
- Depth: 17 ft - 25 ft bgs
- Calculated Volume: 1,273 gal

Features of Interest

- Tie-in with flanged reducer 6 in. to 3 in.
- Encased expansion joint
- Lateral branch (placed for future tie-in, no record of use)
- 3 bends from pipe origin to termination

Waste Streams

- 1969-1972: REDOX process condensate
- Based on Crib data from 216-S-23, likely isotopes transferred included: Co-60, Sr-90, Cs-137, Pm-147, Sm-151, Eu-154, and U (Gross)

Site Interfaces

Origin/Termination

200-IS-1
- 200-W-139-PL

200-WA-1
- 216-S-23 Crib

Site Intersects

200-IS-1
- UPR-200-W-108
- 200-W-100-PL

200-WA-1
- 200-W-54
- 600-269-PL (Active)

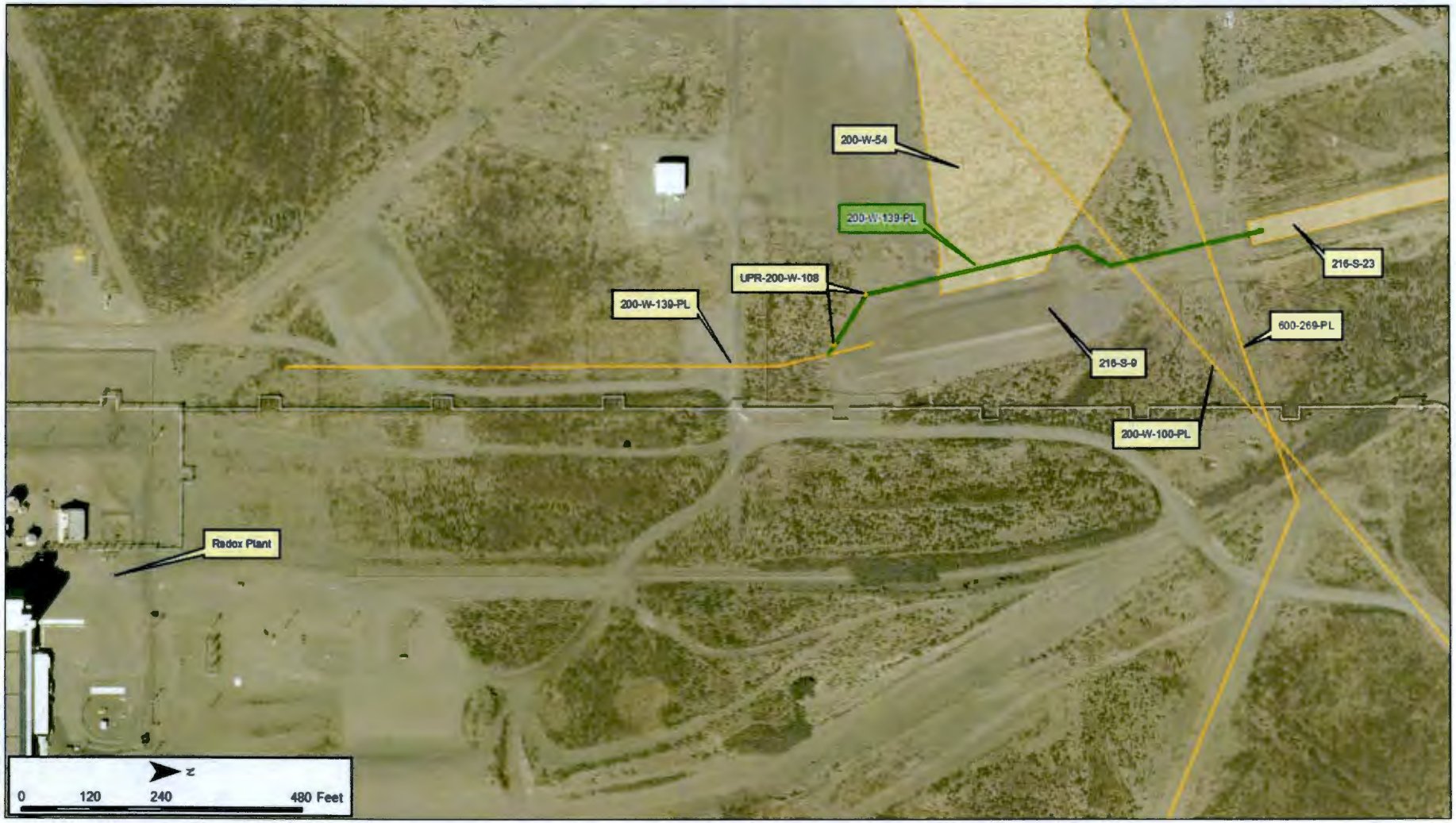
Relevant Characterization

- 1969: Approximately 30 gal of waste solution was discharged into a hole 20 ft bgs
  - Radiological surveys performed during UPR response indicated 450 mrem/hr from liquid waste. However, as the water sank back, the dose rate fell to 20 mrem/hr

Misc./Other Relevant Information

- None identified

Scoping Summary: 200-W-141-PL



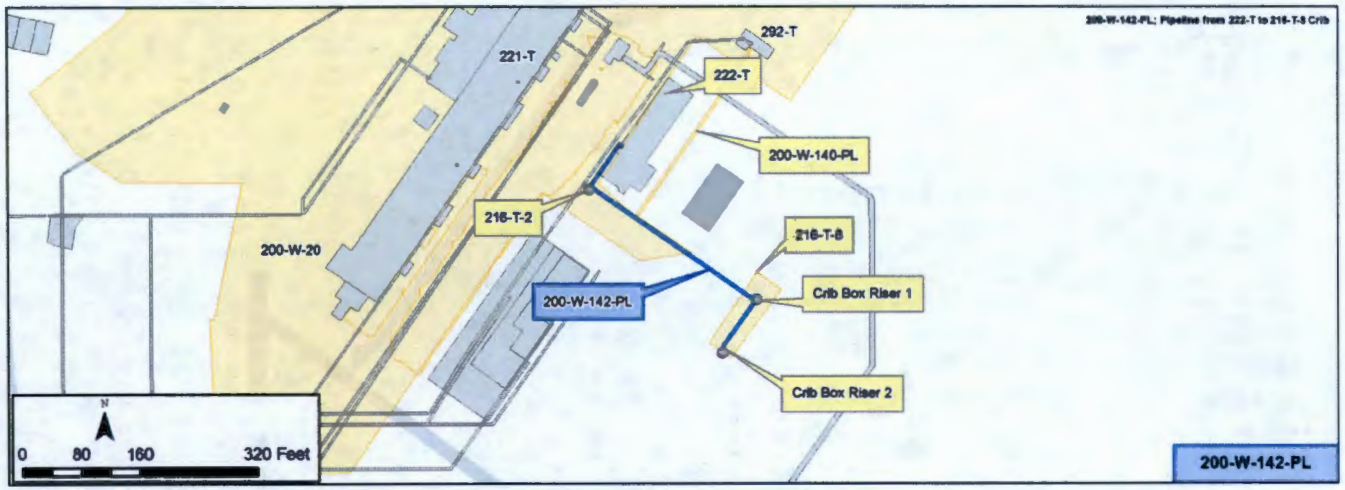
Scoping Summary: 200-W-142-PL

History

The 200-W-142-PL waste site is an inactive underground process sewer from the 222-T Laboratory Building to the 216-T-2 Reverse Well and 216-T-8 Crib.

Operational period was from 1945 to 1951. 222-T laboratory waste was first routed southwest to dry well 216-T-2 (1945-1950) then rerouted southeast to the 216-T-8 crib (1950-1951). The 216-T-8 Crib was deactivated in Sep-1951 when laboratory operations in 222-T were shut down and the pipeline was blanked inside the building.

The total volume of liquid waste discharged to the crib while in service was 5.00E+05 liters.



Construction

- Total Length: 420 ft
- Diameter: 3 in.
- Composition: Stainless steel
- Direct Buried
- Depth: 3.5 ft - 4 ft bgs
- Calculated Volume: 154 gal

Features of Interest

- Three bends in pipeline
- Inline trap at building exit point
- Tee on pipeline at reverse well 216-T-2 where the line is blanked and capped (isolated May-1950) then rerouted to crib 216-T-8
- Connected to 200-W-140-PL in 1949

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- 2.6 curies of fission products and 600 milligrams of plutonium discharged monthly to the 216-T-2 reverse well
- Dec-1998 radionuclides for the 216-T-8 crib included:
  - 4.57E-09 curies of Cs-134; 6.27E-06 curies of Cs-135; 3.25E-01 curies of Cs-137; 3.04E-01 curies of Sr-90; 1.50E-03 curies of U Gross

Waste Streams

- 216-T-2 reverse well was disposal for 222-T laboratory hot sink and sample table waste during the bismuth phosphate fuel separation process
- 1,585,032 gal of acidic waste discharged to the well
- 216-T-8 crib received 132,000 gal of 222-T Decontamination Sink waste and Sample Slurper waste 1950-1951; contains sulfuric acid, nitric acid and sodium dichromate
- Waste stream from 200-W-140-PL was connected in 1949 and discharged to the 216-T-8 crib via this site

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
• 222-T (facility) (origin)	None
200-IS-1 • 200-W-140-PL (origin)	
200-WA-1 • 216-T-8 Crib (termination) • 216-T-2 (isolated May-1950) (termination)	

Scoping Summary: 200-W-142-PL

Scoping Summary: 200-W-143-PL

History

The 200-W-143-PL waste site consists of pipelines used to transfer process material from T Plant to the TX and U Tank Farms. This was originally done by connecting the 241-TX-154 Diversion Box to the 241-TX-155 Diversion Box. This set of pipelines was active from 1950 until the early 1980s. In 1980, project B-208 replaced the 241-TX-155 Diversion Box with the 241-TX-152 Diversion Box.

The following are the primary lines associated with this waste site: V383, V384, V385, V387, V388, V391, V392. Originally, V383, V384, V385, V387, V388, V391, and V392 ran from the 241-TX-154 Diversion Box to the 241-TX-155 Diversion Box. Lines V728 and V729 served as spare lines for 241-TX-154, and V386 and V390 served as spare lines for 241-TX-155. When 241-TX-152 replaced 241-TX-155, lines V387 and V388 were rerouted to 241-TX-152, and V820 was installed to serve as a drain line from the encasement to 241-TX-152. The old lines running into the 241-TX-155 Diversion Box were capped.

Construction

- Length
  - Primary lines - 7 lines, 3,770 ft each, total length 26,390 ft
  - Spare lines - 4 lines, ranging from 45 ft to 266 ft, total length 432 ft
  - Encasement drain lines - 3 ranging from 45 ft to 74 ft, total length 166 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement Specifications: Concrete (9-80; 7-66; 10-86; 1-24); Additional pipe support indicated in H-2-960
- Depth: 6 ft – 13 ft bgs
- Total Calculated Volume: 13,478 gal

Features of Interest

- The 200-W-143-PL site contains:
  - Three 90 degree elbows
  - Thirteen ~135 degree bends
  - One concrete encasement branch from 9- to 1-24 type
  - One two-way concrete encasement transition from 9- to 1-24 type and 7-66 type
  - One concrete encasement branch from 10-86 type to 1-24 type
  - One two-way concrete encasement transition from 10-86 type to 4-36 type and 7-66 type
  - Three 2 in. leak detection risers

Relevant Characterization

- No characterization data relating directly to the 200-W-143-PL waste site were found
- While the footprints for UPR-200-W-38, UPR-200-W-76, and UPR-200-W-160 overlap the 200-W-143-PL, they are not believed to be associated with the 200-W-143-PL

Waste Streams

- The 200-W-143-PL carried the following waste streams between 1952 and 1976:
  - MW2 - at least 4,912-kgals between 1952 and 1956
  - 1C2 - at least 982-kgals between 1953 and 1954
  - DW - at least 863-kgals between 1973 and 1976

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

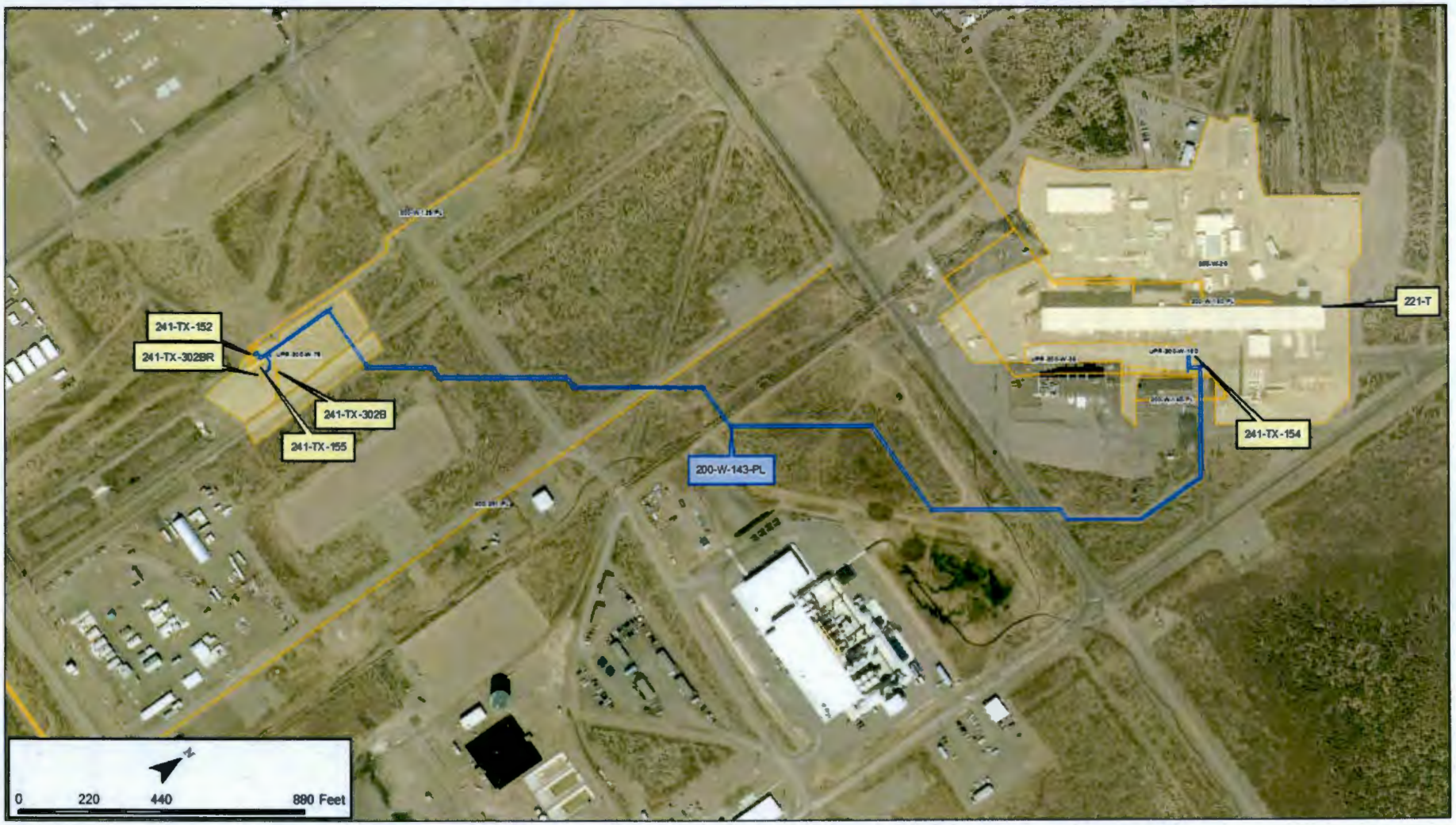
200-IS-1
- 241-TX-152 Div Box
- 241-TX-155 Div Box
- 241-TX-302BR Catch Tank

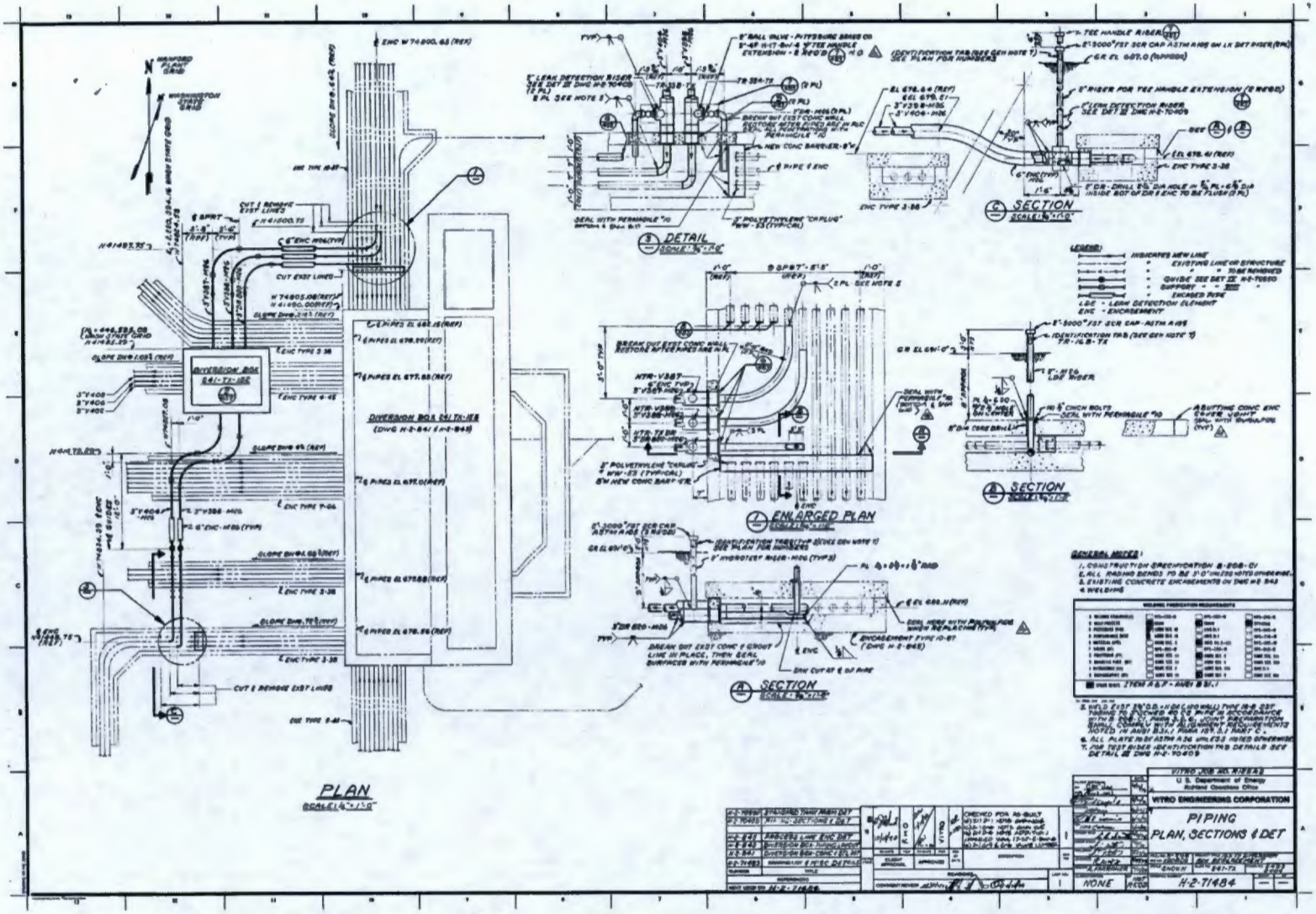
T Plant
- 241-TX-154 Div Box
- 200-W-20 (T-Plant Complex)

Site Intersects

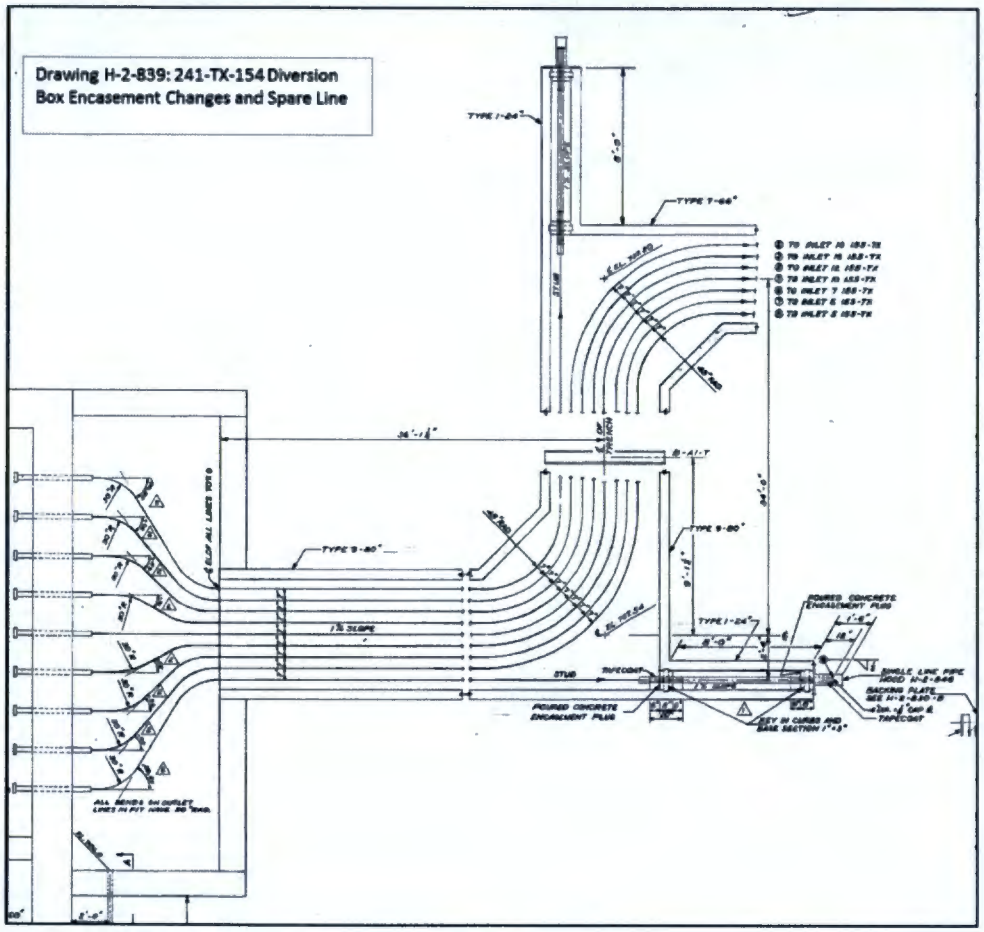
200-IS-1
- 200-W-129-PL
- 200-W-140-PL
- 200-W-163-PL
- UPR-200-W-38
- UPR-200-W-40
- UPR-200-W-160

No Operable Unit
- UPR-200-W-76
- 600-291-PL

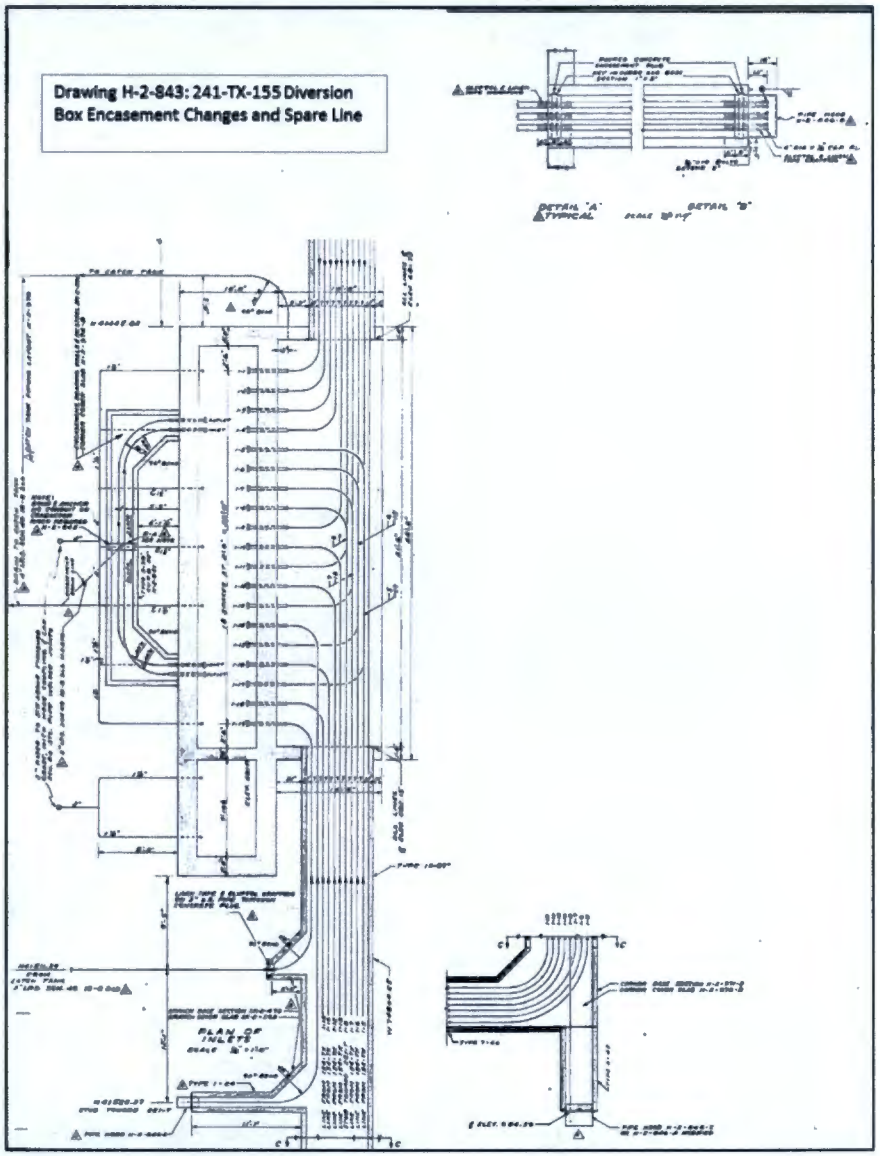

241-TX-152
241-TX-302BR
241-TX-302B
241-TX-155
200-W-143-PL
221-T
241-TX-154
N
0
220
440
880 Feet


PLAN
DETAIL
SECTION
ENLARGED PLAN
SECTION
SECTION
DIVERSION BOX
GENERAL NOTES
PIPING
PLAN, SECTIONS & DET
WITRO ENGINEERING CORPORATION
U.S. Department of Energy
NONE
H-2-71484

Drawing H-2-839: 241-TX-154 Diversion Box Encasement Changes and Spare Line



Drawing H-2-843: 241-TX-155 Diversion Box Encasement Changes and Spare Line

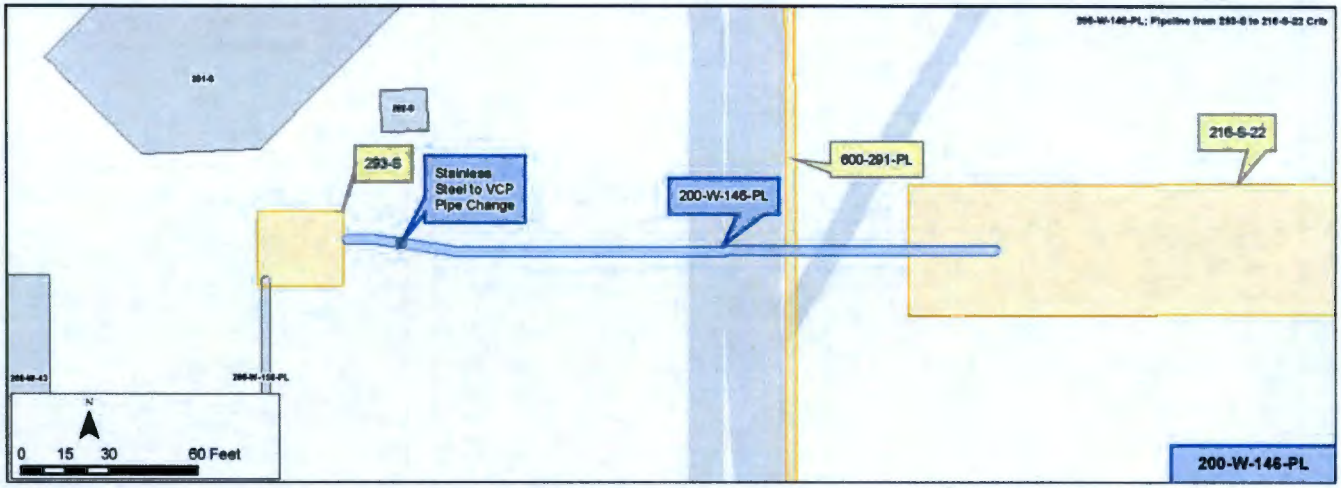


Scoping Summary: 200-W-146-PL

History

The 200-W-146-PL waste site is an inactive underground pipeline that was used to transfer liquid waste from the acid recovery facility in the 293-S Building to the 216-S-22 Crib.

The pipeline was constructed in 1956 and operated from 1957 to 1967, when the production operation at REDOX 202-A Facility was shut down and the piping to the 293-S Building was blanked.



Construction

- Length:
  - Segment 1: 21 ft (from 293-S Facility to transition pipe fitting)
  - Segment 2: 200 ft (from transition pipe fitting to 216-S-22 Crib)
- Diameter: 4 in.
- Composition
  - Segment 1: Stainless Steel
  - Segment 2: Vitrified Clay Pipe
- Gravity Flow
- Direct Buried: 5 ft - 6.5 ft bgs
- Calculated Volume: 147 gal (combined)
  - Segment 1: 15 gal
  - Segment 2: 132 gal

Features of Interest

- Transition pipe fitting (stainless steel to vitrified clay pipe)
- 2 pipe bends

Relevant Characterization

- Historical inventory reports show 216-S-22 transferred:
  - 0.37 Ci Sr-90
  - 2.91E-12 Ci Ru-106
  - 0.39 Ci Cs-137
  - 1.5E-05 Ci Total U
  - 6.20E-03 Ci Total Alpha
  - 1.8 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Waste Streams: 293-S Caustic Scrubber: 216-S-22 Crib (Oct-1-1957 to Dec-31-1959)
- Waste from the acid recovery facility in the 293-S Building
- Based on historical inventory reporting, total waste transferred to 216-S-22 Crib was estimated at 26,000 gal, with 15,400-lbs of Nitrogen and 6,600-lbs of Sodium

Misc./Other Relevant Information

- None identified.

Site Interfaces

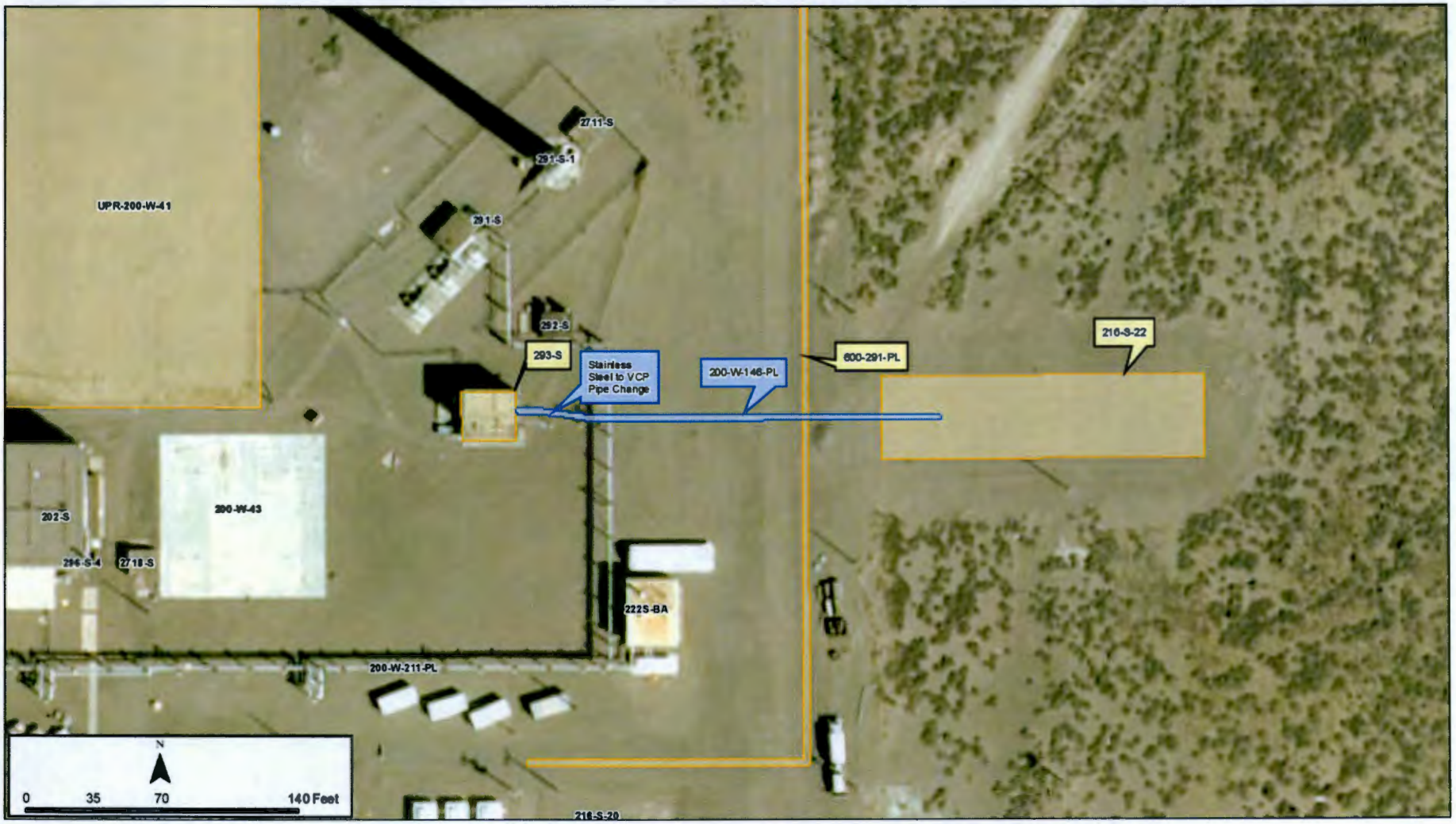
Origin/Termination

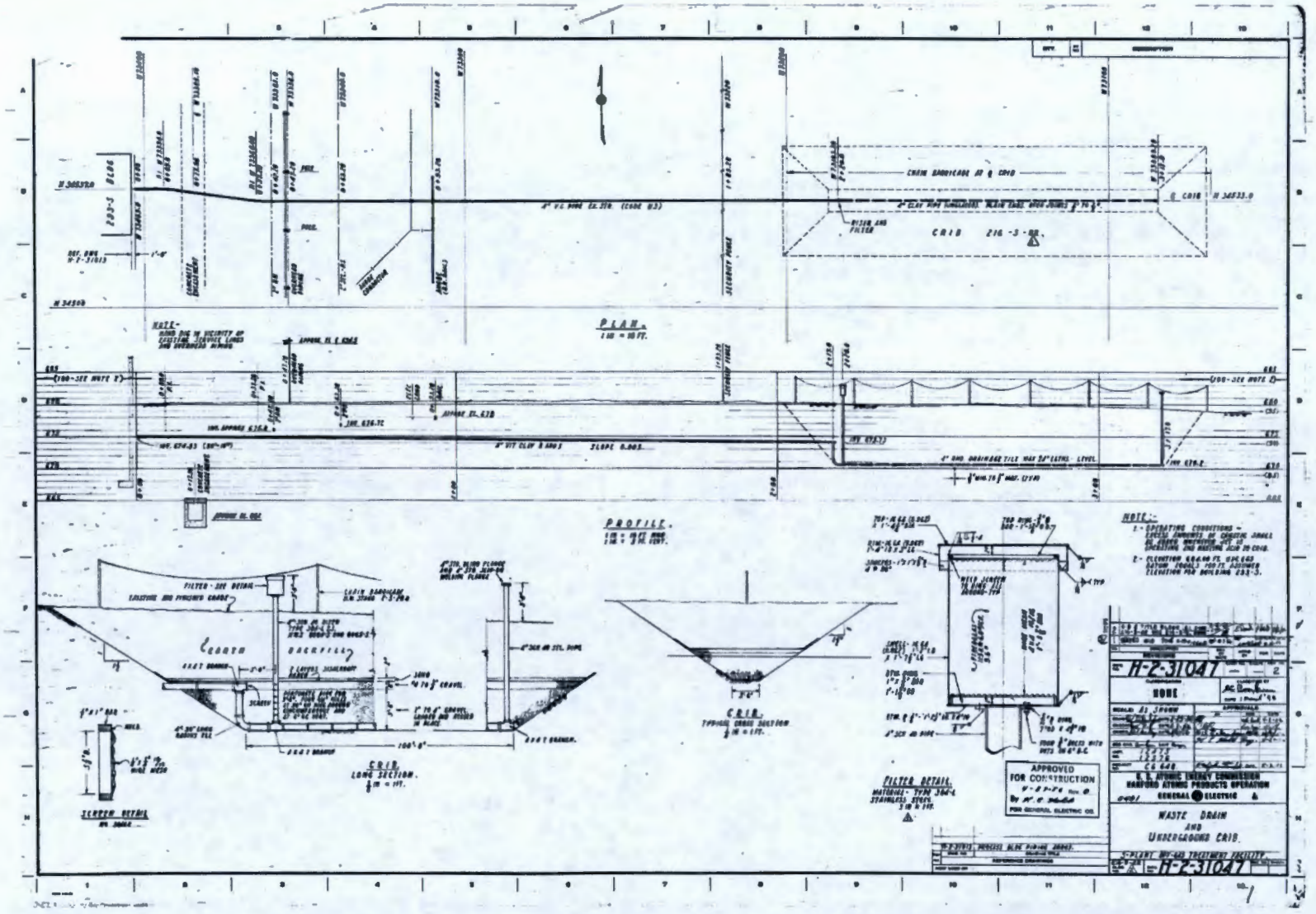
200-WA-1

- 216-S-22
- 293-S (Facility)

Site Intersects

- 600-291-PL (Active Line)


UPR-200-W-41
2711-S
291-S-1
291-S
292-S
293-S
Stainless Steel to VCP Pipe Change
200-W-146-PL
600-291-PL
216-S-22
200-W-43
202-S
294-S-4
2718-S
2225-BA
200-W-211-PL
216-S-20
N
0
35
70
140 Feet


PLAN.
PROFILE.
CRIB.
CRIB. LONG SECTION.
SCREEN DETAIL
FILTER DETAIL
APPROVED FOR CONSTRUCTION
H-2-31047
NONE
U. S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
WASTE DRAIN AND UNDERGROUND CRIB.

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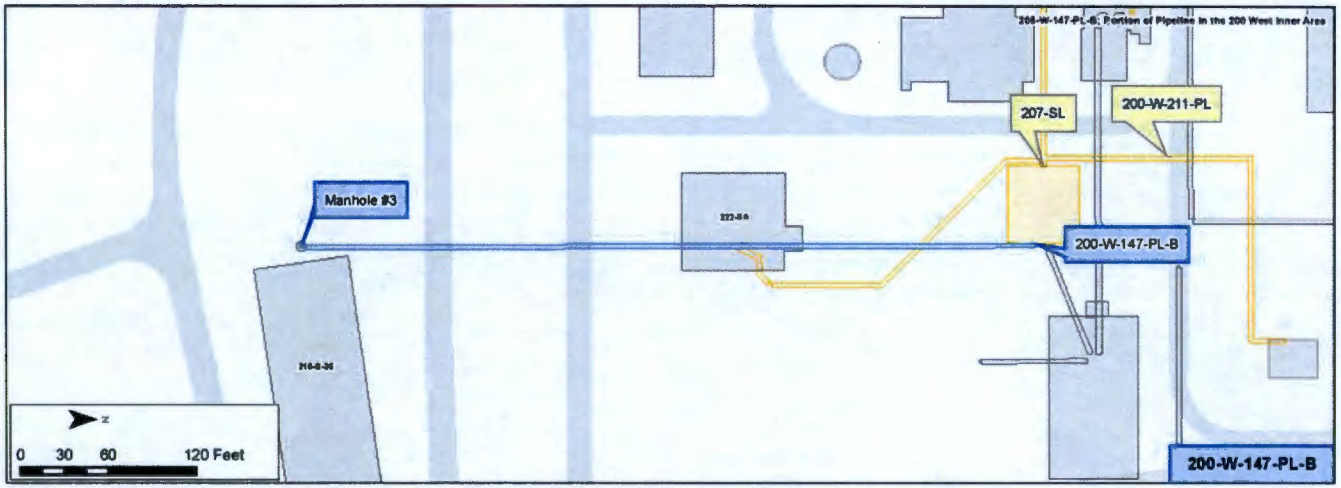
Scoping Summary: 200-W-147-PL-B

History

The 200-W-147-PL-B waste site is an inactive radioactive process sewer. It was constructed around 1950 and extends from 207-SL Retention Basin to the 216-S-26 Crib, where it is isolated.

Originally, this pipeline extended further south to the 216-S-19 Pond. This portion of the pipeline is identified as the 200-W-147-PL-A waste site, which lies in the Outer Area. It was remediated and removed between 2010 and 2011.

The 216-S-19 Pond was replaced with 216-S-26 in 1984, and the portion of the pipe south of the new crib (200-W-147-PL-A) was abandoned.



Construction

- Length: 490 ft
- Diameter: 8 in.
- Composition: Vitrified Clay Pipe
- Encasement:
  - Direct-buried from 207-S to 222-SA
  - Encased beneath 222-SA
  - Direct buried from 222-SA to manhole #3
- Depth: 10 ft bgs
- Calculated Volume: 1,279 gal

Features of Interest

- The 216-S-26 Crib was permanently isolated when the Manhole (#3) was filled with concrete on Jun-1-1995

Relevant Characterization

- 1983: core samples were taken near the pipe inlet. Maximum reading was 300 cpm at depths of 8 in. to 24 in.

Waste Streams

- The pipeline carried laboratory cooling water and sink wastes from its origin, the 207-SL Retention Basin, to the 216-S-19 and 216-S-26 Crib via the 207-SL Retention Basin.

The points of origin for the laboratory wastes were the 222-S and 202-S facilities.

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-WA-1
- 207-SL Retention Basin

200-OA-1
- 216-S-26

- 200-W-147-PL-A (remediated)

Site Intersects

- 200-W-211-PL (active)

222-SA (building)

Scoping Summary: 200-W-147-PL-B

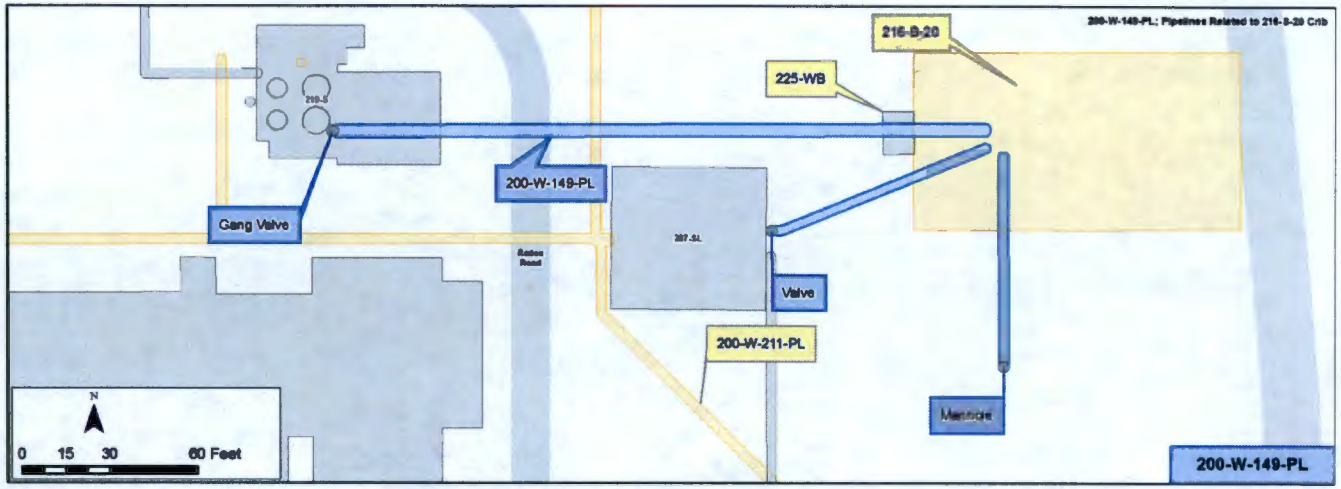
Scoping Summary: 200-W-149-PL

History

The 200-W-149-PL waste site is an inactive radioactive process sewer system that fed the 216-S-20 Crib. The Crib was in use from 1952 to 1972; crib deactivation was completed on Dec-13-1974.

The pipelines were three distinct pieces, sourced from three distinct facilities:

- Two side-by-side pipes extending from 219-S building (one of which was capped and abandoned at this building prior to 1999)
- One pipe extending from the 207-SL Retention Basin valve pit
- One pipe extending from a manhole at the truck unloading station, which was directly south of the 216-S-20 Crib



Construction

- Length: 579 ft (cumulative)
- Diameter:
  - 3.5 in. (from 219-S)
  - 8 in. (from 207-SL)
  - 6 in. (from manhole at truck unloading station)
- Stainless Steel (from 219-S); Carbon Steel (from 207-SL; from manhole at truck unloading station)
- Gravity-flow
- Direct Buried
- Depth: 6 ft bgs at source to 18 ft bgs at Crib
- Calculated Volume: 200 gal

Features of Interest

Deactivation:

- The valve on the discharge line from the 207-SL Retention Basin was closed, and the valve wheel was removed
- The gang valve on the line from the 219-S Building to the unit was locked out; the steam supply line to the valve was removed

Waste Streams

These lines carried waste from:

- Laboratory hoods and decontamination sinks in the 222-S Building via the 219-S Retention Building and the 207-SL Retention Basin
- 300 Area laboratory waste via trucks, which were unloaded into the manhole at the truck unloading station

Site Interfaces

Origins/Termination

No Operable Unit

- 219-S Retention Building (facility)
- Truck Unloading Area (manhole)

200-WA-1

- 216-S-20 Crib
- 207-SL Retention Basin

Site Intersects

No Operable Unit

- 225WB (building)
- 200-W-211-PL

Relevant Characterization

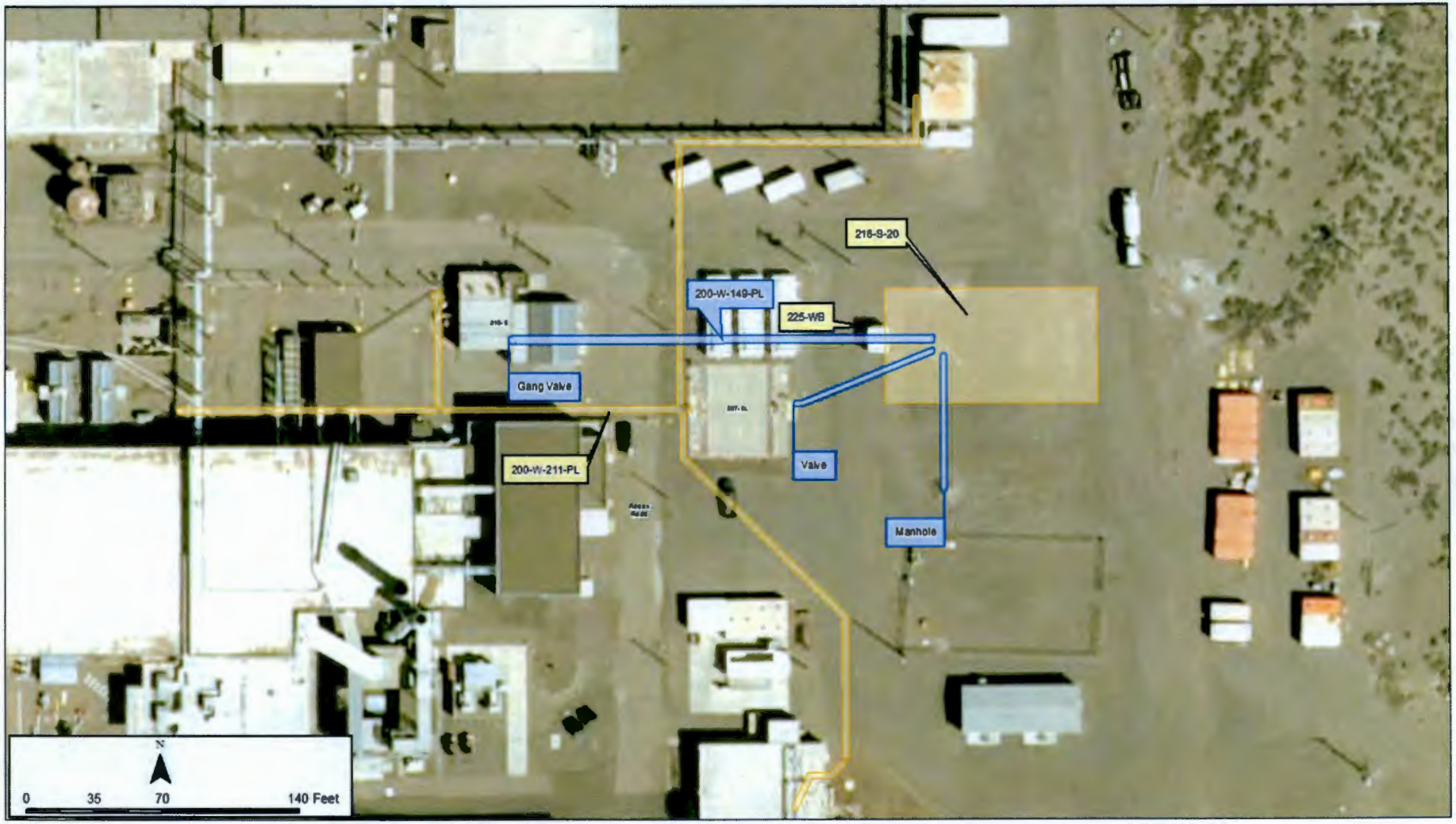
A borehole was drilled into the 216-S-20 Crib in Aug-2004 (C4176), and no radiation was detected from ground surface down to 21 ft. From 25 ft to 35 ft, alpha field screening ranged from 700-to-1,400 disintegrations per minute; beta/gamma field screening ranged from 2,000-to-40,000 disintegrations per minute.

No radiation was detected below 35 ft (D&D-25461). *More detail available (216-S-20 [1012090279]).*

Misc./Other Relevant Information

- None identified

Scoping Summary: 200-W-149-PL



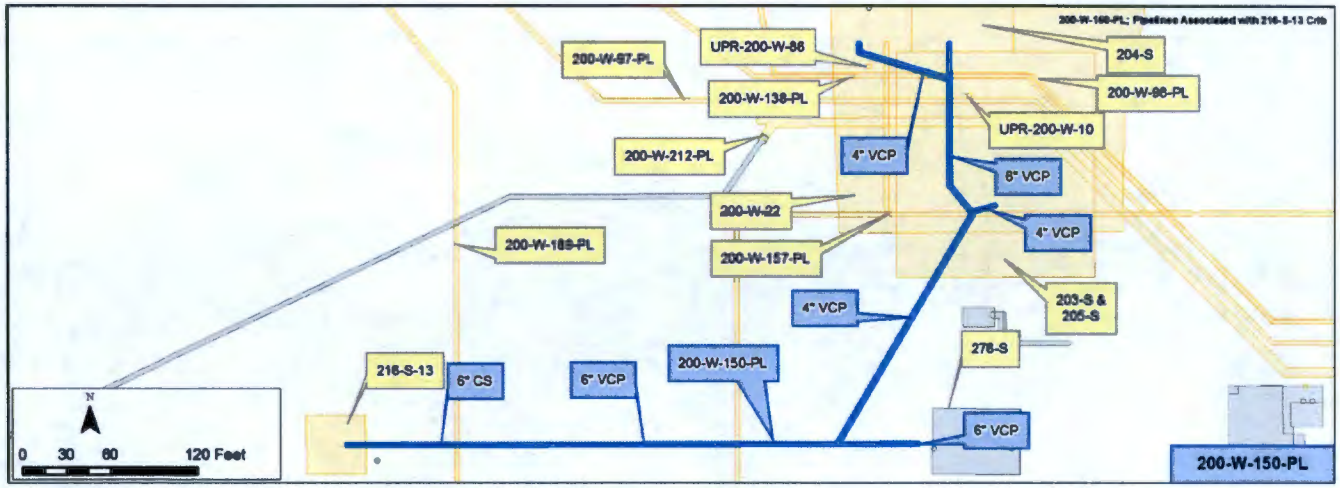
Scoping Summary: 200-W-150-PL

History

The 200-W-150-PL waste site is an inactive underground pipeline that transferred process effluent from the 205-S, 204-S, 203-S, and 276-S facilities to the 216-S-13 Crib.

The 203-S and 205-S buildings were used to process and decontaminate the uranyl nitrate hexahydrate (UNH) produced by REDOX operations. The UNH from PUREX Plant was transported by truck to the 204-S Tanks. The 276-S Building was used for the storage and treatment of REDOX process solvent.

The line was active from 1952 to 1972, when the crib was deactivated and backfilled to grade. In 1983, the REDOX area was decommissioned. All buildings and above-grade structures were demolished, and the area was re-graded and covered with at least 2 ft of clean backfill. All buried pipes were left in place.



Construction

- Length: 765 ft
- Diameter: 4 in. and 6 in.
- Composition: VCP and CS
- Encasement: Concrete (6 in.)
- Depth: 2 ft to 18 ft bgs
- Calculated Volume: 905 gal

Features of Interest

- One pipe bend
- One 6x4 wye
- One 4x4x4 tee
- One 6x6x4 tee
- The waste line is encased in 6 in. concrete, throughout

Relevant Characterization

- No shallow or deep soil data exists
- The 216-S-13 Crib includes the following isotopes: Sr-90, Tc-99, Cs-137, and Sm-151

Waste Streams

- **1952 to Jun-1967**: liquid waste from 203-S Decontaminated Metal Storage Facility, 203-S Uranium Nitrate Hexahydrate, 204-S, 204-S Tank Farm & Pump House, 205-S Process Vault & Chemical Makeup Building, and 276-S
- **1966**: 25,000 gal hexone from 276-S tanks 141/142
- **Jun-1967 to Jul-1972**: occasional sump waste from 204-S

- **Overall**: mixed, organic waste containing nitrate, methyl isobutyl ketone, sodium dichromate, Cobalt-60, Strontium-90, and Cesium-137

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-DV-1
- 216-S-13 Crib

200-WA-1
- 203-S/205-S

- 276-S (rejected)

Site Intersects

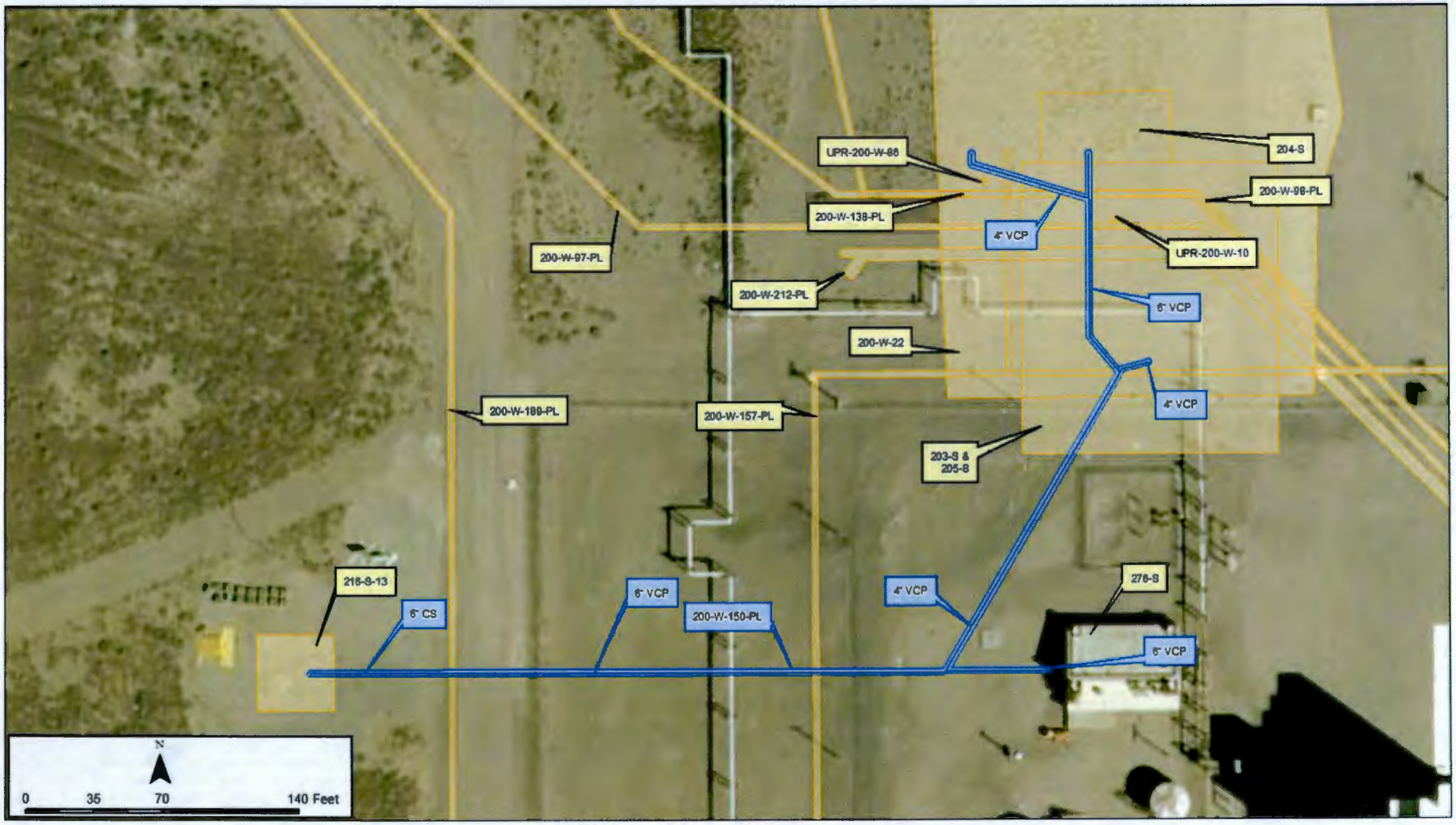
200-IS-1
- 200-W-157-PL
- 200-W-212-PL
- 200-W-98-PL
- 200-W-97-PL
- 200-W-138-PL

200-WA-1
- 200-W-22

Nearby Waste Sites
- UPR-200-W-10
- UPR-200-W-86

- 200-W-189-PL (active)

Scoping Summary: 200-W-150-PL



Scoping Summary: 200-W-151-PL

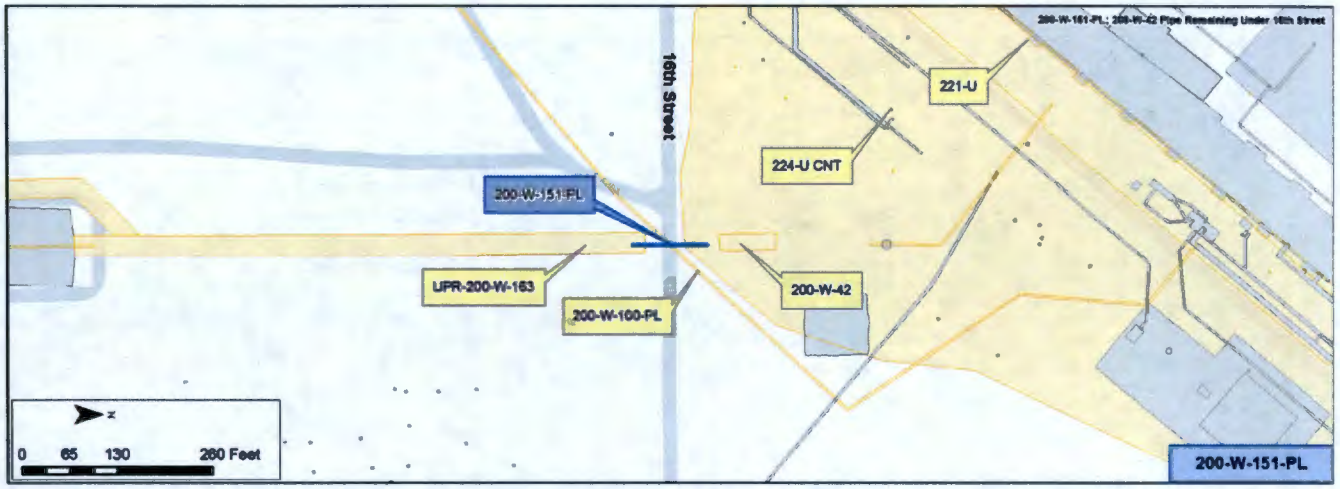
History

The 200-W-151-PL waste site is the only remaining segment of the 200-W-42 vitrified clay pipe, which was otherwise remediated in 2006. The remaining pipe lies directly beneath 16th Street, and is bisected at one point beneath the roadway by encased pipeline 200-W-100-PL, which extends beneath the subject waste site.

The former 200-W-42 was constructed in 1952. From then until 1960, it transferred waste from 221-U, 224-U, and 291-U to the 216-U-8 Crib. In 1960, the 216-U-12 Crib was constructed further south of the 216-U-8 Crib; it received 200-W-42 waste in place of the old crib from 1960 to 1972, when the line was taken out of service for nearly a decade.

After Nov-1981 to 1988, the line transferred process condensate from the 224-U Building to the Crib.

In 1988, the 200-W-42 line was abandoned and the liquid effluent was diverted to the 216-U-17 Crib using a tie in to the original line south of the 222-U Building.



Construction

- Length: 108 ft
- Diameter: 6 in.
- Composition: Vitrified Clay Pipe
- Direct-buried
- Depth: 10 ft bgs
- Calculated Volume: 160 gal

GPS coordinates for the remaining pipe are N134983.79/E567615.35 on the north side of 16th Street; and, N134950.65/E567615.27 on the south side of the street.

Features of Interest

- The original excavation of the 200-W-42 pipeline was left as an open trench upon time-critical removal action completion for 200-W-42 and UPR-200-W-163

Access to the remaining segment, 200-W-151-PL, is open on both sides of the roadway, save for up to 2 ft of clean fill added since 2006 to control surface contamination from blown-in and growing tumbleweeds inside the trench.

- The scope of the 2006 TCRA was originally assumed to terminate south of 16th Street

Waste Streams

- Process condensate
- Contaminated water
- Miscellaneous storm drain waste

Site Interfaces

Origin/Termination	Site Intersects
	200-WA-1
N/A	• 200-W-42
	• UPR-W-163
	• 200-W-100-PL

Relevant Characterization

- 1994: 14 soil samples, as well as four vegetation samples, were collected to characterize the former 200-W-42 pipe leading to the 216-U-8 Crib; Cs-137 as high as 49,100 Pci/g; Sr-90 as high as 180 Pci/g; Gross beta as high as 74,800 Pci/g
- Post-2006 time-critical removal action samples indicate rad contamination beneath the 15 ft excavation depth remains but the action was considered complete, due to depth of excavation. Area is posted URM.

Misc./Other Relevant Information

- Both exposed-and-open ends of the remaining pipe segment were visible in Aug-2006, after completion of the 200-W-42 excavation work
- The 200-W-100-PL is a cement-encased pipeline that consists of three 3 in. stainless steel lines. Since at least 1998, these lines have been considered flushed and empty, except for residual water in low points along the system

Scoping Summary: 200-W-151-PL

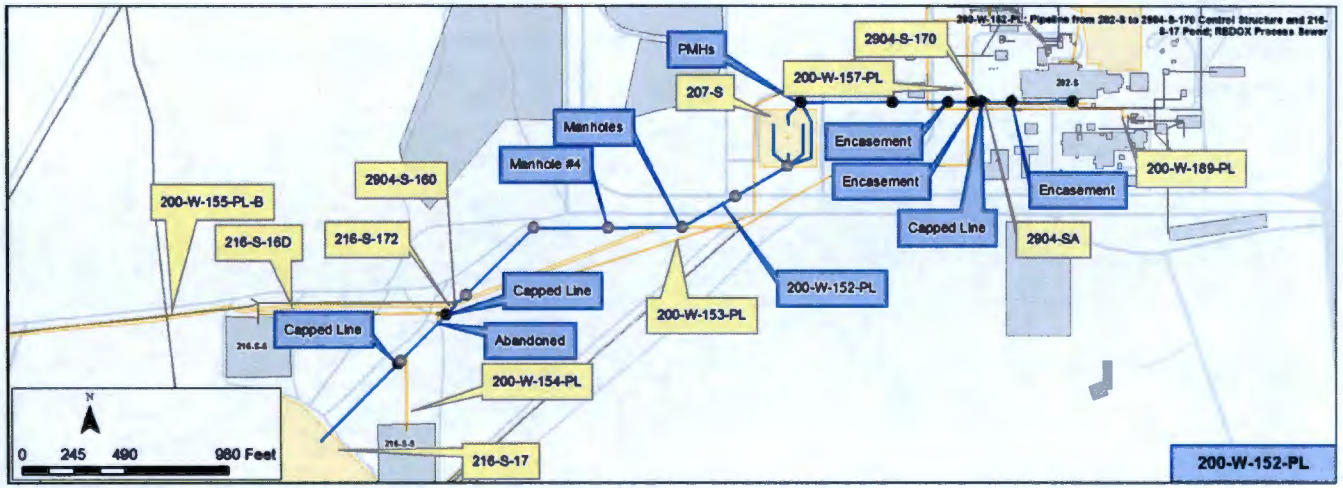
Scoping Summary: 200-W-152-PL

History

The 200-W-152-PL waste site is an inactive underground pipeline that was used to transfer cooling water and steam condensate from the 202-S Building to the 2904-S-160 control structure before being sent to the 216-S-17 Pond or the 200-W-154-PL pipeline.

The 200-W-152-PL was constructed in 1949 and was in operations from 1951 to 1976. The pipeline was originally connected to the 207-S Retention Basin; however, in 1954 it was diverted around the basin due to a coil leak. The 216-S-17 Pond had also become heavily contaminated in 1954; therefore, this line's waste was diverted into the 200-W-154-PL, which drained to the 216-S-5 Pond. Around the same timeframe, the 200-W-155-PL-B pipeline and the 2904-S-160 control structure were constructed to divert flow into the 216-S-6 Crib and 216-S-16 Ditch.

The last recorded transfer of waste in the 200-W-152-PL was in 1976 when the 202-S facility was retired. All terminating sources for the pipeline were deactivated by 1976.



Construction

- Total Length: 3,420 ft
  - Segment 1: 20 ft
  - Segment 2: 3,400 ft
- Diameter: 24 in.
- Composition
  - Segment 1: Stainless Steel
  - Segment 2: Vitrified Clay Pipe
- Gravity Fed
- Direct Buried
- Encasement Specifications (3 short segments):
  - Concrete Pipe Trench (48 in. corrugated steel covering)
- Depth: 5 ft - 16 ft bgs
- Total Calculated Volume: 80,375 gal

Features of Interest

- 11 manholes
- Pipe material transition from stainless steel to vitrified clay pipe at the process manhole #4
- 3 short encased sections
- 2904-S-160 Control Structure
- 216-S-172 Diversion Box
- 3 capped segments (1 south of the 200-W-154-PL connections, 1 near 2604-S-160, and the other south of 2904-SA)
- 207-S Retention Basin and 3 line segments
- 2904-SA Sample Building

Relevant Characterization

- Based on historical inventory reporting, waste characterization of 216-S-5 Crib includes: 43.7 Ci Sr-90, 21.4 Ci Cs-137, 9.06E-02 Ci Total U, 35.6 Ci Total Alpha, 159 Ci Total Beta
  - Radionuclides to Dec-31-1998
- The characterization data reflects the highest values recorded of the three terminating sites: 216-S-16 pond, 216-S-17 pond and the 216-S-5 crib

Waste Streams

- Process: REDOX Plant - Reduction and Oxidation Process, Drain Waste & Cooling Water
- Waste Streams: Vessel cooling water and steam condensate

Misc./Other Relevant Information

- No other information noted

Site Interfaces

Origin/Termination

200-CR-1
- 202-S (Facility)

200-IS-1
- 200-W-154-PL
- 200-W-155-PL-B
- 2904-S-160 (Control Structure)

200-CW-1
- 216-S-17

200-OA-1
- 216-S-16D

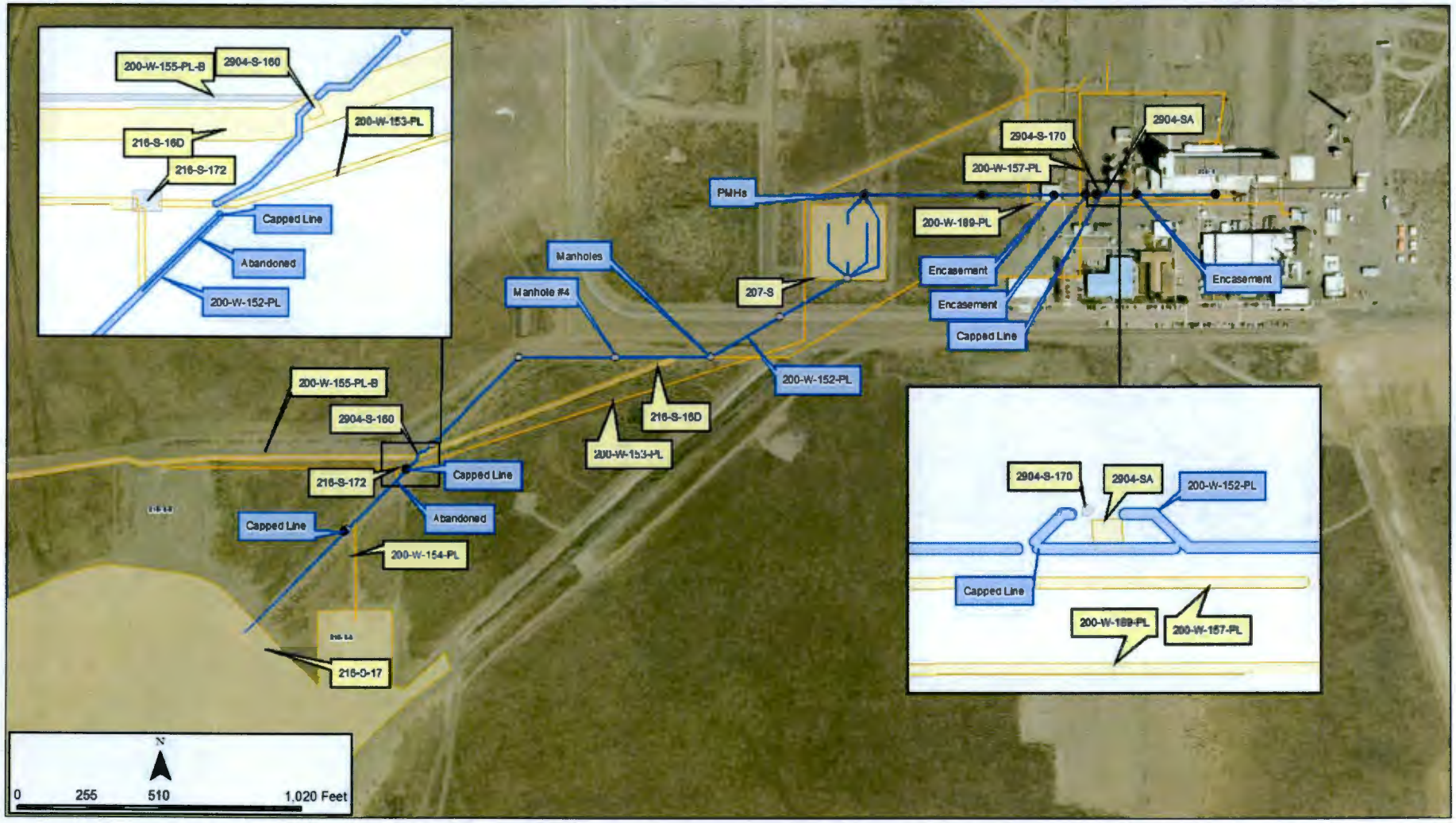
Site Intersects

200-WA-1
- 207-S Retention Basin
- 2904-SA (Sample Building)

200-IS-1
- 200-W-157-PL
- 200-W-153-PL

200-CR-1
- 2904-S-170 (Diversion Box)
- 200-W-189-PL (Active)

Scoping Summary: 200-W-152-PL



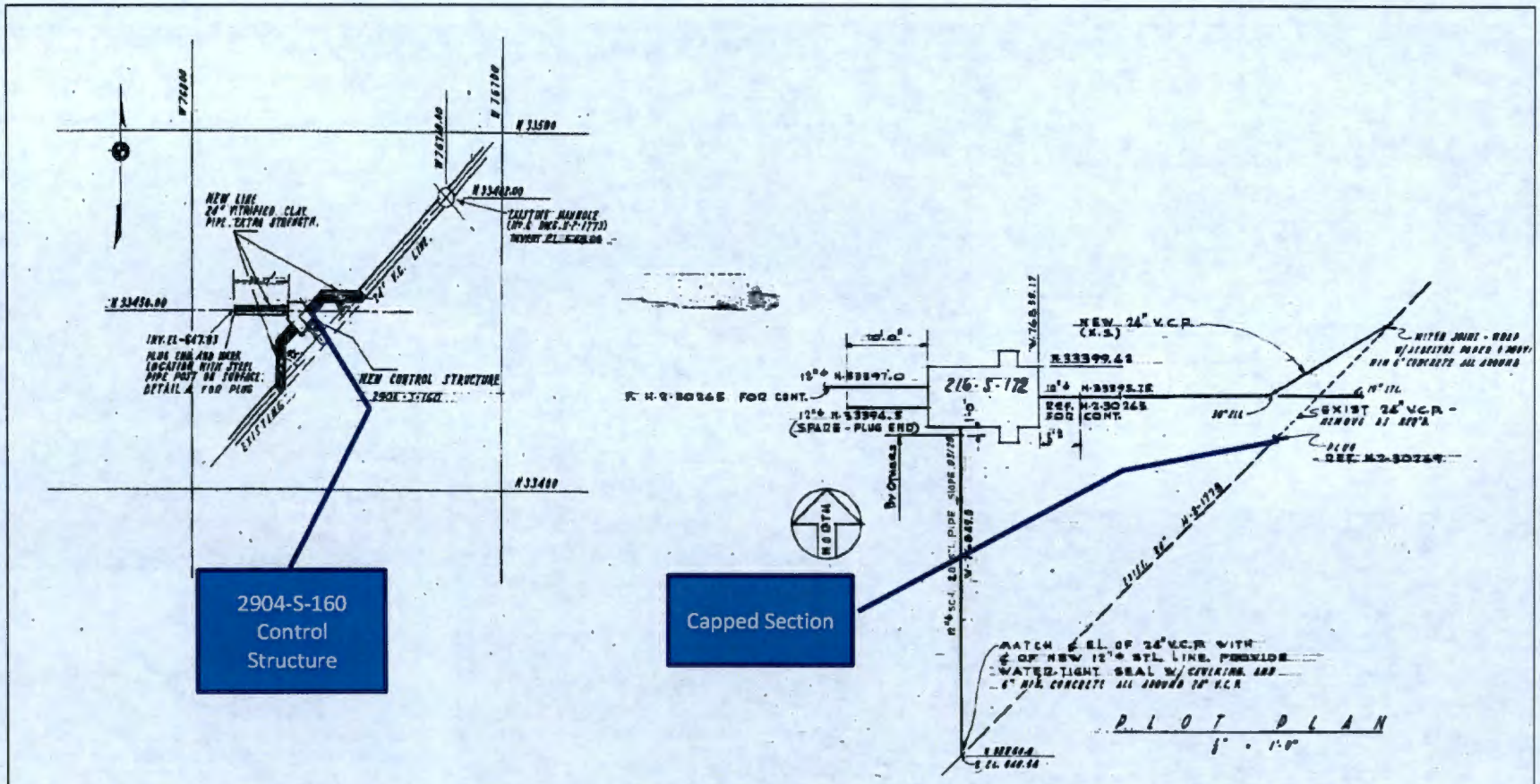


Figure 1 – 200-E-152-PL connection into the 2904-S-160 Control Structure and the 216-S-172 Diversion Box (H-2-2599 and H-2-30268)

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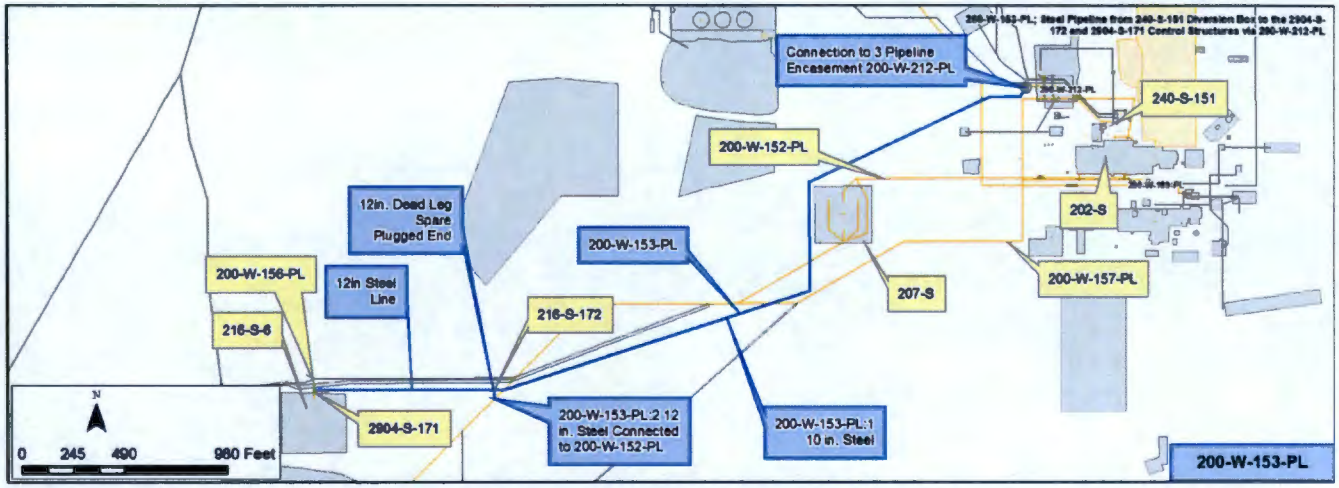
Scoping Summary: 200-W-153-PL

History

The 200-W-153-PL waste site is an inactive underground pipeline that begins at the end of the 200-W-212-PL's three-line encasement where the three lines merge to form a single line that extends southwesterly to the 216-S-172 weir box and 2904-S-171 Control Structure.

The direct buried steel pipeline was constructed in 1956. The 216-S-172 weir box is recorded as being inactive by 1976 and interim stabilized in 1992, and the 216-S-6 Crib was stabilized on Sep-14-1990 (200-W-153-PL was the contributing source of waste feeding into 216-S-6).

200-W-153-PL contains three shorter segments that branch off the 216-S-172 weir box: one 12 in. line exits the south side connecting to 200-W-152-PL, the second 12 in. line extends east connecting to the 2904-S-171 control structure, and the third is a short 12 inch line that is capped on the eastside of the weir box (See Figure 1 for the shorter segments at the weir box).



Construction

- Length: 4,090 ft
- Diameter: 10 in. and 12 in.
- Material: Carbon Steel
- Gravity Pipeline
- Direct Buried
- Depth: 3 ft-to-9 ft bgs
- Calculated Volume: 18,289 gal

Features of Interest

- Piping Encasement Tie-In
- Weir Box (216-S-172)
- Control Box (2904-S-171)
- 12 in. Dead leg pipe (Figure 1)
- One capped segment at the 216-S-172 weir box

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

- Waste Processes: REDOX Plant - Reduction and Oxidation Process; Drain Wastes & Cooling Water
- Waste Streams: REDOX effluent; vessel cooling water and steam condensate

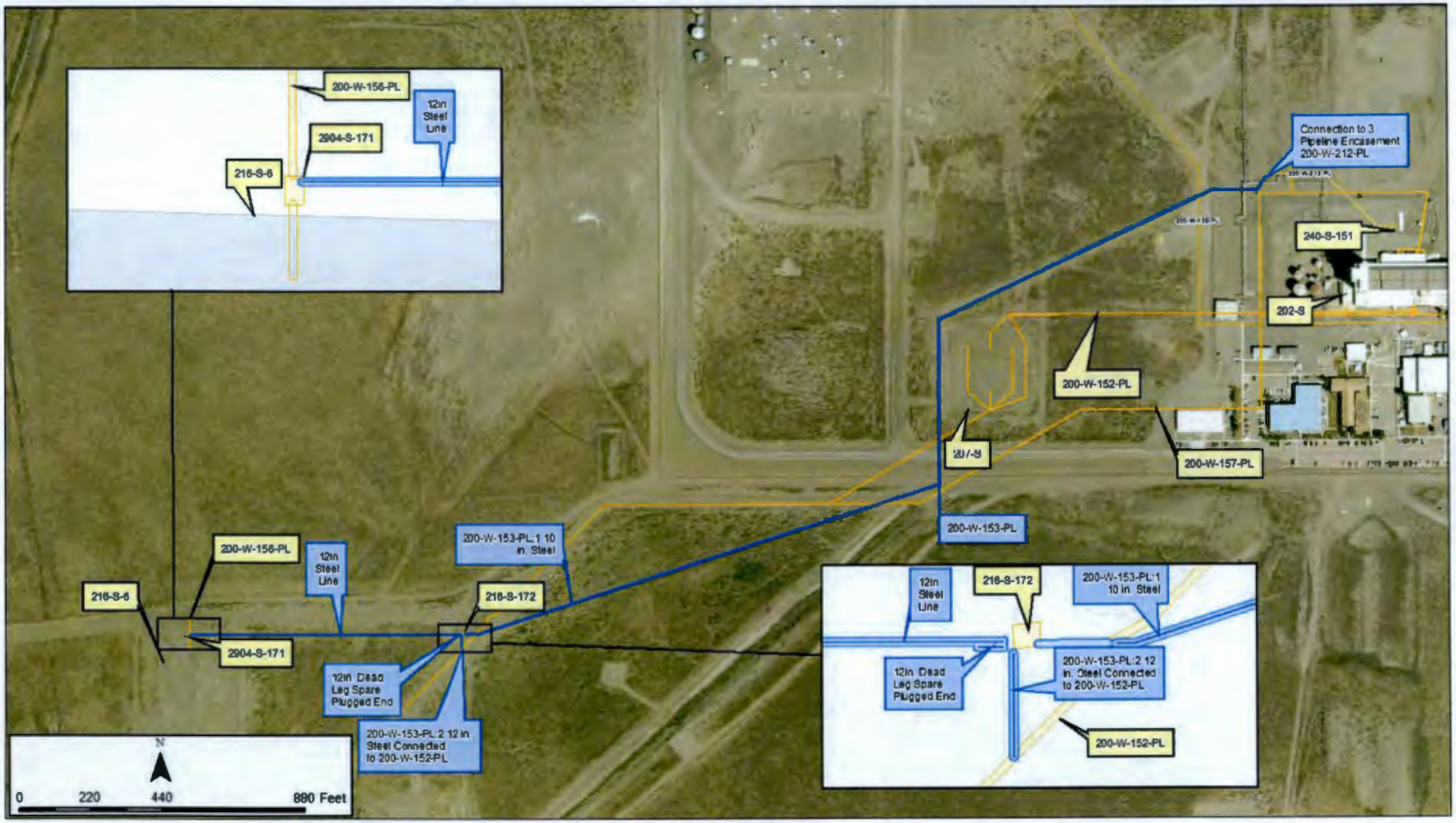
Misc./Other Relevant Information

- Based on historic inventory reporting, total waste transferred to 216-S-6 Crib (connected to 2904-S-171 control structure) was 1.18 billion gal
- Estimated radionuclide content in the 216-S-6 crib: 165 Ci Sr-90, 93.4 Ci Cs-137, 0.09 Ci Total U, 29 Ci Total Alpha, and 630 Ci Total Beta (Radionuclides decayed to Dec-31-1998)

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 200-W-212-PL	• 200-W-152-PL
• 216-S-172 (Weir Box)	• 200-W-157-PL
• 2904-S-171	
• 200-W-156-PL	

Scoping Summary: 200-W-153-PL



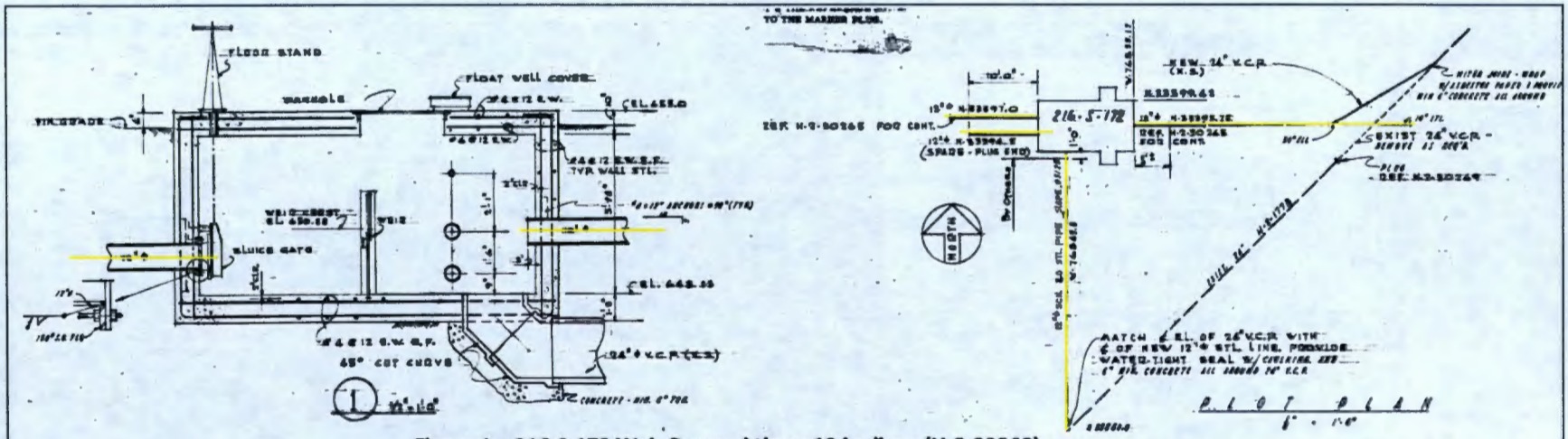


Figure 1 – 216-S-172 Weir Box and three 10 in. lines (H-2-30268)

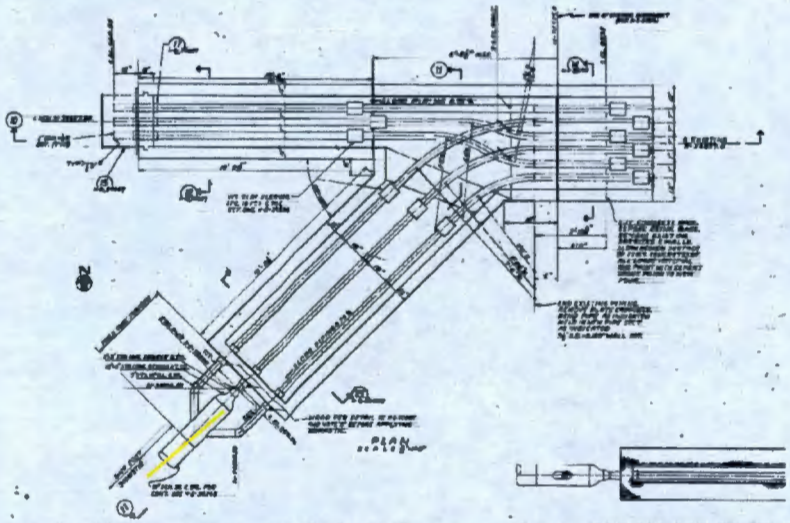


Figure 2 – Piping encasement tie-in at the connection to 200-W-212-PL (H-2-30270)

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Scoping Summary: 200-W-154-PL

History

The 200-W-154-PL waste site is an inactive underground pipeline that transferred REDOX cooling water and steam condensate to the 216-S-5 Crib. The pipeline is connected to the 200-W-152-PL line and terminates at the crib.

The pipeline was constructed in 1953 to redirect discharge from the 216-S-17 Pond, which had become heavily contaminated. The line was in operations from Mar-1954 until Sep-1957, when the site was deactivated by valving out and locking the pipeline.

Construction

- Length: 355 ft
- Diameter: 24 in.
- Composition: Vitrified Clay
- Gravity Fed
- Direct Buried:
- Depth: 2 ft - 5 ft (There may be additional gravel and soil overlay near the 216-S-5 crib as a part of its stabilization effort, BHI 1994)
- Calculated Volume: 8,343 gal

Features of Interest

- Crib line tie-in (H-2-5963)
- Connection into 216-S-5 Crib (H-2-5963)

Waste Streams

- Processes: REDOX Plant - Reduction and Oxidation Process; Cooling Water
- Waste Streams: Process vessel cooling water and steam from 202-S Building. Waste was acidic
- Based on historical inventory reporting, total waste transferred to 216-A-5 was estimated at 1.1 billion gallons

Site Interfaces

Origin/Termination	Site Interfaces
200-IS-1	
• 200-W-152-PL	N/A
200-WA-1	
• 216-S-5	

Relevant Characterization

- Approx. 1.1 billion gal of waste transferred, including:
  - 100 kg Nitrate
  - 33.5 Ci Sr-90
  - 2.22E-10 Ci Ru-106
  - 9.83 Ci Cs-137
  - 0.088 Ci Total U
  - 3.99 Ci Total Alpha
  - 109 Ci Total Beta

Misc./Other Relevant Information

- In 1956, there was a large cooling discharge and holes were cut along the top edge of the 216-S-S Crib to allow for discharge into a nearby ditch. The dose rates along the edge of the crib increased from 100 millirad per hour to 350 millirad per hour with readings up to 17 rad per hour.
- 4 monitoring wells are stationed near the 216-S-S crib, characterization data is available (PNNL-11141)

Scoping Summary: 200-W-154-PL

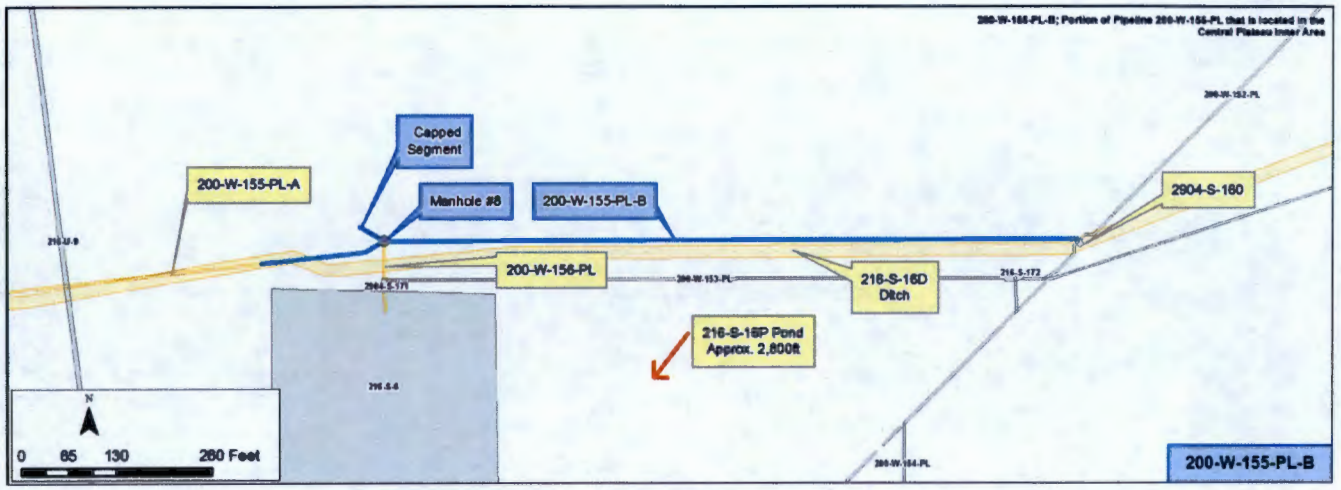
Scoping Summary: 200-W-155-PL-B

History

The 200-W-155-PL-B waste site is an inactive underground pipeline that was used to transfer cooling water and steam condensate that includes high potential radioactive condensates, from the 202-S Building to the 216-S-6 Crib and 216-S-16 Pond. The effluent was routed to the 216-S-6 Crib and later to the 216-S-16 Pond via the 2904-S-160 Control Structure. The flow was directed to the crib at Manhole 8 via the 200-W-156-PL pipeline, or to the pond via the 200-W-155-PL-A pipeline.

The 200-W-155-PL-B and associated 2904-S-160 control structure were constructed in 1954. The line was originally connected to 200-W-156-PL, as well as two stubbed lines (near Manhole 8). In 1956, one of the stubbed lines was extended to the 216-S-16 Ditch through the 200-W-155-PL-A pipeline. The pipeline operated from 1954 to 1976.

The 216-S-16 Pond was backfilled in 1976 and was surface stabilized in 1984. The 2904-S-160 control structure was stabilized in the early 1990s.



Construction

- Length: 1,150 ft
- Diameter: 24 in.
- Composition: Vitrified Clay Pipe
- Gravity Flow
- Direct Buried
- Depth: 7 ft - 8 ft bgs
- Calculated Volume: 27,025 gal

Features of Interest

- 1 Weir Box/Control Structure (2904-S-160; Figure 1)
- 1 Manhole connection (Manhole 8; Figure 2)
- 1 Stubbed line; constructed for potential future expansion, but was never used (at Manhole 8)
- Includes a 30 ft long stubbed pipe (vitrified clay pipe that is 24 in. diameter at Manhole 8)

Relevant Characterization

- Based on historical inventory reporting waste transferred to 216-S-6 includes:
  - 165 Ci Sr-90
  - 1.21E-8 Ci Ru-106
  - 93 Ci Cs-137
  - 0.045 Ci Total U
  - 29 Ci Total Alpha
  - 630 Ci Total Beta

Waste Streams

- Processes: REDOX Plant - Reduction and Oxidation Process; Cooling Water
- Waste Streams: Process vessel cooling water and steam from 202-S Building (including the D-12 and D-14 waste concentrators)

Misc./Other Relevant Information

- The 216-S-6 crib was used for the release of the high potential radioactive condensates and cooling water from the 202-A Building, which was partially carried through 200-W-155-PL-B
- In 2012 and 2013, radiological surveys of 2904-S-160 measured < 5,000 cpm/100 cm-2 of total beta for soil and gravel samples

Site Interfaces

Origin/Termination

200-IS-1

- 200-W-156-PL
- 2904-S-160 (Control Structure)

No Operable Unit

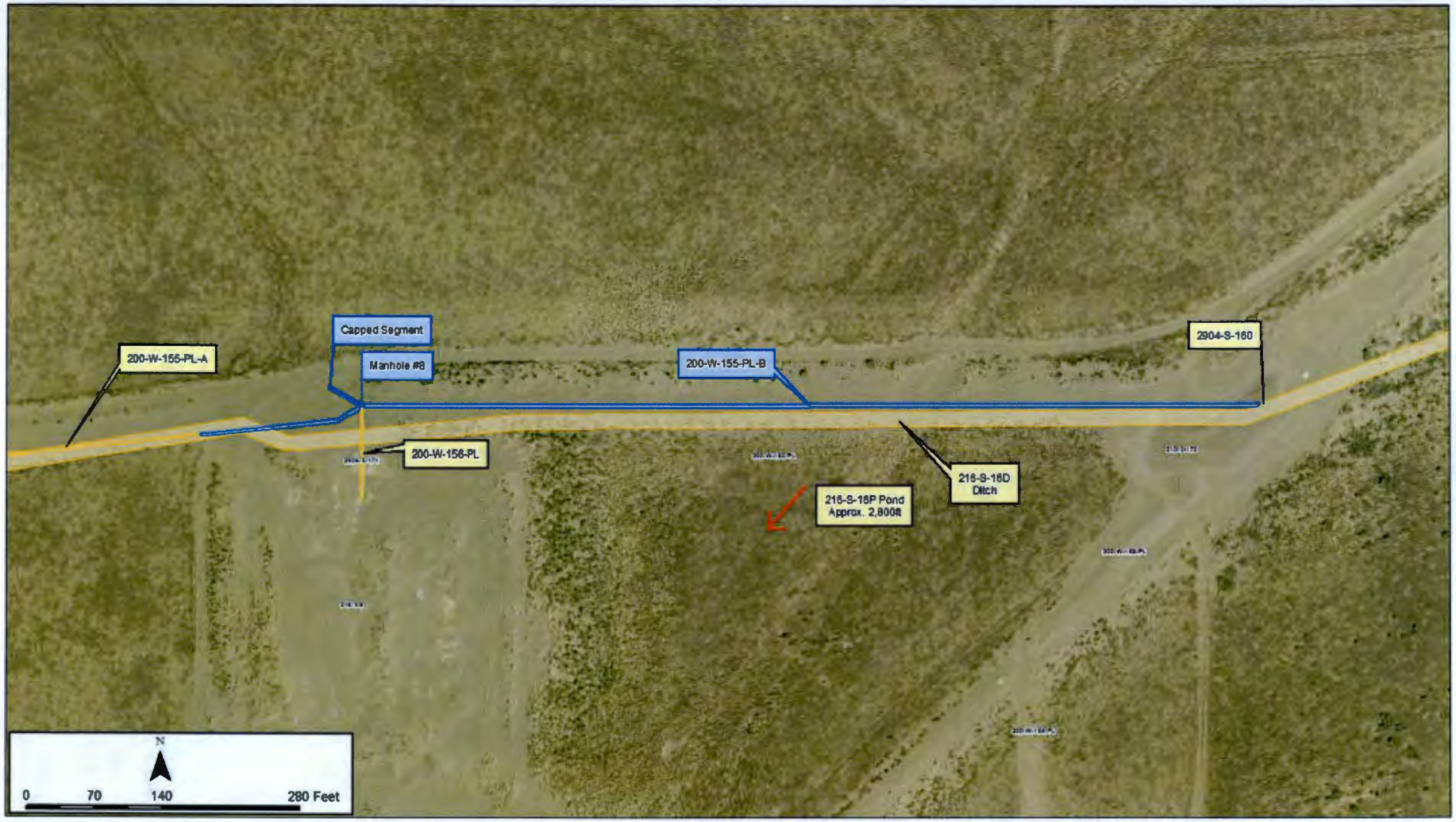
- 200-W-155-PL-A

Site Intersects

200-OA-1

- 216-S-16D

Scoping Summary: 200-W-155-PL-B



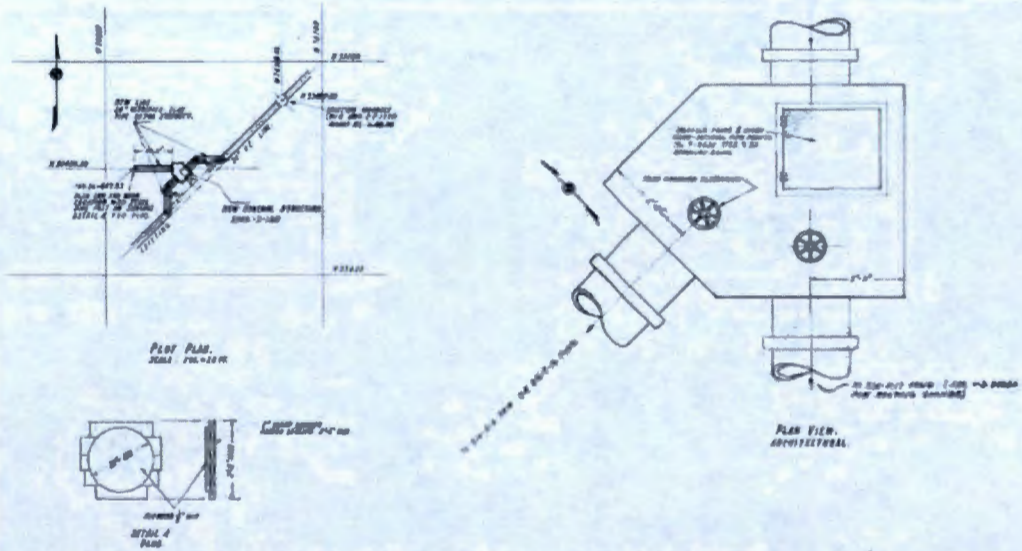


Figure 1 - 2904-S-160 Control Structure (H-2-2599)

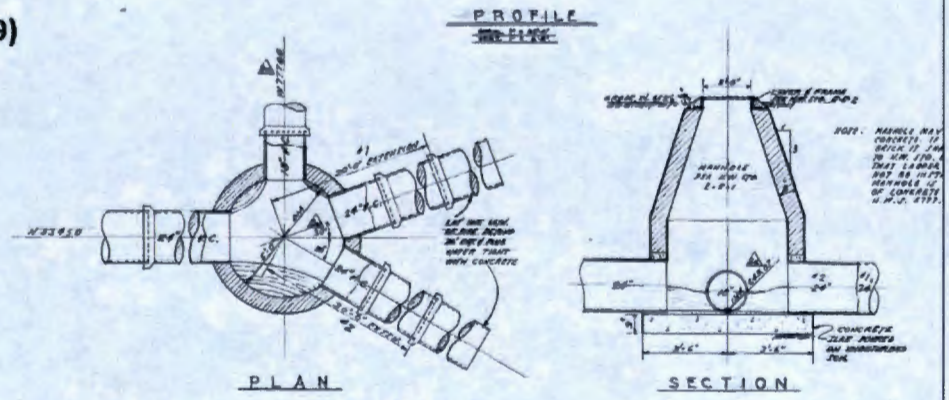


Figure 2 – Manhole #8 (H-2-2596)

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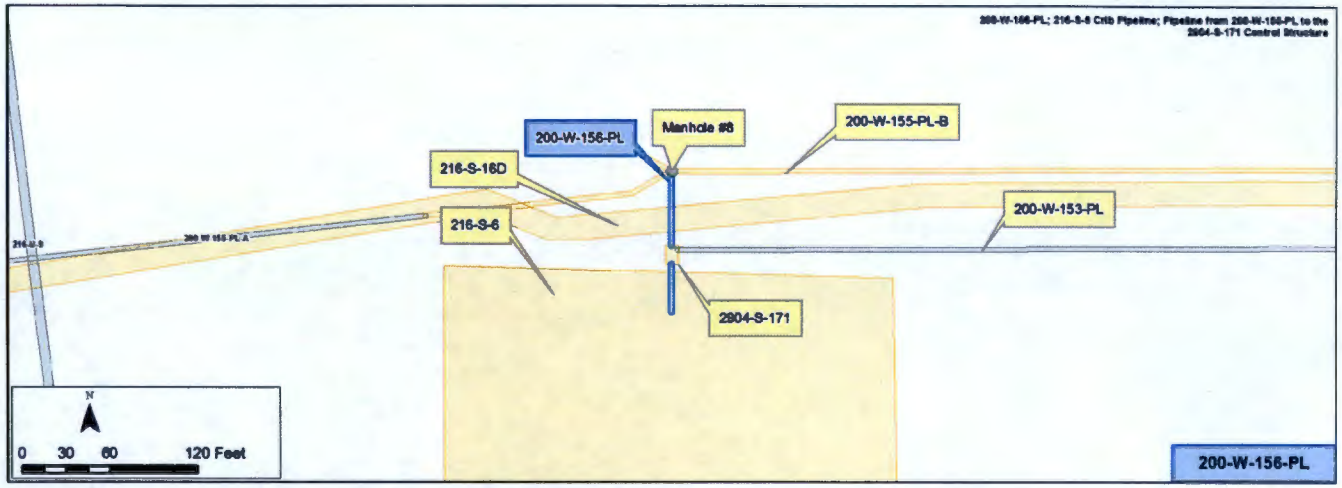
Scoping Summary: 200-W-156-PL

History

The 200-W-156-PL waste site is an inactive underground pipeline that was used to transfer cooling water and steam condensate that included high potential radioactive condensates originating from the 202-S Building to the 216-S-6 Crib.

The effluent was routed through the 200-W-153-PL pipeline and directed to the crib via the 2904-S-171 weir box, where it connected to the 200-W-156-PL pipeline. Effluent was also transferred through the 200-W-155-PL-B pipeline, which connected to the 200-W-156-PL pipeline at Manhole #8.

The 200-W-156-PL and the associated 2904-S-171 weir box were constructed in 1954 and operated until 1972. By August 1972, the 216-S-6 Crib was retired; it was surface stabilized in 1990 (including the 2904-S-171 weir box). Additional stabilization was required on the weir box in 1992 due to a contamination break through.



Construction

- Length: 77 ft (total)
  - Segment 1: 45 ft (from Manhole #8 to the 2904-S-171 weir box)
  - Segment 2: 32 ft (from 2904-S-171 weir box to 216-S-6 crib)
- Diameter: 18 in. (both segments)
- Composition
  - Segment 1: Vitrified Clay Pipe
  - Segment 2: Corrugated Metal
- Gravity Pipeline
- Direct Buried
- Depth: 7 ft
- Calculated Volume: 1,020 gal (total)
  - Segment 1: 595 gal
  - Segment 2: 425 gal

Features of Interest

- 1 Weir Box/Control Box (2904-S-171; Figure 1)
- 1 Manhole connection (Manhole #8; Figure 2)

Relevant Characterization

- Historical inventory reporting show 216-S-6 transferred:
  - 165 Ci Sr-90
  - 1.21E-8 Ci Ru-106
  - 93 Ci Cs-137
  - 0.045 Ci Total U
  - 29 Ci Total Alpha
  - 630 Ci Total Beta

(Radionuclides decayed to Dec-31-1998)

Waste Streams

- Processes: REDOX Plant - Reduction and Oxidation Process; Cooling Water
- Waste Streams: Process vessel cooling water and steam from 202-S Building (including the D-12 and D-14 waste concentrators)
- Based on historical inventory reporting, total waste transferred to 216-S-6 was estimated at 1.2 billion gallons.

Misc./Other Relevant Information

- The 216-S-6 crib was used for the release of the high potential radioactive condensates and cooling water from the 202-A Building
- The 216-S-6 Crib was backfilled with gravel and soil, as a part of the stabilization efforts

Site Interfaces

Origin/Termination

200-IS-1
- 200-W-155-PL-B
- 2904-S-171 (Weir Box)

200-WA-1
- 216-S-6 (Crib)

Site Intersects

200-IS-1
- 200-W-153-PL

Scoping Summary: 200-W-156-PL

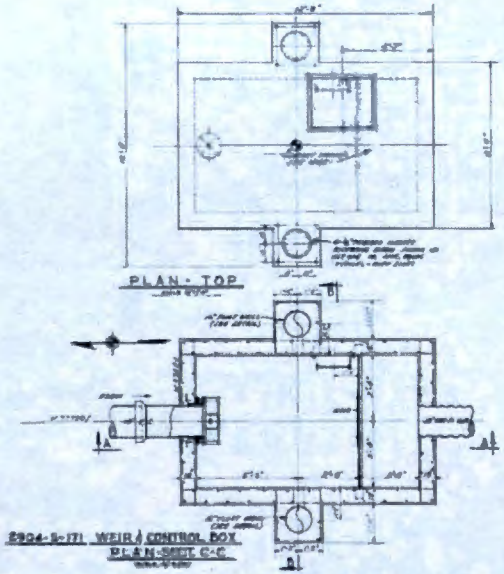


Figure 1 - 2904-S-171 Weir Box (H-2-2595)

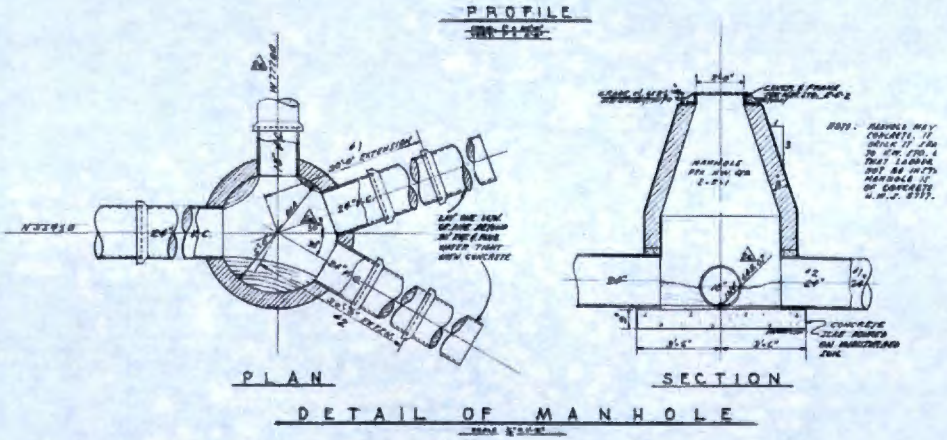


Figure 2 – Manhole #8 (H-2-2596)

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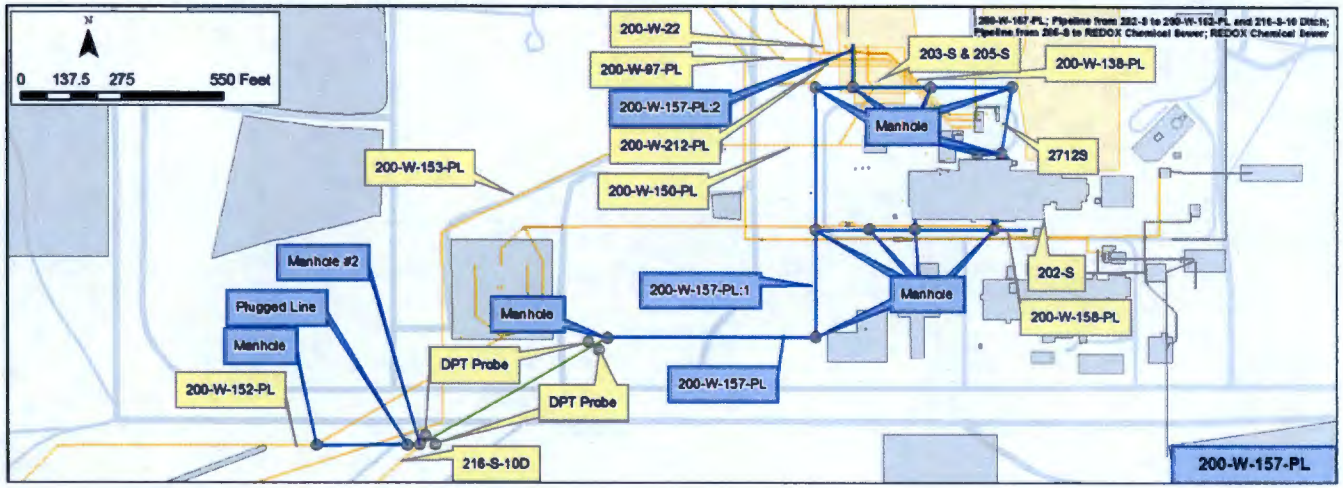
Scoping Summary: 200-W-157-PL

History

The 200-W-157-PL waste site is an inactive underground pipeline that was used to transfer chemical sewer wastes from the 202-5, 203-S, and 205-5 buildings to the 200-W-152-PL, which drained to the 216-S-10D Ditch. The sections of this line under the roadway are encased in concrete extending 5 feet beyond the shoulder on each side.

The pipeline was constructed in 1951 and transferred wastes until 1991. In March 1954, the 200-W-152-PL pipeline was capped, and the waste was sent solely to the 216-S-10D ditch until 1991. The pipeline was capped by filling manhole #2 with concrete, additionally the pipeline has been capped west of manhole #2 (Drawing H-2-44511).

In 2008, four boreholes were drilled in the vicinity of the west end of the 200-W-157-PL pipeline and the results indicated the pipeline had not leaked.



Construction

PL:1
- Diameter: 8 in. and 12 in.
- Material: Vitrified Clay Pipe
- Length: Total - 3,461 ft, 8 inch section - 1,753 ft, 12 in. section - 1,708 ft
- Roadway crossings are concrete-encased
- Gravity flow
- Depth: 9 to 17 ft bgs
- Calculated Volume: Total - 14,601 gal, 8 in. section - 4,575 gal, 12 in. section - 10,026 gal

PL:2
- Diameter: 4 in.
- Material: Vitrified Clay Pipe
- Length: 112 ft
- Direct Buried
- Gravity Pipeline
- Depth: 9 to 12 ft bgs
- Calculated Volume: 73 gal

Encasements:
A minimum of 5.5-in. thick concrete. The encased pipe extends a minimum of 5 feet from each road side shoulder. All remaining pipeline segments are direct buried.

Features of Interest

- Manholes (14)
- Plugged Section (1)
- Wye Fitting (1)
- T-Fitting (1)

Relevant Characterization

- In 2008, four direct push boreholes (C6601, C6602, C6603, and C6604) were drilled in the vicinity of 200-W-157-PL waste site (Figure 1). Results indicated no evidence of a pipeline release.
- Constituents found in the 216-S-10 Ditch, assumed to have been transported by 200-W-157-PL, contained Pu-239/240, Am-241, Cs-137, Sr-90, chromium, hexavalent chromium, mercury, PCB-1254, and several VOCs and SVOCs.

Waste Streams

- Processes: REDOX Plant - Reduction and Oxidation Process
- Chemical sewer waste
- Overflow from the 2901-5 Water Tower

Misc./Other Relevant Information

- Sewer connections from the 202-S building to the vitrified clay pipe sewer are stainless steel pipes connecting to main transfer lines.

Site Interfaces

Origin
200-CR-1
- 202-S

Facility
- 203-5
- 205-5

Termination
200-IS-1
- 200-W-152-PL

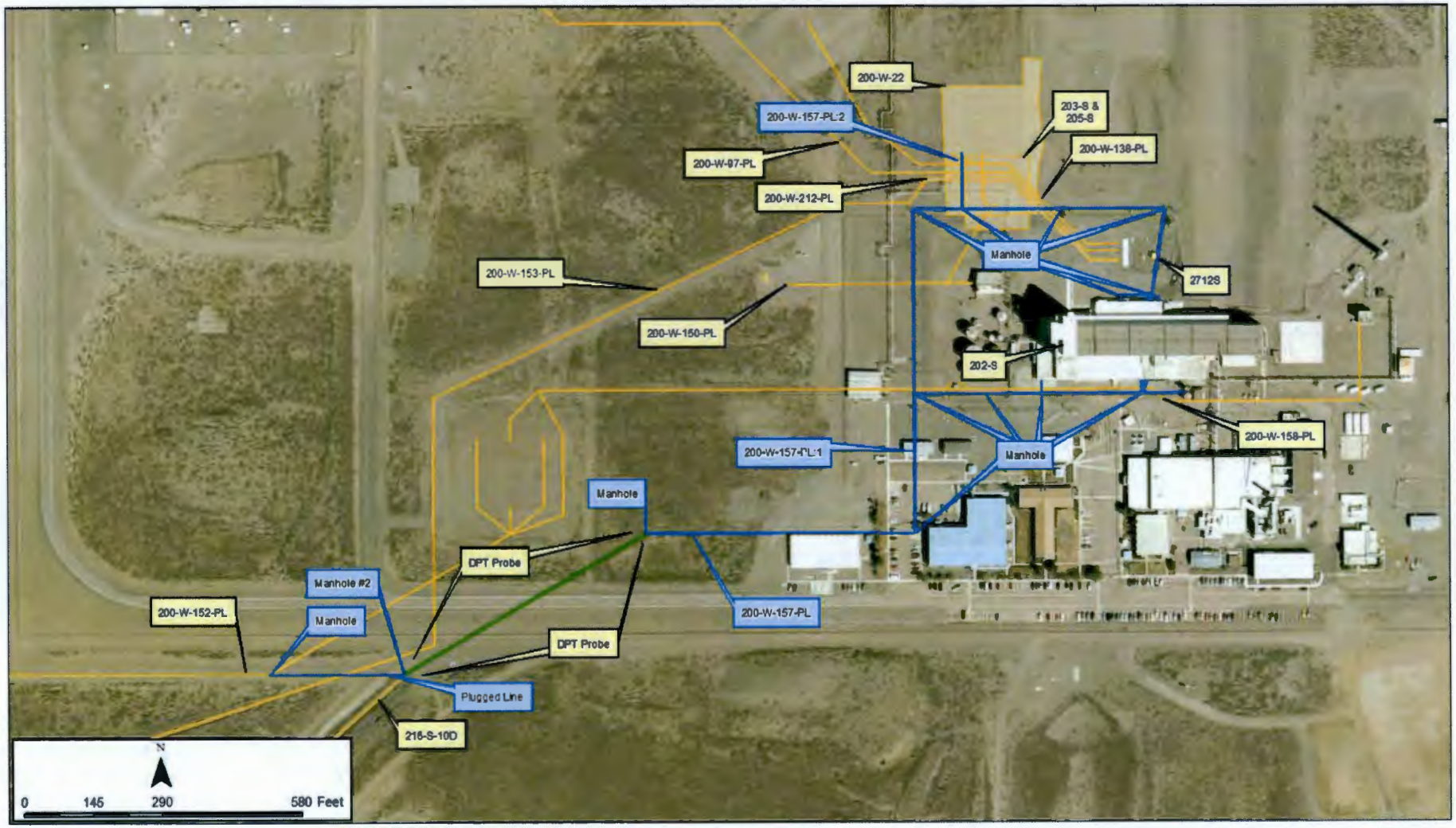
200-OA-1
- 216-S-10D

Sites That Intersect
Facilities
- 2712-S

200-IS-1
- 200-W-97-PL
- 200-W-138-PL
- 200-W-150-PL
- 200-W-153-PL
- 200-W-158-PL
- 200-W-212-PL

200-WA-1
- 200-W-22

Scoping Summary: 200-W-157-PL



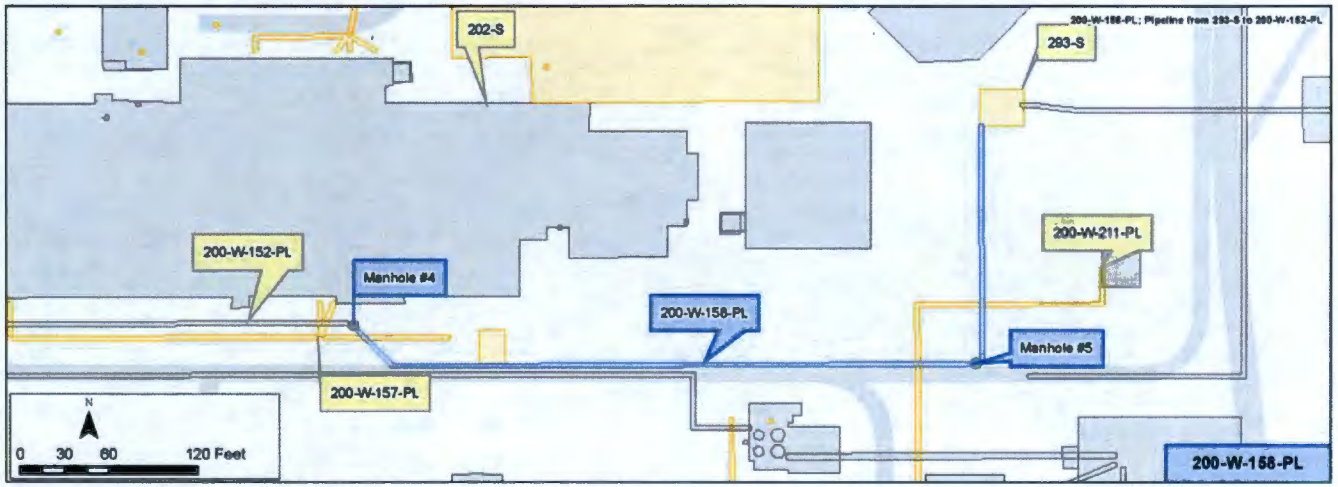
Scoping Summary: 200-W-158-PL

History

The 200-W-158-PL waste site is an inactive underground process sewer from the 293-S Building to the 200-W-152-PL pipeline (process manhole #4 is the connection point).

The pipeline was constructed in 1956, and is assumed to have become inactive in 1967 when Building 293-S also went inactive.

The 293-S Building recovered radioactive iodine in combination with nitric acid vapors during the REDOX process.



Construction

- Length:
  - Segment 1: 4 ft
  - Segment 2: 597 ft
- Diameter:
  - Segment 1: 4 in.
  - Segment 2: 8 in.
- Composition: Carbon Steel
  - Segment 1: Carbon Steel
  - Segment 2: Vitrified Clay Pipe
- Direct Buried
- Depth:
  - Segment 1: 2.5 ft bgs
  - Segment 2: 2.5 ft - 10 ft bgs
- Calculated Volume: 2.6 gal
  - Segment 1: 2.6 gal
  - Segment 2: 1,558 gal

Features of Interest

- Bend (1)
- Manhole (2, one is the termination point)

Relevant Characterization

- No characterization data was located for this pipeline

Waste Streams

- This pipeline connects to the REDOX process sewer. The 293-S building where the pipeline originates was used to remove radioactive iodine in combination with recovering nitric acid vapors
- The 200-W-158-PL process sewer connects to the 200-W-152-PL process sewer which was originally used to transfer expected nonradioactive liquids from processing equipment (steam/condensate)

Misc./Other Relevant Information

- No additional information identified

Site Interfaces

Origin/Termination	Site Intersects
•Building 293-S (origin)	200-IS-1
	• 200-W-157-PL
	• Process Manhole #5
200-IS-1	
•200-W-152-PL (Process Manhole #4) (termination)	Active
	• 200-W-211-PL

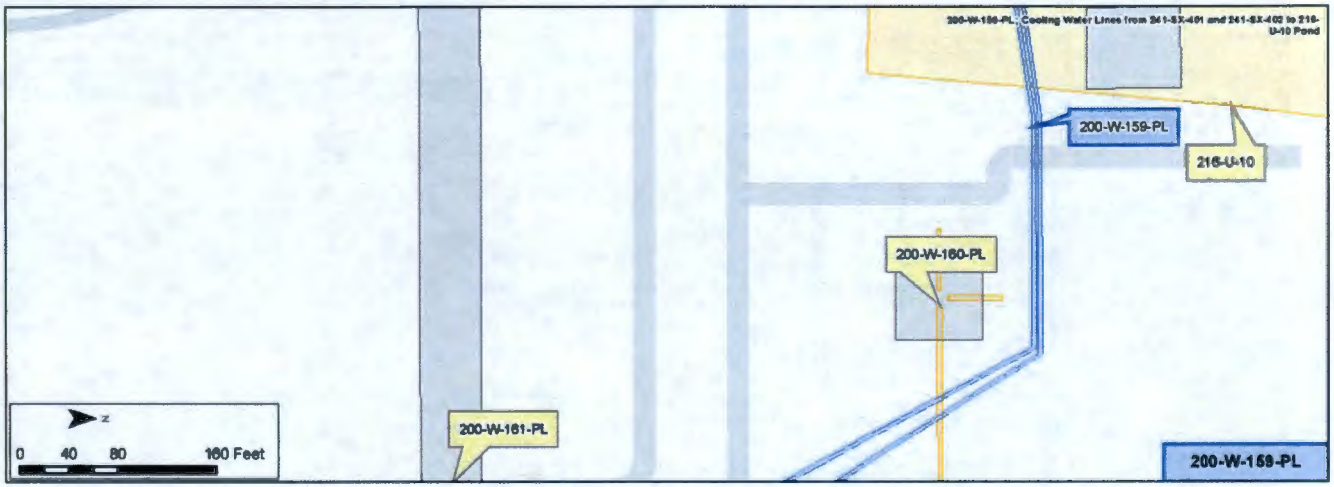
Scoping Summary: 200-W-158-PL

Scoping Summary: 200-W-159-PL

History

The 200-W-159-PL waste site is a pair of inactive underground pressurized radioactive process sewer lines that transferred cooling water from Buildings 241-SX-401 and 241-SX-402 to the 216-U-10 Pond.

The lines were constructed in the 1940s and in use into the 1980s. In 1984, the line from 241-SX-402 was cut and tied in to pipeline 200-W-161-PL; the remaining extension of pipe to the 216-U-10 Pond was abandoned and capped at the tie-in location.



Construction

200-W-159-PL South Line
- Length: 1,178 ft
- Diameter: 8 in.
- Composition: Carbon Steel
- Direct Buried
- Pressurized
- Depth: 6 ft - 13 ft bgs
- Calculated Volume: 2,987 gal

200-W-159-PL North Line
- Length: 1,177 ft
- Diameter: 8 inch
- Composition: Carbon Steel
- Direct Buried
- Pressurized
- Depth: 6 ft - 13 ft bgs
- Calculated Volume: 2,985 gal

Features of Interest

South Line
- Bends (3)
- Reducers 8 in. to 2 in. (2)
- Tie-in (1)
- Isolation Cap (1)

North Line
- Bends (3)

Relevant Characterization

- No direct characterization data was located for this pipe system
- Based on extensive sampling data from the 216-U-10 Pond Disposal System thru 1980, the pipes are likely to include the following radioisotopes: Sr-90 and Cs-137

Waste Streams

- Cooling water and process condensate from the 241-SX Tank Farm buildings

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

WMA S/SX
- 241-SX-401 (North Line)
- 241-SX-402

200-CW-1
- 216-U-10

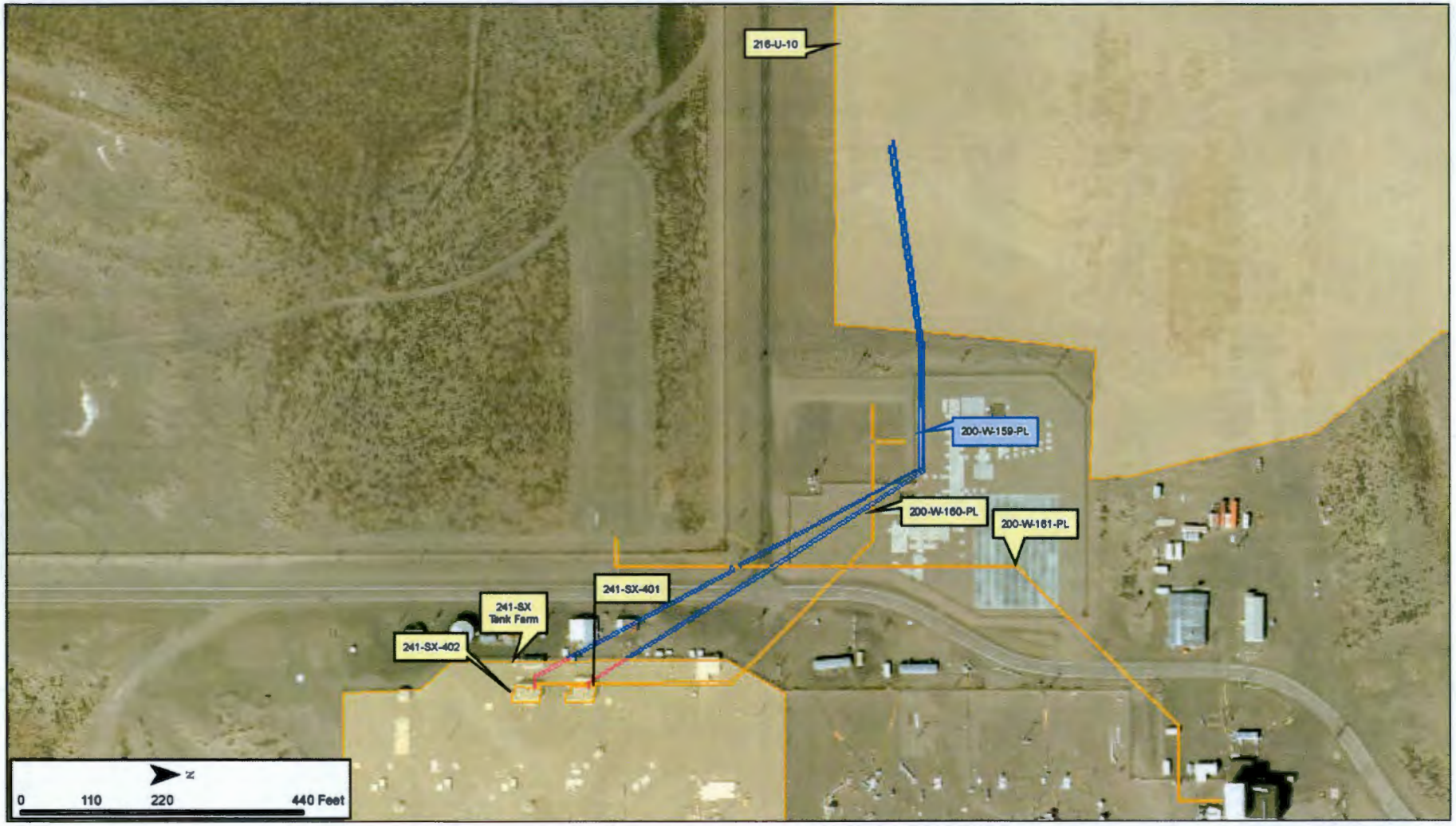
200-IS-1
- 200-W-161-PL (South Line)

Site Intersects

WMA S/SX
- 241-SX Tank Farm

200-IS-1
- 200-W-161-PL
- 200-W-160-PL

Scoping Summary: 200-W-159-PL

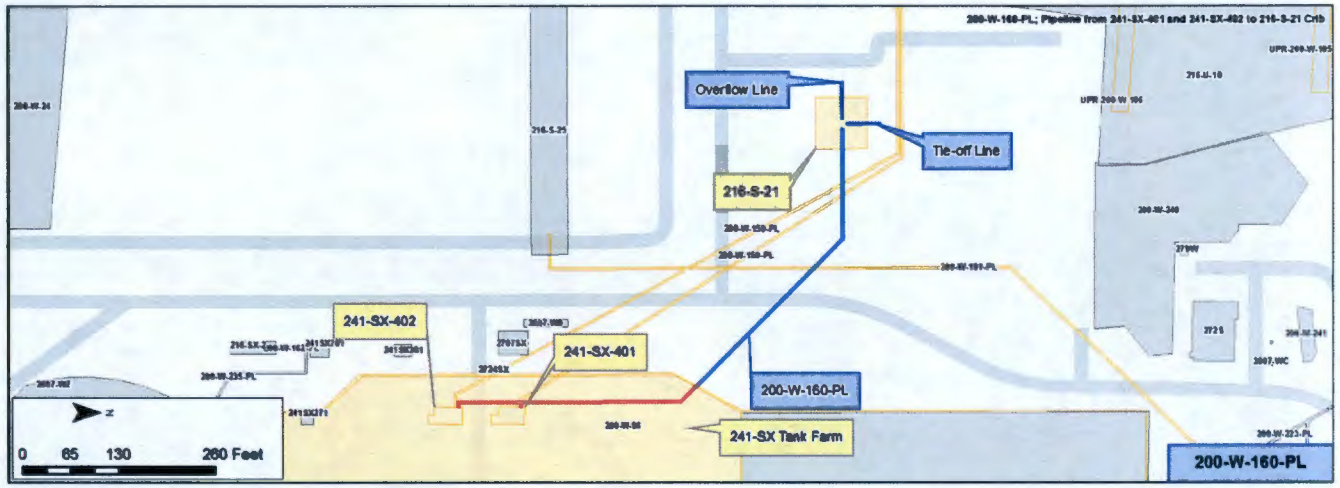


Scoping Summary: 200-W-160-PL

History

The 200-W-160-PL waste site is an inactive underground pipeline that transferred condensate from the 241-SX-401 and 241-SX-402 Condensate Shielding buildings to the 216-S-21 Crib. At the crib, there are two additional segments of pipe for this site, one is an overflow line and the other is tie-off line (see figure page 3).

The system was in use from 1954 to 1970, when the crib was deactivated. The condensate buildings continued to operate until 1975.



Construction

- Length: 860 ft
- Diameter: 8 in.
- Composition: Carbon Steel
- Flow Method: Gravity
- Encasement: None
- Cathodic Protection: None
- Depth: 6 ft - 10 ft bgs
- Calculated Volume: 2,246 gal

Features of Interest

- Blind flange at exit of 241-SX-401 (see figures page 4)

Waste Streams

- Condensation for 241-SX tank farm off-gases
- 216-S-21 crib waste contained ammonium nitrate

Site Interfaces

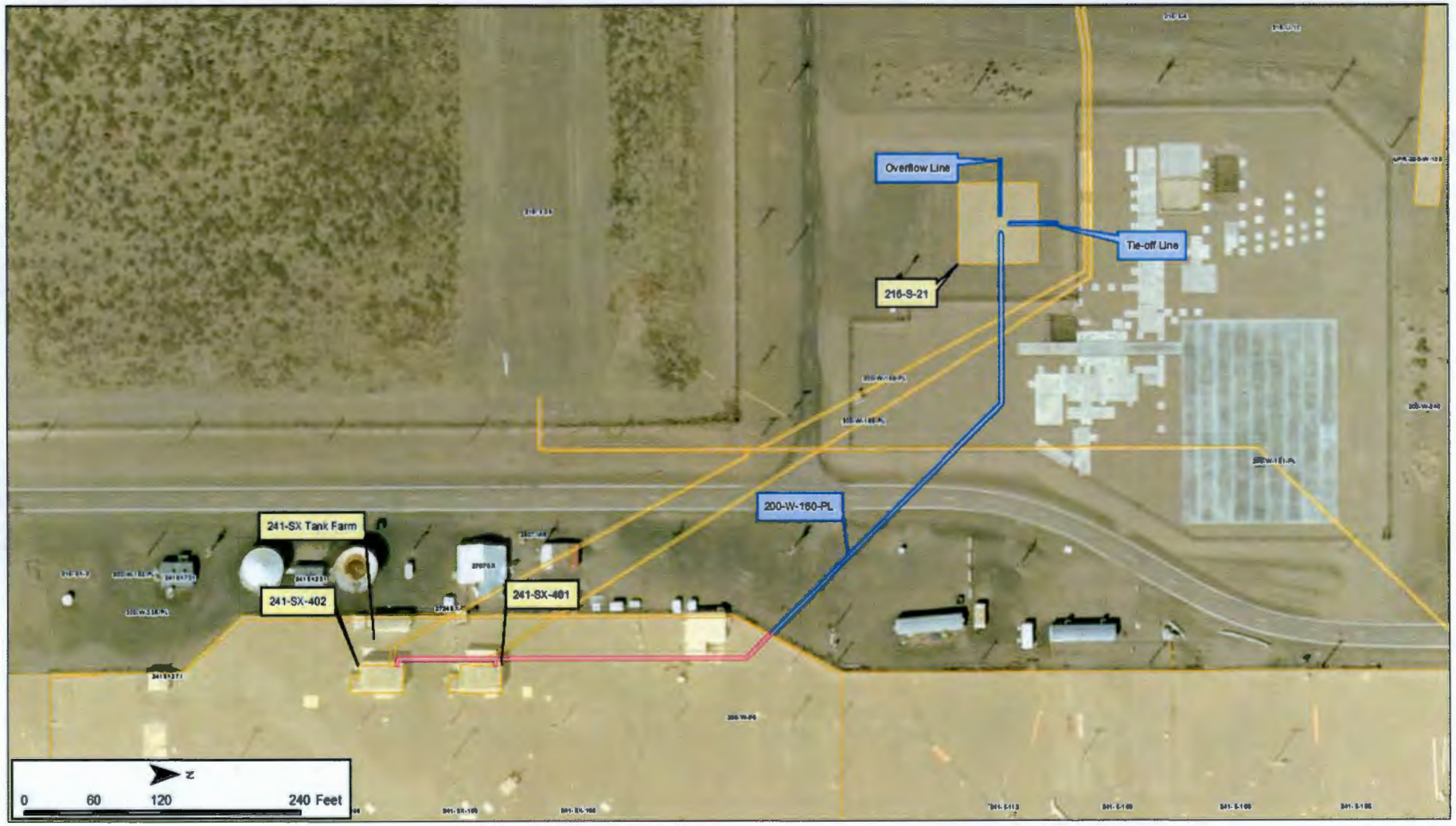
Origin/Termination	Site Intersects
WMA S/SX	200-IS-1
• 241-SX-401 (origin)	• 200-W-159-PL
• 241-SX-402 (origin)	• 200-W-161-PL
200-DV-1	WMA S/SX
• 216-S-21 (termination)	• 200-W-96

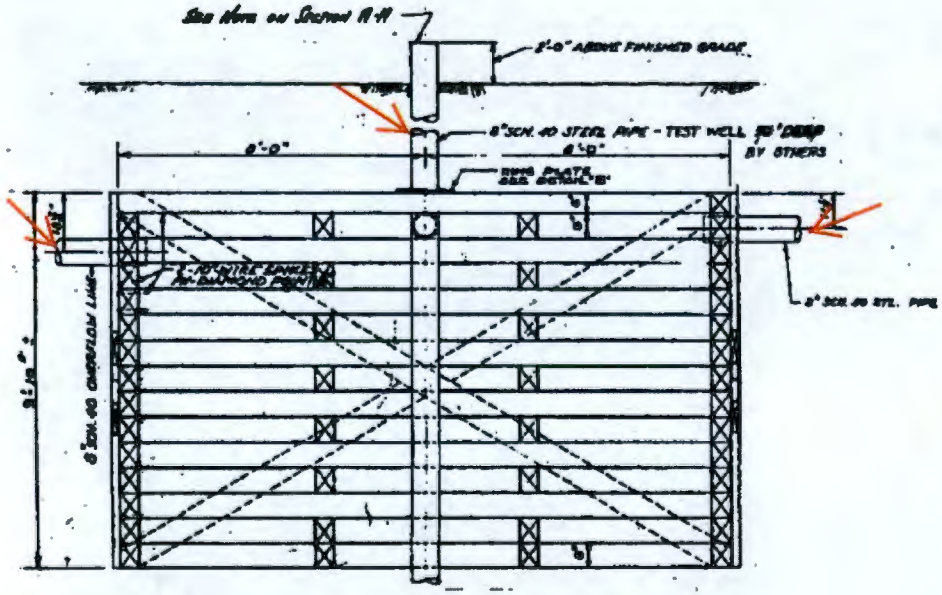
Relevant Characterization

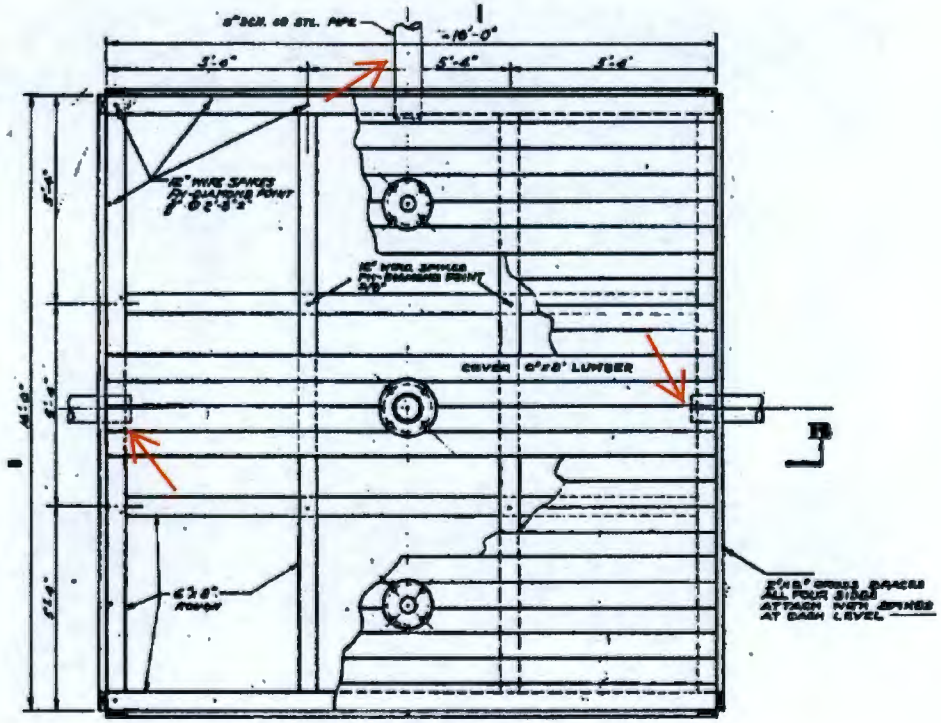
- No direct characterization data have been located for the pipeline or adjacent soil
- 1998 radionuclide curies inventory of 216-S-21 included:
  - 1.76E+01 of Sr-90
  - 1.11E-06 of Cs-134
  - 1.38E-05 of Cs-135
  - 6.93E+01 of Cs-137
  - 1.39E-03 of U Gross

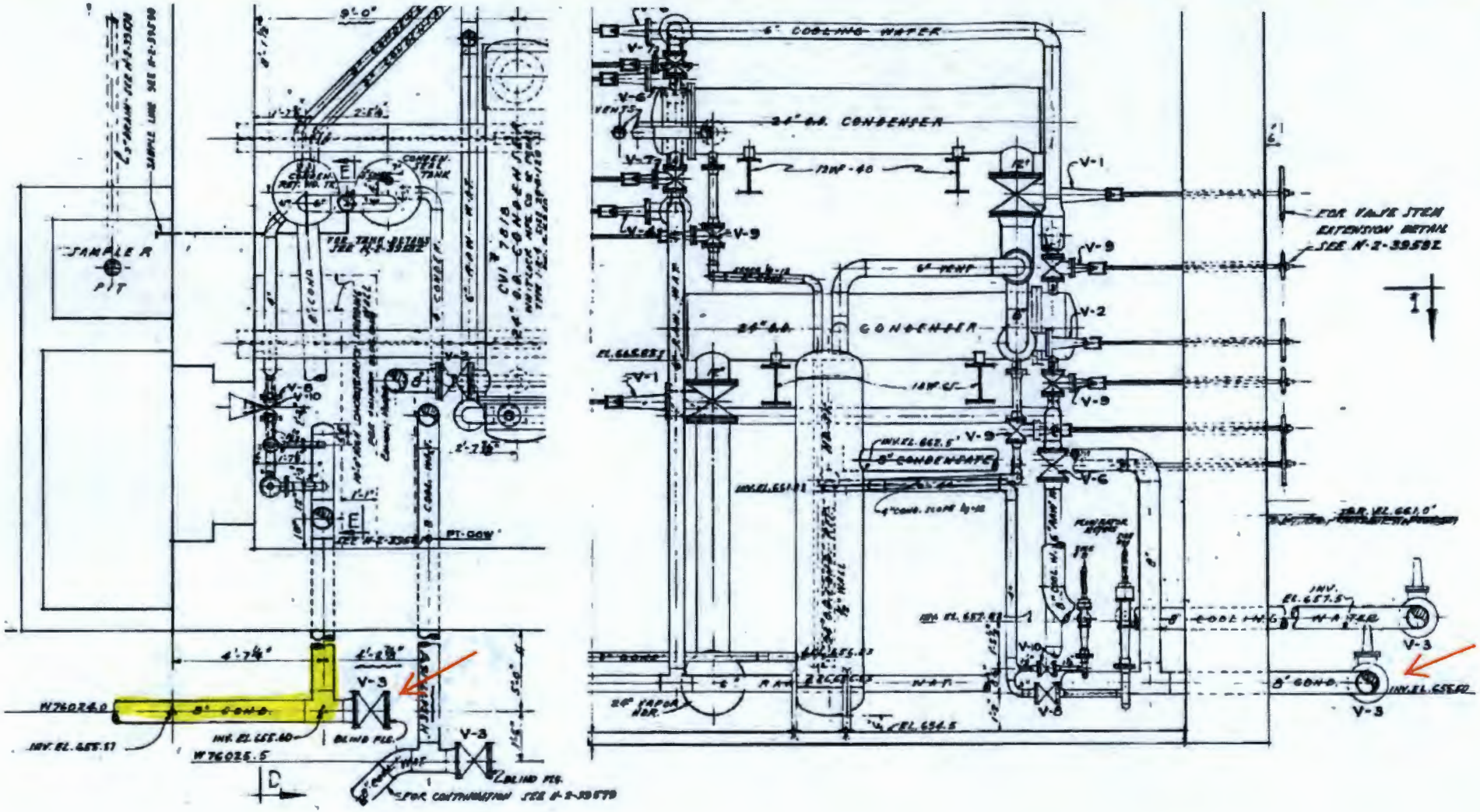
Misc./Other Relevant Information

- Drilling and data collection of borehole C9S14 is planned in a 201S-2016 description of work for the 200-DV-1 OU sampling and analysis plan


Overflow Line
Tie-off Line
216-S-21
200-W-160-PL
241-SX Tank Farm
241-SX-402
241-SX-401
N
0
60
120
240 Feet


See Note on Section A-A
2'-0" ABOVE FINISHED GRADE
8" SCH. 40 STEEL PIPE - TEST WELL
BY OTHERS
8" SCH. 40 STEEL PIPE


8" SCH. 40 STL. PIPE
10'-0"
5'-4"
5'-4"
5'-4"
COVER 6"x8" LUMBER
ALL FOUR SIDES
ATTACH WITH SPIKES
AT DASH LEVEL

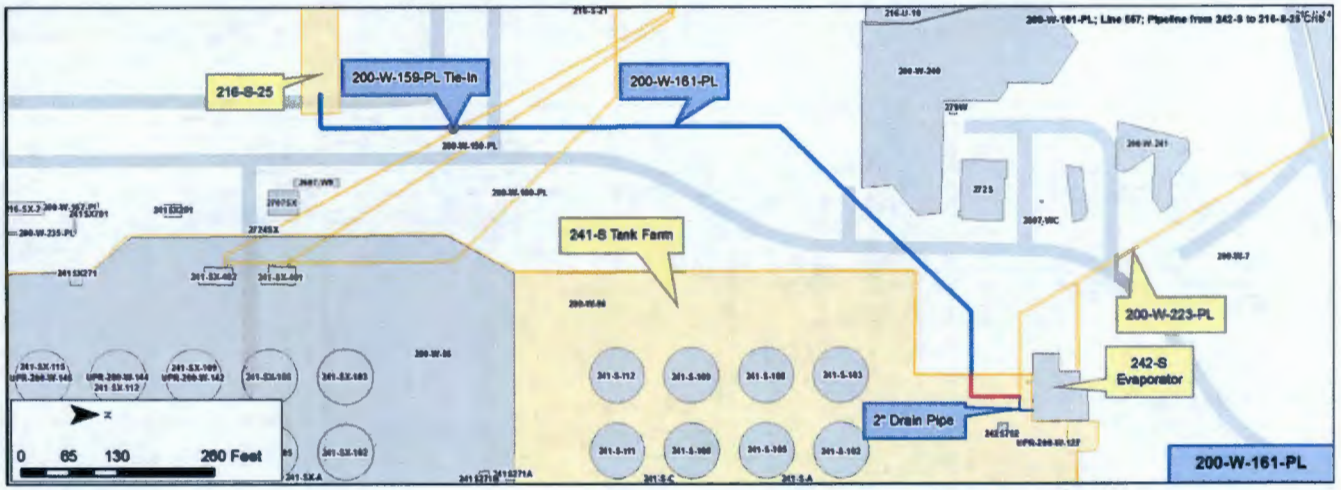

6" COOLING WATER
24" DIA. CONDENSER
CONDENSER
V-1
V-2
V-3
V-6
V-9
V-10
FOR VALVE STEM EXTENSION DETAIL SEE W-2-39582
SAMPLE PIT
8" COND.
BLIND FLG.
FOR CONTINUATION SEE W-2-39579
8" CONDENSATE
COOLING WATER

Scoping Summary: 200-W-161-PL

History

The 200-W-161-PL waste site is an inactive underground process sewer pipeline extending from the 242-S Evaporator to the 216-S-25 Crib. Historical drawings indicate that the pipeline connects to 200-W-223-PL and a 2 in. drain pipe, which connects to the condenser room in 242-S (see figure pg. 3).

The line was in use from 1973 to 1992. It transferred process steam condensate from 242-S until Nov-1980. In 1984, condensate from the 241-SX tank farm gases was introduced via the 200-W-159-PL tie-in.



Construction

- Total Length: 1,203 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Flow Method: Gravity
- Encasement: None
- Cathodic Protection: None
- Depth: 5 ft - 8 ft
- Total Calculated Volume: 785 gal

Features of Interest

- Reducer and slip joint at the crib discharge point, transition to PVC distribution pipe (see figure pg. 4)
- Connection to a 2 in. drain pipe at the junction with 200-W-223-PL (see figure pg. 3)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- 1998 radionuclide curies inventory for 216-S-25 included:
  - 3.38E-02 of Sr-90
  - 2.64E-06 of Cs-134
  - 3.14E-07 of Cs-135
  - 5.44E-02 of Cs-137
  - 5.54-02 of U Gross

Waste Streams

- Steam condensate from 242-S Evaporator
- 242-S Evaporator received single-shell tank supernate, phosphate and radioactive waste
- Condensate from 241-SX tank farm gases via 241-SX-402 and 200-W-159-PL

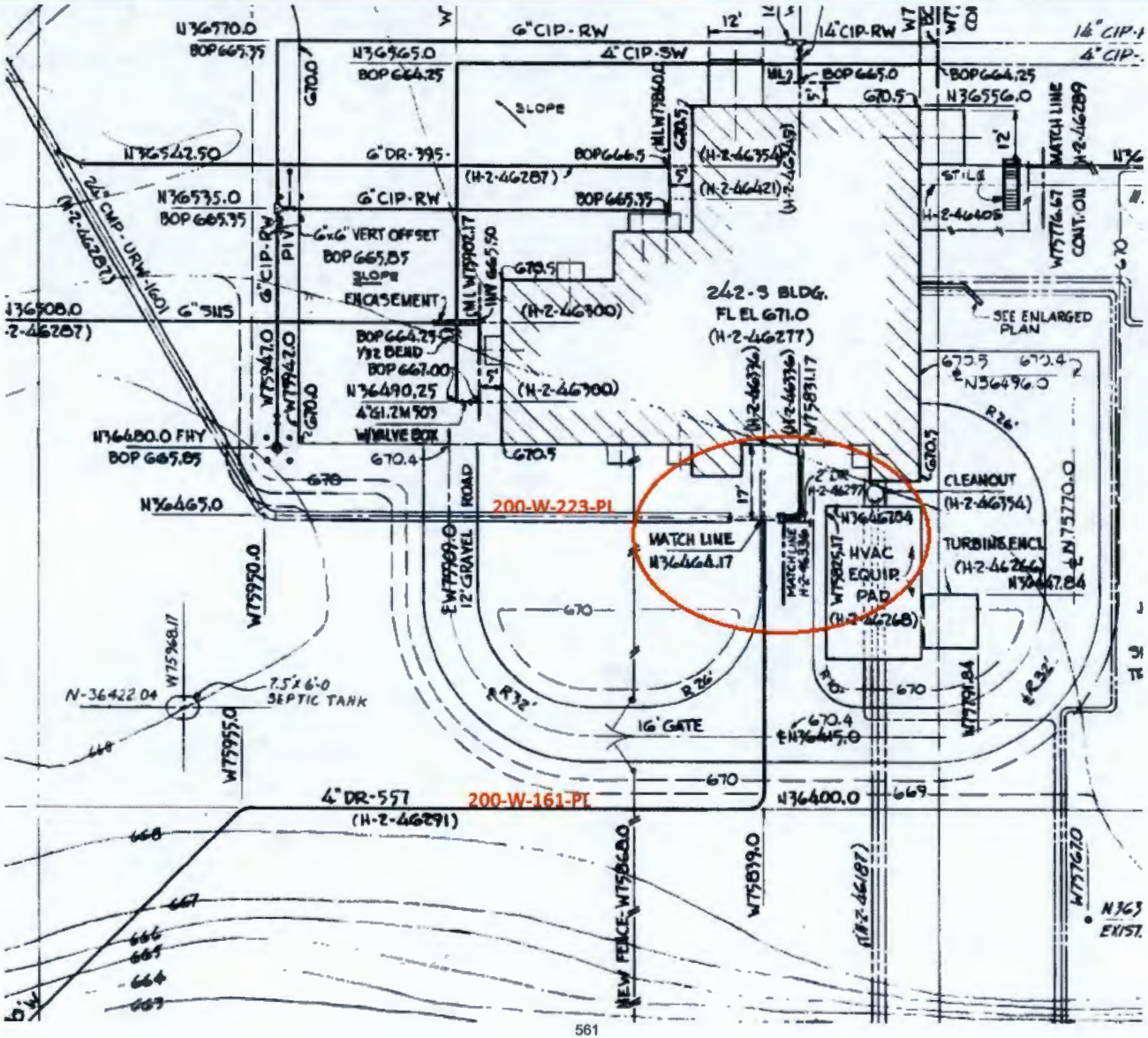
Misc./Other Relevant Information

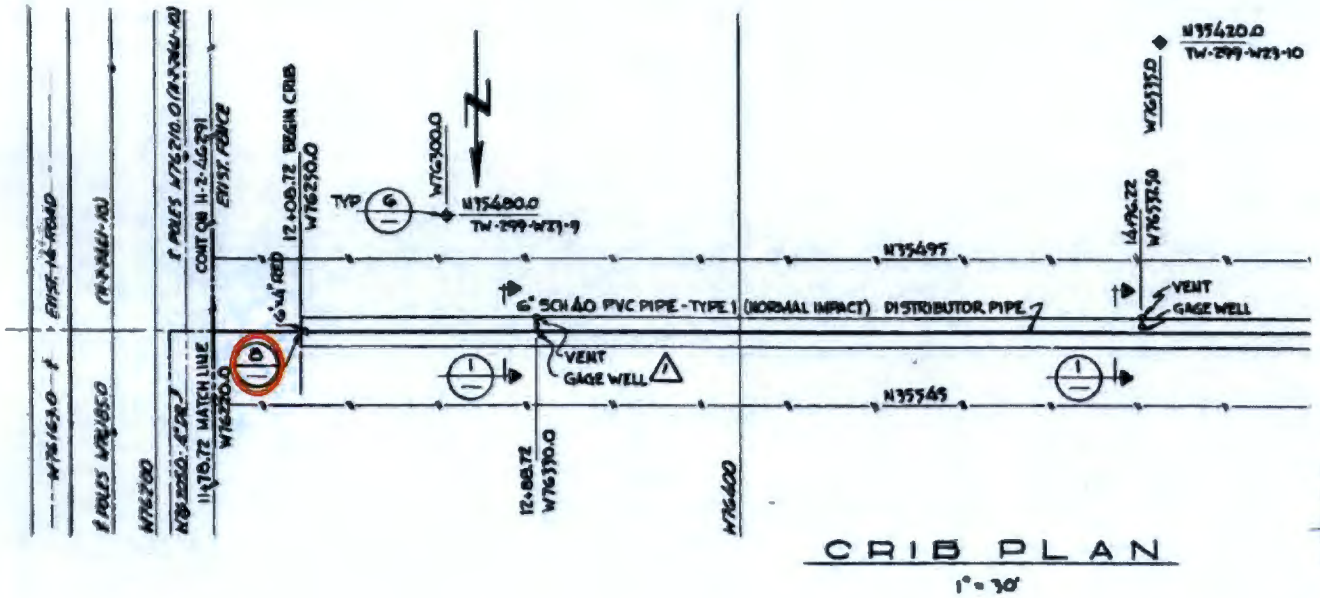
- In 1985 the 216-S-25 crib received effluent from the 216-U1 & 2 groundwater pump and treat effort - it is unclear if the 200-W-161-PL was used in this brief waste stream
- 1991 annual surface radiological survey of the 216-S-25 crib, no contamination detected
- 1976: Geophysical logging of monitoring wells for 216-S-25 detected no groundwater contamination

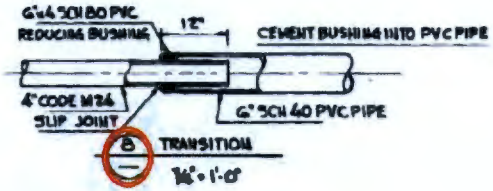
Site Interfaces

Origin/Termination	Site Intersects
• 242-S (facility) (origin)	200-IS-1 • 200-W-160-PL • 200-W-159-PL
200-IS-1 • 200-W-223-PL (origin)	• 200-W-223-PL
200-WA-1 • 216-S-25 (termination)	WMA S/SX • 200-W-96

216-S-25
200-W-159-PL Tie-In
200-W-161-PL
241-S Tank Farm
200-W-223-PL
242-S Evaporator
2" Drain Pipe
N
0
70
140
280 Feet


6"CIP-RW
4"CIP-SW
14"CIP-RW
SLOPE
6"DR-395
6"CIP-RW
6"x6" VERT OFFSET
BOP 665.85
SLOPE
ENCASEMENT
242-S BLDG.
FL EL 671.0
(H-2-46277)
SEE ENLARGED PLAN
CLEANOUT
(H-2-46394)
TURBINE ENCL
HVAC EQUIP PAD
(H-2-46268)
MATCH LINE
N36464.17
200-W-223-PL
12' GRAVEL ROAD
7.5'x6'-0 SEPTIC TANK
16' GATE
4"DR-557
(H-2-46291)
200-W-161-PL
NEW FENCE
EXIST.


N35420.0
TW-299-W23-10
W763350
W76300.0
N35480.0
TW-299-W23-9
TYP
12+08.72 BEGIN CRIB
W76250.0
N35495
14+96.72
W763350
6" SCH 40 PVC PIPE - TYPE 1 (NORMAL IMPACT) DISTRIBUTOR PIPE
VENT
GAGE WELL
N35545
12+88.72
W76350.0
W76400
CRIB PLAN
1" = 30'


6"x4 SCH 80 PVC
REDUCING BUSHING
12"
CEMENT BUSHING INTO PVC PIPE
4" CODE M24
SLIP JOINT
6" SCH 40 PVC PIPE
TRANSITION

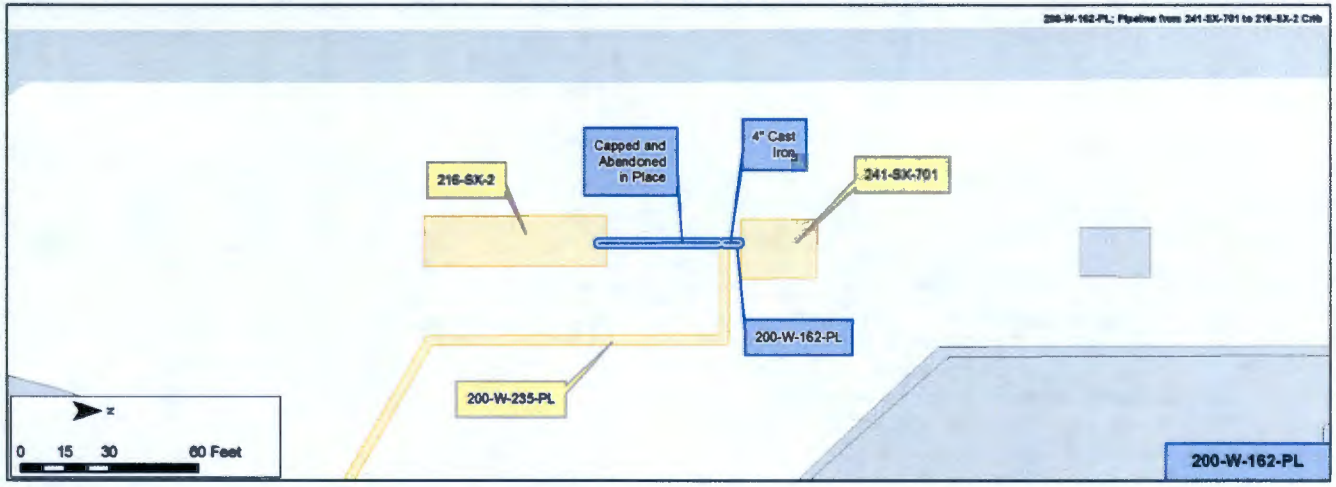
Scoping Summary: 200-W-162-PL

History

The 200-W-162-PL waste site is an inactive underground process sewer pipe that transported compressor effluent from the 241-SX-701 Compressor House to the 216-SX-2 Crib. The initial five feet of pipe exiting the 241-SX-701 Compressor House is a 4 in., cast iron pipe. This segment joined to a 6 in. vitrified clay pipe, which continued to the 216-SX-2 Crib.

The pipeline began transporting effluent in 1956. In 1965, the 216-SX-2 Crib ceased to percolate. The crib was isolated by cutting and blanking 200-W-162-PL at the point where the pipeline material changed.

The pipeline known as waste site 200-W-235-PL was then connected to the cast iron segment exiting the 241-SX-701 Compressor House and wastes were re-routed to the 200-W-236 Pit.



Construction

- Length: 46 ft cumulative
  - Segment 1: 5 ft
  - Segment 2: 41 ft
- Diameter
  - Segment 1: 4 in.
  - Segment 2: 6 in.
- Gravity Drained
- Pipeline Composition:
  - Segment 1: Cast Iron
  - Segment 2: Vitrified Clay
- Direct Buried
- Depth: 5 ft - 10 ft bgs
- Calculated volume: 63 gal cumulative
  - Segment 1: 3 gal
  - Segment 2: 60 gal

Features of Interest

- 200-W-162-PL was cut at the end of the 5 ftcast iron segment that exited the 241-SX-701 Compressor House
  - This section was then connected to 200-W-235-PL

Relevant Characterization

- None noted

Waste Streams

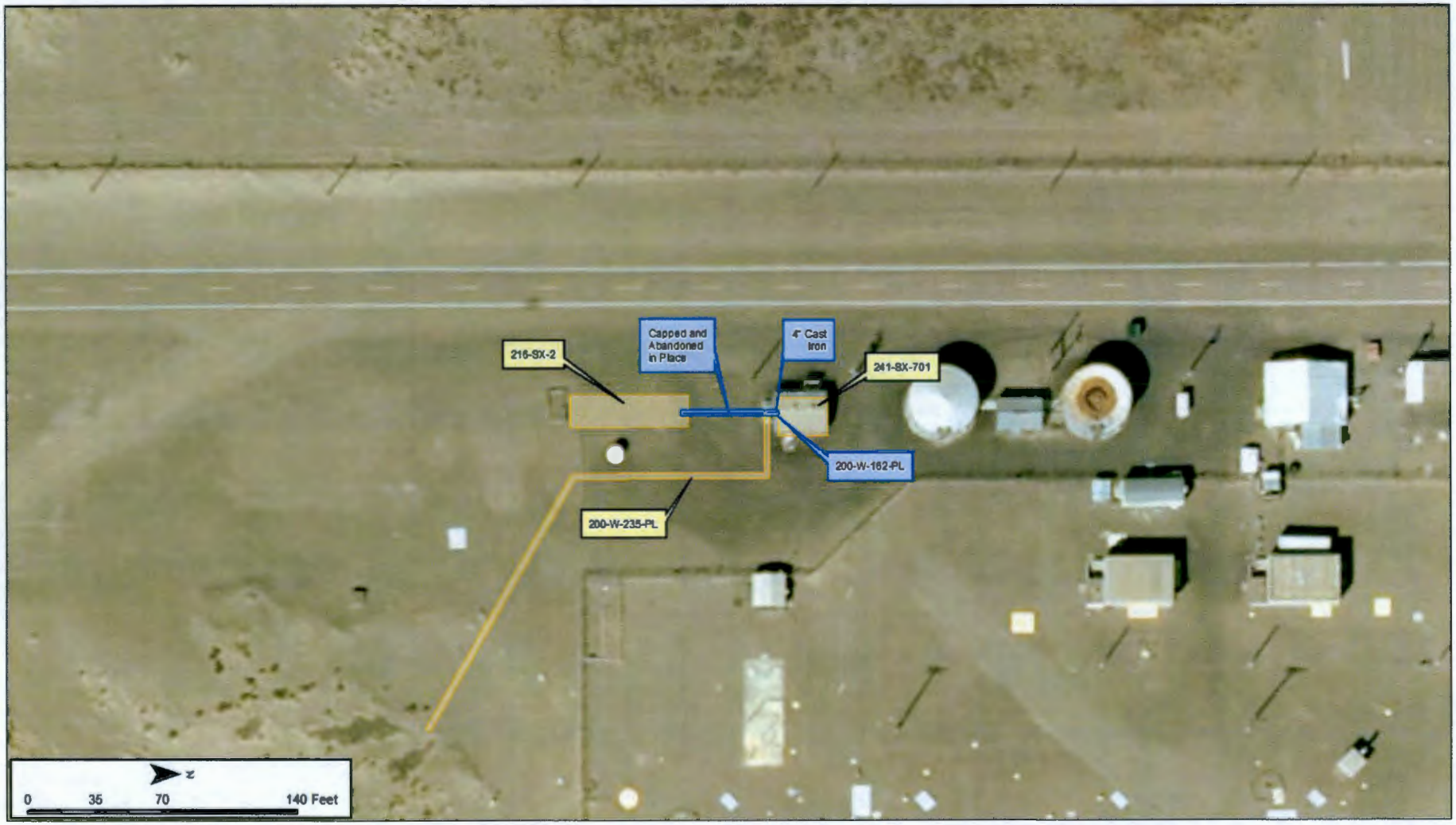
- The waste streams discharged through 200-W-162-PL originate in the 241-SX-701 Compressor House from floor drains under the compressor and receiver tank and consisted of compressed air condensate drainage and floor drainage
- Associated waste streams are believed to have contained very low risk of contamination

Misc./Other Relevant Information

- None noted

Site Interfaces

Origin/Termination	Site Intersects
• 241-SX-701 (building) (origin)	N/A
200-WA-1	
• 216-SX-2 (termination)	
200-IS-1	
• 200-W-235-PL (termination)	


216-SX-2
Capped and Abandoned in Place
4" Cast Iron
241-SX-701
200-W-162-PL
200-W-235-PL
N
0
35
70
140 Feet

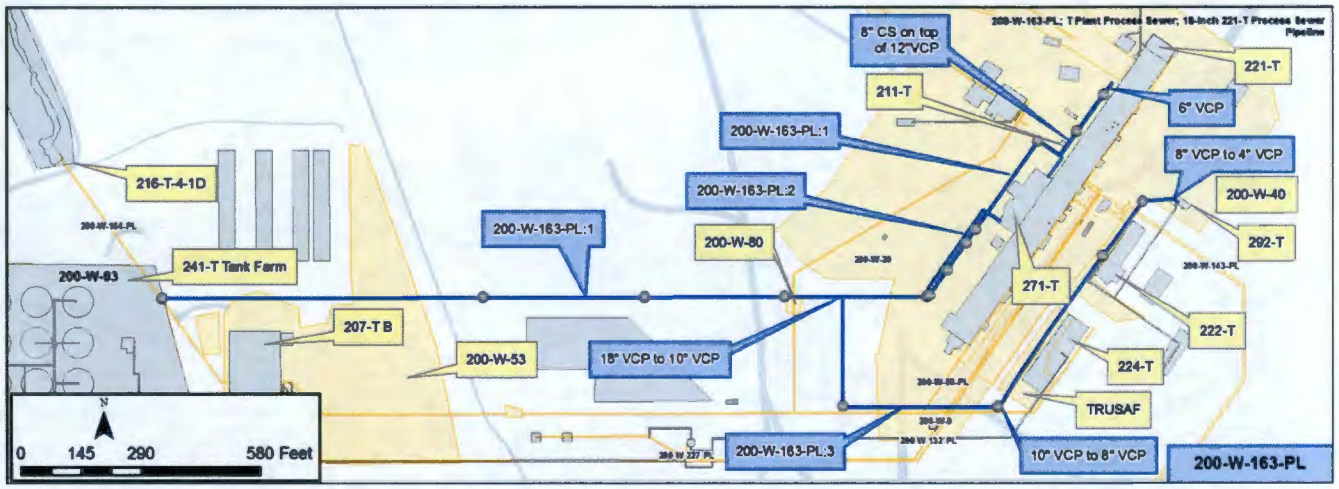
Scoping Summary: 200-W-163-PL

History

The 200-W-163-PL waste site is an inactive underground process sewer line that extends from the T Plant and connects to 200-W-164-PL, which feeds into the 216-T-4 Ditches. Feed lines are divided into three subsites (figure pg. 3).

Based on the operational time frame of the 216-T-4-1D Ditch, 200-W-163-PL:1 and 200-W-163-PL:2 transported steam condensate from the 221-T facility from 1944 to 1970. 221-T's fuel reprocessing effort was deactivated in 1956; decontamination efforts began there in 1957. The north end of 221-T housed various experiments from the 1940s thru 1990s.
200-W-163-PL:3 originates from 292-T, 222-T and 224-T buildings, and its operational use was from 1944 to 1956, when 224-T facility was retired as a chemical processing facility. There was a suspension in site operations from 1957 to 1964, while the 216-T-4 ditch was on standby.

200-W-9 is an unplanned released associated with this site discovered during a nearby excavation in 1994. Contamination was found on an exposed 10 in. VCP that was assumed to be 200-W-163-PL at the time. No further data to support this association was located.



Construction

Total Length: 4,491 ft
Total Calculated Volume: 34,840 gal
Depth: Approx. 9 ft - 10 ft, direct buried

200-W-163-PL:1
- 18 in. Diameter VCP - Length: Approx. 1,875 ft
- 12 in. Diameter VCP - Length: Approx. 765 ft
- 8 in. Diameter CS - Length: Approx. 185 ft
- 6 in. Diameter VCP - Length: Approx. 40 ft
- Subsite Total Length: 2,865 ft
- Subsite Calculated Volume: 29,823 gal

200-W-163-PL:2
- 8 in. Diameter CS - Length: Approx. 300 ft
- Calculated Volume: 783 gal

200-W-163-PL:3
- 10 in. Diameter VCP - Length: Approx. 640 ft
- 8 in. Diameter VCP - Length: Approx. 600 ft
- 4 in. Diameter VCP - Length: Approx. 86 ft
- Subsite Total Length: 1,326 ft
- Subsite Calculated Volume: 4,234 gal

Features of Interest

- 16 manholes, approximate locations indicated with circles
- Multiple Y-branches on north segment of 200-W-163-PL:1. Additional unmapped feeder lines are indicated for the subsite in the vicinity of 271-T (previous office building) and 221-T
- Two unmapped 6 in. VCP wye branch ties lead to 224-T and 221-T building entry points on 200-W-163-PL:3 (QMAP)

Relevant Characterization

- Sample data for the pipeline was not located
- 200-W-9 reading taken from a smear on the exposed pipe revealed contamination up to 3,000 dpm with a 5,500 dpm direct reading

Waste Streams

- Steam condensate and process cooling water
- 221-T - bismuth phosphate plutonium separation facility
- 224-T - facility for purification of dilute plutonium solution using the lanthanum fluoride process
- 292-T - plutonium extraction from N Reactor irradiated fuel rods with possible influence by a later use for PNL experiments that simulated a loss-of-coolant accident in a water cooled reactor core
- 222-T was a process analysis lab, waste stream not located

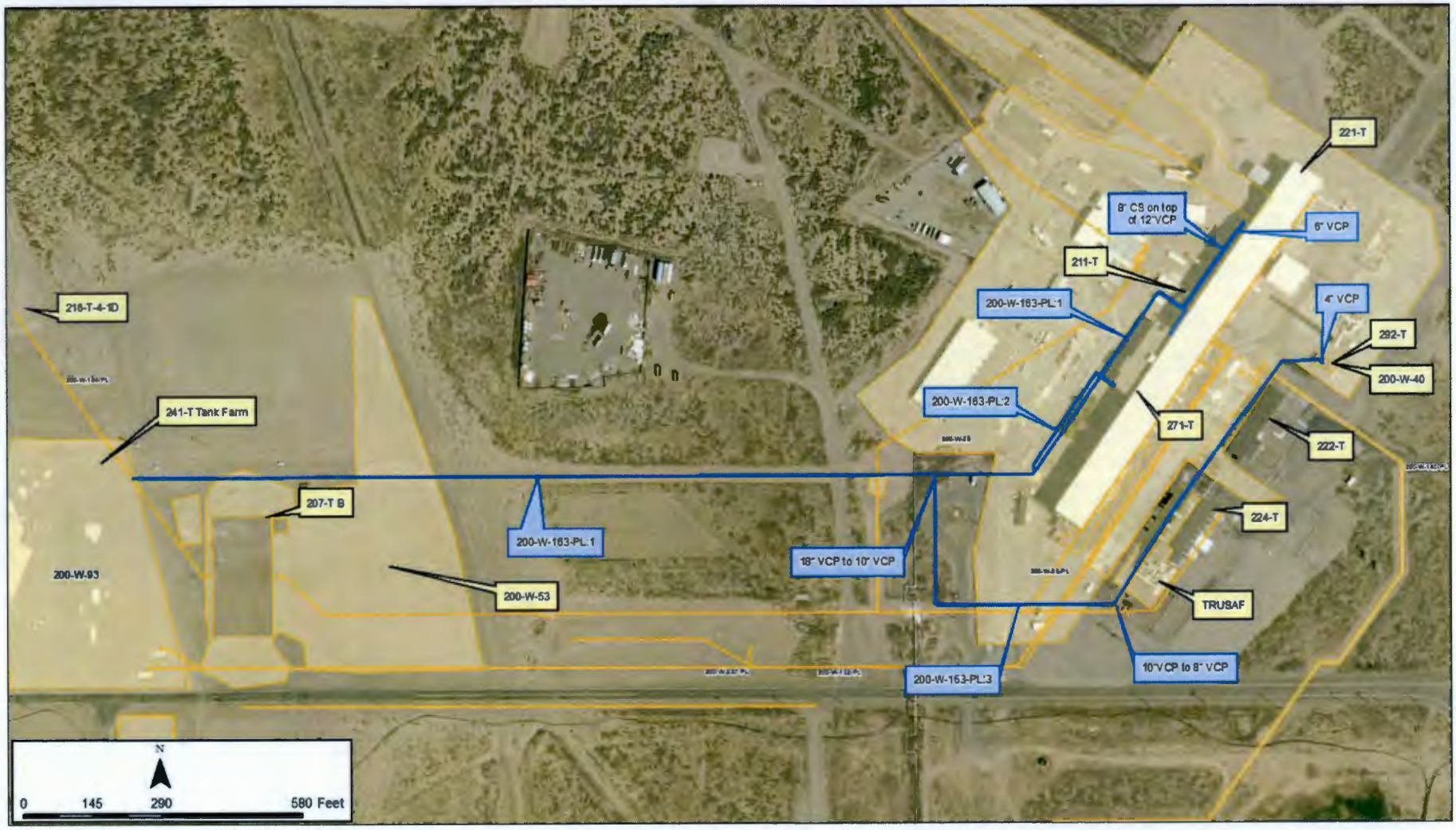
Misc./Other Relevant Information

- 221-T Experiments: 1944-45 hot semi-works studies, tests with ammonnium silico-fluoride. 1964-69 Tests with iodine, radioactive cesium and radioactive cobalt. 1976-90 liquid-metal reactor tests with nonradioactive sodium, lithium, and sodium iodide. Light-water reactor tests with nonradioactive cesium, manganese, zinc, lithium sulfate, iodine, and hydrogen iodide

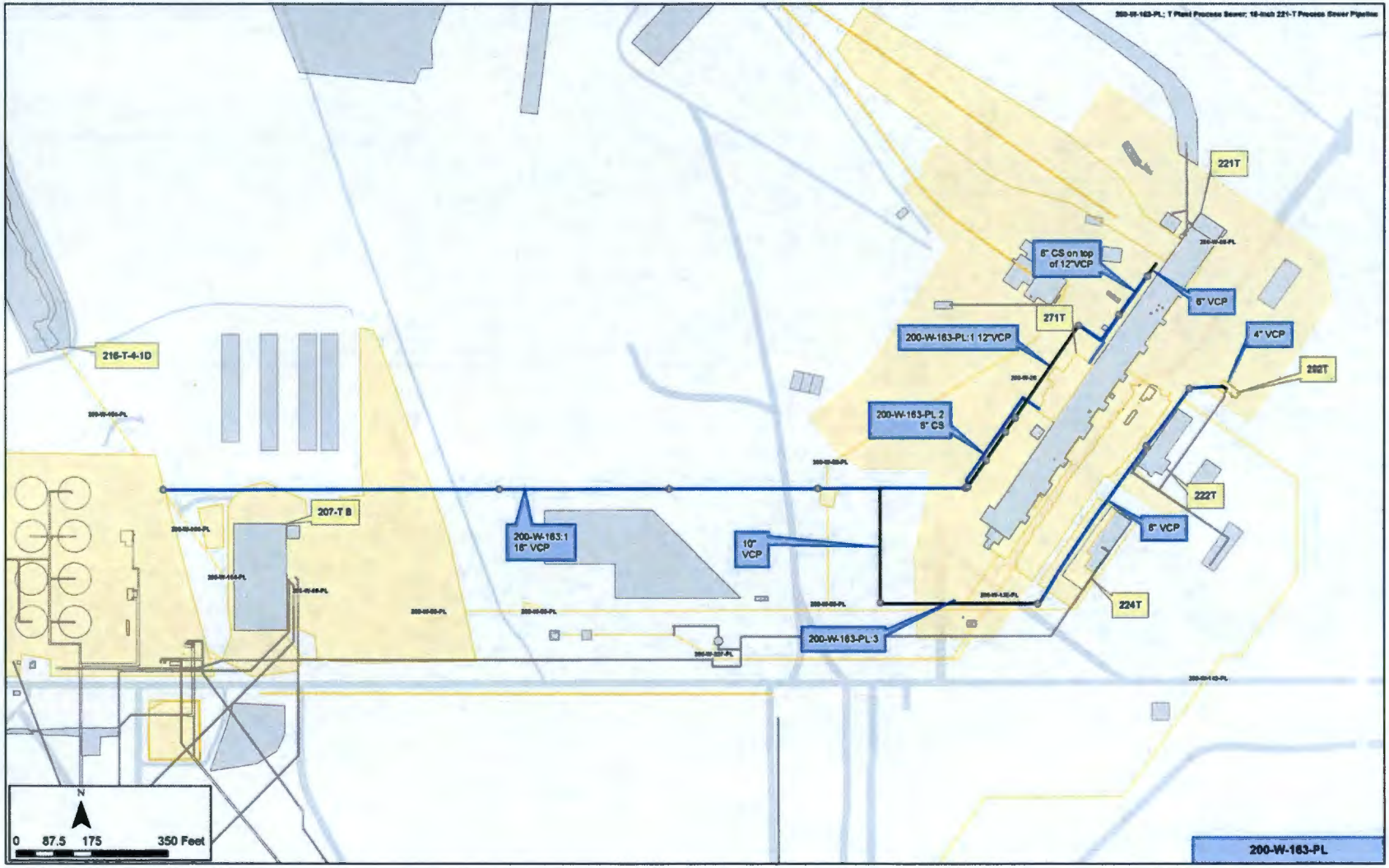
Site Interfaces

Origin/Termination	Site Intersects
• 292-T Building (200-W-40) (origin)	• 200-W-88-PL
• 222-T Building (origin)	• 200-W-227-PL
• 224-T Building (origin)	• 200-W-132-PL
• 221-T Building (origin)	• 200-W-164-PL
• 271-T Building (origin)	• 200-W-143-PL
	• 200-W-20
	• 200-W-53
• 200-W-164-PL (termination)	• 200-W-80
	• 200-W-93

Scoping Summary: 200-W-163-PL



Scoping Summary: 200-W-163-PL



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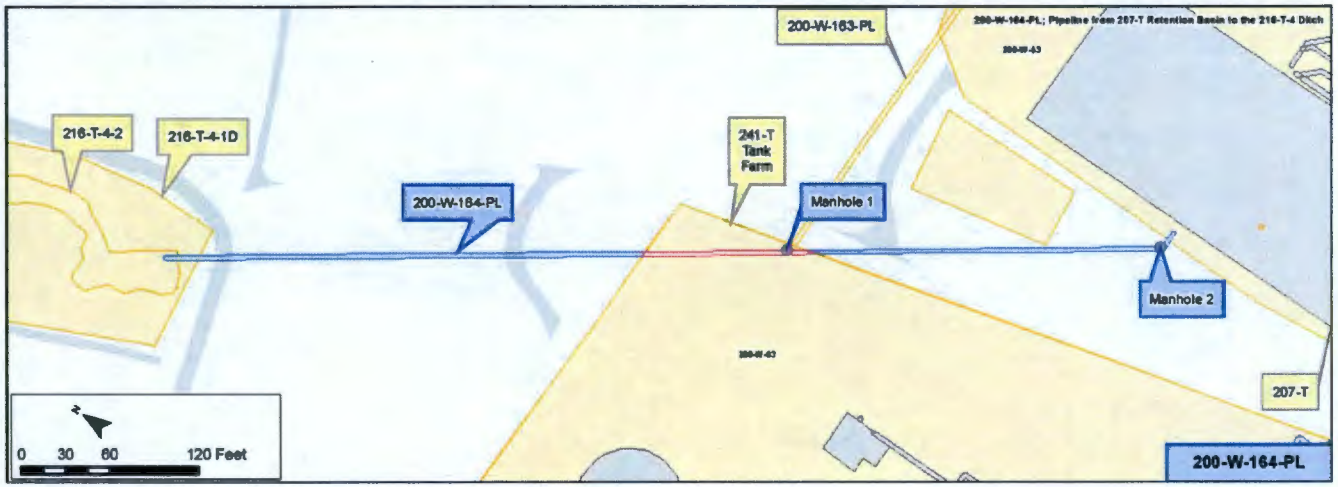
Scoping Summary: 200-W-164-PL

History

The 200-W-164-PL waste site is an inactive underground vitrified clay pipe (VCP) that conveyed wastes from 207-T and 200-W-163-PL by connecting the 207-T Retention Basin to the 216-T-4-1D and 216-T-4-2 Ditches.

It was operated from 1944 to 1995. The pipe originates on the west side of 207-T and extends northwest to the ditches.



Construction

- Length: 674 ft
- Diameter: 24 in.
- Composition: Vitrified Clay Pipe
- Gravity
- Direct Buried
- Depth: 5 ft – 9 ft bgs
- Total Calculated Volume: 15,800 gal

Features of Interest

- Two manholes along the 200-W-164-PL (N 136767.2, E 566899.6 -Manhole 1 and N 136705.0, E 566944.0 - Manhole 2)
- One pipe bend near the 207-T exit point

Relevant Characterization

- No located history of leaks, failures, or characterization data related to the pipeline
- Characterization data is available for the 216-T-4-1D and 216-T-4-2 Ditches
  - A radiological survey in Jan-1978 (RHO-CD-673, Section 2) at the 216-T-4-2 Ditch head end
  - pH measurements from 1984-1985
  - 500 gal of 5% sodium hydroxide solution was released to 207-T; waste discharged via 200-W-164-PL

Waste Streams

- T Plant waste cooling water (1944 to 1995)
  - T-Plant process waste
  - Bismuth phosphate process (BiPO4)
- T Plant decontamination waste (1964 to 1995)
- Waste cooling water from 241-TX-112 to 207-T (1950 to 1976)
- Waste cooling water from 242-T (1950 to 1976)
  - Condensate from tank farm waste evaporation

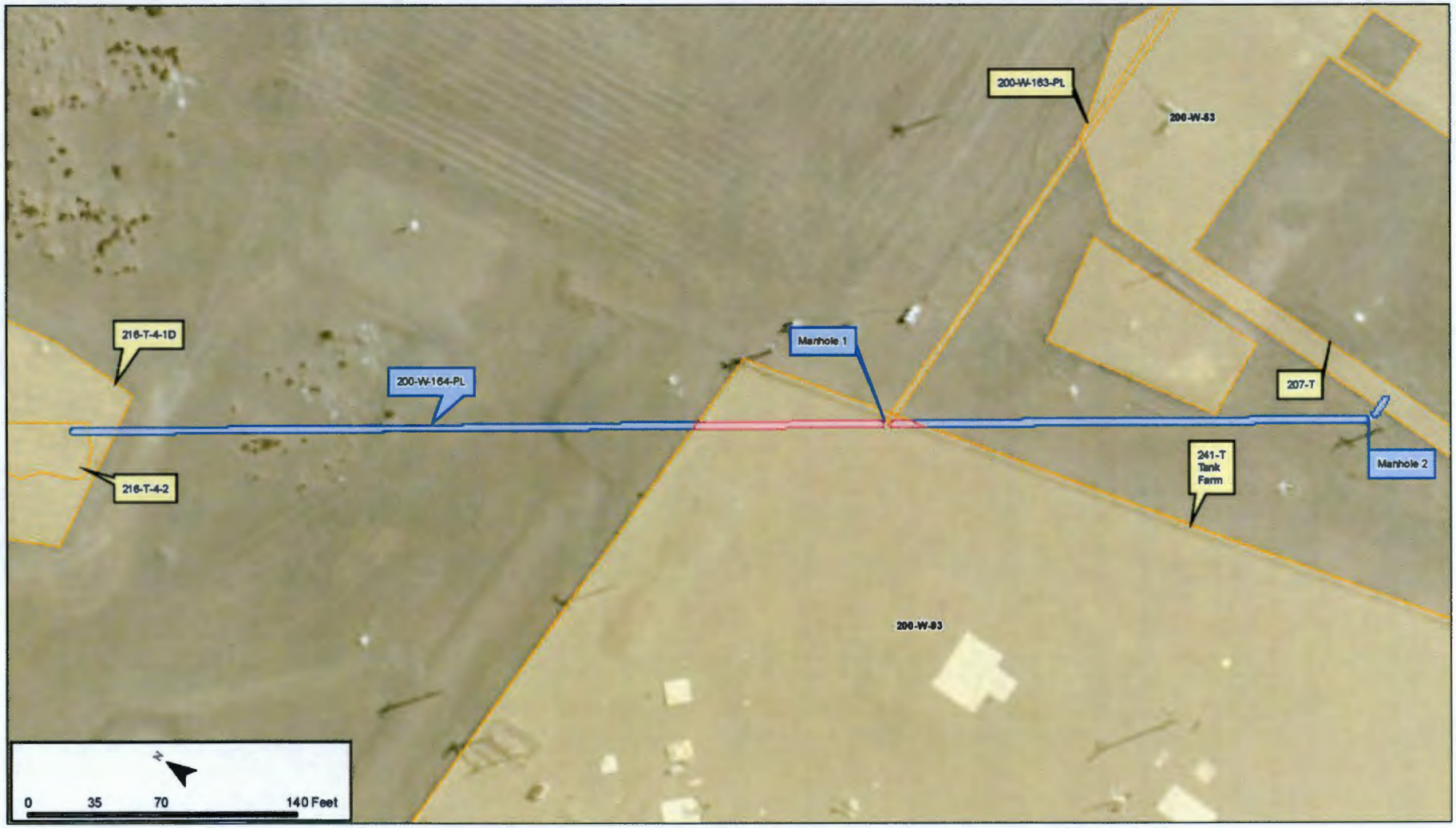
Misc./Other Relevant Information

- None

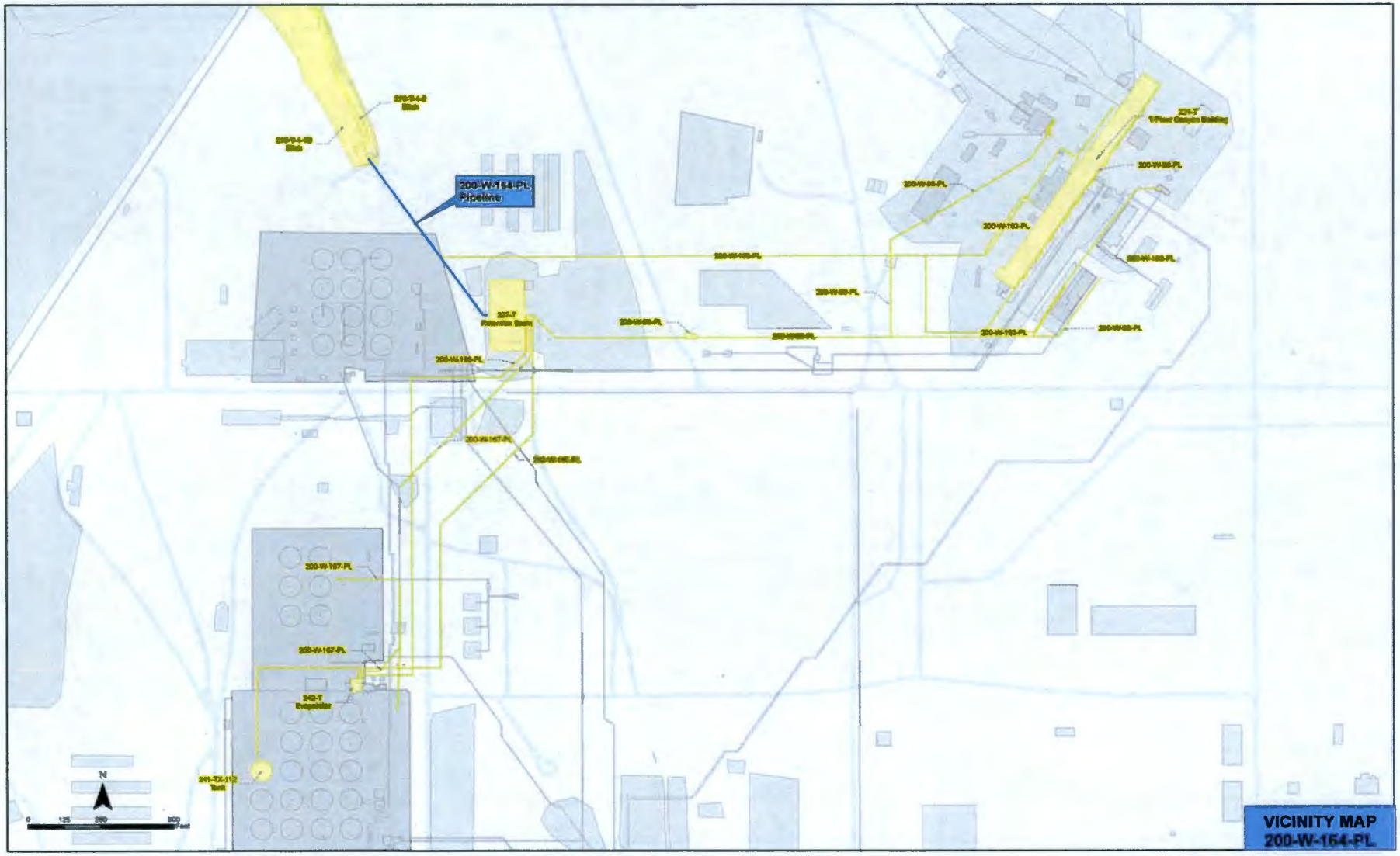
Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	WMA-T
• 207-T Retention Basin	• 200-W-9
• 216-T-4-1D Ditch	
200-SW-1	
• 216-T-4-2 Ditch	
200-IS-1	
• 200-W-163-PL	

Scoping Summary: 200-W-164-PL

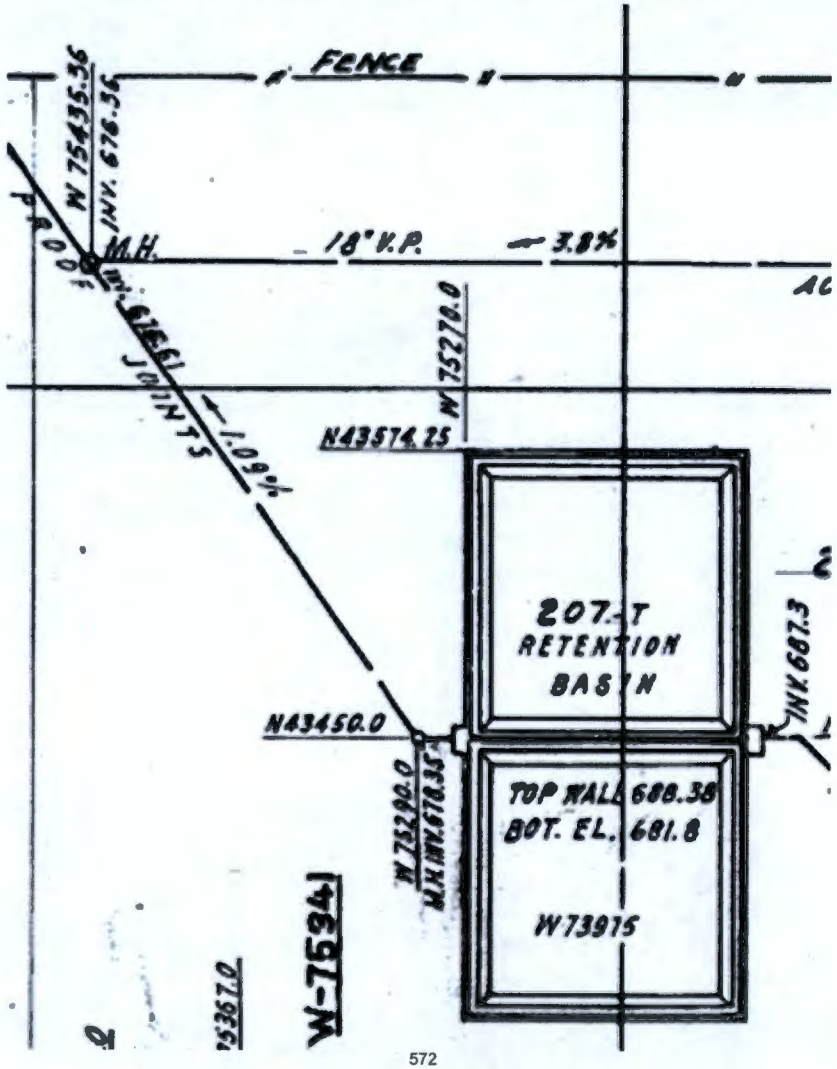


200-W-164-PL Vicinity Map



200-W-164-PL Select Features of Interest

200-W-164-PL manhole information from M-2904-W, Sh 11, Rev 5



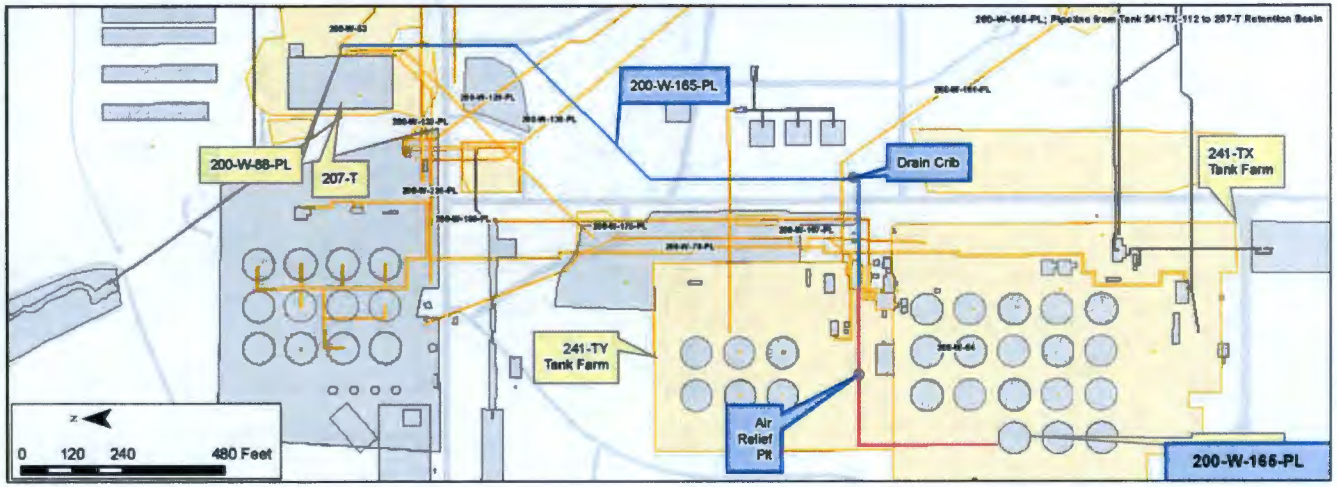
Scoping Summary: 200-W-165-PL

History

The 200-W-165-PL waste site is an inactive underground pipe that transferred cooling water from the 241-TX-112 Tank, valve pit No. 2 to the 200-W-88-PL, which discharged to the 207-T Retention Basin. The pipe crosses under Camden Ave near the 242-T Evaporator, and a portion of the pipeline is within the 241-TX tank farm.

The operational period of 241-TX-112 tank is 1950 to 1976. The project associated with the pipe, HCP-661, 242-T Evaporator Bottoms Cooler Demonstration Facility, installed a water cooled heat exchanger to evaluate the feasibility of further cooling the evaporator bottoms, with the intention to increase the evaporator boil off rate and efficiency of salt concentration.

The project installed a second valve pit at 241-TX-112 in 1972. 200-W-165-PL originates from the Valve Pit No. 2. Therefore, the operational period for 200-W-165-PL begins with the 1972 installation and ends no later than the 241-TX-112 tank operational end date (1976). 200-W-165-PL is effectively isolated from 207-T as the basin was backfilled in 1996 and was isolated at the 241-TX-112 valve pit #2.



Construction

- Length: 2,320 ft
- Diameter: 6 in.
- Composition: Cast iron
- Pressurized
- Encasement Specifications: None
- Direct buried
- Depth: 3 ft - 4 ft bgs
- Calculated volume: 3,408 gal

Features of Interest

- Flange and reducer connecting 4 in. line to 6 in.
- Drain crib
- Air relief pit
- 2 flanges upstream of 200-W-88-PL connection
- Connection of 6 in. Cast Iron (200-W-165-PL) to the 24 in. VCP (200-W-88-PL) at 207-T inlet
- 5 elbows and 2 bends

Relevant Characterization

- No records of a release from 200-W-165-PL were found

Waste Streams

- Waste cooling water associated with the 242-T evaporator bottom cooler was transported through this pipeline
  - Between 1972 and 1976, transported from 241-TX-112
  - Waste cooling water associated with TSlgCk (saltcake from last 242-T operations)
  - TSlgCk should include Z waste from Z Plant, but is listed separately to ensure inclusion

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

WMA TX/TY
- 241-TX-112 (origin)

200-WA-1
- 207-T (termination)

200-IS-1
- 200-W-88-PL (origin)

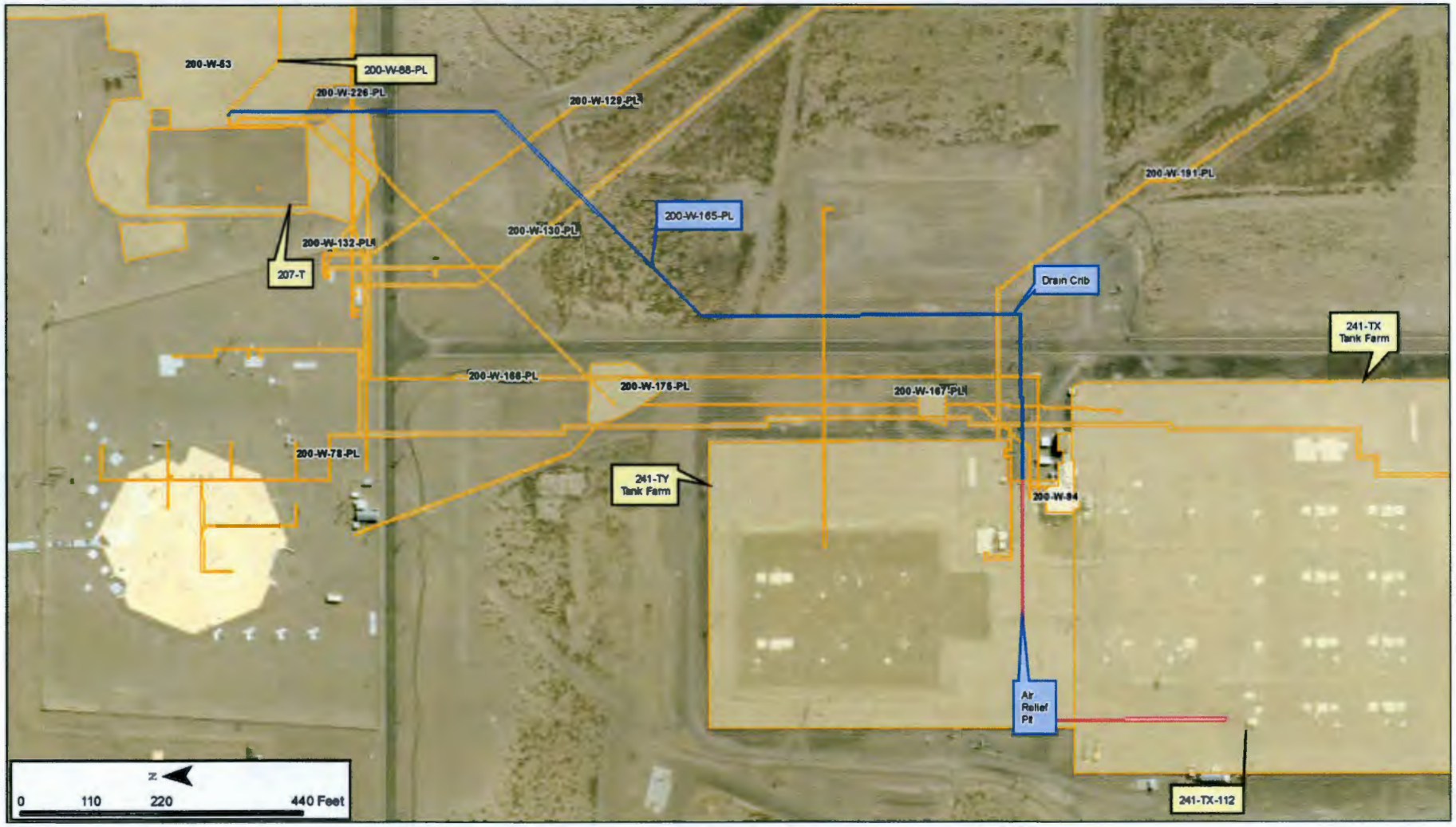
Site Intersects

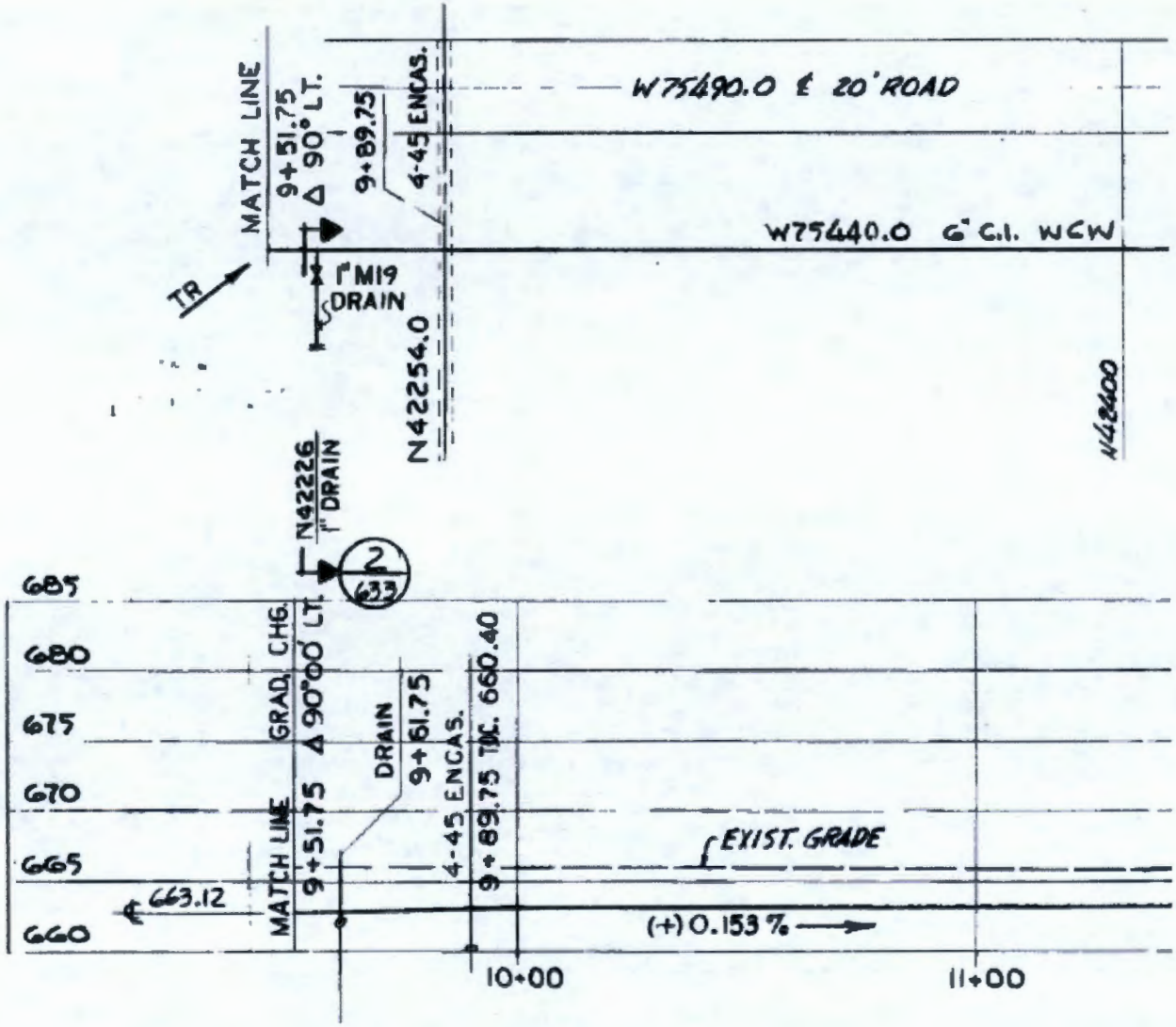
WMA TX/TY
- 200-W-94 (Contaminated Soil at 241-TX/TY Tank Farm)

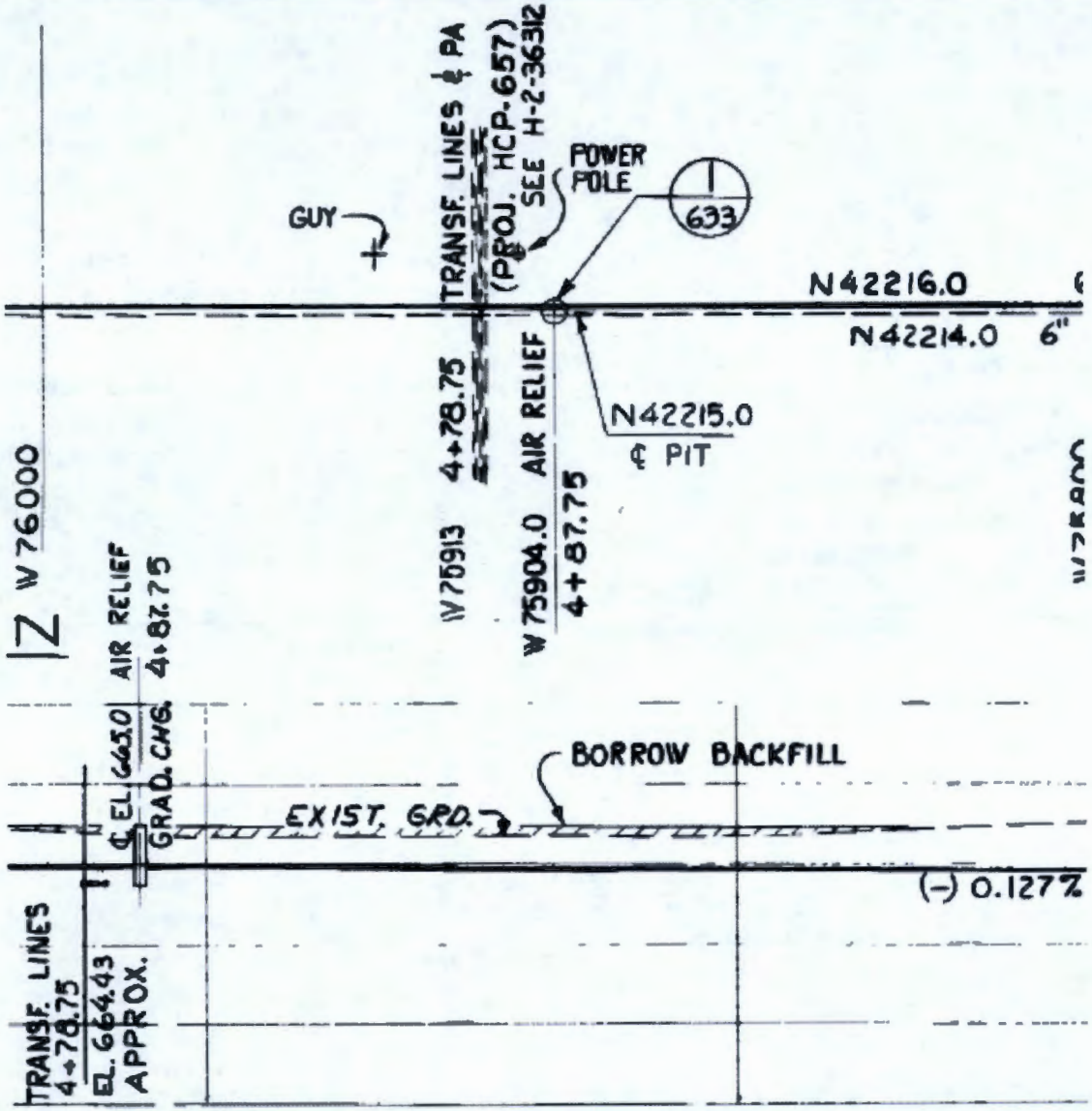
200-WA-1
- 200-W-53 (Contaminated Soil East of 207-T Retention Basin)
- UPR-200-W-63 (Road contamination possibly associated with 200-W-90)

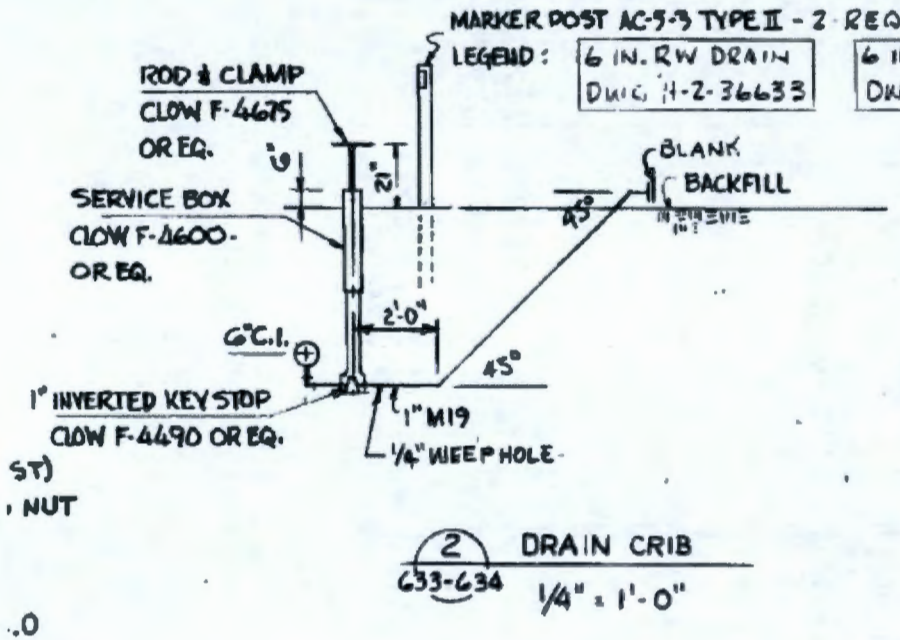
200-IS-1
- 200-W-78-PL
- 200-W-129-PL
- 200-W-130-PL
- 200-W-132-PL
- 200-W-166-PL
- 200-W-167-PL
- 200-W-175-PL
- 200-W-191-PL

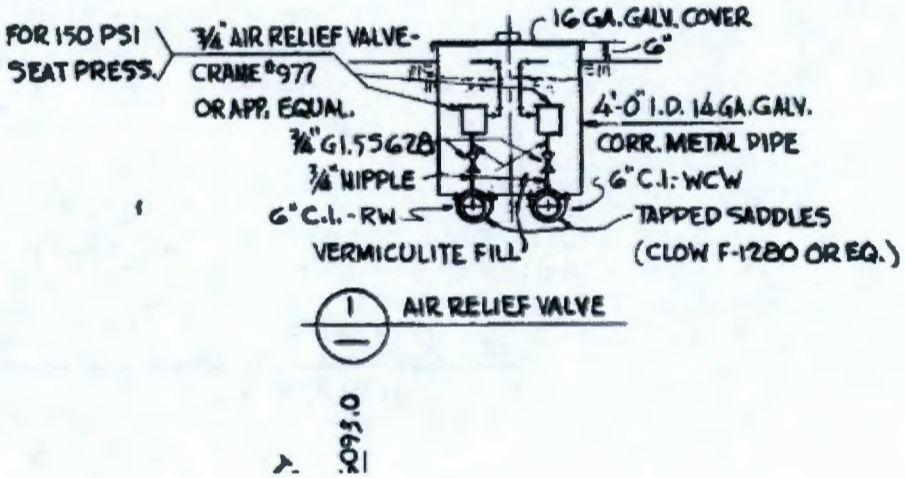
Scoping Summary: 200-W-165-PL

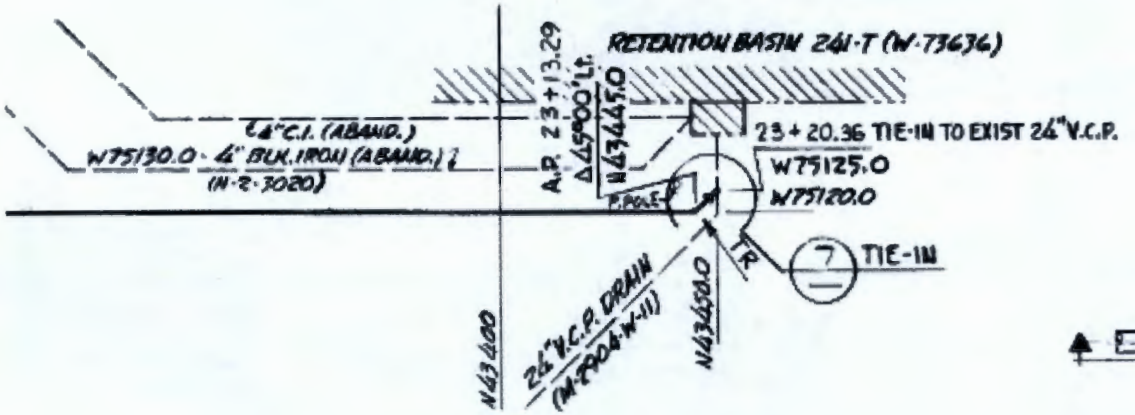


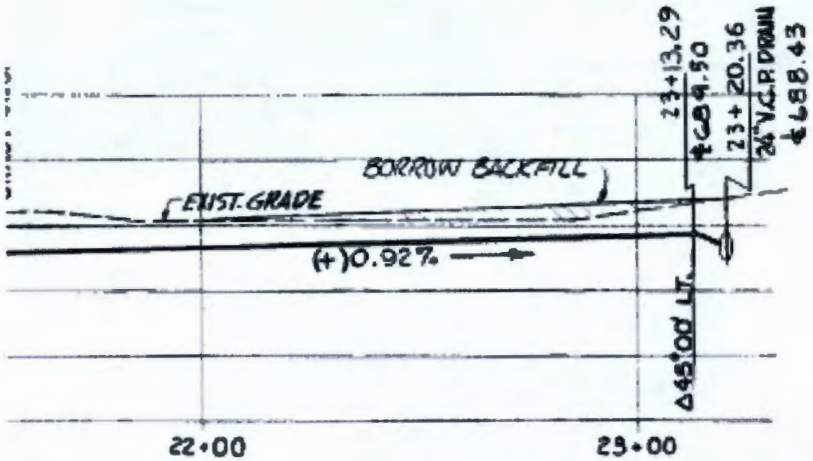

MATCH LINE
9+51.75
Δ 90° LT.
9+89.75
4-45 ENCAS.
W75490.0 & 20' ROAD
W75440.0 6" C.I. WCW
TR
1" M19
DRAIN
N42254.0
N42226
1" DRAIN
2
633
N42400
685
680
675
670
665
660
GRAD. CHG.
Δ 90°00' LT.
DRAIN
9+61.75
4-45 ENCAS.
9+89.75 TOC. 660.40
MATCH LINE
9+51.75
EXIST. GRADE
663.12
(+) 0.153 %
10+00
11+00

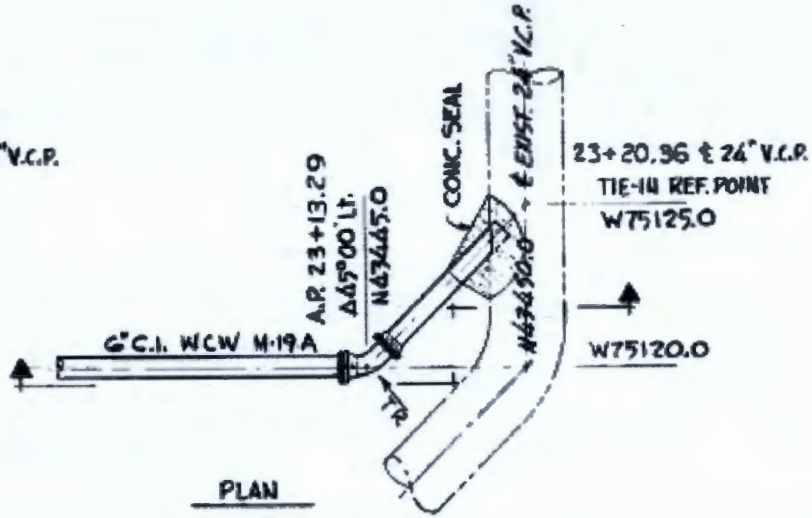

W 76000
TRANSF. LINES 4+78.75
EL. 664.43 APPROX.
℄ EL. 665.0
AIR RELIEF 4+87.75
GRAD. CHG.
W 75913
4+78.75
TRANSF. LINES & PA
(PROJ. HCP-657)
SEE H-2-36312
W 75904.0
AIR RELIEF
4+87.75
GUY
POWER POLE
633
N42216.0
N42214.0
6"
N42215.0
℄ PIT
BORROW BACKFILL
EXIST. GRD.
(-) 0.127%

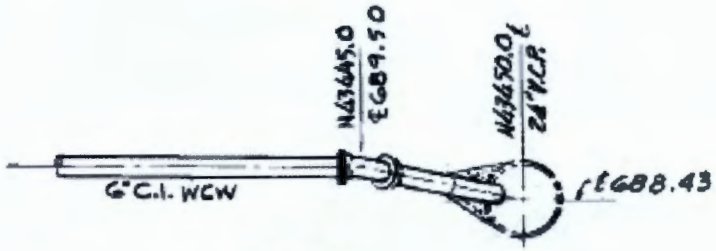

MARKER POST AC-5-3 TYPE II - 2 REQ'D
LEGEND:
6 IN. RW DRAIN
DWG. H-2-36633
6 IN. WCW DRAIN
DWG. H-2-36634
ROD & CLAMP
CLOW F-4675
OR EQ.
SERVICE BOX
CLOW F-4600
OR EQ.
BLANK
BACKFILL
45°
2'-0"
6"C.I.
45°
1" INVERTED KEY STOP
CLOW F-4490 OR EQ.
1" M19
1/4" WEEP HOLE
2
633-634
DRAIN CRIB
1/4" = 1'-0"


FOR 150 PSI
SEAT PRESS.
3/4" AIR RELIEF VALVE-
CRANE #977
OR APP. EQUAL.
3/4" G1.55628
3/4" NIPPLE
6" C.I.-RW
VERMICULITE FILL
16 GA. GALV. COVER
6"
4'-0" I.D. 16 GA. GALV.
CORR. METAL PIPE
6" C.I.-WCW
TAPPED SADDLES
(CLOW F-1280 OR EQ.)
1
AIR RELIEF VALVE









7 TIE-IN DETAIL
1/4" = 1'-0"

Scoping Summary: 200-W-166-PL

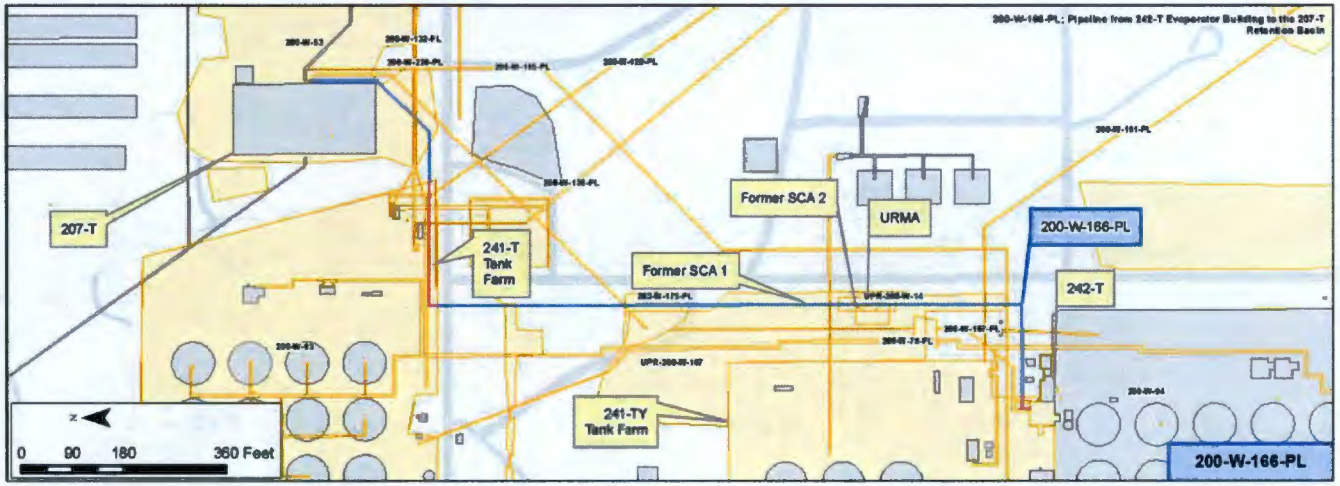
History

The 200-W-166-PL waste site is an inactive underground pipe that was used to carried steam condensate and cooling water from the 242-T Evaporator to the 207-T Retention Basin.

It was constructed in 1950 and in service until 1953, when 200-W-167-PL functionally replaced 200-W-166-PL.

In 1952, a release attributed to a leak in the pipe between 242-T and 207-T caused ground contamination above 200-W-166-PL (UPR-200-W-14). The location of the release was not well documented and its location is an estimate.

200-W-166-PL passes beneath several stabilized surface areas that are posted as underground radioactive materials areas (URMAs). Two former soil contamination areas (SCAs) located east of the 241-TY Tank Farm are associated with 200-W-166-PL. The areas were previously stabilized with bio-barrier and gravel and are currently posted as URMAs. Another URMA is co-located with 200-W-166-PL, UPR-200-W-14, and the southernmost former SCA/current URMA (SCA 2).



Construction

- Length: 1,798 ft
- Diameter: 4 in.
- Composition: Cast Iron
- Pressurized
- Direct Buried
- Encasement Specifications: Partially corrugated cover and concrete base
- Depth: 5 ft – 8 ft bgs
- Calculated Volume: 1,168 gal

Features of Interest

- 5 pipe bends
- Road encasement
- Pipe encasement at 242-T exit
- 2 former SCAs/current URMAs
- 1 URMA

Relevant Characterization

- Two former SCAs/current URMAs and an unplanned release are associated with 200-W-166-PL
  - Former SCA 1 was identified in approximately 1998 and comprised "ant activity that was transferring contamination above ground"
  - Former SCA 2 was identified in 2001 and comprised areas of soil and gravel contamination
- 200-W-166-PL also passes beneath a third URMA that was established in Aug-2008

Waste Streams

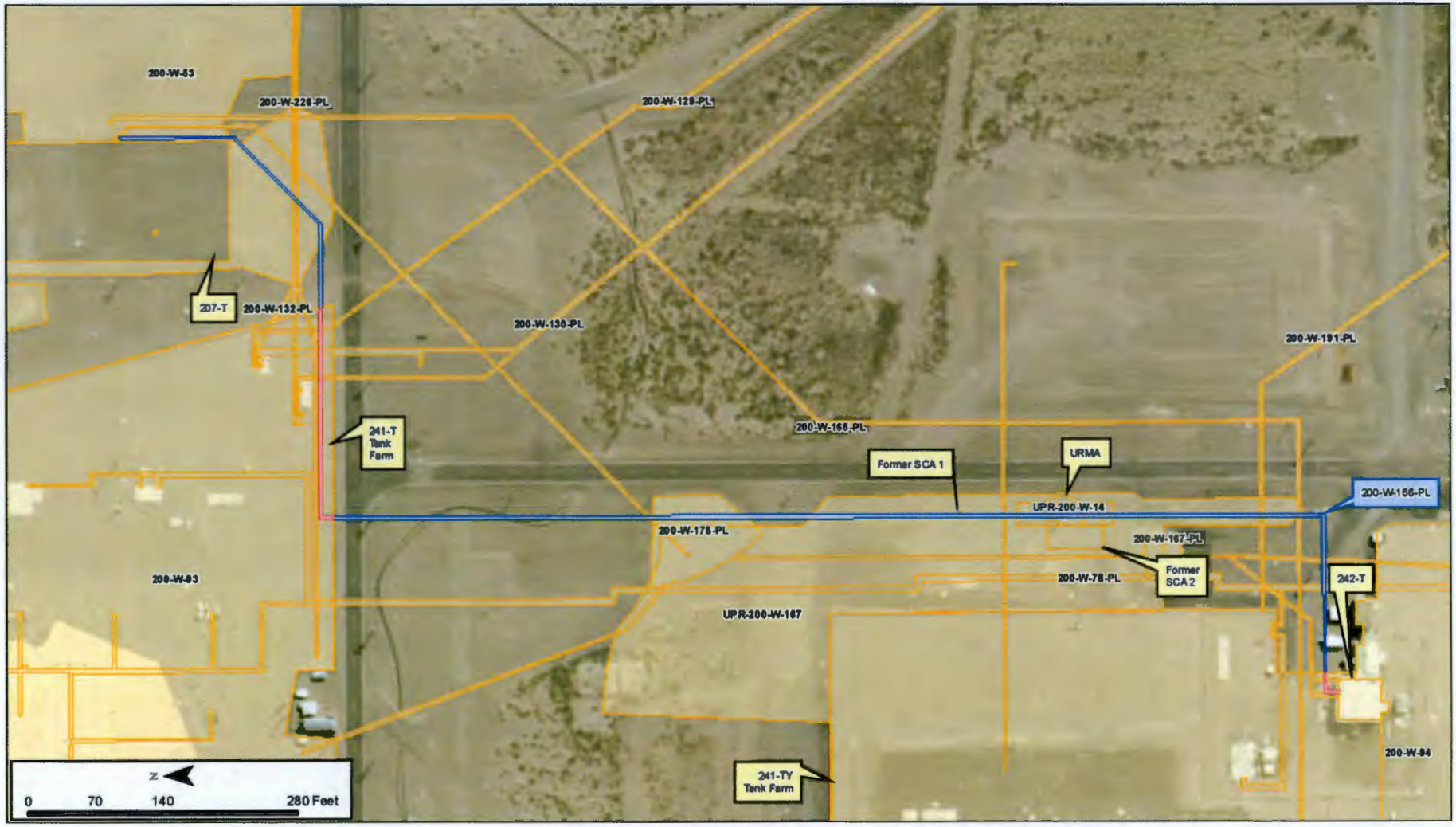
- Waste from 242-T evaporator operations in this time frame is identified as BT-SltCk
  - Byproduct cake solution and waste solution from first cycle decontamination bismuth-phosphate ($BiPO_4$)
    - Approximately 10% of original fission activity
    - Approximately 1% plutonium in solution with phosphates, nitrates, and sulfates

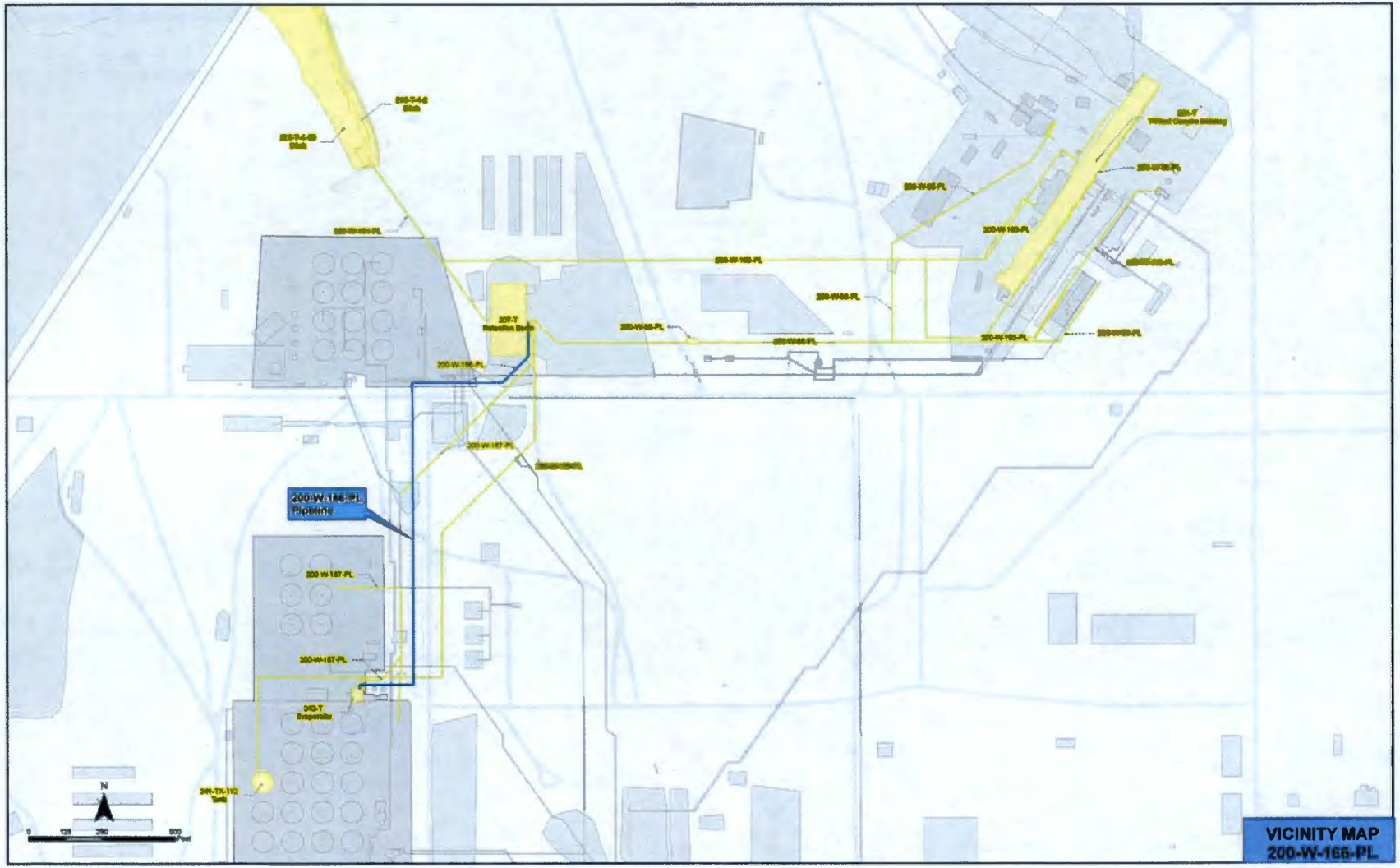
Misc./Other Relevant Information

200-W-166-PL crosses UPR-200-W-167, which is a former SCA/current URMA associated with 200-W-78-PL in WIDS. The SCA was identified in 1985 and measured 8,361 m-sq. (90,000 ft-sq.). The contamination was located to the north and east of 241-TY Tank Farm. Surface contamination was scraped and disposed in 1986 and all markings and postings were removed.

Site Interfaces

Origin/Termination	Site Intersects
WMA TX/TY	200-IS-1
• 242-T Evaporator	• 200-W-78-PL
	• 200-W-79-PL
200-WA-1	• 200-W-129-PL
• 207-T Retention Basin	• 200-W-130-PL
	• 200-W-132-PL
	• 200-W-165-PL
	• 200-W-167-PL
	• 200-W-175-PL
	• 200-W-191-PL
	• 200-W-226-PL
	• UPR-200-W-167
	WMA TX/TY
	• 200-W-94
	WMA T
	• 200-W-93
	200-WA-1
	• 200-W-53
	• UPR-200-W-14


200-W-83
200-W-228-PL
200-W-129-PL
207-T
200-W-132-PL
200-W-130-PL
200-W-191-PL
241-T
Tank
Farm
200-W-165-PL
Former SCA 1
URMA
UPR-200-W-14
200-W-166-PL
200-W-175-PL
200-W-167-PL
200-W-78-PL
Former
SCA 2
242-T
200-W-83
UPR-200-W-167
200-W-84
241-TY
Tank Farm
N
0
70
140
280 Feet


200-W-166-PL
Pipeline
N
VICINITY MAP
200-W-166-PL

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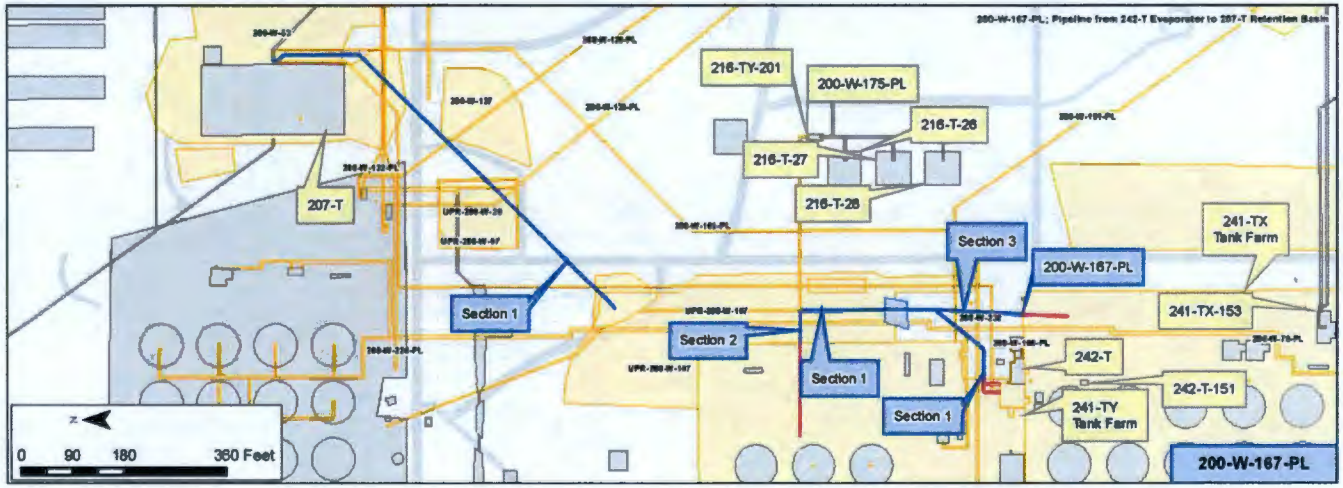
Scoping Summary: 200-W-167-PL

History

The 200-W-167-PL waste site consists of multiple sewer segments formerly used to transport cooling water to the 207-T Retention Basin, supernatant waste to 216-T-26 Crib, and various process and condensate wastes to 216-T-19 Crib and Tile Field. 200-W-167-PL includes three separate sections:

- Section 1 is a Carbon Steel line that conveyed cooling water from the 242-T Evaporator to the 207-T Retention Basin. The pipes were installed in 1953, and remained active until 1955, when Section 1 was cut and capped at two locations and 325 ft of the section was incorporated into 200-W-175-PL.
- Section 2 is a Carbon Steel line that transferred supernatant waste from 241-TY tanks to the 216-W-201 Flush Tank and 216-T-26 Crib. It was active and isolated in 1955. The west portion is Section 2 and the east portion was incorporated into 200-W-175-PL (see FOI).
- Section 3 is assumed to be V610 which ran from 242-T to the 241-TX-153 Diversion Box. It likely transferred waste from 242-T to 241-TX-153 which fed the 216-T-19 Crib and drain field. Assuming Section 3 conveyed waste to 216-T-19, the operational period is that of 216-T-19 Crib, 1951 to 1980. It is direct buried, but enters an encasement of five lines south of the site boundary. The line also extends north and may have connected to Section 1.



Construction

- Length: 1,691 ft
  - Section 1: 1,240 ft
  - Section 2: 215 ft
  - Section 3: 236 ft
- Diameter: Varied, ranging from 1.5 in. – 4 in.
- Composition: Carbon Steel
- Pressurized, with cathodic protection
- Direct Buried
- Encasement Specifications: Partially, in corrugated concrete
- Depth: 1 ft – 8 ft bgs
- Total Calculated Volume: 951 gal

Features of Interest

- 6 pipe bends
- 3 road crossing encasements
- 3 locations where pipe is isolated to construct 200-W-175-PL
- A former soil contamination area (SCA)/current URMA associated with the connection point of 200-W-175-PL and section 1 was identified in 2000
  - The SCA is associated with 200-W-175-PL in WIDS but is also potentially associated with section 1

Relevant Characterization

- Section 1: A former SCA/current URMA was identified in 2000, and found an "abundance of deep-rooted vegetation"
  - The area was stabilized (bio-barrier and gravel)
- Section 2: Geophysical logging results for borehole C3102 in 216-T-26 (Conducted in 2001)
  - Cs-137; Eu-154; Co-60; Am-241; Co-60; Tc-99; Sr-90; H-3; Eu, Pu, and U isotopes; metals and anions
- Section 3 No characterization information was identified

Waste Streams

- Section 1 carried steam condensate and cooling water from 242-T
  - 242-T operated as a batch evaporator and received byproduct cake solution and BiPO4 process waste
  - Waste stream is identified as TB-SltCK
- Section 2 carried TBP scavenging supernatant waste
  - Identified as Tank Farm and Basin Wastes – Scavenged Waste
- Section 3 is assumed to have carried process and condensate waste

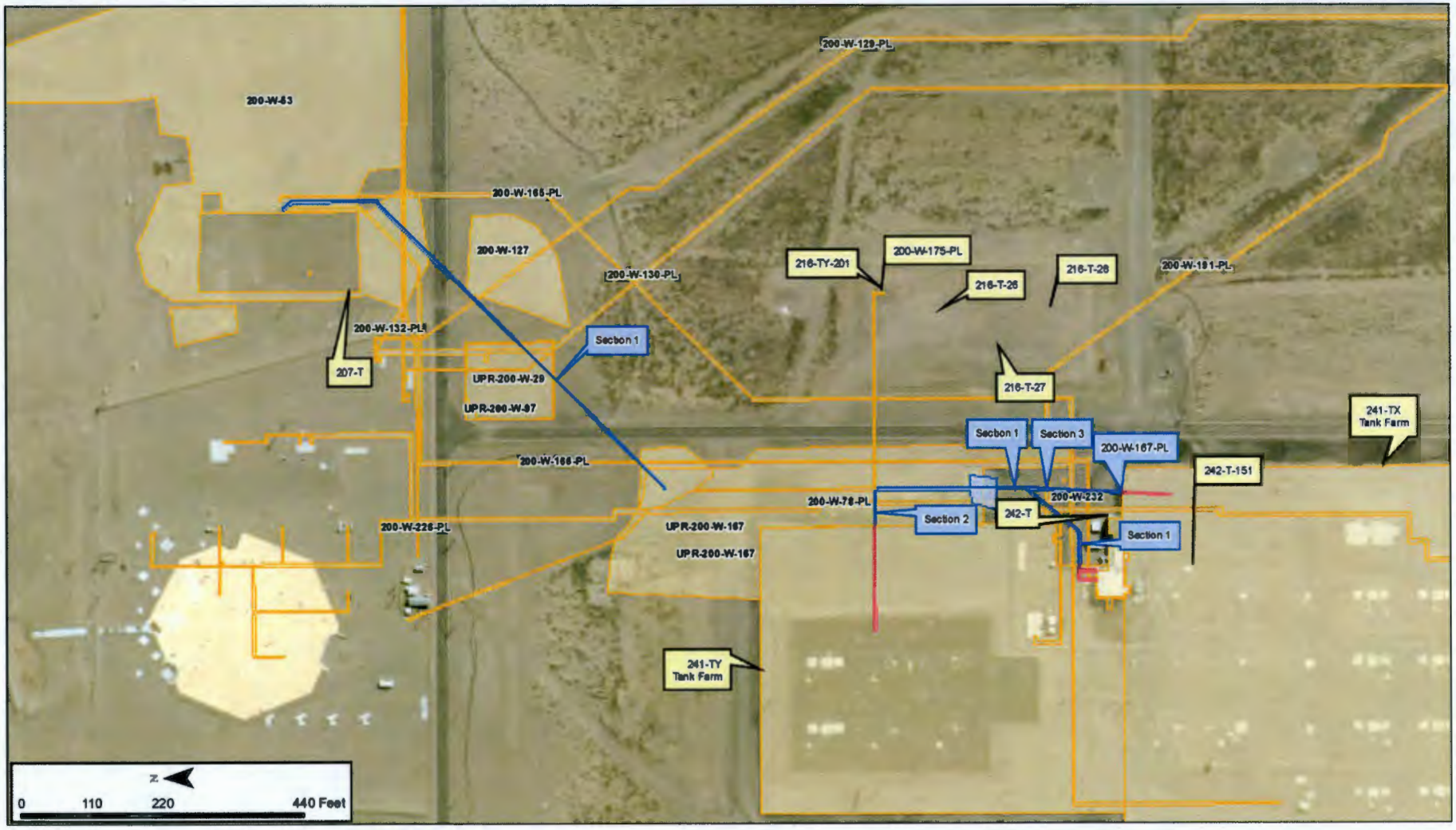
Misc./Other Relevant Information

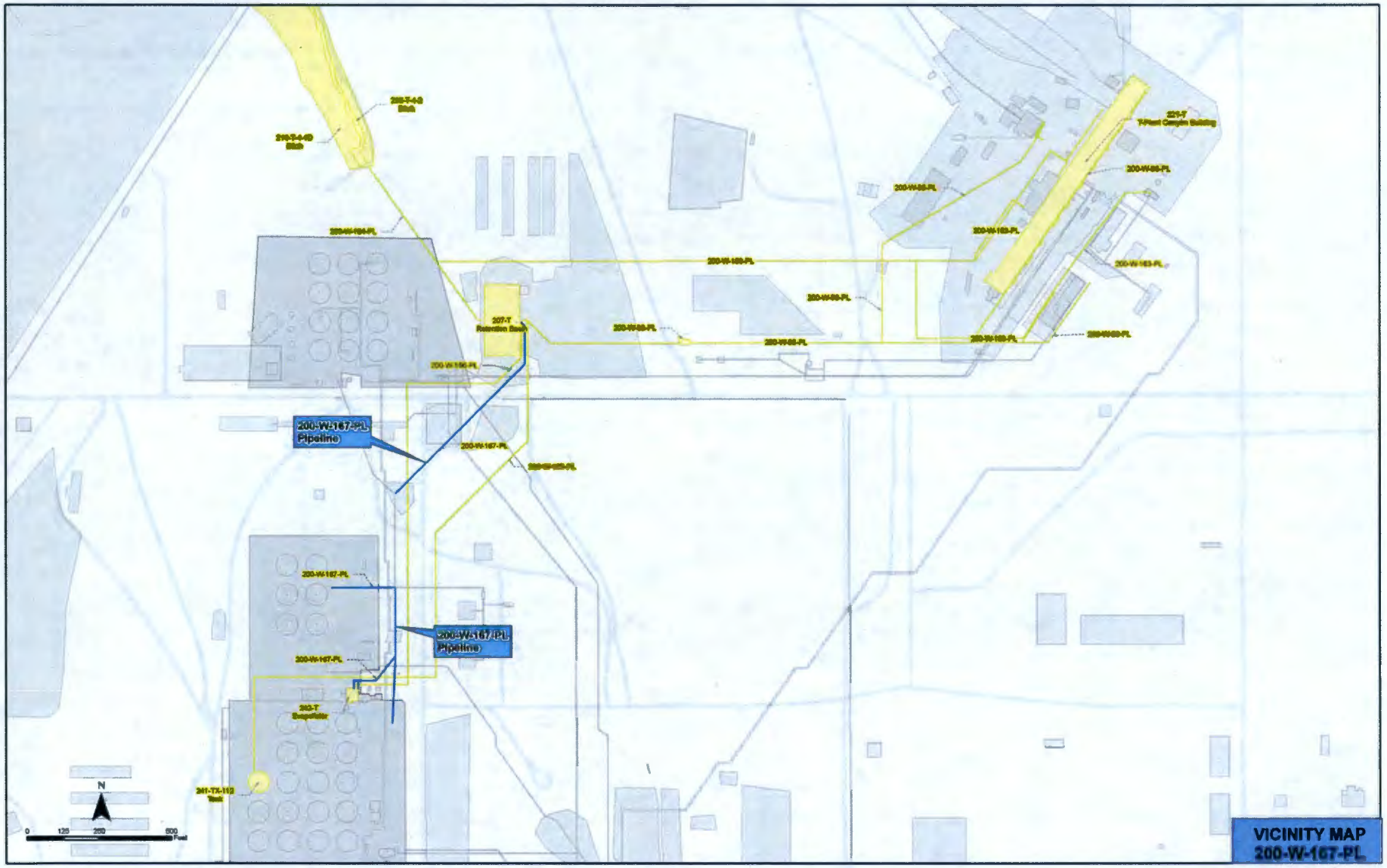
- None

Site Interfaces

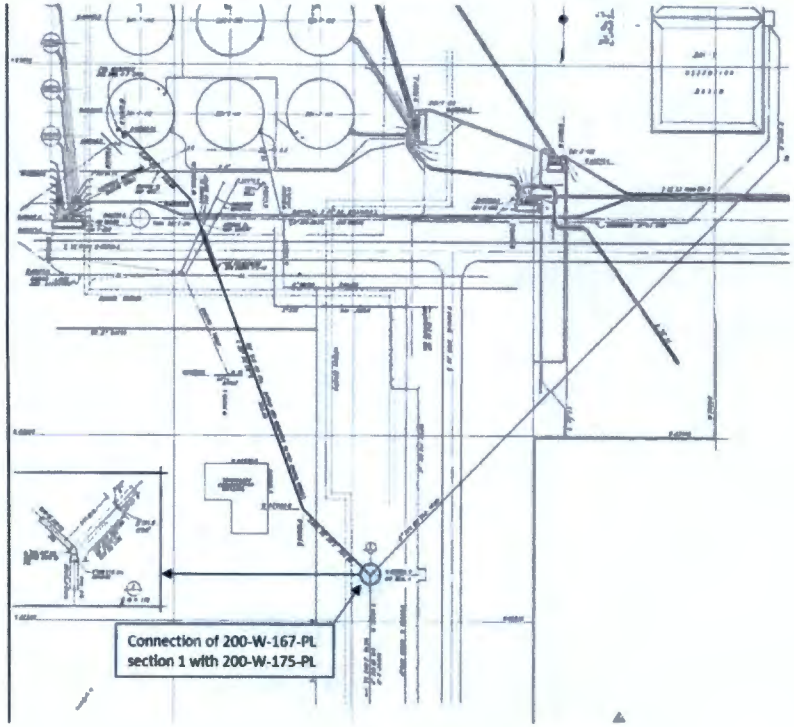
Origin/Termination	Site Intersects
WMA TX/TY	WMA TX/TY
• 242-T Evaporator	• 200-W-94
200-WA-1	200-WA-1
• 207-T Retention Basin	• 200-W-53
	• UPR-200-W-14
200-IS-1	
• 200-W-175-PL	Not assigned
216-TY-201 Flush Tank"	• 200-W-127
	• 200-W-232
	200-IS-1
	• 200-W-78-PL
	• 200-W-129-PL
	• 200-W-130-PL
	• 200-W-132-PL
	• 200-W-165-PL
	• 200-W-166-PL
	• 200-W-191-PL
	• 200-W-226-PL
	• UPR-200-W-167
	• UPR-200-W-29

Scoping Summary: 200-W-167-PL

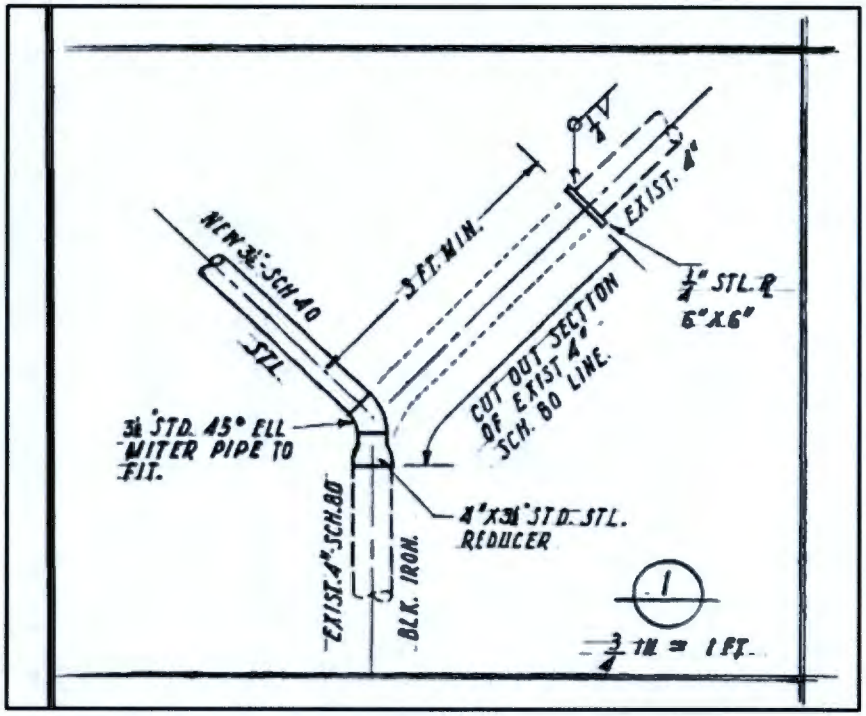



200-W-167-PL Pipeline
200-W-167-PL Pipeline
207-T Retention Basin
221-T
200-W-163-PL
200-W-167-PL
N
0 125 250 500 Feet
VICINITY MAP
200-W-167-PL

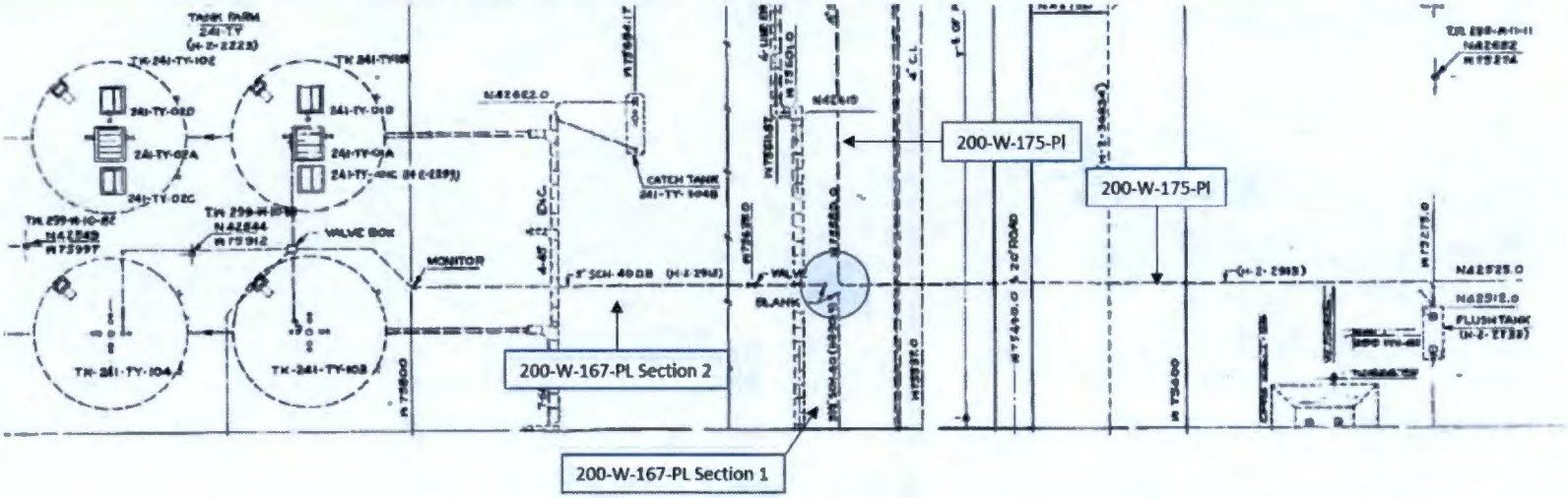
H-2-3020 Sh 1, Rev 2. Connection of new 3-1/2", 200-W-175-PL section 3 with existing 4", 200-W-167-PL section 1. Isolation of 200-W-167-PL section 1 in Detail 1 below.



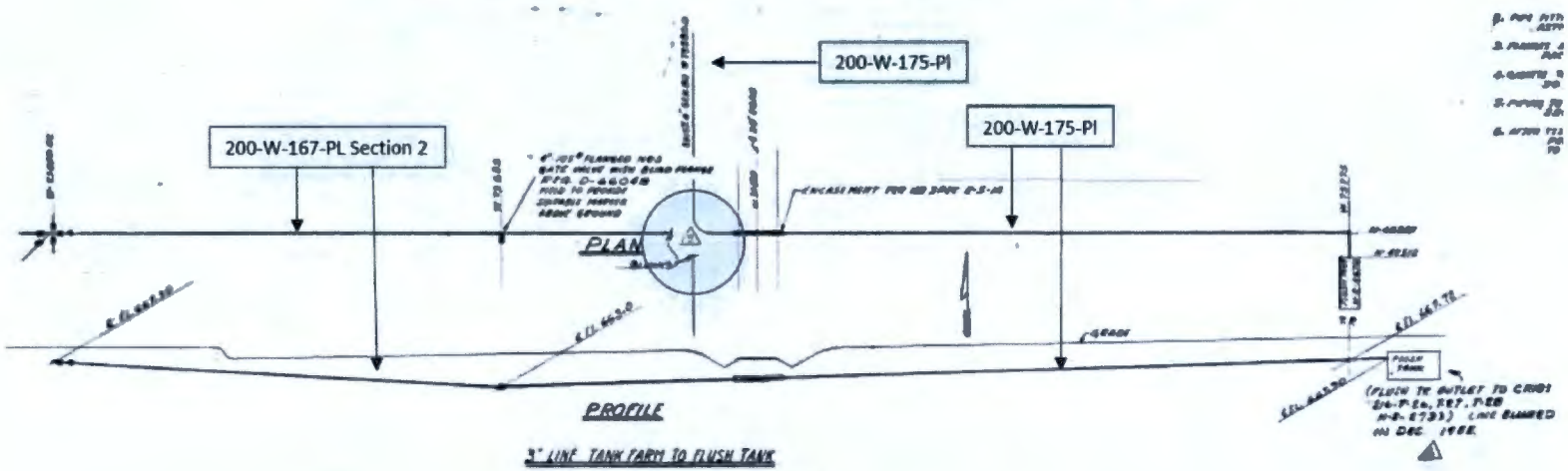
H-2-3020, Sh 1, Rev 2. Detail 1 showing 200-W-167-PL section 1 connection with 200-W-175-PL and isolation of 200-W-167-PL



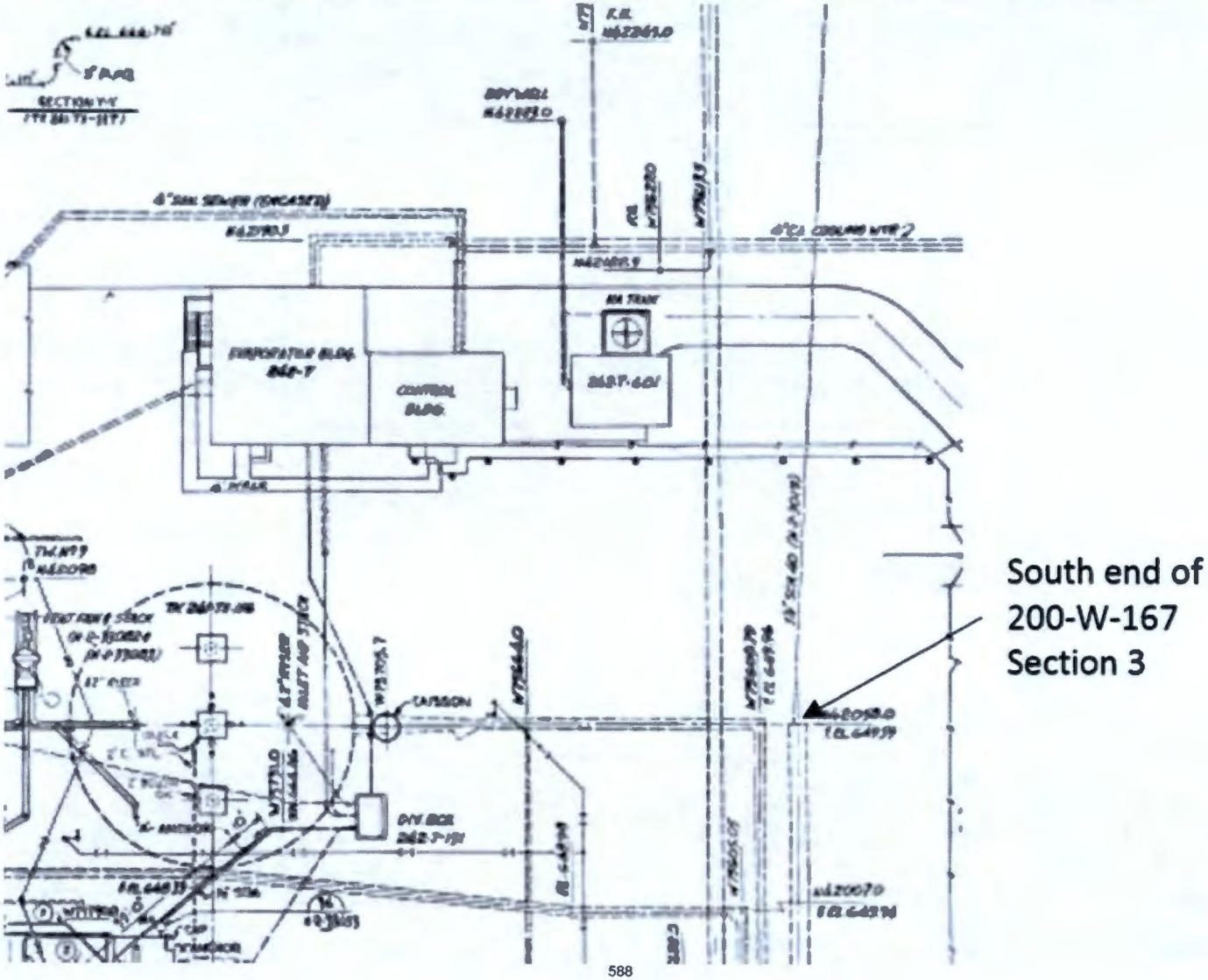
H-2-44511, Sh 126, Rev 5. Isolation of 200-W-167-PL Section 1 (4-in) and Section 2 (3-in) east of 241-TY to construct 200-W-175-PL.



H-2-2913, Sheet 1, Rev 6. Profile of previous line from 241-TY tanks to 216-TY-201.
Plan view shows isolation of 200-W-167-PL Section 2 (3-in) to construct 200-W-175-PL.



H-2-33451, Sh 1, Rev 5.South end of 200-W-167-PL section 3. Section 3 continues south into a pipe encasement to 241-TX-153.



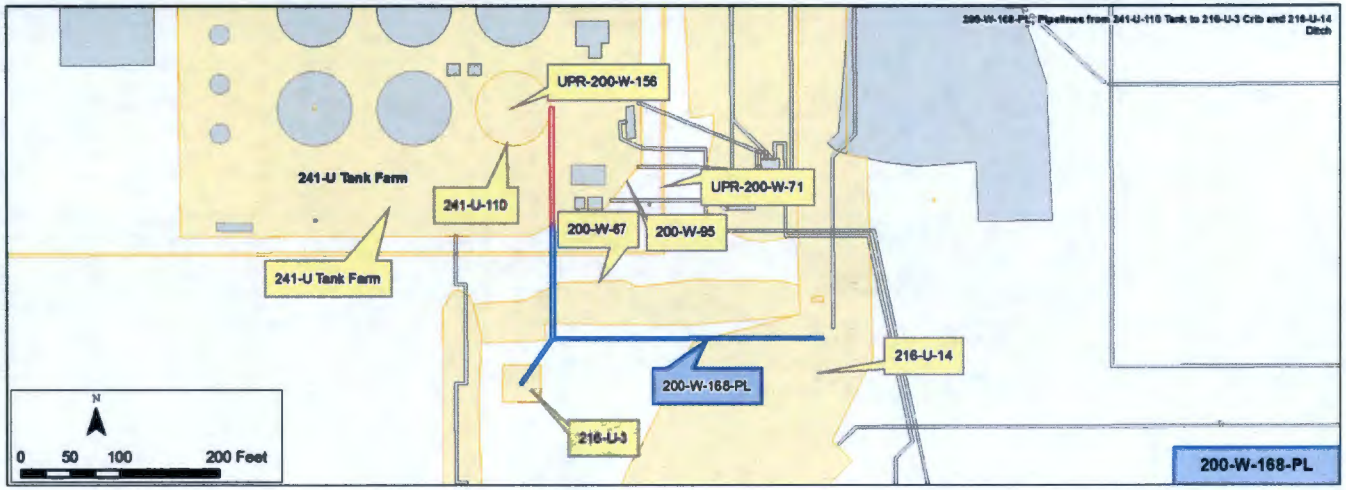
Scoping Summary: 200-W-168-PL

History

The 200-W-168-PL waste site is an inactive underground radioactive process sewer split into two subsites (200-W-168-PL:1 and 200-W-168-PL:2). The system transported cooling water and condensate from the 241-U-110 Tank inside the 241-U Tank Farm to the 216-U-3 French Drain and Trench.

The pipelines were constructed in 1953 and in use until Aug-1955, when the French Drain was de-activated.

The 241-U-110 origination tank, a single shell tank, has been designated a leaker; however, there is no evidence to suggest the pipelines leaked.



Construction

- Length:
  - 200-W-168-PL:1 – 287 ft (runs from the 241-U-110 Tank to the 216-U-3 French Drain)
  - 200-W-168-PL:2 – 506 ft (runs from the 241-U-110 Tank to the 216-U-14 Trench)
- Diameter: 2 in.
- Composition: Carbon Steel
- Drainage pattern is unknown
- Direct Buried
- Encasement Specification: 6 in. steel pipe-in-pipe encased under 16th St.
- Depth: 5 ft – 7 ft bgs
- Total Calculated Volume:
  - 200-W-168-PL:1 – 46.8 gal
  - 200-W-168-PL:2 – 82.6 gal

Features of Interest

- 2 Bends
- Encasement Section (6 in. diameter pipe over the 2 in. pipe)

Relevant Characterization

- There is no known characterization data for this pipeline
- Based on isotopes detected in the 216-U-3 French Drain and 216-U-14, this system is likely to contain: Sr-90, Tc-99, Cs-137, PU-239/40, and U

Waste Streams

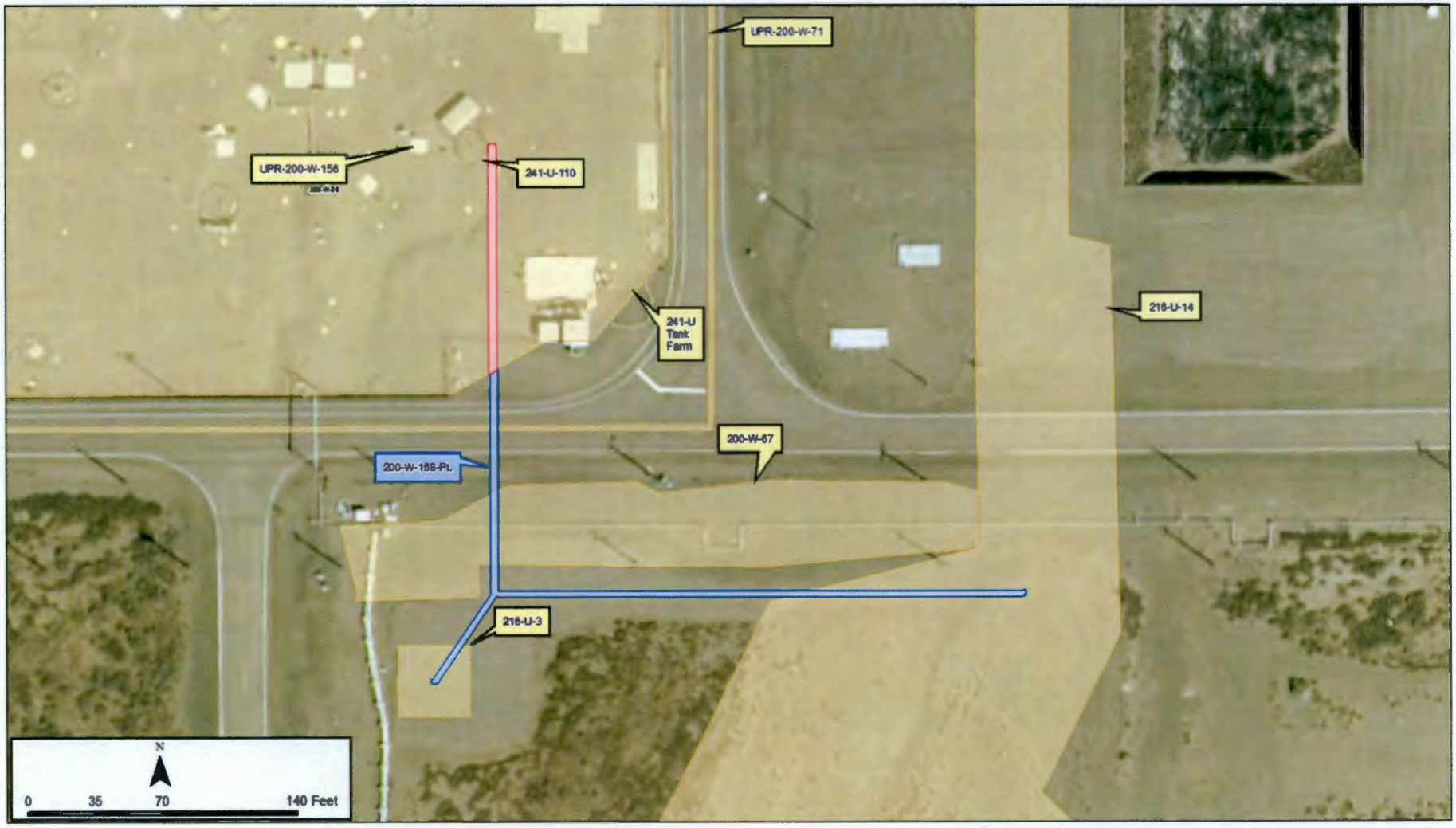
- Waste transferred consisted of cooling water (1944-1985) and condensate (1954-1955) from the 241-U Tank Farm
  - Waste is described as low salt, neutral-basic condensate

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
WMA U	200-WA-1
• 241-U-110	• 200-W-67
200-WA-1	WMA U
• 216-U-3 French Drain	• UPR-200-W-156
• 216-U-14	• 200-W-95
	Unknown
	• UPR-200-W-71


UPR-200-W-71
UPR-200-W-156
241-U-110
241-U Tank Farm
216-U-14
200-W-67
200-W-168-PL
216-U-3
N
0
35
70
140 Feet

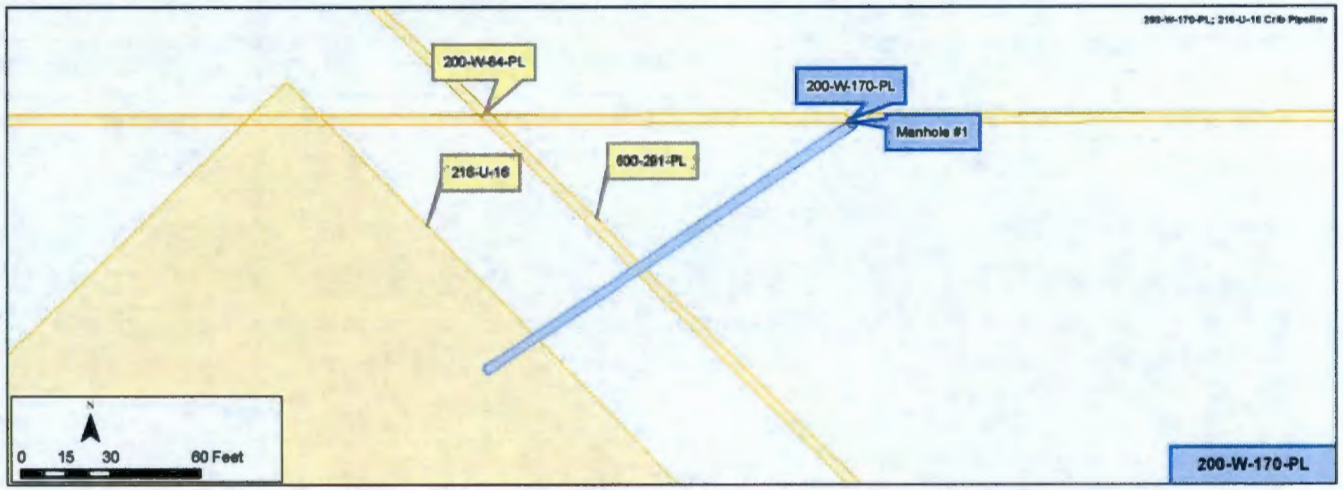
Scoping Summary: 200-W-170-PL

History

The 200-W-170-PL waste site is an inactive underground process sewer line that extends from Manhole #1 of the 200-W-84-PL to the 216-U-16 Crib. The line was used to transfer U Plant process effluent to the crib.

The line was in use from Jul-1984 to 1985, when the crib was taken out of service due to high levels of uranium in groundwater that were attributed to its use.

In 1996, the waste site was permanently isolated, when Manhole #1 was filled with concrete.



Construction

- Length: 149 ft
- Diameter: 12 in.
- Composition: PVC
- Gravity Drained
- Encasement: Direct Buried
- Depth: 9 ft - 10 ft bgs
- Calculated Volume: 784 gal

Features of Interest

- Connection to VCP at the junction with 200-W-84-PL
- Connection to Acid Resistant Distribution Box inside 216-U-16 Crib

Relevant Characterization

- A remotely operated crawler (with video camera and gamma detection equipment) was sent through the 221-U process sewer: average dose rate inside the sewer, ~100 mrem/hr
- Two samples of thin layers of dried, small-grain material were taken, detecting radionuclides including:
  - Strontium-89/90, Cesium-137, Americium-241, Europium-154, Uranium-238, and Plutonium isotopes

Waste Streams

- 1984-85: 224-U steam condensate, 224-U chemical sewer waste, 271-U compressor cooling water, 221-U chemical sewer waste, and 224-U process condensate
- The 216-U-16 Crib includes Cs-137, U (Gross), Pu-239/40, Total Alpha at 7.39E-03, and Total Beta at 5.15E-02

Misc./Other Relevant Information

- Operational end dates for the 216-U-16 Crib are variously reported as 1985 or 1987; however, samples indicating unusually high levels of uranium in groundwater were collected in Feb-1985
  - SD-WM-TI-303 states the 216-U-16 Crib was taken out of service as soon as the accuracy of groundwater data was confirmed

Site Interfaces

Origin/Termination	Site Intersect
200-IS-1 • 200-W-84-PL	• 600-291-PL (Active)
200-WA-1 • 216-U-16 Crib	

Scoping Summary: 200-W-170-PL

Scoping Summary: 200-W-171

History

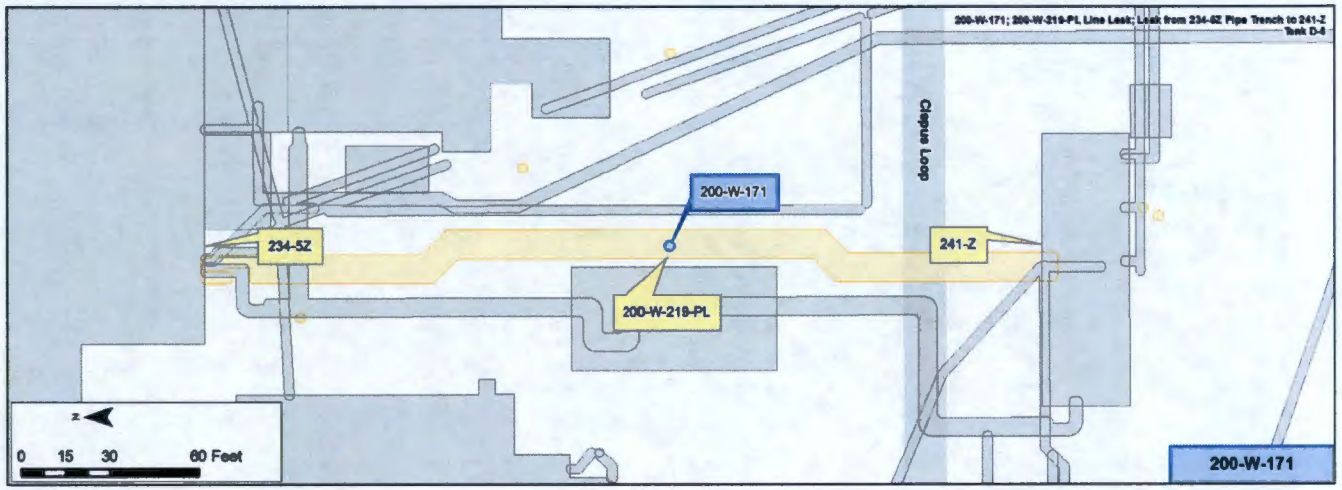
The 200-W-171 waste site is a documented leak associated with the 200-W-219-PL waste site, which runs within the pipe trench from the 234-5Z building to the 241-Z Tank D-6.

The 241-Z Tanks were activated on Nov-24-1948 and in use until 2004, when the last of the waste stored there was transferred to tank farms.

On Feb-18-1969, 30,000 gal of liquid was discharged thru the 200-W-219-PL sump pipe to the 241-Z Tank D-6 but never arrived. The liquid contained up to 30 grams of plutonium.

Subsequent tests to identify a problem found the concrete trench, known as 241-Z Primary Pipe Trench or Tunnel 3, was cracked, and the D6 sump pipe was completely broken near the north side of the road. Anecdotal summary of the repair effort noted the pipe was restored by welding and the crack in the trench bottom was sealed; cover blocks were replaced, and operation resumed.

This documented leak is one of several instances where portions of Tunnel 3 are known to have been contaminated because of leaks occurring during pipe modifications.



Construction

Leak: 30,000 gal

The 200-W-219-PL Scoping Summary includes construction specs for the lines in Tunnel 3, including the line to Tank D6.

Features of Interest

- Pipe tunnels have full length gutters measuring 1 ft wide by 2 in. deep. The trenches have sump pumps attached to the gutters
- The 200-W-219-PL waste site consists of six lines that run to the 241-Z tanks, including the only known leaker, which ran to Tank D6

Waste Streams

- 30,000 gal leak
- Waste produced by the PFP were process wastes/condensates and non-contact wastewater

Site Interfaces

Origin/Termination:

- 234-5Z (building)

200-IS-1

- 241-Z

Site Intersect:

200-IS-1

- 200-W-219-PL

Relevant Characterization

- Areas of Tunnel 3 were reported to have residual contamination levels in millions of disintegrations per minute
- Contaminated liquid seeped into Tunnel 3 from section 18-B with contamination levels at 100,000 dpm
- In mid-1960, areas of Tunnels 2 and 3 had contamination at levels >40,000 dpm

Misc./Other Relevant Information

- The 241-Z structure and tanks were removed from 2005 to 2007. The area's current state is slab-on-grade, and all pipe penetrations were verified to be empty and sealed.

The 234-5Z Primary Pipe Trench, or Tunnel 3, was explicitly excluded from this D&D project.

Scoping Summary: 200-W-171

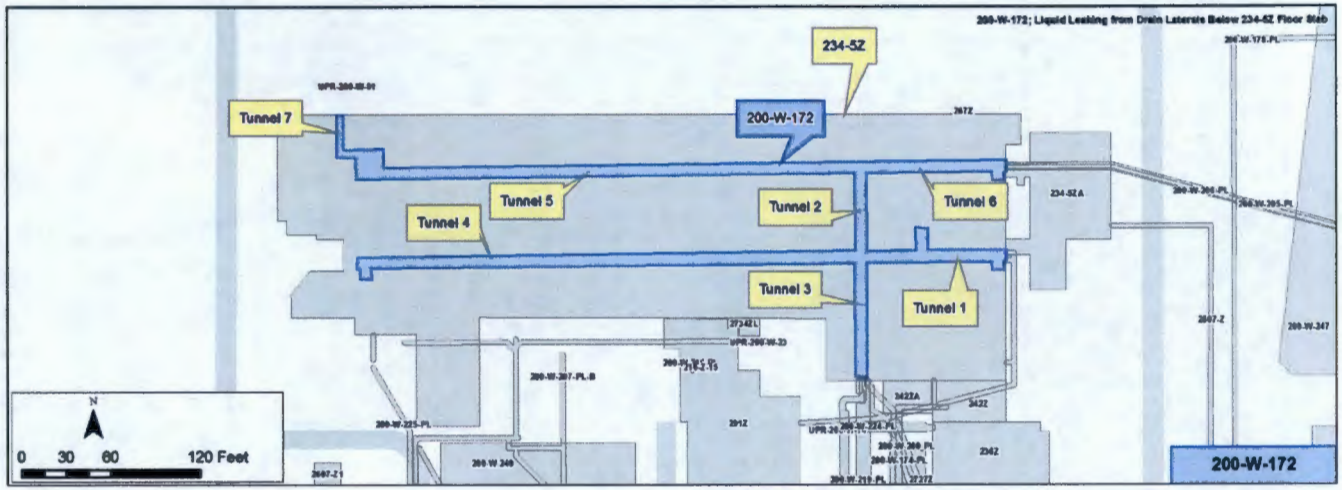
Scoping Summary: 200-W-172

History

The 200-W-172 waste site is associated with unplanned releases in the pipe tunnels lying below the 234-5Z Plutonium Finishing Plant slab. 52 lateral pipeline trenches entered the pipe tunnels and conveyed liquids from points of use to the main drain lines. The 200-W-172 waste site was created to address potential historical leaks and spills in the pipe tunnels which may have resulted in contamination of the tunnels or the ground beneath the slab if leaked liquids were able to escape to the soil beneath the slab.

Although no evidence of large volume leaks could be located, the presence of plutonium contamination suggests there were minor leaks or spills during the operations of the pipelines in the pipe tunnels. 15 of the 52 side laterals appear to be candidates for possible plutonium leakage. Of those, three side laterals exiting the Recuplex facility in room 221 carried substantial quantities of liquids containing plutonium. It is considered unlikely that significant quantities of liquid escaped to the soil below the building floor in that area. All pipe tunnels are potentially contaminated, but contamination to soil below the slab is thought to be minimal.

The 234-5Z building was operational from 1949 until 2004.



Construction

Pipe tunnels

- Trench length: 1,250 ft cumulative
- Trench width: 8 ft
- Trench depth: 8 ft
- Trench construction: 6 in. thick reinforced concrete walls with 2 in. slab above
- Drained via sump
- Top of tunnels at slab grade

Lateral pipe trenches

- Trench length: 1,040 ft cumulative
- Trench width: 2 ft
- Trench depth: 2 ft
- Trench construction: 6-in thick reinforced concrete walls with 2 in. slab above
- Gravity Drained
- Top of trenches at slab grade

Features of Interest

- Some of the lateral tunnels have been blanked where they intersect with the main tunnels
- The east-west tunnels have stairway access at each end. Each stairwell has a French drain of unknown dimensions for dissipating storm water
- Pipe tunnels have full length gutters measuring 1 ft wide by 2 in. deep. Sump pumps are attached to the gutters

Relevant Characterization

- Areas of tunnel 3 were reported to have residual contamination levels in millions of disintegrations per minute
- Contaminated liquid seeped into tunnel 3 from section 18-B with contamination levels at 100,000 dpm.
- In the mid 1960, areas of tunnels 2 and 3 had contamination at levels >40,000 dpm

Waste Streams

- Dissolved hydrogen fluoride and plutonium from water used to provide vacuum service for hydrofluorinators
- The RECUPLEX Process was used in the 234-5Z Building from 1955-1962. Waste streams from this process included: spent aqueous extractant, spent organic solvents, and waste silica
- Historically, liquid wastes contained traces of plutonium, other transuranic elements, and process chemicals

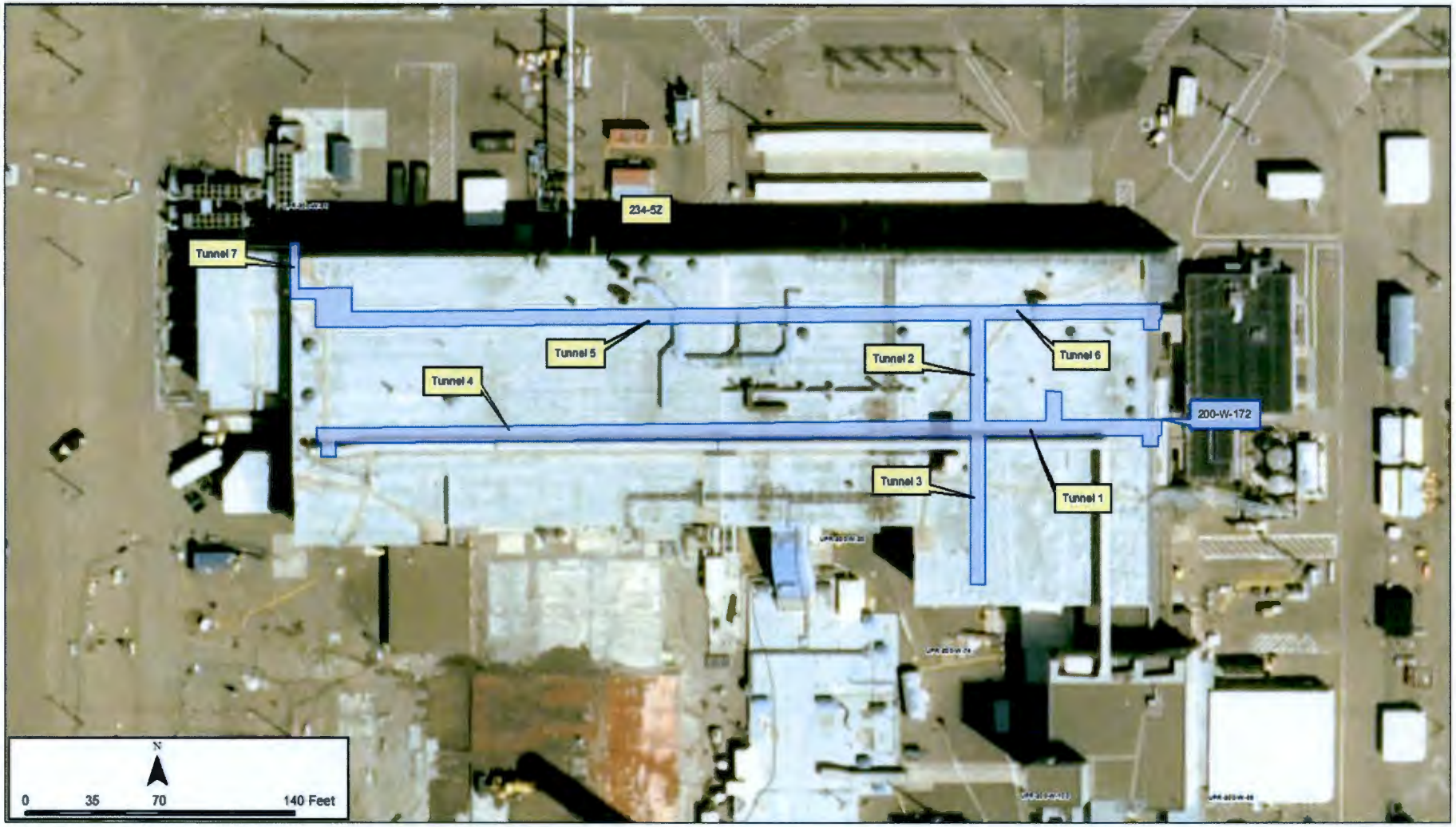
Misc./Other Relevant Information

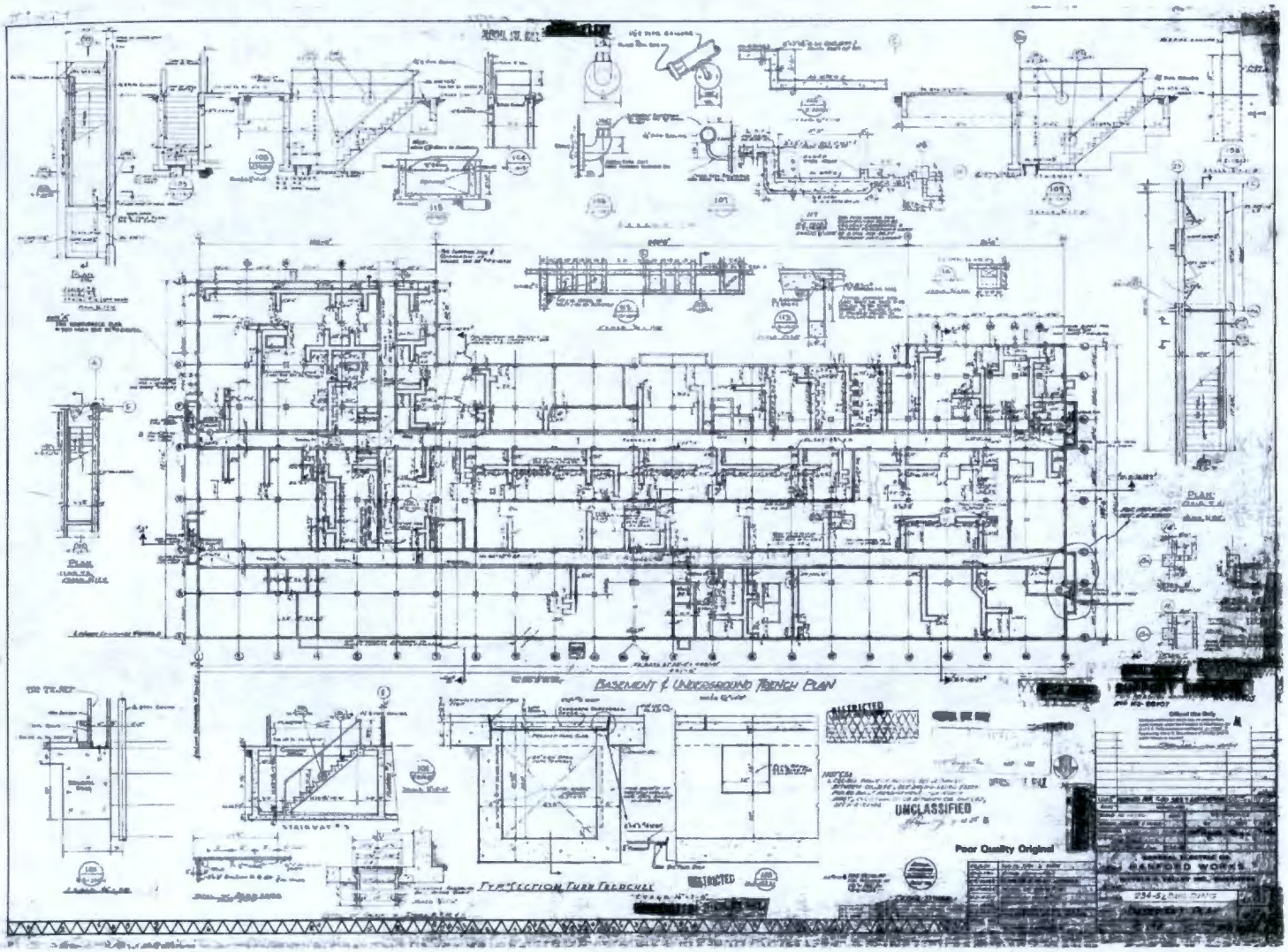
- No information could be located to describe the pathway for liquids collected in the tunnels and captured by the sump pumps

Site Interfaces

Origin/Termination	Site Intersects
• 234-5Z facility (origin)	• 234-5Z facility
• Unknown Termination	

Scoping Summary: 200-W-172




BASEMENT & UNDERGROUND TRENCH PLAN
UNCLASSIFIED
Poor Quality Original
RESTRICTED
STAIRWAY

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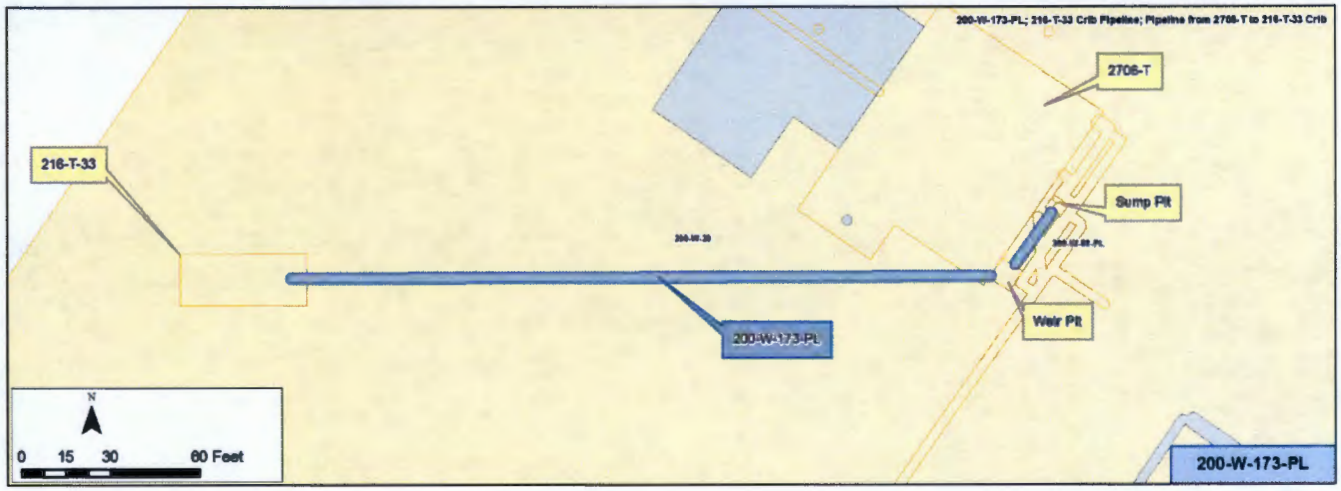
Scoping Summary: 200-W-173-PL

History

The 200-W-173-PL waste site is an inactive underground pipeline that transferred decontamination waste from the 2706-T Facility to the 216-T-33 Crib.

A 6 in. VCP drain line runs from the facility to a weir pit, then an 8 in. VCP extends from the pit to the crib. At the crib, 200-W-173-PL connects to the crib distribution line, a perforated pipe that runs the length of the crib.

Operational period was January to Feb-1963, when perforations in the pipeline plugged near the crib discharge point. The amount of liquid that actually reached the crib is unknown and operating management at the time believed the pipeline retained all the waste. Sections of the crib distribution line were removed and the crib was deactivated in 1963. Which sections were removed and the amount of liquid present in the pipe was not located.



Construction

- Total Length: 258 ft
  - Segment 1: 22 ft (Feed line to weir pit)
  - Segment 2: 236 ft (Crib line from weird pit)
- Diameter:
  - Segment 1: 6 in.
  - Segment 2: 8 in.
- Composition: Vitrified clay pipe
- Flow Method: gravity
- Direct Buried
- Cathodic Protection: None
- Depth: 5 ft - 10 ft bgs
- Total Calculated Volume: 648 gal
  - Segment 1: 32 gal
  - Segment 2: 616 gal

Features of Interest

- Possible sump pit at 2706-T building exit point - confirming as-built dates for this structure were not located
- Weir pit (see Page 3)

Relevant Characterization

- No direct characterization data have been located for the pipeline
- In 2008 six geophysical boreholes (C6609-C6614) were drilled adjacent to 200-W-173-PL to characterize potential subsurface soil contamination (see Page 4)
- Results from borehole C6612 showed an elevated cesium-137 of 20 pCi/g concentration at 8.5 ft bgs with the bottom of pipe at 8 ft bgs

Waste Streams

- Equipment decontamination waste from the 2706 facility
- 216-T-33 crib contains Am-241, Pu239/240, Cs-137, Sr-90, chromium, nitrate, oil/grease, PCB-1254, PCB-1260 and some VOCs

Misc./Other Relevant Information

- The 216-T-33 crib was stabilized in 1991 and posted with Underground Radioactive Material signs. A layer of plastic sheeting and 2 feet of sand and backfill are above the crib distribution line.
- 1998 radionuclide inventory of 216-T-33 included:
  - 2.07E-01 of Sr-90, 9.59E-08 of Cs-134, 1.97E-06 of Cs-135, 2.17E-01 of Cs-137, and 1.51E-03 of U Gross

Site Interfaces

Origin/Termination

- 2706-T (Facility) (origin)

200-WA-1

- 216-T-33 ditch (termination)

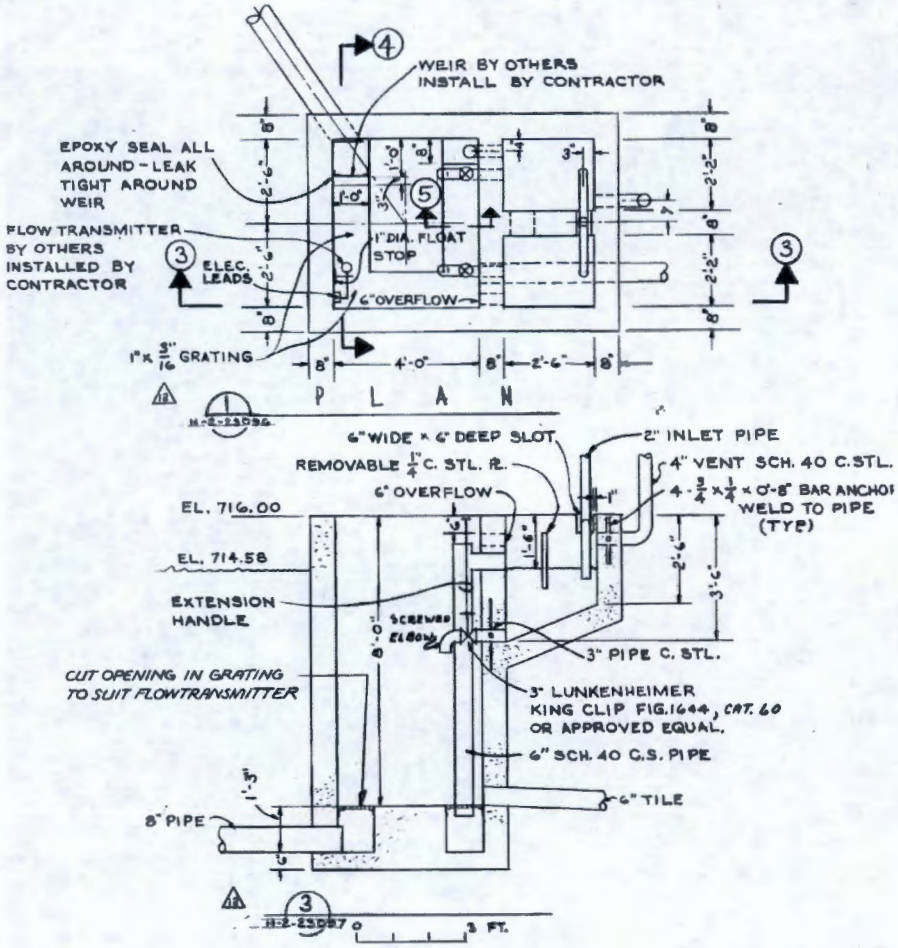
Site Intersects

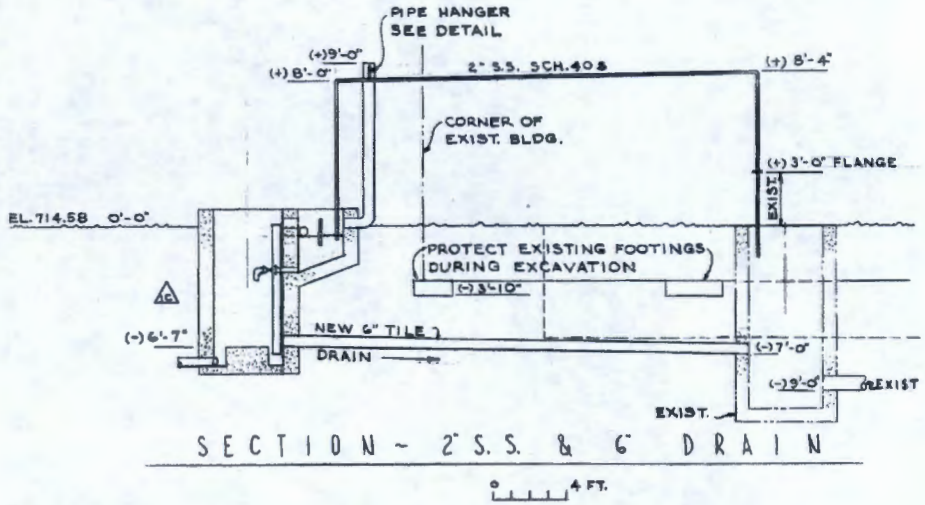
- 200-W-20 (T Plant complex)

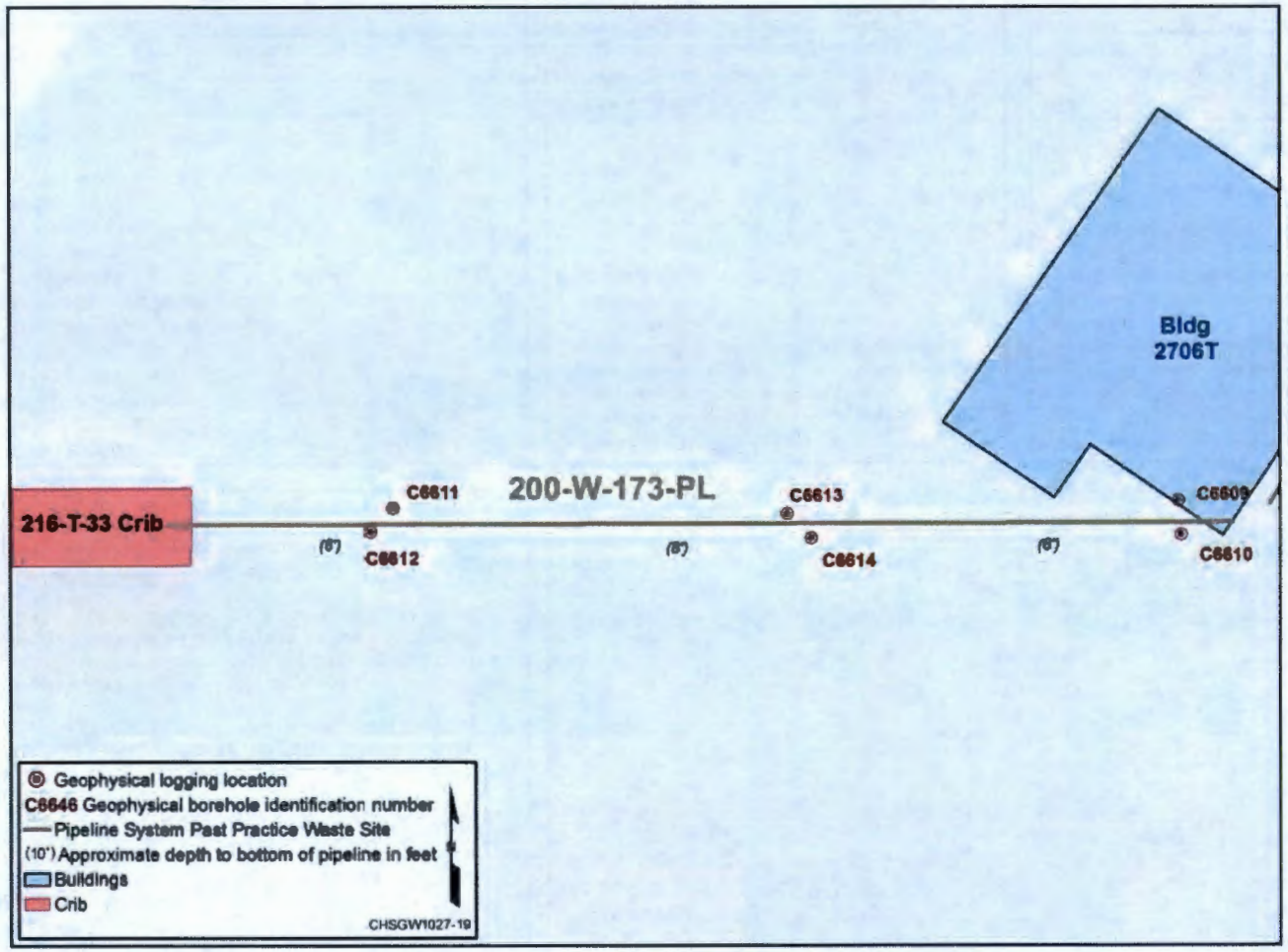
200-IS-1

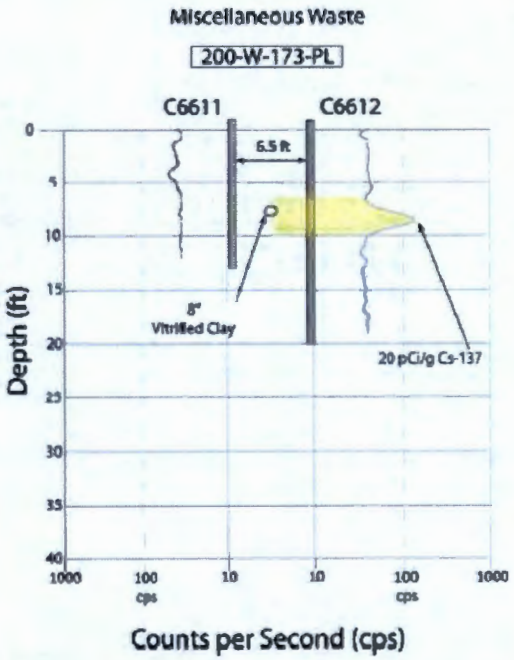
- 200-W-88-PL

Scoping Summary: 200-W-173-PL


WEIR BY OTHERS
INSTALL BY CONTRACTOR
EPOXY SEAL ALL AROUND - LEAK TIGHT AROUND WEIR
FLOW TRANSMITTER BY OTHERS INSTALLED BY CONTRACTOR
ELEC. LEADS
1" DIA. FLOAT STOP
6" OVERFLOW
1" x 3/16 GRATING
PLAN
6" WIDE x 6" DEEP SLOT
REMOVABLE 1/4" C. STL. PL.
6" OVERFLOW
2" INLET PIPE
4" VENT SCH. 40 C.STL.
4 - 3/4 x 1/4 x 0'-8" BAR ANCHOR WELD TO PIPE (TYP)
EL. 716.00
EL. 714.58
EXTENSION HANDLE
SCREWED ELBOW
3" PIPE C. STL.
CUT OPENING IN GRATING TO SUIT FLOWTRANSMITTER
3" LUNKENHEIMER KING CLIP FIG.1644, CAT. 60 OR APPROVED EQUAL.
6" SCH. 40 C.S. PIPE
6" TILE
8" PIPE
0 3 FT.


PIPE HANGER SEE DETAIL
(+)9'-0"
(+)8'-0"
2" S.S. SCH.40S
(+) 8'-4"
CORNER OF EXIST. BLDG.
(+) 3'-0" FLANGE
EXIST.
EL. 714.58 0'-0"
PROTECT EXISTING FOOTINGS DURING EXCAVATION
(-) 3'-10"
(-) 6'-7"
NEW 6" TILE
DRAIN
(-) 7'-0"
(-) 9'-0"
EXIST.
EXIST.
SECTION ~ 2" S.S. & 6" DRAIN
0 4 FT.


Bldg
2706T
216-T-33 Crib
C6611
200-W-173-PL
C6613
C6609
(6')
C6612
(6')
C6614
(6')
C6610
Geophysical logging location
C6646 Geophysical borehole identification number
Pipeline System Past Practice Waste Site
(10') Approximate depth to bottom of pipeline in feet
Buildings
Crib
CHSGW1027-19


Miscellaneous Waste
200-W-173-PL
C6611
C6612
6.5 ft
8"
Vitrified Clay
20 pCi/g Cs-137
Depth (ft)
0
5
10
15
20
25
30
35
40
1000
100
cps
10
10
100
cps
1000
Counts per Second (cps)

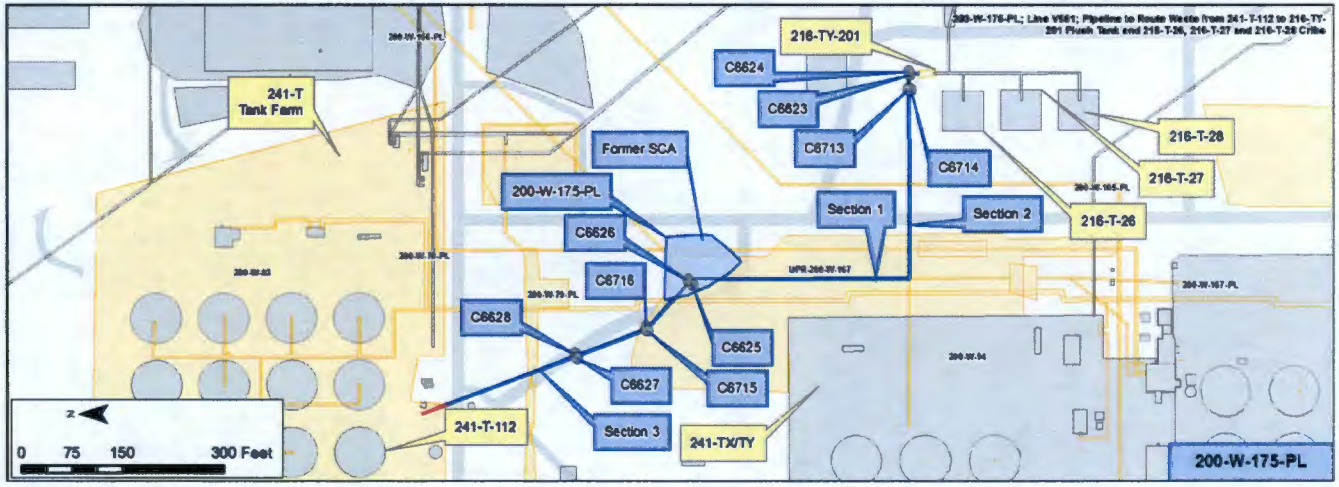
Scoping Summary: 200-W-175-PL

History

The 200-W-175-PL waste site is a single inactive underground pipeline that was used to transfer waste from the 241-T-112 Tank to the 216-TY-201 Flush Tank. The flush tank fed the 216-T-26, 216-T-27, and 216-T-28 Cribs.

200-W-175-PL is divided into three subsites:
Section 1 was constructed in 1953 and was part of 200-W-167-PL's section 1 that carried cooling water from 242-T Building to the 207-T Retention Basin.
Section 2 was constructed in 1955 and was part of a line that carried first cycle scavenged tributylphosphate (TBP) supernatant waste from the 241-TY Tank Farm to the 216-T-26, 216-T-27, and 216-T-28 cribs.
Section 3 was constructed in 1956 and ran from the 241-T-112 tank to 200-W-175-PL section 1. The 216-T-26, 216-T-27, and 216-T-28 cribs received waste via 200-W-175-PL and operated from 1955 – 1965.

A former soil contamination area (SCA)/current URMA associated with 200-W-175-PL was identified in 2000. The SCA is located at the connection of 200-W-175-PL section 3 with section 1 (previously part of 200-W-167-PL section 1).



Construction

- Length: 1,099 ft
  - Section 1: 324 ft
  - Section 2: 307 ft
  - Section 3: 468 ft
- Diameter: Varied, 3.5 in. - 8 in.
- Composition: Carbon Steel with portions Iron
- Pressurized
- Direct Buried
- Encasement Specifications: Corrugated
- Depth: 5 ft bgs
- Total Calculated Volume: 1,088 gal

Features of Interest

- 2 sections of 200-W-175-PL previously used for other waste transfers; the lines were cut in 1955
- Former SCA/current URMA at location where the 7.6-cm (3 in.) 200-W-175-PL section 3 was joined with existing 10-cm (4 in.) 200-W-167-PL
- 4 pipe bends
- 2 road crossing encasements

Relevant Characterization

- A former SCA/current URMA was identified in 2000
  - Identified an "abundance of deep-rooted vegetation" growing inside a radiologically controlled area (RCA)
- SGW-39648 reports direct push, geophysical logging performed in 2008 at 10 locations along 200-W-175-PL
- 1983 report of groundwater data from well W14-2, which monitors 216-T-26, 216-T-27, and 216-T-28, detected gross alpha, gross beta, and tritium

Waste Streams

- 200-W-175-PL transferred 7,200,000 gal of waste from 241-TY tanks and 241-T-112 to 216-TY-201 and the 216-T-26, 216-T-27, and 216-T-28 cribs
  - 216-T-26 received first cycle scavenged TBP supernatant
  - 216-T-27 and 216-T-28 received 221-T steam condensate, and process decontamination waste from 2706-T
  - Received decontamination waste from 241-T-112

Misc./Other Relevant Information

- 200-W-175-PL section 1 is a previous segment of 200-W-167-PL section 1
- In Dec-1955, a 99-m (324 ft) stretch of the 10 cm (4 in.) diameter CS, 200-W-167-PL, Section 1 was isolated at 2 locations and incorporated into 200-W-175-PL

Site Interfaces

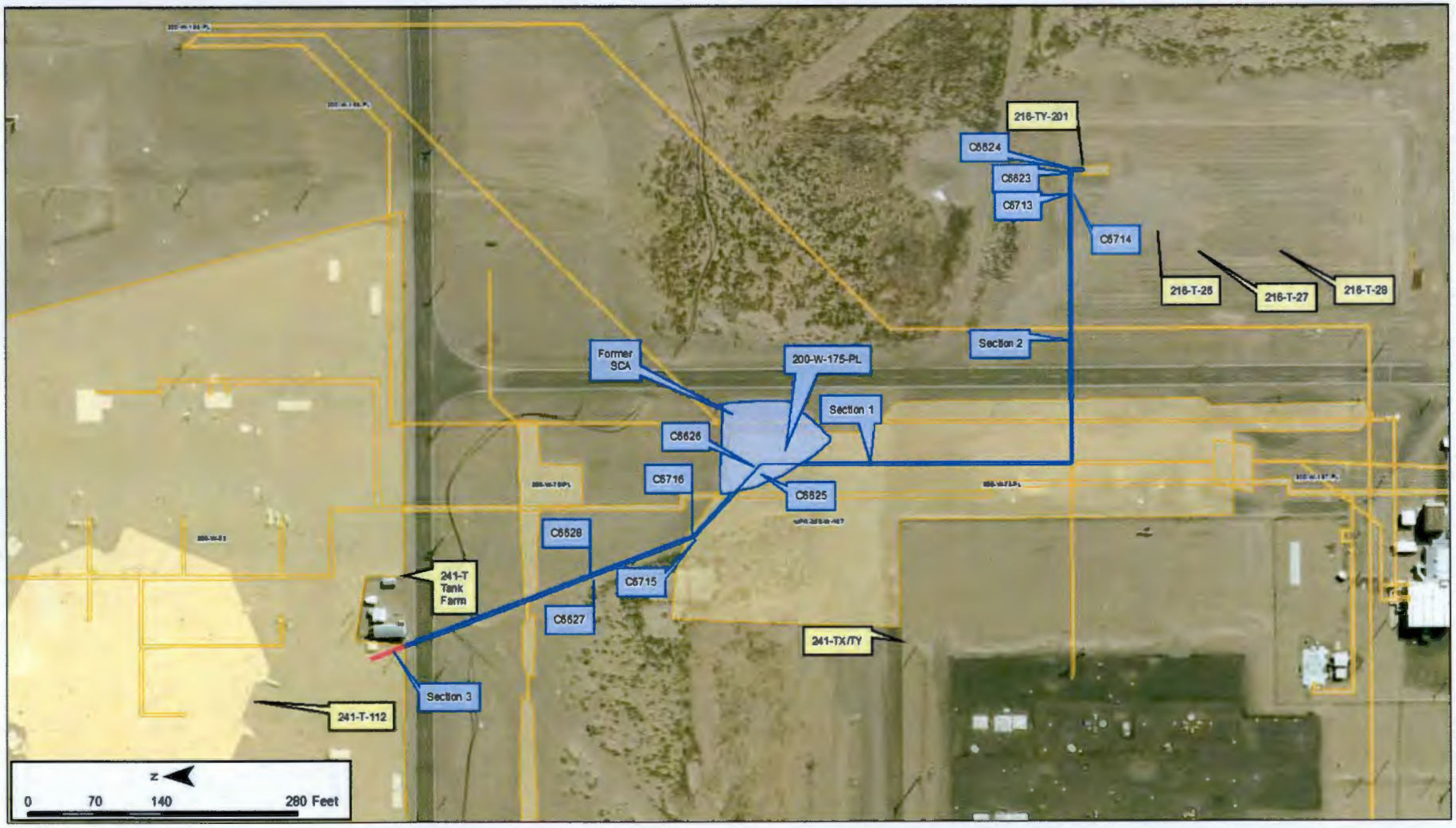
Origin/Termination

200-IS-1
- 200-W-167-PL
- 216-TY-201 Flush Tank

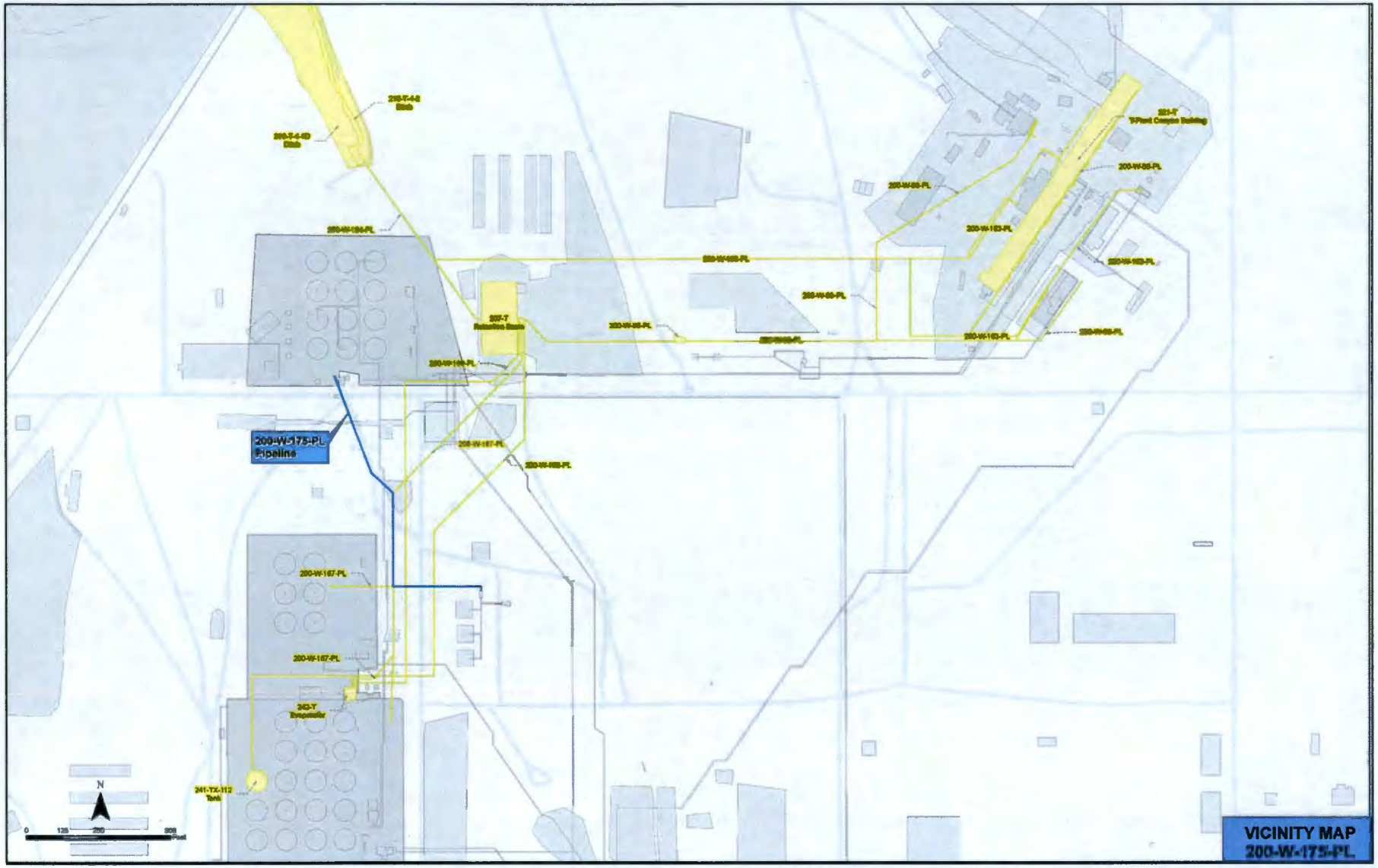
Site Intersects

200-IS-1
- 200-W-78-PL
- 200-W-79-PL
- 200-W-165-PL
- UPR-200-W-167 (surface soil contamination from 241-TY operations)

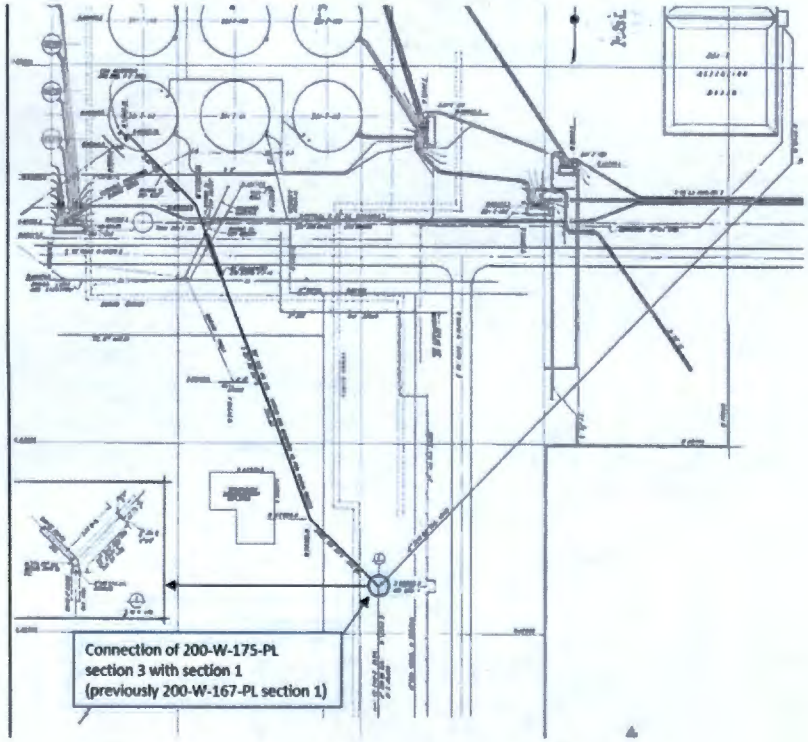
WMA-T
- 200-W-93 (Contaminated soil at 241-T Tank Farm)


216-TY-201
C6624
C6623
C6713
C6714
216-T-26
216-T-27
216-T-28
Section 2
Former SCA
200-W-175-PL
Section 1
C6626
C6716
C6625
C6628
C6715
C6627
241-T Tank Farm
241-TX/TY
Section 3
241-T-112
N
0
70
140
280 Feet

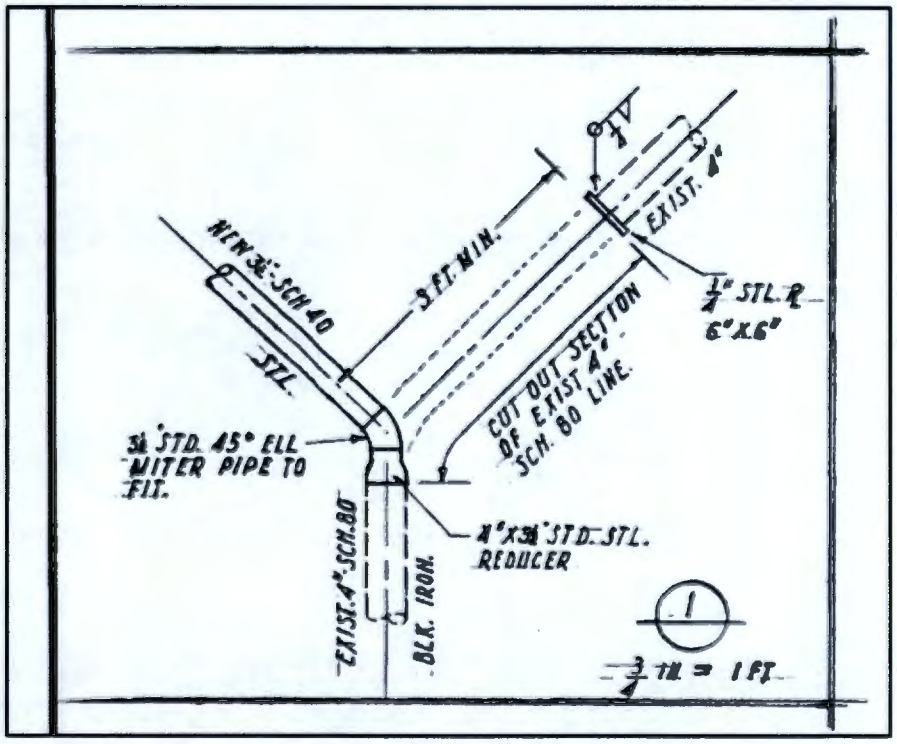
Scoping Summary: 200-W-175-PL



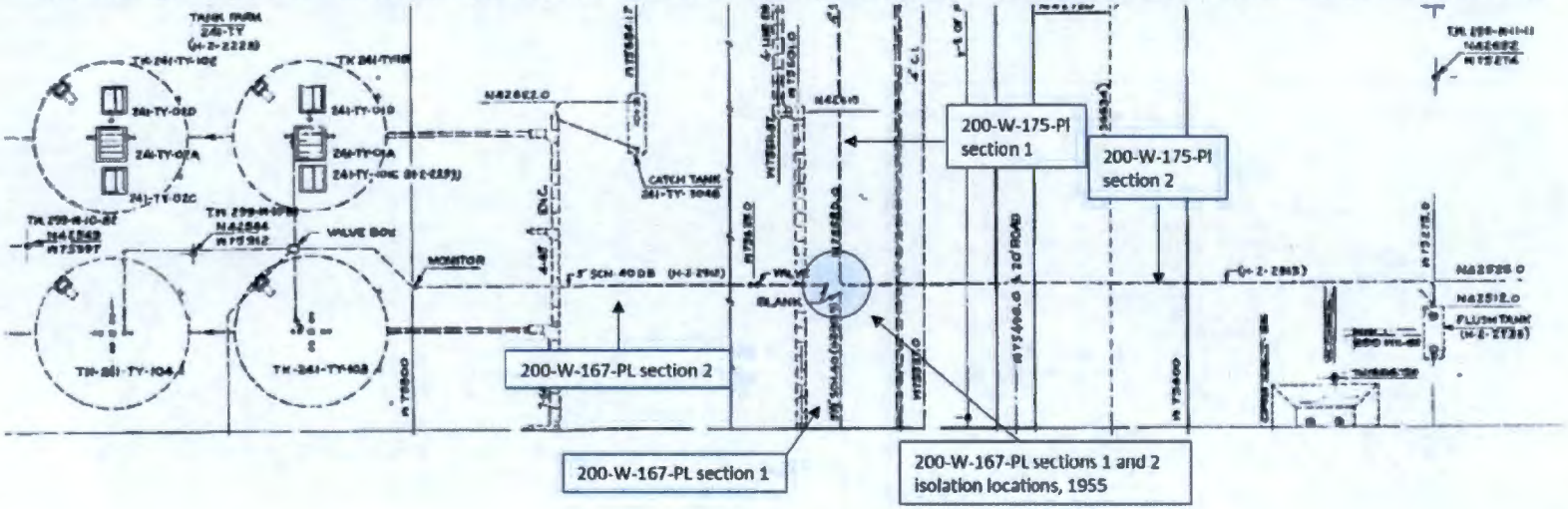
H-2-3020 Sh 1, Rev 2. Connection of new 3-1/2", 200-W-175-PL section 3 with existing 4", section 1 (previously 200-W-167-PL section 1). Isolation of existing 200-W-167-PL section 1 to NE (see Detail 1 below)



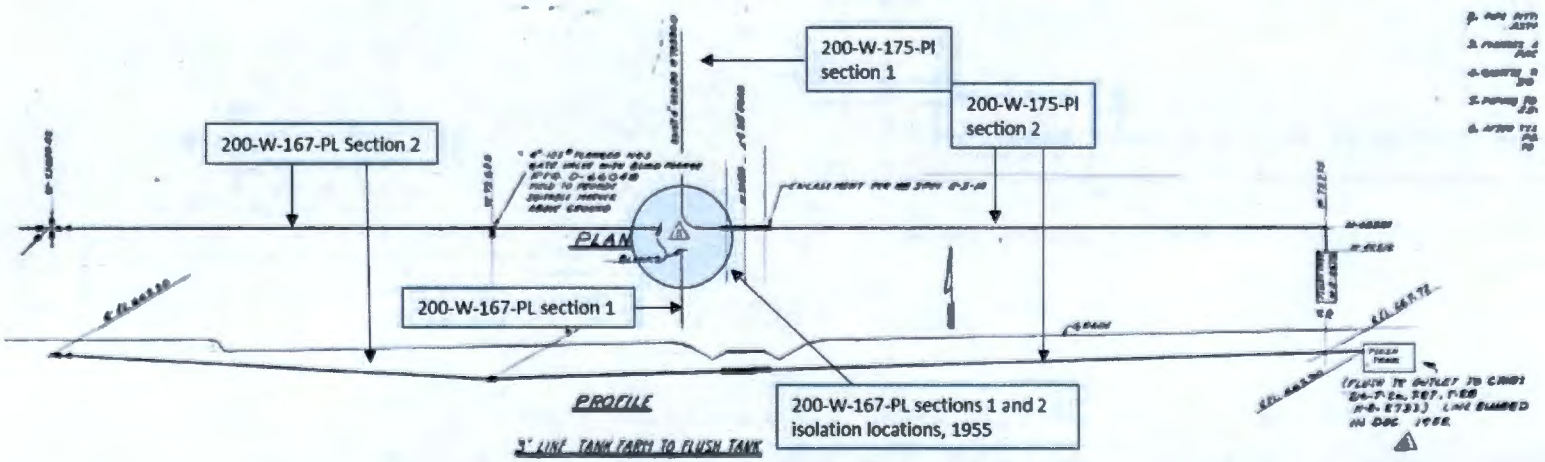
H-2-3020, Sh 1, Rev 2. Detail 1 showing 200-W-167-PL connection with new 200-W-175-PL and isolation of 200-W-167-PL



H-2-44511, Sh 126, Rev 5. Isolation of 200-W-167-PL Section 1 (4-in) and Section 2 (3-in) east of 241-TY to construct 200-W-175-PL.



H-2-2913, Sheet 1, Rev 6. Profile of previous line from 241-TY tanks to 216-TY-201. Plan view shows isolation of 200-W-167-PL Section 2 (3-in) to construct 200-W-175-PL.



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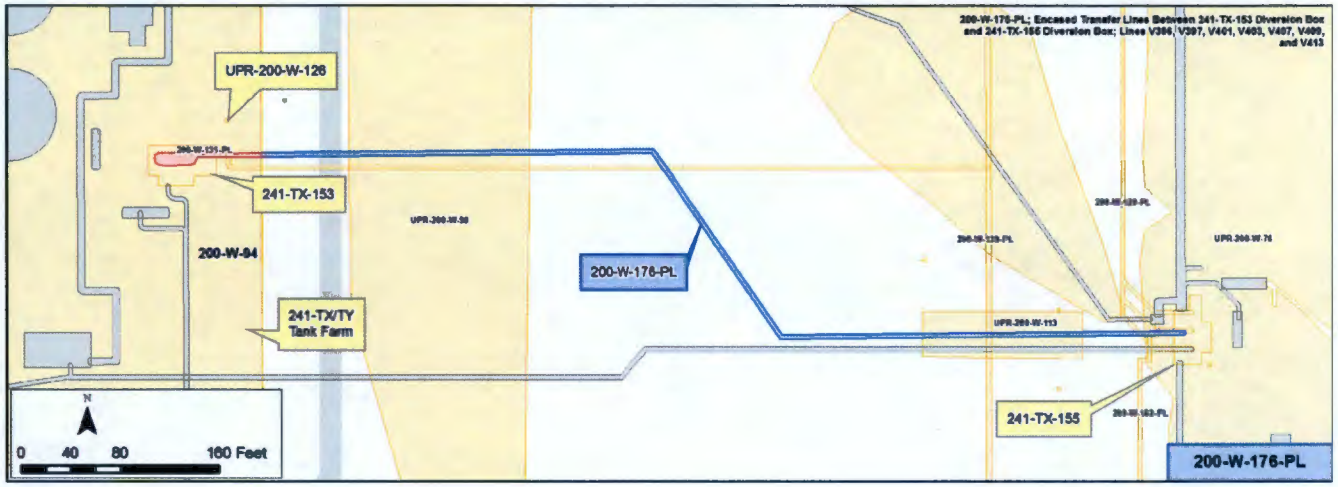
Scoping Summary: 200-W-176-PL

History

The 200-W-176-PL waste site consists of a concrete encasement with seven transfer lines that were used to transfer process fluids from the 241-TX-155 Diversion Box to the 241-TX-153 Diversion Box in the TX/TY Tank Farm.

The lines are identified as V396, V397, V401, V403, V407, V409, and V413. All lines are intact (i.e., no evidence of cutting or capping was found with the exception of V409 which may be plugged (H-2-2338)) and both the 241-TX-155 and 241-TX-153 diversion boxes are weather covered and isolated.

These lines were all constructed in 1948 as part of Project C-163, the TX Tank Farm. The final transfer through these lines occurred in 1974.



Construction

- Length: 7 lines, each 819 ft
  - V396, V397, V401, V403, V407, V409, V413
- Diameter: 3.5 in.
- Composition: Stainless Steel
- Gravity
- Direct Buried
- Encasement Specifications: Type 7-66 concrete
  - Transitions to a 14-119 encasement at the 200-TX-153 diversion box
- Depth: 9.5 ft – 12.5 ft
- Total Calculated Volume: 409.3 gal each, 2,865 gal total

Features of Interest

- Two ~135 degree bends

Relevant Characterization

- No characterization data directly related to the 200-W-176-PL lines was found
- While there is no known relationship beyond overlapping footprints, the site summary and further investigation of the UPR-200-W-113 waste site may provide relevant characterization data

Waste Streams

- 200-W-176-PL lines carried up to 19,895,000 gallons of the following waste streams
  - T Plant First Decontamination Cycle waste (1C)
  - Tri-Butyl Phosphate (TBP)
  - Metal Waste (MW)
  - R Waste (R)
  - IX/SIX waste (SRR)
  - CW waste (CW)
  - RIX waste (RIX)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-TX-155 (diversion box)

WMA TX/TY
- 241-TX-153 (diversion box)

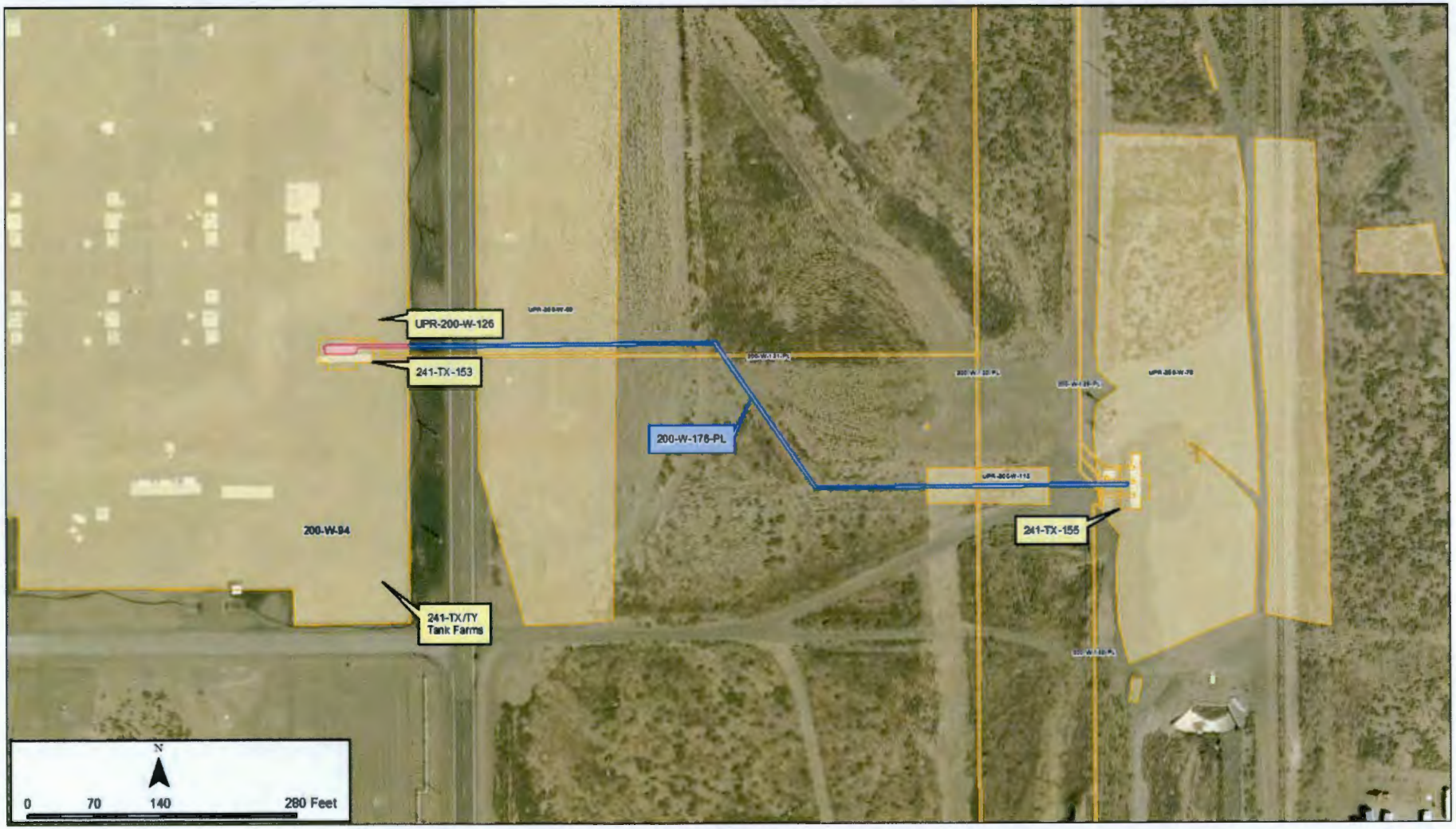
Site Intersects

200-IS-1
- 200-W-129-PL
- 200-W-130-PL
- 200-W-131-PL
- 200-W-182-PL
- UPR-200-W-113

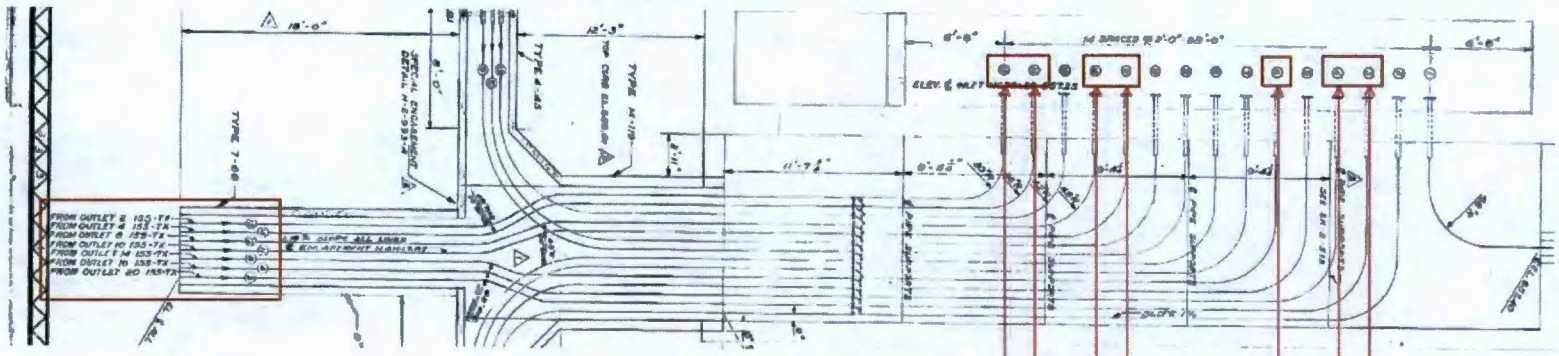
WMA TX/TY
- 200-W-94 (UPR)
- UPR-200-W-126

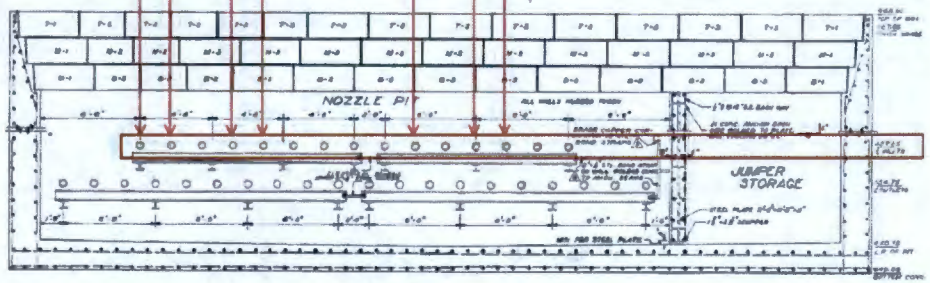
200-WA-1
- UPR-200-W-99

TBD
- UPR-200-W-76


UPR-200-W-126
241-TX-153
200-W-176-PL
241-TX-155
200-W-94
241-TX/TY
Tank Farms
N
0
70
140
280 Feet

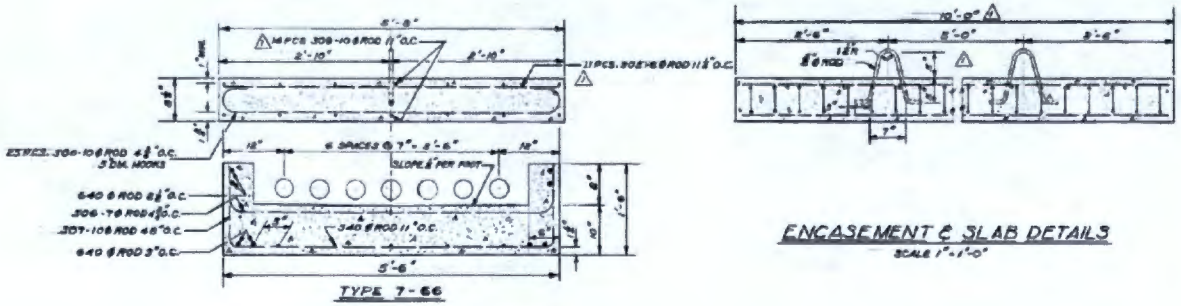
241-TX-153 Diversion Box Inlets Plan View from H-2-828





241-TX-153 Diversion Box Inlets Profile View from H-2-825

Encasement Type 7-66 Details from H-2- 845



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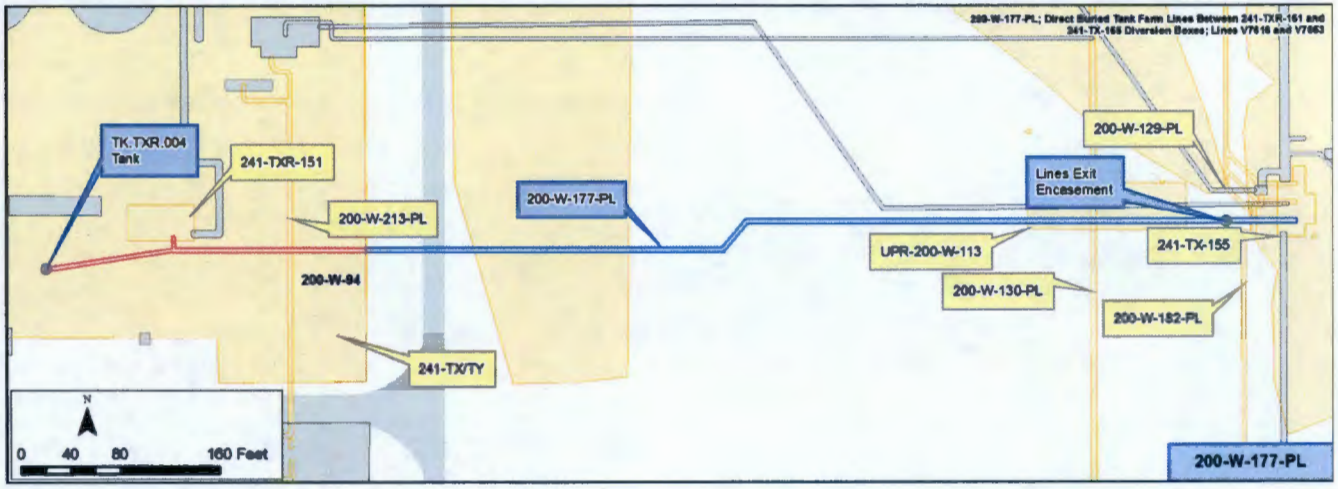
Scoping Summary: 200-W-177-PL

History

The 200-W-177-PL waste site consists of two lines used to transfer process fluids between the 241-TX/TY Tank Farm (241-TXR-151 Diversion Box and 244-TXR Vault), the 241-TX-155 Diversion Box, and TK-TXR-004 .

The lines are identified as V7616 and V7653. A third line (7636) runs in a portion of the 200-W-177-PL pipe trench for about 80 ft to TXR-151. The lines were active from 1950 to 1972, and the lines were isolated by 1979.



Construction

- Length:
  - V7616: 931 ft
  - V7653: 1026 ft
- Diameter: 3.5 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Encasement Specifications: 3-38 concrete (for first 40 feet)
- Depth: 4 ft – 12.5 ft bgs
- Total Calculated Volume: 978.1 gal
  - V7616: 465.3 gal
  - V7653: 512.8 gal

Features of Interest

- Two ~135 horizontal degree bends
- Four vertical bends following site topography

Relevant Characterization

- No characterization data for the 200-W-177-PL lines was found
- While there is no known relationship beyond overlapping footprints, the site summary and further investigation of the UPR-200-W-113 waste site may provide relevant characterization data

Waste Streams

- 200-W-177-PL lines carried the following waste streams:
  - T Plant First Decontamination Cycle waste (1C)
  - Tri-Butyl Phosphate (TBP)
  - Metal Waste (MW)
  - R Waste (R)
  - IX/SIX waste (SRR)
  - CW waste (CW)
  - RIX waste (RIX)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-TX-155 (diversion box)

WMA TX/TY
- 241-TXR-151 (diversion box)
- 244-TXR Vault

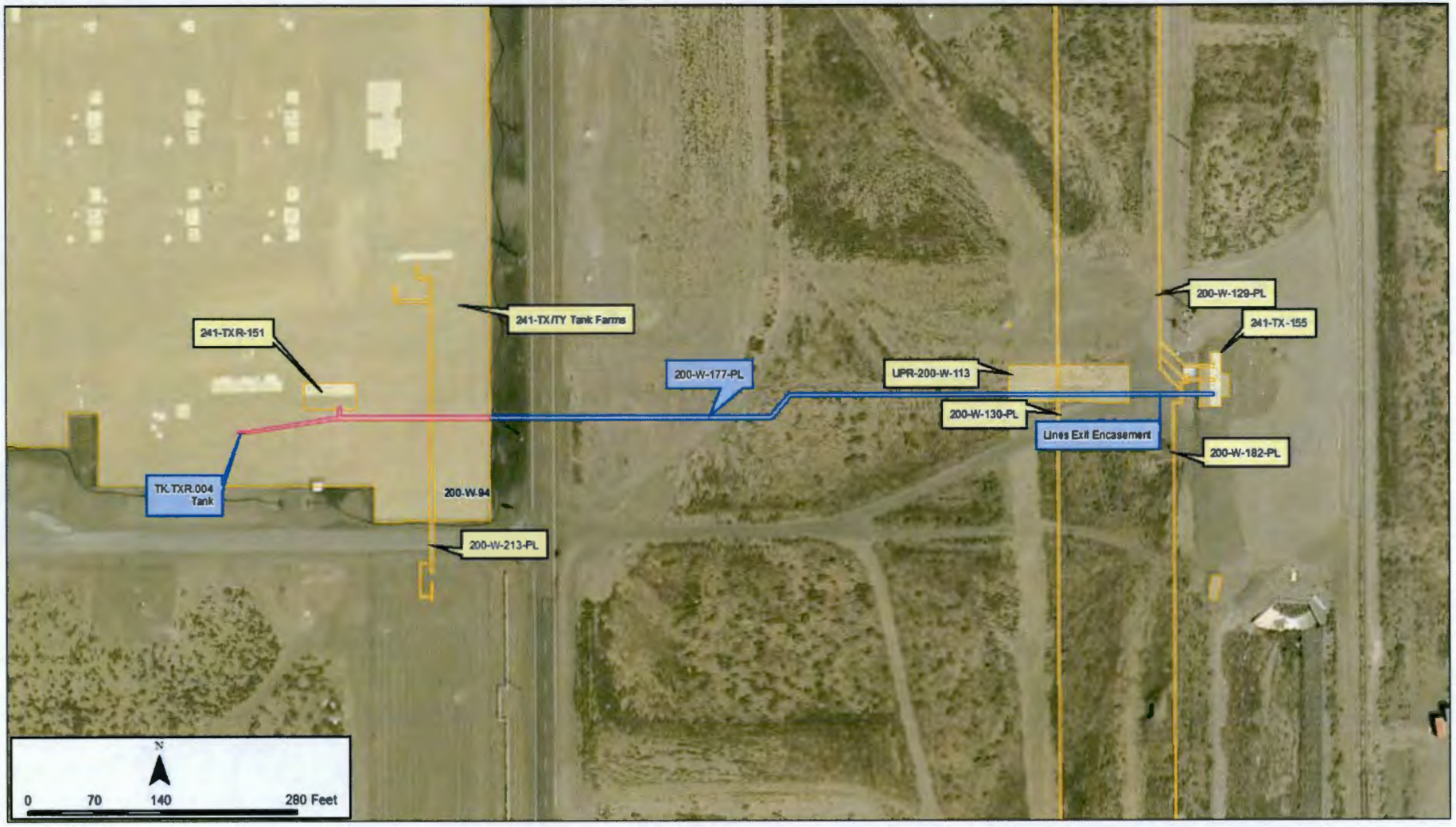
Site Intersects

200-IS-1
- 200-W-129-PL
- 200-W-130-PL
- 200-W-182-PL
- 200-W-213-PL
- UPR-200-W-113
- 200-W-178-PL

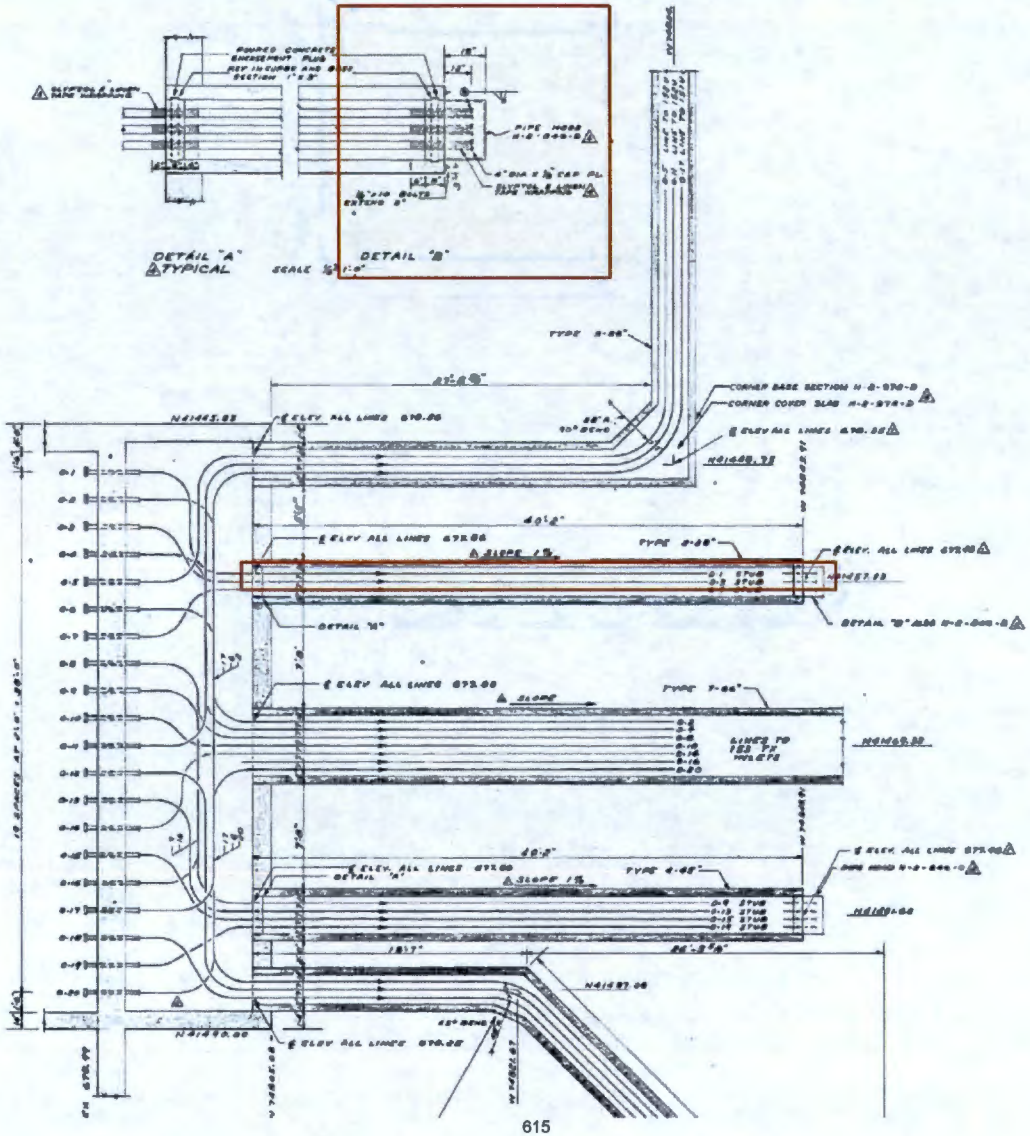
200-WA-1
- UPR-200-W-99

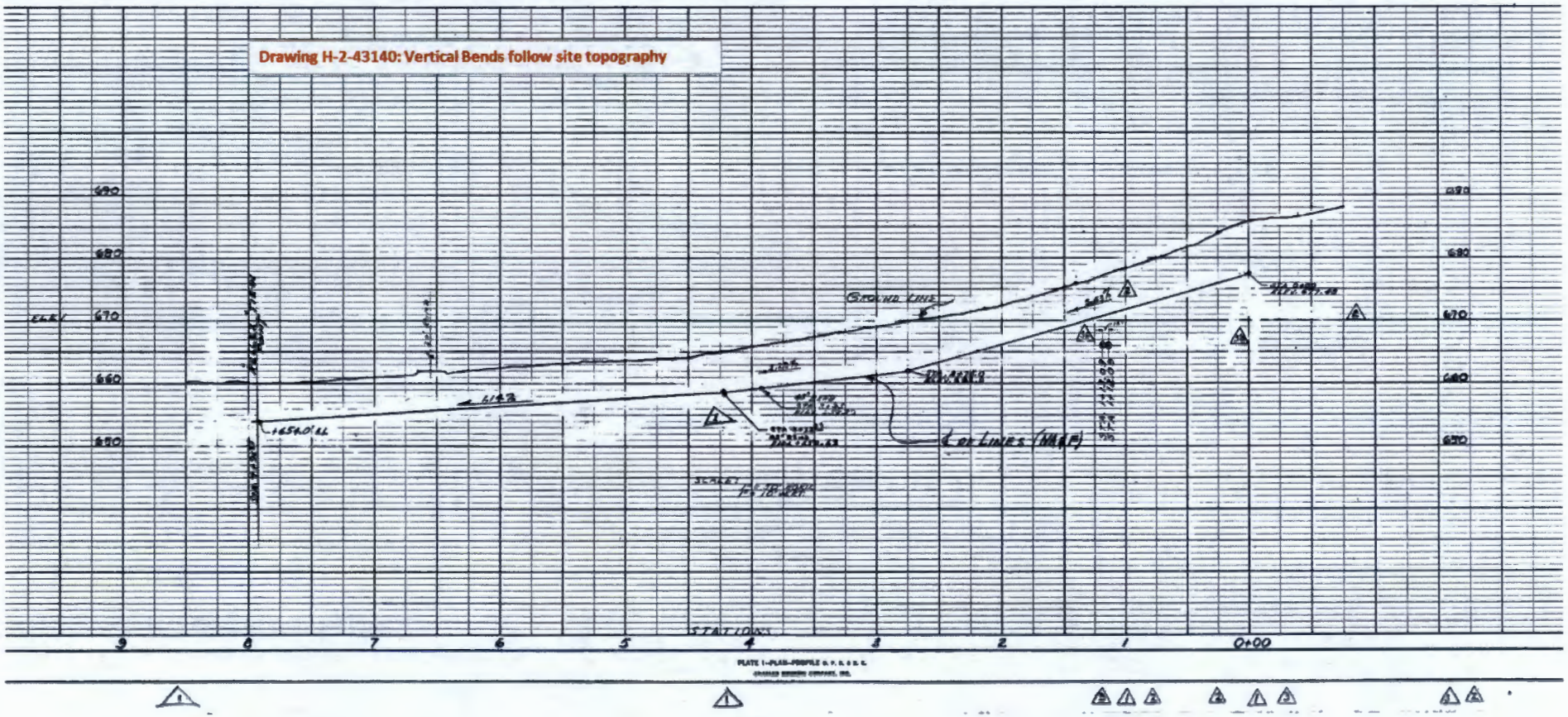
TBD
- UPR-200-W-76

Scoping Summary: 200-W-177-PL



241-TX-155 Diversion Box Inlet and Pipe Hood Details from H-2-843




Drawing H-2-43140: Vertical Bends follow site topography
690
680
670
660
650
ELEV
GROUND LINE
STATIONS
9
8
7
6
5
4
3
2
1
0+00

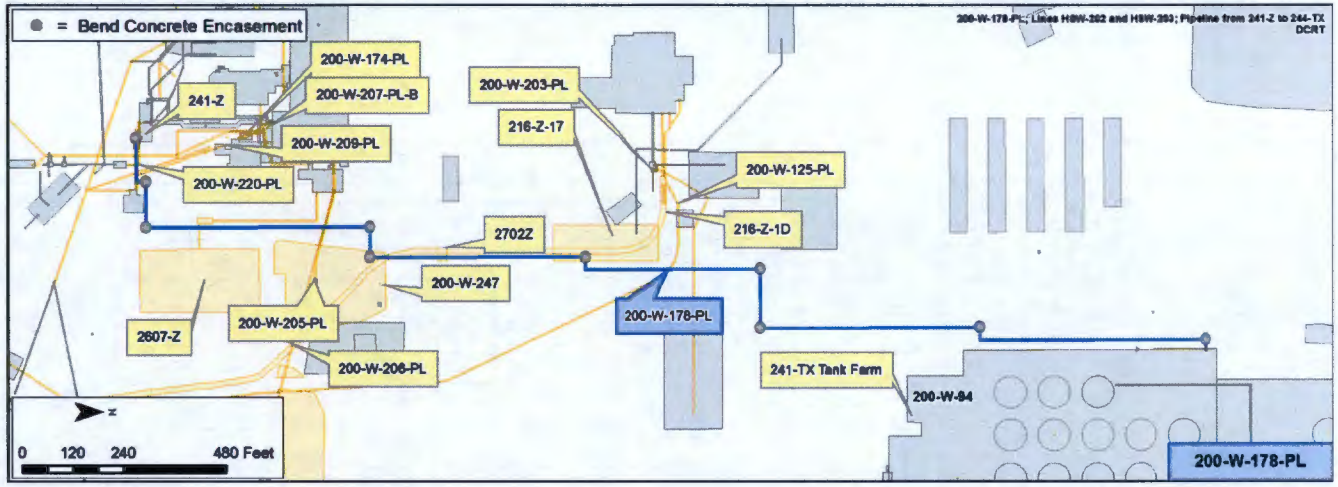
Scoping Summary: 200-W-178-PL

History

The 200-W-178-PL site transferred Plutonium Finishing Plant mixed waste for over a mile from the 241-Z D-5 tank to the 241-TX Tank Farm. Constructed in the 1960s, the two encased lines include multiple sections of concrete encasements and anchor units. The 200-W-178-PL waste site ends at the boundary of the 241-TX Tank Farm.

Within the tank farm boundary, the two lines originally continued on to the 242-A Receiver Tank Vault and in 1979 they were cut and capped and diverted north into 244-TX Receiver Vault.

The 241-Z complex that fed directly into 200-W-178-PL last operated in 2004 and was demolished in 2007.



Construction

2 Lines: HSW-202-M8 and HSW-203-M8

- Total Length: 6,100 ft (each line 3,050 ft)
- Diameter: 2 in.
- Composition: Stainless Steel (wrapped in foam insultation)
- Pressurized
- Direct Buried and Encased
- Encasement specification: 10 small sections of concrete encasement for each bend in the pipe (see Figure 1); 3 in. Pipe encasement for complete line
- Depth: 2 ft - 9 ft bgs
- Cathodic protection
- Total Calculated Volume: ~1,000 gal

Features of Interest

- 10 - Concrete Expansion Bend Encasements (See Figure 1)
- 8 - Anchor Encasements (See Figure 1)

Relevant Characterization

- RCRA closure for 241-Z tank system, samples indicated trace levels of contaminants
- Exits surveys of 241-Z tanks was above >2,000 DPM/100 sq-cm, with some areas up to 100,000 DPM/100 sq-cm
- Closure document laboratory data for 241-Z is shown in Figure 2

Waste Streams

- Process: Plutonium Finishing Plant mixed waste
- Tank 241-Z waste products are expected, including constituents from treatment of the waste prior to entry into 200-W-178-PL (waste treated with sodium hydroxide, ferric nitrate, and sodium nitrite)
- Waste prior to treatment contained high and low salt including sodium hydroxide potassium hydroxide, sodium nitrite, ferric nitrate, carbon tetrachloride, metals, lead, mercury and trace amounts of plutonium

Misc./Other Relevant Information

- Two smaller segments originally apart of 200-W-178-PL, HSW-202-M8 and HSW-203-M8, are now capped and within the 241-TX Tank Farm

Site Interfaces

Origin/Termination

- 241-TX/TY Tank Farm

200-IS-1

- 241-Z (Storage and Treatment Tank)

Site Intersects

200-IS-1

- 200-W-125-PL
- 200-W-205-PL
- 200-W-209-PL
- 200-W-220-PL

Site Intersects Con't

200-WA-1

- 216-Z-17
- 2607-Z
- 200-W-203-PL

200-CW-3

- 216-Z-1D

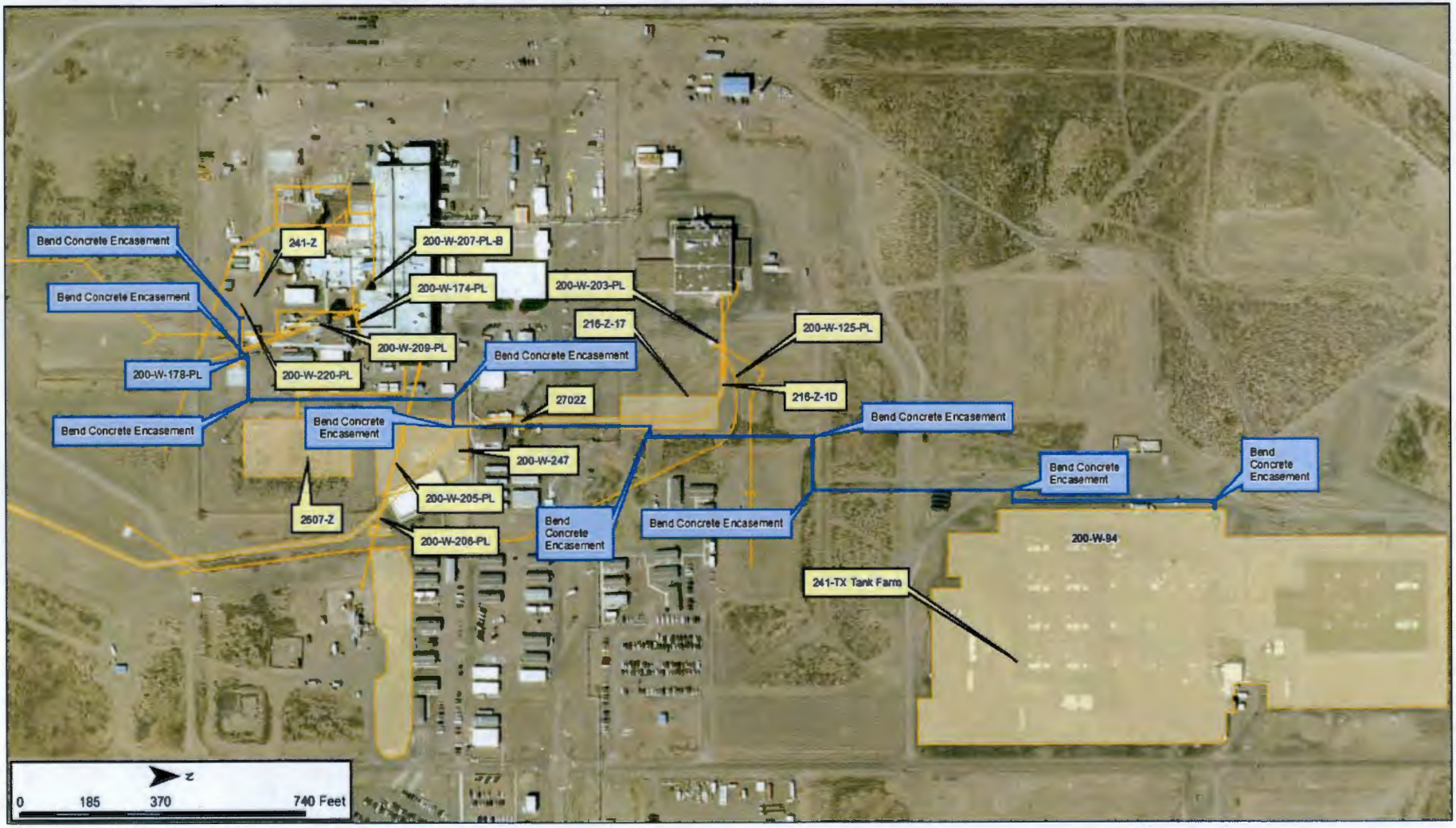
No Operable Unit

- 2702-Z
- 200-W-247
- 200-W-206-PL
- 200-W-174-PL
- 200-W-207-PL-B

WMA TX/TY

- 200-W-94

Scoping Summary: 200-W-178-PL



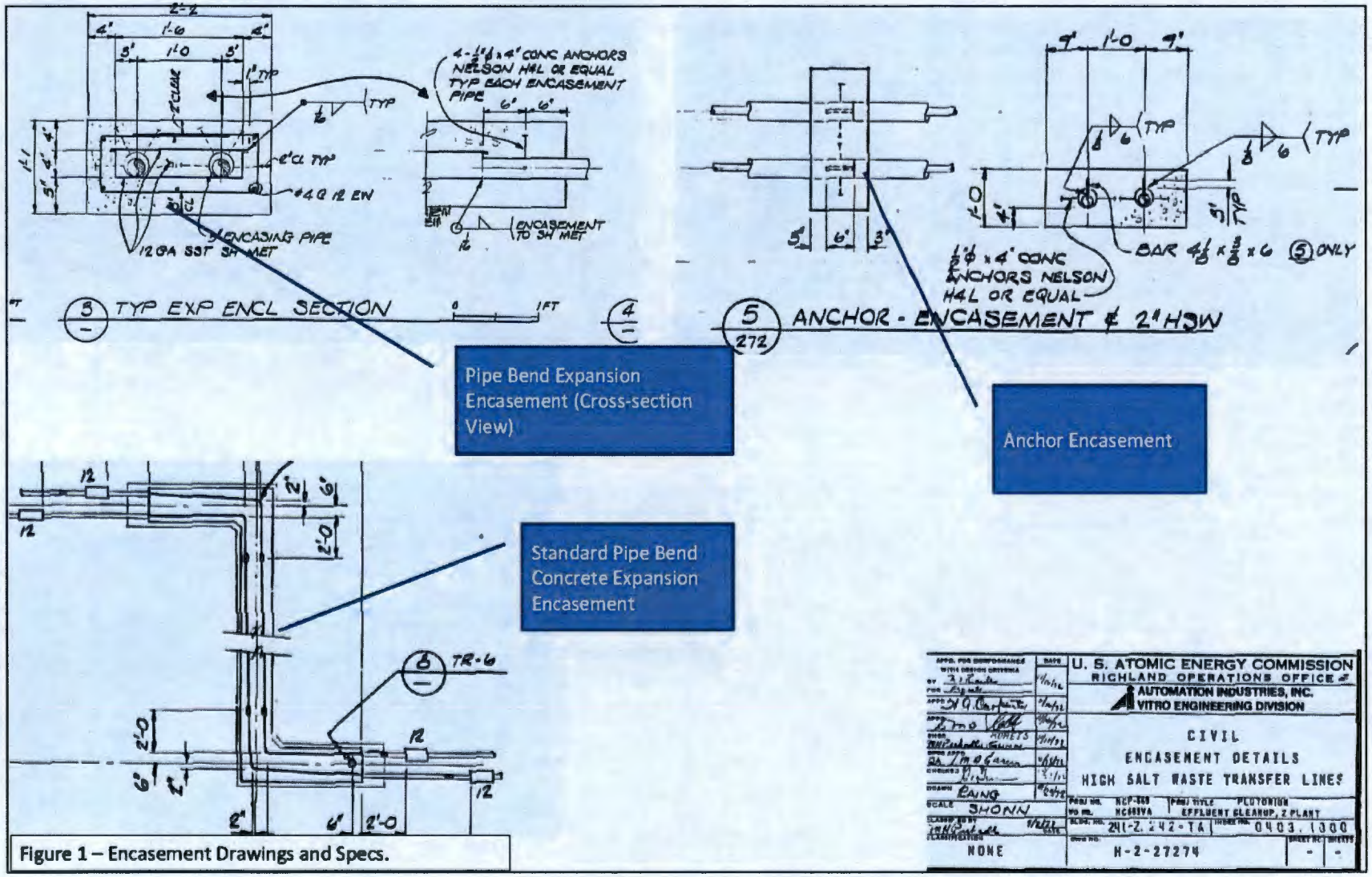


Figure 1 – Encasement Drawings and Specs.

Table 4-2. Past Waste Characterization of Plutonium Finishing Plant Waste Transferred to the 241-Z Treatment and Storage Tanks. (Concentrations are listed in parts per million). (sheet 1 of 2)

Species	PRF CAW	PRF CAW Range*	PRF CXP	PRF CUU	PRF LSW	RMC HSW	RMC LSW	Laboratories
Ag^{+}	---	---	---	---	---	---	---	10
Al^{+3}	20,000	10,000-18,000	0	0	0	0	0	0
Ba^{+2}	1	---	0	0	1	0	0	0
Ca^{+2}	50	---	1	0	6	0	2	0
Cr	70	10-100	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Fe^{+2}	50	0-10,000	50	50	60	50	54	50
H^{+}	2000	2,000-3,000	0	400	2,000	0	800	100
K^{+}	40	0-7,000	0	0	200	200,000	90	0
Mg^{+2}	1	---	0	0	1	0	0	0
Mn^{+2}	50	0-9,000	0	0	100	0	300	0
Na^{+}	600	0-10,000	20,000	0	100	20,000	100	100
Ni^{+2}	40	10-100	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Pb^{+2}	90	---	0	0	0	0	0	0
Sr^{+2}	2	---	0	0	0	0	0	0
OH^{-}	0	---	80	0	0	30,000	0	0
CO_3^{-2}	0	---	30,000	0	0	1,000	0	0
Cl^{-}	300	0-20,000	3	3	200	9,000	30	10
F^{-}	800	300-1,000	1,000	1,267	0	44,280	0	0
I^{-}	0	---	0	0	0	0	0	0
NO_3^{-}	300,000	200,000 - 300,000	20,000	20,000	100,000	0	50,000	1,000
NO_2^{-}	1,000	---	60	0	400	0	400	20
PO_4^{-3}	20	---	2	0	8	0	4	0

Table 4-2. Past Waste Characterization of Plutonium Finishing Plant Waste Transferred to the 241-Z Treatment and Storage Tanks. (Concentrations are listed in parts per million). (sheet 2 of 2)

Species	PRF CAW	PRF CAW Range*	PRF CXP	PRF CUU	PRF LSW	RMC HSW	RMC LSW	Laboratories
SO_4^{-2}	200	---	0	0	0	0	0	0
CCl_4	600	---	700	700	300	0	0	0
Ammonia	200	---	0	0	0	0	0	0
TBP	4,000	---	6,000	6,000	0	0	0	0
Butanol	12	11-13	0	0	500	0	0	0
DBP	0	---	800	0	0	0	0	0
MBP	0	---	0	0	0	0	0	0
TOC	3,000	---	3,000	3,000	400	0	0	0
Silica	90	---	0	0	0	0	0	0
Pu	9	2-200	60	20	2	<1	6	0
Am	1	0-8	0	3	1	0	1	0
U	1	---	0	20	0	0	3	0

* Waste concentrations show a range due to variations in the PRF process used to accommodate variations in the PRF feed.

CAW = column aqueous waste
CXP = CX column waste stream
CUU = CU column waste stream
DBP = dibutyl phosphate
HSW = high-salt waste
LSW = low-salt waste
MBP = monobutyl phosphate
PRF = Plutonium Reclamation Facility
RMC = remote mechanical C
TBP = tributyl phosphate
TOC = total organic carbon.

Figure 2 – 241-Z Treatment and Storage Tank Closure; Waste Characterization Table (DOE/RL-96-82)

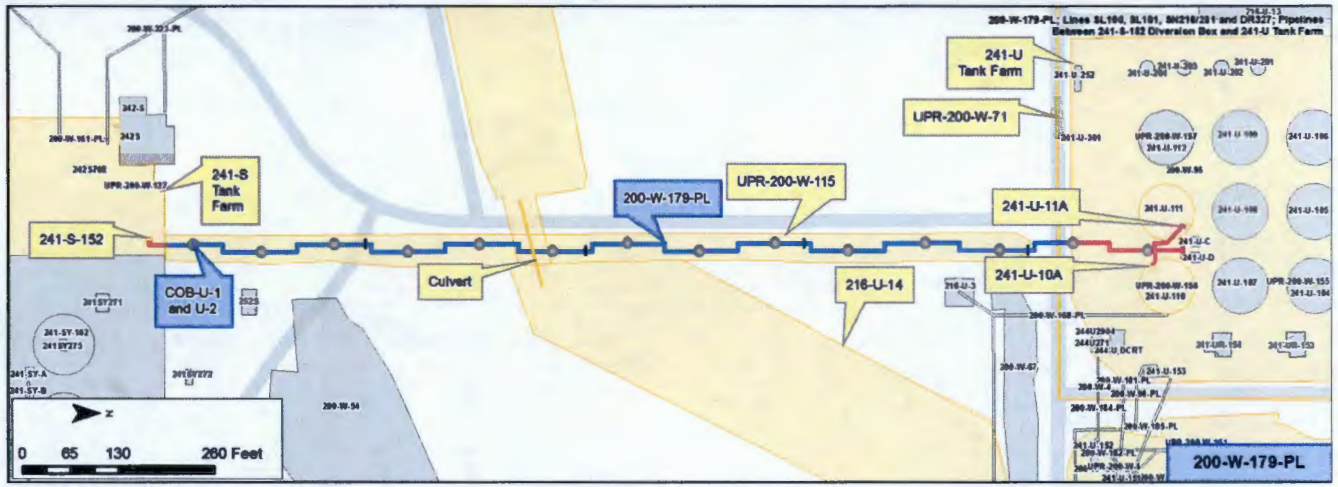
Scoping Summary: 200-W-179-PL

History

The 200-W-179-PL waste site is an inactive underground pipeline that consists of four pipe-in-pipe encased lines extending north from the 241-S-152 Diversion Box in the 241-S tank farm to valve and pump pits in the 241-U tank farm.

The pipelines were installed in approximately 1973 and operational by 1977, when the 241-S-152 Diversion Box was placed in service. The operational end date is unknown; however, the last known failure event was recorded in 2002.

Line SL-100 extends from the 241-S-152 Diversion Box to valve pit 241-U-C. Line SL-101 extends from the diversion box to valve pit 241-U-D and was cut and capped after blockage was found on both ends in April 1981. Line DR-327 extends from COB-U-2 (clean out box) and COB-U-1 on Line SL-101 to pump pits 241-U-10-A and 11A. Line SN-216/281 extends from valve pit 241-U-D to the diversion box and was blocked 14 ft from the valve pit in Nov-1999, and had additional blockage in 2001/2002. The line is now capped at the diversion box nozzle and was cut and capped approximately 85 ft before the valve pit.



Construction

- Length: 5,972 ft (total)
  - SL-100, SL-101, SN-216/281, and DR-327: ~1,493 ft (each)
- Diameter
  - Lines SL-100 and SL-101: 2 in. within a 4 in.
  - Lines SN-216/281 and DR-327: 3 in. within a 6 in.
- Composition: Carbon Steel
- Flow Method: Pressurized, bi-directional flow indicated
- Encasement: Pipe-in-pipe on a concrete slab 4 ft wide and 8 in. tall
- Cathodic Protection: Yes
- Depth: ~3 ft - 8 ft bgs
- Total Calculated Volume: ~1,553 gal
  - SL-100 & SL-101: ~244 gal each
  - SN-216/281: ~517 gal
  - DR-327: ~548 gal

Features of Interest

- SL-100 and SL-101 have 14 pairs of clean out boxes (indicated as circles on the plan view) with 2 in. tie ins, pairs spaced 4 ft apart, 100 ft between pairs
- SL-100, SL-101 and SN-216 have four risers each (indicated with dashes on the plan view)
- There is reference to DR-327 being capped at a riser on the segment between the pump pits, exact location was not found
- 200-W-179-PL crosses a 48 ft culvert
- SN-282 stub from 241-SY-B-R3 was connected to SN-216 and routed to 241-U-D-R1

Relevant Characterization

- UPR-200-W-115 refers to soil contamination located above 200-W-179-PL. In 1981 a radiation survey indicated the soil and COBs on the pipeline encasement were free of contamination. The only radiation detected was a emitting from the interior of the COBs
- Periodic radiological surveys since 1981 of the surface of the COBs and risers have indicated levels consistent with background

Waste Streams

- Valve pits 241-U-C/U-D and pump pits 241-U-10A/11A are associated with 241-U-110 and 241-U-111 single shell tanks, which received BiPO4 metal waste, REDOX, lab waste, PNL waste HNO4/KMnO4, N Reactor waste, decontamination waste
- 241-S-152 diversion box received waste from 241-S and 241-SX tank farms and transferred it to the 242-S Evaporator, which received single-shell tank supernate, phosphate, complexed radioactive, and miscellaneous dilute radioactive
- See page 3 for historical tank content of SN-216/281 associated tanks, 241-U-111 and 241-U-107

Misc./Other Relevant Information

- SN-216/281 was used to support the salt well pumping campaign for 241-U-107; estimated length of 1999 blockage was 1,444 ft with an estimated residual waste volume of 80 gal
- SL-101 transferred partially neutralized 242-S Evaporator waste to 241-U-107; estimated length of 1981 blockage was 1,444 ft with an estimated residual waste volume of 35 gal

Site Interfaces

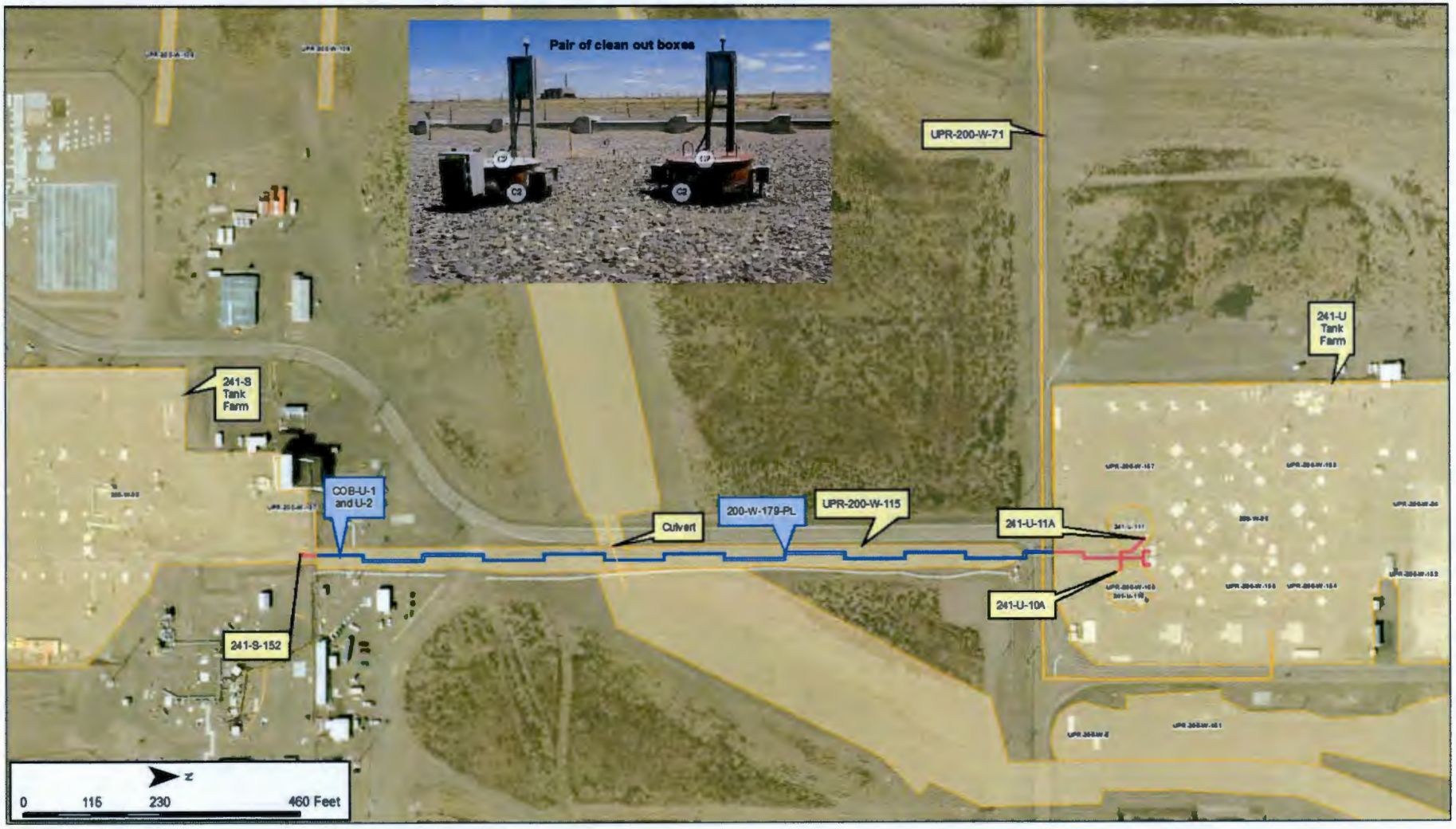
Origin/Termination

- 241-S-152 Diversion Box (WMA S/SX)
- 241-U-C Valve Pit (WMA U)
- 241-U-D (WMA U)
- 241-U-10A Pump Pit
- 241-U-11A Pump Pit

Site Intersects

200-IS-1
- UPR-200-W-115
- 200-W-96 (WMA S/SX)

200-WA-1
- 216-U-14
- 200-W-67
- 200-W-95 (WMA U)
- UPR-200-W-71 (rejected)


Pair of clean out boxes
UPR-200-W-71
241-U Tank Farm
241-S Tank Farm
COB-U-1 and U-2
Culvert
200-W-179-PL
UPR-200-W-115
241-U-11A
241-U-10A
241-S-152
N
0
115
230
460 Feet

Single-Shell Tank 241-U-107							
SMM Composite Inventory Estimate							
Physical Properties							
Total SMM Waste	1.94E+06 kg			(330 kgal)			
Heat Load	2.68 kW			(9.14E+03 BTU/hr)			
Bulk Density*	(1.55 g/cc)						
Water wt%†	36.8						
TOC wt% C (wet)	0.839						
Radiological Constituents	**Ci/L**	**µCi/g**	**Ci**	**-95 CI (Ci/L)**	**-67 CI (Ci/L)**	**+67 CI (Ci/L)**	**+95 CI (Ci/L)**
Sr-90	0.125	80.1	1.56E+05	0.116	0.120	0.129	0.133
Tc-99	2.30E-04	0.148	288	1.52E-04	1.90E-04	2.71E-04	3.09E-04
I-129	4.36E-07	2.80E-04	0.545	2.87E-07	3.60E-07	5.13E-07	5.87E-07
Cs-137	0.279	179	3.48E+05	0.251	0.264	0.293	0.306
U-232	3.37E-07	2.17E-04	0.421	2.90E-07	3.13E-07	3.48E-07	3.60E-07
U-233	1.27E-06	8.19E-04	1.59	1.10E-06	1.18E-06	1.32E-06	1.36E-06
U-234	7.19E-07	4.63E-04	0.898	6.87E-07	7.03E-07	7.36E-07	7.52E-07
U-235	2.98E-08	1.91E-05	3.72E-02	2.84E-08	2.90E-08	3.05E-08	3.11E-08
U-236	1.81E-08	1.16E-05	2.26E-02	1.73E-08	1.77E-08	1.84E-08	1.87E-08
U-238	9.14E-07	5.88E-04	1.14	8.82E-07	8.98E-07	9.31E-07	9.47E-07
Np-237	2.16E-06	1.39E-03	2.70	1.74E-06	1.95E-06	2.37E-06	2.58E-06
Pu-238	9.70E-07	6.24E-04	1.21	7.24E-07	8.58E-07	1.05E-06	1.13E-06
Pu-239	4.70E-05	3.02E-02	58.7	3.68E-05	4.20E-05	5.16E-05	5.61E-05
Pu-240	6.98E-06	4.49E-03	8.72	5.41E-06	6.22E-06	7.65E-06	8.29E-06
Pu-241	6.55E-05	4.21E-02	81.9	4.88E-05	5.80E-05	7.11E-05	7.64E-05
Pu-242	2.82E-10	1.81E-07	3.52E-04	2.06E-10	2.49E-10	3.03E-10	3.24E-10
Am-241	1.64E-04	0.106	205	1.33E-04	1.48E-04	1.80E-04	1.96E-04
Am-243	8.44E-09	5.43E-06	1.05E-02	7.28E-09	7.85E-09	9.03E-09	9.61E-09
Totals	**M**	**µg/g**	**kg**	**-95 CI (M or g/L)**	**-67 CI (M or g/L)**	**+67 CI (M or g/L)**	**+95 CI (M or g/L)**
Pu	5.66E-04 (g/L)	---	0.707	3.96E-04	4.82E-04	6.44E-04	7.18E-04
U	8.55E-03	1.31E+03	2.54E+03	8.13E-03	8.34E-03	8.76E-03	8.96E-03

*Density is calculated based on Na, OH-, and AlO2-.

†Water wt% derived from the difference of density and total dissolved species.

Single-Shell Tank 241-U-111							
Total Inventory Estimate*							
Physical Properties							
Total Waste	1.72E+06 kg			(329 kgal)			
Heat Load	2.01 kW			(6.87E+03 BTU/hr)			
Bulk Density†	(1.38 g/cc)						
Water wt%†	52.6						
TOC wt% C (wet)	0.587						
Radiological Constituents	**Ci/L**	**µCi/g**	**Ci**	**-95 CI (Ci/L)**	**-67 CI (Ci/L)**	**+67 CI (Ci/L)**	**+95 CI (Ci/L)**
Sr-90	0.116	84.0	1.44E+05	0.105	0.111	0.119	0.122
Tc-99	1.44E-04	0.104	179	9.53E-05	1.19E-04	1.68E-04	1.92E-04
I-129	2.72E-07	1.97E-04	0.339	1.80E-07	2.25E-07	3.19E-07	3.65E-07
Cs-137	0.178	129	2.22E+05	0.162	0.170	0.187	0.195
U-232	2.02E-07	1.47E-04	0.252	1.74E-07	1.88E-07	2.09E-07	2.16E-07
U-233	7.65E-07	5.55E-04	0.952	6.59E-07	7.11E-07	7.89E-07	8.16E-07
U-234	1.08E-06	7.86E-04	1.35	1.04E-06	1.07E-06	1.10E-06	1.11E-06
U-235	4.71E-08	3.42E-05	5.86E-02	4.53E-08	4.63E-08	4.76E-08	4.81E-08
U-236	1.50E-08	1.09E-05	1.87E-02	1.45E-08	1.48E-08	1.52E-08	1.54E-08
U-238	1.21E-06	8.75E-04	1.50	1.16E-06	1.19E-06	1.22E-06	1.23E-06
Np-237	1.35E-06	9.80E-04	1.68	1.09E-06	1.22E-06	1.48E-06	1.61E-06
Pu-238	8.18E-07	5.94E-04	1.02	6.66E-07	7.49E-07	8.69E-07	9.19E-07
Pu-239	4.63E-05	3.36E-02	57.7	4.01E-05	4.32E-05	4.92E-05	5.19E-05
Pu-240	6.57E-06	4.77E-03	8.18	5.60E-06	6.10E-06	6.98E-06	7.38E-06
Pu-241	5.29E-05	3.84E-02	65.9	4.26E-05	4.83E-05	5.64E-05	5.96E-05
Pu-242	2.26E-10	1.64E-07	2.81E-04	1.79E-10	2.06E-10	2.39E-10	2.52E-10
Am-241	1.02E-04	7.42E-02	127	8.27E-05	9.23E-05	1.12E-04	1.22E-04
Am-243	5.26E-09	3.82E-06	6.54E-03	4.54E-09	4.89E-09	5.62E-09	5.97E-09
Totals	**M**	**µg/g**	**kg**	**-95 CI (M or g/L)**	**-67 CI (M or g/L)**	**+67 CI (M or g/L)**	**+95 CI (M or g/L)**
Pu	6.37E-04 (g/L)	---	0.793	5.32E-04	5.85E-04	6.85E-04	7.30E-04
U	1.34E-02	2.32E+03	3.98E+03	1.29E-02	1.32E-02	1.36E-02	1.37E-02

*Unknowns in tank solids inventory are assigned by Tank Layering Model (TLM).

†Volume average density, mass average Water wt% and TOC wt% C.

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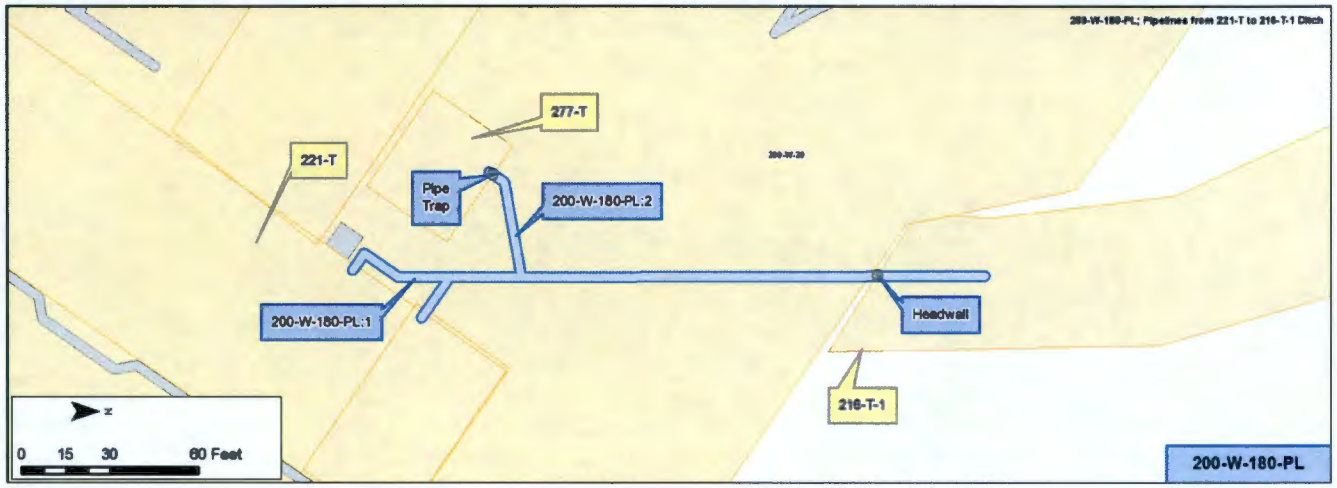
Scoping Summary: 200-W-180-PL

History

The 200-W-180-PL waste site is an inactive underground process sewer pipeline that carried miscellaneous waste from the 221-T and 277-T buildings within the T Plant complex to the 216-T-1 Ditch.

The site consists of two subsites:
200-W-180-PL:1 is three vitrified clay (VCP) segments that connect the 221-T building to the ditch.
200-W-180-PL:2 is a cast iron pipe that connects the 277-T Building to the 200-W-180-PL:1 VCP pipe.

The pipeline was operational from 1944 to 1995, when the Ditch was deactivated. The site and the ditch were inactive for a period from Jun-1956 to Jan-1964 ,due to T Plant operations being shut down.



Construction

- Total Length: 275 ft
- Composition: Vitrified Clay and Cast Iron
- Flow Method: Gravity
- Direct Buried
- Encasement: None
- Cathodic Protection: None
- Depth: 1 ft - 5 ft bgs
- Total Calculated Volume: 550 gal

200-W-180-PL:1

- 8 in. Diameter Segment: Approx. 182 ft long, calculated volume 475 gal
- 6 in. Diameter Segment: Approx. 17 ft, calculated volume 25 gal
- 4 in. Diameter Segment: Approx. 38 ft, calculated volume 25 gal
- Composition: Vitrified Clay

200-W-180-PL:2

- 4 in. Diameter Segment: Approx. 38 ft, calculated volume 25 gal
- Composition: Cast Iron

Features of Interest

- Cast iron trap on 200-W-180-PL:2 at the exit from 277-T building
- Timber headwall at the entrance to 216-T-1 ditch

Relevant Characterization

- No characterization data for the 200-W-180-PL site was located
- 1998 radionuclide curies inventory for 216-T-1 included:
  - 2.93E-02 of Sr-90
  - 8.14E-11 of Cs-134
  - 1.90E-07 of Cs-135
  - <3.14E-02 of Cs-137
  - 1.50E-03 of U Gross

Waste Streams

- Cooling water, steam condensate and decontamination waste from 221-T and 277-T
- 221-T head-end miscellaneous waste from PNL and Westinghouse experimental testing
- Sodium hydroxide wash water solution
- Process solutions, roof and floor drains from the 221-T building head-end wastewater stream
- Strontium, Uranium and Cesium detected in the 216-T-1 ditch

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

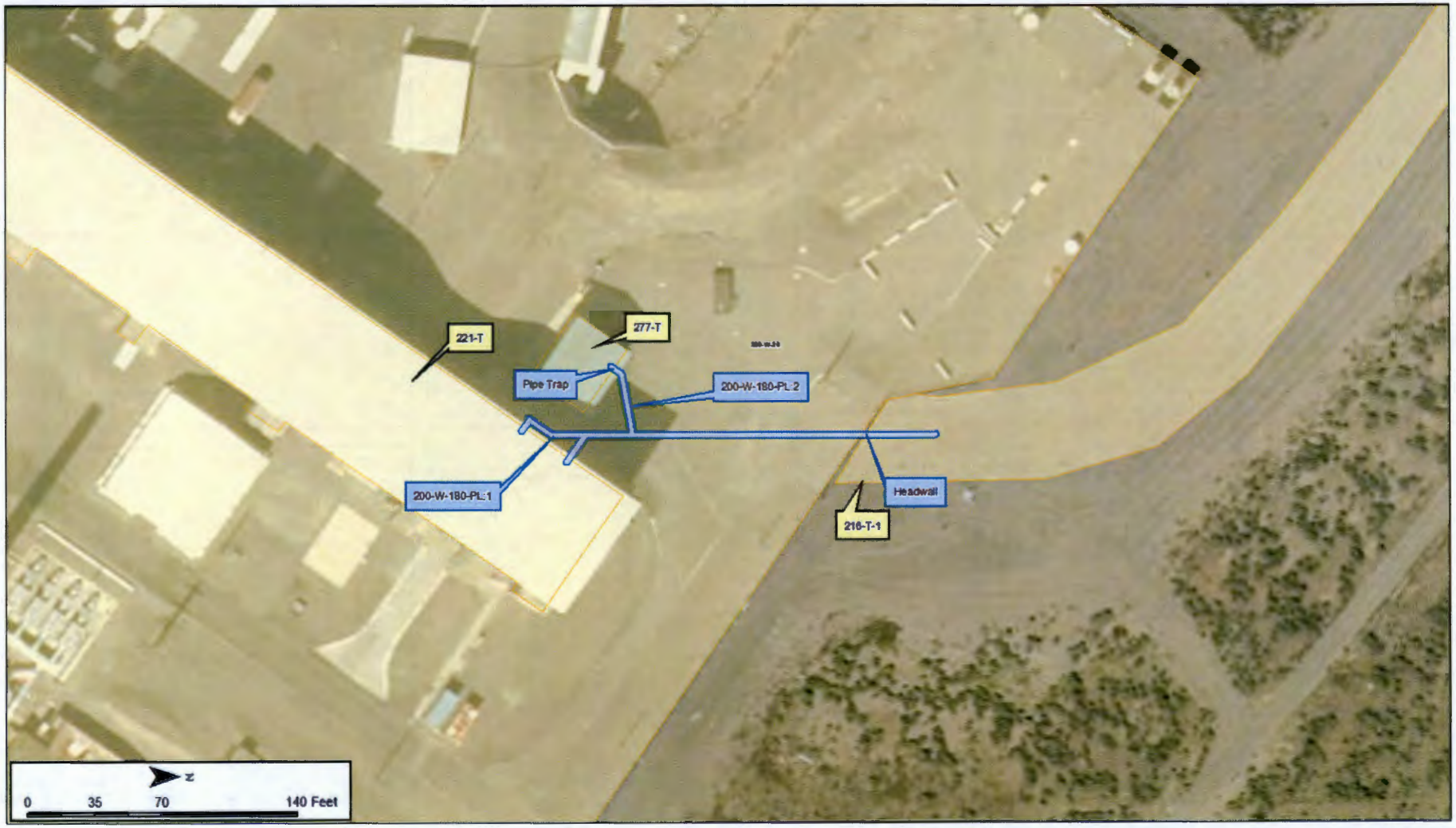
- 221-T (facility) (origin)
- 277-T (facility) (origin)

200-OA-1

- 216-T-1 Ditch (termination)

Site Intersects

- 200-W-20 (T Plant Complex)


221-T
277-T
Pipe Trap
200-W-180-PL:2
200-W-180-PL:1
Headwall
216-T-1
N
0
35
70
140 Feet

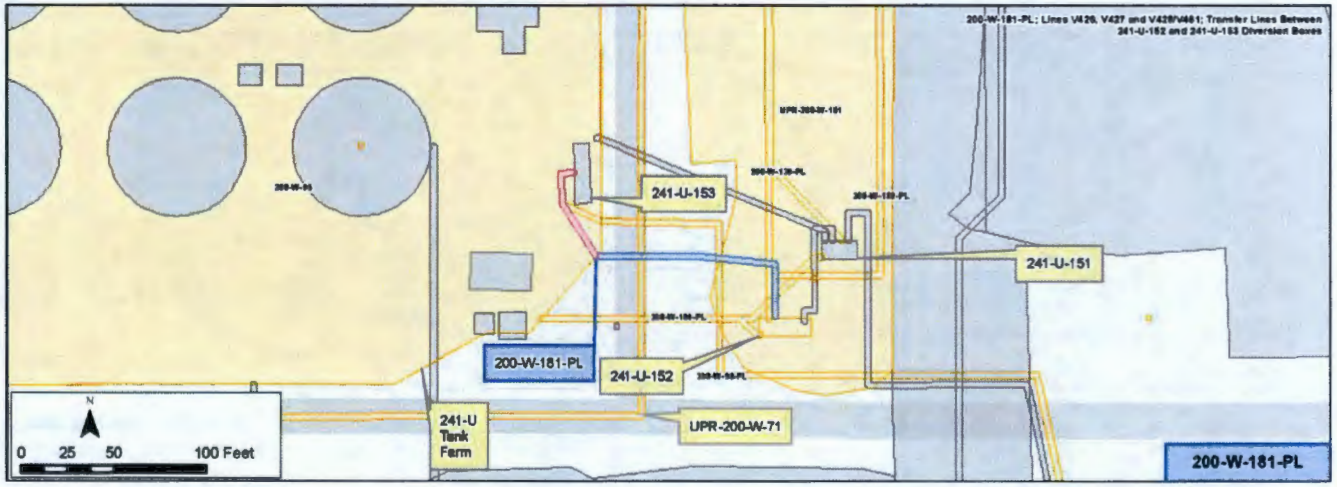
Scoping Summary: 200-W-181-PL

History

The 200-W-181-PL waste site is a set of inactive underground tank farm transfer lines (V426, V427, V461/V428) used to convey both solid and liquid process effluent from the 241-U-152 to the 241-U-153 Diversion Box.

The pipeline was active from 1949 to 1981. There were no documented releases or losses from this pipeline.

Line V426, one of three parallel lines, failed in 1979 and was taken out of service and capped at both ends. The 200-W-181-PL slopes toward the 241-U-153 Diversion Box, located inside the tank farm. The stated practice was to flush pipelines following each transfer; however, no documentation was found for this pipeline.



Construction

- Length: 3 lines, each ~185 ft
  - V426
  - V427
  - V461/V428
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Encasement Specifications: 8 in. diameter steel pipe (for 30 ft)
- Depth: 13 ft – 14 ft bgs
- Total Calculated Volume: 67.9 gal each, 131.5 gal total (V426 taken out of service)

Features of Interest

- 5 bends
- 1 encasement (30 ft)
- 2 pipe caps (on either end plugged line V426)

Relevant Characterization

- No relevant characterization data was identified for this line

Waste Streams

- 200-W-181-PL transported both supernatant and sludge materials
  - Over the operating lifetime the waste streams were mixed, both liquids and solids and included: BiPO4, Uranium Recovery, Waste Scavenging, REDOX, Waste Fractionization

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-U-152 Div Box
- 241-U-153 Div Box

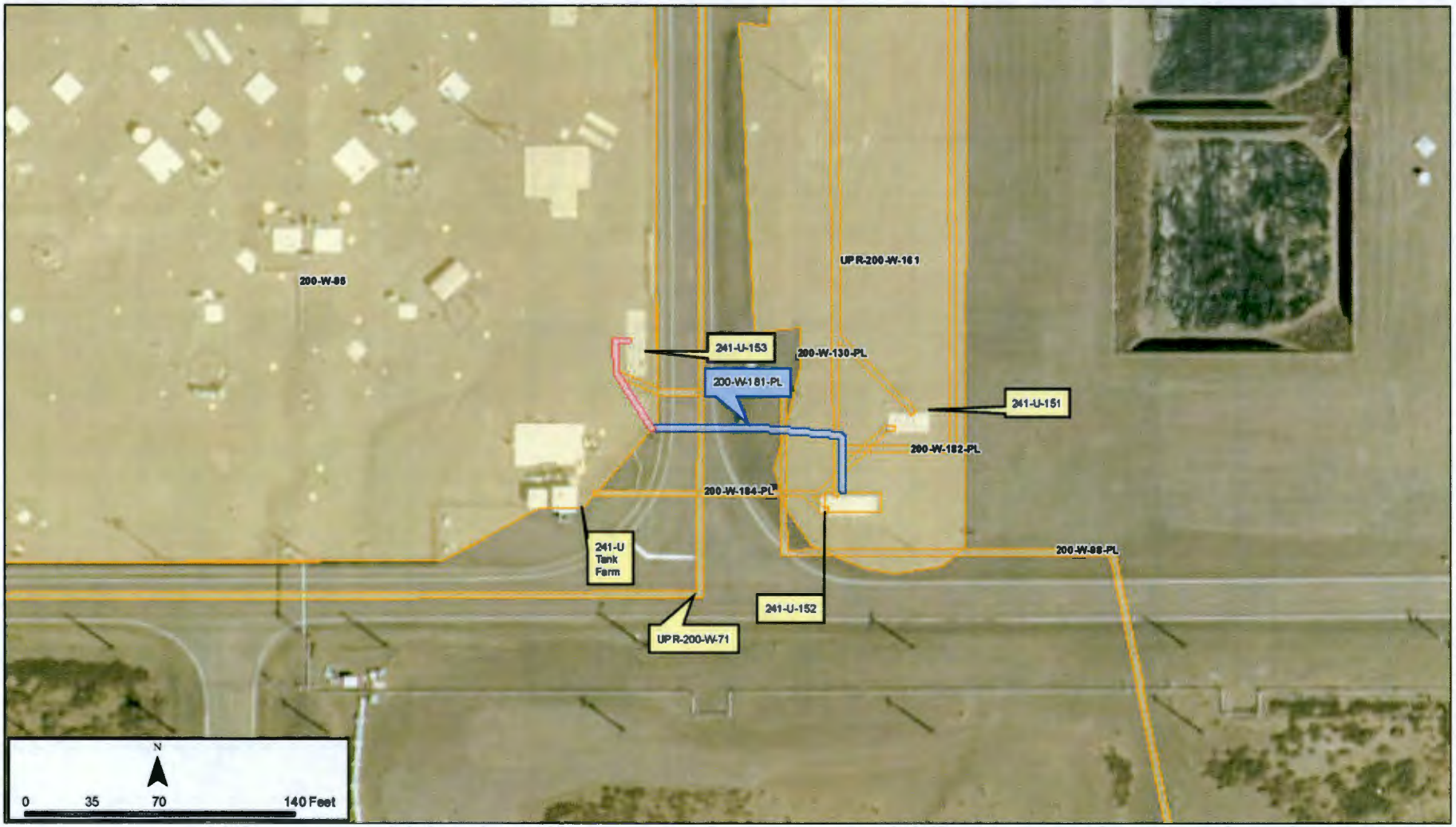
Site Intersects

200-IS-1
- 200-W-98-PL
- 200-W-130-PL
- 200-W-182-PL
- 200-W-184-PL
- UPR-200-W-161

200-WA-1
- UPR-200-W-71

WMA U
- 200-W-95

Scoping Summary: 200-W-181-PL



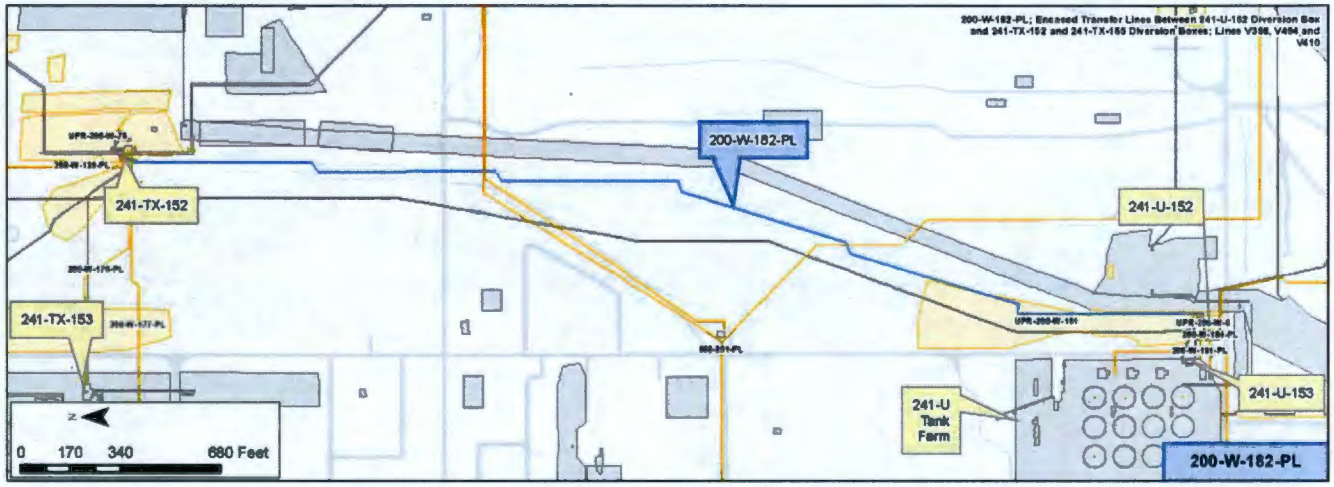
Scoping Summary: 200-W-182-PL

History

The 200-W-182-PL waste site is a set of pipelines (V398, V410, V404) used to transfer T Plant process liquids and solids from the 241-TX-152 Diversion Box to the 241-U-152 Diversion Box. It was built in 1944 and was in use until about 1985.

In 1979, lines V398 and V404 were reconfigured to be routed through the 241-TX-152 Diversion Box. During this process,line V410 was taken out of service.

Line V398 leaked near test riser TR-36-TX, as confirmed with a failed pressure test in 1982.



Construction

- Length: 3920 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Encasement: 3-38 encasement transitioned to a 10-87 encasement following line modifications
- Cathodic protection
- Depth: 11 ft - 12 ft bags
- Calculated Volume: 1,140 gal

Features of Interest

- 16 bends
- 2 Pipe connections
- 1 plugged pipeline
- Carbon steel risers welded to stainless steel T's

Relevant Characterization

- There are no characterization data for 241-W-182-PL

Waste Streams

- 241-W-182-PL was constructed to convey T Plant process wastes to tank farms
  - Initial process was BiPO4 (Metal Waste (MW1; MW2); Cladding Waste (CW); First and Second Cycle Decontamination Waste (1C1, 1C2; 2C1, 2C2))
  - Tribute phosphate processing
  - 242-T evaporator concentration and high level waste (2C, CW, cell drainage, and 224-T wastes)
  - REDOX and in-tank scavenging materials
  - T Plant decontamination waste (DW)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-I5-1

- 241-TX-152 Div. Box
- 241-TX-155 Div. Box
- 241-U-152 Div. Box

Site Intersects

200-IS-1

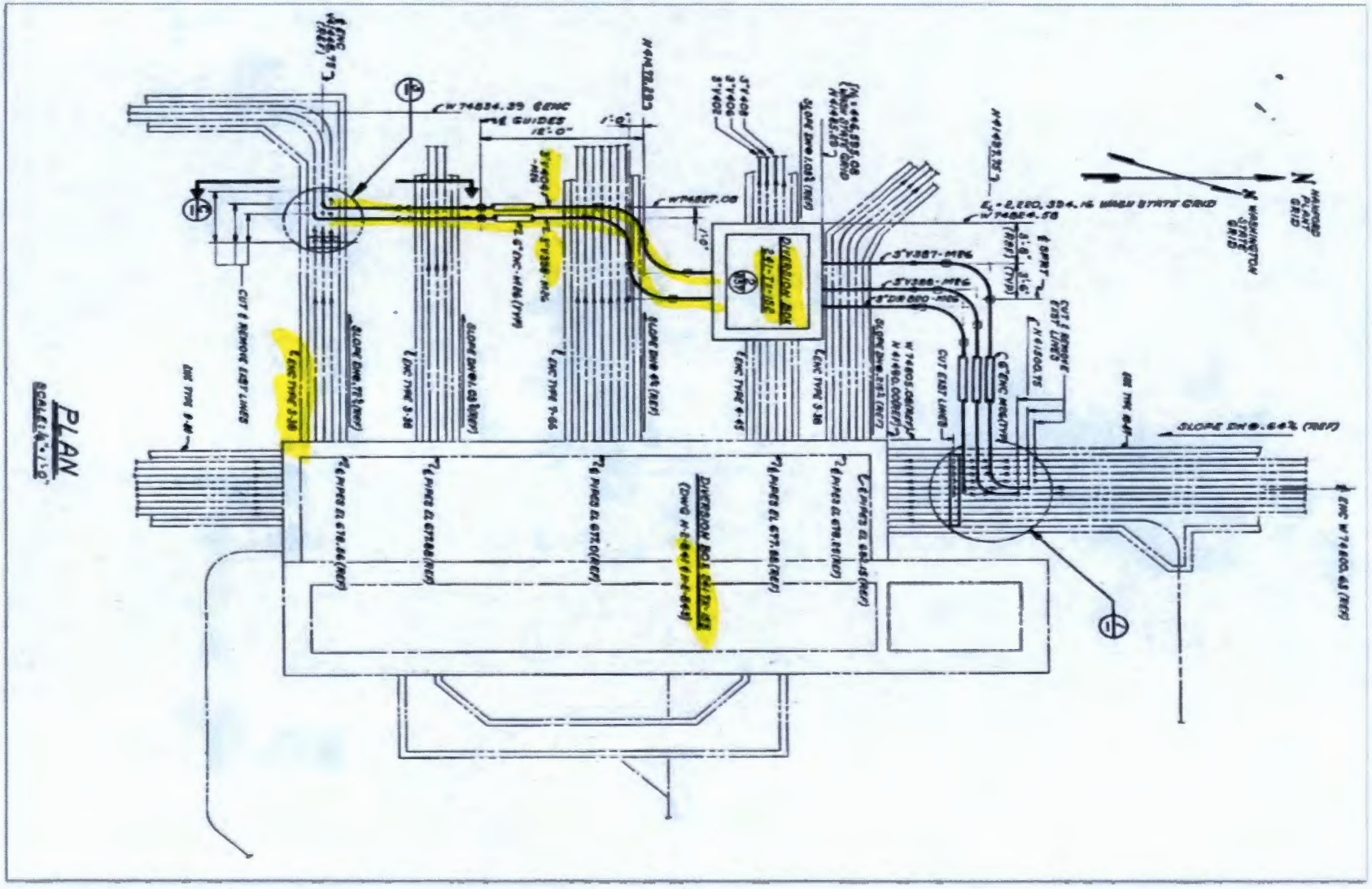
- 200-W-99-PL
- 200-W-129-PL
- 200-W-176-PL
- 200-W-177-PL
- 200-W-181-PL
- 200-W-183-PL
- 200-W-184-PL
- UPR-200-W-6: 241-U-151 and 241-U-152 Div. Boxes
- UPR-200-W-76: 241-TX-152 Div. Box, 241-TX-155 Div. Box and 241-TX-302B catch tank
- UPR-200-W-161: 241-U Tank Farm

No Operable Unit

- 600-291-PL (TEDF Pipeline)

UPR-200-W-76
200-W-129-PL
241-TX-152
200-W-176-PL
200-W-177-PL
241-TX-153
200-W-182-PL
600-291-PL
UPR-200-W-161
2UPR-200-W-8
200-W-184-PL
200-W-181-PL
241-U-152
241-U-153
241-U Tank Farm
N
0 255 510 1,020 Feet

241-TX-152 Diversion Box, 200-W-182-PL Pipe Arrangement



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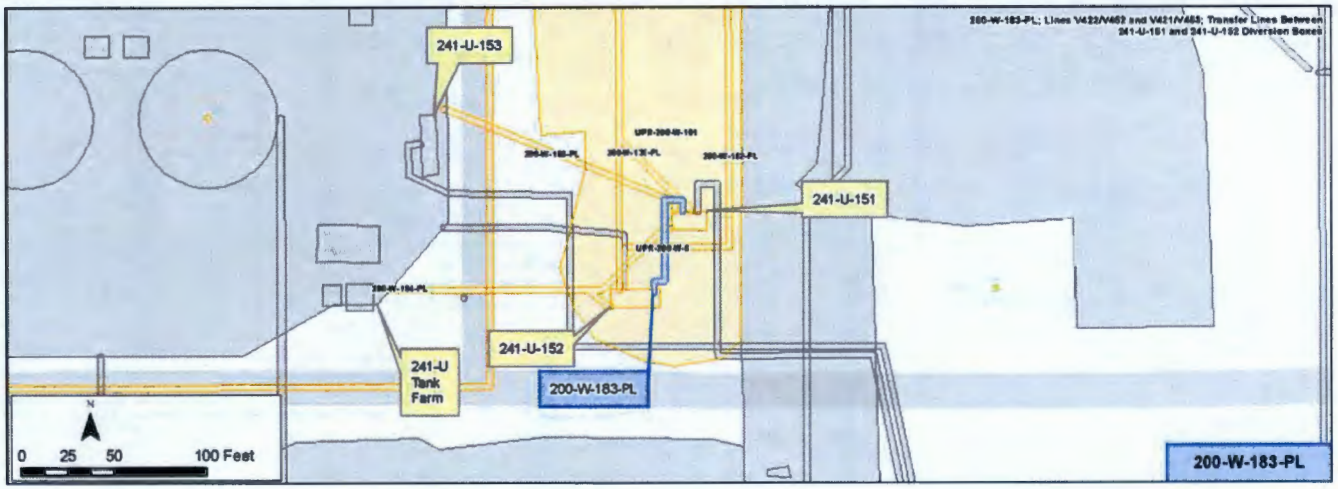
Scoping Summary: 200-W-183-PL

History

The 200-W-183-PL waste site is an inactive underground pipeline comprised of lines V422/V452 and V421/V453 used to transfer salt cake and evaporator feed wastes from the 241-U-152 to 241-U-151 Diversion Boxes.

The lines were constructed in 1976 and remained active until about 1979, when the lines were stubbed off. Shortly thereafter, the diversion boxes were isolated and weather sealed.

Line V453 became plugged with waste near the 241-U-151 Diversion Box.



Construction

- Length:
  - V422/V452: 71.7 ft
  - V421/V453: 71.7 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Gravity
- Direct Buried
- Encasement Specifications: pipe-in-pipe, supported with 6 in. x 6 in. timbers treated with pentachlorophenol
- Depth: 10 ft – 13 ft bgs
- Total Calculated Volume: 44.5 gal

Features of Interest

- 4 Bends
- 2 Test Riser (one for each line)
- 2 Pressure Relief Riser (one for each line)
- 2 Pipe Encasement (one for each line)

Relevant Characterization

- There are no characterization data for the operational years for this pipeline
- One release, UPR-200-W-6, is identified as proximal to the 200-W-183-PL
  - There is no direct relationship between the UPR and the 200-W-183-PL

Waste Streams

- The 200-W-183-PL transferred saltcake materials (S1SltCk, S2SltCk) and Evaporator Feed (typically 1C1 and 1C2 supernatant, or T Plant DW)
  - The saltcake materials came from the 244-TX Double Contained Receiver Tank (DCRT) where Z Plant supplied High Salt Waste and T Plant supplied Salt Waste; the resultant stream in 1976 was called High Low Salt Waste (HLSW)
- According to SD-WM-TI-025, in 1978, line V453 was plugged during an MW2 & 1C2 transfer

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

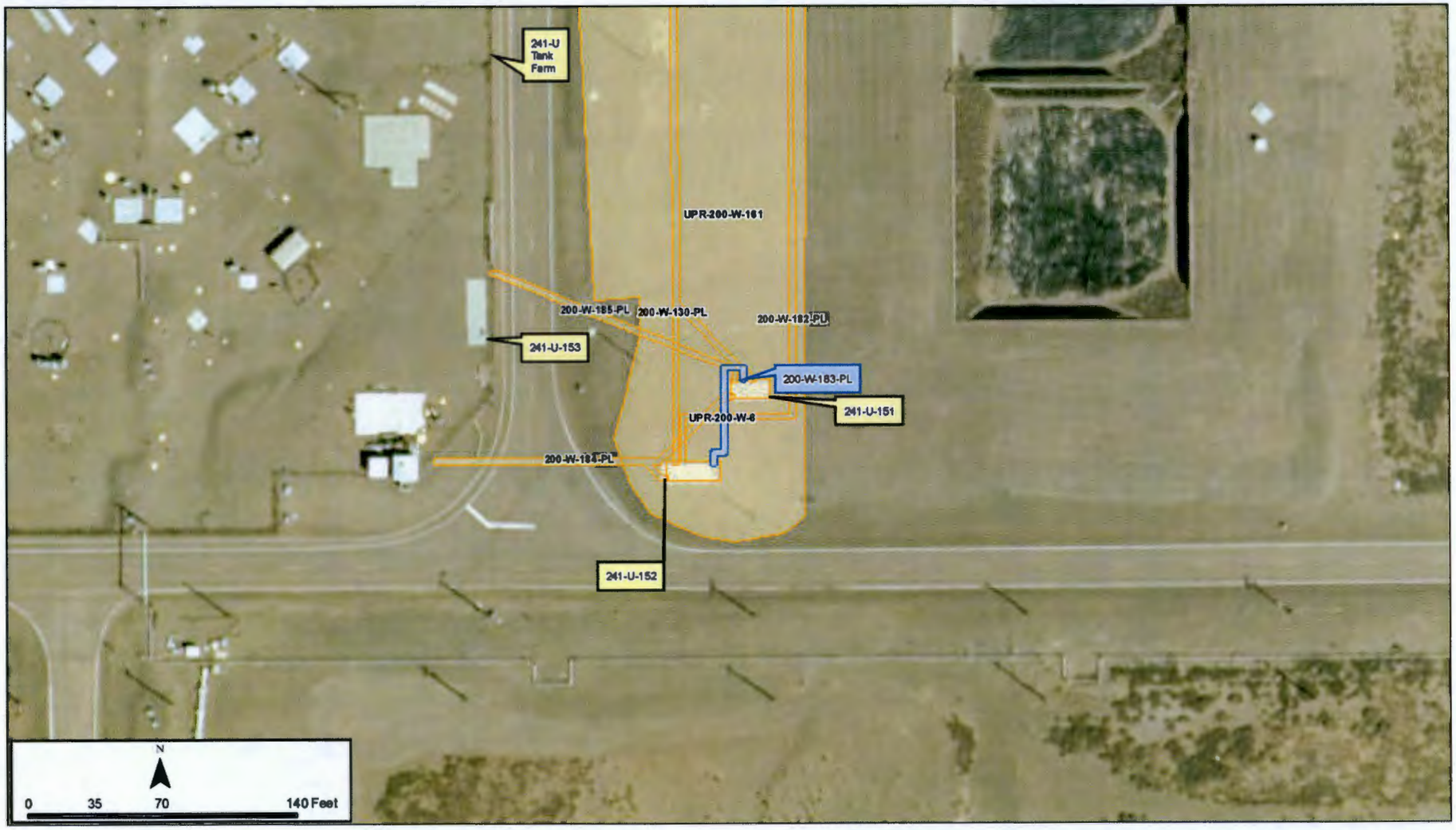
- 241-U-151 Div Box
- 241-U-152 Div Box

Site Intersects

200-IS-1

- 200-W-130-PL
- 200-W-182-PL
- 200-W-184-PL
- 200-W-185-PL
- UPR-200-W-6: 241-U-151 and 241-U-152 Div Boxes
- UPR-200-W-161: 241-U Tank Farm

Scoping Summary: 200-W-183-PL

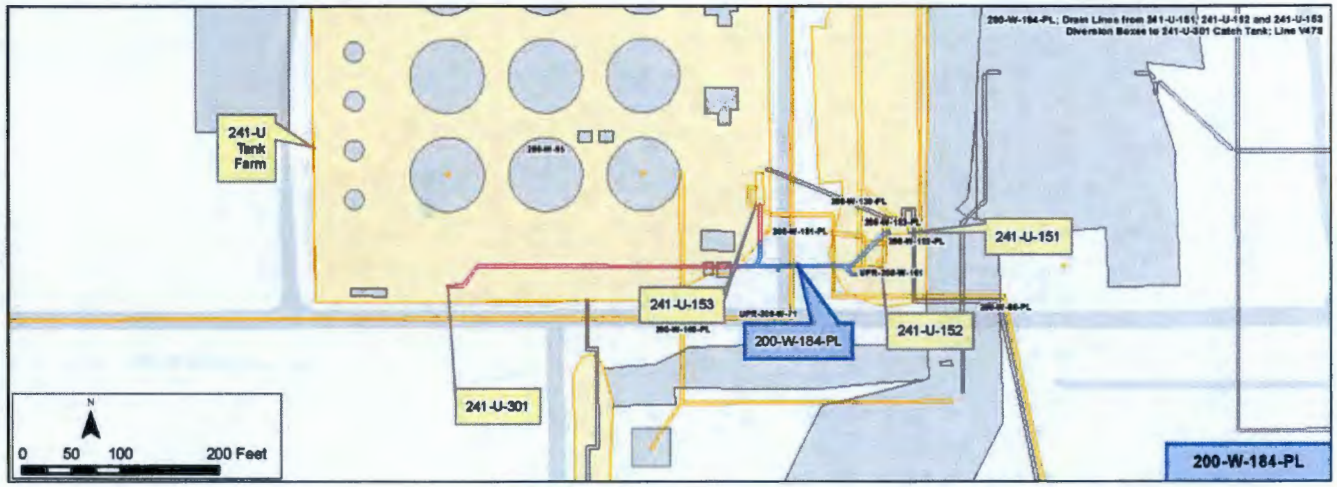


Scoping Summary: 200-W-184-PL

History

The 200-W-184-PL waste site is an inactive underground drain line used to capture BiPO4, REDOX, and PUREX process waste liquids and solids from leaks and overflows within the 241-U-151, 241-U-152, and 241-U-153 Diversion Boxes. It drains to the 241-U-301 (301B) Catch Tank.

It was operated from 1946 to about 1980. Two thirds of this pipeline is inside the U Tank Farm boundary. There are no documented releases from this drain line.



Construction

- Length: 181 ft
- Diameter: 4 in.
- Composition: Carbon Steel
- Gravity Drained
- Direct Buried
- Depth: 14.5 ft – 15 ft bgs
- Total Calculated Volume: 119 gal

Features of Interest

- 3 bends in the pipeline
- 1 junction; line from 241-U-152 Diversion Box joins the drain line from 241-U-151 Diversion Box, and is welded in place

Relevant Characterization

- There are no characterization data for this pipeline

Waste Streams

- The 200-W-184-PL drained overflows or spills from its connected diversion boxes
- Waste streams that traveled through these diversion boxes include: BiPO4 (MW, CW, 1C), TBP/Uranium Recovery (Ferrocyanides), REDOX (R1, R2, CWR1, CWR2, CWZr1), PUREX (P1, P2, CWP1, CWP2), Waste Fractionization and Salt Cake (primarily from Z Plant)
- There were additional materials from T Plant in the form of DW and evaporator feed
  - These waste streams were routed through the diversion boxes as transfers and as part of the waste volume reduction efforts throughout the operational history in the 200 Areas

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

- 241-U-151 Diversion Box
- 241-U-152 Diversion Box
- 241-U-153 Diversion Box
- 241-U-301 Catch Tank

Site Intersects

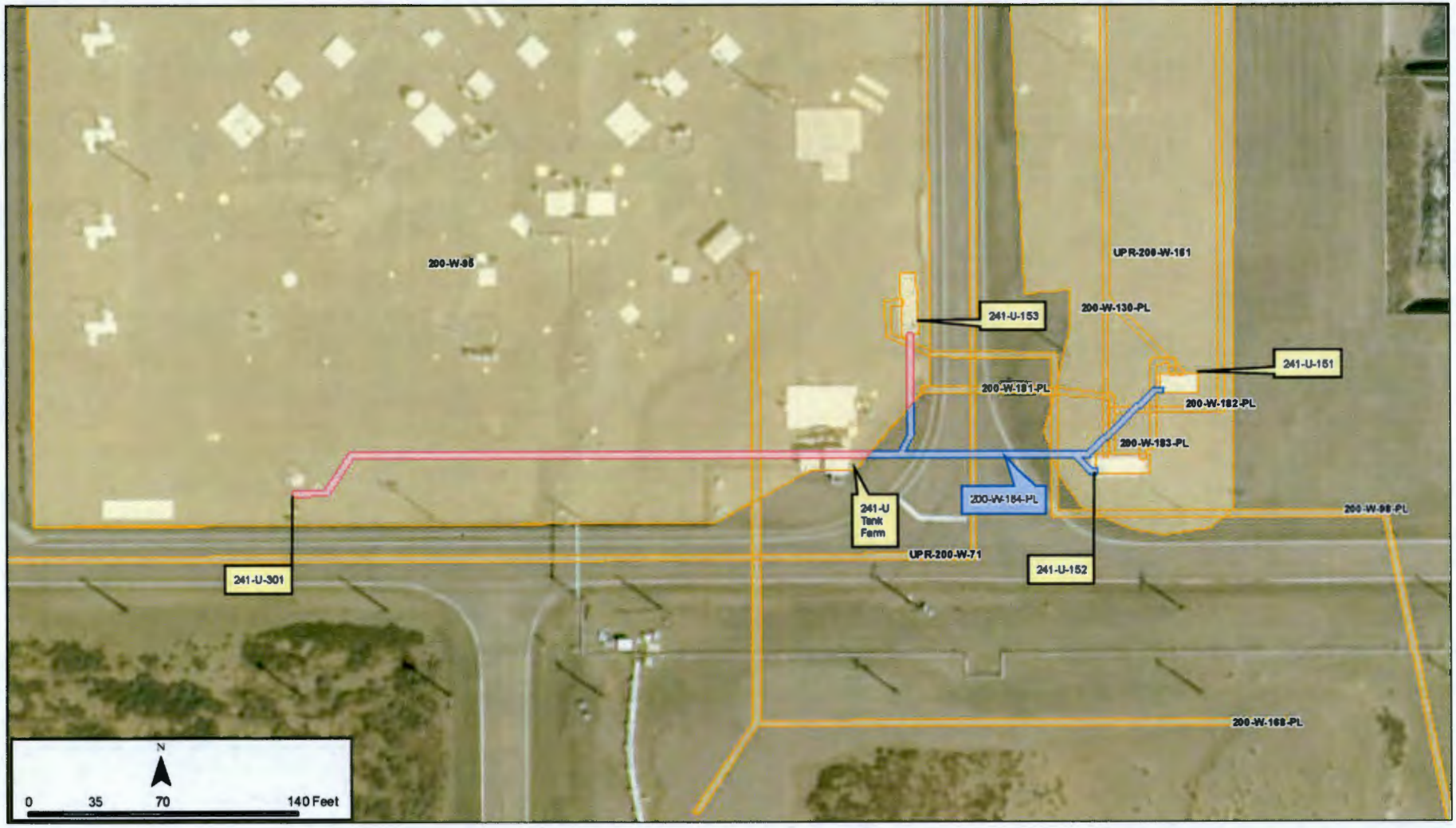
200-IS-1

- 200-W-98-PL
- 200-W-130-PL
- 200-W-181-PL
- 200-W-182-PL
- 200-W-183-PL
- UPR-200-W-161 (U Tank Farm)

200-WA-1

- UPR-200-W-71 (Contamination spread from U Farm along 16th St and Dayton Ave while delivering a heel pump to a burial ground)

Scoping Summary: 200-W-184-PL



Scoping Summary: 200-W-185-PL

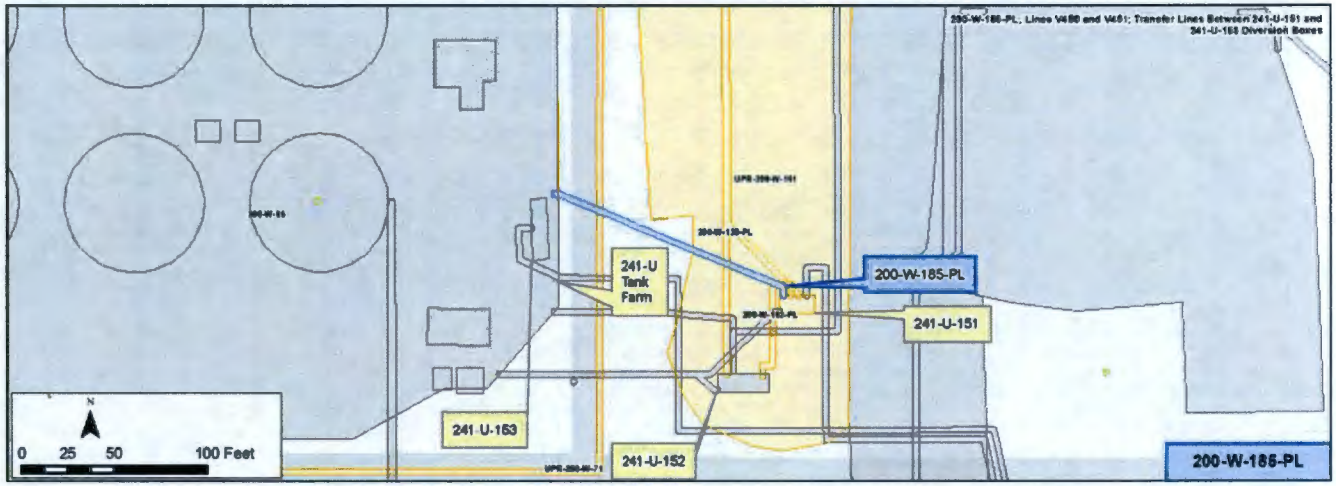
History

The 200-W-185-PL waste site is an inactive underground set of pipelines (V450 and V451) used to transfer BiPO4, REDOX and PUREX wastes from the 241-U-151 Diversion Box to the 241-U-153 Diversion Box.

It was operated from 1949 until 1980, when the lines were sealed at the 241-U-151 Diversion Box.

When the 242-S Evaporator was operating, the 200-W-185-PL was used to transfer REDOX and PUREX wastes to U Tank Farm for storage and feed to the evaporator. The last campaign may have been to convey tool and equipment decontamination waste from the T Plant, with the waste stream consisting of low level waste. These wastes were temporarily stored in tanks for settling, and then the supernatants decanted and sent to cribs and/or trenches for disposal.

During its service life, there were no recorded or documented leaks or releases or loss of transfer volumes.



Construction

- Length:
  - V450: 140 ft
  - V451: 140 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized
- Direct Buried
- Depth: 13 ft – 13.5 ft bgs
- Total Calculated Volume: 51.5 gal each, 103 gal total

Features of Interest

- 2 bends

Relevant Characterization

- There are no characterization data specific to this pipeline available.

Waste Streams

- Initial wastes were BiPO4 process related (MW, CW, 1C)
- The waste stream changed to in-tank scavenging (TBP, PFeCN1 &2, TFeCN, 1CFeCN) during uranium recovery, and REDOX processes (R1, R2, CWR1, CWR2)
- A variety of REDOX and PUREX processed wastes, sludge, supernatant and combinations of both were routed through U Tank Farm via the 200-W-185-PL as feed for volume reduction in the 242-S evaporator

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1
- 241-U-151 Div Box

WMA U
- 241-U-153 Div Box (241-U Tank Farm)

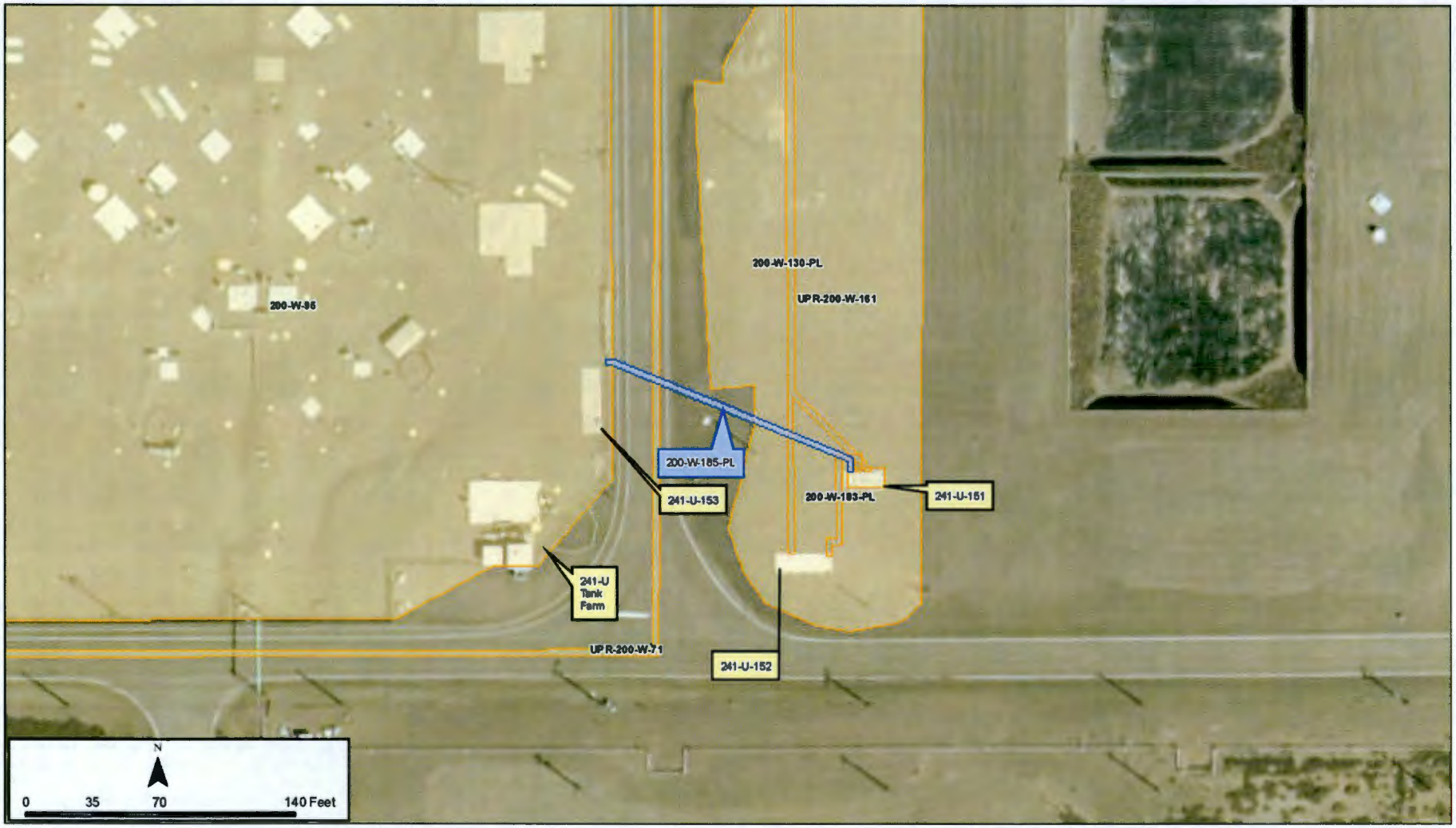
Site Intersects

200-IS-1
- 200-W-130-PL
- 200-W-183-PL
- UPR-200-W-161 (241-U Tank Farm)

200-WA-1
- UPR-200-W-71

WMA U
- 200-W-95

Scoping Summary: 200-W-185-PL



Scoping Summary: 200-W-186-PL

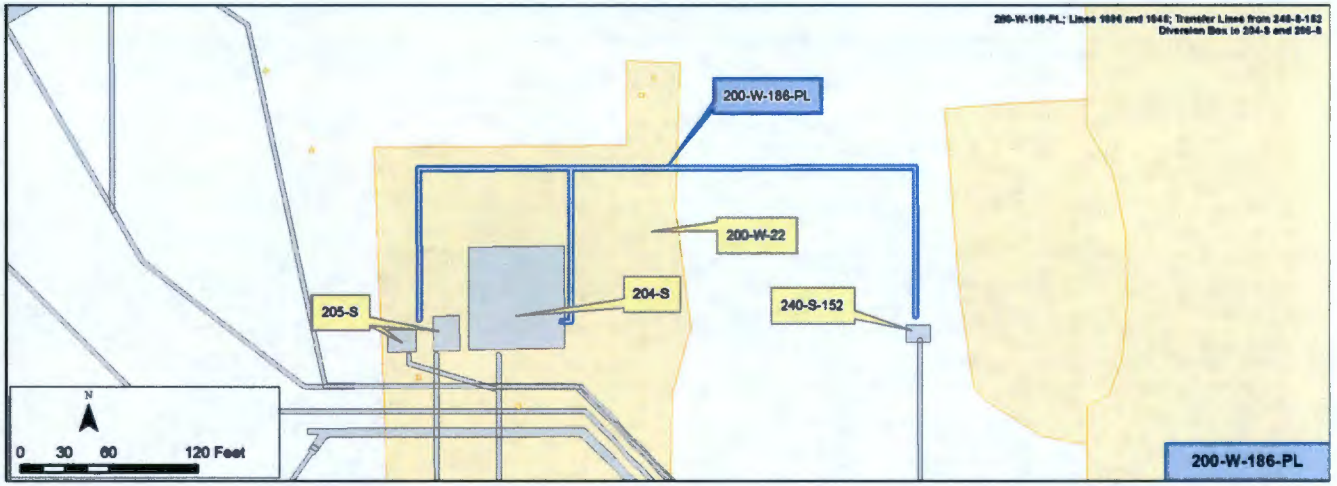
History

The 200-W-186-PL waste site is a pair of inactive underground encased waste transfer lines extending from the 240-S-152 Diversion Box to the former 204-S and 205-S buildings.

In the 1950s, both lines extended to the 205-S Building; in 1968, one line was cut-and-capped off from 205-S due north of 204-S, then re-routed directly to 204-S. The alteration of the line extending to 204-S in 1968, and its current status, is unknown.

204-S and 205-S were utilized to decontaminate uranyl nitrate hexahydrate (UNH) from the REDOX and PUREX facilities.

In 1983, the buildings and other above ground infrastructure in the REDOX area were decommissioned and removed to two ft below grade; clean fill was added. The 205-S Vault was filled with a 1 ft layer of concrete to seal all nozzles, then filled with clean fill and capped with another 1 ft layer of concrete to act as a cap.



Construction

- Length: 680 ft (cumulative)
  - Segment 1 (240-S-152 to 204-S): 330 ft
  - Segment 2 (240-S-152 to 204-S): 350 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement: Reinforced concrete 2-30 and 2-36 Special
- Cathodic Protection: yes
- Depth: 4 ft - 8 ft bgs
- Calculated Volume: 250 gal
  - Segment 1: 120 gal
  - Segment 2: 130 gal
- Estimated Volume of Concrete: 51 cu-yds

Features of Interest

- Test risers at each of the two elbows
- One line capped and grouted, to 205-S north of 204-S

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.
- This area was decommissioned in 1983 down to 2 ft bgs
  - The area was then covered with clean soil.

Waste Streams

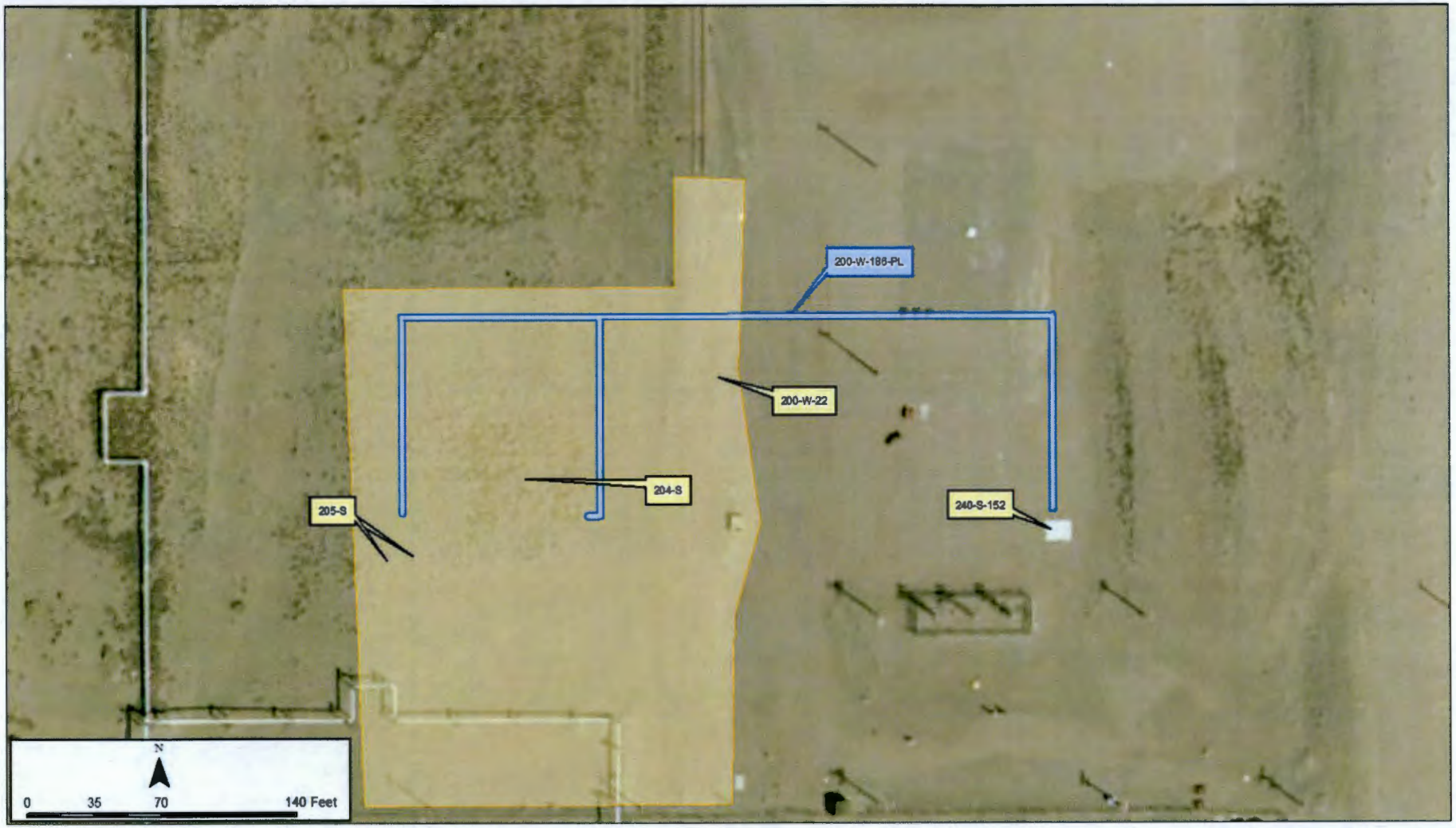
- **1952-to-1967**: waste associated with decontamination of uranyl nitrate hexahydrate (UNH) from REDOX
- **1977-to-1980**: waste from 204-S, which was most likely UNH waste trucked in to 204-S from the PUREX facility

Misc./Other Relevant Information

- The line added to extend to 204-S in 1968 is not included as a separate waste site, nor is it currently designated part of 200-W-186-PL. Based on documentation referenced, it is expected to be a 2 in. M-21 P pipe that extends from the 2-30 encasement north of former 204-S to the southeast footprint of that former building

Site Interfaces

Origin/Termination	Site Intersect
• 204-S Bldg (removed)	200-WA-1
• 205-S Bldg (removed)	• 200-W-22
200-IS-1	
• 240-S-152 Diversion Box	


200-W-186-PL
200-W-22
204-S
205-S
240-S-152
N
0
35
70
140 Feet

Scoping Summary: 200-W-187-PL

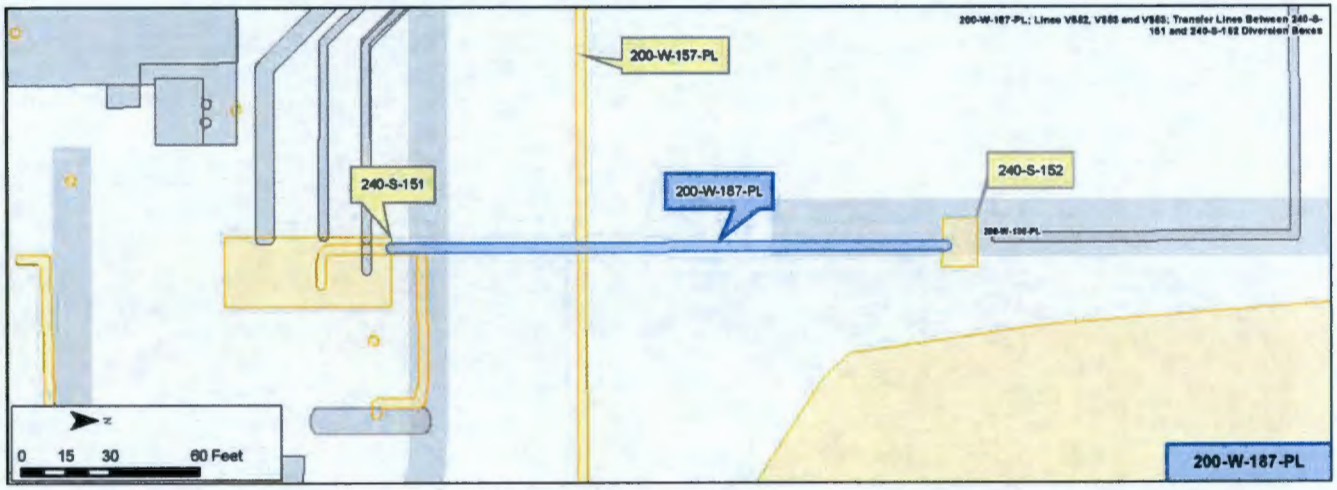
History

The 200-W-187-PL waste site is an inactive encased underground waste transfer system that consists of three lines between the 240-S-151 Diversion Box and the 240-S-152 Diversion Box.

It was constructed in the early 1950s and last used in 1980 to transfer waste between the two diversion boxes it serviced.

The transfer system's primary function was to transfer waste that originated at former building 204-S to the 240-S-151 Diversion Box, where it was re-routed to cribs or tank farms.

The 204-S-152 Diversion Box is weather-covered to restrict exterior water intrusion; both diversion boxes are now used for waste lead storage.



Construction

- Length: 635 ft (cumulative)
  - ~210 ft (end-to-end)
- Diameter: 3 in.
- Composition: Stainless Steel
- Depth: 7 ft - 12 ft bgs
- Cathodic Protection: yes
- Encasement: 3-36 Concrete
- Estimated Volume of Concrete: 35 cu-yds
- Calculated Volume: 230 gal

Features of Interest

- Midway between the diversion boxes, the encasement changes from 3-38 for the southern portion to 3-36 the rest of the way north to 240-S-152

Relevant Characterization

- No direct characterization date for the pipeline or adjacent soil could be located

Waste Streams

- REDOX and PUREX waste solutions from processing and product decontamination operations to tank farms. Uranyl nitrate hexahydrate (UNH) was decontaminated at REDOX

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersect
200-IS-1	200-IS-1
• 240-S-151 Diversion Box	• 200-W-157-PL
• 240-S-152 Diversion Box	

Scoping Summary: 200-W-187-PL

Scoping Summary: 200-W-188-PL

History

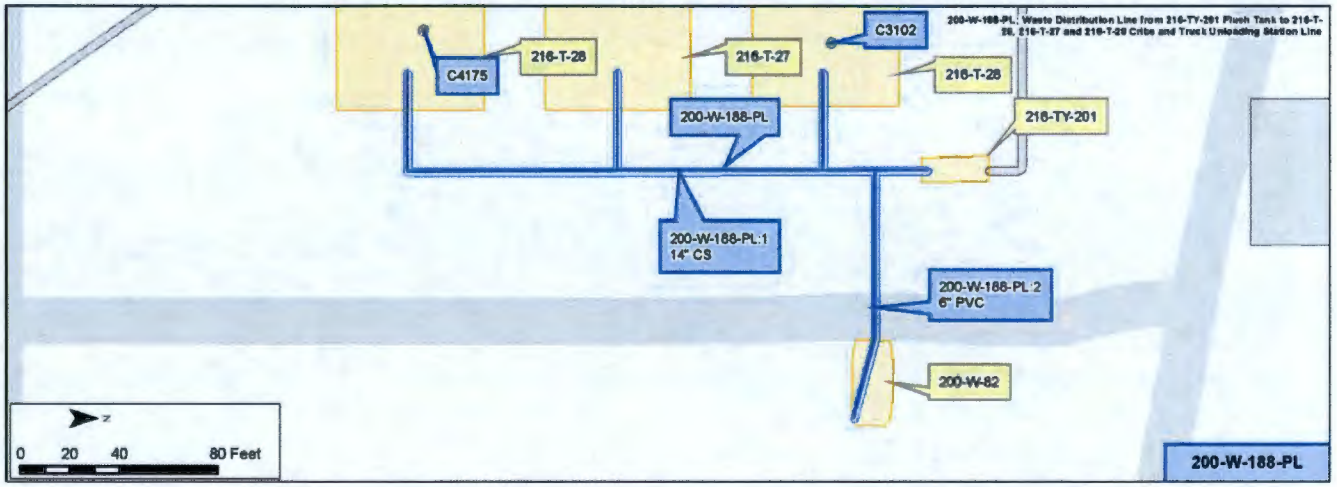
The 200-W-188-PL waste site is an inactive underground pipeline that consists of two subsites; 200-W-188-PL:1 and 200-W-188-PL:2.

The pipeline was originally constructed in 1955 to dispose of first cycle supernatant waste from the 241-T Tank Farm.

The 200-W-188-PL:1 subsite is a 14 inch diameter carbon steel pipeline that connects the 216-TY-201 Flush Line to the 216-T-26, 216-T-27, and 216-T-28 Cribs.

The 200-W-188-PL:2 subsite is a 6 inch PVC line that connects the 200-W-82 Truck Unloading Station to the 200-W-188-PL:2 pipeline. The truck unloading station (200-W-82) was later connected to an existing tie-in.

Wastes were disposed of in the 216-T-26 Crib from 1955 until 1956, when the crib was isolated with a blank flange. From 1956 until 1965 waste was disposed of in the 216-T-27 and 216-T-28 Cribs. Both cribs were then shortly after isolated by installing blank flanges.



Construction

200-W-188-PL:1
- Diameter: 14 in.
- Material: Carbon Steel
- Length: 353 ft
- Direct Buried
- Gravity Flow Pipeline
- Depth: 7 to 11 ft bgs
- Calculated Volume: 2,816 gal

200-W-188-PL:2
- Diameter: 6 in. (3 in. section)
- Material: PVC (3" section is Carbon Steel)
- Length: 81 ft
- Direct Buried
- Gravity Flow Pipeline
- Depth: 0 to 5.5 ft bgs
- Calculated Volume: 119 gal

Features of Interest

200-W-188-PL:1
- T-branches (3)
- 14 inch Gate Valves (3)
- Bend (3)
- 8" Vertical Riser

200-W-188-PL:2
- 14 inch Gate Valve
- Flanged Joint/Reducer 14 inch CS to 6 inch PVC
- Bend (1)
- Reducer/Transition 6 inch PVC to 3 inch CS

Relevant Characterization

- 216-TY-201 (the main source of wastes to this pipeline) solids are assumed to contain 5,110 ug/g Al, 28,800 ug/g Bi, 16,400 ug/g Fe, 41,000 ug/g Na, 395 ug/g Pb, 313 ug/g Sr, 3,100 ug/g U, and 36,600 ug/g OH. Solid radionuclides include 0.184 uCi/g, Cs-137, 6.0 uCi/g Sr-90, 5.71E-04 uCi/g Pu-138, 0.07 uCi/g Pu-139, and 1.0E-04 uCi/g Am-241.
- Supernate contains 9.0E-06 uCi/g Am-241.

Waste Streams

- Waste coming from the 216-TY-201 Flush Tank is described as scavenged first cycle supernatant from 221-T (sourced from: 241-TY-101, 241-TY-103, and 241-TY-104 tanks). Containing: ferrocyanide, flouride, nitrate, nitrite, phosphate, sodium, sodium aluminate, sodium hydroxide, sodium silicate, and sulfate.
- Waste from the 200-W-82 truck unloading station is described as laboratory wastes generated from the 300 area (189 truckloads). Specifically from the Plutonium Recycle Test Reactor (PRTR) Bldg. 309.
- Recorded volumes transferred to cribs: 216-T-26 at 3,170,000 gallons, 216-T-27 at 1,900,000 gallons, and 216-T-28 at 1,120,000 gallons

Misc./Other Relevant Information

- Borehole C3102 was drilled in 216-T-26 in 2001. Results indicated Cs-137, Eu-154, and Co-60. The highest Cs concentration was 3,000 pCi/g.
- Borehole C4175 was drilled in 216-T-28 in 2004. Results indicated Cs-134/137, Co-60, Pu-238, Ni-63, Am-241, Pu-239/240, U-233/234, and beta radiostrontium.

Site Interfaces

Origin

200-WA-1
- 200-W-82

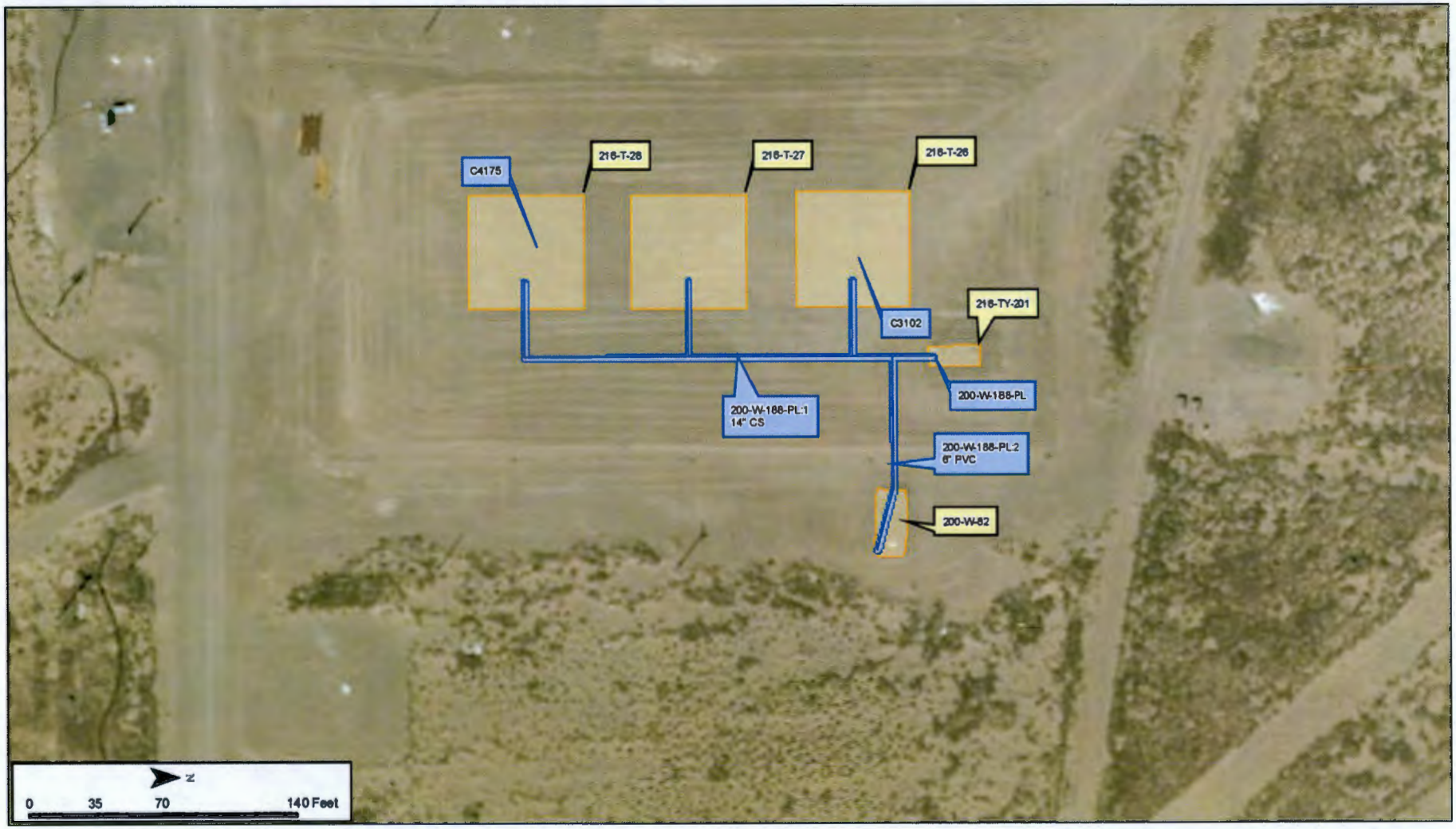
200-IS-1
- 216-TY-201

Termination

200-DV-1
- 216-T-26

200-WA-1
- 216-T-27
- 216-T-28

Scoping Summary: 200-W-188-PL



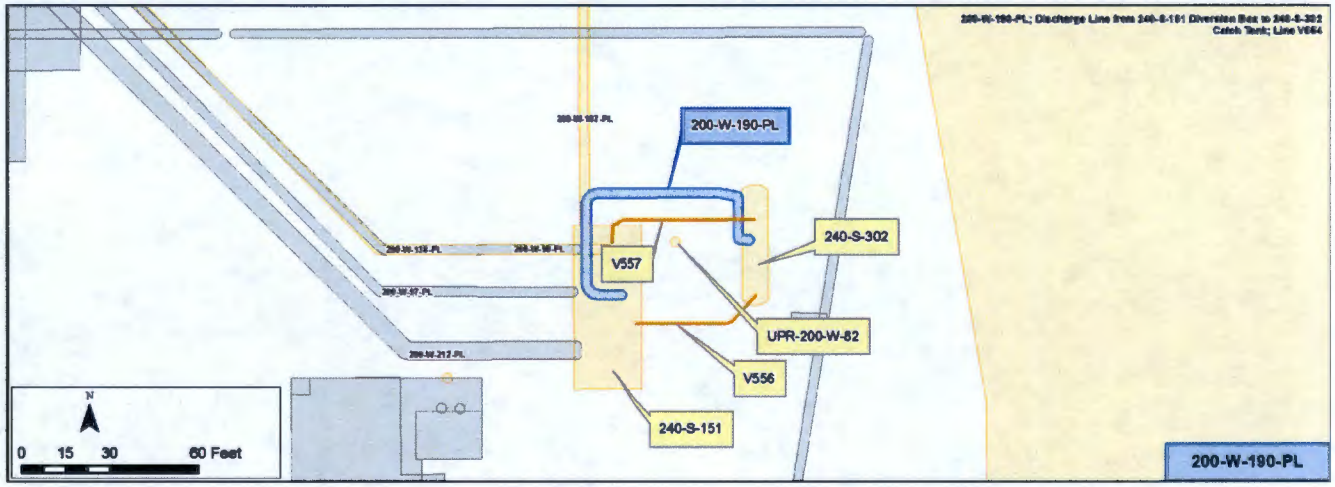
Scoping Summary: 200-W-190-PL

History

The 200-W-190-PL waste site is an inactive underground steam jet discharge line (i.e., return line) from the 240-S-302 Catch Tank to the 240-S-151 Diversion Box.

The line was in use from approximately 1950 to 1980, when the last recorded waste transfer was made from the diversion box.

Isolation measures for the diversion box and its catch tank were conducted in 1988. The risers from the catch tank were cut-and-capped, the pump from the catch tank's pump pit was removed, the opening sealed, and drains in the diversion box were capped and grouted.



Construction

- Length: 45 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Flow: Pressurized
- Encasement: Direct Buried
  - 1-24 concrete-encased at pipe bend near diversion box corner
- Depth: 23 ft - 4 ft bgs
- Calculated Volume: 16 gal

Features of Interest

- A portion of the line is 1-24 encased in concrete, at the last main bend from the catch tank to the diversion box
- The line immediately exiting from the catch tank's pump pit is marked 2 in. M25

Relevant Characterization

- No characterization data have been located for the pipeline or adjacent soil

Waste Streams

- The 240-S-151 Diversion Box was used to transfer REDOX waste solutions from processing and product decontamination operations to the tank farms
- The catch tank likely captured low-level dilute laboratory waste and drainage from the diversion box
- The 200-W-190-PL line was a steam jet return from the catch tank to the diversion box

Misc./Other Relevant Information

- There are two 4 in. drains from the diversion box to catch tank, lines V556 and V557. These lines are inconsistently included/not as part of the 200-W-190-PL waste site. They are *excluded* here and captured in the scoping summary for the 240-S-302 Catch Tank
- The catch tank was a known leaker and had a documented leak in 1985

Site Interfaces

Origin/Termination

200-IS-1

- 240-S-302 Catch Tank
- 240-S-151 Diversion Box

Site Intersects

200-WA-1

- UPR-200-W-82

Nearby Lines

200-IS-1

- 200-W-187-PL
- 200-W-98-PL
- 200-W-138-PL
- 200-W-97-PL
- 200-W-212-PL

Scoping Summary: 200-W-190-PL

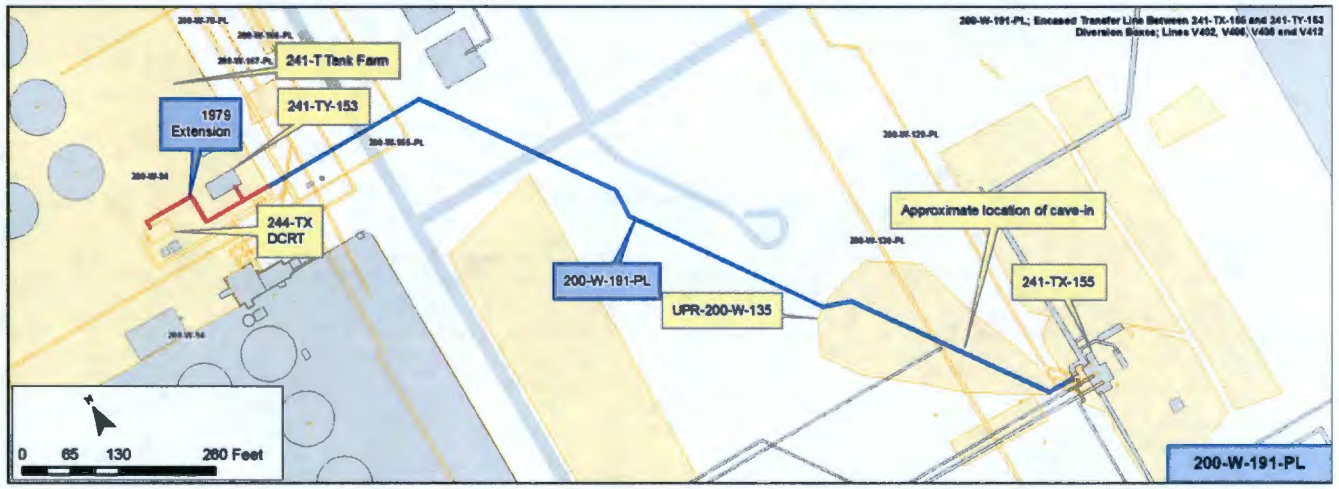
Scoping Summary: 200-W-191-PL

History

The 200-W-191-PL waste site is an inactive underground tank farm pipeline consisting of four pipelines within a concrete encasement. The waste site is located southwest of T Plant. The system transferred waste from the 241-TX-155 Diversion Box to the 241-TY-153 Diversion Box. Line V408 served as the diversion box drain and may have transferred any of the waste streams received by the 241-TX-155 Diversion Box.

Operations began in 1952. In 1979, V402, V406, and V408 were extended from the 241-TY-153 Diversion Box to the 244-TX Double Contained Receiver Tank (DCRT). Line V412 does not appear to have been modified at this time. Operations officially ended on Jan-15-1982, due to chloride induced pitting; however, the last documented waste transfer for the 241-TX-155 Diversion Box took place in 1980. As this pipeline served as a transfer line from the 241-TX-155 Diversion Box, no additional waste streams would have passed through the pipeline following this transfer. For isolation, V402, V406, and V408 were cut and capped at both ends, while V412 was blocked where it drained to the 241-TY-153 Diversion Box.

The 1979 extension to the 244-TX DCRT may have been operational until 2005 when the tank was isolated.



Construction

Pipeline (V402, V406, V408, V412)

- Length: 1,227 ft each, 4,908 ft total pipe length
- Diameter: 3 in.
- Composition: 3 Stainless Steel (V402, V406, V408) and 1 Carbon Steel (V412)
- Gravity Drained
- Direct Buried
- Encased in 4-45 concrete encasement
- Depth: 5 ft - 14 ft bgs
- Total Calculated Volume: 1,800 gal in pipelines

Encasement

- Type: 4-45
- Width: 3.9 ft
- Height: 2.56 ft
- Thickness: 0.5 ft walls, 0.56 ft cover, 0.67 ft floor
- Lengths: 1,227 ft
- Concrete Volume: 6,588 cu ft

Features of Interest

- None noted

Relevant Characterization

- During a 1990 radiological survey (prior to isolation) readings up to 20,000 dpm beta were noted
- The pipelines are assumed to contain residual wastes

Waste Streams

- All waste streams associated with the 241-TX-155 Diversion Box may have passed through 200-W-191-PL. These waste streams include various processing and decontamination operations
- V412 carried concentrated REDOX supernate

Misc./Other Relevant Information

- On Apr-19-1954, a cave in and an associated run-off path caused by a leak from the 241-TX-302BR catch tank which flowed along the pipeline encasement was noted. The pipeline and encasement were not damaged. Radiation levels of 5 rad/hr at 3 ft over the cave in and 300 rad/hr at 4 in. Over the dried basin.
- The WIDS Summary for this site states that only V402 was diverted to the 244-TX DCRT, but documentation suggests V406 and V408 were also diverted.

Site Interfaces

Origin/Termination

200-IS-1

- 241-TX-155 (origin)

WMA TX/TY

- 241-TY-153 (termination)
- 244-TX DCRT (termination)

Site Intersects

200-WA-1

- 200-W-166-PL

200-IS-1

- 200-W-78-PL
- 200-W-129-PL
- 200-W-130-PL
- 200-W-165-PL
- 200-W-167-PL
- UPR-200-W-135 (leak from 241-TX-302BR catch tank caused cave in and contamination along 200-W-191-PL)

WMA TX/TY

- 200-W-94 (Contamination area surrounding the 241-TX/TY Tank Farm complex)

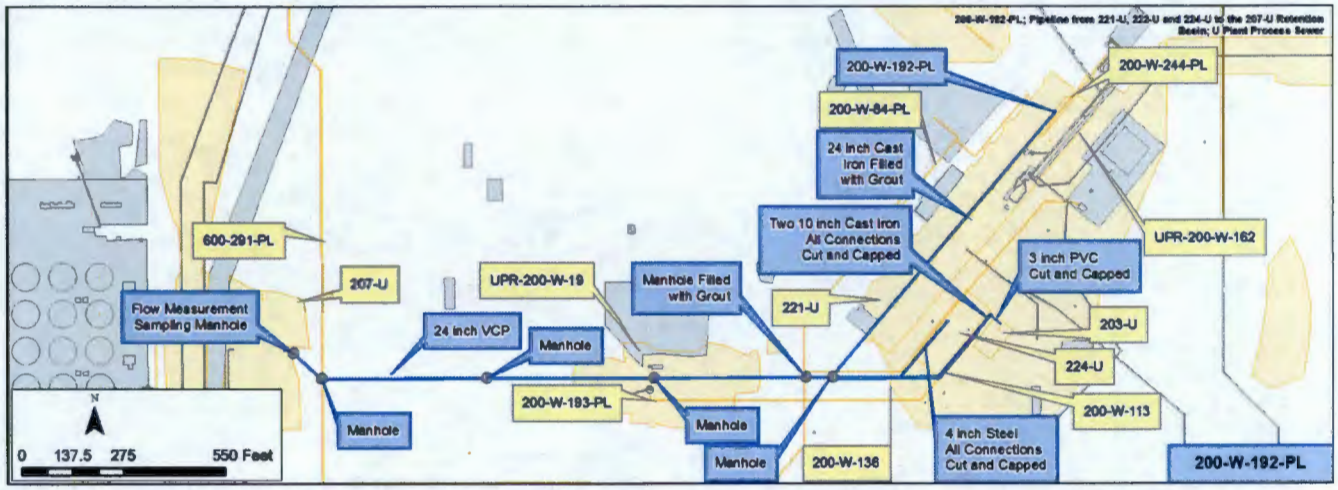
241-TY Tank Farm
241-TY-153
1979 Extension
244-TX DCRT
200-W-191-PL
UPR-200-W-135
Approximate location of cave-in
241-TX-155
N
0
70
140
280 Feet

Scoping Summary: 200-W-192-PL

History

The 200-W-192-PL site is the former chemical sewer drain from the 221-U and 224-U Buildings to the 207-U Retention Basin. The first set of pipelines were constructed in the 1940s with a 24 in. cast iron line (200-W-192-PL:4) connected to the south side of 221-U, two 10 in. cast iron lines that were connected 224-U (200-W-192-PL:2), and one 4 in. steel line that was connected to 224-U (200-W-192-PL:3). All four lines merged into one process sewer line (200-W-192-PL:1) that continued into the 207-U Retention Basin. In 1986, a 3 in. PVC sewer drain from the 203-U Building was added, which connects into 200-W-192-PL:2.

The 207-U Retention Basin was deactivated and filled with concrete in 1994. In 2011, the line connecting to the 221-U Building (200-W-192-PL:4) was filled with grout and all the associated line connections into the 224-U and 203-U Buildings were cut and capped as a part of the U-Plant Closure Plan (200-W-192-PL:2, 200-W-192-PL:3, and the PVC pipe). The remaining line, 200-W-192-PL:1, was left in place and was capped with grout at the manhole where 200-W-84-PL intersects with 200-W-192-PL.



Construction

- Length:
  - 200-W-192-PL:1 – 1,500 ft
  - 200-W-192-PL:2A – 505 ft
  - 200-W-192-PL:2B – 450 ft
  - 200-W-192-PL:3 – 380 ft
  - 200-W-192-PL:4 – 940 ft
  - 200-W-192-PL:5 – 50 ft
- Diameter:
  - 200-W-192-PL:1 and 200-W-192-PL:4 – 24 in.
  - 200-W-192-PL:2A/200-W-192-PL:2B – 10 in.
  - 200-W-192-PL:3 – 4 in.
  - 200-W-192-PL:5 – 3 in.
- Composition
  - 200-W-192-PL:1 – Vitrified Clay
  - 200-W-192-PL:2A/200-W-192-PL:2B and 200-W-192-PL:4 – Cast Iron
  - 200-W-192-PL:3 – Stainless Steel
  - 200-W-192-PL:5 – PVC
- Gravity Fed
- Direct Buried
- Depth: 2 ft – 8 ft bgs
- Total Calculated Volume: 61,510 gal

Features of Interest

- 5 manholes (1 noted as being filled with grout)
- 1 Flow Measurement and Sampling Manhole
- 6 Bends
- Multiple capped connections near previous 224-U Building structure
- 24 in. cast iron line filled with grout, south of 221-U
- All lines capped or filled with grout

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

- Process: U Plant - Uranium Recovery and Scavenging and Drain Wastes & Cooling Water
- Waste Streams: Chemical sewer waste from 221-U Building; steam condensate and cooling water from 224-U building
- Last waste stream was storm water from 224-U
- Based on historical inventory reporting, total waste transferred to crib estimated at 409,000,000 liters and included:
  - 9.01E-02 Ci Pu-239/40
  - 2.30E-01 Ci Am-241
  - 5.15E-02 Ci total beta
  - (radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- Between 1984 and 1986, 200-W-192-PL was deactivated; waste was temporarily diverted through 200-W-84-PL into 216-U-16 Crib, but reactivated when 216-U-16 Crib was taken out of service
- Aug-6-1986 release of 796 gal of reprocessed nitric acid into the 207-U Retention Basin (approximately 225,000 pounds of corrosive solution and 100 pounds of uranium)

Site Interfaces

Origin/Termination:

200-CU-1
- 221-U Building

200-WA-1
- 207-U (Retention Basin)

No Operable Unit
- 200-W-113 (224-U Building)

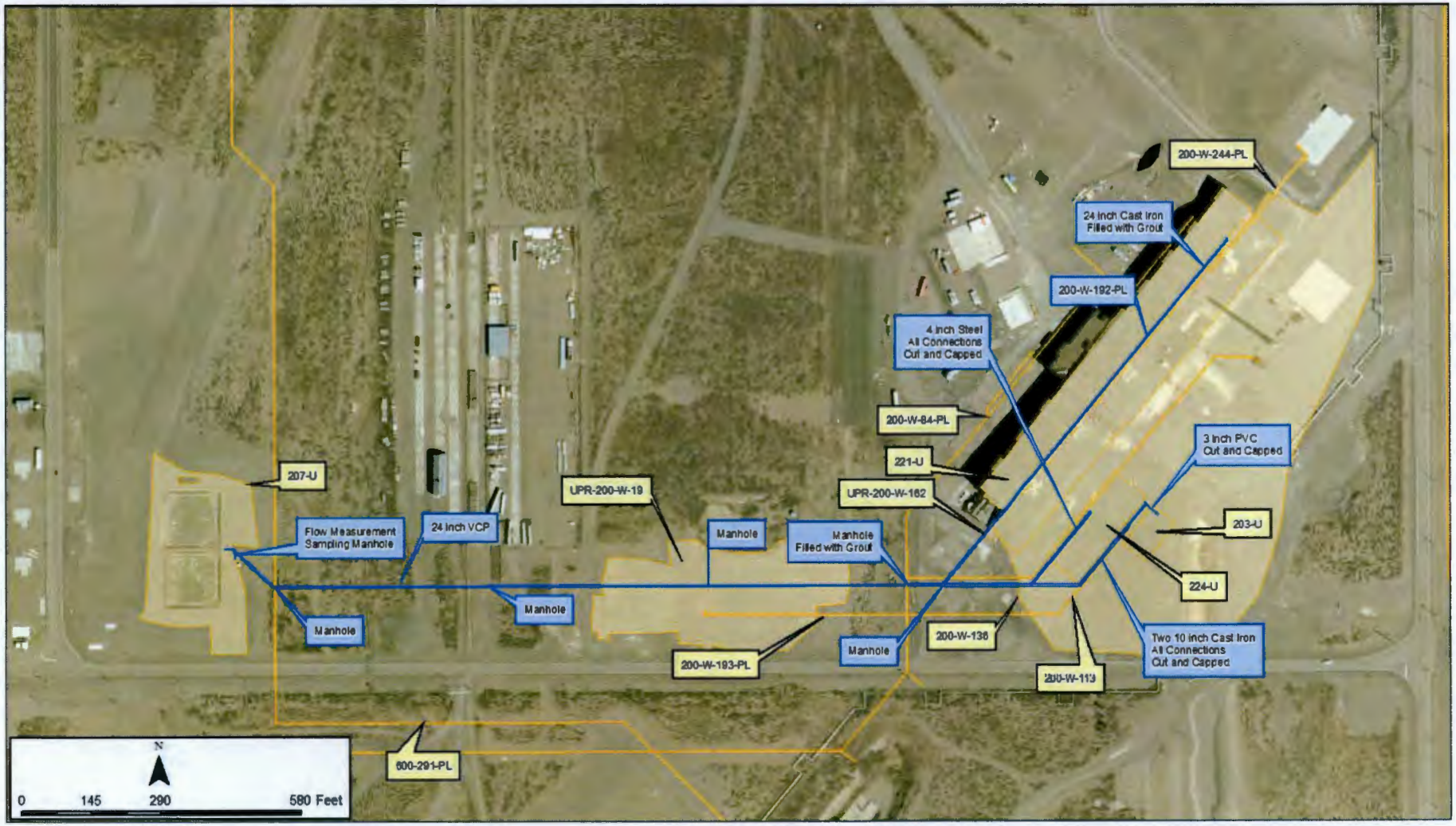
Site Intersects:

200-WA-1
- 200-W-244-PL
- UPR-200-W-162
- UPR-200-W-19

No Operable Unit
- 600-291-PL
- 200-W-136

200-IS-1
- 200-W-84-PL
- 200-W-193-PL

Scoping Summary: 200-W-192-PL



Scoping Summary: 200-W-193-PL

History

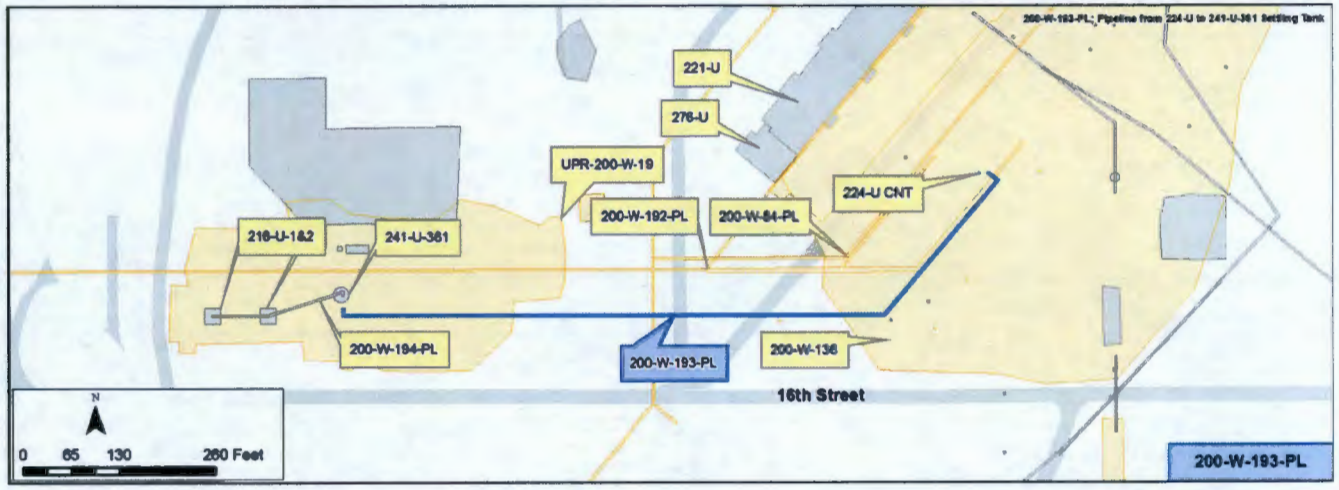
The 200-W-193-PL waste site is an inactive underground radioactive process sewer line that transferred liquid waste from the U Plant and its support facilities to the 216-U-1/2 Cribs system; specifically, to the 241-U-361 Settling Tank.

The line was constructed in the late 1940s, and in use from 1951 to 1967. In 1967, the Settling Tank was no longer used and its surface was covered over with clean fill and then shotcrete.

The U Plant Ancillary buildings were further deactivated in 1993, and, eventually removed in 2005/2006. This area is now labeled, 224-U CNT.

The pipeline's integrity was investigated in the mid-1990s and found to be in excellent condition, while the 241-U-361 Settling Tank was observed to be filled with approximately 27,500 gal of sludge with 160 grams plutonium content.

The final 20 ft to 30 ft of the pipe leading to the settling tank was also filled with liquid.



Construction

- Length: 1,000 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Direct Buried
- Depth: 5 ft to 10 ft bgs
- Calculated Volume: 370 gal

Features of Interest

- Two pipe tie-ins were observed during the 1994 video camera in-pipe investigation, from 276-U and 221-U buildings. A drawing from the early 1950s, suggests at least one of these tie-ins is the line from the 241-U-361 Settling Tank to the 216-U-1/2 Cribs. Drawings are not clear as to the whereabouts of the additional tie in.

Relevant Characterization

- A 1994 investigation of this area and the integrity of the stainless steel pipe consisted of interior and exterior pipe smear samples, as well as a video camera running the interior of the pipe for about 500 ft
- Smear samples inside the pipe were up to 30,000 counts per minute, while the pipe's exterior and surrounding soil identified no activity. The video monitoring showed puddles of liquid in low spots, as well as a completely full pipe for the final 20 ft to 30 ft entering the Settling Tank.

Waste Streams

Radioactive process sewer waste from U-Plant (221-U and 224-U, 276-U):

- 224-U Decontamination Waste

Misc./Other Relevant Information

- The 224-U Building and other ancillary U Plant structures were removed in 2005/2006
- 200-W-193-PL was cut at the surface, filled with grout and gravel, to grade, and the entire area was surface-stabilized

Site Interfaces

Origin/Termination:

- 224-U Building (demolished)

200-WA-1

- 241-U-361 Settling Tank

Site Intersects:

200-IS-1

- 200-W-84-PL
- 200-W-194-PL

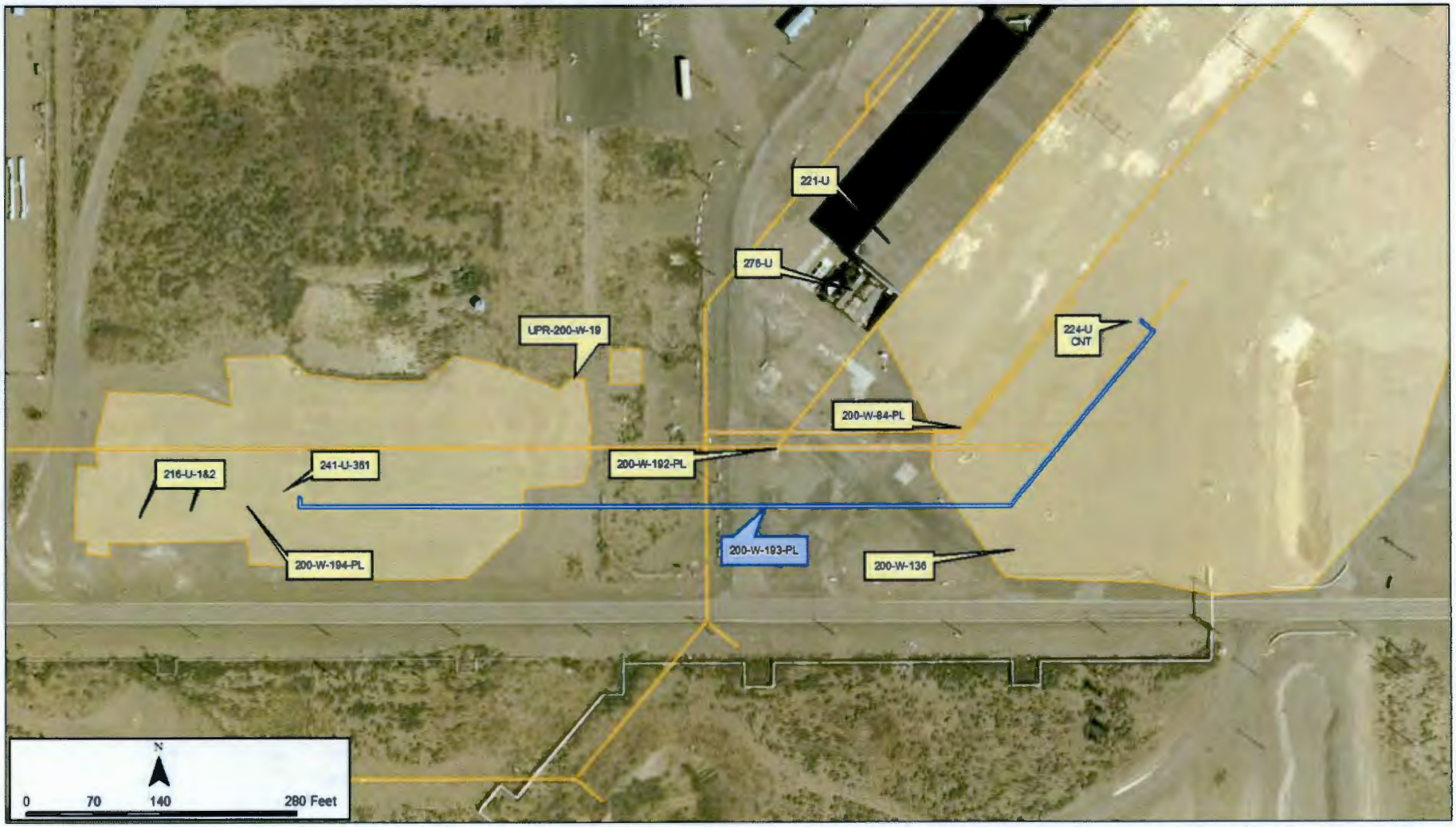
200-WA-1

- UPR-200-W-19
- 216-U-1&2 Cribs

No Operable Unit

- 224-U CNT (Rejected)
- 200-W-192-PL
- 200-W-136

Scoping Summary: 200-W-193-PL

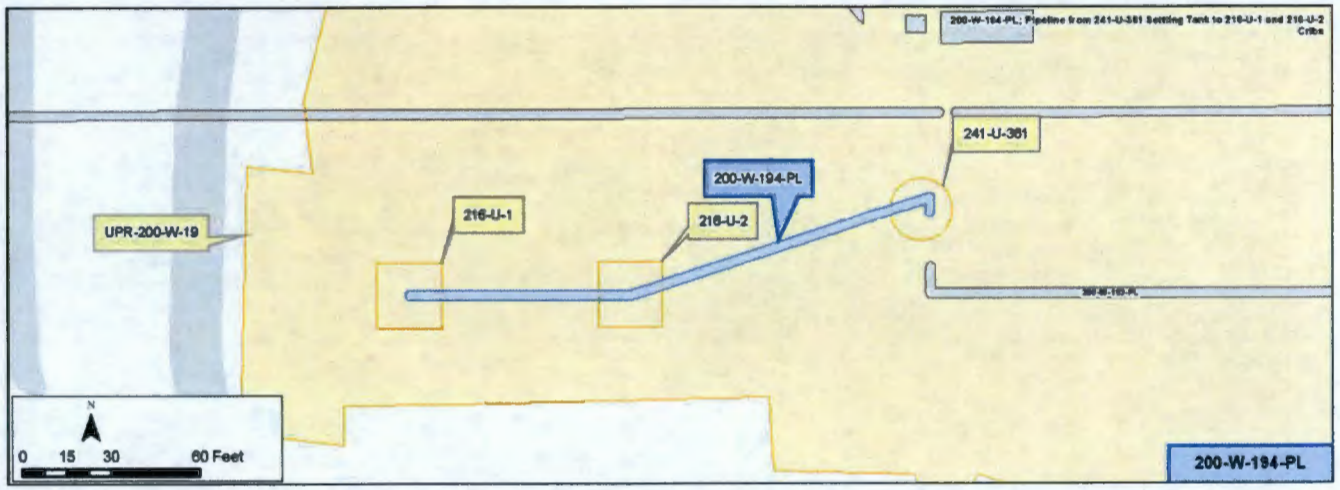


Scoping Summary: 200-W-194-PL

History

The 200-W-194-PL waste site is an inactive underground pipeline that was used to transfer waste from the 241-U-361 Settling Tank to the 216-U-1 and 216-U-2 Cribs. The feeder line to the settling tank, 200-W-193-PL, transferred waste from 224-U, 221-U, and 276-U.

The 200-W-194-PL pipeline was in use from 1951 to 1967, when the cribs were deactivated. The 224-U, 224-UA, and ancillary facilities at U Plant were demolished between 2005 and 2007. The 241-U-361 Settling Tank is surface-stabilized with shotcrete, and the 216-U-1 & -2 Cribs are surface-stabilized with clean dirt.



Construction

- Length: 85 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement: Direct Buried
- Depth: 10 ft bgs
- Calculated Volume: 31 gal

Features of Interest

- None identified

Relevant Characterization

- 1993: Crib boreholes to 170 ft bgs. Most contamination at 20 ft bgs and 40 ft bgs
- 1994: A portion of the pipeline leading to the settling tank was in-line video surveyed in 1994 and determined to be in excellent condition
- 2004/2005: Nine auger borings to 45 ft bgs. Radiological contamination highest at 3 ft - 5 ft bgs in cribs
- 2004: Contaminated tumbleweeds as high as 198,000 dpm located in the vicinity

Waste Streams

- 1952-57: cell drainage from the 5-6 Tank in 221-U, 224-U waste
- 1957: 276-U contaminated solvent
- 1957-67: 224-U Facility waste and 221-U reclamation waste
- Isotopes in the 216-U-1 & 216-U-2 Cribs include: Sr-90, Ru-106, Cs-137, Total U at 7.01E-01, Total Alpha at 2.62E+00, and Total Beta at 1.26E+01

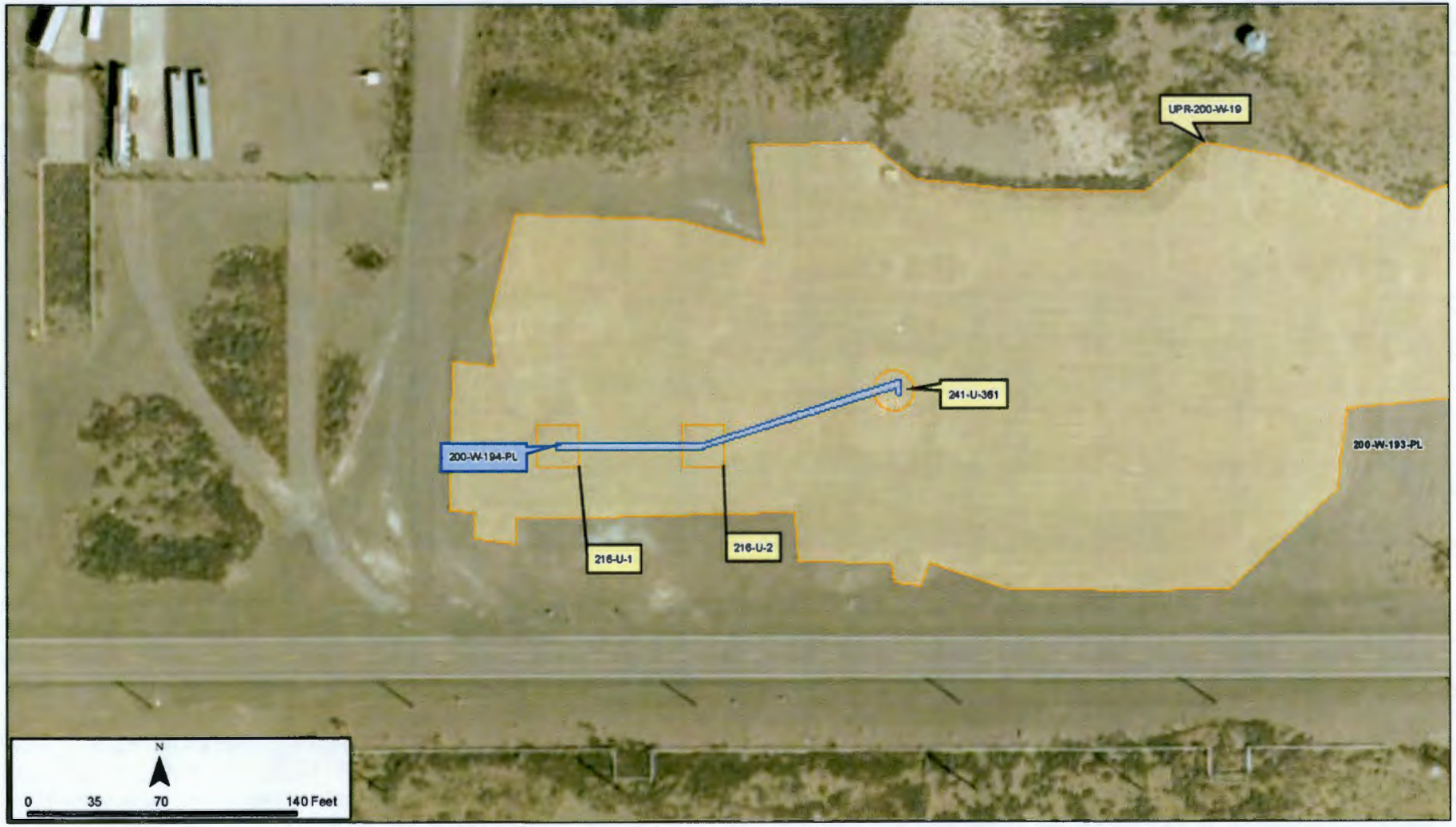
Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersect
200-WA-1	200-WA-1
• 241-U-361 Settling Tank	• UPR-200-W-19
• 216-U-1&2 Cribs	

Scoping Summary: 200-W-194-PL



Scoping Summary: 200-W-195-PL

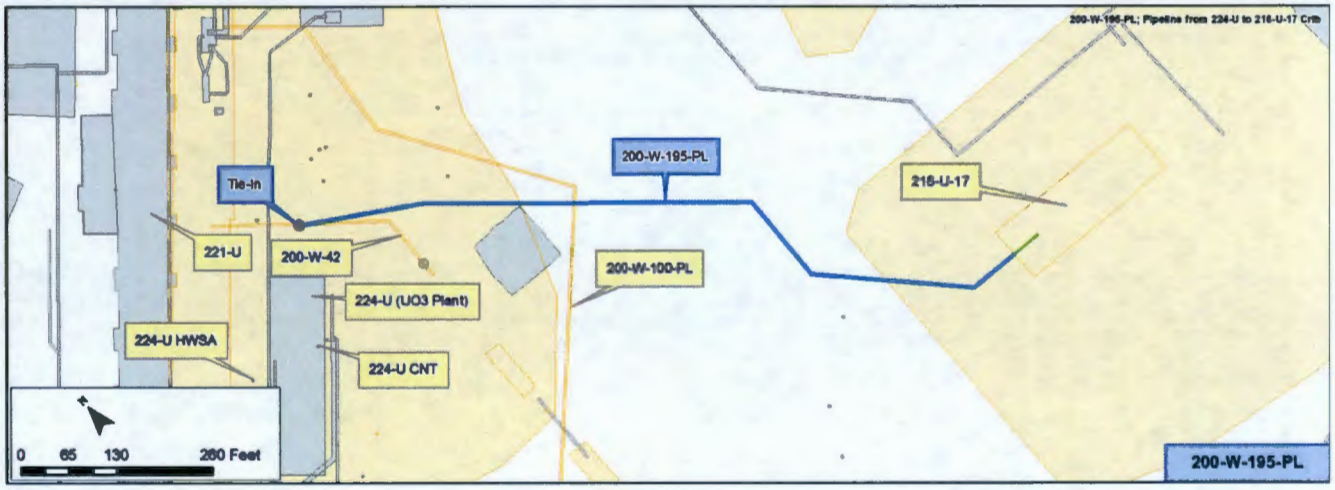
History

The 200-W-195-PL waste site is an inactive drain pipe from the 224-U Building to the 216-U-17 Crib. The line was fed by an above-ground process condensate line with a tie-in for the two lines at the northwest point of 200-W-195-PL.

The final twenty-plus feet of the drain line as it enters the crib is approximately 20 ft bgs.

The line was in use from 1988 to 1994. The 224-U Building and the neutralization tank used for the process condensate transferred through this drain pipe were removed in 2010. The tank was disposed in the ERDF landfill. All piping was cut off at grade, plugged with grout, and inspected. No anomalous solids or liquids were identified as part of the demolition activities.

For a period of time in 1989/1990, the process condensate was re-routed to storage tanks around the UO3 Plant while the effluent was studied to determine whether it warranted dangerous waste classification.



Construction

- Length: 1,075 ft
- Diameter: 6 in.
- Composition: Polyethylene
- Direct Buried
- Depth: 7 ft to 20 ft bgs
- Calculated Volume: 1,580 gal

Features of Interest

- None identified

Relevant Characterization

- Routine radiation surveys conducted in 1997 around the crib area found no contamination

Waste Streams

- Process condensate drain line to crib: UO3 Process condensate - 1988 through 1994
  - Effluent was neutralized prior to discharge to the crib
- A 1990 investigation into the UO3 Plant process condensate concluded it was not a dangerous waste

Misc./Other Relevant Information

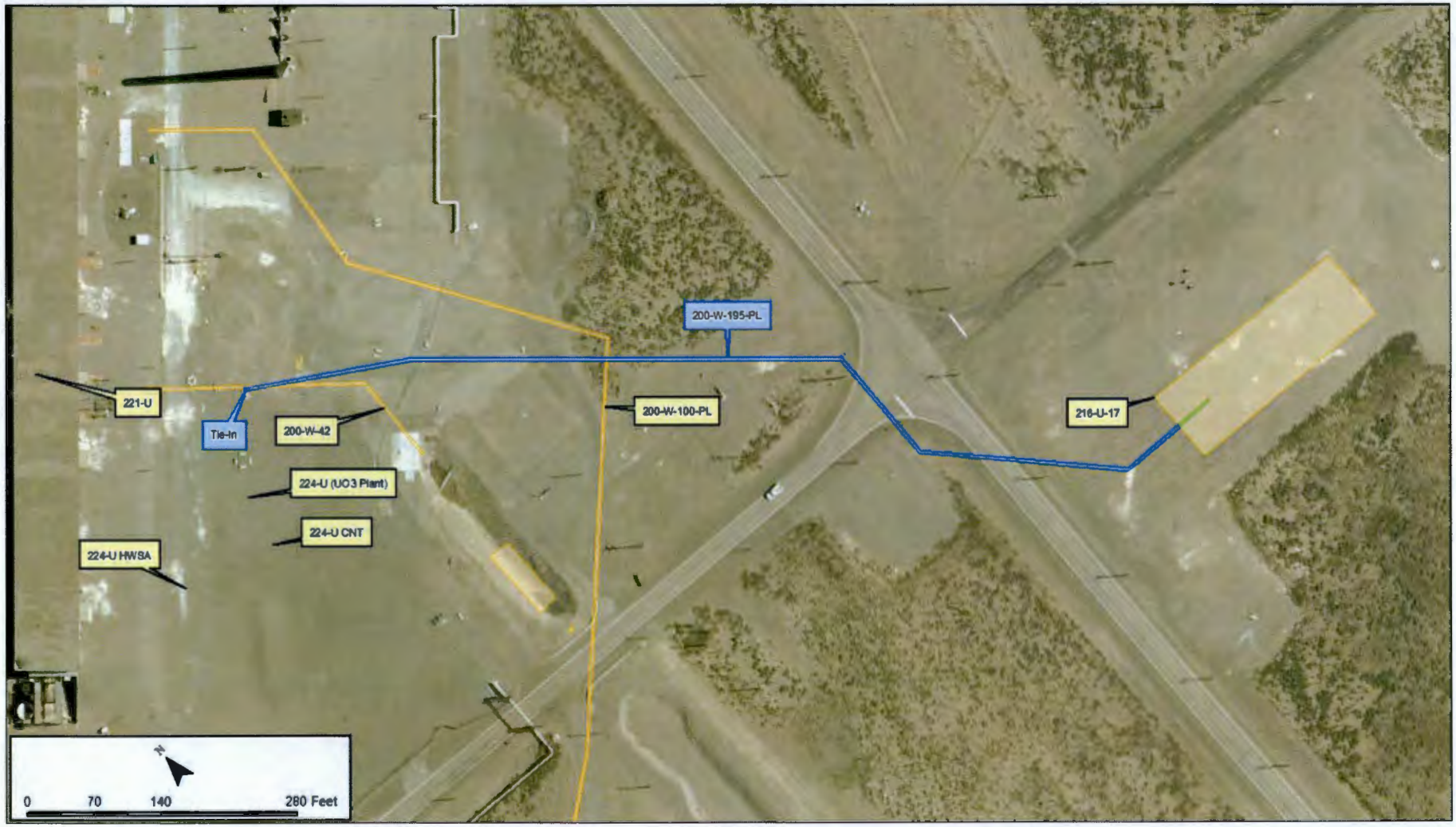
- The 216-U-17 Crib's vent risers were sealed in July 2000 as a preventative measure for potential passive radioactive emissions

Site Interfaces

Origin/Termination:
200-WA-1
- 216-U-17 Crib
- 224-U (former building)

Site Intersects:
200-WA-1
- 200-W-100-PL
- 200-W-42
- 224-U CNT (Rejected)

Scoping Summary: 200-W-195-PL



Scoping Summary: 200-W-196-PL

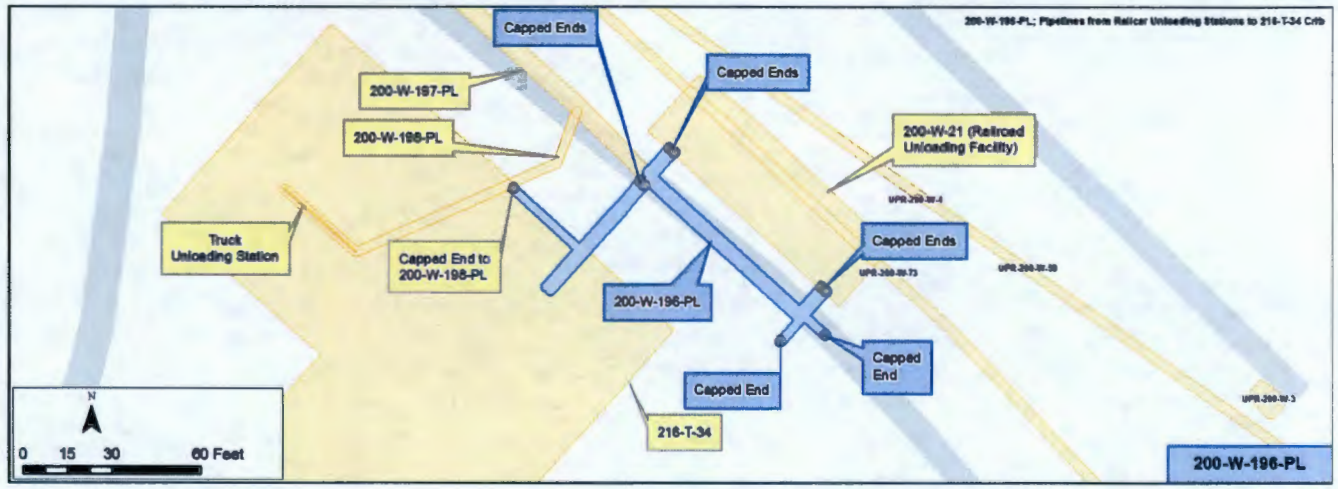
History

The 200-W-196-PL waste site is an inactive underground radioactive process sewer that consists of two pipelines used to transfer 300 Area liquid laboratory waste from the 200-W-21 Railroad Unloading Facility to the 216-T-34 Crib.

The waste was shipped from the 340 Facility in the 300 Area to the unloading facility via railroad tanker cars. In 1967, the 216-T-34 Crib reached its disposal limit. At that point, the 200-W-196-PL pipeline was connected to the 200-W-197-PL pipeline and the waste was delivered to the 216-T-35 Crib.

The 200-W-196-PL also tied in to the 200-W-198-PL pipeline which connects directly into a truck unloading station. However, there are no recorded transfers from the truck unloading station.

The last recorded service date of 200-W-196-PL was in 1967. In the 1990's, the 200-W-196-PL pipelines were capped and the 200-W-21 Railroad Unloading Facility was stabilized. The exact closure date of the Railroad Unloading Facility is unknown.



Construction

- Length: 310 ft (total)
  - PVC Segment: 155 ft
  - VCP Segment: 155 ft
- Diameter:
  - PVC Segment: 8 in.
  - VCP Segment: 6 in.
- Gravity Fed
- Direct Buried
- Depth: 2-8 ft
- Total Calculated Volume: 633 gal
  - PVC Segment: 405 gal
  - VCP Segment: 228 gal

Features of Interest

- 2 bend sections
- 2 T-connections (See Figure 1)
- 8 capped ends
  - 4 at previous hookup to the Railcar Unloading Facility (200-W-21)
  - 2 south-east of 200-W-21
  - 2 south of the 200-W-197-PL

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

- Processes: Laboratory Waste
- Waste Streams: 300 Area liquid laboratory waste from the 340 Facility
- Connection to truck unloading station, but no recorded input of waste from this source (200-W-198-PL)
- Based on historic inventory reporting, total waste transferred to the 216-T-34 and 216-T-35 cribs was 4.5 million gal and 1.3 million gal respectively
- Estimated radionuclide content includes: 144 Ci Sr-90; 128 Ci Cs-137; 6.57 Ci Total alpha; and 668 Ci Total beta (Radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- Jul-30-2015: RAD Survey of 200-W-21 found total beta <5,000 dpm/100 cm-2 and total alpha <500 dpm/100 cm-2
- Aug-15-2013: RAD Survey of 200-W-21 found total Beta <5,000 dpm/100 cm-2 and total alpha <500 dpm/100 cm-2

Site Interfaces

Origin/Termination:

200-WA-1

- 200-W-21 (T-Plant Waste Railcar Unloading Facility)
- 216-T-34 (Crib)

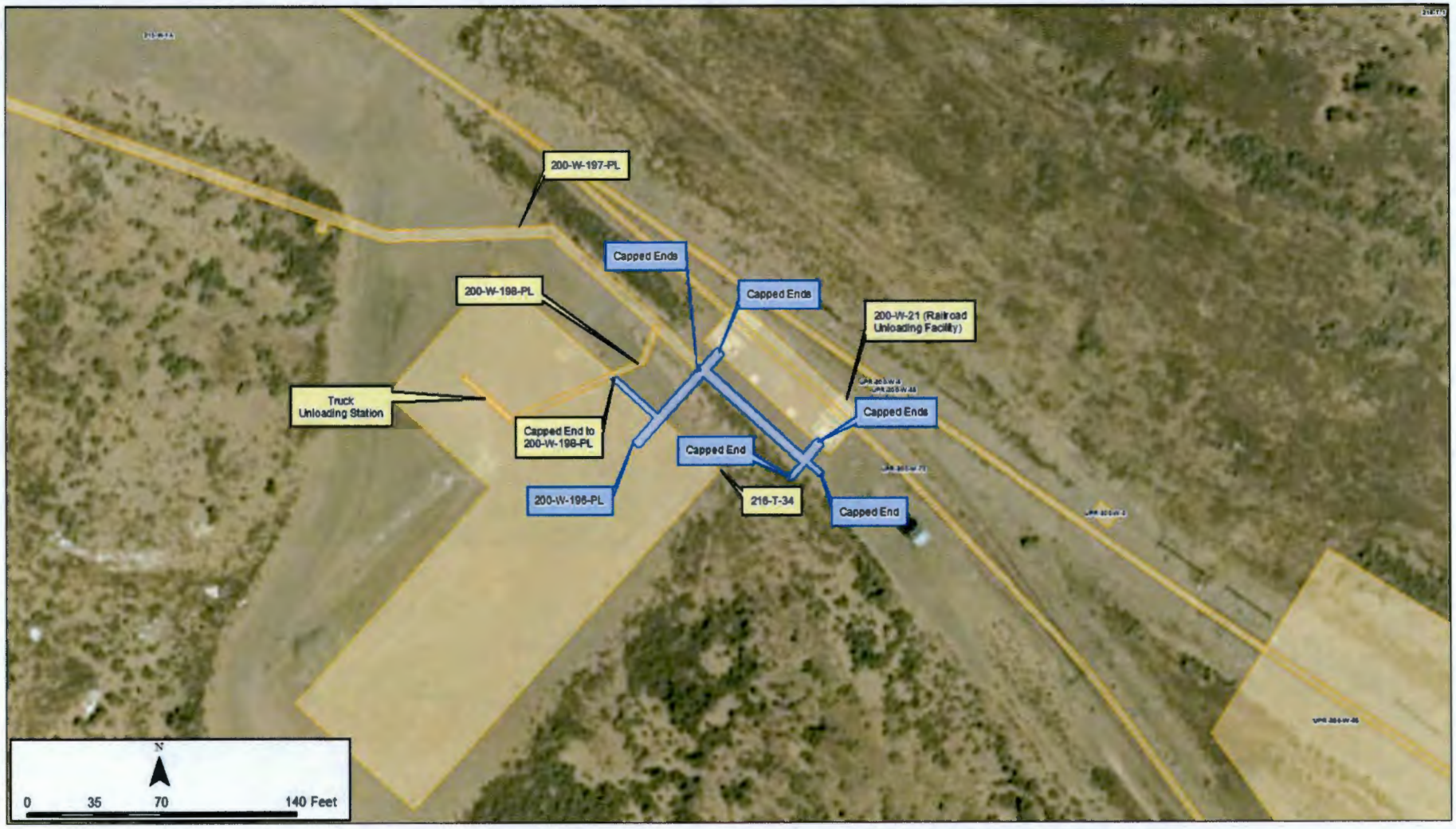
200-IS-1

- 200-W-197-PL

Site Intersects:

200-IS-1

- 200-W-198-PL


200-W-197-PL
Capped Ends
200-W-198-PL
Capped Ends
200-W-21 (Railroad Unloading Facility)
Truck Unloading Station
Capped Ends
Capped End to 200-W-198-PL
Capped End
200-W-196-PL
216-T-34
Capped End
N
0
35
70
140 Feet

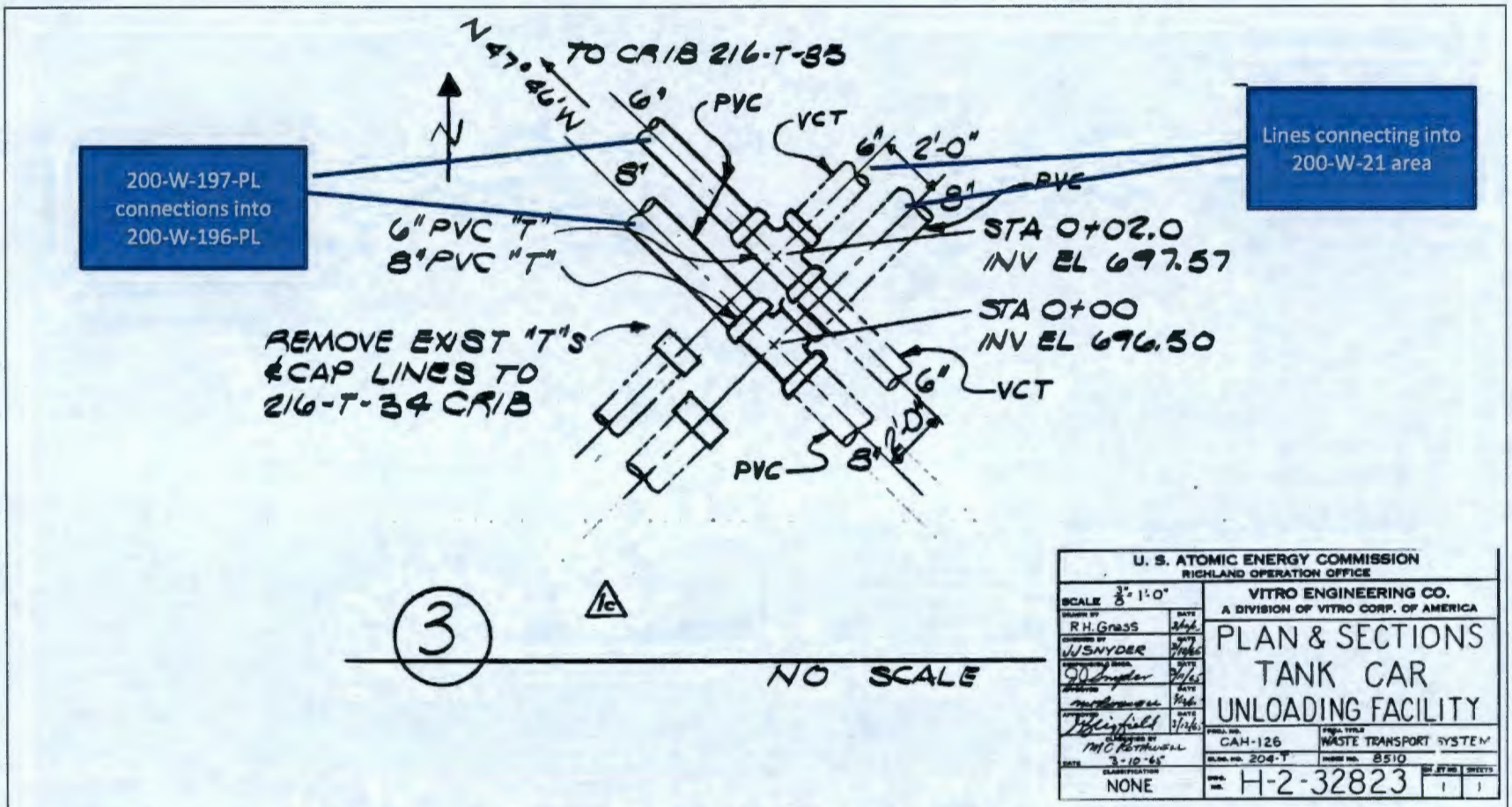


Figure 1 – T-connections that connect the 200-W-196-PL and 200-W-197-PL pipelines together

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Scoping Summary: 200-W-197-PL

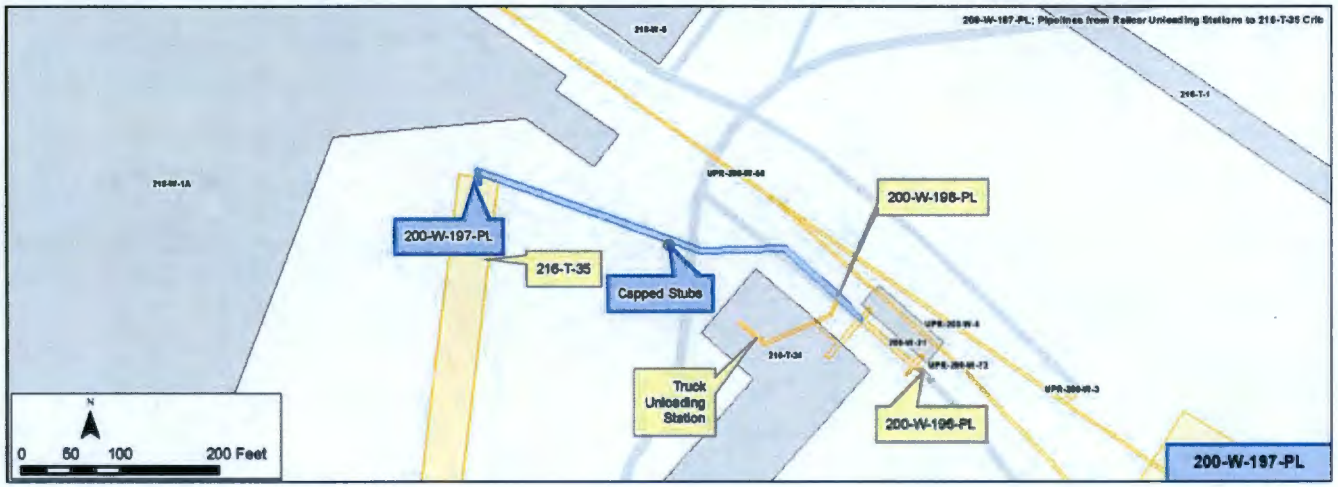
History

The 200-W-197-PL waste site is an inactive radioactive process sewer that consists of two underground lines that extend from the 200-W-196-PL to the 216-T-35 Crib.

The pipelines were in use from March to December of 1967 and transferred 300 Area laboratory waste shipped via railcar from the 340 Facility to the 200-W-21 Railroad Unloading Station to the 216-T-35 Crib.

The subject pipeline also tied into the 200-W-198-PL pipeline which connects directly to a truck unloading station. However, there are no recorded transfers from the truck unloading station.

In the 1990's, the 200-W-196-PL pipelines were capped and the 200-W-21 Railroad Unloading Facility was stabilized. The exact closure date of the railroad unloading station is unknown.



Construction

2 Lines: Equal lengths of 6 in. and 8 in. diameter line

- Total Length: 890 ft
- Diameter: 8 in. and 6 in.
- Composition: PVC
- Gravity Fed
- Direct Buried
- Depth: 6 ft - 11 ft bgs
- Total Calculated Volume: 1,815 gal

Features of Interest

- 3 bend sections
- 2 T-connections (See Figure 1)
- 1 Tie-In Joints and 1 Reducer joints into Vitrified clay lines as part of the 216-T-35 Crib (See Figure 1)
- 2 side lines stubbed for future use

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

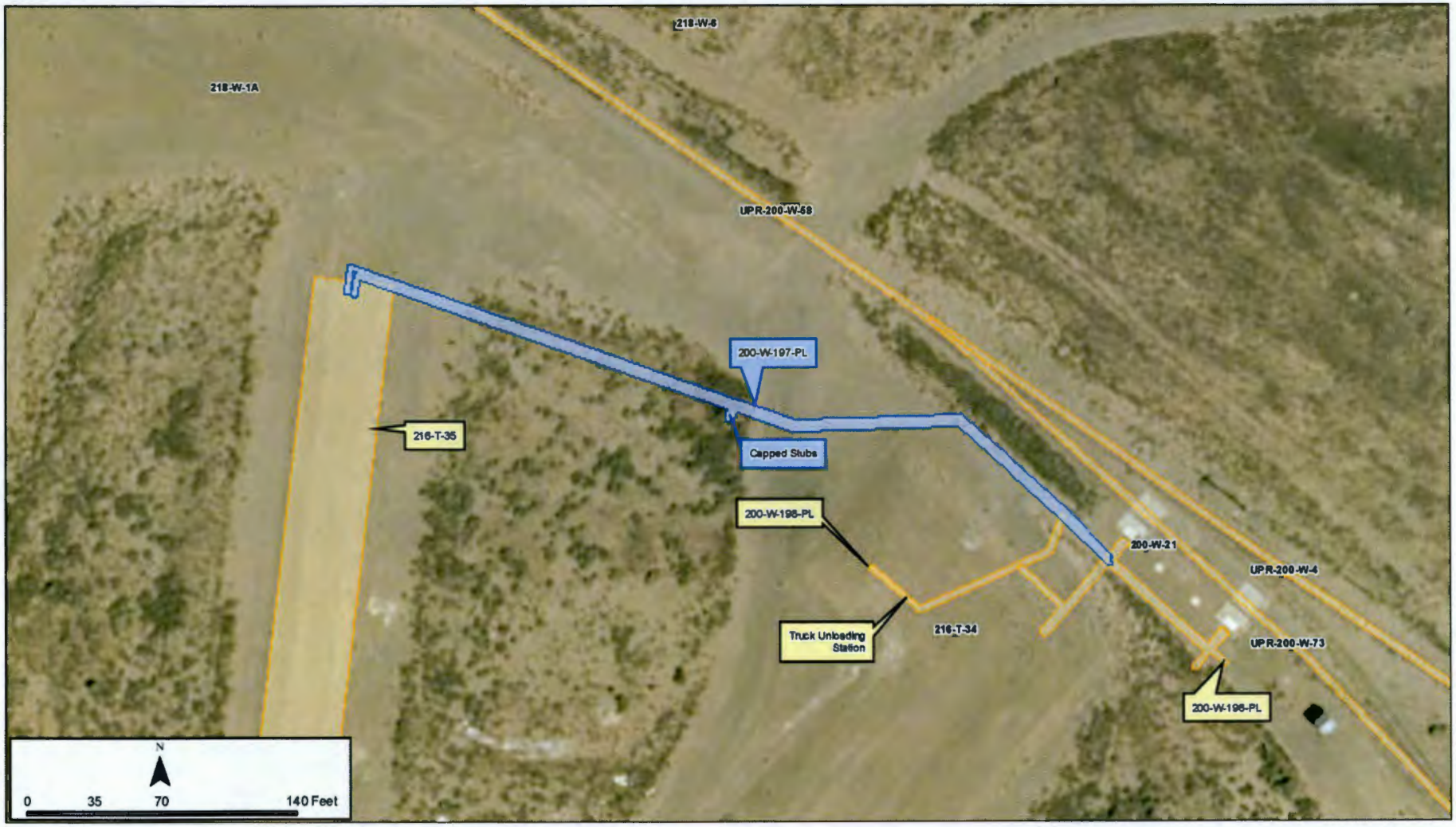
- Processes: 300 Area Laboratory Waste
- Waste Streams: 300 Area liquid laboratory waste from the 340 Facility
- Connection to truck unloading station, but no recorded input of waste from this source (200-W-198-PL)
- Based on historic inventory reporting, total waste transferred to the 216-T-35 crib was 1.3 million gal
- Estimated radionuclide content includes: 29 Ci Sr-90; 9.5 Ci Cs-137; 6.06 Ci Total alpha; and 45.6 Ci Total beta (Radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- Jul-30-2015 RAD Survey of 200-W-21: Total Beta <5,000 dpm/100 sq-cm and Total Alpha <500 dpm/100 sq-cm
- Aug-15-2013 RAD Survey of 200-W-21: Total Beta <5,000 dpm/100 sq-cm and Total Alpha <500 dpm/100 sq-cm

Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	
• 216-T-35 (Crib)	N/A
200-IS-1	
• 200-W-196-PL	
• 200-W-198-PL	


218-W-6
218-W-1A
UPR-200-W-68
200-W-197-PL
216-T-35
Capped Stubs
200-W-198-PL
200-W-21
UPR-200-W-4
Truck Unloading Station
216-T-34
UPR-200-W-73
200-W-198-PL
N
0
35
70
140 Feet

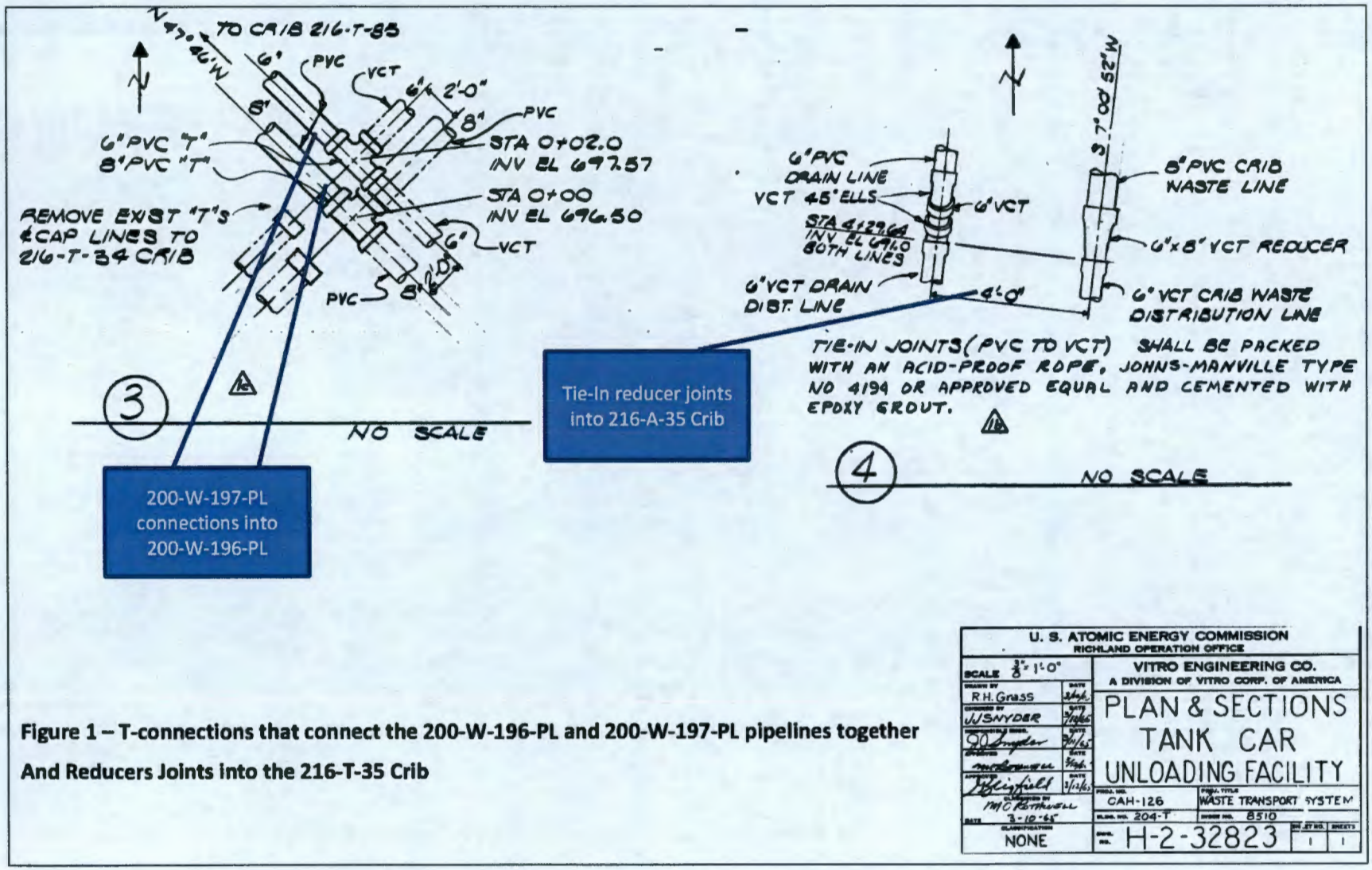


Figure 1 – T-connections that connect the 200-W-196-PL and 200-W-197-PL pipelines together And Reducers Joints into the 216-T-35 Crib

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Scoping Summary: 200-W-198-PL

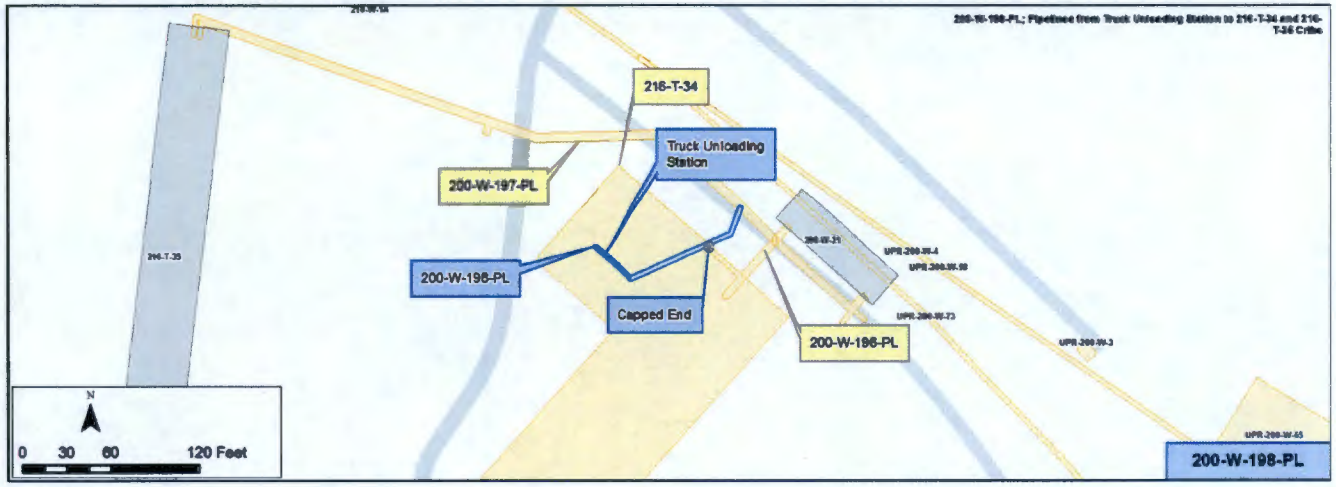
History

The 200-W-198-PL waste site is an inactive underground pipeline that extends from the truck unloading station to the pipelines that fed the 216-T-34 Crib (200-W-196-PL) and the 216-T-35 Crib (200-W-197-PL).

The pipeline was constructed in 1966 and originally connected to the 200-W-196-PL; however, in 1967 it was capped and rerouted into the 200-W-197-PL pipeline, when the 216-T-34 Crib was taken out of service.

Although there is no recorded transfer of waste through the pipeline, it may have been used.

The last recorded service date of 200-W-197-PL, which is the terminating connection for 200-W-198-PL, was in December 1967.



Construction

- Length: 160 ft
- Diameter: 6in.
- Composition: PVC
- Gravity Fed
- Buried Depth: 4-8 ft
- Encasement: 32 ft of 8 in. Corrugated Pipe Encasment (Section below the Truck Unload Station; see Figure 1)
- Total Calculated Volume: 235 gallons

Features of Interest

- 2 pipe bend sections
- 2 T-connections
- 1 Capped line segement
- Truck Unloading Station, encasment and pipe connections (See Figure 1)

Relevant Characterization

- No direct characterization data was located, but data available for the 216-T-34 and 216-T-35 cribs shown in Misc./Other Relevant Information

Waste Streams

- Process: Unknown
- Waste Streams: Connection to the truck unloading station (see Misc./Other Relevant Information for potential waste information)

Misc./Other Relevant Information

- Based on historic inventory reporting, total waste transferred to the 216-T-34 and 216-T-35 cribs was 4.5 million and 1.3 million gallons, respectively (the cribs included other contributing sources from lines 200-W-196-PL and 200-W-197-PL)
- Estimated radionuclide content includes: 144 Ci Sr-90; 2.66E-04 Ci Pd-107; 128 Ci Cs-137; 1.63E-02 Ci Gross U; 6.57 Ci Total alpha; and 668 Ci Total beta (Radionuclides decayed to 12/31/98)

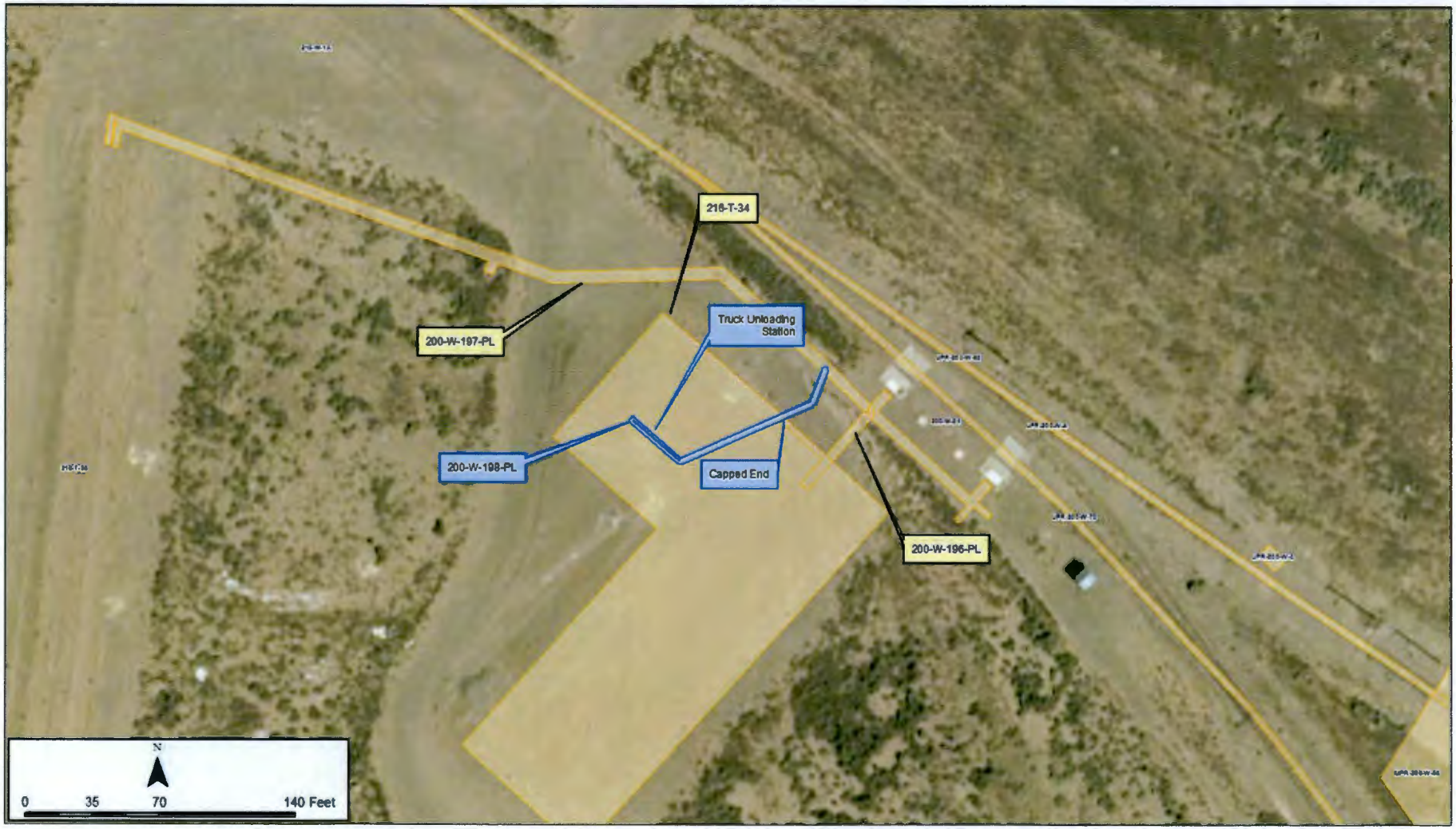
Site Interfaces

Origin/Termination Points:

200-IS-1

- 200-W-196-PL
- 200-W-197-PL

- Truck Unloading Station (Facility)


216-T-34
200-W-197-PL
Truck Unloading Station
200-W-198-PL
Capped End
200-W-196-PL
N
0
35
70
140 Feet

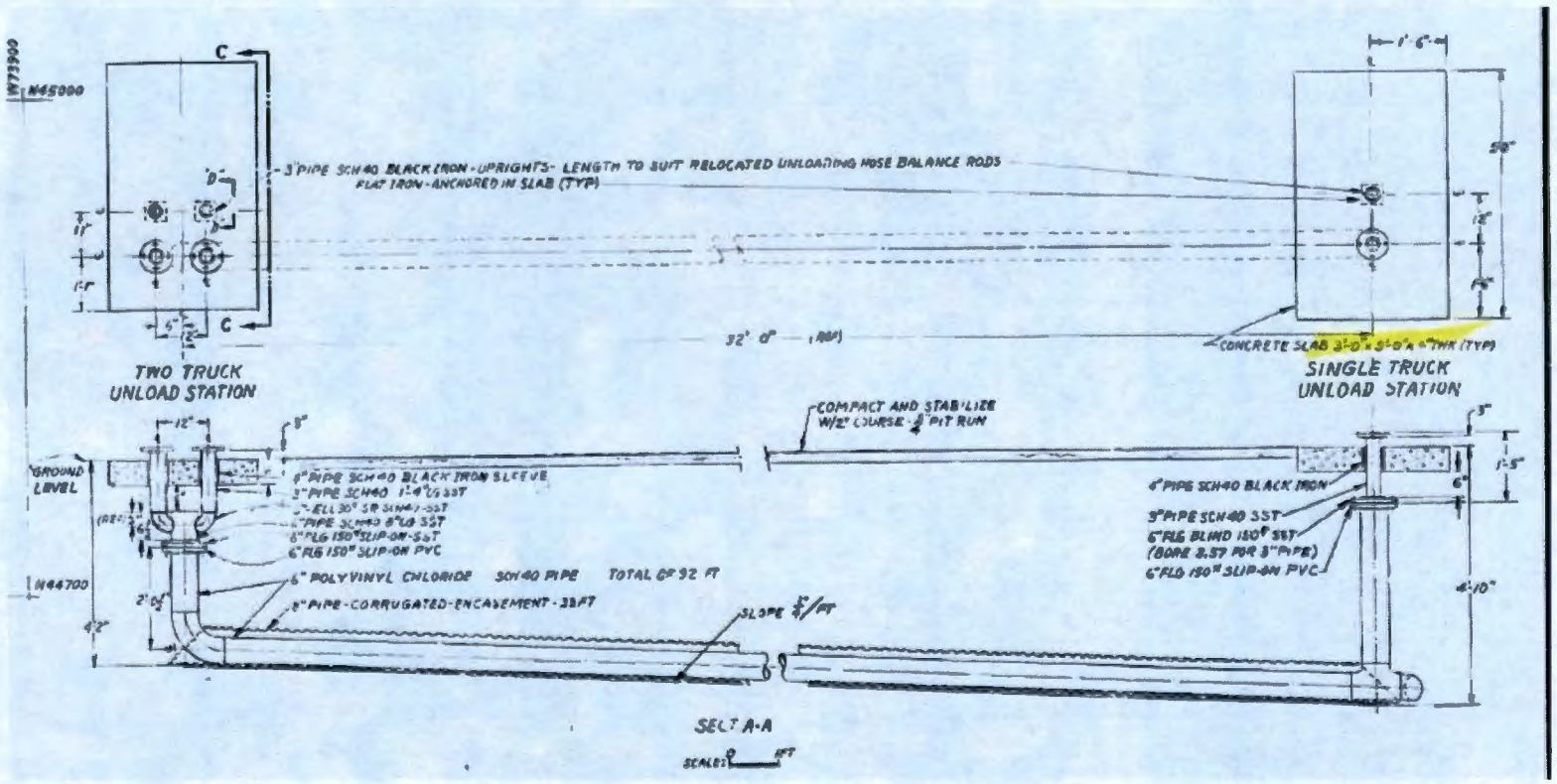


Figure 1 – Truck Unloading Station (SK-2-3706)

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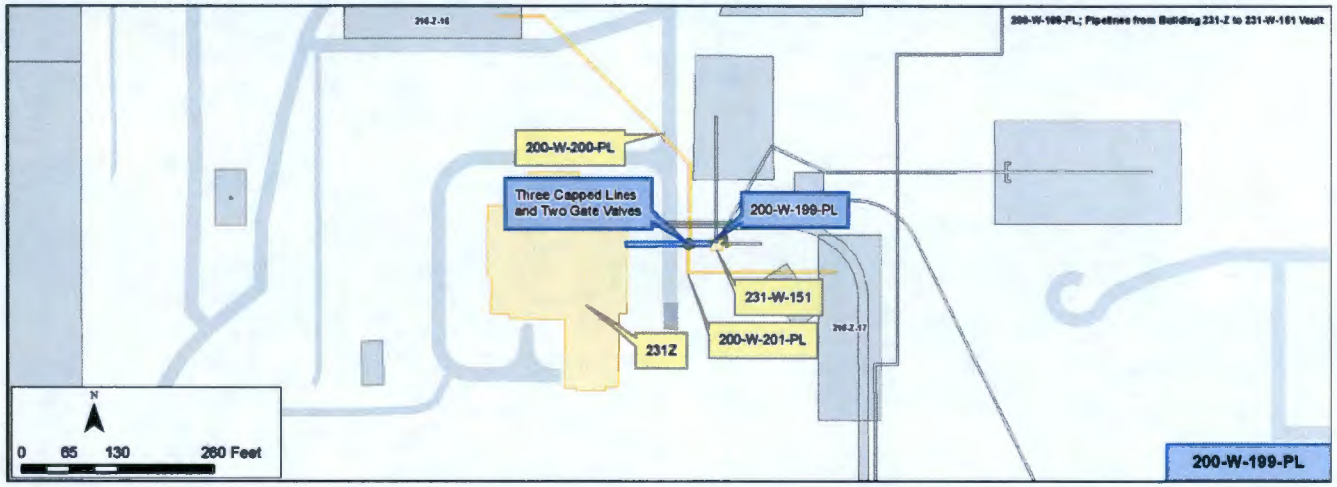
Scoping Summary: 200-W-199-PL

History

The 200-W-199-PL waste site is an inactive underground pipeline that consists of three lines that transferred laboratory waste from the 231-Z Facility to the 231-W-151 Vault, as well as to the 200-W-200-PL and 200-W-201-PL pipelines.

The pipeline was originally constructed in 1947-48 to transfer the 231-Z Laboratory waste into the 231-W-151 Vault. In the late 1960s, the three inlet lines into to the vault were capped off. The other end of the lines connected to the 231-Z facility were diverted and terminated into the manifold that connects into 200-W-200-PL and 200-W-201-PL (See Figure 1).

In 1975, 200-W-201-PL was taken out of service.200-W-200-PL was taken out of service in 1977.



Construction

3 Lines (6 segments): 3 segments connected to 231-W-151, later capped; 3 segments connected from 231-Z Building to 200-W-200-PL and 200-W-201-PL via a manhole

- Length: 32 ft x 3 Segments= 96 ft (capped segments); 80 ft x 3 Segments= 240 ft (connected segments)
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Drained
- Direct Buried
- Depth: 3 ft - 5 ft bgs
- Total Calculated Volume: 124 gal

Features of Interest

- Three capped 3-in lines connected to 231-W-151 Diversion Box
- 2 Gate Valves, part of the manifold

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

- Process: Laboratory Waste and Drain Wastes
- Waste Streams: 231-Z Material Engineering Lab and Drainage from 7S floor drains in Building 231-Z
- Last recorded waste stream was Pacific Northwest Laboratory operations waste in the 231-Z Building.
- Based on historic inventory reporting, total waste transferred to 216-Z-17 trench and 216-Z-16 was estimated at 9.5 million gallons and 27 million gallons, respectively, with very low activity fission products transferring via 200-W-199-PL

Misc./Other Relevant Information

- Sep-2002, alpha contamination at 210,000 disintegration per minute and 420 disintegrations per minute removable in the 231-W-151 Vault
- 1974 sample contained 0.001 gram of plutonium in the 231-Z Diversion Box
- 216-Z-16 Crib waste measured with 0.16 pounds of plutonium and 217-Z-16 Ditch with 0.11 pounds of plutonium

Site Interfaces

Origin/Termination

- 231-Z (Building)

200-WA-1

- 231-W-151 (Sump, Vault Tanks)

Site Intersects

200-IS-1

- 200-W-200-PL
- 200-W-201-PL

200-W-200-PL
200-W-199-PL
231-W-151
200-W-201-PL
231Z
Three Capped Lines and Two Gate Valves
N
0
60
120
240 Feet

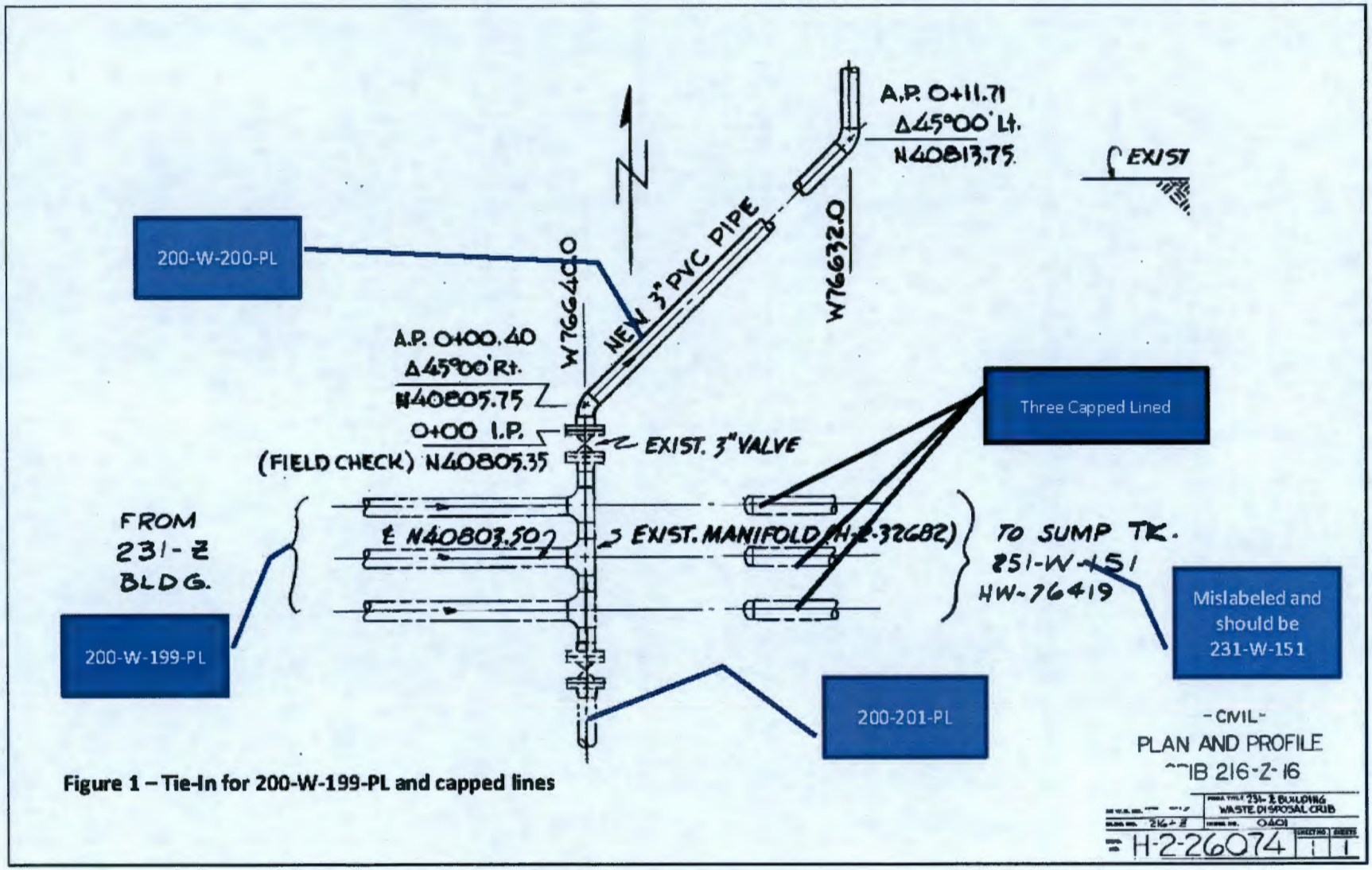


Figure 1 – Tie-In for 200-W-199-PL and capped lines

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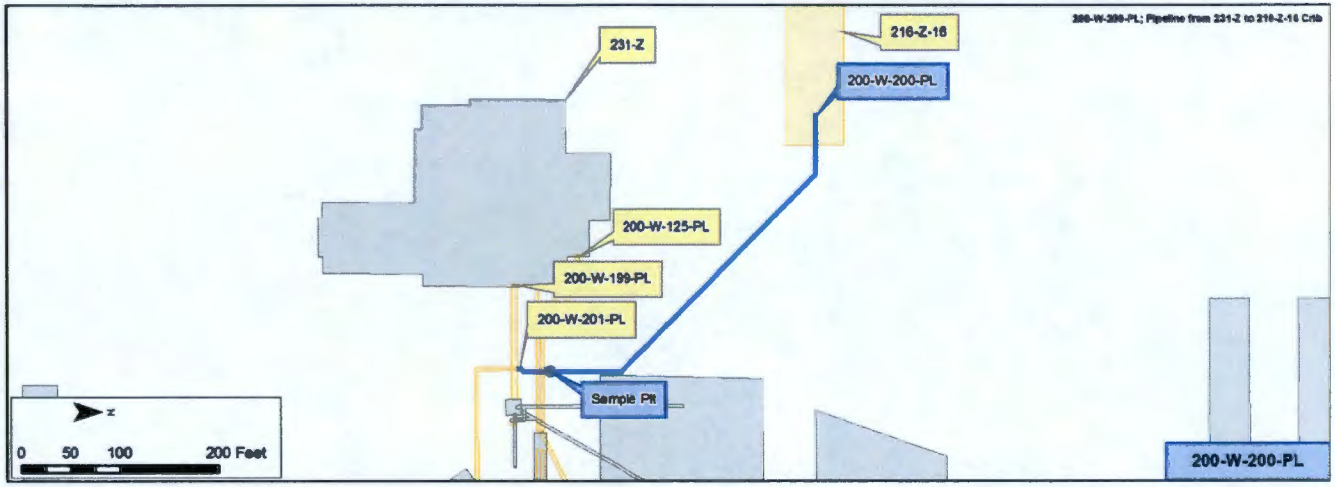
Scoping Summary: 200-W-200-PL

History

The 200-W-200-PL waste site is an inactive underground pipeline that transferred liquid laboratory waste from the 231-Z Building to the 216-Z-16 Crib. This pipeline connects to the 200-W-199-PL pipeline by a header system with a flow control valve.

The pipeline was constructed in 1967 and in use from Mar-1968 until Jan-1977.



Construction

Pipeline

- Length: 444 ft
- Diameter: 3 in. (for 37 ft) and 4 in. (for 407 ft)
- Composition: PVC
- Pressurized
- Direct buried
- Depth: 5 ft - 11 ft bgs
- Calculated Volume: 279 gal

Sample Pit (Figure 3 for detail)

- Height: 7 ft 4 in.
- Width: 4 ft 4 in.
- Length: 7 ft 4 in.
- Composition: Reinforced concrete with an 11-gauge stainless steel box insert 1.5 ft x 1.5 ft x 6 ft
- Buried Depth: 0 ft - 7 ft bgs
- One line in, one line out
- Calculated Volume: 1,466 gal

Features of Interest

- T-joints (3), header connection from 200-W-199-PL
- Transitions (2), Carbon Steel to Stainless Steel, for fittings at header
- Valve, gate valve
- Bends (4)
- T-joint, PVC with blanked end for future use
- Sample Pit, see Figure 3 for detail, the pit consisted of a stainless steel box and sampling pump within a concrete vault

Relevant Characterization

- The 216-Z-16 crib had a characterization borehole (C6832) drilled in 2008. Additionally, there are eleven crib penetrating wells, one gage well, and two monitoring wells adjacent to the crib
- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

- The pipeline was used to transfer laboratory wastes from the Pacific Northwest Laboratory in the 231-Z building to the 216-Z-16 crib
- Wastes are described as neutral to basic
- Based on historical inventory reporting, total waste transferred to crib estimated at 102,000,000 liters with approximately 72 grams of plutonium and 4.40 Ci of total alpha
  - Radionuclides decayed to Dec-31-1998

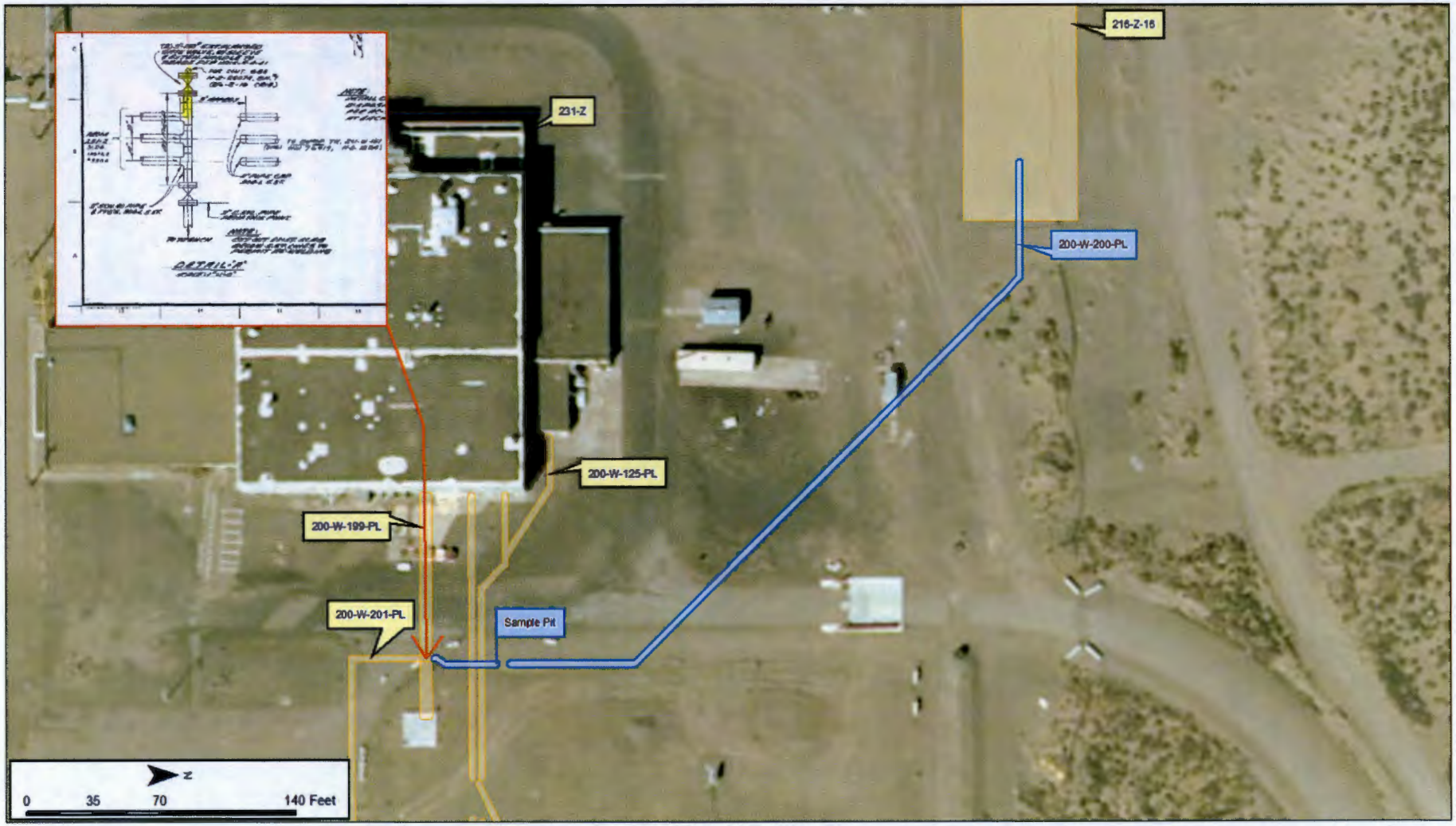
Misc./Other Relevant Information

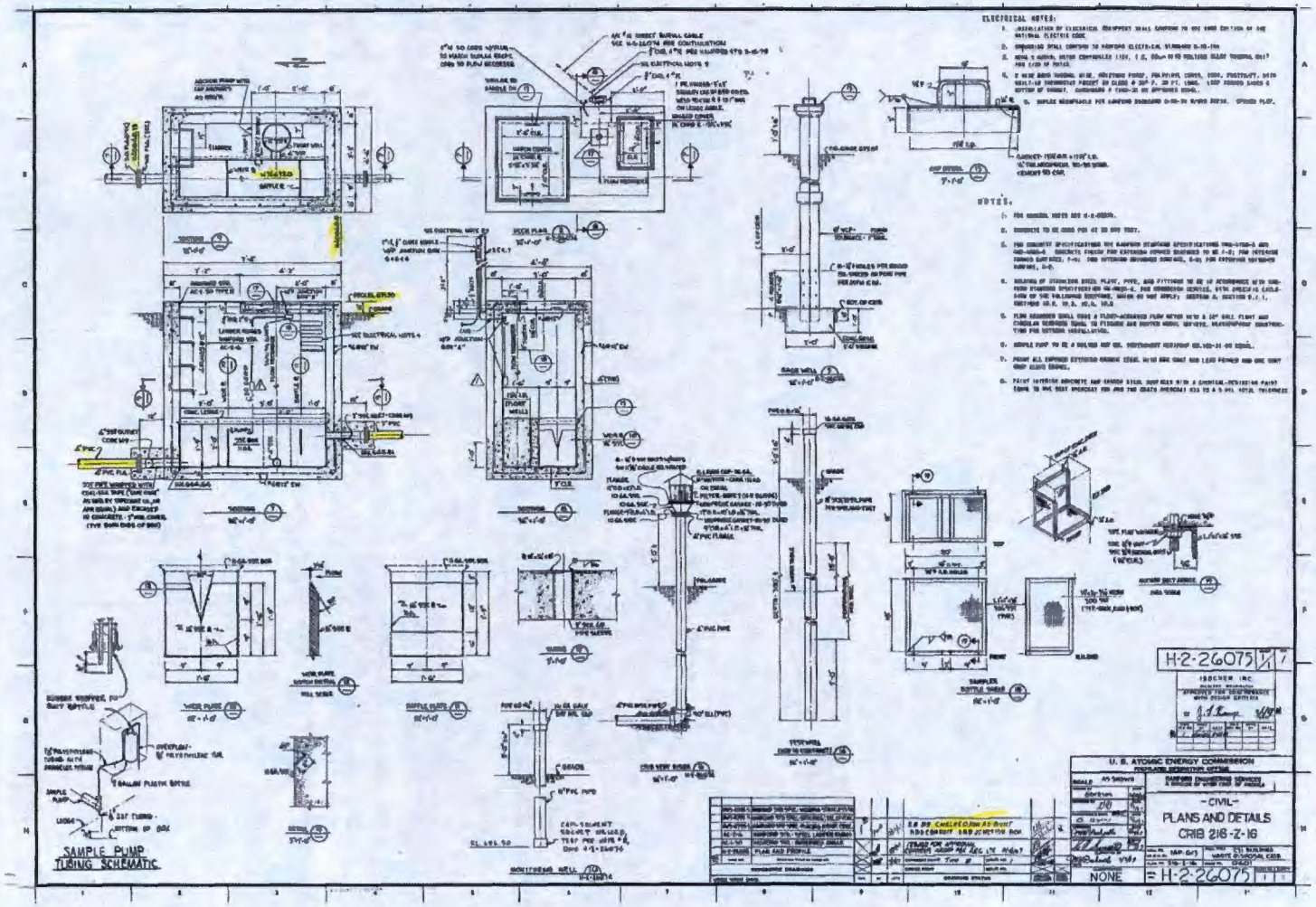
- No information was identified

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 200-W-199-PL (origin)	• 200-W-125-PL
	• 200-W-201-PL
200-WA-1	
• 216-Z-16 (termination)	

Scoping Summary: 200-W-200-PL




ELECTRICAL NOTES:
NOTES:
SAMPLE PUMP TUBING SCHEMATIC
H-2-26075
U. S. ATOMIC ENERGY COMMISSION
-CIVIL-
PLANS AND DETAILS
CRIB 216-Z-16
NONE
H-2-26075

No ECNs —

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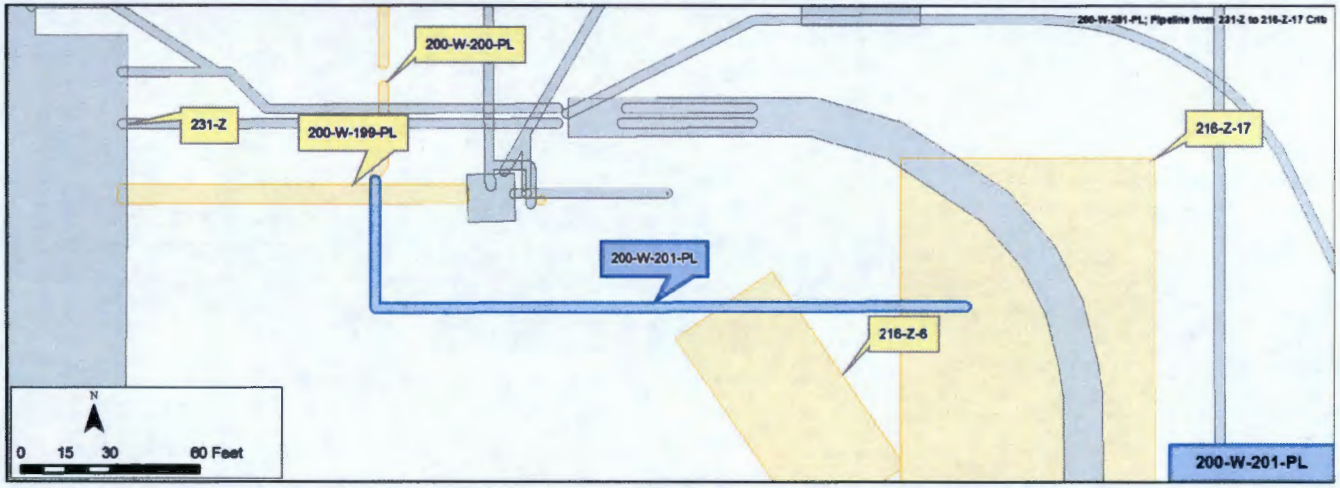
Scoping Summary: 200-W-201-PL

History

The 200-W-201-PL waste site is an inactive underground pipeline that transferred liquid laboratory waste from the 231-Z Building to the 216-Z-17 Trench.

The 200-W-201-PL pipeline connects to the 200-W-199-PL pipeline by a header system with a control valve.

The pipeline was constructed in 1966 and operational from Feb-1967 until Feb-1968, when the flow exceeded the infiltration capacity of the destination crib. The pipeline was capped at the crib and the valving closed at the 200-W-199-PL interface header in 1977.



Construction

- Length: 243 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Direct Buried
- Pressurized Pipeline
- Depth: 5 ft - 5.8 ft
- Calculated Volume: 89 gal

Features of Interest

- T-joint
- Transitions (2), Carbon Steel to Stainless Steel
- Valve, Stainless Steel Gate
- Bend, direction change from N/S to E/W

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

- The pipeline was used to transfer laboratory wastes associated with the PNL lab in the 231-Z building to the 216-Z-17 trench
- Wastes are described as neutral to basic
- Based on historical inventory reporting, total waste transferred to crib estimated at 36,800,000 liters with an estimated 50 grams plutonium and 3.08 Ci total alpha.

Misc./Other Relevant Information

- No additional information identified

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-WA-1
• 200-W-199-PL (origin)	• 216-Z-6
200-WA-1	200-IS-1
• 216-Z-17 (termination)	• 200-W-200-PL

Scoping Summary: 200-W-201-PL

Scoping Summary: 200-W-202-PL

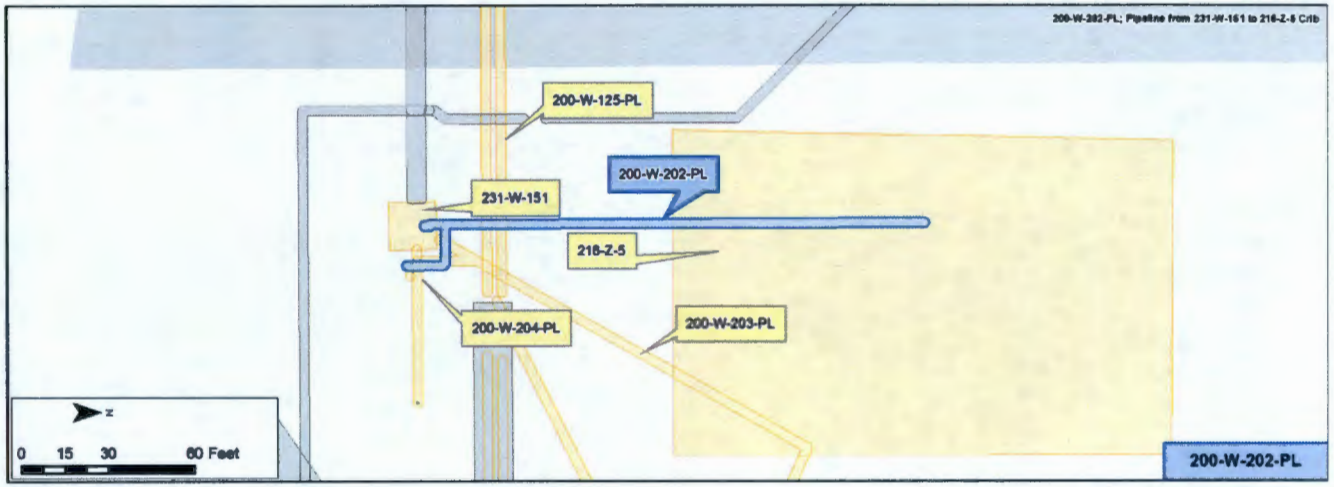
History

The 200-W-202-PL waste site is an inactive underground pipeline that transferred liquid waste from the 231-W-151 Diversion Pit (originating from the 231-Z Building, via the 200-W-199-PL pipelines) to the 216-Z-5 Crib.

The site consists of two subsites that transferred identical waste streams to separate destinations:
200-W-202-PL:1 from the 231-W-151 Diversion Pit to the 216-Z-5 Crib.
200-W-202-PL:2 from the diversion pit to 200-W-204-PL, which drained to the 216-Z-10 Reverse Well.

The system was constructed in 1945 and in use until 1947, when the 216-Z-5 Crib was deactivated after waste sludge blocked the crib. The pipeline was deactivated by capping the pipeline west of the 231-W-151 diversion pit.

A portion of the 200-W-202-PL:1 lies within the footprint of the 216-Z-5 Crib.



Construction

- Length:
  - 200-W-202-PL:1 - 175 ft
  - 200-W-202-PL:2 - 27 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Direct Buried
- Pressurized Pipeline
- Depth: 0 ft - 12.5 ft
- Calculated Volume:
  - 200-W-202-PL:1 - 64 gal
  - 200-W-202-PL:2 - 10 gal

Features of Interest

200-W-202-PL:1
- Vertical Run, vertical section of pipe connecting 231-W-151
- T fitting (2), branches PL:1 to PL:2 and connects PL:1 to 216-Z-5

200-W-202-PL:2
- Bend, 90 degree
- Tie-in, connects 200-W-202-PL:2 to 200-W-204-PL

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil

Waste Streams

The pipeline was used to transfer process and laboratory wastes from the 231-Z building to the 216-Z-5 crib. Based on historic inventory reporting, wastes are described as low level liquid wastes. Total waste transferred is estimated at 31,000,000 liters contained approximately 3,000 grams of plutonium. Waste also contained mixed fission products, including:
- 1.35 Ci Sr-90
- 2.42 Ci Cs-137
- 7.85E-05 Ci Tc-99
- 20.9 Ci total alpha

(Radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- None Identified

Site Interfaces

Origin/Termination

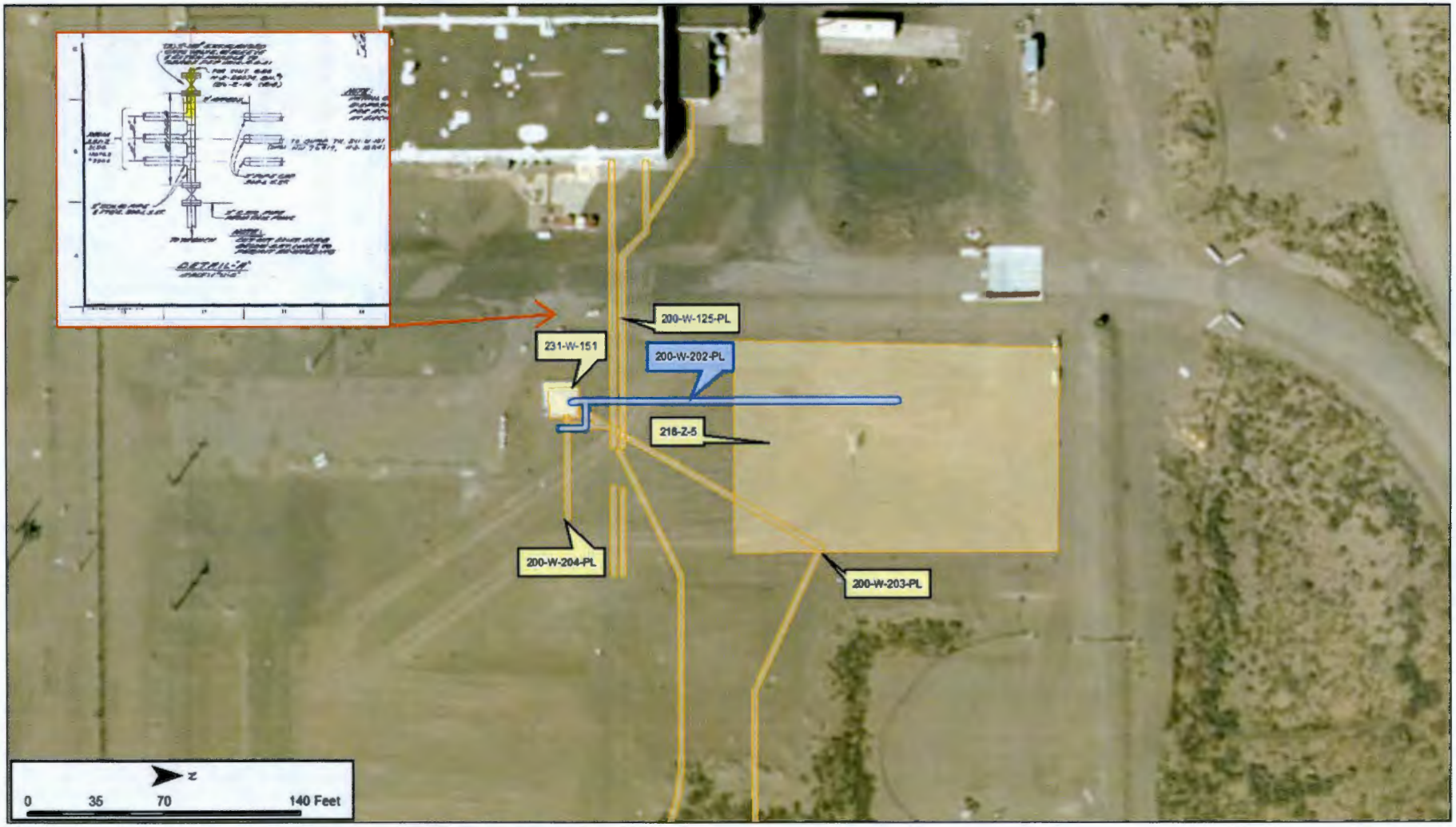
200-WA-1
- 231-W-151 (origin)

200-PW-6
- 216-Z-5 (PL:1) (termination)

200-IS-1
- 200-W-204-PL (PL:2) (termination)

Site Intersects

200-IS-1
- 200-W-125-PL
- 200-W-203-PL


200-W-125-PL
231-W-151
200-W-202-PL
216-Z-5
200-W-204-PL
200-W-203-PL
N
0
35
70
140 Feet

Scoping Summary: 200-W-203-PL

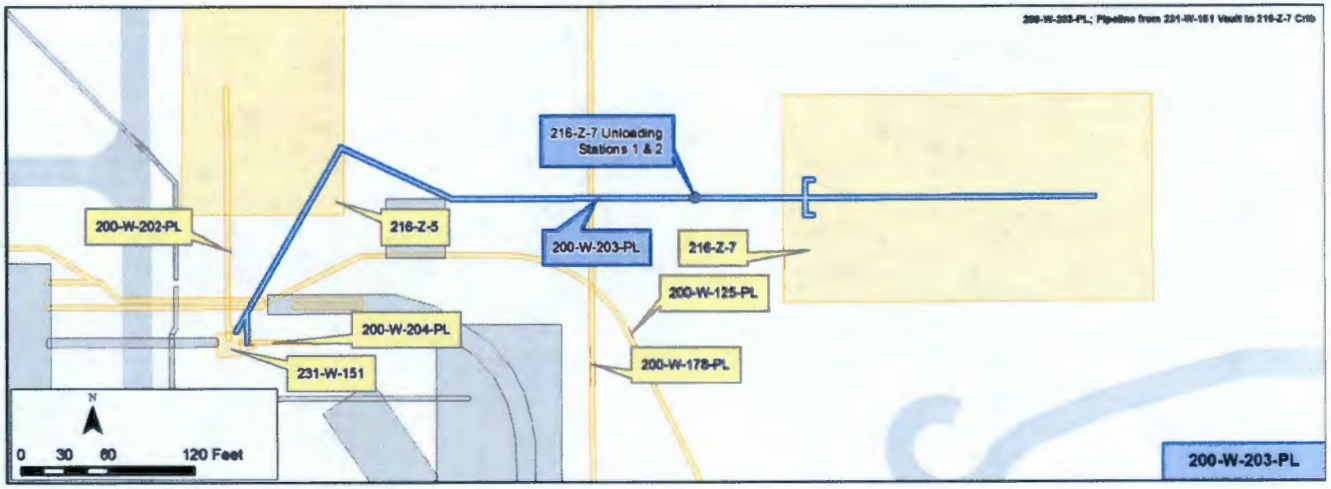
History

The 200-W-203-PL waste site is an inactive underground pipeline that transferred liquid waste from the 231-W-151 Diversion Pit (originating from the 231-Z building) to the 216-Z-7 Crib. The pipeline has four risers referred to as the 216-Z-7 unloading stations (1 and 2).

It was constructed in 1945, and from 1947 to 1953 transferred process waste from the 231-Z building. From 1953 until 1967, the site transferred laboratory waste from the 231-Z Building. From 1965 until 1967, waste was transferred from the 231-Z building and tanker trucks from the 340 Building were offloaded at the 216-Z-7 unloading stations.

The pipeline was capped in 1967, which coincided with 216-Z-7 Crib deactivation. The pipeline was capped immediately west of the 231-W-151 diversion pit on the 200-W-199-PL pipeline.

A portion of the 200-W-203-PL pipeline lies within the footprint of the 216-Z-7 crib.



Construction

- Length: 738 ft total (only 267 ft within the 216-Z-7 crib footprint)
- Diameter: 3 in.
- Composition: Stainless Steel
- Direct Buried
- Pressurized Pipeline
- Depth: 0 to 10 ft bgs
- Calculated Volume: 271 gal total (98 gal within the 216-Z-7 footprint)

Features of Interest

- T-fitting
- Vertical run connecting 216-W-151 diversion box to buried run
- Y-fitting
- Bends (2), direction changes
- Risers (2), 3 in. SST risers connecting to 216-Z-7 unloading station
- Risers (2), 3 in. to 6 in. SST risers connecting to 216-Z-7 unloading station

Within 216-Z-7 footprint:

- Cross fitting
- Bends (2)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

The pipeline transferred process and laboratory wastes from the 231-Z building to the 216-Z-7 crib. Wastes are described as low level liquid wastes. Waste from the 340 building was trucked and unloaded at the 216-Z-7 unloading stations. Based on historical inventory reporting, total waste transferred to crib estimated at 79,900,000 liters with ~ 3,000 grams of Pu and mixed fission products including:

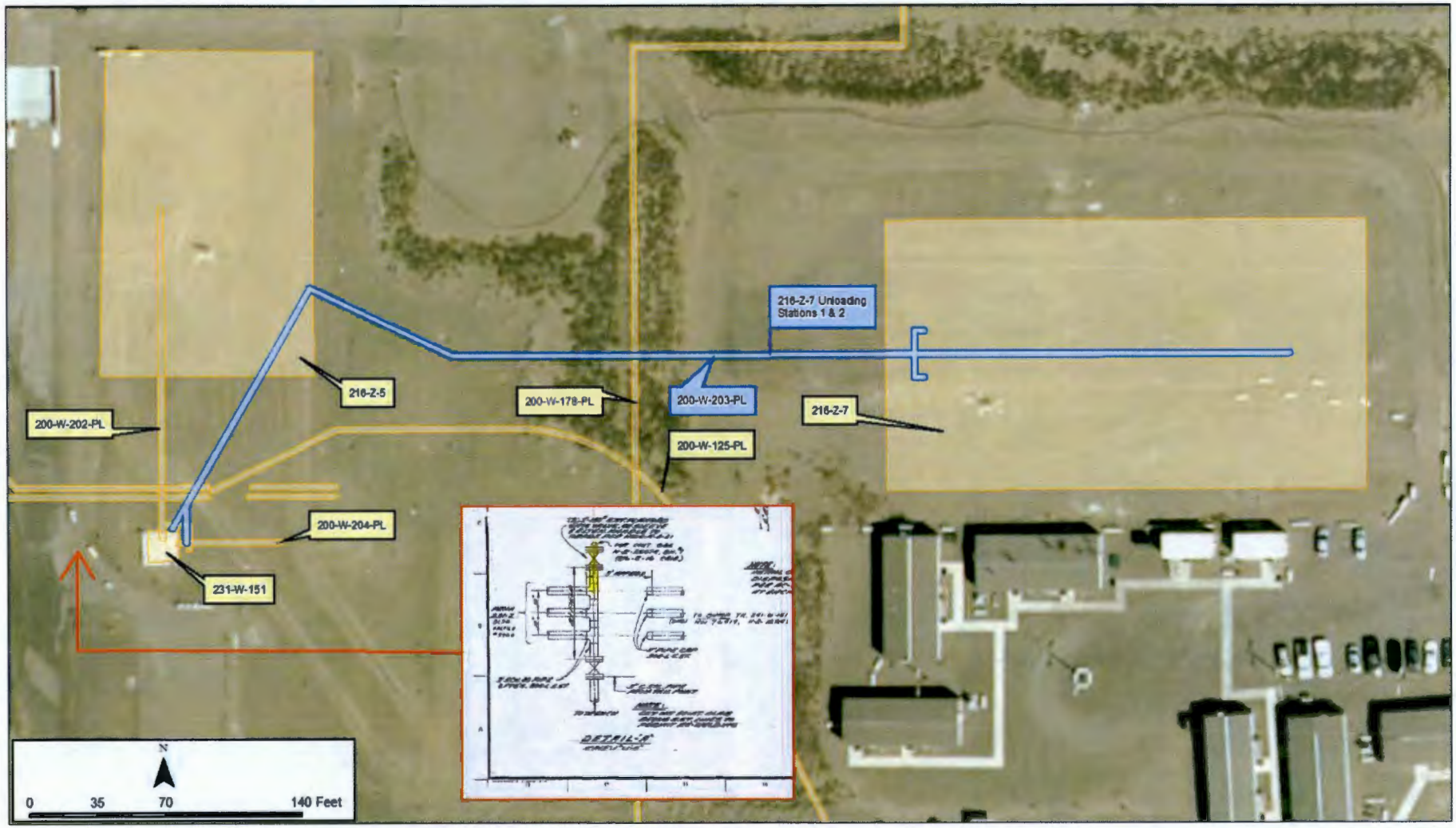
- 1.64E+02 Ci Sr-90
- 1.67E+02 Ci Cs-137
- 3.16E-03 Ci Tc-99
- 1.23E+02 Ci total alpha; 8.02E+02 Ci total beta (radionuclides decayed to Dec-31-1998)

Misc./Other Relevant Information

- No information identified

Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	200-IS-1
• 231-W-151 (origin)	• 200-W-125-PL
• 216-Z-7 (termination)	• 200-W-178-PL
	• 200-W-202-PL
	• 200-W-204-PL
	200-PW-6
	• 216-Z-S


216-Z-7 Unloading Stations 1 & 2
216-Z-5
200-W-178-PL
200-W-203-PL
216-Z-7
200-W-202-PL
200-W-125-PL
200-W-204-PL
231-W-151
N
0
35
70
140 Feet

Scoping Summary: 200-W-204-PL

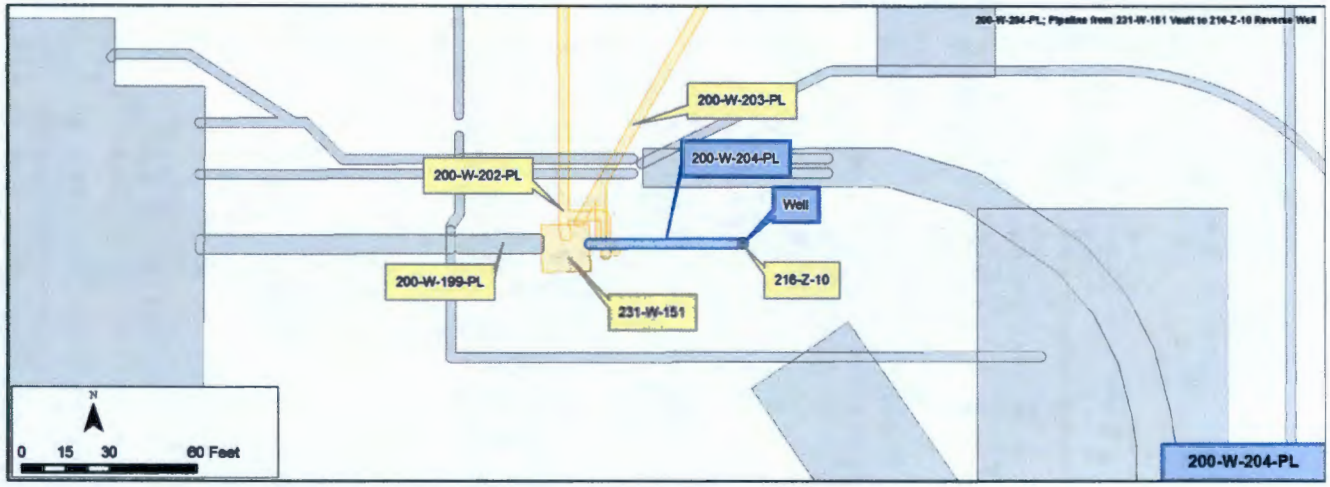
History

The 200-W-204-PL waste sites is an inactive underground pipeline that transferred liquid waste from the 231-W-151 Diversion Pit (originating from the 231-Z building) to the 216-Z-10 Reverse Well.

The pipeline was constructed in 1945 and began transferring waste in Feb-1945. The pipeline was made inactive in Jun-1945 after the reverse well plugged with sludge.

The pipeline and reverse well were isolated by capping the pipeline west of the 231-W-151 diversion pit on the 200-W-199-PL pipeline.

After this pipeline was taken offline, wastes from the diversion pit were routed thru 200-W-202-PL.



Construction

- Length: 53 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Pressurized Pipeline
- Direct Buried
- Depth: 5 ft to 7 ft bgs
- Calculated Volume: 20 gal

Features of Interest

- Capped - West of 231-W-151 diversion pit (on 200-W-199-PL)

Relevant Characterization

- In 1947 three wells were dug 15 ft from reverse well 216-Z-10 and 200-W-204-PL to a depth of 175 ft below ground surface. Soils samples were taken every 5 ft, none of which showed any contamination
- 200-W-204-PL and 216-Z-10 are part of the annual Radiological Survey Program
- No direct characterization data have been located for the pipeline or adjacent soils

Waste Streams

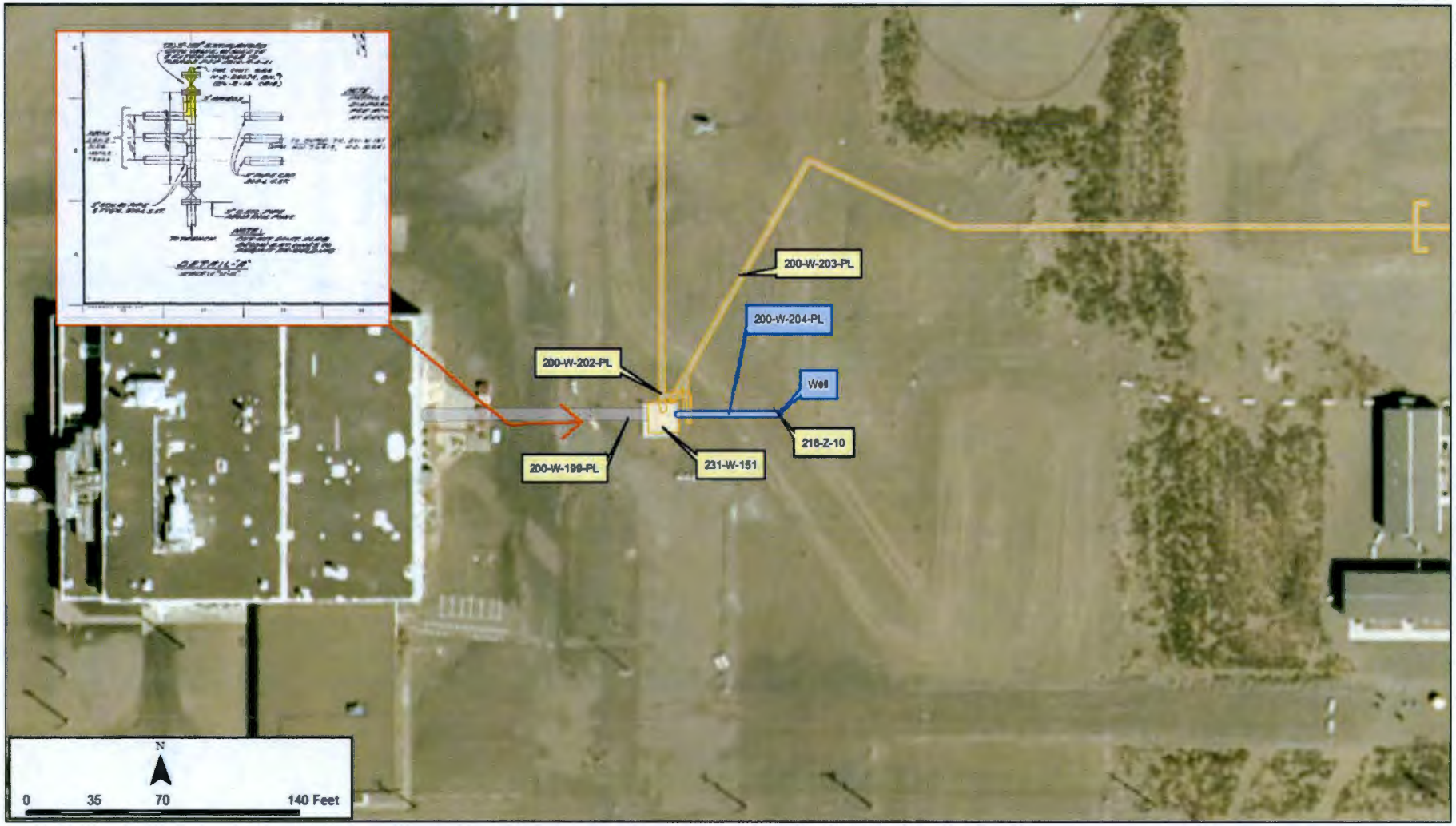
- Transferred process and laboratory wastes from the 231-Z building to the 216-Z-10 reverse well.
- Waste was described as low level liquid waste.
- Based on historical inventory reporting, total waste transferred to crib estimated at 988,000 liters with approximately 50 grams of plutonium and 3.07 Ci of total alpha.
  - Radionuclides decayed to Dec-31-1998

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	200-IS-1
• 231-W-151 (origin)	• 200-W-199-PL
	• 200-W-202-PL
200-PW-6	• 200-W-203-PL
• 216-Z-10 (termination)	


200-W-203-PL
200-W-204-PL
200-W-202-PL
Well
216-Z-10
200-W-199-PL
231-W-151
N
0
35
70
140 Feet

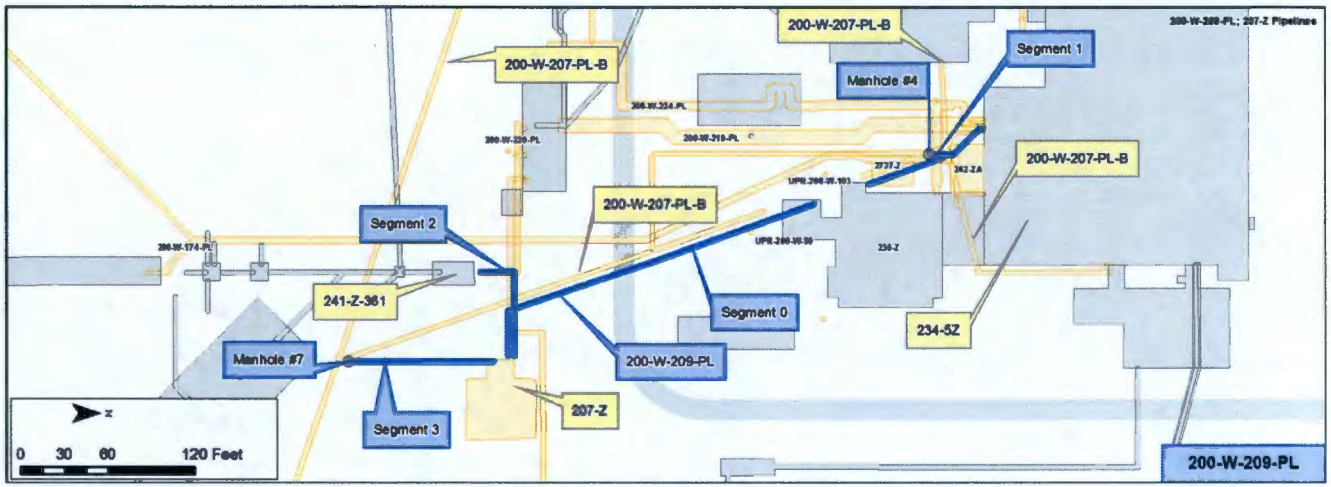
Scoping Summary: 200-W-209-PL

History

The 200-W-209-PL waste site is an inactive underground radioactive process sewer consisting of several pipeline segments.

The initial segment transported waste streams from the 234-5Z Building to the 207-Z Retention Basin (Segment 0). From the 207-Z Retention Basin, two additional segments transported waste to the 241-Z-361 Settling Tank (Segment 2) and Manhole #7 connection to 200-W-207-PL-B (Segment 3). These segments were installed and operational between 1949 and 1959.

When the original line segments were abandoned, the pipeline exiting the 234-5Z Building was cut and waste streams were re-routed to Manhole #4 through a new segment (Segment 1). From Manhole #4, waste streams were routed through 200-W-207-PL-B. Operational dates for this segment could not be located. No further information on abandonment of the other segments was identified.



Construction

- Length: 522 ft cumulative pipe length
- Diameter: 6 in. (Segments 2 and 3) and 8 in. (Segments 0 and 1)
- Ccomposition: Carbon Steel
- Gravity drained
- Direct Buried
- Depth: 5 ft - 10 ft bgs
- Total Calculated Volume: ~1,040 gal in pipelines

Features of Interest

- Line segment 1 terminates at manhole #4
- Line segment 3 ends at manhole #7

Relevant Characterization

- None noted

Waste Streams

- 200-W-209-PL transported potentially contaminated liquid waste, including steam condensate and cooling water from the 234-5Z Building
- 200-W-209-PL may have transported process wastes containing plutonium and organic compounds

Misc./Other Relevant Information

- The 207-Z Retention Basin was filled with high density grout in 2006
- The 241-Z-361 Settling Tank was blanked off in 1973 and pumped out in May-1975. It was in use from 1949-1973

Site Interfaces

Origin/Termination

- 234-5Z facility (Origin)

200-PW-1

- 241-Z-361 (Termination)

200-WA-1

- 207-Z (Termination)

No Operable Unit

- 200-W-207-PL-B (Termination)

Site Intersects

200-IS-1

- 200-W-219-PL
- 200-W-224-PL

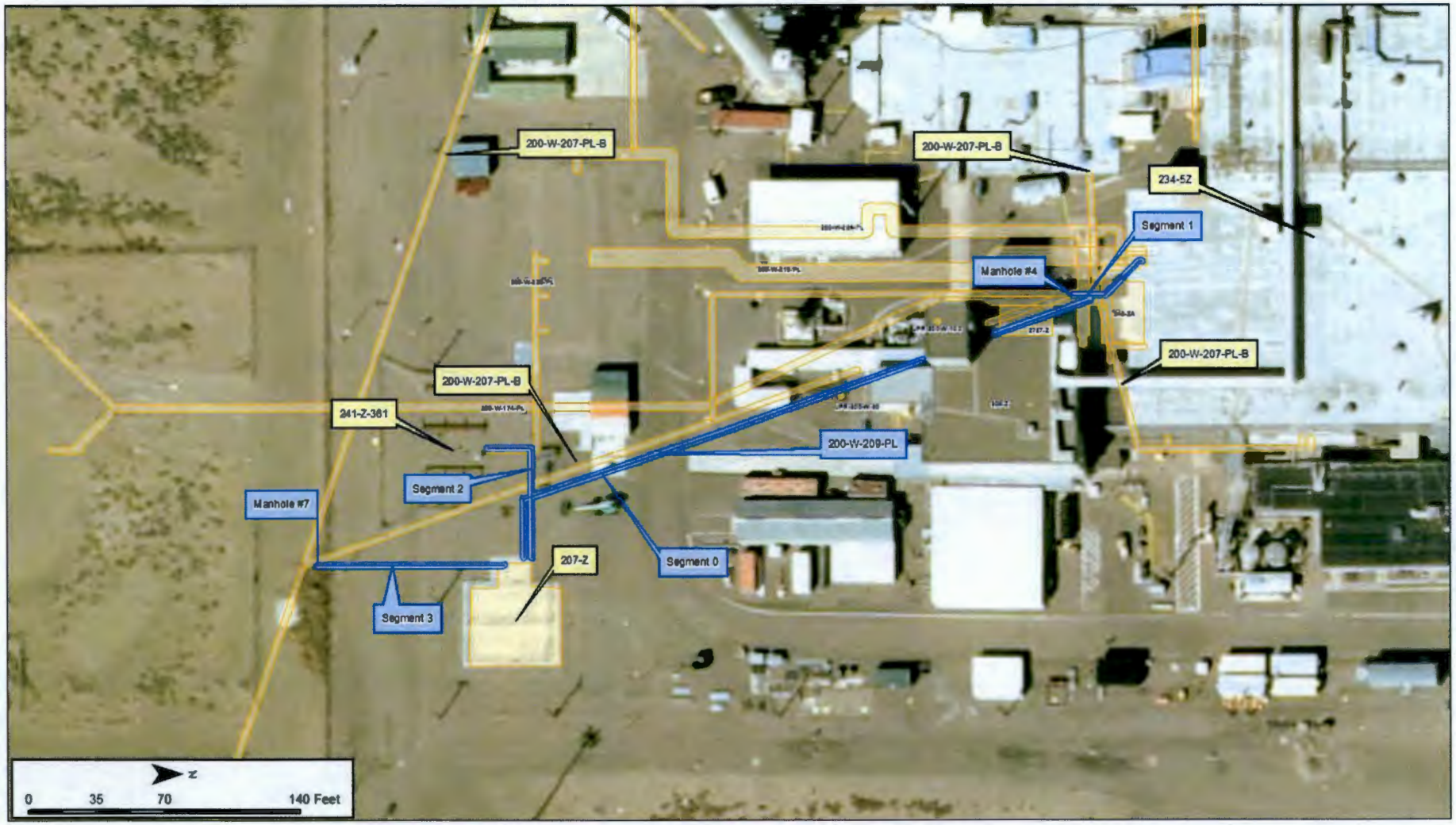
200-WA-1

- UPR-200-W-103 (Contamination due to 1971 break in 200-W-174-PL)

No Operable Unit

- 200-W-174-PL
- 00-W-220-PL
- UPR-200-W-90 (Rejected)

Scoping Summary: 200-W-209-PL



Scoping Summary: 200-W-212-PL

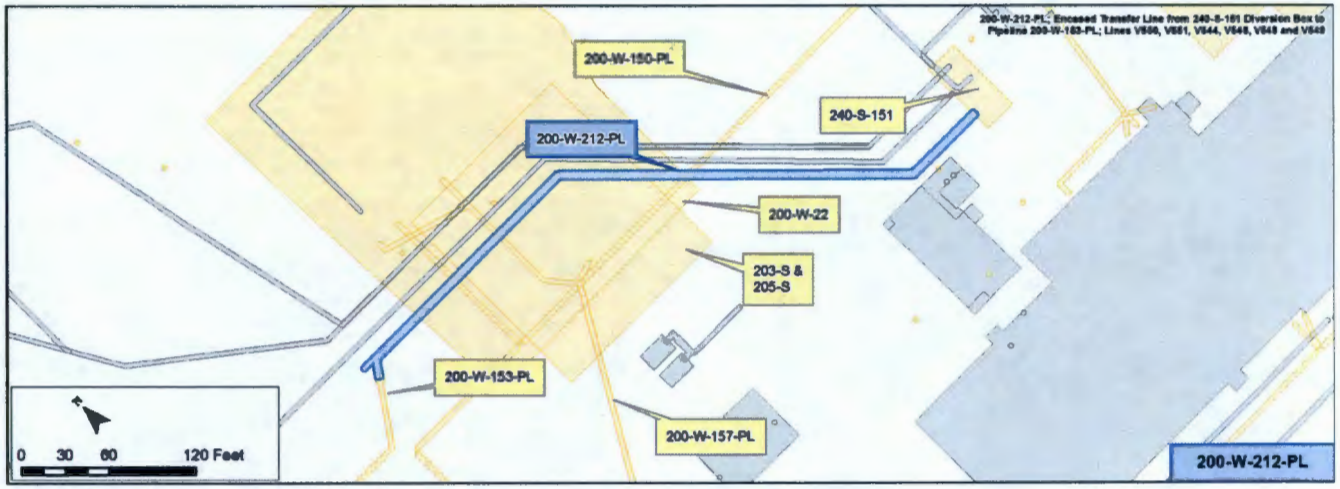
History

The 200-W-212-PL waste site is an inactive underground concrete-encased transfer system from the 240-S-151 Diversion Box to the process sewer system's junction with 200-W-153-PL.

The system consists of six lines constructed in the early 1950s; it was originally constructed as six outlet stubs for connection to a future tank farm or future salt recovery plant; however this intended use was never realized.

Three of the lines were never used and remain stubbed off at the system's endpoint to the northwest. The other three lines were directed to the southwest in the late 1950s and reduced into a single line, which is waste site 200-W-153-PL.

The last documented transfer from the system's source, the diversion box, was in 1980.



Construction

- Length: 2,845 ft (cumulative); 474 ft (end-to-end)
- Diameter: 3 in.
- Composition: Stainless Steel
- Encasement: 6-59 concrete
- Cathodic Protection: Yes
- Depth: 10 ft bgs
- Calculated Volume: 174 gal/line; 1,044 gal (all lines)
- Estimated Volume of Concrete: 134 cu-yds

Features of Interest

- Three pipe bends
- Lines V546, V549, and V551 are stubbed off northwest of the junction with 200-W-153-PL and were never used
- Lines V544, V548, and V550 are reduced into one line and become 200-W-153-PL, a 10 in. Schedule 20 Carbon Steel line that leads to the 216-S-6 Crib

Relevant Characterization

- No characterization data have been located for the pipeline or adjacent soil

Waste Streams

- 1950 to 1980: REDOX steam condensate waste/cooling water
- Isotopes in the 216-S-5 and 216-S-6 Cribs, which received REDOX steam condensate, include: Sr-90, Tc-99, Cs-137, Sm-151, Eu-154, Total Alpha, and Total Beta

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

200-IS-1

- 240-S-151 Diversion Box
- 200-W-153-PL

Site Intersects

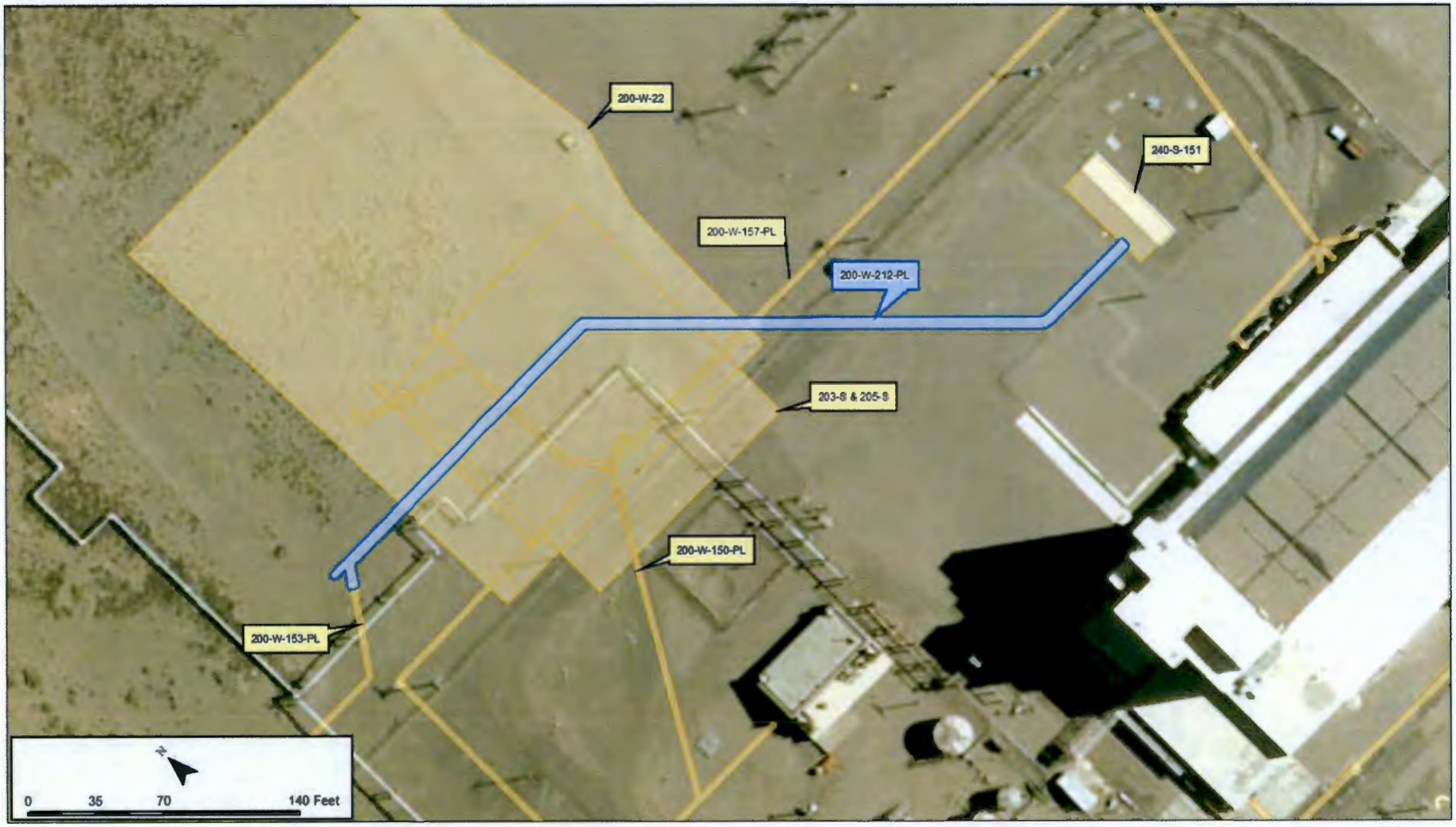
200-IS-1

- 200-W-157-PL
- 200-W-150-PL

200-WA-1

- 200-W-22
- 203-S & 205-S

Scoping Summary: 200-W-212-PL



Scoping Summary: 200-W-213-PL

History

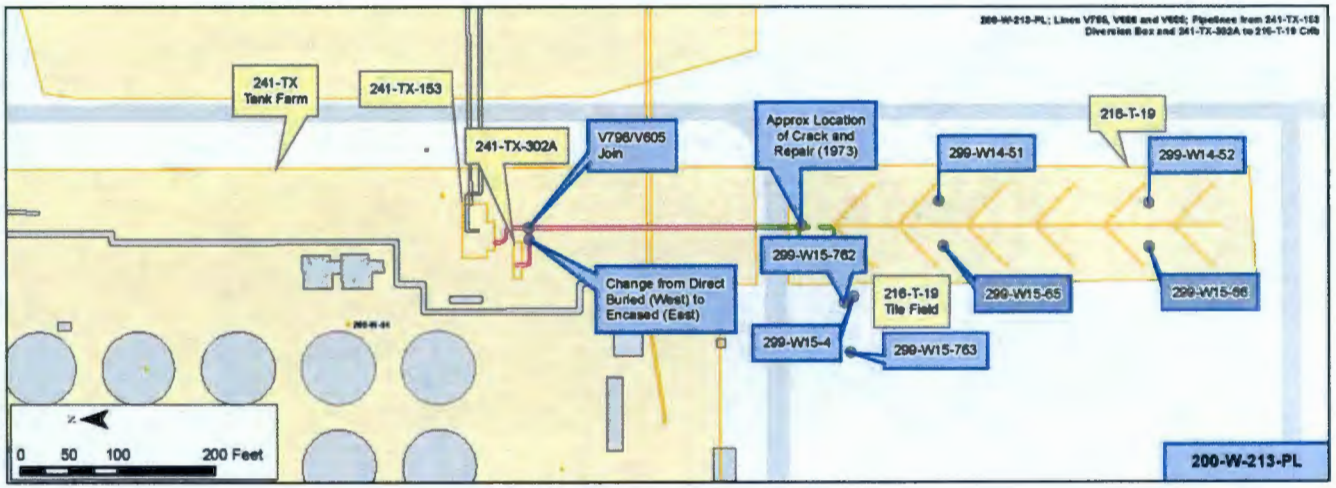
The 200-W-213-PL waste site is an inactive underground pipeline that consists of two lines (V605 and V795) that transferred T Plant and Z Plant waste from the 241-TX-153 Diversion Box and 241-TX-302A Catch Tank to the 216-T-19 Crib and Tile Field.

The site also includes short segments of vitrified clay pipe (VCP) that exited the crib and fed the tile field. All lines in this waste site were constructed in 1950 and were operational from 1951 to 1980.

In 1956, a cave in occurred that resulted in the abandonment of the wooden crib portion of 216-T-19 Crib. That December, a new SS bypass line was installed to route effluent around the crib directly to the tile field.

In 1973, Line V605 was cracked and subsequently repaired. A historical source states the line was blanked in 1980 and 216-T-19 was retired.

Line V795 from 241-TX-302A has been isolated, whilethe status of line V605 was not identified.



Construction

- Length:
  - V605: 315.2 ft
  - V795: 320.7 ft
  - Miscellaneous: 72.8 ft
- Diameter:
  - V605: 3 in.
  - V795: 3 in.
  - Miscellaneous: 3 in. – 8 in.
- Composition:
  - V605: Stainless Steel
  - V795: Cast Iron from Catch Tank to Encasement, where it transitions to Stainless Steel
  - Miscellaneous: Vitrified Clay; Stainless Steel
- Gravity Fed
- Direct Buried
- Encasement Specifications:
  - 2-24 Concrete
  - 6-in Steel Pipe (final 13 ft leading into crib)
- Depth: 9 ft – 27 ft bgs
- Total Calculated Volume: 1,680 gal

Features of Interest

- 8, 90 degree bends
- Crack and repair just upstream of the crib noted on drawing H-2-36801
- Inlet connection of 3 in. V605 and V795 lines to 18 in. SS pipe with 8 in. outlet connection for bypass line
- Direct buried bypass line
- Direct buried segment of V795 between the catch tank and the point where it joins V605 in concrete encasement
- Asbestos packing noted on line V795 at the point where the line changes from direct buried to encased

Relevant Characterization

- Boreholes in the 216-T-19 area have geophysical logging results
  - 299-W14-51(2008); 299-W14-52 (2006); 299-W15-4 (1956); 299-W15-65 (2006); 299-W15-66 (2008); 299-W15-762 (2000); 299-W15-763 (2000)
- 1983 groundwater data from 299-W15-4 reported detections of gross beta, tritium, and nitrate
- Summary of 216-T-19 crib and investigations in 2011
  - Document Number: SGW-49498, Rev 0

Waste Streams

- 200-W-213-PL conveyed 110,000,000 gal of waste from the following identified T Plant waste streams
  - Process condensate (Sep-1951 to Jul-1955)
  - Cell drainage from Tank 5-6, 2nd cycle supernatant from 221-T and waste from 224-T (Dec-1955 to Aug-1956)
  - Process condensate and steam condensate from 242-T (Jan-1966 to Apr-1976)
  - Cold cell drainage from 242-T (Apr-1976 to Jul-1980)
  - Carbon tetrachloride from Z-Plant (May-1973 to Apr-1976)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-DV-1

- 216-T-19 Crib and Drain Field

WMA TX/TY

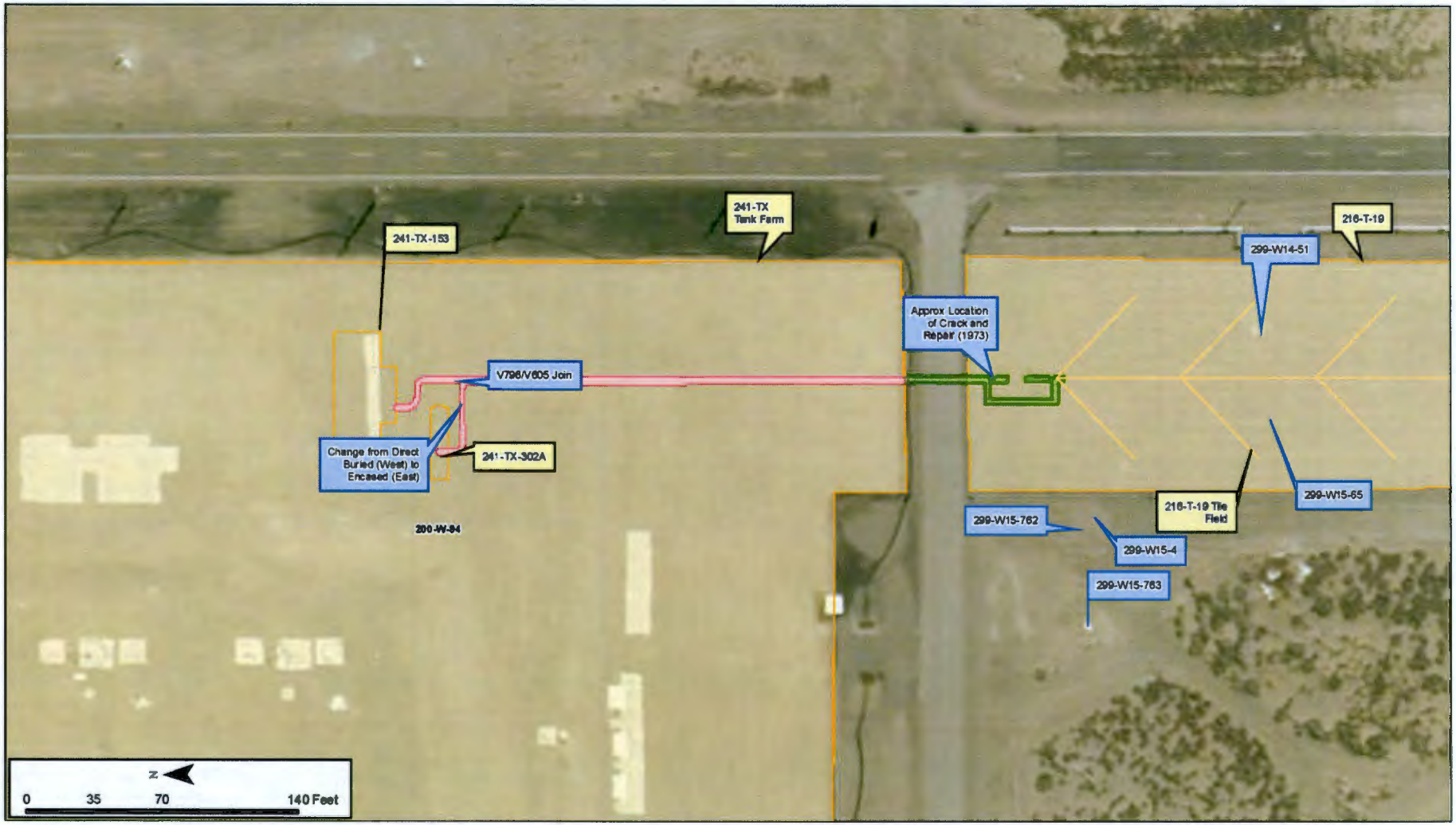
- 241-TX-153 Diversion Box
- 241-TX-302A Catch Tank

Site Intersects

WMA TX/TY

- 200-W-94 (241-TX/TY tank farm contaminated soil)

Scoping Summary: 200-W-213-PL



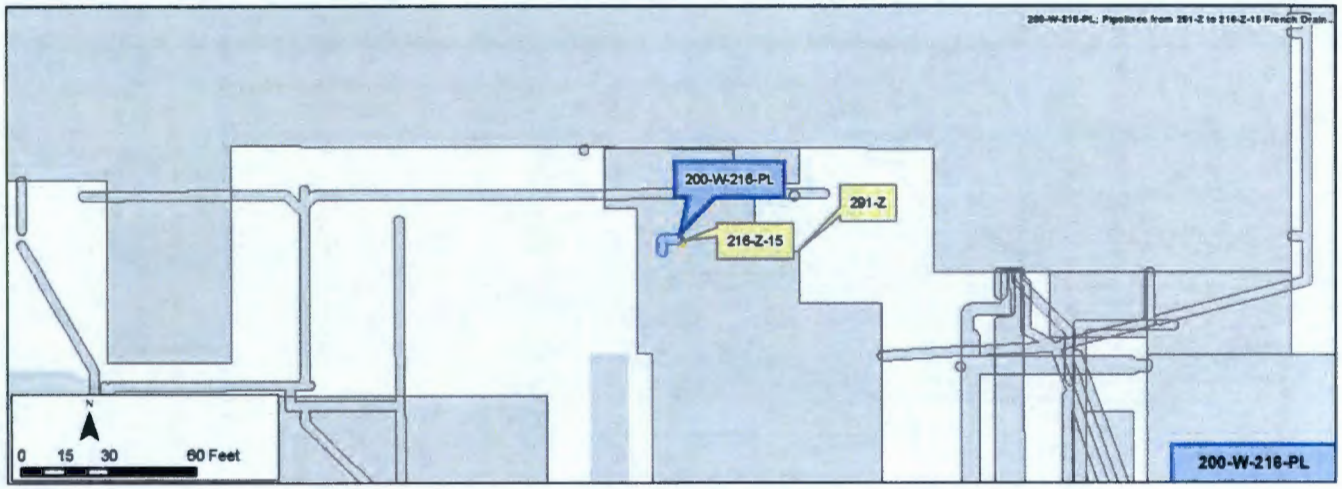
Scoping Summary: 200-W-216-PL

History

The 200-W-216-PL waste site is an inactive drain pipe from the 291-Z building's evaporator cooler to the underground 216-Z-15 French Drain, which is also known as the 234-Z Dry Well #3 or the 216-Z-15 Dry Well. The French Drain is located 50-ft south of Building 234-5Z.

The pipe is adjacent to the north side of Building 291-Z and was used as a floor drain for liquid wastes from the S-12 evaporator cooler inside the building.

The drain pipe and French Drain were in use from 1949 to 1997, when the source was eliminated.



Construction

- Length: 9-ft
- Diameter: 4-in.
- Composition: Unknown (Believed to be Vitrified Clay)
- Encasement: Direct Buried
- Depth: 0-ft 9-ft bgs
- Calculated Volume: 6-gal

Features of Interest

- None identified

Relevant Characterization

- None identified

Waste Streams

- Evaporator condensate water, radioactivity levels unknown but low-level contamination is assumed

Misc./Other Relevant Information

- The inlet pipe to the French Drain is 6-in. VCP. The subject waste site is listed as a 4-in. pipe of unknown composition that ties in to the 6-in. French Drain inlet at an unknown location

Site Interfaces

Origin/Termination	Site Intersects
• 291-Z (Active)	N/A
200-WA-1	
• 216-Z-15	

200-W-216-PL
216-Z-15
291-Z
N
0
35
70
140 Feet

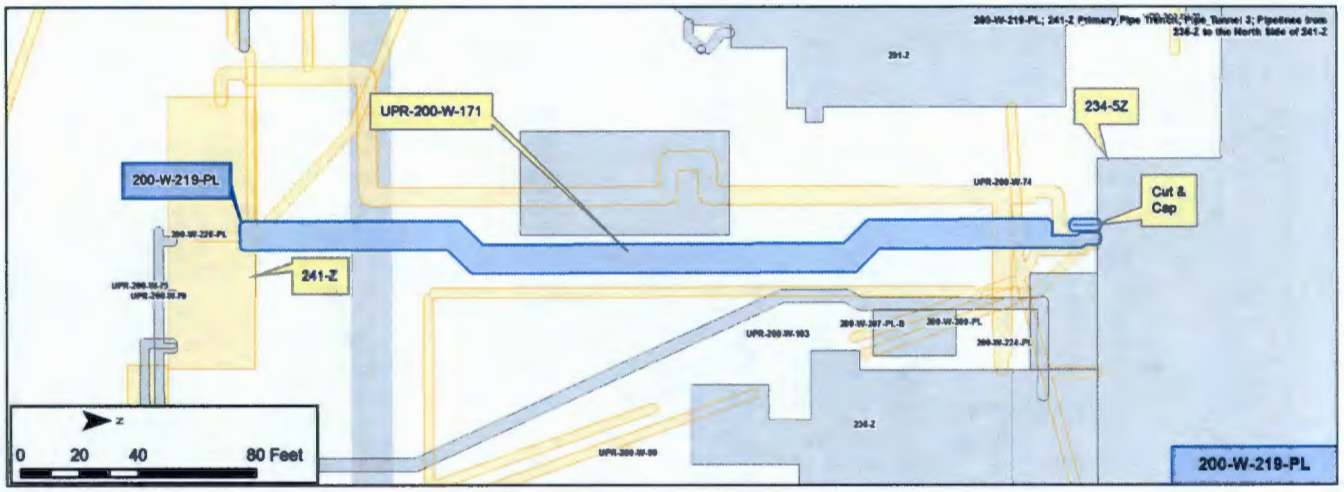
Scoping Summary: 200-W-219-PL

History

The 200-W-219-PL waste site is an inactive underground pipeline that consists of six stainless steel pipes inside a concrete encasement (241-Z Primary Pipe Trench) that transferred corrosive, plutonium-bearing liquid waste to and from the Plutonium Finishing Plant (PFP) in the 234-5Z building to the 241-Z storage and treatment tanks.

Period of service can be correlated to the PFP, which operated 1949 to 1973, and then again, intermittently, from 1985 thru 1988.

An unplanned release (200-W-171) is associated with the 241-Z Pipe Trench from a 1969 event, in which approximately 30,000 gal was sent to the 241-Z-D-6 tank that never reached it, indicating a leak in the pipeline to the D-6 tank. Investigation revealed that the concrete encasement was cracked and the pipe was broken near the north side of the road. Between 3,000 gal and 30,000 gal of waste containing between 3 and 30 grams of plutonium is estimated to have leaked into the trench and subsequently to the soil below. The pipe was restored by welding, the crack in the trench was plugged, and the cover blocks were replaced.



Construction

- Length: 1,704 ft (total)
  - Segment 1 / Segment 2: 283 ft, each
  - Segment 3 / Segment 4: 276 ft, each
  - Segment 5 / Segment 6: 293 ft, each
- Diameter:
  - Segment 1 / Segment 2: 3 in.
  - Segment 3 / Segment 4: 8 in.
  - Segment 5 / Segment 6: 4 in.
- Composition: Stainless Steel
- Direct Buried
- Encasement Specifications: 8 ft wide concrete , and covered with concrete and steel slabs 6 in. - 8 in. wide
- Depth: 5 ft - 8 ft
- Volume: 2,030 gal (total)
  - Segment 1 / Segment 2: 104 gal, each
  - Segment 3 / Segment 4: 720 gal, each
  - Segment 5 / Segment 6: 191 gal, each

Features of Interest

- Four lines of 200-W-219-PL are cut and capped (QMAP)
- 200-W-224-PL exits 234-5Z at the same point as 200-W-219-PL and approximately 12 ft from the building exits the 241-Z Pipe Trench
- 200-W-228-PL enters the 241-Z Pipe Trench approximately 4 ft from the point 200-W-219-PL enters the 241-Z tanks, where it is cut and capped (QMAP)

Relevant Characterization

- Sampling data for the pipelines in 200-W-219-PL was not located
- Sampling data for UPR-200-W-171 was not located

Waste Streams

- From 1949 to 2004 the 241-Z storage tanks received approximately 740,000 gal of waste from the PFP
- Wastes produced by the PFP were process wastes/condensates and non-contact wastewater
- 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

Misc./Other Relevant Information

- 241-Z currently consists of a below grade concrete vault containing four storage and treatment tanks. Above ground features were removed 2005-2007. The cells and tanks were deactivated and decontaminated, pipe penetrations in the cell walls were verified empty and sealed
- A process pipe trench arrangement drawing indicates bi-directional flow, 4 in. going from PFP to 241-Z and 3 in. pipes from 241-Z to the PFP

Site Interfaces

Origin/Termination

No Operable Unit
- 234-5Z Building (origin)

200-IS-1
- 241-Z Tanks (termination)

Site Intersects

200-IS-1
- 200-W-171
- 200-W-207-PL-B
- 200-W-209-PL
- 200-W-224-PL
- 200-W-228-PL

234-5Z
241-Z
UPR-200-W-171
Cut & Cap
200-W-219-PL
N
0
35
70
140 Feet

Scoping Summary: 200-W-222-PL

History

The 200-W-222-PL Waste Site is an inactive underground pipeline connecting the 207-U Retention Basin to the 216-U-14 Ditch.

The contents of the 207-U Retention Basin were pumped into the line by sump pumps within the basin.

Construction of 200-W-222-PL is assumed to have been concurrent with the design and construction of the 207-U Retention Basin, which began in 1944. The line was isolated in 1994 by filling the diversion box fed by the sump pumps with concrete. The 216-U-14 Ditch was removed from service in 1995.

Construction

- Length: 342 ft
- Diameter: 24 in.
- Composition: Vitrified Clay
- Gravity drained
- Direct buried
- Depth: ~9 ft bgs at 207-U
- Computed volume: 8,037 gal

Features of Interest

- 200-W-222-PL contains a manhole at the end of the initial east to west portion of the line as it leaves the 207-U Retention Basin.

Waste Streams

- Prior to 1972, 207-U received steam condensate and cooling water from 224-U Building and chemical sewer waste from the 221-U Building
- After 1972, 207-U received only cooling water from the 224-U Building
- The 207-U Retention Basin was later used for collection and solar evaporation of storm water runoff from the UO3 Facility and the 224-U Building and grounds, but these waste streams do not appear to have been transported by 200-W-222-PL

Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	200-IS-1
• 207-U (origin)	• 200-W-98-PL
• 216-U-14 (termination)	• 200-W-99-PL

Relevant Characterization

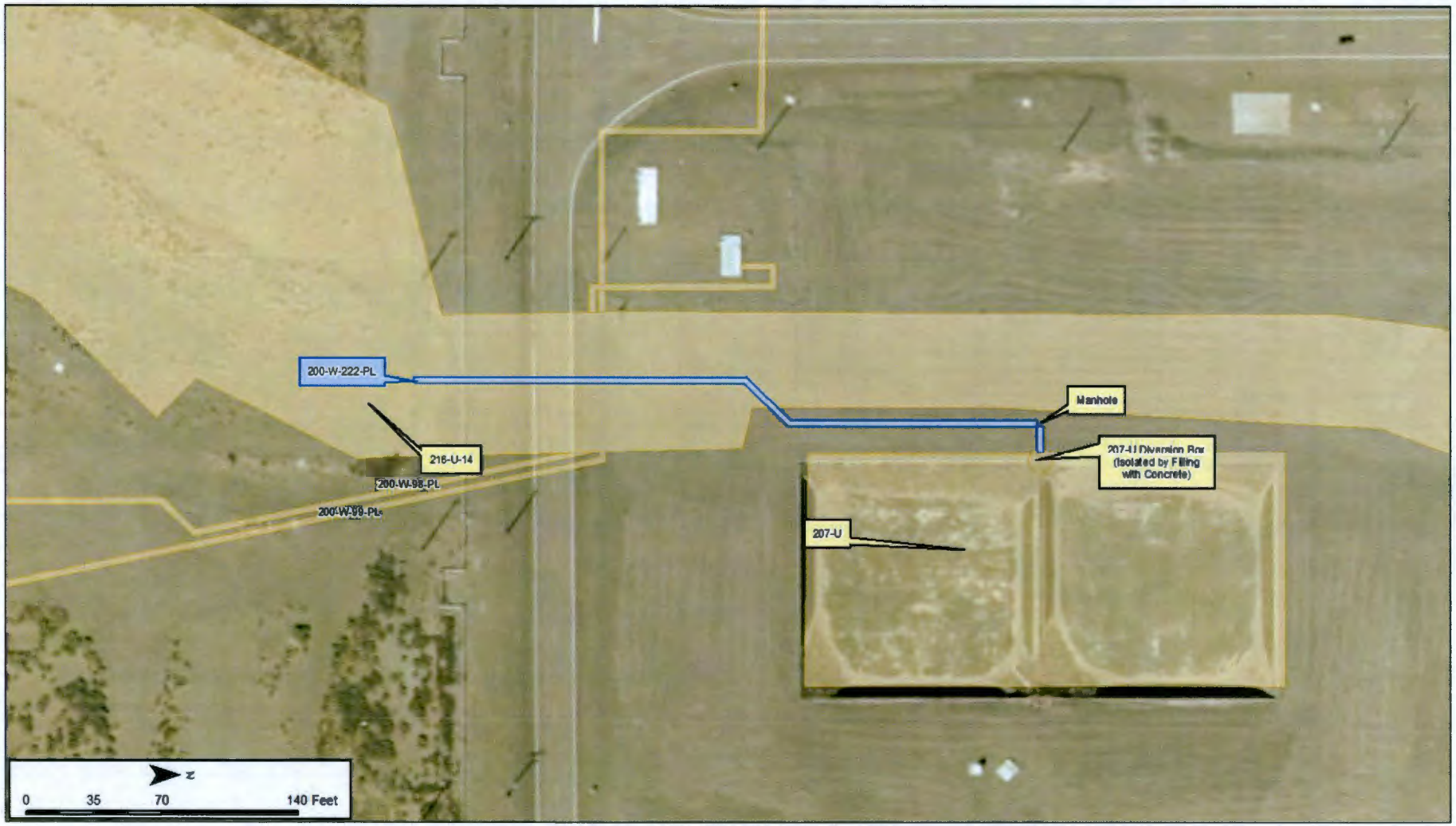
- Nitric acid containing uranium was accidentally released to 207-U and migrated through 200-W-222-PL along with cooling water from the 224-U Facility on Aug-6-1986. The total release was approximately 225,000 pounds of corrosive solution and 100 pounds of uranium.
- 200-W-222-PL was isolated in 1994 by filling the diversion box at 207-U with concrete
- 216-U-14 also received powerhouse waste water and laundry waste water until 1981 via 200-W-102-PL.

Misc./Other Relevant Information

Additional Waste Streams Information

- The 207-U Retention Basin was later used for collection and solar evaporation of storm water runoff from the UO3 Facility and the 224-U Building and grounds, but these waste streams do not appear to have been transported by 200-W-222-PL.

Scoping Summary: 200-W-222-PL



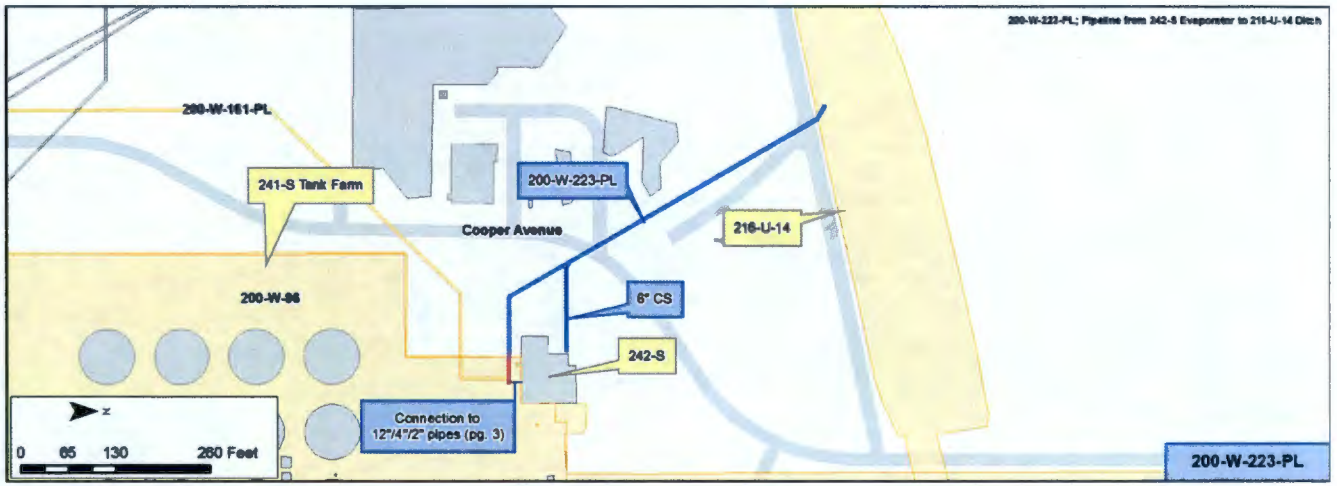
Scoping Summary: 200-W-223-PL

History

The 200-W-223-PL site is an inactive underground process drain that consists of two pipes that transferred effluent from the 242-S Evaporator facility to the 216-U-14 Ditch.

The site began operating in 1973 carrying steam condensate and cooling water until the 242-S facility was put on standby in 1981. In 1985 the facility was partially restarted to process contaminated groundwater from the 216-U-1/U-2 Cribs and then returned to standby. Isolation of 200-W-223-PL can be correlated to the stabilization of the south portion of the 216-U-14 Ditch, which indicates that the pipeline continued to receive a small amount of effluent until Apr-1995, when the ditch discharge pipe was capped.

200-W-223-PL has two branch connections to the 242-S Evaporator building that are not included in this site. The south branch is a continuation of the main 24 in. corrugated metal pipe with three pipes connecting it to the facility. The north branch is a 6 in. carbon steel drain line. Schematics were not located for the connection of this segment to the 242-S facility.



Construction

- Total Length: 739 ft
  - Segment 1: 626 ft
  - Segment 2: 113 ft
- Diameter:
  - Segment 1: 24 in.
  - Segment 2: 6 in.
- Composition:
  - Segment 1: Corrugated Metal (CMP)
  - Segment 2: Carbon Steel (CS)
- Flow Method: Not located
- Direct buried
- Encasement: None
- Cathodic Protection: None
- Depth: 4 ft - 7 ft
- Total Calculated Volume: 14,877 gal

Features of Interest

- Connection to 12 in./4 in./2 in. raw water/cooler/condensate pipes to 242-S condenser room with transition flange
- Connection from 24 in. CMP to 6 in. CS (see figures pg. 3)

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil
- Samples taken between October 1989 and March 1990 from the R-C-1 sampler in the 242-S Evaporator condenser room detected Strontium and Uranium (Mean concentration values in pCi/L:
  - Sr-90: 1.79E-01
  - U-234: 1.37E-01
  - U-238: 1.08E-01

Waste Streams

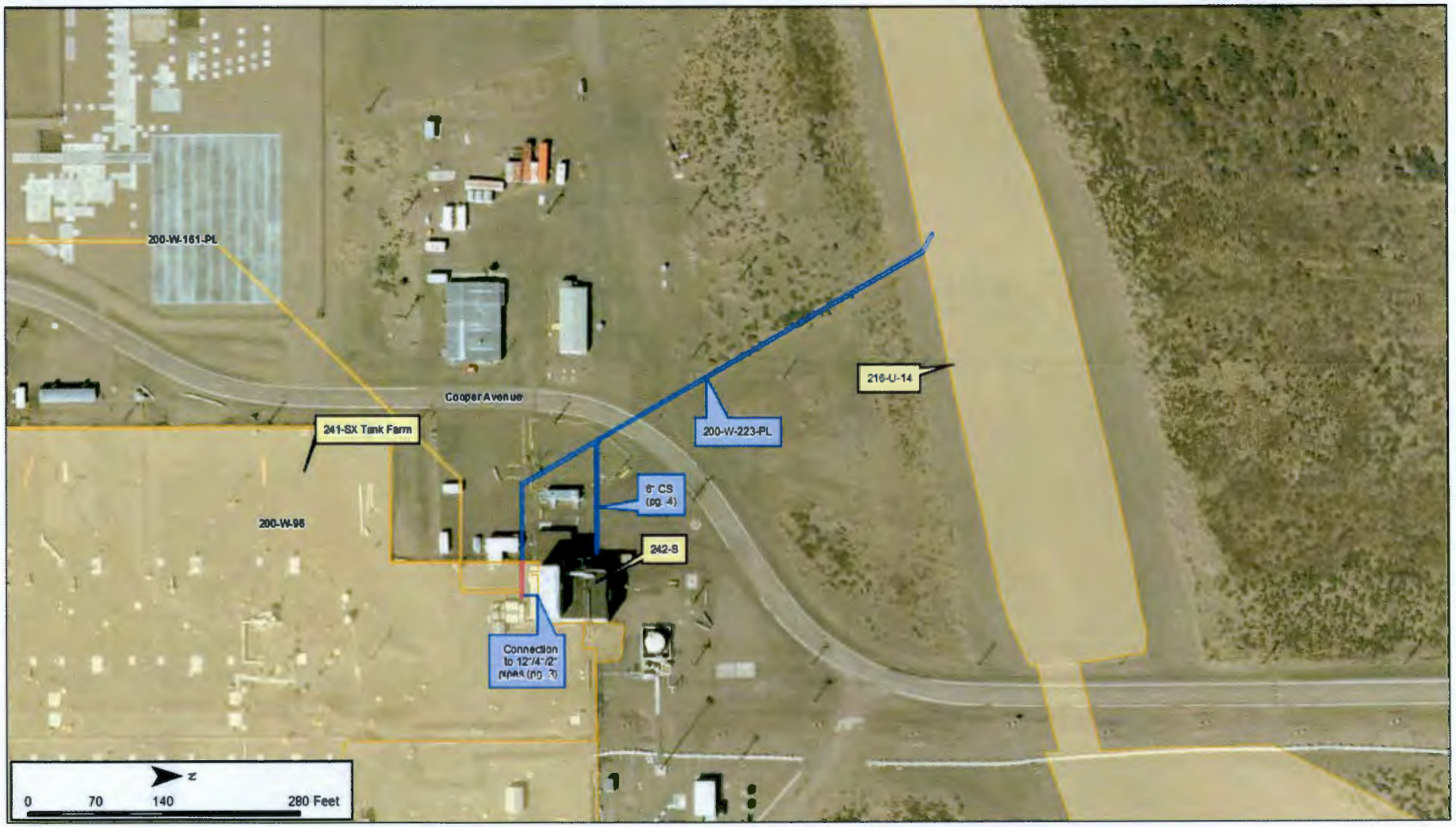
- 1973-1981 steam condensate and cooling water from 242-S facility, which reduced the volume of radioactive liquid waste with an evaporation-crystallization process.
- 1985 contaminated groundwater from 216-S-U1/U2 cribs (confirmation of discharge via this site was not located)
- Post 1985 the only active 242-S contributor to the 200-W-223-PL waste stream was water from the air-sampler pump (to monitor levels of airborne radioactive material)

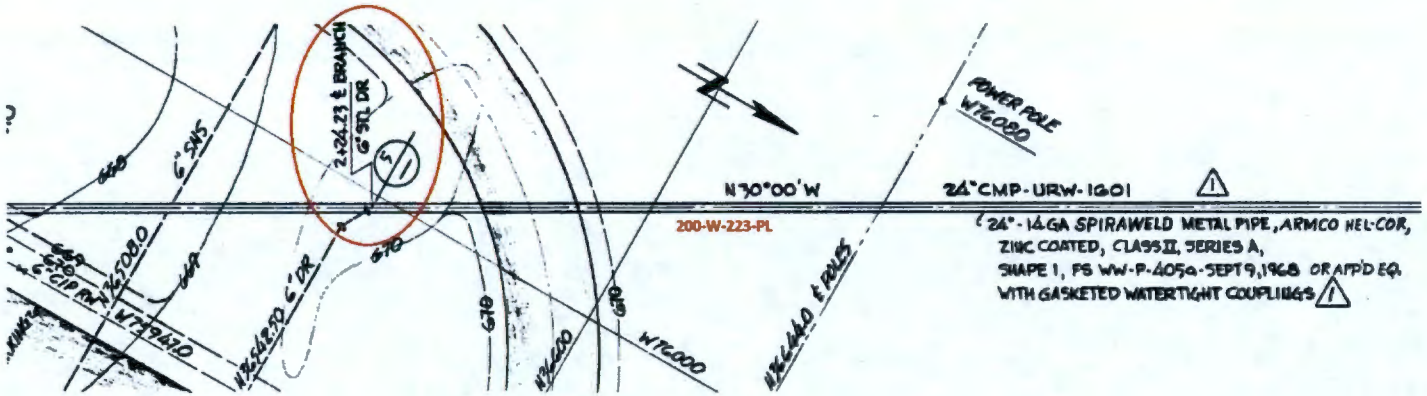
Misc./Other Relevant Information

- 1998 radionuclide curies inventory for the U-10 pond, U-14 and Z-ditches included:
  - 5.34E-02 of Sr-90
  - 4.93E-09 of Cs-134
  - 2.15E-06 of Cs-135
  - 5.74E-02 of Cs-137
  - 6.38E-02 of U Gross
  - 2.86E-04 of Am-241

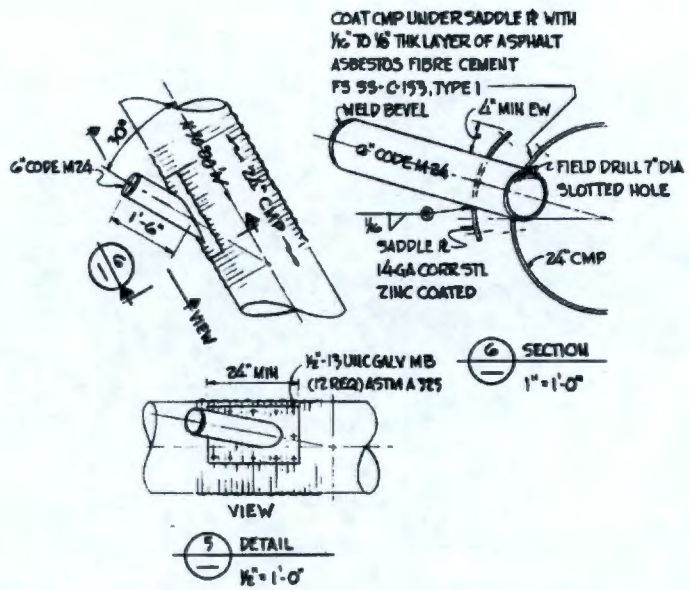
Site Interfaces

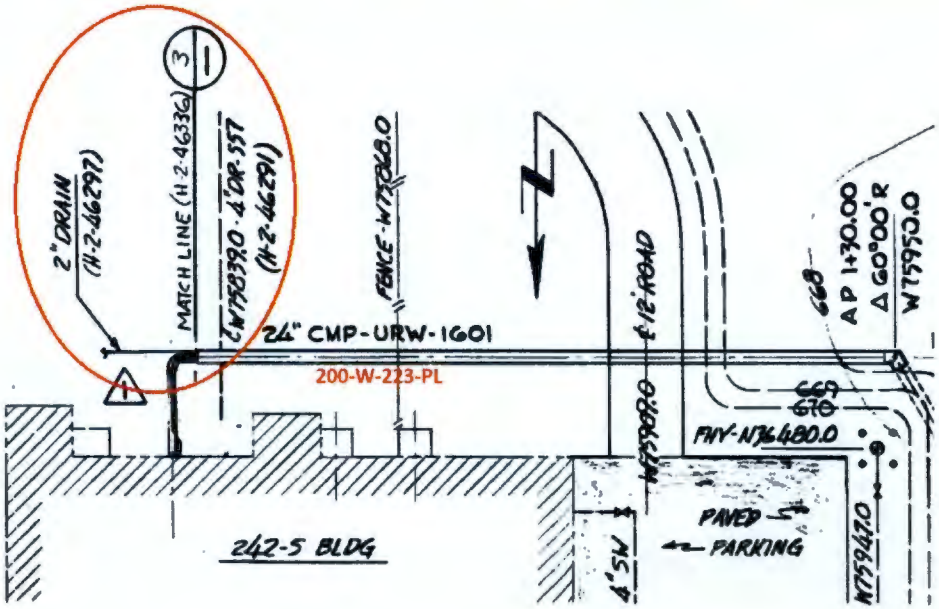
Origin/Termination	Site Intersects
• 242-S (facility) (origin)	200-IS-1
	• 200-W-161-PL
200-WA-1	
• 216-U-14 Ditch (termination)	• 200-W-96 (tank farm)

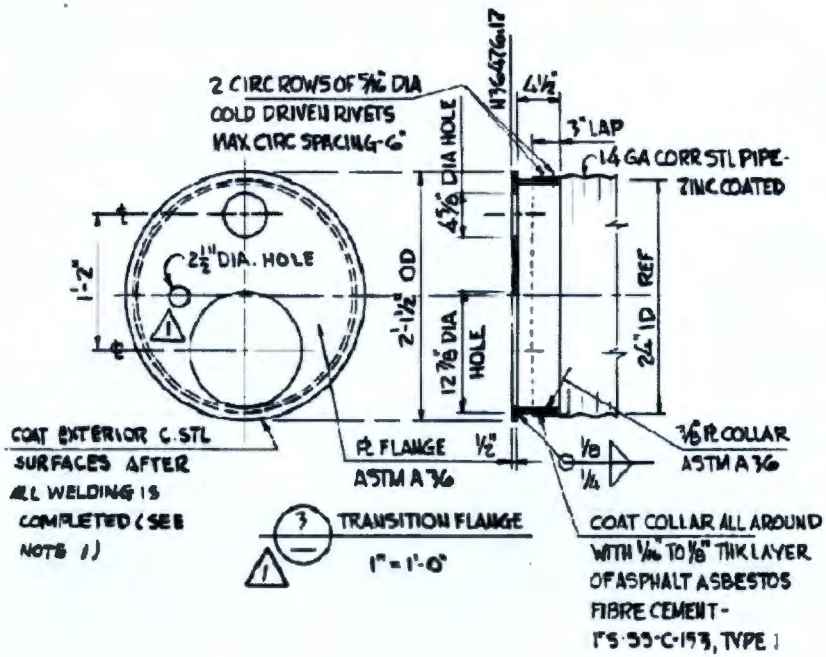

200-W-161-PL
Cooper Avenue
241-SX Tank Farm
200-W-98
200-W-223-PL
216-U-14
6" CS
(pg. 4)
242-S
Connection
to 12"/4"/2"
pipes (pg. 3)
N
0
70
140
280 Feet



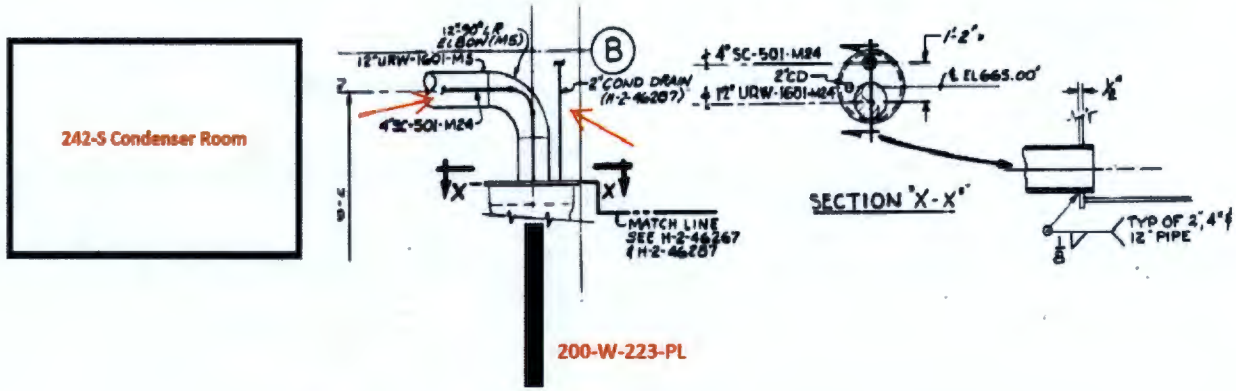
Transition 24" CMP to 6" CS







Connection to 12"/4"/2" raw water/cooler/condensate pipes



Scoping Summary: 200-W-224-PL

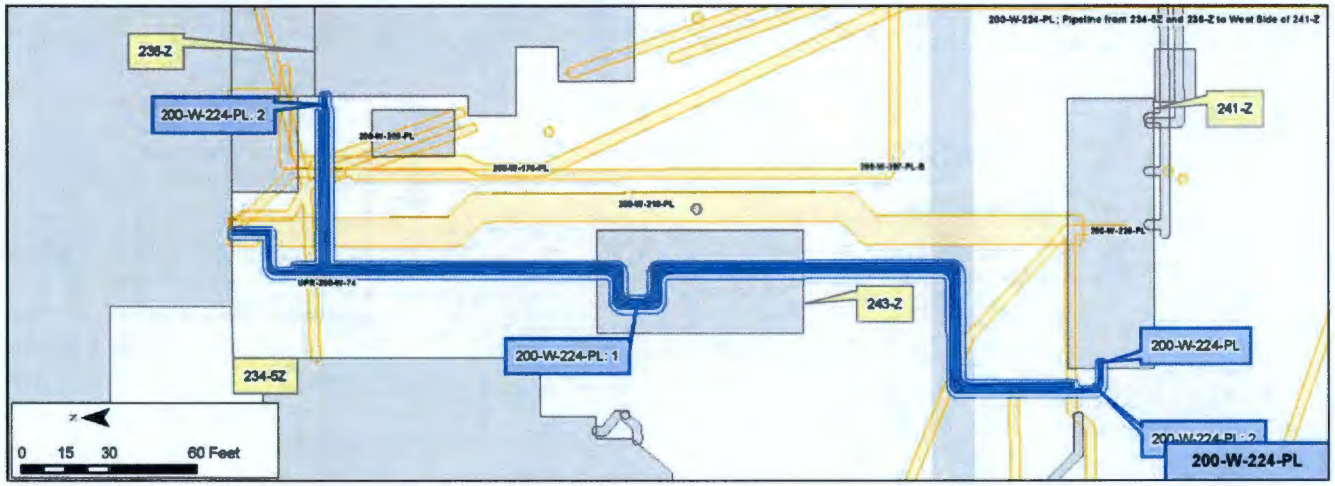
History

The 200-W-224-PL waste site is an inactive radioactive process sewer consisting of four lines used to transfer evaporator and scrubber wastes from the 234-5Z and 236-Z Buildings to the west side of the 241-Z Storage and Treatment Tanks.

These pipes operated from approximately 1994 to 2004.

Two of the lines were spares that were never used and were capped when waste transfers ceased. This waste site is divided into two subsites; 200-W-224-PL:1 (Phase I) and 200-W-224-PL:2 (Phase II), which was initiated as part of Project C-031H to upgrade the existing interconnecting transfer lines (see Figure 1).

The 200-W-224-PL pipeline was flushed with 2,000 liters of water after the last waste transfer in 2004 and sampled (with clean results) before being cut and capped in 2005.



Construction

- Length:
  - 200-W-224-PL:1: 226 ft total (excluding spare lines)
  - 200-W-224-PL:2: 40 ft total (excluding spare line)
- Diameter: 2 in. inside 4 in.
- Composition: Stainless Steel
- Direct buried pipe-in-pipe configuration
  - All expansion joints/loops are encased in a 6 in. SST pipe and a then in a 10 in. polyurethane-coated galvanized steel duct encasement (see Figures 2 and 5).
- Depth: 6 ft - 10 ft bgs
- Total Calculated Volume:
  - 200-W-224-PL:1: 37 gal (excluding spare lines)
  - 200-W-224-PL:2: 6.5 gal (excluding spare line)

Features of Interest

- 8 end caps
- 28 4 in. to 6 in. reducers

Relevant Characterization

- Samples collected as part of RCRA closure of 241-Z tank system in 2005
  - To collect the sample, the flange joint was opened exposing the inside of the pipe
  - After sampling was complete, the lines were capped
  - Sample results are summarized in Figure 4
    - All results are well below regulatory limits

Waste Streams

- Plutonium Reclamation Facility waste, specifically:
  - High salt waste including potassium fluoride and potassium hydroxide from the potassium hydroxide scrubber in 234-5Z
  - Low salt waste from the filtrate evaporator in 236-Z with a higher volume and lower acidity than the waste from the 234-5Z building

Misc./Other Relevant Information

UPR-200-W-74 is located at the "T" intersection of 200-W-224-PL. On May-18-1976, about 20 sq in. of ground was contaminated with alpha activity when an above ground polyethylene line leaked at a connection. The contaminated soil was removed. The rest of the line was checked and deemed free of contamination. The above ground polyethylene pipe was replaced with a continuous pipe, eliminating the connection that caused the release.

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
•241-Z (Storage and Treatment Tanks)	•200-W-219-PL •200-W-228-PL •200-W-209-PL
TBD	TBD
•234-5Z (Plutonium processing and storage) •236-Z (Plutonium Reclamation Building)	•200-W-174-PL •200-W-207-PL-B •UPR-200-W-74 •243-Z (Low Level Waste Treatment Facility)

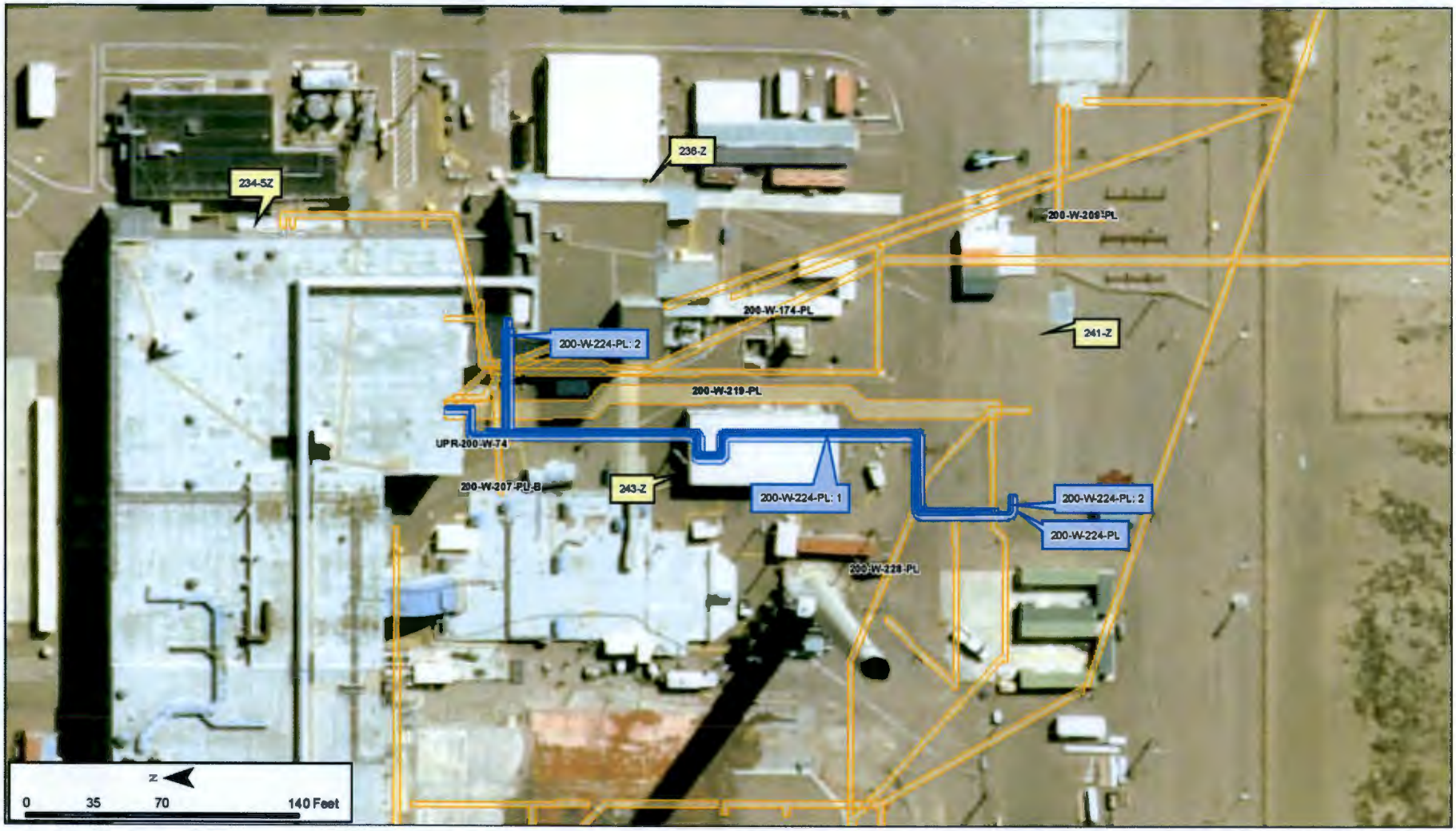
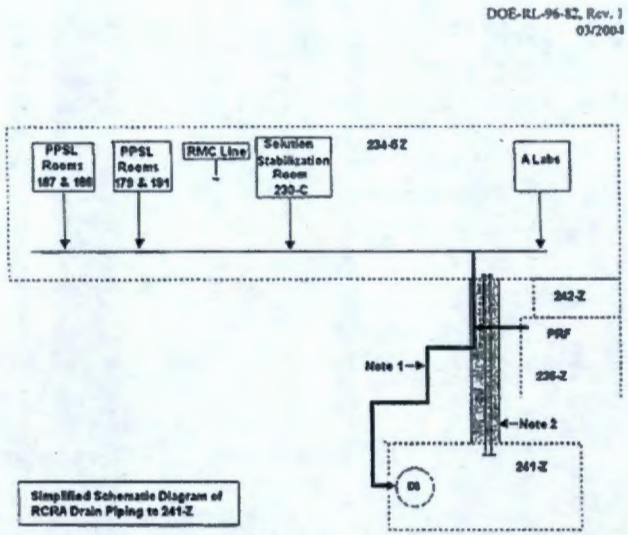

234-5Z
236-Z
200-W-209-PL
200-W-174-PL
241-Z
200-W-224-PL: 2
200-W-219-PL
UPR-200-W-74
200-W-207-PL-B
243-Z
200-W-224-PL: 1
200-W-224-PL: 2
200-W-224-PL
200-W-228-PL
N
0
35
70
140 Feet

Figure 1. Diagram of 200-W-224-PL from 234-5Z and 236-Z to 241-Z



Note 1: Direct buried double-walled pipe (in service since 1994)

Note 2: Trench and single-walled pipes to tanks D-4, D-5, D-6, D-7, and D-8 (D-6 line failed in 1969, remaining piping was removed from service in 1994).

Figure 2. Details of 200-W-224-PL

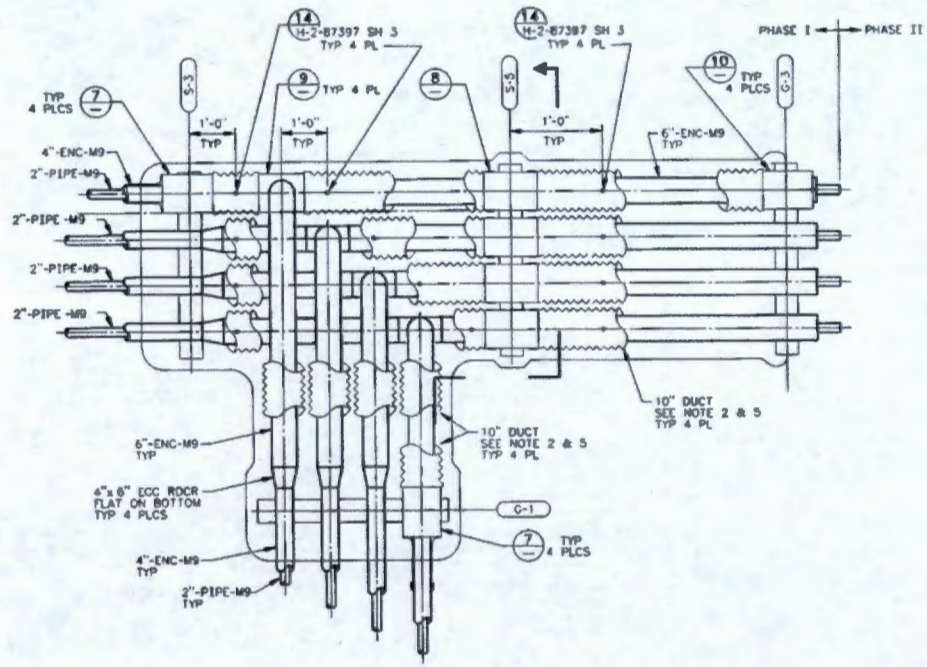


Figure 3. Shows Tank D8 Within 241-Z Treatment and Storage Facility (Sample Location "B" is the 200-W-224-PL connection)

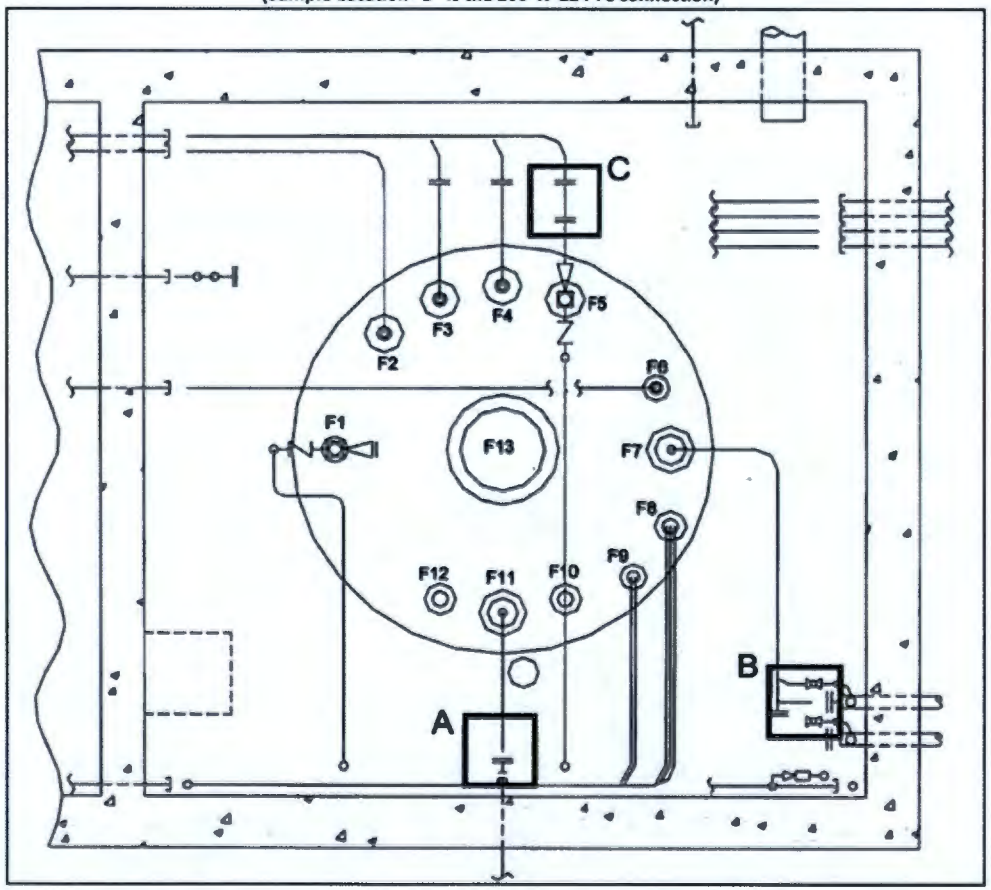
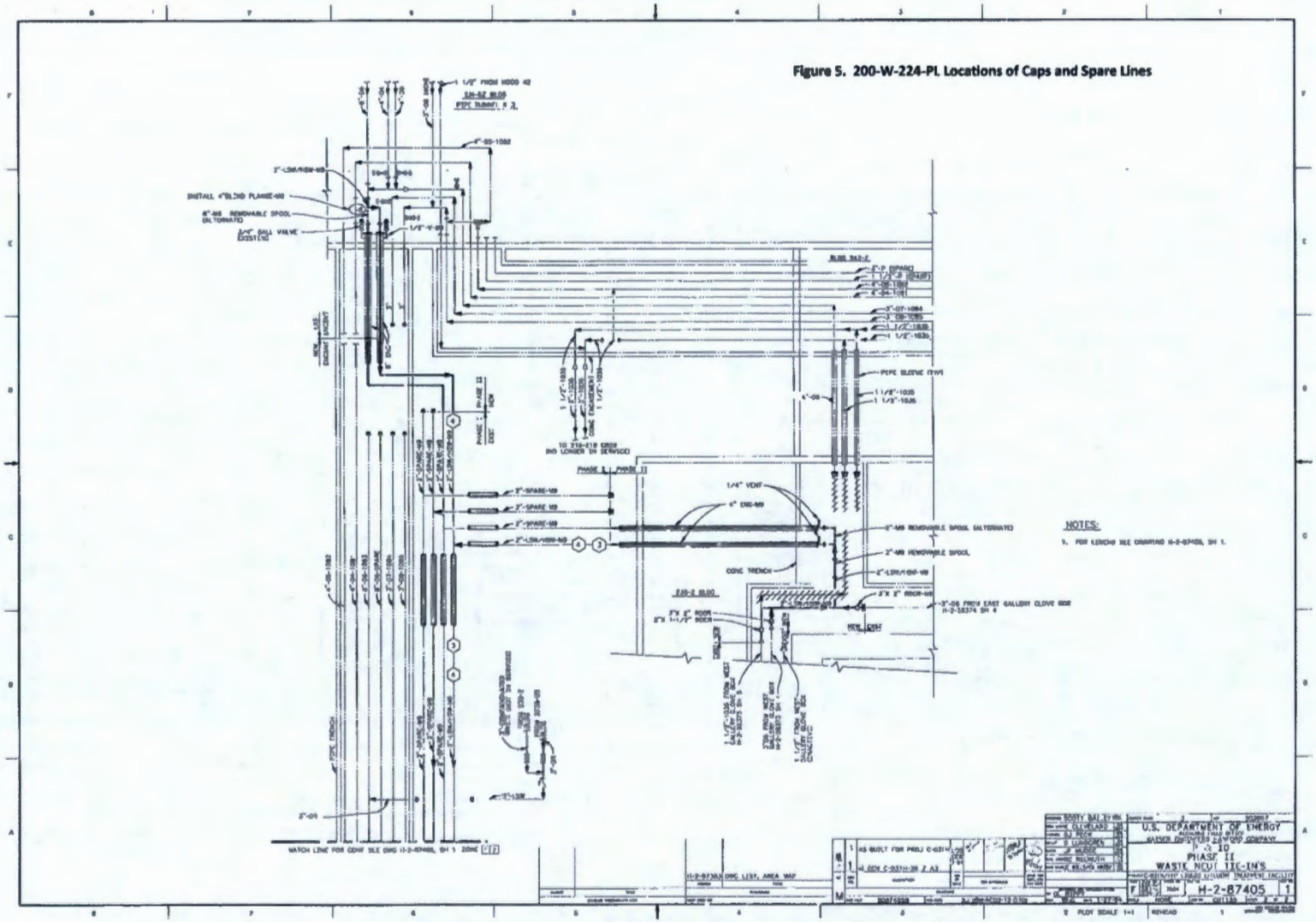


Figure 4. Highlighted Results from Sample Location "B" (HNF-30205 Rev. 1)

Sample results in mg/L except pH **Highest detected value reported**						
COC	**Waste Number**	**B1FXY6 Old D-8 inlet**	**B1FXY7 Newer D-8 inlet**	**B1FXY8 D-8 outlet**	**B1FXY9 Field Blank**	**Regulatory Limit**
Corrosivity	D002	**6.08**	**4.9**	**8.89**	**5.82**	pH = < 2, >12.5
Carbon Tetrachloride	D019	< 0.3	< 0.3	< 0.3	< 0.3	0.50
Arsenic (As)	D004	< 0.04	< 0.04	0.05	< 0.04	5.00
Barium (Ba)	D005	**0.0099 (J)**	< 0.005	< 0.005	< 0.005	100.00
Cadmium (Cd)	D006	< 0.004	**0.0052***	< 0.004	< 0.004	1.00
Chromium (Cr)	D007	**0.0521**	**0.105**	**0.0232 (J)**	< 0.0025	5.00
Lead (Pb)	D008	< 0.03	< 0.03	< 0.03	< 0.03	5.00
Selenium (Se)	D010	< 0.04	< 0.04	< 0.04	< 0.04	1.00
Silver (Ag)	D011	< 0.005	**0.0131**	< 0.005	< 0.005	5.00
Mercury	D009	< 0.0001	**0.00018 (J)**	< 0.0001	< 0.0001	0.20

Figure 5. 200-W-224-PL Locations of Caps and Spare Lines



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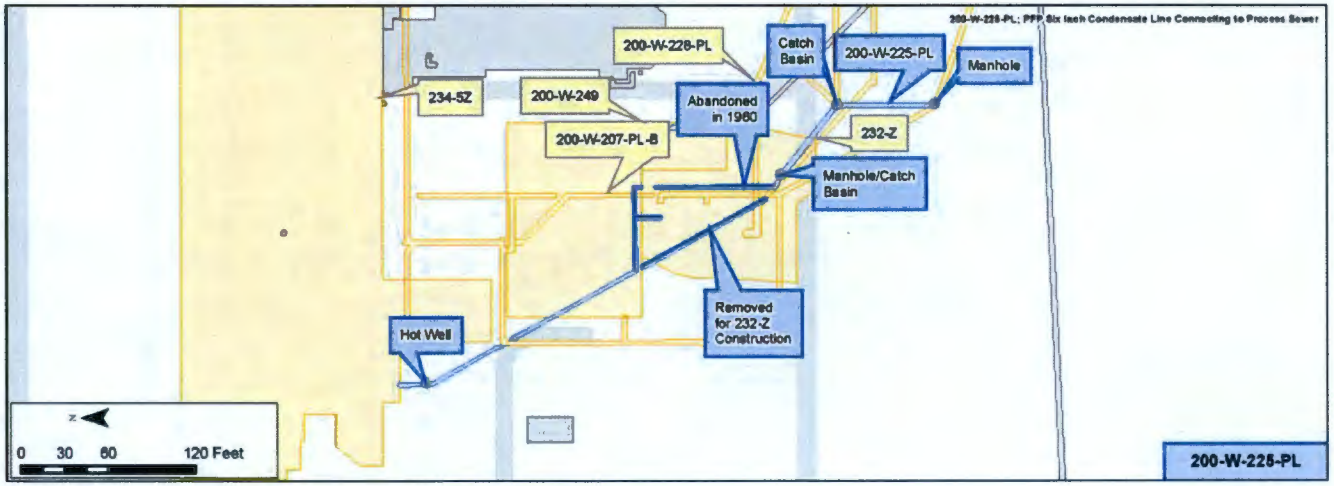
Scoping Summary: 200-W-225-PL

History

The 200-W-225-PL waste site is an inactive and partially removed and abandoned underground condensate line. It runs thru the Hot Well at the southwest end of 234-5Z (Plutonium Finishing Plant) to southeast of former 232-Z facility. Ultimately, it terminates into the radioactive process sewer line for Z-Plant, 200-W-207-PL.

Portions of the pipeline were removed or abandoned around 1960 for the construction of the 232-Z facility. Additional portions of the 6 in. Transite section of this line were capped, abandoned and potentially removed by 2006, when the 232-Z was decommissioned to slab-on-grade.

As a result of construction and subsequent demolition, the pipeline underwent several modifications between 1948 and 2006.



Construction

- Length: 582 ft
- Diameter: 6 in.
- Composition: Carbon Steel, Transite, Corrugated Metal (CMP) (10 in. diameter)
- Direct Buried
- Depth: 3 ft to 5 ft bgs
- Calculated Volume: 855 gal

Features of Interest

- Additional Image: Feature of Interest 1 shows the interfaces between the 200-W-225-PL site and 200-W-207-PL subsites.

Relevant Characterization

- No direct characterization data have been located for the pipeline or adjacent soil.

Waste Streams

- Liquids including cooling water, HVAC condensate, heat exchanger condensate, radiator water, and non-rad area drain liquids.

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

No Operable Unit

- 234-5Z (PFP)
- 200-W-207-PL

Site Intersects

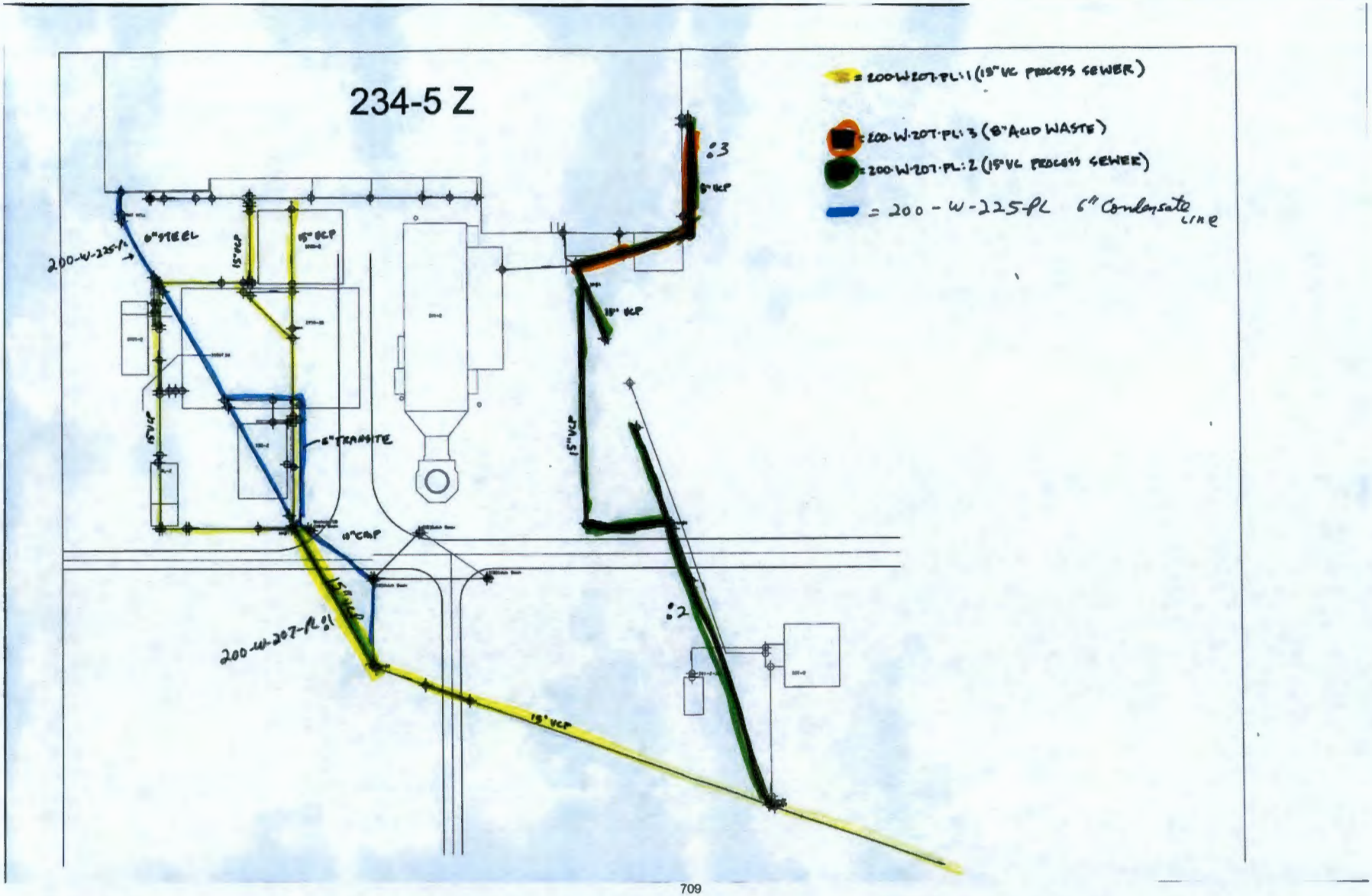
No Operable Unit

- 232-Z
- 200-W-249 (2736 & 2736-ZC slabs)

200-IS-1

- 200-W-228-PL

Scoping Summary: 200-W-225-PL


234-5 Z
= 200-W-207-PL:1 (18" VC PROCESS SEWER)
= 200-W-207-PL:3 (8" ACID WASTE)
= 200-W-207-PL:2 (18" VC PROCESS SEWER)
= 200-W-225-PL 6" Condensate Line
:3
8" VCP
18" VCP
18" VCP
6" STEEL
200-W-225-1
15" VCP
15" VCP
6" TRANSITE
18" CMP
15" VCP
200-W-207-PL:1
15" VCP
:2

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Scoping Summary: 200-W-226-PL

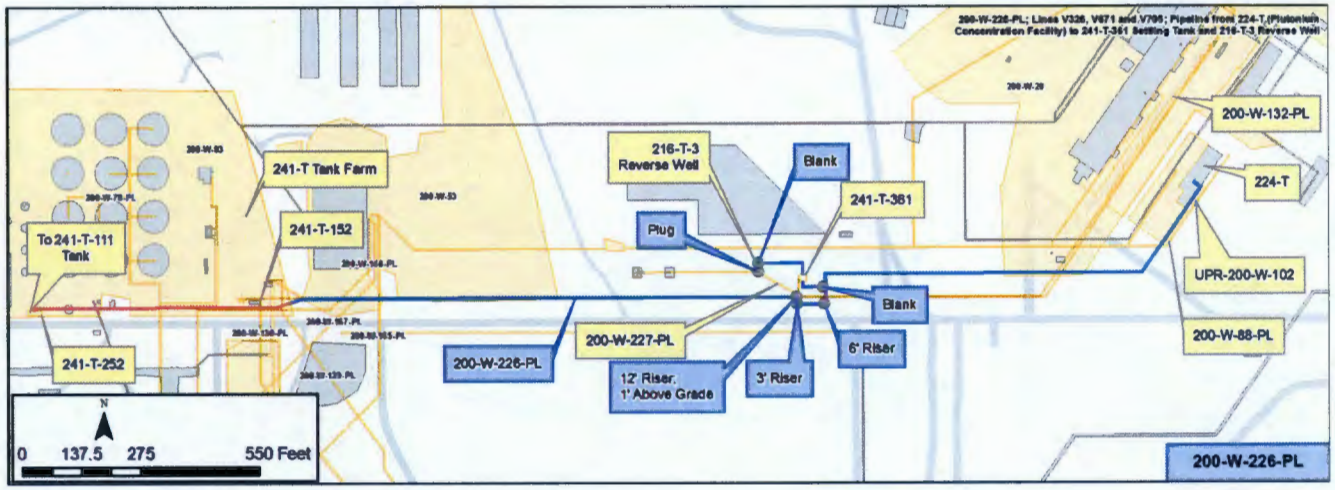
History

The 200-W-226-PL waste site is an inactive underground radioactive process sewer system that transferred waste from the 224-T Plutonium Concentration Facility to 241-T-361 Settling Tank and 216-T-3 Reverse Well; and later, to the T Tank Farm.

The line is cut and capped at the 224-T Building, blanked and intentionally plugged in numerous locations around the 241-T-361 Settling Tank and the 216-T-3 Reverse Well. It is most likely cut and capped inside the T Tank Farm, where it used to run to the 241-T-111 Tank, at the 241-T-252 Diversion Box. For much of its path from the Settling Tank to tank farm, the line runs concurrently with six other waste lines in a direct-buried trench.

This system was constructed in 1946 to convey process overflow from the 224-T building. The 216-T-3 Reverse Well was abandoned later that same year, and the 241-T-361 Settling Tank was deactivated in 1951. The Settling Tank was pumped out in 1985 and isolated later that year.

The Settling Tank and Reverse Well were surface stabilized in 1993, and are currently posted Underground Radioactive Material.



Construction

- Length: 2,865 ft (cumulative pipeline)
- Diameter: 3 in.
  - 2 in. - From 241-T-361 to its intersect with 200-W-227-PL
- Composition: Stainless Steel
- Gravity Flow
- Direct Buried
- Depth: 8 ft to 11 ft bgs
- Calculated Volume: 1,052 gal

Features of Interest

- Segment V671 failed a hydrostatic test due to corrosion in Aug-1953
- Noted to be leaking in Aug-1966. This line is cut and capped within the 224-T footprint; segment V326 runs from the capped location to the 241-T-361 Settling Tank And the 12 ft riser, where segment V706 begins and runs to the T Tank Farm
- 200-W-226-PL and 200-W-227-PL are welded together at a point directly south of the 216-T-3 reverse well. 200-W-226-PL is isolated at this location

Relevant Characterization

UPR-200-W-102 is a contaminated soil area east of 224-T most likely as a result of a process line leak from 200-W-226-PL in 1966. The contamination was discovered in 1972, and 139 drums of soil were excavated to address the concern.

- A rad survey in Oct-1975 near UPR-200-W-102 showed no surface contamination
- 1999 and 2000 rad surveys from same area detected no surface contamination

Waste Streams

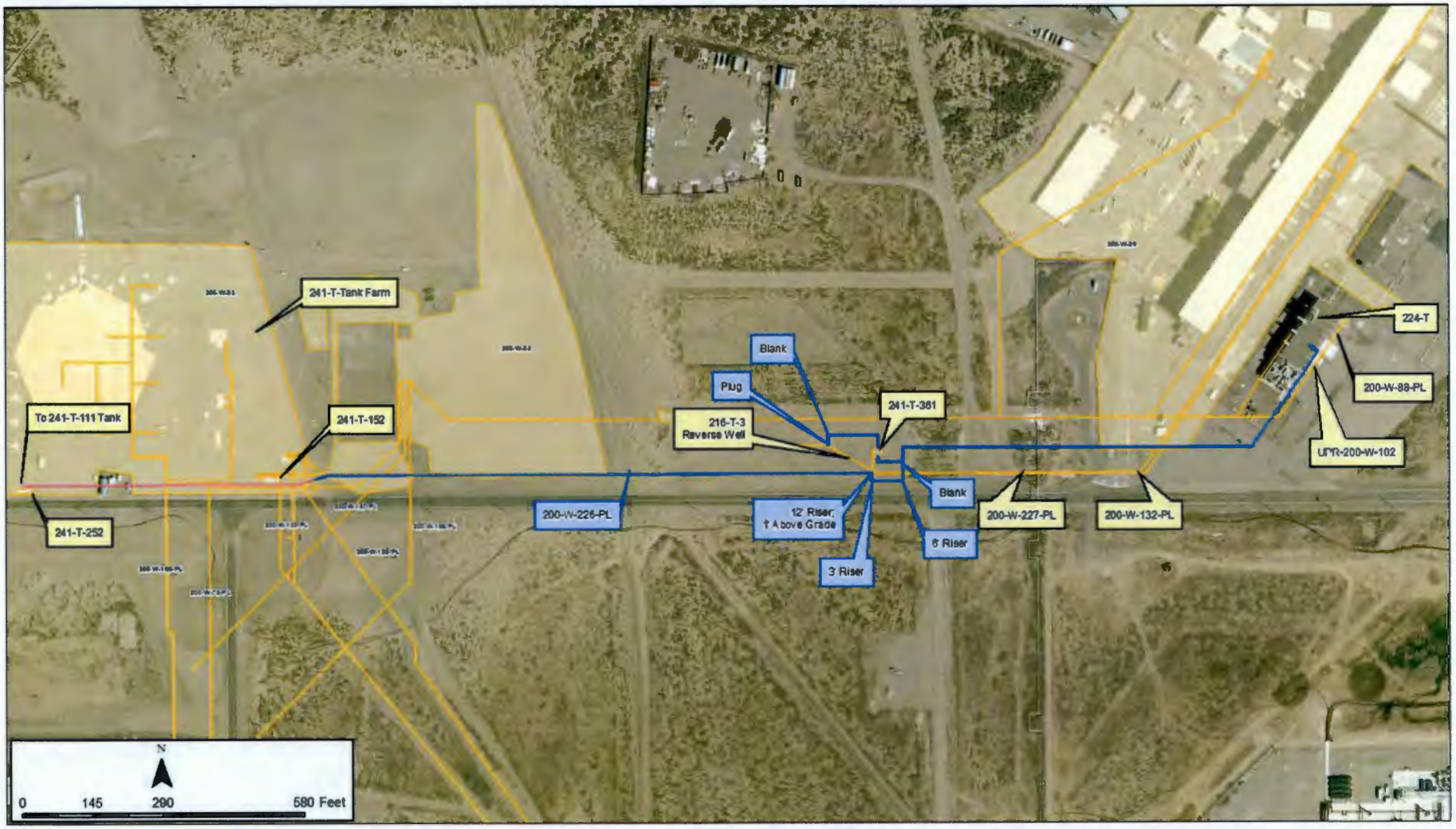
- 224-T & 5-6 Cell drain wastes

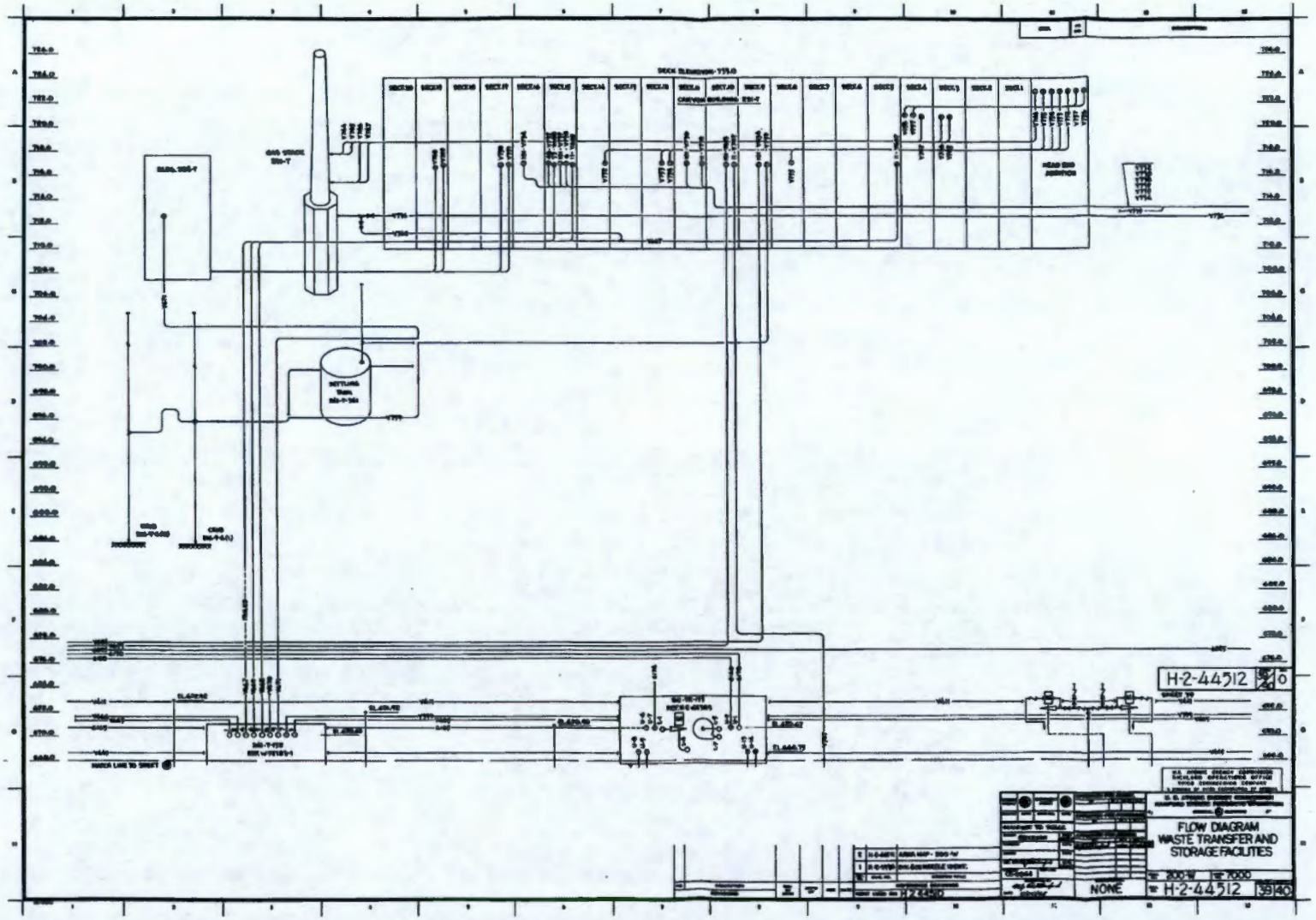
Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersects
200-WA-1	Unassociated
• 241-T-361 Settling Tank	• 200-W-132-PL
	• 200-W-88-PL
	• 200-W-130-PL
200-DV-1	• 200-W-165-PL
• 216-T-3 Reverse Well	• 200-W-166-PL
	• 200-W-167-PL
• 224-T Building (facility)	• 200-W-129-PL
	• 200-W-130-PL


241-T-Tank Farm
To 241-T-111 Tank
241-T-152
241-T-252
Blank
Plug
216-T-3
Reverse Well
241-T-361
200-W-226-PL
12' Riser,
1' Above Grade
3' Riser
Blank
6' Riser
200-W-227-PL
200-W-132-PL
224-T
200-W-88-PL
UMR-200-W-102
N
0
145
290
580 Feet


H-2-44512
FLOW DIAGRAM
WASTE TRANSFER AND
STORAGE FACILITIES
NONE
H-2-44512

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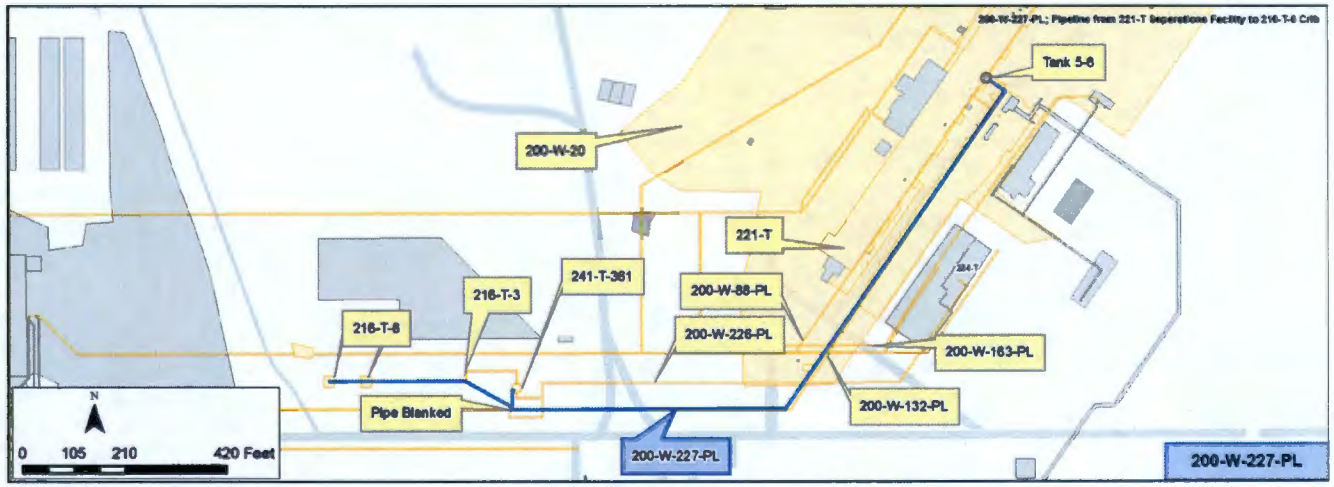
Scoping Summary: 200-W-227-PL

History

The 200-W-227-PL waste site is an inactive underground radioactive process sewer that extends from the east side of the 221-T Separations Facility to the 216-T-6 Cribs.

In 1946, the system transferred waste originating from the 224-T Building via the overflow from 241-T-361 Settling Tank. From 1946 to 1951, the pipeline transported waste directly from Tank 5-6 in the 221-T Building to the cribs.

In 1951, the 216-T-6 Crib network was abandoned and the 200-W-227-PL was blanked south of the 241-T-361 Settling Tank.



Construction

- Length: 1,812 ft
- Diameter: 3 in.
- Composition: Stainless Steel at 221-T welded to Carbon Steel at Bypass Connection, south of 216-T-3 Reverse Well
- Direct Buried
- Depth: ~8 ft to 11 ft bgs
- Calculated Volume: 665 gal

Features of Interest

- None identified

Waste Streams

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. These are considered T-Plant wastes; specifically:

- 224-T wastes, and
- T-Plant Tank 5-6 Cell Drain Wastes

Site Interfaces

Origin/Termination

- 221-T Separations Facility (building)

200-DV-1

- 216-T-6 Cribs
- 216-T-3 Reverse Well

Site Intersects

200-IS-1

- 200-W-226-PL
- 200-W-132-PL
- 200-W-88-PL

No Operable Unit

- 200-W-163-PL

200-WA-1

- 241-T-361 Settling Tank

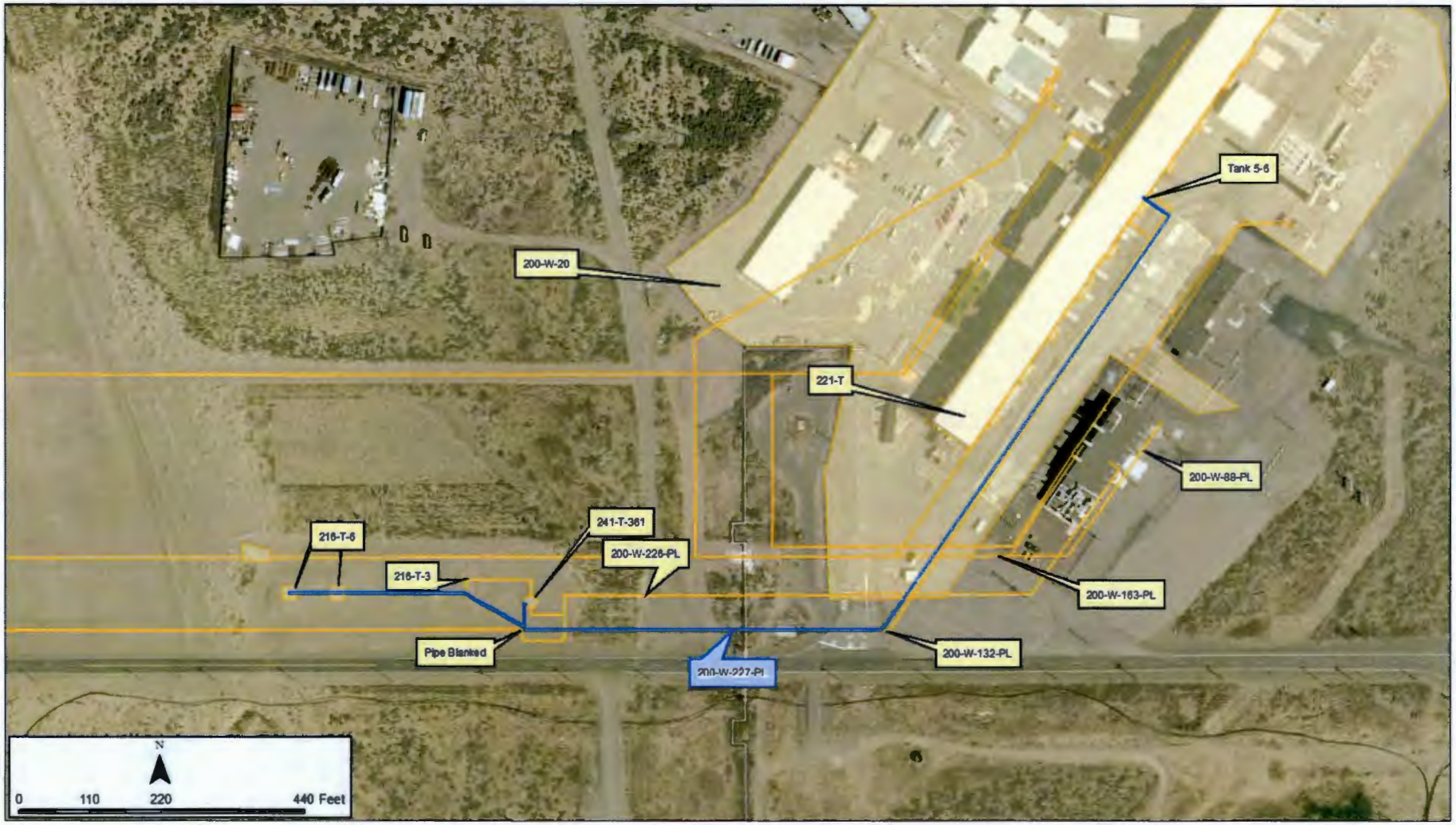
Relevant Characterization

In Jun-1951, the 241-T-361 Settling Tank and 216-T-6 cribs were deactivated to evaluate the radionuclide disposal characteristics therein. Sink holes in the crib area were filled and the ground surface was leveled in 1975; the area was again surface stabilized in 1993.

In 2008, four DPT probes were pushed into the crib (C6424 thru C6427).

Misc./Other Relevant Information

The 216-T-6 Cribs were used between 1946 and 1951. They are now 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.


Tank 5-6
200-W-20
221-T
200-W-88-PL
241-T-361
216-T-6
200-W-226-PL
216-T-3
200-W-163-PL
Pipe Blanked
200-W-132-PL
200-W-227-PL
N
0
110
220
440 Feet

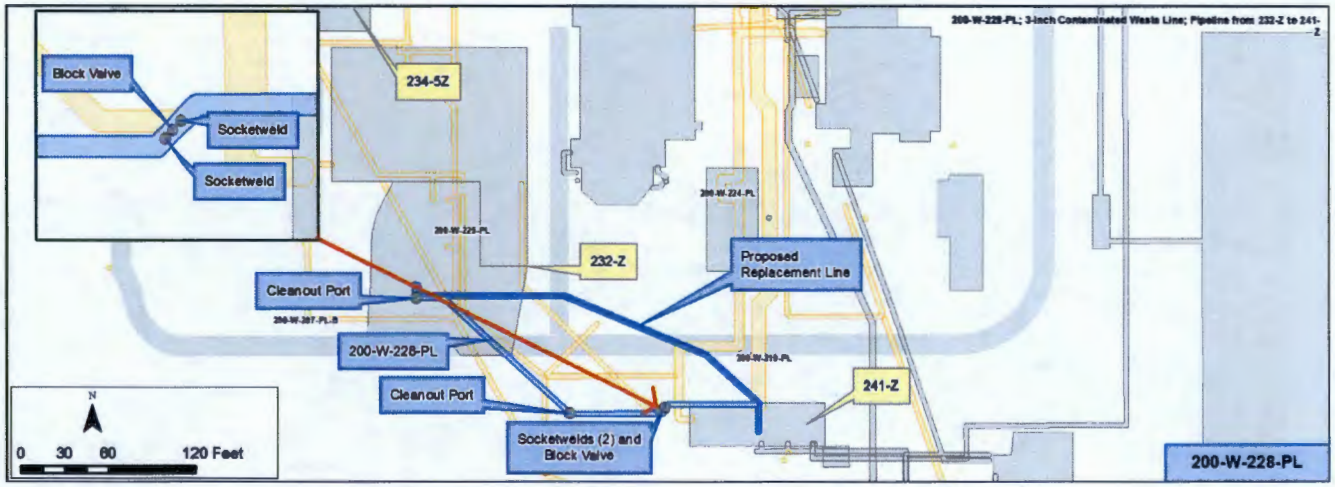
Scoping Summary: 200-W-228-PL

History

The 200-W-228-PL waste is an inactive radioactive process sewer line that runs from the scrubber cell within the 232-Z waste incineration facility to tank D6, part of the 241-Z storage and treatment tanks. It was constructed in approximately 1962 and taken out of service in 1972, when tank D6 was taken out of service and 232-Z waste incineration operations were halted.

Due to issues with a corroded line coming from the 234-5Z plutonium processing and storage facility, in 1976, it was proposed that a new drain line from the 232-Z waste incineration facility to tank D4 within the 241-Z storage and treatment tanks be installed, and the existing line abandoned. A 232-Z waste incineration facility walk-thru showed the floor was cut and the encased piping installed, but there was no evidence the work progressed beyond this task.

During D4 activities in the mid-1990s, 200-W-228-PL was cut and capped at the 241-Z storage and treatment tanks for the installation of the new encased lines (200-W-224-PL). In approximately 2004, the 200-W-228-PL was plugged at the 232-Z waste incineration facility slab for CERCLA closure.



Construction

- Length: 276 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Direct buried
- Gravity flow
- Depth: 10 ft bgs
- Total Calculated Volume: 101 gal

Prior to demolition of the 232-Z waste incineration facility, 200-W-228-PL was sampled, liquid pumped out, and plugged with grout or fire block material (low density silicone elastomer). After 232-Z demolition, the floor slab was painted with Polymeric Barrier System (PBS) fixative and then covered with a minimum of 6 in. of gravel. During 241-Z storage and treatment tanks D4 operations in the mid-1990s, the 200-W-228-PL was cut and capped at the building.

Features of Interest

- 8 end caps
- 28 4 in. to 6 in. reducers
- Two 3 in. flange cleanout connections
- One block valve.
- Two welds (both are 3 in. CS to 3 in. SST) at connection with 200-W-229-PL before entering the 241-Z storage and treatment tanks

Relevant Characterization

- In 2006, liquid from the 232-Z waste incineration scrubber cell drain (no sediment present) was sampled. Two 250 mL samples of liquid were analyzed for metals, PCB, and radionuclides.
  - Laboratory results showed amerecium-241 (3.8 x 10-5 µCi/mL), pH 7.94-8.27, and approximately 23 µg/L of polychlorinated biphenyls (PCB). Neither plutonium nor any regulated amounts of metals were detected.
- Liquid was assayed and disposed of as low level waste.

Waste Streams

- Combustible plutonium bearing waste was sent through the 232-Z incinerator; plutonium was then recovered from the ash. The incinerator gas was processed in a scrubber with a mixture of water, sodium hydroxide, and urea.
- Between 1962 to 1972, the 232-Z waste incineration facility spent scrubber solution was sent to tank D6 as low salt waste (LSW).
  - Solution consisted of 10 weight percent sodium hydroxide
  - Estimated total discard of NaOH was about twenty tons.

Misc./Other Relevant Information

The proposed replacement drain line for 200-W-228-PL (not installed per HNF-FMP-03-18999-R0) was to be a 3 in. SST pipeline, inside a 6 in. encasement and equipped with cathodic protection. This line would have also included a 6 in. SST riser T at W76705.67, 6 in. to 3 in. pipe seal weld at the 241-Z treatment and storage tanks (H-2-27561 SH1 Rev2), and ~10 ft drop from the 232-Z waste incineration facility to the 241-Z storage and treatment tanks.

Site Interfaces

Origin/Termination

TBD

- 232-Z (waste incineration facility)

200-IS-1

- 241-Z (storage and treatment tanks)

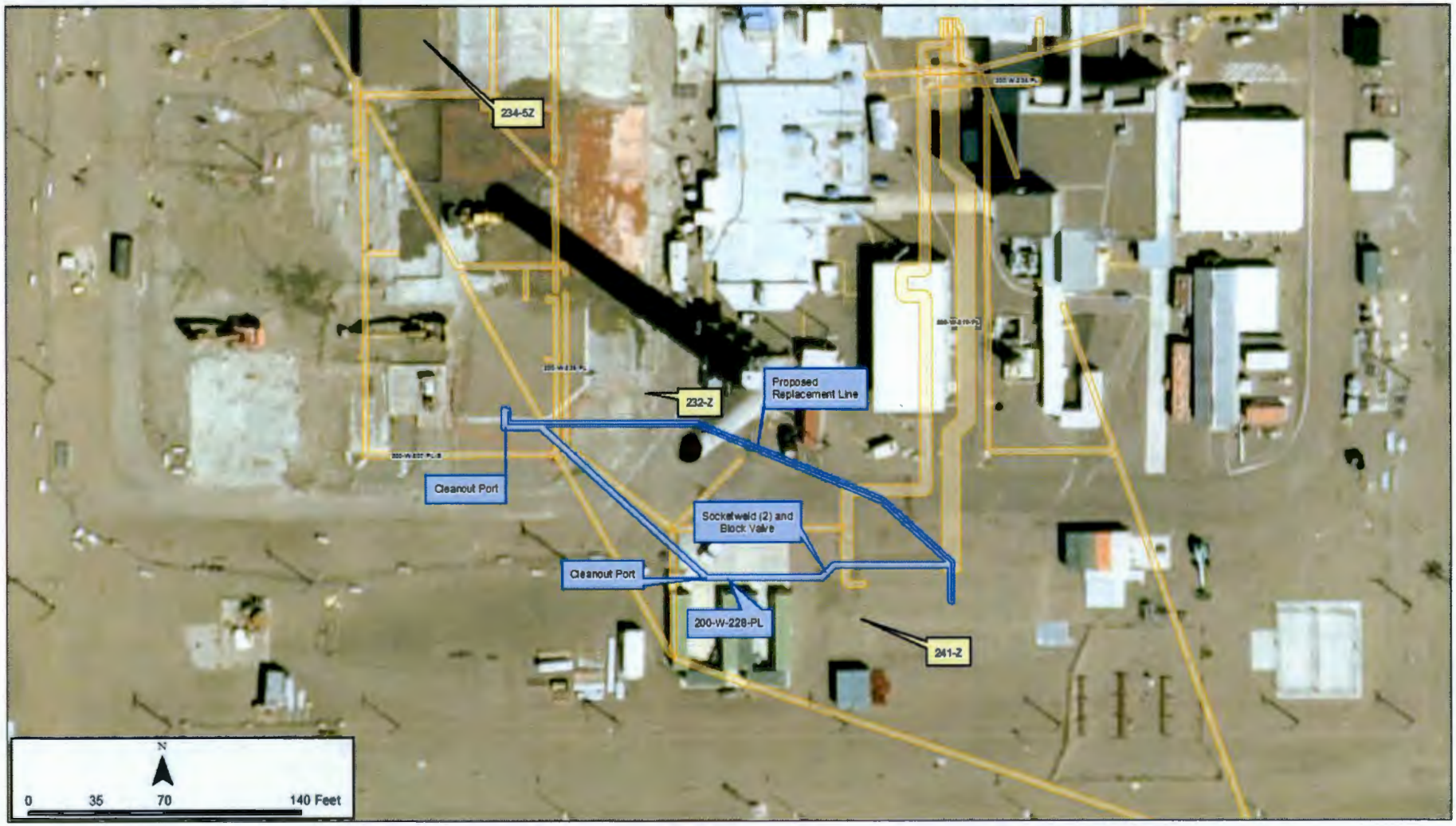
Site Intersects

TBD

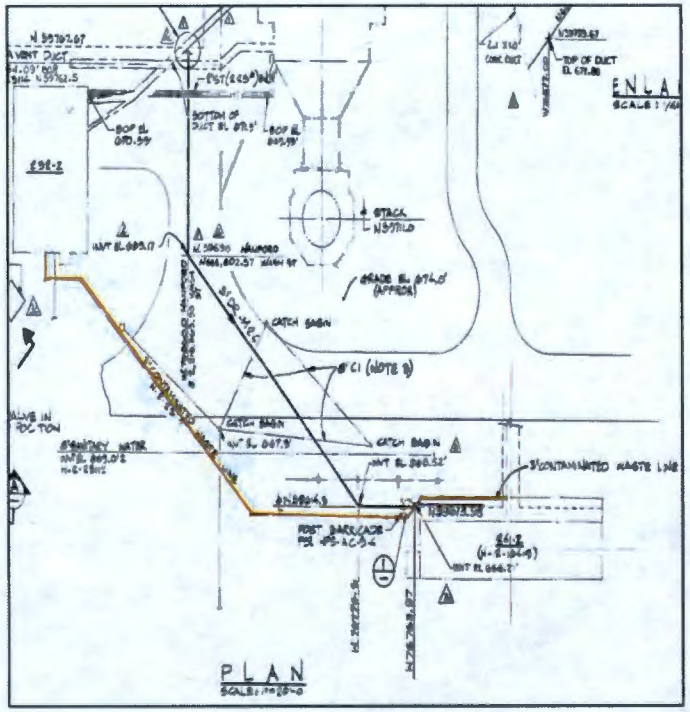
- 200-W-207-PL-B
- 234-5Z (Plutonium processing and storage)

200-IS-1

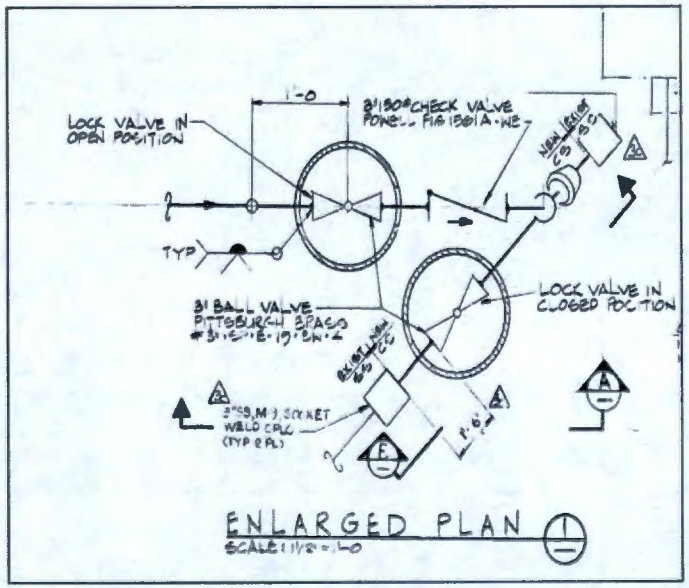
- 200-W-219-PL
- 200-W-224-PL
- 200-W-225-PL
- 200-W-228-PL
- 200-W-229-PL


234-5Z
232-Z
Proposed Replacement Line
Cleanout Port
Socketweld (2) and Block Valve
Cleanout Port
200-W-228-PL
241-Z
N
0
35
70
140 Feet

200-W-228-PL Shown in Orange (Drawing H-2-80191 Sheet 1)



200-W-228-PL Welds Detail (Drawing H-2-80191 Sheet 1)



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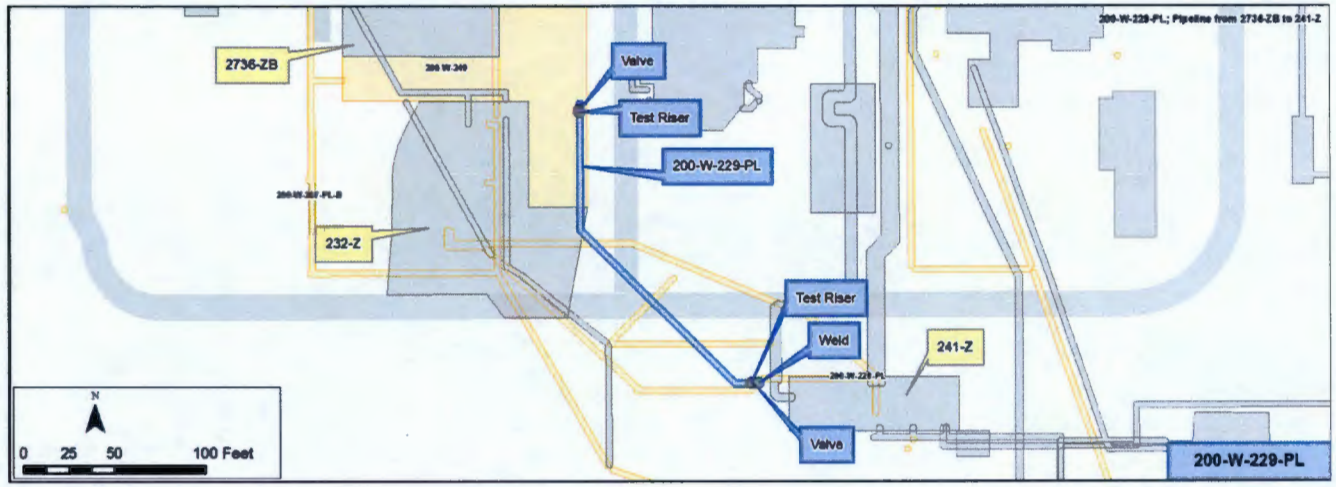
Scoping Summary: 200-W-229-PL

History

The 200-W-229-PL waste site is an inactive underground radioactive process sewer drain line that extends from a decontamination safety shower within the 2736-ZB Support Facility and ties into 200-W-228-PL, which then flows into the 241-Z storage and transfer tanks.

Around 2004, in support of D4 activities, the section of pipe within the 2736-ZB Support Facility was cut flush with the concrete slab, drained, and capped.



Construction

- Length: 200 ft
- Diameter: 3 in.
- Composition: Carbon Steel
- Gravity Flow
- Direct Buried
- Depth: less than 10 ft bgs
- Calculated Volume: 64 gal

Features of Interest

- Two block valves
  - One block valve located at the interface with the 2736-ZB Support Facility shower drain
  - One block valve with hand wheel access (for manual shutoff/on) at the connection to 200-W-228-PL
- Two 45-degree bends
- Two 1/2 in. test risers
- Cut and capped at the 2736-ZB Support Facility
- SS and CS socket weld between 200-W-228-PL and 200-W-229-PL

Relevant Characterization

- No characterization specific to 200-W-229-PL was identified.
- 200-W-229-PL ties into 200-W-228-PL, a radioactive process sewer drain line, and together they enter the 241-Z storage and treatment tanks as one line.
  - For 200-W-228-PL, americium-241 and PCBs are COPCs.

Waste Streams

- Drained decontamination shower within the 2736-ZB Support Facility

Misc./Other Relevant Information

- The total elevation drop from the 2736-ZB Support Facility foundation to the 200-W-228-PL connection point is approximately 3 ft

Site Interfaces

Origin/Termination	Site Intersects
TBD •2736-ZB Support Facility	TBD •200-W-249 (concrete slabs)
200-IS-1 •241-Z Treatment and Storage Tanks	200-IS-1 •200-W-228-PL •200-W-229-PL
	200-CW-5 •200-W-207-PL-B

Scoping Summary: 200-W-229-PL

Scoping Summary: 200-W-230-PL

History

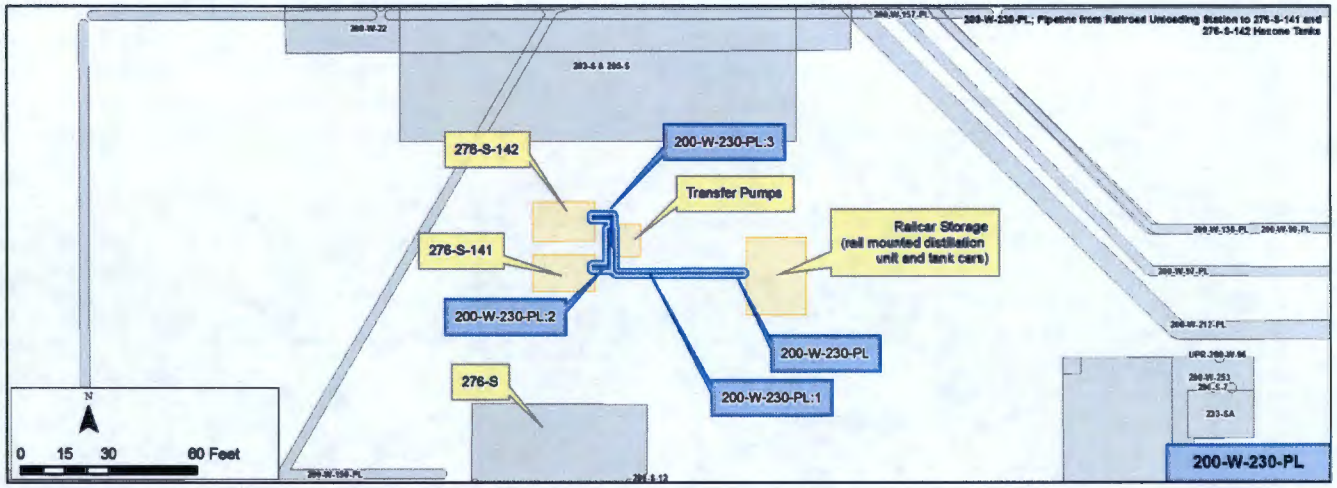
The 200-W-230-PL waste site is an inactive underground pipeline that consists of three subsites that transferred commercial-grade hexone from the Railcar Storage Connection Area to the 276-S-141 and 276-S-142 storage tanks, and to the 276-S facility.

The Hexone Storage and Treatment Facility (HSTF), which includes the 200-W-230-PL pipeline was constructed in 1951. The HSTF received hexone from 1950's to 1967, and radioactively contaminated organic liquids in 1967.

By the late 1980's, the railcar unloading ramp and hose system and the overhead transfer pipe to the 276-S Building were removed.

In 1990, a distillation system was added to the HSTF at the Railcar Storage Connection Area. The contents from the tanks that could be pumped underwent distillation in 1990 and were emptied except for small amounts of residual sludge and liquid. The temporary piping that connected the tanks to the distillation system, as well as the distillation system, were removed in early 1992.

In March 2002, the 276-S-141 and 276-S-142 tanks were filled with grout and the nitrogen suppression system was shut off.



Construction

- Total Length: 172 ft
  - 200-W-230-PL:1 - 60 ft
  - 200-W-230-PL:2 - 80 ft (2 lines at 40 ft each)
  - 200-W-230-PL:3 - 32 ft (2 lines at 16 ft each)
- Diameter: 2 in. and 2.5 in.
  - 200-W-230-PL:1 (1 line: 2.5 in. diameter line)
  - 200-W-230-PL:2 (2 lines: 2 in. diameter line and 2.5 in. line)
  - 200-W-230-PL:3 (2 lines: 2 in. diameter line and 2.5 in. line)
- Composition: Carbon Steel
- Cathodic Protection: None Observed
- Pressurized
- Direct Buried
- Depth: 3 ft - 5 ft bgs
- Total Calculated Volume: 38 gal

Features of Interest

- 2 transfer pumps
- Dismantled Railcar Storage Connection Area
- Figure 1 shows the configuration of the HSTF and its associated lines
- Lines capped at the connection into the 276-S-141 and 276-S-142 storage tanks and may be capped at the railroad connection

Relevant Characterization

- Waste Inventory for the 276-S-141 and 276-S-142 tanks that went via the 200-W-230-PL line in 1989:
  - 2.07 E-6 Ci Total Alpha
  - 12.5 E-5 Ci Total Beta
  - 7.5 E-6 Ci Tritium
  - 3.5 E-8 Ci I-129

Waste Streams

- Process: REDOX Plant - Reduction and Oxidation Process
- Waste Streams: commercial grade hexone and radioactively contaminated organic liquids associated with the shutdown of the REDOX plant (hexone, tributyl phosphate, normal paraffin hydrocarbons, and solvent-saturated water)

Misc./Other Relevant Information

- Prior to being emptied, Tank 276-S-141 contained: 20,000 gal of pure hexone
- Prior to being emptied, Tank 276-S-142 contained: 2,000 gal of water; 14,000 galmixture of: 60% hexone, 25.2% paraffin hydrocarbon, 12.6% tributyl phosphate, and 1.7% water; 100 gal of tarry sludge resting on base
- Estimates of 200 gal to 250 gal of sludge & 5 gal to 30 gal of liquid believed to remain after being emptied

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	
• 276-S-141 (tank)	N/A
• 276-S-142 (tank)	

200-W-230-PL:3
276-S-142
Transfer Pumps
Railcar Storage
(rail mounted distillation
unit and tank cars)
276-S-141
200-W-230-PL:2
200-W-230-PL
276-S
200-W-230-PL:1
N
0
35
70
140 Feet

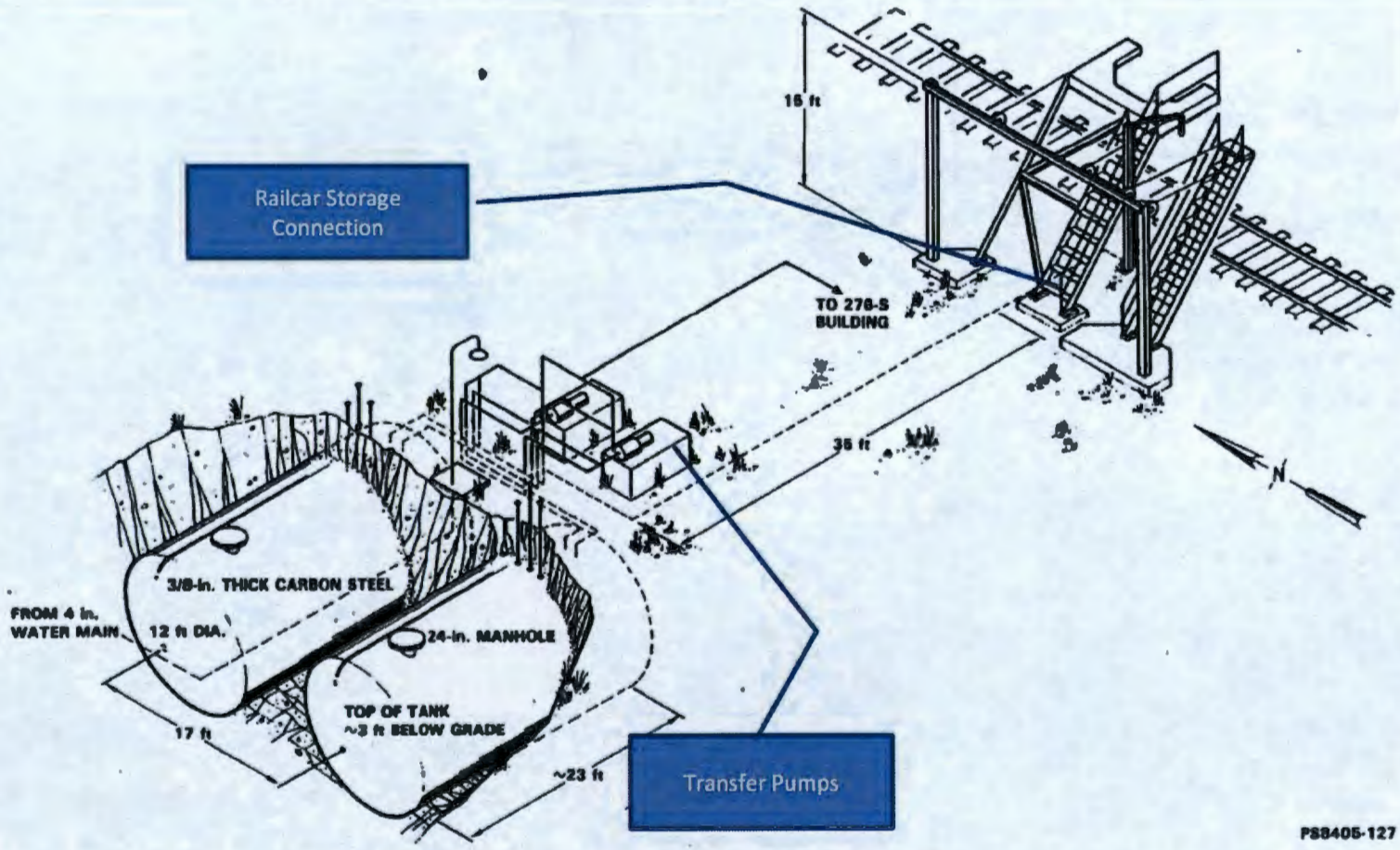


Figure 1 – 200-E-230-PL and the associated Hexone Storage Tanks (RHO-WM-PL-10, pg. 8-90)

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Scoping Summary: 200-W-235-PL

History

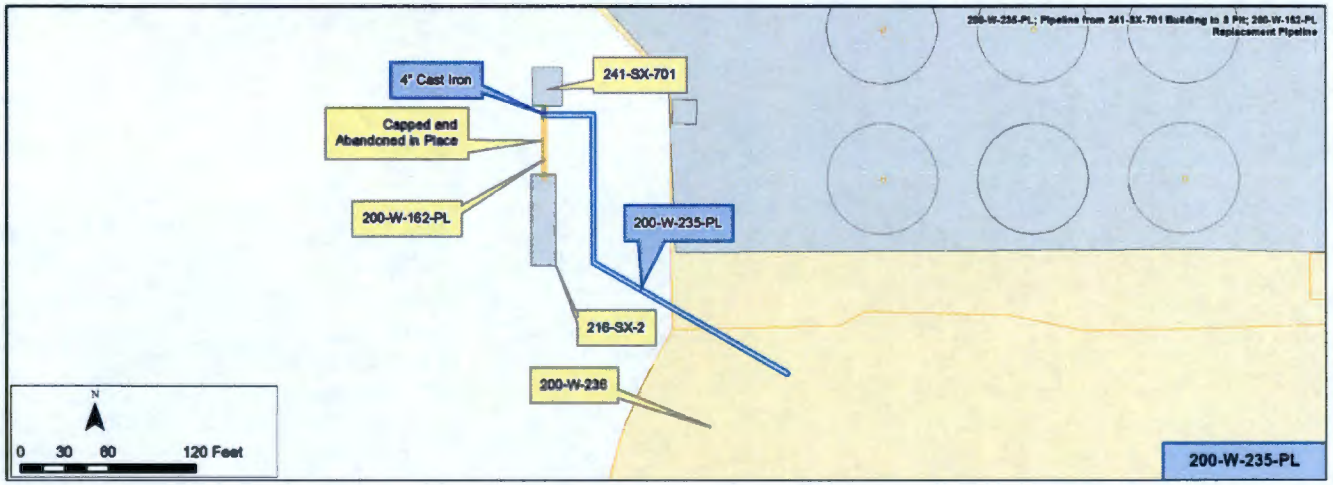
The 200-W-235-PL waste site is an inactive underground pipeline that transported compressor effluent from the 241-SX-701 Compressor House to the 200-W-236 Pit.

This pipeline was put into service in 1965 when the 200-W-162-PL was cut and capped and the associated waste streams from the 241-SX-701 Compressor House were rerouted via 200-W-235-PL to an existing pit known as the 200-W-236 waste site.

Line 200-W-162-PL was cut at the end of a five foot, cast iron segment exiting the 241-SX-701 Compressor Building. The connection to 200-W-235-PL was made at this point, and the initial cast iron segment remains part of the 200-W-162-PL waste site.

The 200-W-162-PL transported compressor effluent to the 216-SX-2 Crib beginning in 1956, and the same waste streams were transported by 200-W-235-PL.

No out of service date could be confirmed, but it is believed to be 1979.



Construction

- Length: ~190 ft
- Diameter: 3 in.
- Composition: Stainless Steel
- Gravity Drained
- Direct Buried
- Depth: 5 ft 10 ft bgs
- Calculated Volume: 70 gal

Features of Interest

- The 200-W-235-PL originates from a connection to a 4 in., 5 ft long Cast Iron line exiting the 241-SX-701 Compressor House.
- The pipeline has three elbows (including the elbow connecting to the pipeline to the cast iron segment of 200-W-162-PL).

Relevant Characterization

- None noted

Waste Streams

- The waste streams discharged through 200-W-162-PL originate in the 241-SX-701 Compressor House from floor drains under the compressor and receiver tank and consisted of compressed air condensate drainage and floor drainage.
- Associated waste streams are believed to have contained very low risk of contamination.

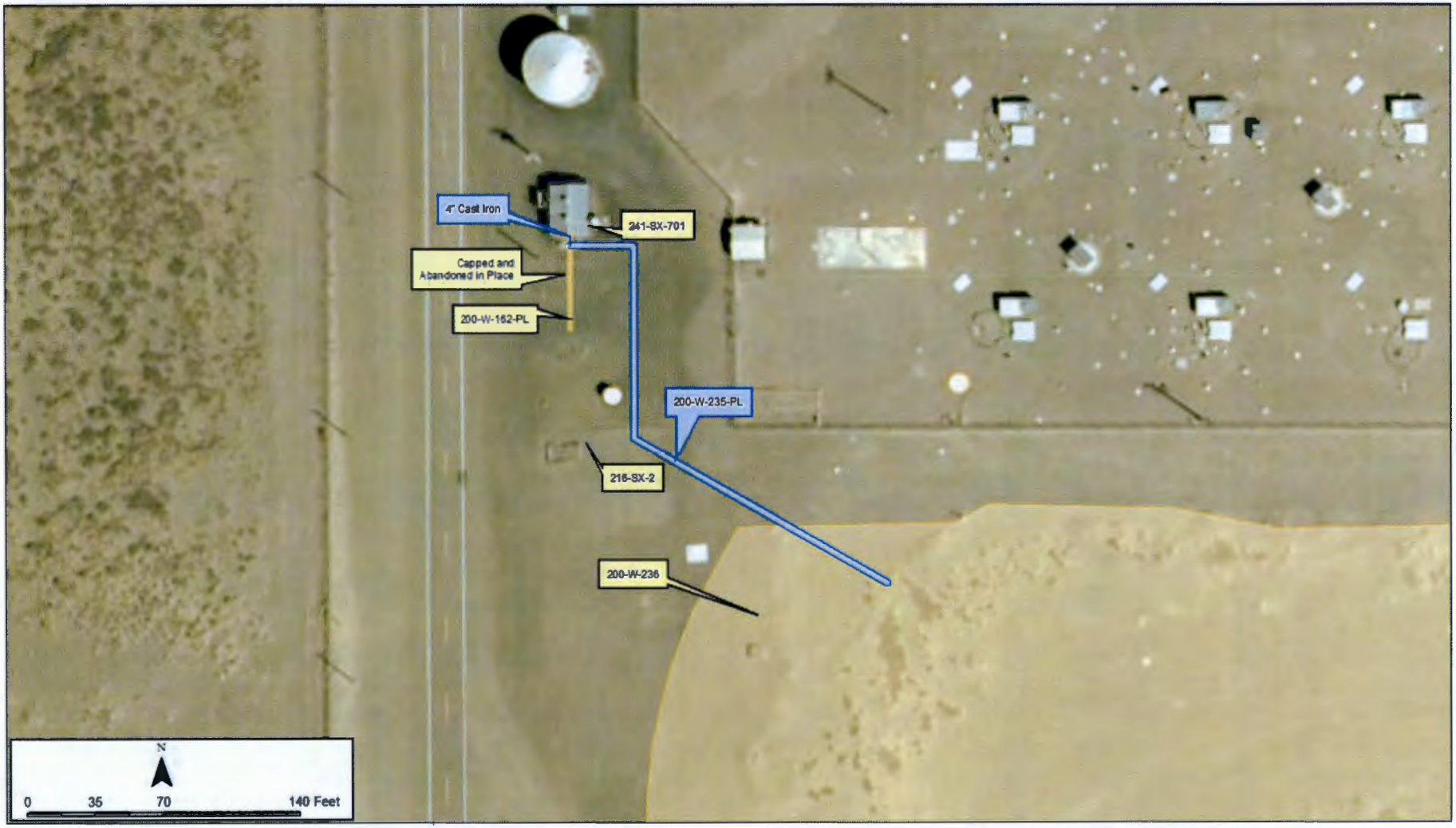
Misc./Other Relevant Information

- The area is posted with Underground Radioactive Material signs associated with the 241-SX tank farm.

Site Interfaces

Origin/Termination	Intersecting Sites
200-IS-1	
• 200-W-162-PL (origin)	N/A
• 200-W-236 (termination)	

Scoping Summary: 200-W-235-PL



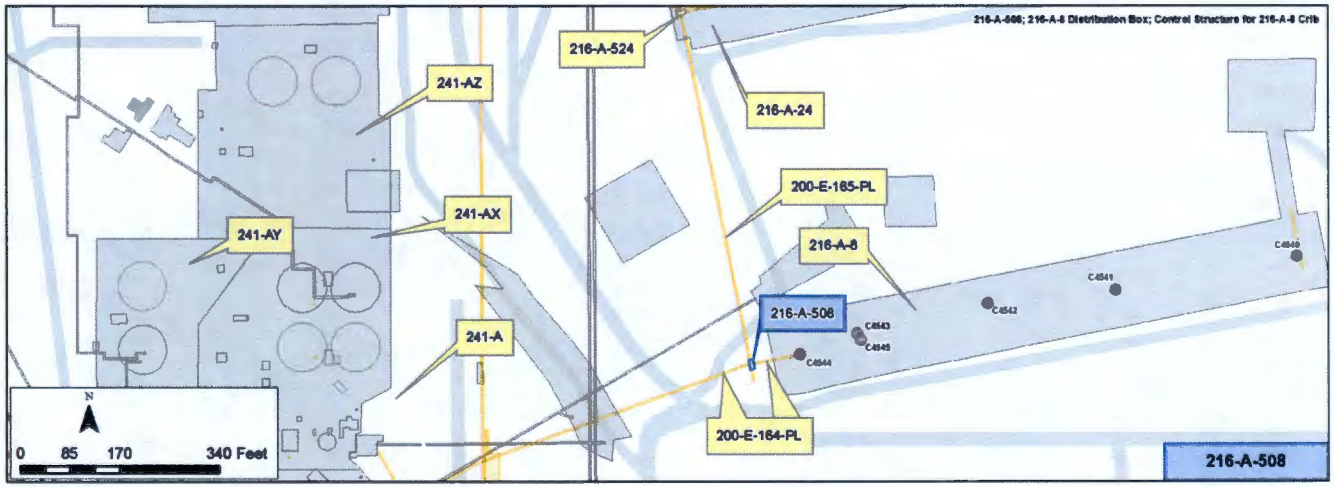
Scoping Summary: 216-A-508

History

The 216-A-508 waste site is a reinforced concrete distribution box (control structure). The distribution box was used to distribute waste flow to either the 216-A-8 Crib or the 216-A-24 Crib via the 200-E-165-PL pipeline. The tank farm condensate wastes were received from the 241-A, 241-AY, 241-AX, and 241-AZ Tank Farms via the 200-E-164-PL pipeline.

The distribution box was constructed in 1954-55. The 216-A-8 Crib received discharge via the distribution box from 1955 to 1958, at which time the effluent was routed to the 216-A-24 Crib. In 1966, the valve to 216-A-24 Crib was intended to be closed while the valve to 216-A-8 was opened, but in 1979 it was discovered to still be in the open position allowing liquids to enter the 216-A-24 Crib, as well. The distribution box valve to 216-A-24 was subsequently closed in 1979, but the connection to 216-A-8 Crib is recorded to have been in operations through 1985.

In 1990, the 216-A-8 Crib was surface stabilized by adding 2 ft of clean fill and in 1995 the 216-A-508 control structure was filled with concrete.



Construction

- Dimensions:
  - 16.2 ft long x 8 ft wide x 16 ft deep (OD)
  - 15.2 ft long x 7 ft wide x 15 ft deep (ID)
  - Divided vertically, by two concrete walls 11 ft high and 1 ft thick, making three chambers
- Composition: Reinforced concrete
- Computed Volume: 930 cu ft (filled with concrete)
- Depth:
  - Top of structure: at grade
  - Bottom of structure: 16 bgs
- Cover Blocks: 6 in. Thick, 4 ft x 8.2 ft concrete cover fitted with lifting eyes
- May have a covering of clean fill as a part of the 216-A-8 crib stabilization

Nozzles/Lines:

- 4 nozzles
- 1 line 16 in. steel inlet from 200-E-164-PL
- 1 line 24 in. steel blanked outlet
- 1 line 24 in. steel outlet to the 216-A-8 Crib
- 1 line 24 in. steel outlet to 200-E-165-PL

Features of Interest

- 3 in. pipe sleeve
- 1 vent filter
- 3 sluice gates
- 1 24 in. to 16 in. reducer (at the connection into 200-E-165-PL)
- All surface structure have reportedly been removed, but 2004 photo shows above ground structures in place

Relevant Characterization

- Based on historic inventory reporting, total waste transferred through the distribution box to the 216-A-24 & 216-A-8 cribs was 217 million & 304 million gallons, respectively
- Estimated radionuclide content in 216-A-24 crib: 291 Ci Sr-90; 217 Ci Cs-137; 0.02 Ci Total U; 0.31 Ci Total Alpha; 552 Ci Total Beta (radionuclides decayed to 12/31/98)

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process
- Waste Streams: Tank farm condensate from 241-A, 241-AY, 241-AZ, and 241-AX tank farm that is low salt and neutral to basic liquid condensate (included dibutyl phosphate and paraffin hydrocarbon)

Misc./Other Relevant Information

- Borehole survey in 216-A-8 Crib: highest concentration of Cs-137 at 20 ft deep at 1.5 million pCi/g
- In the 216-A-524 there is 500 cpm smearable contamination, 10,000 cpm direct beta-gamma, 40 mrad/h non-penetrating, and 0.7 mrem/h penetrating radiation (Cramer, 1987; Note that all waste streams running through 216-A-524 ran through 216-A-508)

Site Interfaces

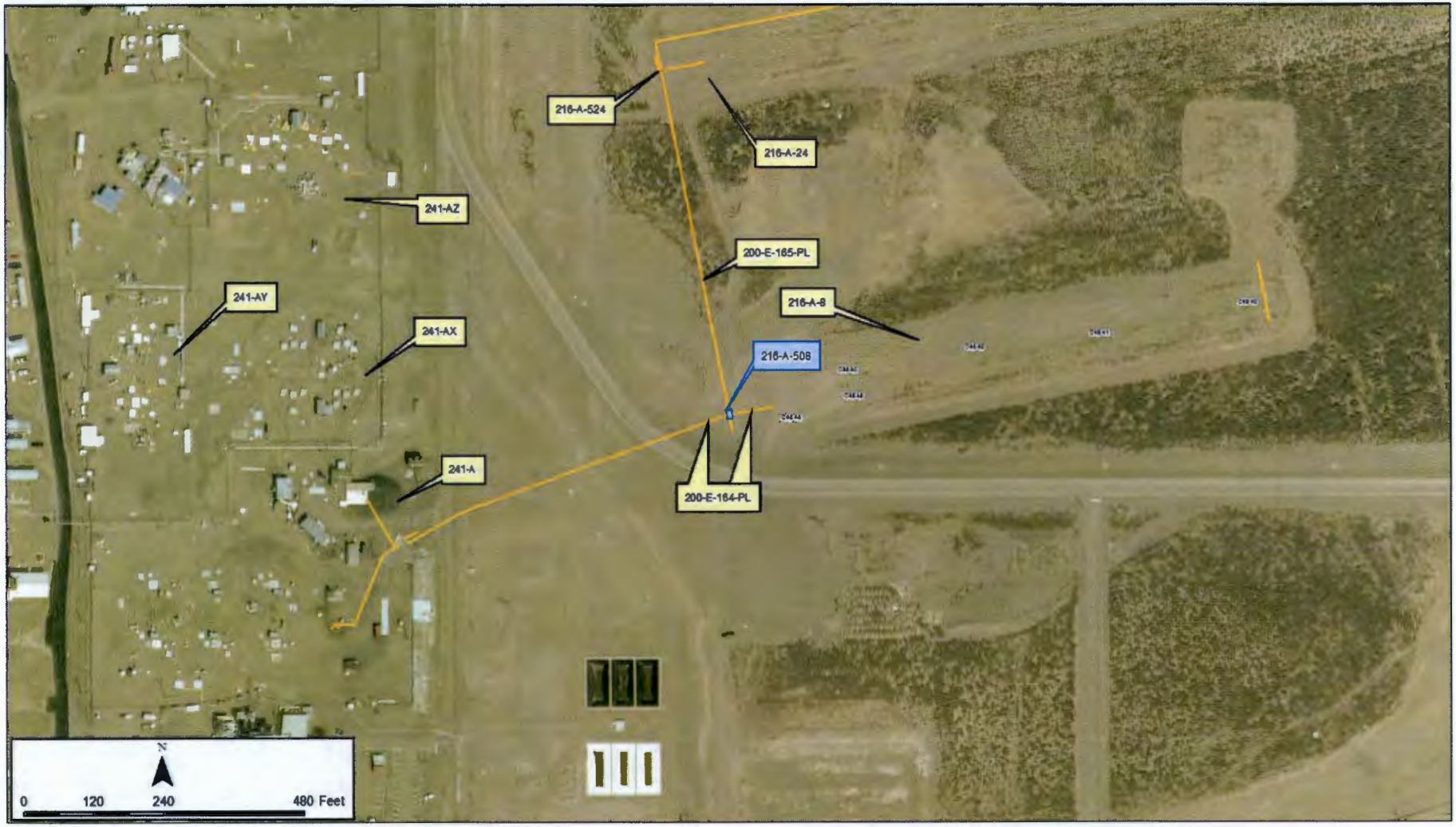
Origin/Termination Points:

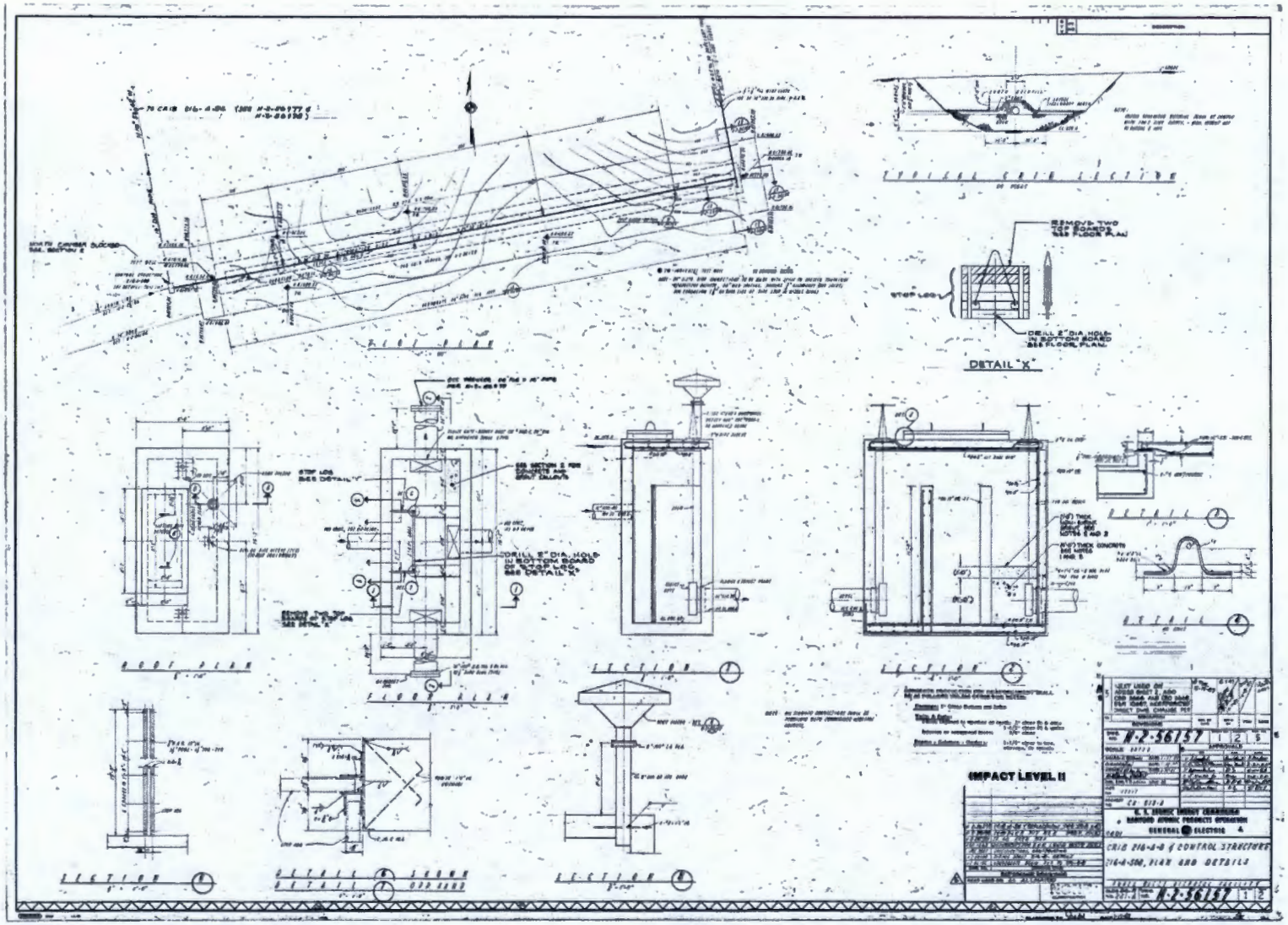
200-IS-1

- 200-E-164-PL
- 200-E-165-PL

200-PW-3

- 216-A-8 (Crib)


216-A-524
216-A-24
241-AZ
200-E-165-PL
241-AY
216-A-8
241-AX
216-A-508
241-A
200-E-164-PL
N
0
120
240
480 Feet


DETAIL "X"
IMPACT LEVEL II
N-2-36157

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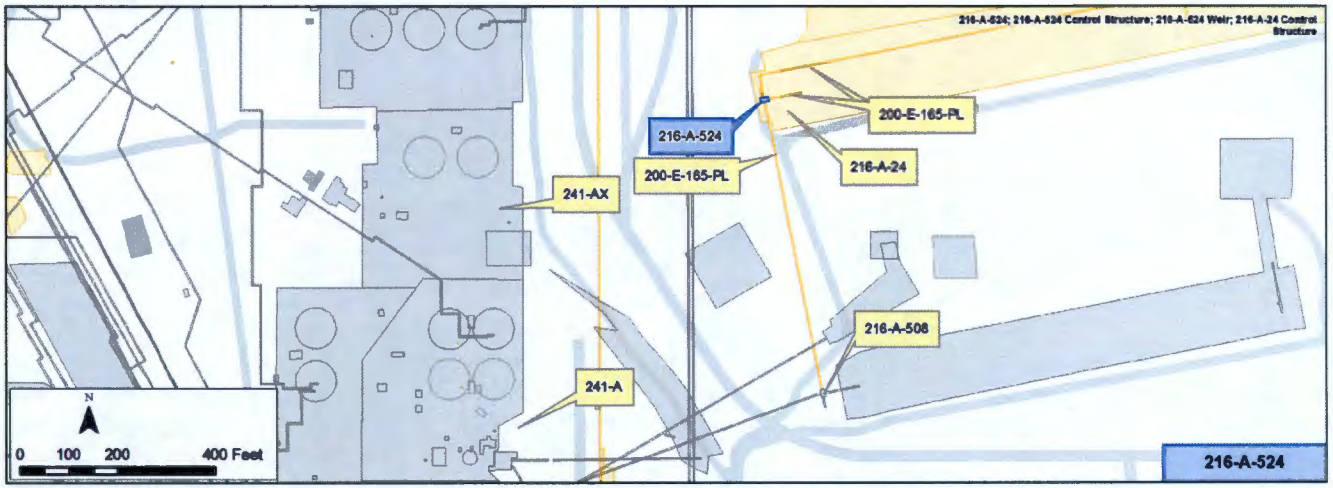
Scoping Summary: 216-A-524

History

The 216-A-524 waste site is a reinforced concrete weir box (control structure). The weir box was used to transfer radioactive process sewer tank farm condensate from the 241-A and 241-AX Tank Farms via the 200-E-165-PL pipeline to the 216-A-24 Crib.

The 216-A-524 weir box was constructed in 1957. The connecting 200-E-165-PL pipeline was activated in 1958 and believed to be deactivated in 1966 by valving out the pipeline at the 216-A-508 control structure. In 1979, the valve was discovered to still be open, allowing liquids to enter the 216-A-524 weir box and was subsequently closed. In 1995, the site was permanently isolated from the receiving waste streams by the filling of the 216-A-508 control structure with concrete.

The weir box does have internal contamination. It was reported in the 1990s that there is no surface manifestation of the weir box, suggesting that the aboveground components have been removed or buried. The 216-A-24 Crib area was backfilled in 1981 following a contamination spread and was surface stabilized in 1988.



Construction

- Dimensions:
  - 16 ft long x 8 ft wide x 11 ft deep (OD)
  - 15 ft long x 7 ft wide x 10 ft deep (ID)
  - Divided vertically, by two concrete walls 8.5 ft high and 1 ft thick, making three chambers
- Composition: Reinforced concrete
- Computed Volume: 930 cu ft
- Depth:
  - Top of structure: at grade
  - Bottom of structure: 11 bgs
- Cover Blocks: 6 in. thick, 3 ft x 12 ft concrete cover fitted with lifting eyes
- Covered by clean fill as a part of the 216-A-24 crib stabilization

Nozzles/Lines:

- 4 nozzles
- 1 line 16 in. steel inlet from 200-E-165-PL
- 1 line 16 in. steel blanked outlet
- 1 line 16 in. steel blanked outlet transitions to 15 in. corrugated pipe connected to the 216-A-24 Crib
- 1 line 16 in. with a 2 in. diameter steel bypass connected to 216-S-24 Crib

Features of Interest

- 3 stem gate valves, with handwheels for operation of sluice gates (may have been removed)
- 1 filtered vent pipe (may have been removed)

Relevant Characterization

- 500 cpm smearable contamination, 10,000 cpm direct beta-gamma, 40 mrad/h non-penetrating, and 0.7 mrem/h penetrating radiation (Cramer, 1987)
- Based on historic inventory reporting, total waste transferred through the weir box to the 216-A-24 crib was 216,600,000 gallons
- Estimated 216-A-24 crib radionuclide inventory: 291 Ci; Sr-90; 217 Ci Cs-137; 0.02 Ci Total U; 0.31 Ci Total Alpha; 552 Ci Total Beta (Radionuclides decayed to 12/31/98)

Waste Streams

- Process: PUREX Plant - Plutonium-Uranium Extraction Process
- Waste Streams: Tank farm condensate from 241-A and 241-AX tank farm (05/01/1958 to 12/31/67) that is low salt and neutral to basic liquid condensate

Misc./Other Relevant Information

- High concentrations of Cs-137 detected under the 216-A-24 crib with concentrations exceeding 1,000,000 pCi/g

Site Interfaces

Origin/Termination Points:

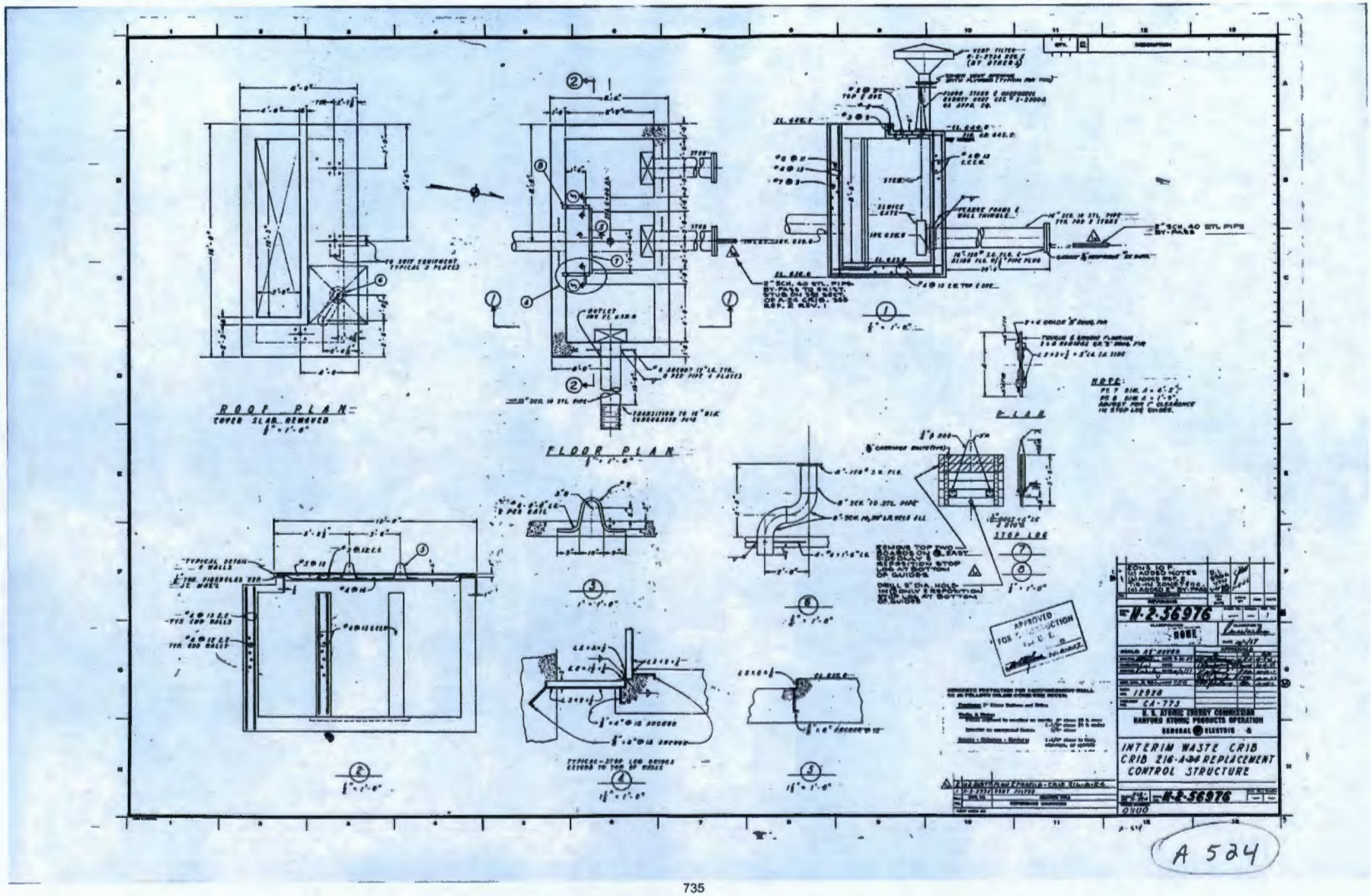
200-IS-1

- 200-E-165-PL

200-PW-3

- 216-A-24 (Crib)

Scoping Summary: 216-A-524


ROOF PLAN
COVER SLAB REMOVED
FLOOR PLAN
PLAN
STOP LOG
H-2-56976
INTERIM WASTE CRIB
CRIB 216-A-24 REPLACEMENT
CONTROL STRUCTURE
A 524

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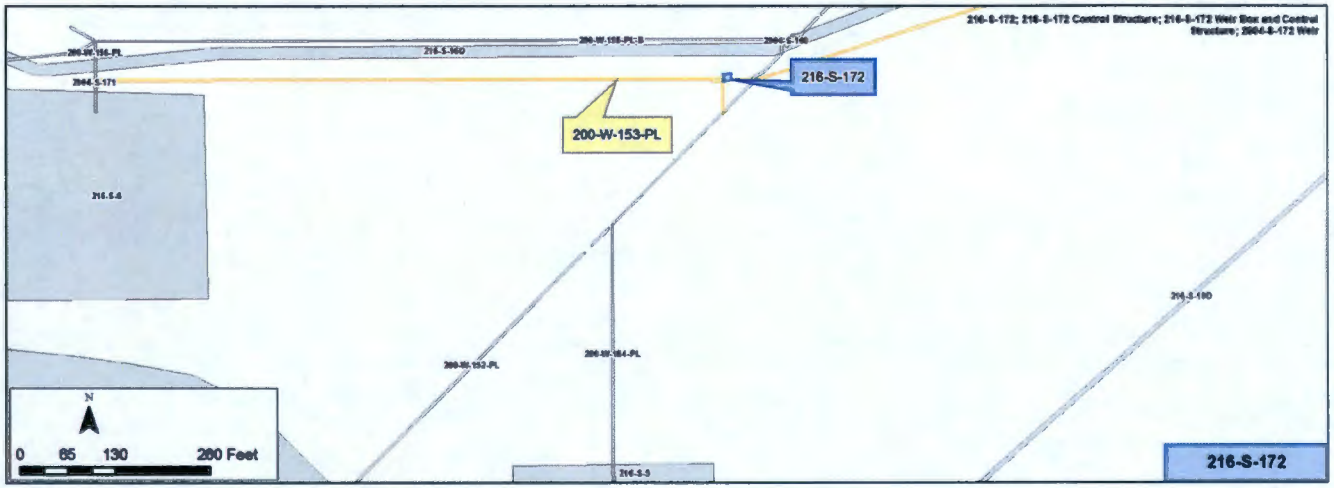
Scoping Summary: 216-S-172

History

The 216-S-172 waste site, sometimes referred to as 2904-S-172, is an inactive control structure (weir box) used to divert 202-S (REDOX) facility process vessel cooling water to the 216-S-6 Crib (via 200-W-153-PL and 2904-S-171), and steam condensate to the 216-S-16 Ditch.

The control structure was constructed in 1956 and in use until 1972, when the 216-S-6 Crib was de-activated. It is located outside the southwest corner of the 200 West Area perimeter fence, due east of weir box 2904-S-171, which diverts waste into the 216-S-6 Crib.

This site was stabilized (covered with clean fill) by 1992 and is currently marked underground radioactive materials area with cave in warning signs surrounding it.



Construction

- Rectangular concrete structure that originally rose approximately 6 in. above ground surface, prior to clean fill cover
- Beneath clean fill cover:
  - Two float well covers
  - Three handwheels for operating sluice gates
  - One Stevens recorder
  - One manhole cover
- Composition: Reinforced-concrete
- Dimensions: 13.8 ft X 7.4 ft X 7.4 ft tall
- Thickness: 10 in. walls/roof; 12 in. base
- Depth: to 7 ft bgs

Features of Interest

- Float wells attached vertically to the north and south outside walls of the weir. Float wells are 16 in. diameter metal pipes centered in 2 ft concrete columns.

Relevant Characterization

- The unit contains unquantified amounts of low-level radioactive residual contamination. The maximum reading recorded is 25 mR/h in 1987.
- Based on data from the 216-S-6 Crib, the following radioisotopes are expected to be present in this control structure: Sr-90, Tc-99, Cs-137, and Uranium.

Waste Streams

- 1956-to-1972: REDOX process vessel cooling water and steam condensate

Misc./Other Relevant Information

- None identified.

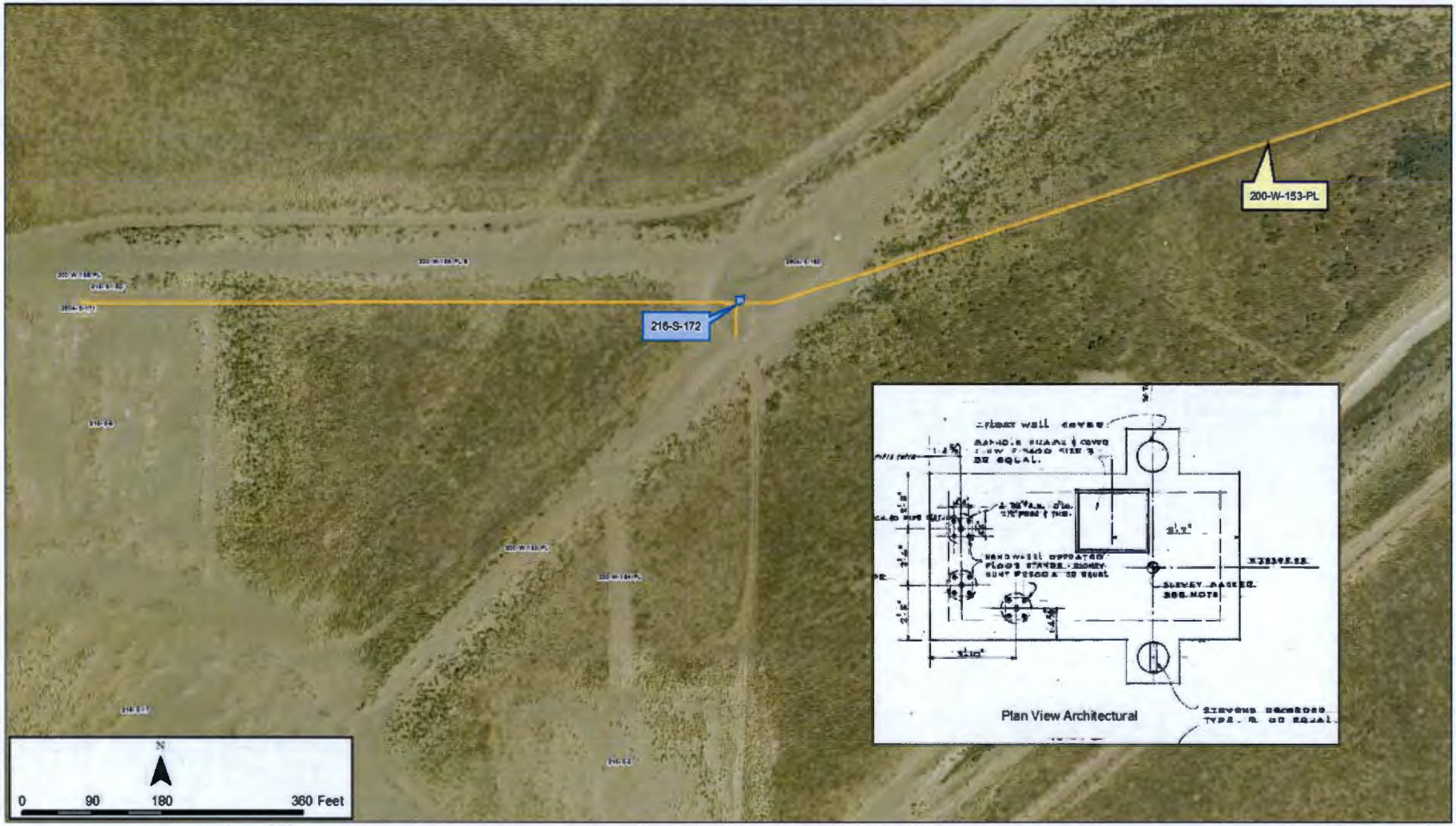
Site Interfaces

Site Intersect:

200-IS-1 OU

- 200-W-153-PL

Scoping Summary: 216-S-172



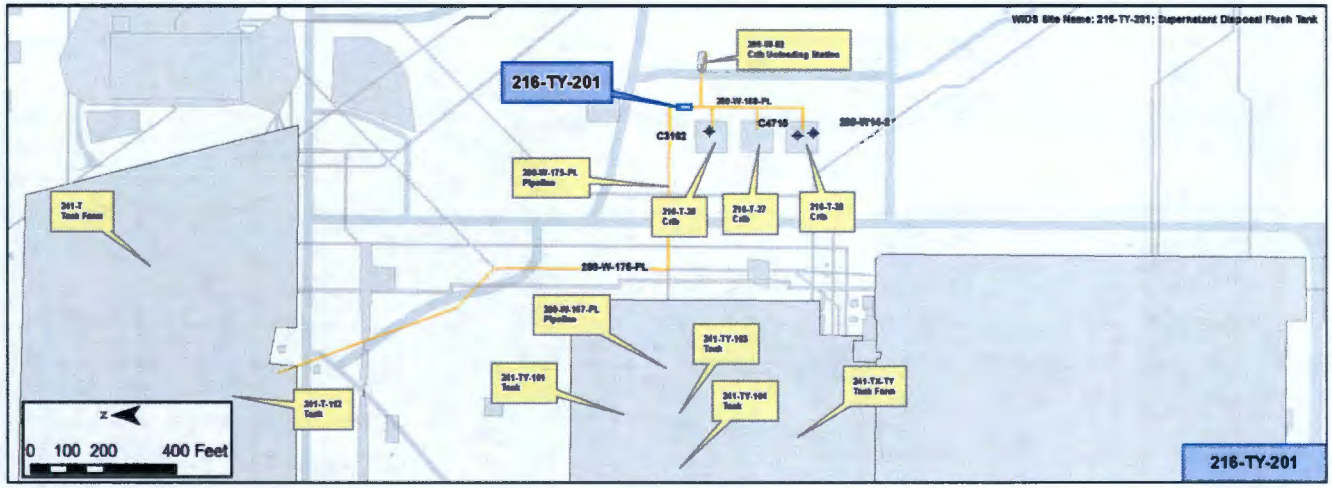
Scoping Summary: 216-TY-201

History

The 216-TY-201 waste site was a flush tank designed to receive liquid waste from the 241-TY and 241-T tank farms destined for a series of RCRA-Past Practice cribs (216-T-26, 216-T-27, and 216-T-28). It was installed in 1955 as part of Project CG-603, 4X Program. The purpose of the flush tank was to trap particulates and accumulate enough fluid that the crib lines would be adequately cleared after each flush. The flush tank was connected to the 241-TY tank farm by 200-W-167-PL (cut and abandoned) and to the 241-T tank farm by 200-W-175-PL.

The flush tank was in service from 1955 to 1966. It received waste from the 241-TY-101, 241-TY-103, and 241-TY-104 tanks during 1955, and from the 241-T-112 tank between 1956 and 1966. Waste was settled in the tank prior to discharging to the cribs. The last recorded waste transfer was to the 216-T-28 Crib in Jul-1966.

241-T-112 was taken out of service in 1977 and isolated in 1981. Documentation indicates that the 216-TY-201 flush tank was assumed to have been isolated at the same time 241-T-112 was isolated.



Construction

- Dimensions: 23 ft long x 10 ft wide x 9.5 ft high
- Material: One foot thick reinforced concrete
- Tank Penetrations:
  - Two manholes top of tank at north and south ends
  - Two 8 in. vent pipes extend from the top of the tank to 2 ft above grade (7 ft total length); vent filters removed and pipes capped
  - One 4 in. riser, capped
  - One 3 in. carbon steel line (200-W-175-PL) 4 ft bgs
  - One 8 in. carbon steel siphon at the tank base connected to a 12 in. carbon steel pipe which drained to 200-W-188-PL at 12 ft bgs
- Buried Depth: Top of tank 5 ft bgs
- The operating depth for liquid in the tank: 6 in. to 5.5 ft The elevation of 200-W-175-PL entering the pipe is 668 ft (4 ft bgs).
- Volume: 8,750 gal

Features of Interest

- None

Relevant Characterization

- No records of a release from 216-TY-201 were found.
- A field investigation and engineering assessment performed in 1998 (HNF-2503)
- The residual tank volume at the time of its isolation (1981) was assumed to be 638 gal, the liquid level minimum capacity. The solid and liquid composition were estimated based on the Best Basis Inventory of 241-T-112.

Waste Streams

- 216-TY-201 received waste from 241-TY tanks and 241-T-112 between 1955 and 1966, including:
  - To Crib 216-T-26: First cycle scavenged tributyl phosphate supernatant from the 241-TY-101, -103, and -104 and 241-T-112 tanks (TBP)
  - To Crib 216-T-27: 221-T steam condensate and process decontamination waste and decontamination waste from T Plant effluent
  - To Crib 216-T-28: Miscellaneous T Plan effluent
- The combined waste volume from 216-TY-201 to all 3 cribs is 2.7x10^7 L (7.2x10^6 gal).

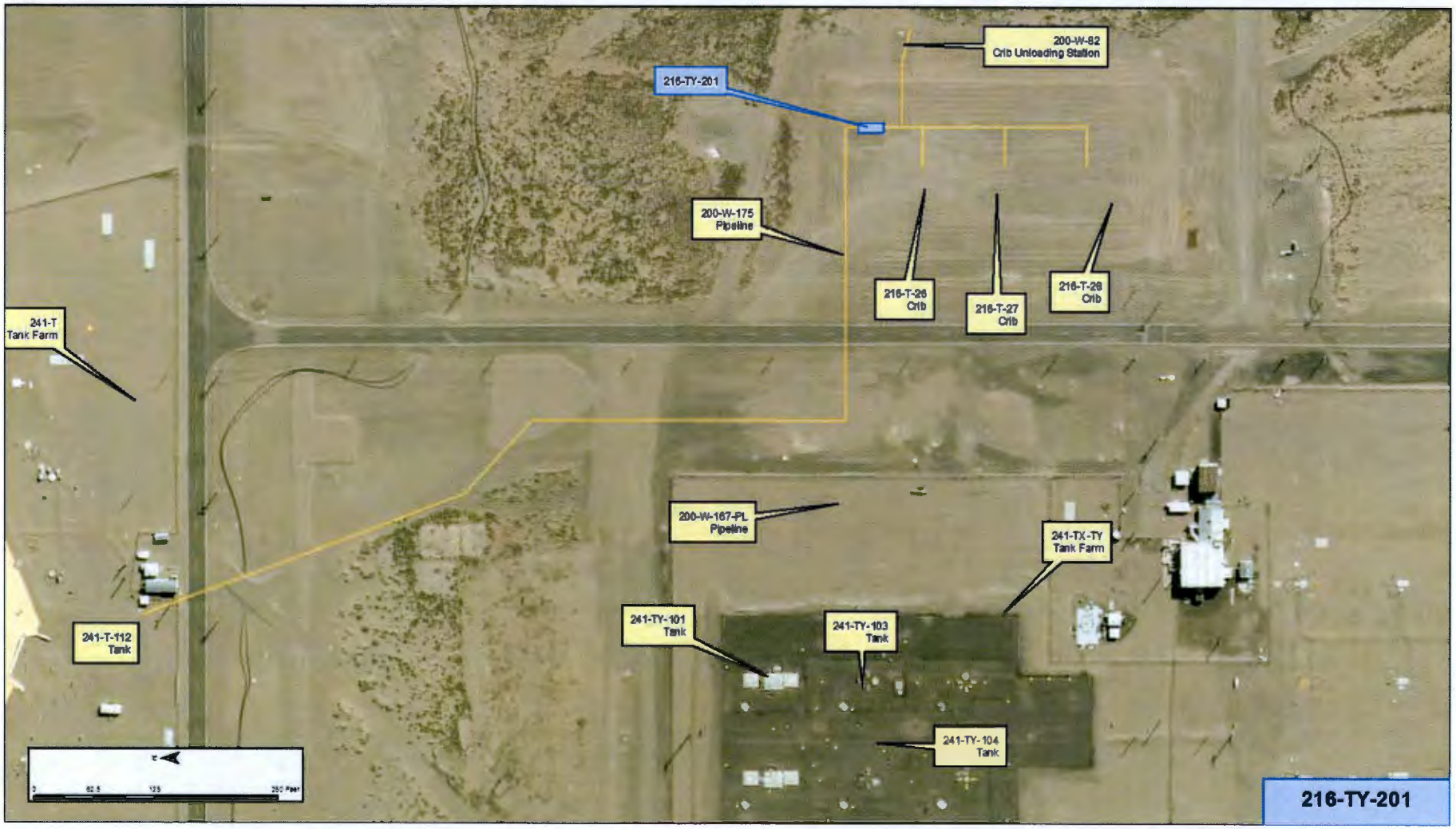
Misc./Other Relevant Information

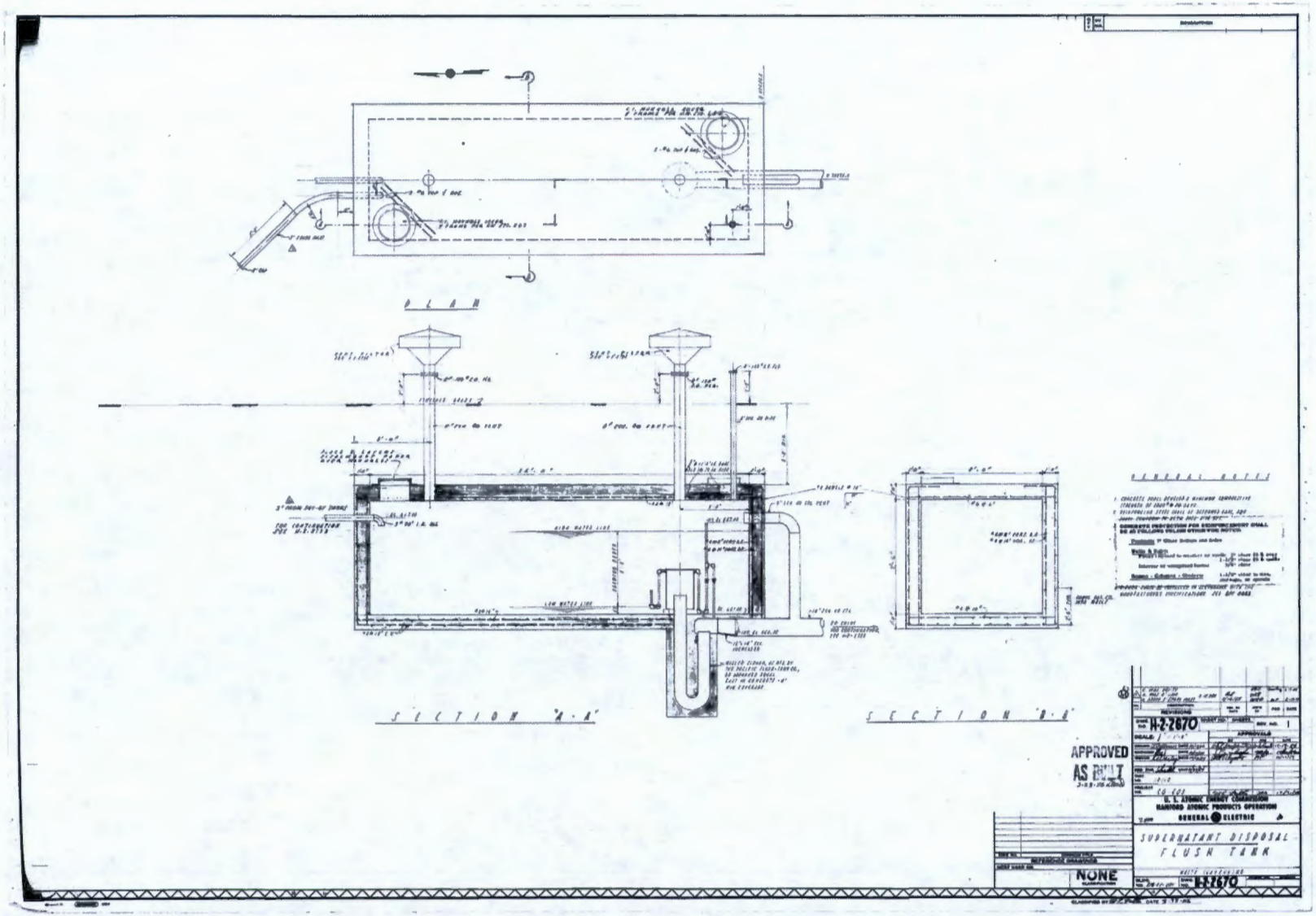
- Chemicals used for equipment decontamination - nitric acid, sodium hydroxide, sodium citrate, sodium phosphate, boric acid, versene, sodium dichromate, sodium tartrate.
- High pressure sprays used 1,1,1-trichloroethane or perchloroethylene, and chlorine based detergents.
- By mid 1960s, commercially available detergents replaced most of the previously used chemicals.

Site Interfaces

Origin/Termination	Site Interfaces
	200-IS-1
Not Applicable	• 200-W-175-PL
	• 200-W-188-PL

Scoping Summary: 216-TY-201




PLAN
SECTION "A-A"
SECTION "B-B"
GENERAL NOTES
APPROVED AS BUILT
U.S. ATOMIC ENERGY COMMISSION
HANFORD ATOMIC PRODUCTS OPERATION
GENERAL ELECTRIC
SUPERNATANT DISPOSAL FLUSH TANK
NONE
H-2-2870

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Scoping Summary: 240-S-151

History

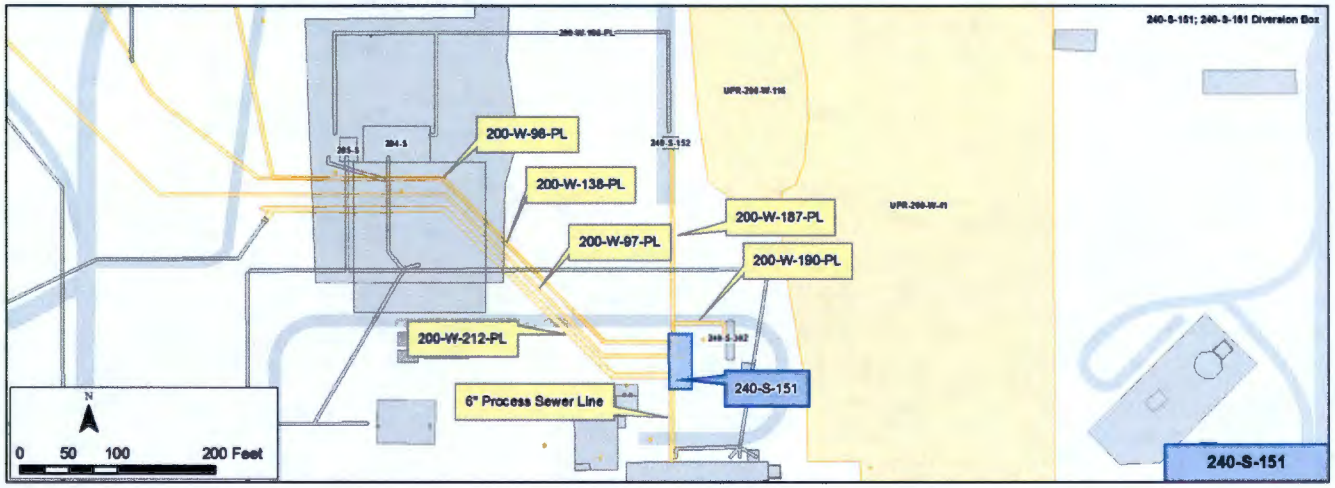
The 240-S-151 waste site is a diversion box north of 202-S and connected to multiple radioactive process sewer lines, due south of the 240-S-152 Diversion Box.

It was used for the to-and-from transfer of waste solutions from processing and decontamination operations at REDOX, including for uranyl nitrate hexahydrate (UNH).

The diversion box was constructed in 1950 and in use no later than 1987, potentially out of use as early as 1980.

After waste transfers ceased, waste lead was placed into the diversion box for storage. The exact quantity of lead is unknown, but records indicate it may have as much as 50 lbs of waste lead.

There are no known releases associated with this diversion box.



Construction

- Dimensions (ft): L x W x H - 56 x 10 x 17
- Calculated Volume: 9,520 cubic ft
- Composition: Reinforced concrete
- Depth: Grade to 17 ft bgs

Nozzles/Lines:

- 39 nozzles total
  - 13 lines to/from 202-S
  - 9 lines to/from 241-S-151
  - 4 lines stubbed off
  - 3 lines to 216-S-17 Swamp
  - 3 lines to/from 240-S-152
  - 3 lines to 204/205-S Buildings
  - 2 drain lines to 240-S-302 Catch Tank
  - 1 return line from 240-S-302 CT jet pump
  - 1 line to 216-S-9 Crib

Features of Interest

- None identified.

Relevant Characterization

- No direct characterization data for the diversion box or adjacent soil was located. A general ground scan in 2014 revealed no radiological issues.
- A hand-written document from 1979 estimated high alpha-beta- and gamma-activity levels within the diversion box, but gave no basis for the estimate.
- Based on 216-S-9 Crib data, the following radioisotopes are expected to be present: Sr-90, Tc-99, Cs-137, Pm-147, Sm-151, and Uranium.

Waste Streams

- Supported transfers of REDOX waste and uranyl nitrate hexahydrate to various tanks and cribs.
- The diversion box transferred waste to the 216-S-7 Crib, the 216-S-9 Crib, and the 240-S-302 Catch Tank. It transferred waste to-and-from the 216-S-17 Sump, the 202-S Building, the 241-S-151 Diversion Box, T Series Diversion Boxes, the 240-S-152 Diversion Box.
- The 240-S-302 Catch Tank jet pump also returned drain waste, periodically.

Misc./Other Relevant Information

- There is a 6 in. process sewer connection from the 202-S facility that is not assigned to a waste site.

Site Interfaces

Origins/Terminations:

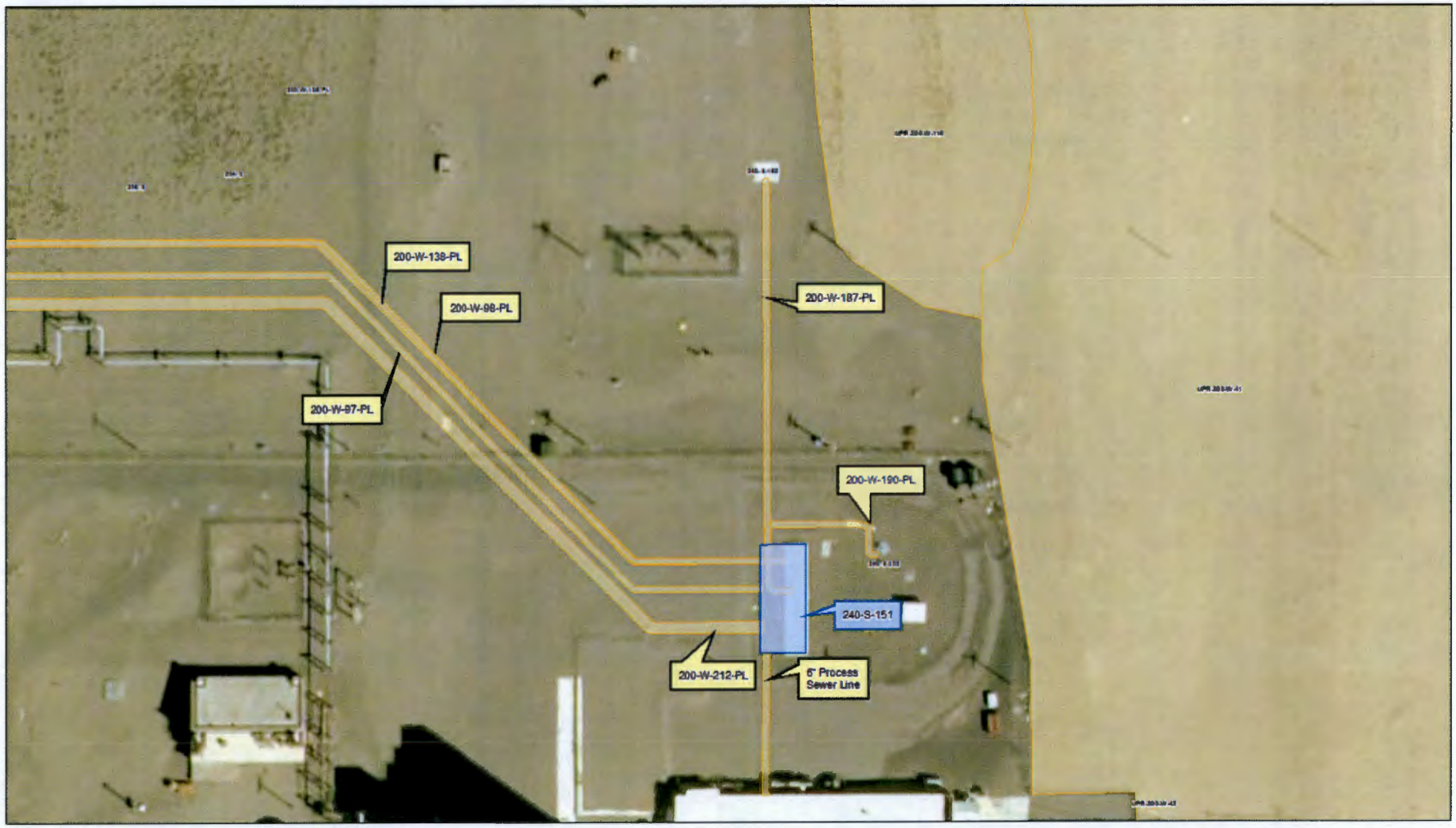
200-IS-1 OU

- 200-W-190-PL
- 200-W-187-PL
- 200-W-98-PL
- 200-W-138-PL
- 200-W-97-PL
- 200-W-212-PL

Not Previously ID'd

- 6-in. process sewer

Scoping Summary: 240-S-151



Scoping Summary: 240-S-152

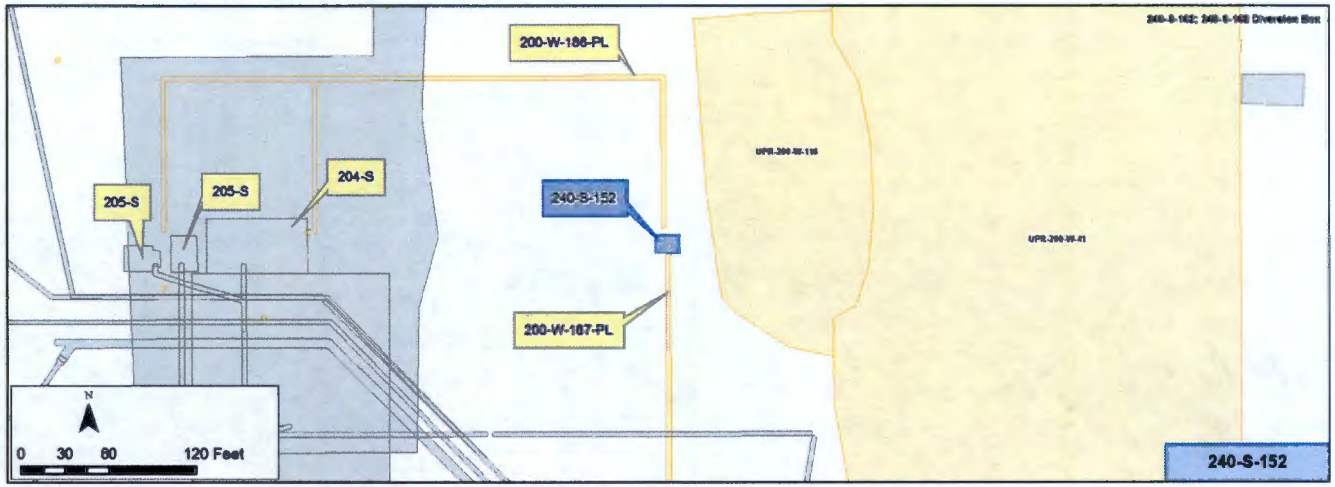
History

The 240-S-152 waste site is a diversion box connected to radioactive process sewer lines 200-W-186-PL and 200-W-187-PL.

It was used for the transfer of high-level waste solution from processing and decontamination operations at REDOX and also received uranyl nitrate hexahydrate (UNH) from the 240-S-151 Diversion Box and transferred it to the 205-S Chemical Makeup Building for decontamination.

The 240-S-152 Diversion box was constructed in 1952; however, it did not enter service until 1977 and was removed from service in 1980.

After waste transfers ceased, waste lead was placed into the diversion box for storage. The exact quantity of lead is unknown, but records indicate it may contain as much as 50-lbs of waste lead.



Construction

- Dimensions: 14 ft long x 10 ft wide x 9 ft high
- Composition: Reinforced concrete, weather-covered to restrict exterior water intrusion
- Depth:
  - Top of Structure: 1 ft above ground
  - Bottom of Structure: 8 ft bgs
- Calculated Volume: 9,425 gal

Nozzles/Lines:

- 8 nozzles total
- 3 lines to 240-S-151 (V552, V553, V555)
- 1 line from 204-S (1045)
- 1 line to 205-S (1006) [Inconsistently reported as going to the 205-S Process Equipment Cell or the 205-S Chemical Makeup Building]
- 3 unused nozzles
- 2 floor drains connected to 1 pipe pit drain to 240-S-151 (unnumbered)
- 1 standpipe

Features of Interest

- Floor drain in the NE corner of the diversion box sloped to a second floor drain in the SE corner.
- A standpipe is located inline between the floor drains.

Relevant Characterization

- A general ground scan in 2014 showed no measurable detections above background at ground surface.
- No direct characterization data could be located for the diversion box or adjacent soil.

Waste Streams

- 1977-to-1980: Supported transfers of REDOX waste and uranyl nitrate hexahydrate. Waste from REDOX was routed to various tanks and cribs, depending on waste profile.

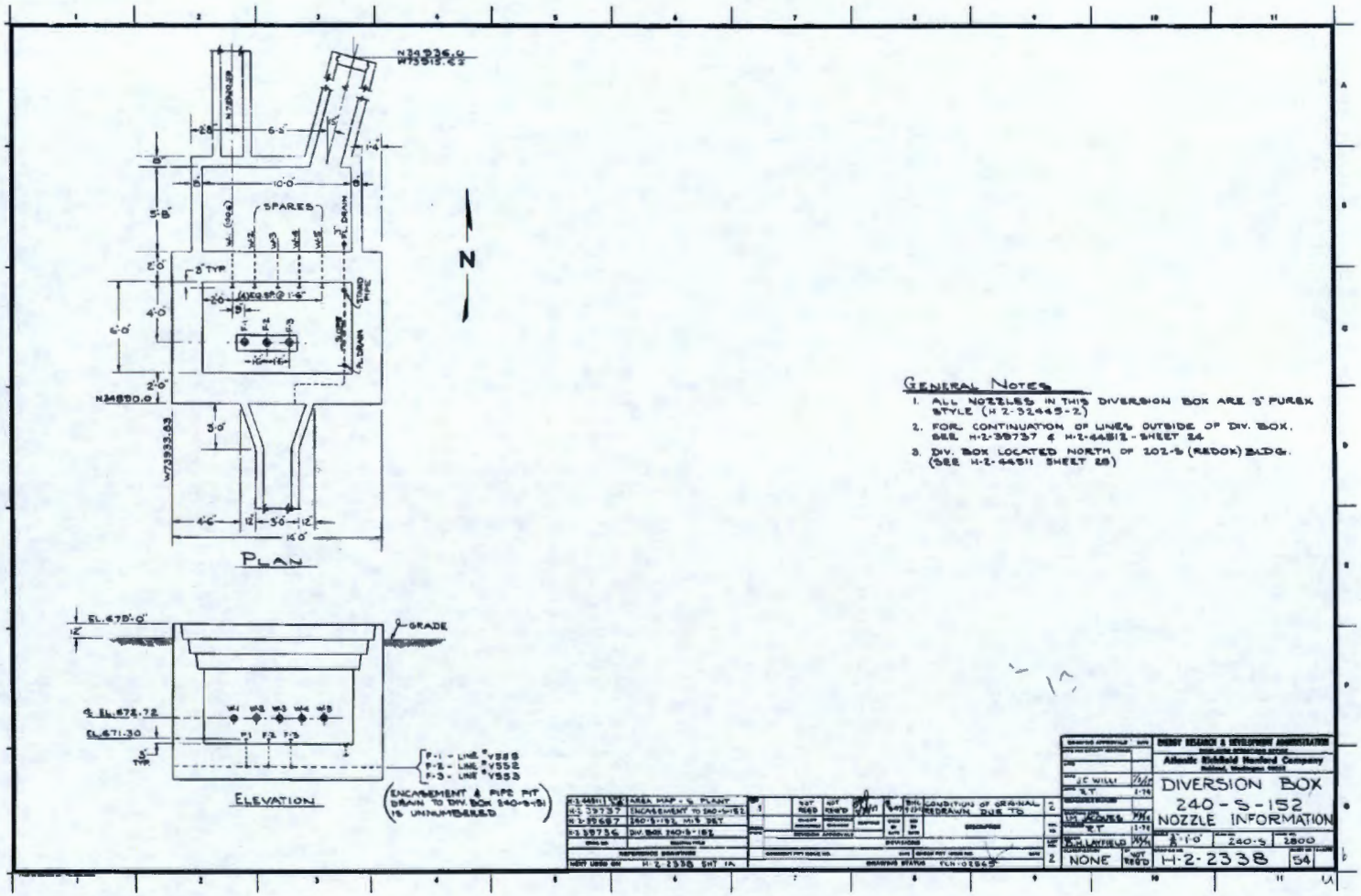
Misc./Other Relevant Information

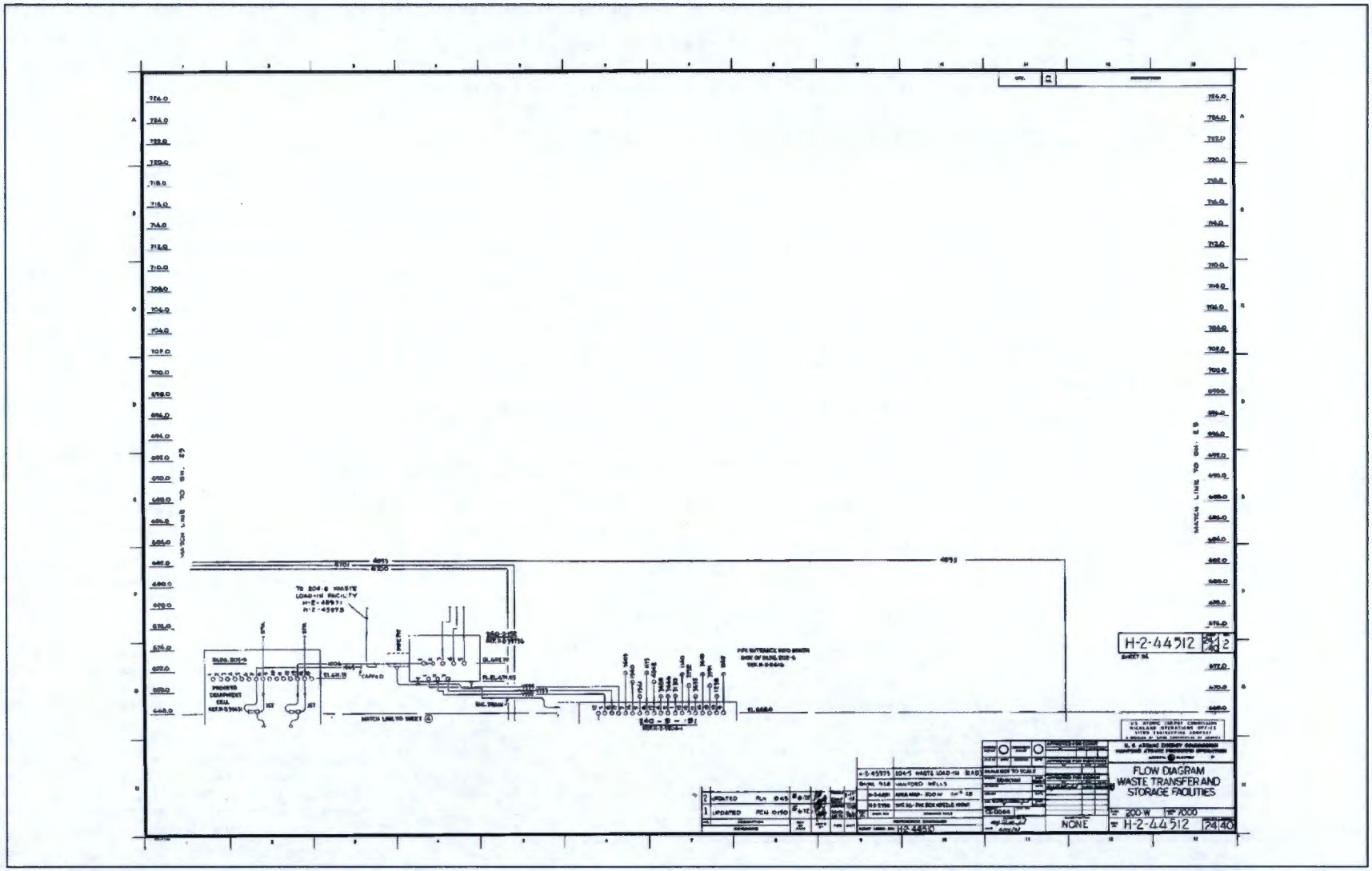
- One drawing [H-14-104176] shows a drain line going from the 240-S-152 diversion box to the 240-S-302 Catch Tank

Site Interfaces

Origin/Termination	Site Intersects
	200-IS-1
N/A	• 200-W-187-PL
	• 200-W-186-PL

200-W-186-PL
204-S
205-S
205-S
240-S-152
200-W-187-PI
N
0
35
70
140 Feet


PLAN
ELEVATION
SPARES
N
GRADE
GENERAL NOTES
1. ALL NOZZLES IN THIS DIVERSION BOX ARE 3" FUREX STYLE (H-2-32445-2)
2. FOR CONTINUATION OF LINES OUTSIDE OF DIV. BOX, SEE H-2-38737 & H-2-44512 - SHEET 24
3. DIV. BOX LOCATED NORTH OF 202-S (REDOX) BLDG. (SEE H-2-44511 SHEET 28)
DIVERSION BOX
240-S-152
NOZZLE INFORMATION
H-2-2338


H-2-44512
FLOW DIAGRAM
WASTE TRANSFER AND
STORAGE FACILITIES
200-W
7000
NONE
H-2-44512
2440

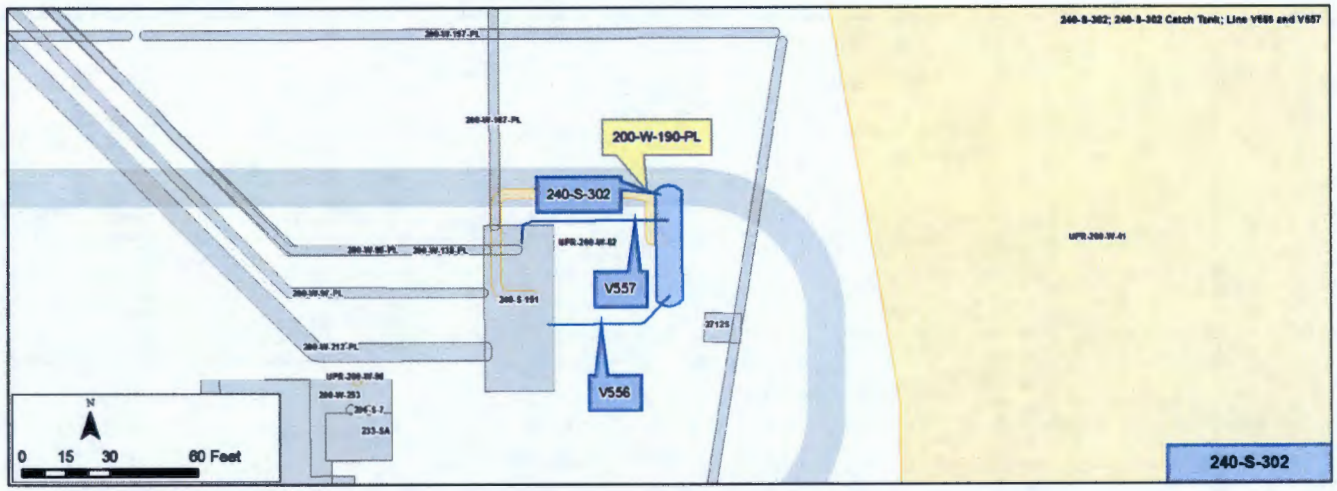
Scoping Summary: 240-S-302

History

The 240-S-302 waste site is an inactive catch tank that received leakage, spillage, line flushes, and drainage associated with waste transfers through the 240-S-151 Diversion Box. It was in service from 1950 to approximately 1985, the period when S-Plant was operating. These waste transfers were associated with the T and S Tank Farms, Building 202-S, and S Plant cribs and sumps.

The tank was assumed to have leaked in 1977. In 1985 the tank was confirmed to be leaking when approximately 600 gallons of rainwater were released between Jun-1985 and Jan-1986. Records do not explain whether the tank itself leaked, overflowed, or if piping connected to the tank leaked.

Although the isolation plan was developed in 1980, records indicate the tank was actually isolated in 1988 when the risers were cut and capped, the pump in the pump pit was removed and the opening sealed, and the drains in the 240-S-151 Diversion Box were plugged and grouted. In 1997, approximately 4,900 gal of rain and snow melt from the diversion box overflowed into the catch tank, although the route of this inflow was not described. The 240-S-302 catch tank was pumped in 2008 to remove 6,265 gal of free liquids. Access is limited by posts and chains with IMUST signage.



Construction

- Dimensions:
  - Length: 36 ft
  - Diameter: 9 ft
- Position: Horizontal
- Capacity: 17,684 gal
- Material: Stainless Steel
- Connections:
  - Two 4 in. stainless steel drain lines from the 240-S-151 diversion (V556 and V557)
  - One discharge line (200-W-190-PL) from the tank back to the 240-S-151 Diversion Box
- Depth: 27 ft bgs to top of tank

Features of Interest

- Three 4 in. diameter steel risers
- One 12 in. diameter steel riser with cathodic protection
- A steam jet syphon and jet box in the line run from the diversion box to the tank (200-W-190-PL) and are included within the scope of this unit

Relevant Characterization

- Current State: Tank is isolated
- Tanks solids sampled in 2007 for metals (RPT-RPT-35991
  - Cr: 828 µg/g; Hg: 4.89 µg/mL; Pb: 510 µg/g
  - The detection limits could not determine the concentrations of Cd, Se and Ag relative to thresholds
- Pumped in 2008 to remove free liquids
- ~6 gal of liquid & 1,600 gal of solid remain in the tank
- The area above the tank is surrounded by posts and a chain

Waste Streams

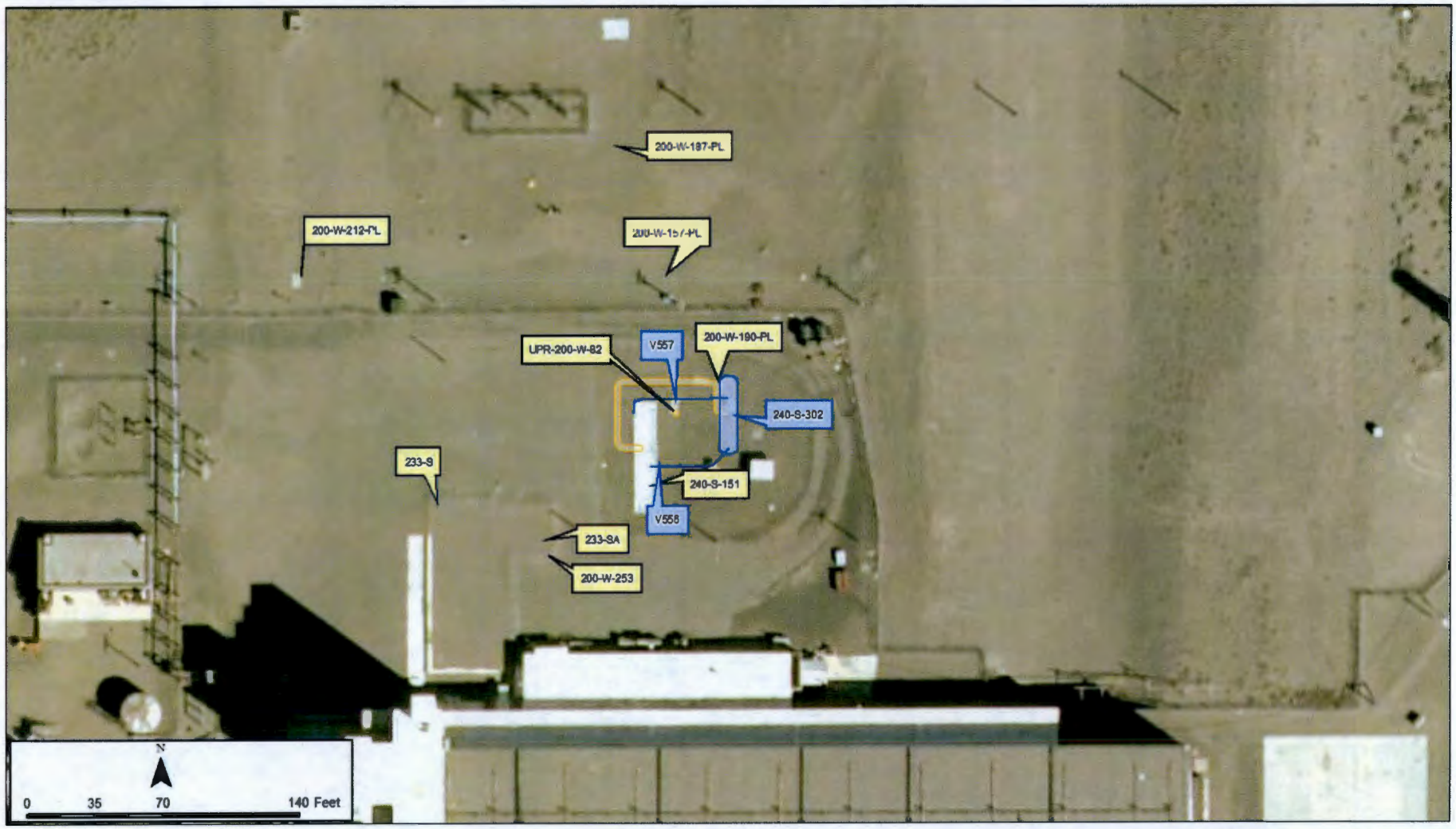
- 1950-1985: The 240-S-151 diversion box supported S-Plant Waste Transfers of the following waste; R, CW, EB, BNW, DW, N, B, BL, IX, LW, RIX, 224, TL, EVAP, HDRL, DSSF, NCPLX, and PMF

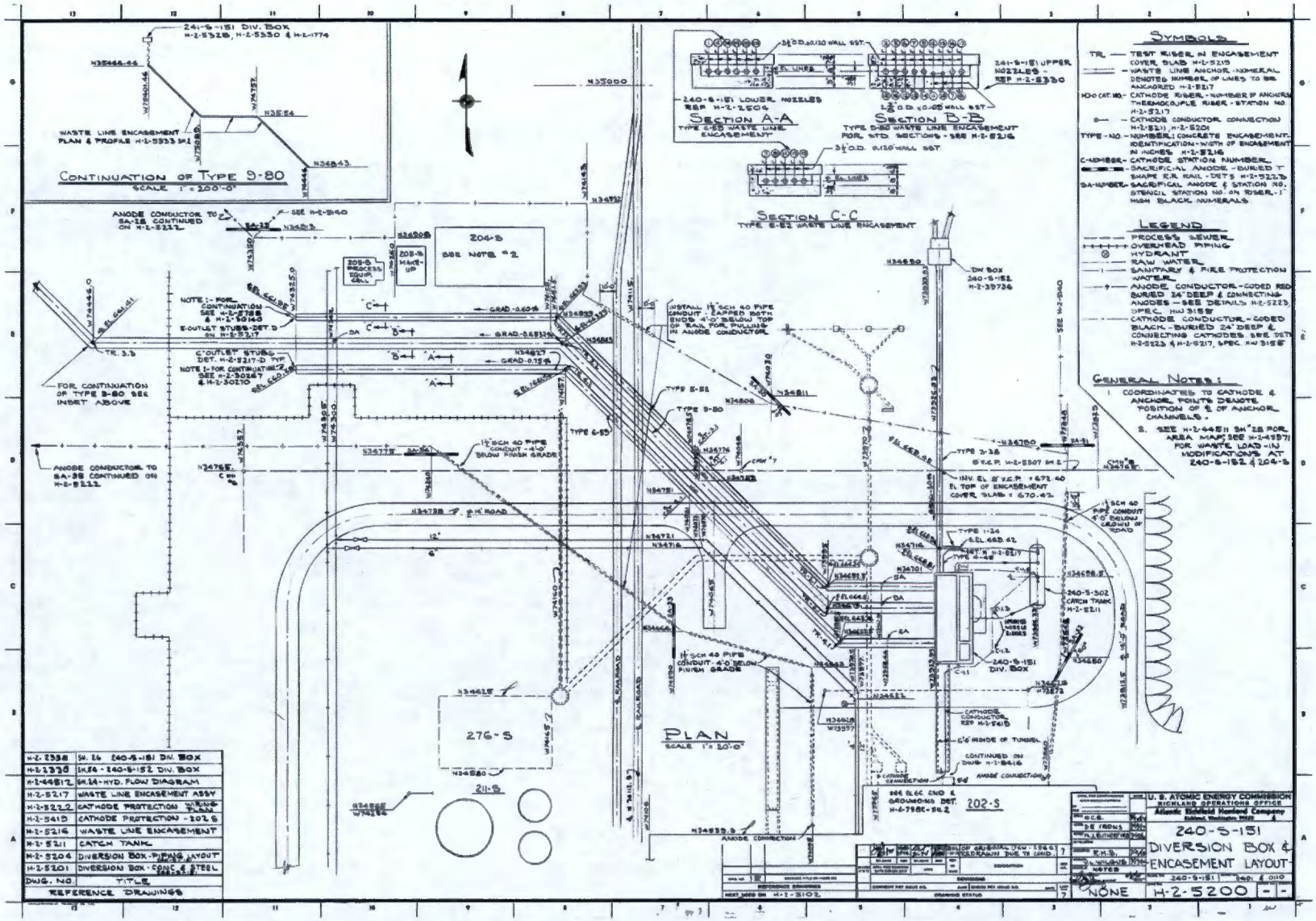
Misc./Other Relevant Information

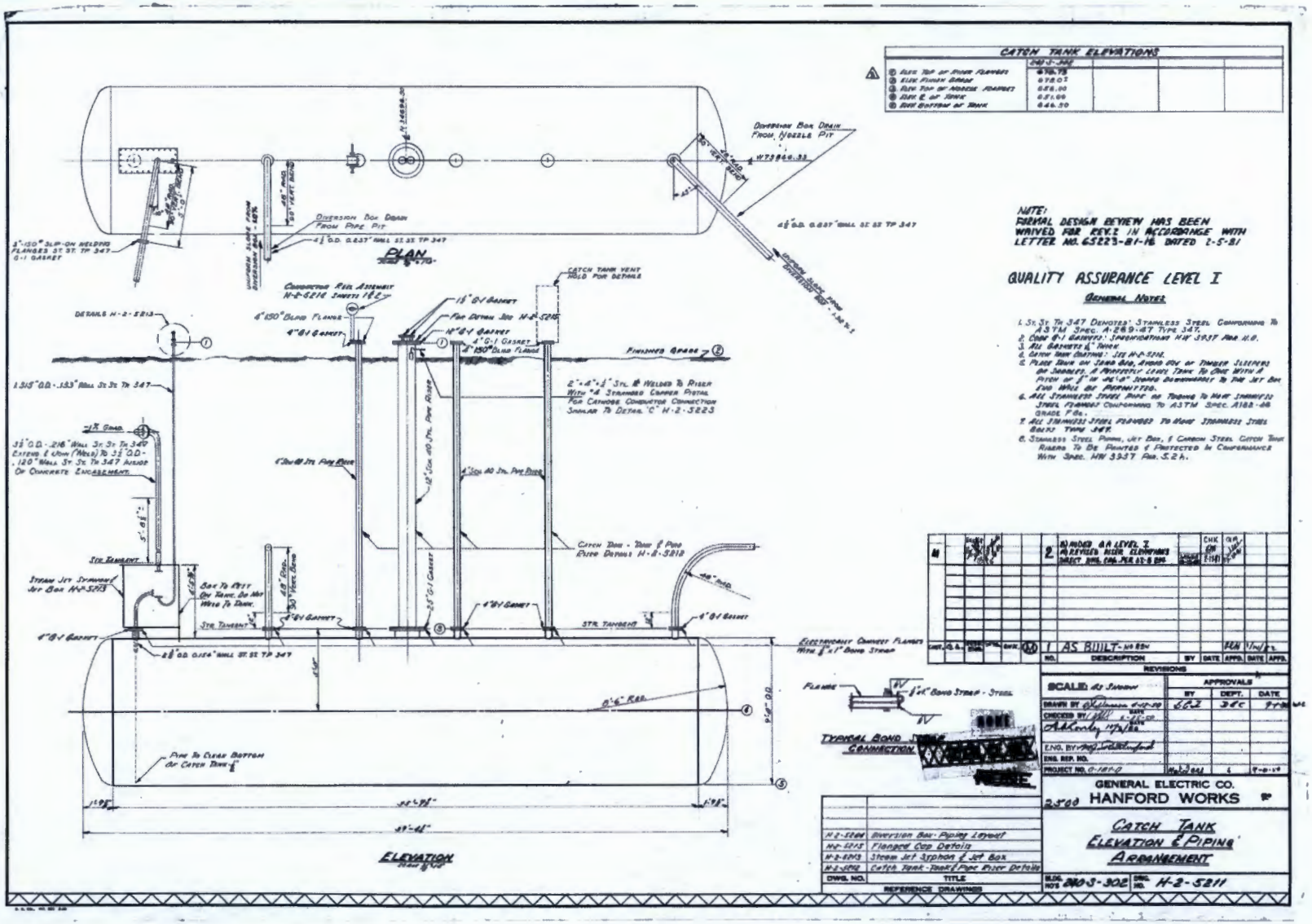
- On Oct-10-1988 a 2 in. vapor seal and fabric film were installed inside the pump pit of 240-S-302

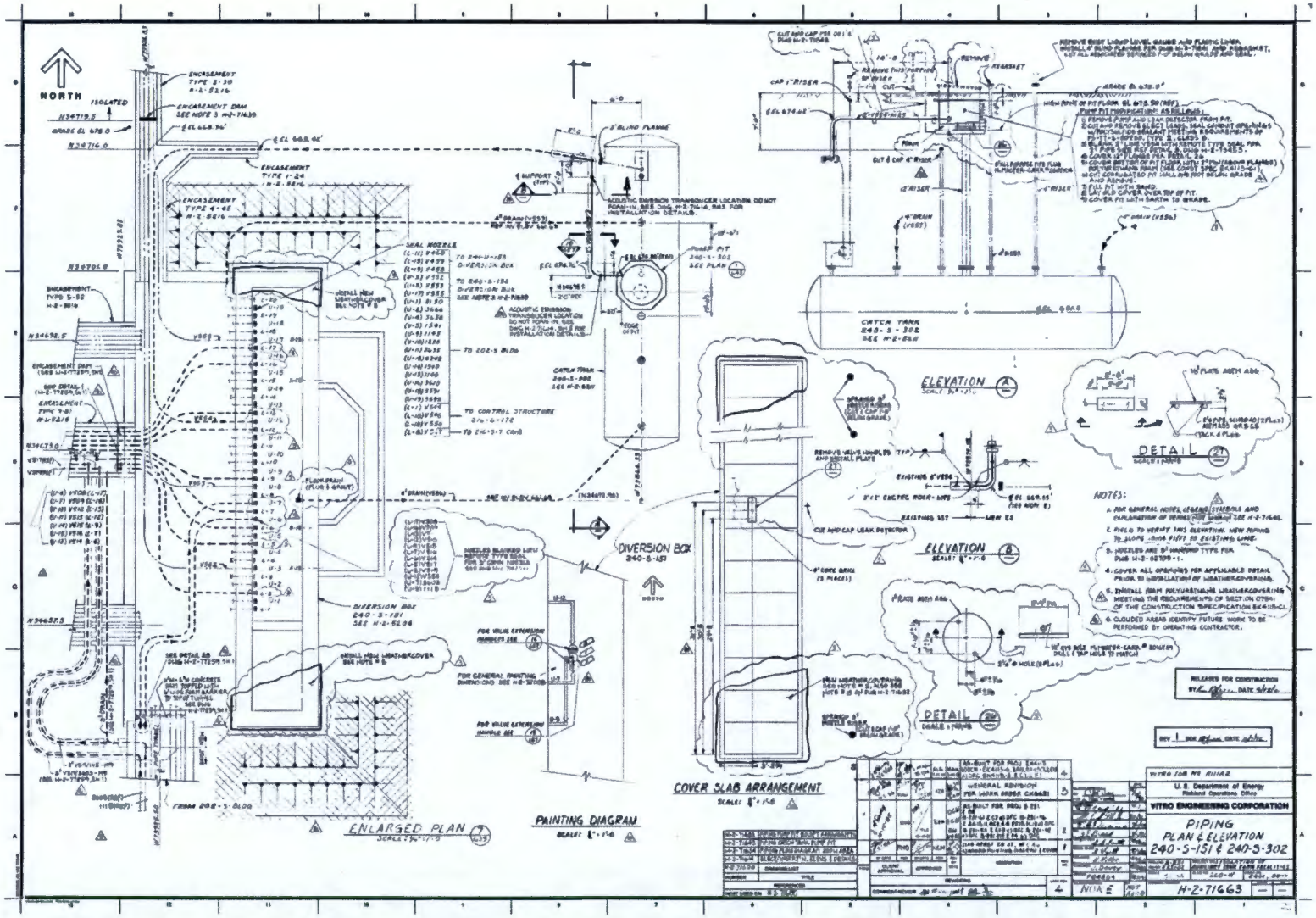
Site Interfaces

Origin/Termination	Site Interfaces
	200-WA-1
• 240-S-151	• UPR-200-W-82 (spread of contamination from 240-S-151)
• 200-W-190-PL	


200-W-197-PL
200-W-212-PL
200-W-157-PL
UPR-200-W-82
V557
200-W-190-PL
240-S-302
233-S
240-S-151
V558
233-SA
200-W-253
N
0
35
70
140 Feet


CONTINUATION OF TYPE 9-80
SCALE 1" = 200'-0"
SECTION A-A
SECTION B-B
SECTION C-C
PLAN
SCALE 1" = 20'-0"
SYMBOLS
LEGEND
GENERAL NOTES:
240-S-151
DIVERSION BOX & ENCASEMENT LAYOUT
H-2-5200
NONE
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
REFERENCE DRAWINGS
DWG. NO.
TITLE


CATCH TANK ELEVATIONS
PLAN
ELEVATION
NOTE:
FORMAL DESIGN REVIEW HAS BEEN WAIVED FOR REV. I IN ACCORDANCE WITH LETTER NO. 65223-81-116 DATED 2-5-81
QUALITY ASSURANCE LEVEL I
GENERAL NOTES
AS BUILT
GENERAL ELECTRIC CO.
HANFORD WORKS
CATCH TANK ELEVATION & PIPING ARRANGEMENT
H-2-5211
REFERENCE DRAWINGS


NORTH
ENLARGED PLAN
PAINTING DIAGRAM
COVER SLAB ARRANGEMENT
DIVERSION BOX
ELEVATION
DETAIL
NOTES:
PIPING
PLAN & ELEVATION
240-S-151 & 240-S-302
H-2-71663

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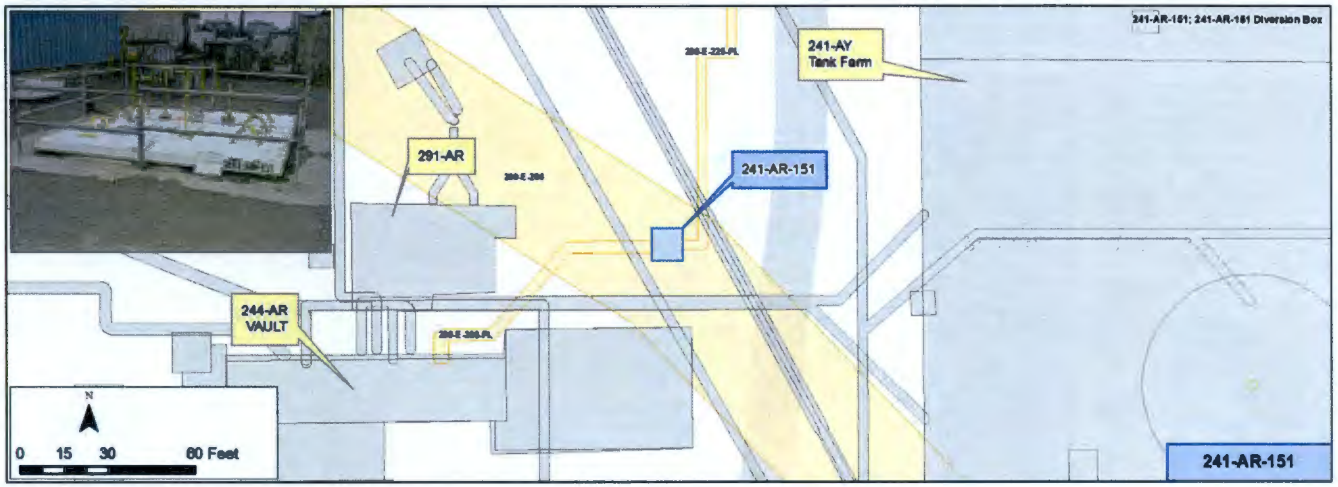
Scoping Summary: 241-AR-151

History

The 241-AR-151 waste site is a diversion box and was one of two diversion boxes used to transfer waste generated at PUREX to tanks in the 241-AY and 241-AZ Tank Farms. PUREX wastes included high level waste and mixed, low level which were transferred to the AY and AZ Tank Farms to condense sludge and separate supernatant. The diversion box is located north of the 244-AR Vault, east of 291-AR, and is on the west side of Buffalo Avenue.

The diversion box was constructed in 1976 and was in service through approximately mid-2003 when 6 connecting pipelines were flushed, isolated and process blanks installed. The 241-AR-151 Diversion Box was weather sealed in Sep-2003.

The diversion box was officially removed from service in Jun-2005 per Milestone Report M-48-07. The site is posted as an Underground Radioactive Materials Area.



Construction

241-AR-151 Diversion Box

- Specifications: 11 ft long x 11 ft wide x 11 ft 3 in. deep
- Composition: Reinforced concrete
- Depth: 10.75 ft bgs
- Walls and floor are lined with 11-gauge stainless steel
- Sealed with cover blocks approximately 3 ft 9 in. thick
- Equipped with a leak detection system that alarms in the 242A Evaporator Building

Pipelines

Six pipelines lines are associated with this diversion box:

- Line V714 from 202A PUREX and continuing to 241-AX-155 Diversion Box
- Line V716 to 244-AR Vault Tank 001 (WIDS Site 200-E-206-PL)
- Line V717 (floor drain) to 244-AR Vault Tank 001 (WIDS Site 200-E-206-PL)
- Line V817/718 to 244-AR Vault Tank 003 (WIDS Site 200-E-206-PL)
- Line V720 to 241-AY-02D Tank (WIDS Site 200-E-225-PL)

Features of Interest

- Six pipelines are associated with this diversion box:
  - V714
  - V716
  - V717
  - V817/718
  - V720
- Other features include:
  - Floor drain (V717) that drains to Tank 001 in 244-AR Vault
  - Leak detection system that alarms in the 242A Evaporator Building

Relevant Characterization

- Diversion Box 241-AR-151 is managed and posted as an Underground Radioactive Materials Area (URMA).
- The diversion box is located within the foot print of the 200-E-286 Waste Site
  - 200-E-286 listing is from past practices that pre-date the diversion box

Waste Streams

- Wastes associated with PUREX High Level waste from 202A PUREX to 241-AY and 241-AZ Tank Farms was processed through the pipeline
- Waste types included aging waste, high-level B Plant waste, B-Plant waste, B-Plant cesium feed waste, non-complexed waste, concentrated complexed waste, and cesium and strontium recovery waste.
- Active from 1976-2005

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

Not Applicable

Site Intersects

200-IS-1

- 244-AR Vault
- 200-E-206-PL
- 200-E-225-PL

No operable unit

- 200-E-286 (Powerhouse Ditch)

241-AY
Tank Farm
291-AR
241-AR-151
244-AR VAULT
N
0
35
70
140 Feet

241-AR-151
241-AR-151

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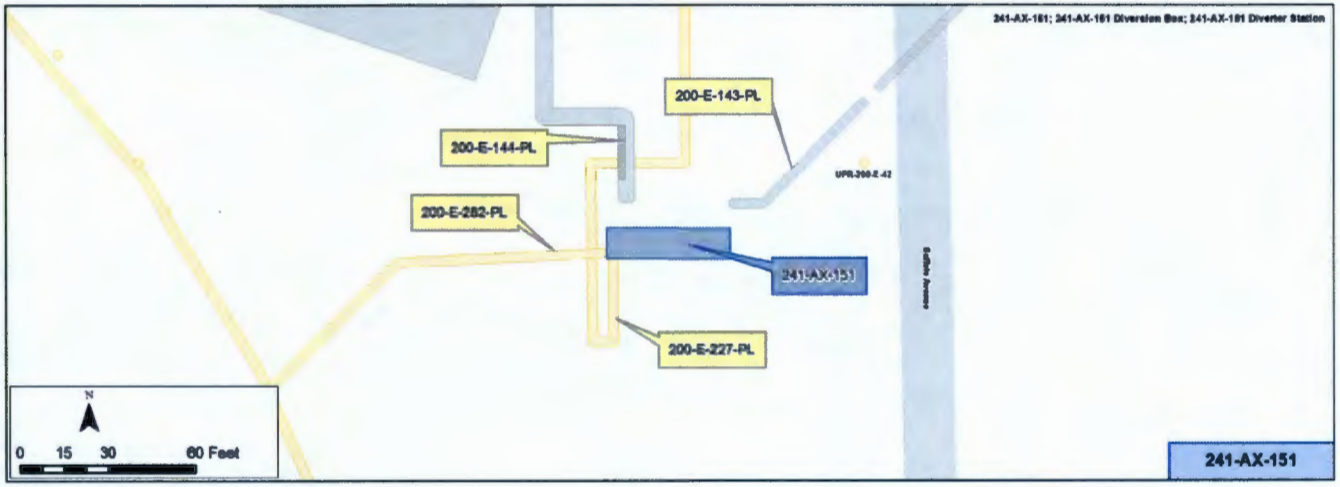
Scoping Summary: 241-AX-151

History

The 241-AX-151 waste site is an underground reinforced concrete diversion box used to route waste from the 202-A Plant to the 244-AR Vault and the 241-AY and 241-AZ Tank Farms. The diversion box, sometimes referred to as a diverter station, consists of four diverter tanks in individual cells and a pump pit that drained to a catch tank below.

The diversion box was in use from approximately 1962 to 1977, when the last documented transfer took place.

The diversion box was isolated in the early 1980s, as part of the B-231 Project and B-181 Project, Addendum 1. The diversion box was foamed over to prevent water intrusion. All process lines from PUREX were re-routed or blanked, and encasements were dammed. The four diverter operator mechanisms were removed, and risers were sealed with a blind flange.



Construction

- Structure: Reinforced concrete
- Dimensions: 44 ft 4 in., long x 10 ft wide x 24 ft 10 in. high
  - Walls: 1.5 ft thick
- Calculated Volume: 11,640 gal (11,000 gal in catch tank; 159 gal in each of 4 tanks)
- Depth: Base is 15 ft bgs, measured from top of structure, which is ~10 ft above ground surface but mounded with gravel

Cells containing the diverter tanks and a pump pit are above a 5 ft 8 in., thick cover block to the catch tank. All waste lines to the diversion box terminate in the diverter tanks, and the waste is routed from there.

Each of the four diverter tanks is in an individual cell; the cells have stainless steel liners on the floors that extend about a foot up the walls. The pump pit floor does not have a liner. All cells and the pump pit drain into the catch tank below.

Waste was transferred to and from the diverter station via 3 in. stainless steel pipes encased in concrete.

Features of Interest

- There is one 4.5 ft riser with a bale indicating a possible shield plug
- There is one 2 in. riser with a threaded or welded cap
- As part of the B-231 Project, the following were isolated:
  - Four diverter operator mechanisms
  - Leak detector lines
  - Electrical conduits
  - Flush lines
  - Raw water line
  - 200-E-282-PL
  - 200-E-227-PL

Relevant Characterization

- In 2006, a video inspection was conducted in the diversion box; approximately 2,838 gallons of supernate are expected to remain in the catch tank, based on a zip cord reading
- Based on 1988 historical sample data, major radionuclides present are Cs-137 and Sr-90; the material is complexed (>10 g/L TOC) and transuranic waste

Waste Streams

- PUREX acid waste
- B Plant neutralized high-level waste

Misc./Other Relevant Information

- Gravel was added to the slope around the diversion box in Apr-2005, to control erosion
- Based on 2006 video inspection, the structural integrity of the diversion box and piping appear to be in excellent condition

Site Interfaces

Origin/Termination

N/A

Site Intersects

200-IS-1
- 200-E-282-PL
- 200-E-227-PL

Nearby Waste Sites

200-IS-1
- UPR-200-E-42
- 200-E-143-PL
- 200-E-144-PL

Scoping Summary: 241-AX-151

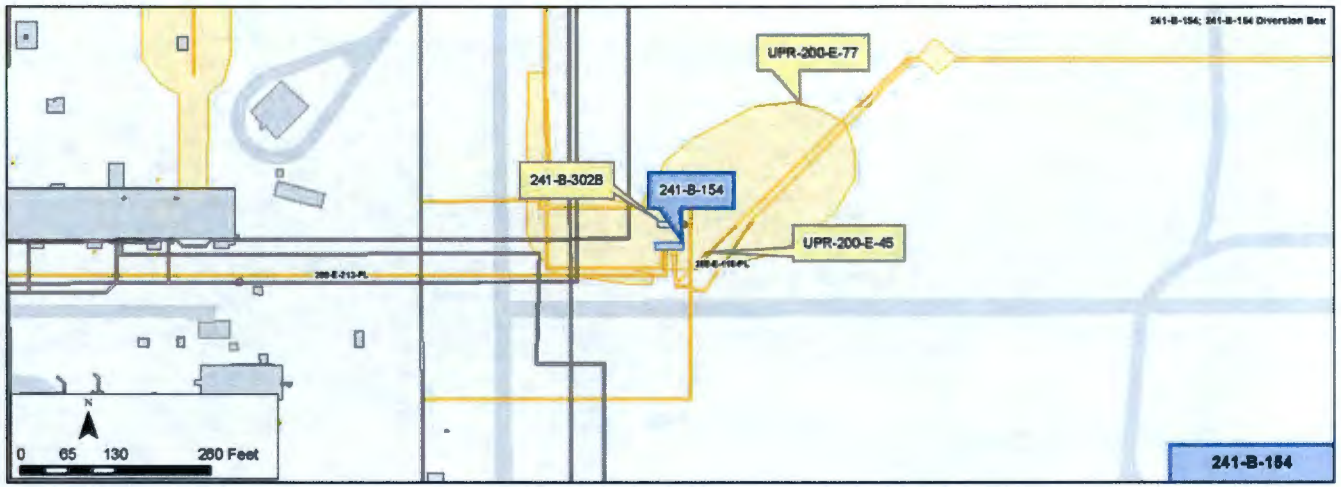
Scoping Summary: 241-B-154

History

The 241-B-154 waste site is a diversion box that supported the BiPO4 process, waste fractionization, and fissionable materials recovery processes, and interconnects diversion boxes 241-B-151 and 241-B-152 with the 221-B Building.

It was constructed in 1944-1945 and was active from 1945 to Jun-1984.

In 1946 a leaky jumper spilled an estimated 1 Ci metal waste (MW) into the soils around the diversion box. The release is identified as UPR-200-E-77. This was stabilized but contaminated again with a similar spill in 1966. Stabilization was one foot of clean soil placed on top of the spill site and along with a layer of shotcrete. Waste volumes in the system varied with production operations. In 1985, the diversion box was isolated and stabilized by applying a weather-proofing plasticizer.



Construction

- Dimensions: 26 ft Long X 9 ft Wide X 17 ft Deep
  - 2 ft thick walls on the ends; 1.5 ft thick side walls
- Buried depth: Bottom 17 ft bgs
- 1 Stainless Steel Drain Line (V217); 1 SS Return Line (V201)
- Three Reinforced Concrete cover blocks; Lead Shielding blocks may be present inside the diversion box

Pipelines

- Length
  - V217: 31 ft
  - V201: 65 ft
- Diameter
  - V217: 4 in.
  - V201: 3 in.
- Composition: Stainless Steel
- V217 (Pressurized); V201(Gravity)
- Direct Buried
- Depth:
  - V217: 15 ft bgs
  - V201: 13 ft – 15 ft bgs
- Total Calculated Volume:
  - V217: 20.2 gal
  - V201: 23.9 gal

Features of Interest

- 1 catch tank (241-B-302B)
- 1 UPR, and associated with a second UPR
- 2 Flanges
- 1 Drain Line, 1 Return Line
- 1 Jet Pump

Relevant Characterization

- A leak (UPR-200-E-82) surfaced directly above the joint connecting a 3 in. SS to a 3 in. carbon steel pipe in the V122 transfer line
  - The estimated leaked volume was 2,640 gal
  - It contained 11,300 ci of 137Cs, 260 Ci of 144Ce, 250 Ci of 95ZrNb, 130 Ci of 106Ru, and 100 Ci of 134Cs

Waste Streams

The 241-B-154 Diversion Box received the following waste streams:

- Bismuth Phosphate First Decontamination Cycle Waste (1C) and Coating Waste (CW) from 1945-1952
- Bismuth Phosphate Plant Metal Waste (MW) from 1945-1952
- Phase I Waste Fractionization Project from 1963-1966
- Phase III Waste Fractionization Project from 1968-1984
- Neutralized Cladding Acid Waste starting in 1986
- PUREX Supernate; PUREX Sludge Supernate; Uranium Recovery

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

Facility

221-U

WMA B/BX/BY

- 241-B-151 (Div Box)
- 241-B-152 (Div Box)

Site Intersects

200-IS-1

- 200-E-116-PL
- 200-E-199-PL
- 200-E-213-PL
- 241-B-302 (Catch Tank)
- UPR-200-E-45
- UPR-200-E-77

200-CB-1

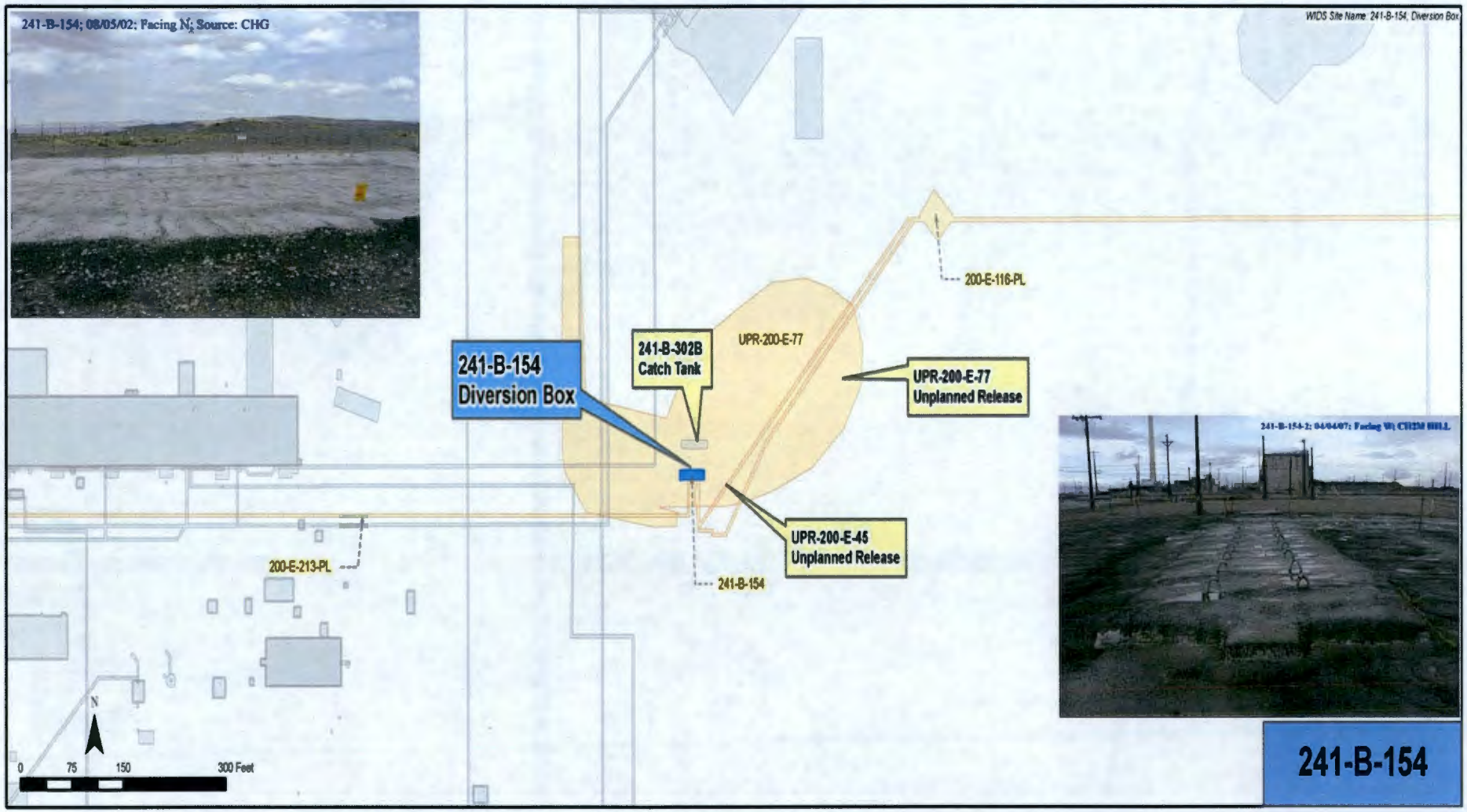
- 221-B (B Plant)

WMA C

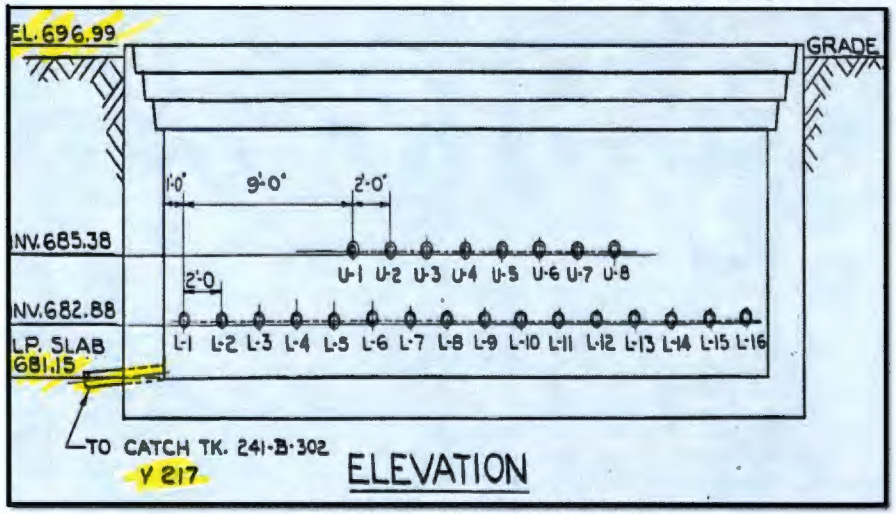
- 241-C-151 (Div Box)
- 241-C-152 (Div Box)

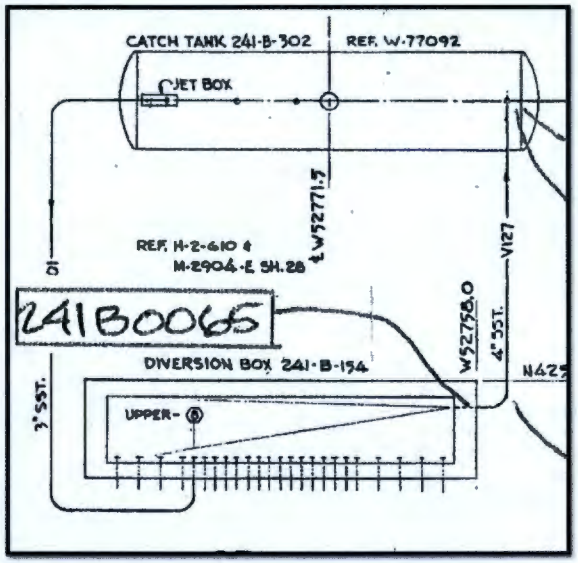
UPR-200-E-77
241-B-302B
241-B-154
200-E-213-PL
200-E-116-PL
UPR-200-E-45
N
0
35
70
140 Feet

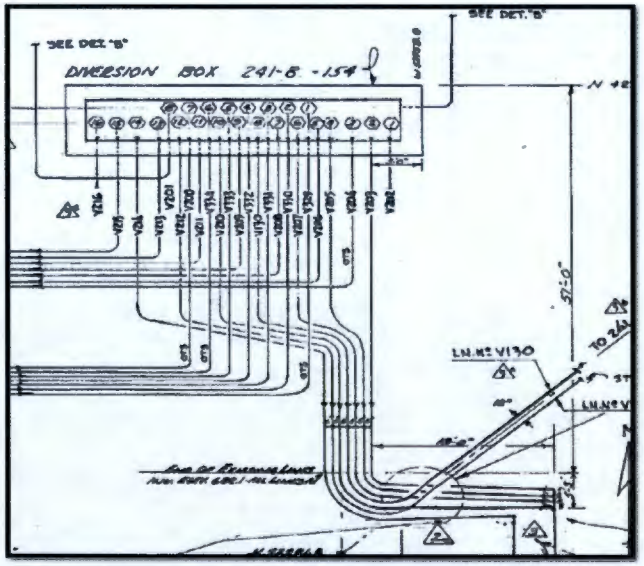
241-B-154 Diversion Box

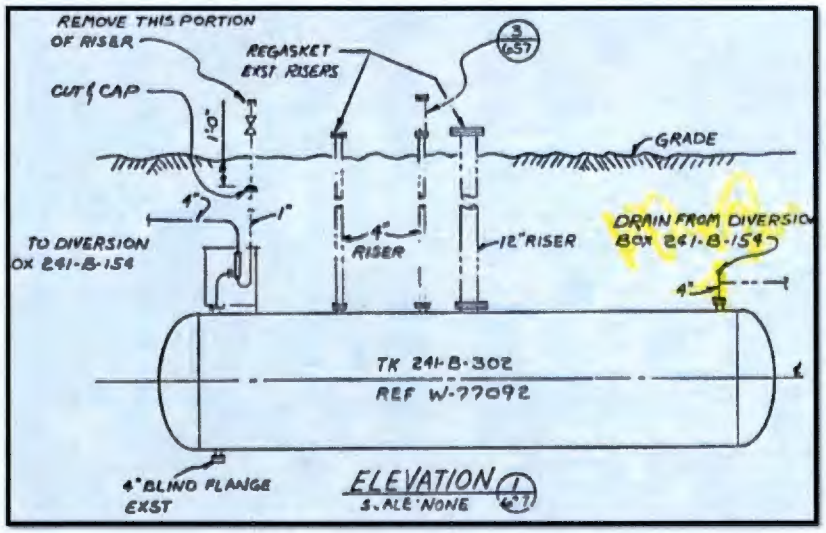


241-B-154 (Diversion Box) 241-B-302B Catch Tank Figures









Scoping Summary: 241-B-302B

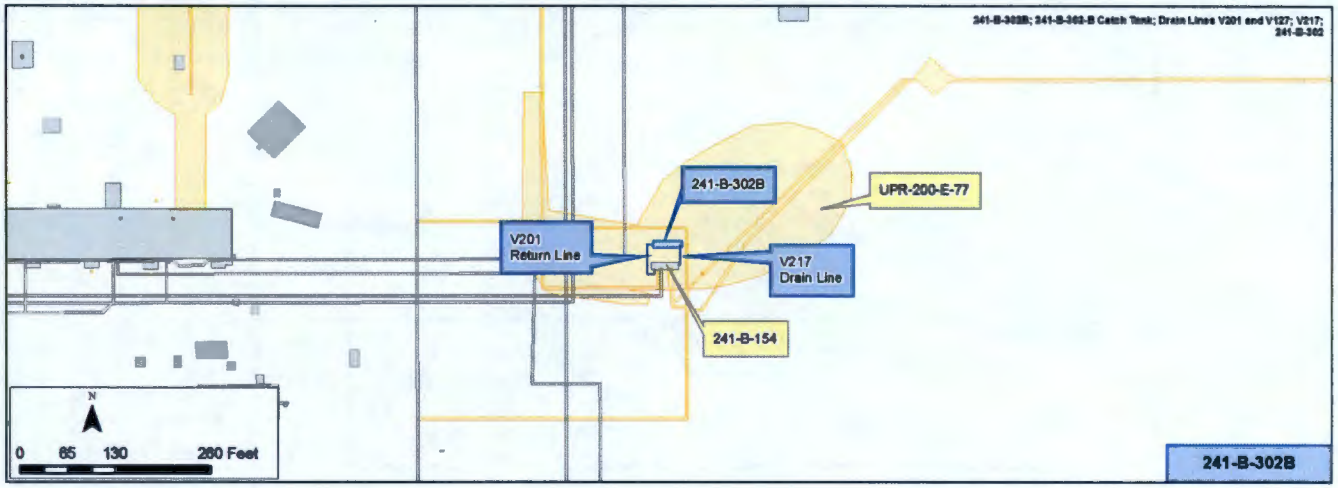
History

The 241-B-302B waste site is a catch tank north of the 241-B-154 Biversion Box.

It was constructed in 1945 and in use until 1985, when it was isolated and its contents were estimated at 4,240 gal liquid and 690 gal sludge. The residual volume in the tank as of 2006 was 4,930 gal and the tank is not monitored.

One unplanned release from the 241-B-154 Diversion Box occurred in 1946 during work on a leaky jumper, and resulted in 1 Ci Metal Waste (U, Pu, fission products, CO3, PO4, SO4, Na) released to the environment around the diversion box; a similar release occurred in 1966.

The catch tank is located outside the tank farm fence, and is not in a RCRA part A permit. An un-numbered 2-in. steel drain line services the 241-B-154 pipes encasement, and the other half drains 1C from B Plant processing cells.



Construction

Catch Tank

- Dimensions:
  - Length: 35 ft 9 in.
  - Diameter: 9 ft
- Computed Volume: 17,682.08 gal
- Buried depth: 14 ft
- Material: Carbon Steel

Pipelines

- Length:
  - V201: 65 ft
  - V217: 31 ft
- Diameter:
  - V201: 3 in.
  - V217: 4 in.
- Composition: Stainless Steel
- Gravity Drained (V217); Pressurized (V201)
- Direct Buried
- Depth: 11 ft bgs
- Total Calculated Volume:
  - V201: 23.9 gal
  - V217: 58.7 gal

Features of Interest

The features of interest are the drain line and its connection to the catch tank, and the jet box and its connection to the diversion box return line, risers and flanges.

- One Drain line (V217, 4 in. SST)
- 4 in. drain line flange connection to the tank
- 3 risers to the surface
- Jet Box
- One Return line (V201, 3 in. SST)
- 3 in. X 2 in. reducer (connects the jet box to the return line V201)
- Blind Flange

Relevant Characterization

- 1985: Volume of liquid inside the tank was estimated at 4,240 gal. Sludge content was estimated at 690 gal.
- 1994: Engineering Study found U-236 (2.94E-06 Ci) and other fissionable materials (Eu-154, 8.03E-01; Np-237, 4.61E-03; Pu-241, 9.58E-02; Am-241, 6.61E-02 Ci in selected analyses). Elevated sodium (9.43E+02 Kg) with reduced Ca (1.48E+00 Kg), Mg and K (8.09E+00 Kg) and elevated pH (8.3 to 9.0 at 60 ft) are indicators for caustic process waste in the near surface environment.

Waste Streams

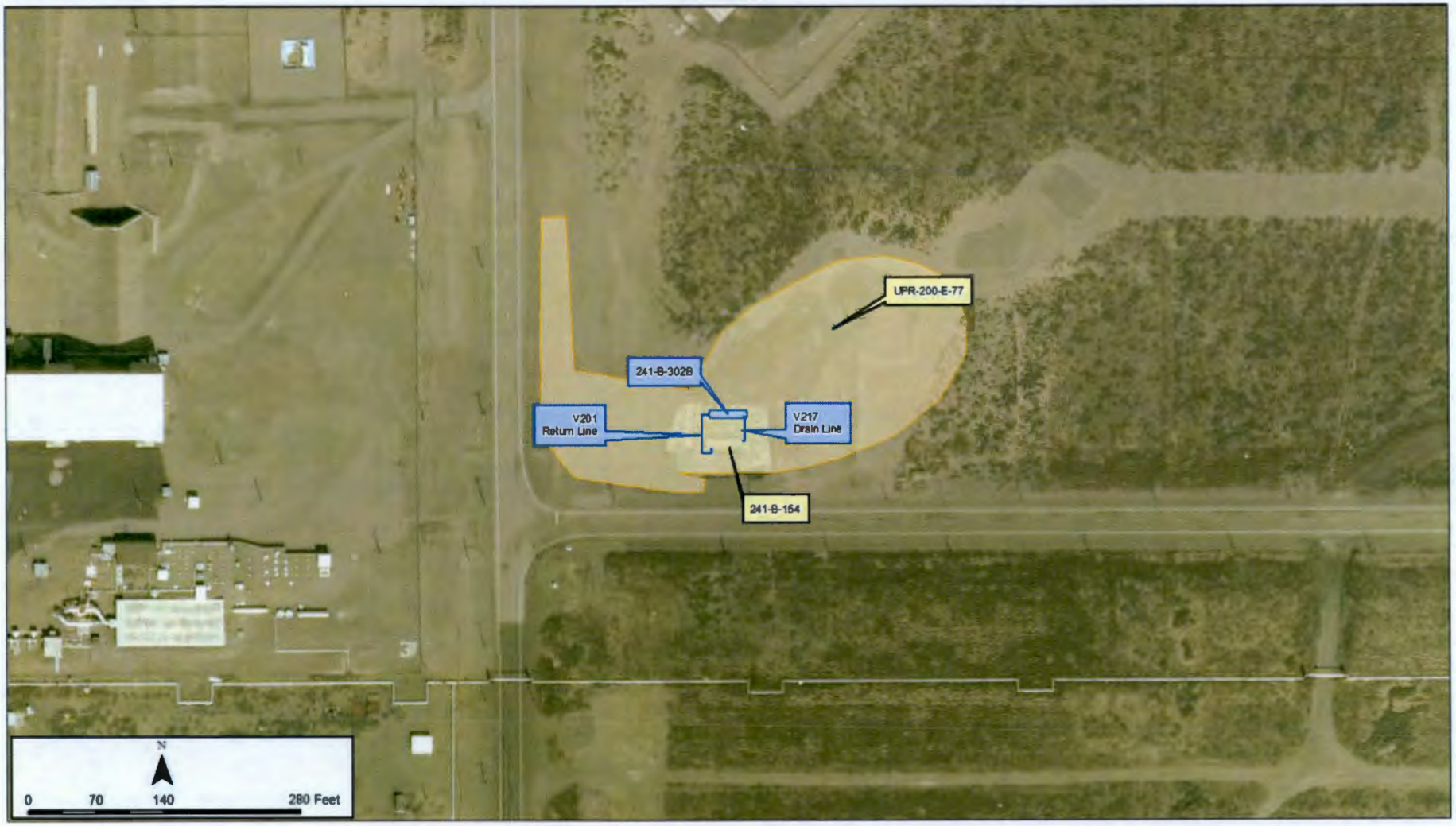
- The catch tank collected leaking and excess waste from processing and decontamination operations
  - Metal Waste (MW, Pu @ 2.0E-04g/L, Uranyl nitrate 132 g/L; 1.3E+07 Gamma counts/min/ml)
  - Cladding Waste (CW, Pu @ 3.3E-04 g/L; U @ 0.15 g/L; 6.6E+04 Gamma counts/min/ml)
  - 1st and 2nd cycle decontamination waste (1C, Pu @ 6.0E-07g/ml; U 0.235 g/ml; 2.3E+06 Gamma counts/min/ml; Ce 0.03 g/ml and 2C Pu @ 1.6E-07 g/ml; 1.13E+04 counts/min/ml; no entry for U))
- The initial volumes delivered to C tank farm filled all 12 Single Shell Tanks, about 6.6 million gallons.

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Interfaces
200-IS-1	200-IS-1
• 241-B-154 Div Box (both to and from the catch tank)	• UPR-200-E-77 (Div Box 241-B-154 leaky jumper)


UPR-200-E-77
241-B-302B
V201
Return Line
V217
Drain Line
241-B-154
N
0
70
140
280 Feet

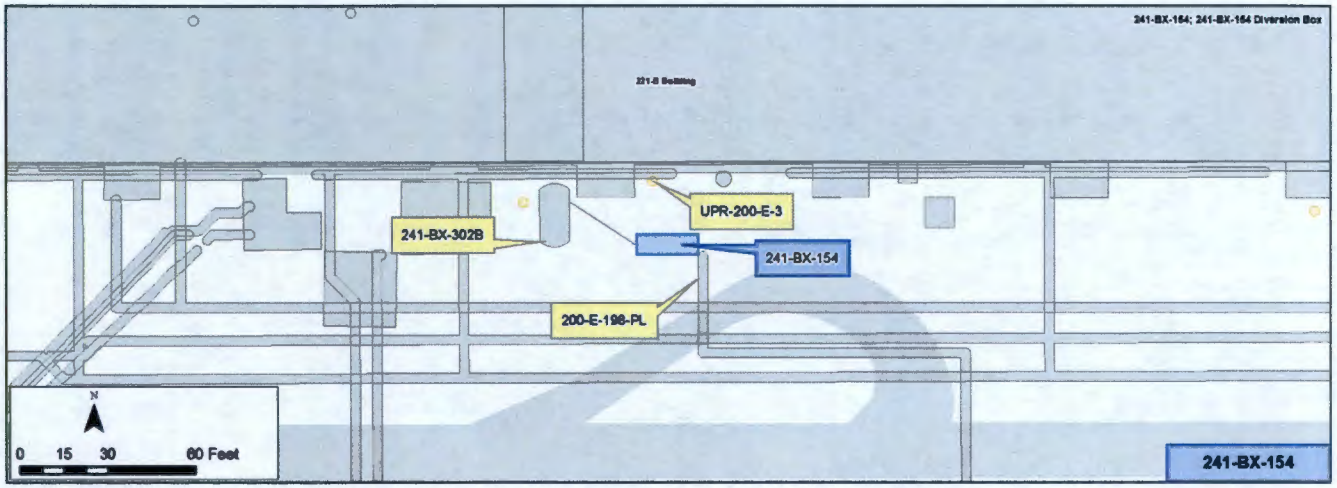
Scoping Summary: 241-BX-154

History

The 241-BX-154 waste site is a rectangular reinforced concrete diversion box and a set of pipelines connecting it to the 221-B Building (V335-V342 are not currently associated with a waste site).

It was used to transfer waste solutions between the 221-B Building and the 241-BX Tank Farm, via the 200-E-198-PL Pipeline, using jumper connections within the diversion box. Spillage or drainage in the diversion box drained to the 241-BX-302B Catch Tank. The 241-BX-154 Diversion Box was in use from 1948 until 1985.

The 241-BX-154 Diversion Box is located about 30 ft south of the 221-B Building and east of the 241-BX-302B Catch Tank. It has been weather-sealed and isolated.



Construction

Diversion Box

- Dimensions: 22 ft long x 9 ft wide x 14 ft tall (OD)
  18 ft long x 6 ft wide x 7 ft 5 in. tall (ID)
- Computed Volume: 5,992 gal
- Buried depth: Top at 1 ft above ground level, bottom at 13 ft
- 17 3-in. lines in/out and drain to catch tank
- Material: Reinforced concrete
- Cover Blocks: 3 layers of concrete blocks with combined thickness of 5 ft 1 in.

V335 - V342

- Length: V335: 66 ft; V336: 48 ft; V337: 25 ft (at cap); V338: 184 ft; V339: 193 ft; V340: 261 ft; V341: 230 ft: V342: 73 ft
- Dimensions: 3 in. pipe inside 6 in. OD casing
- Materials: Stainless Steel (3 in.) and Carbon Steel (6 in.)
- Gravity drain from 221-B Building to Diversion Box
- Depth: 5 ft - 8 ft bgs
- Calculated Volume: V335: 24 gal; V336: 18 gal; V337: 9 gal (in capped length); V338: 68 gal; V339: 71 gal; V340: 96 gal; V341: 84 gal; V342: 27 gal

Features of Interest

- V337 has been capped at 25 ft from the Diversion Box. It was originally 37.6 ft and connected to the 221-B Building
- Approximately 50-lbs of lead shielding may be stored in the diversion box

Relevant Characterization

- Area posted with "Underground Radioactive Warning" signs.
- This site is associated with unplanned release UPR-200-E-3. In 1951, a pipeline from the 221-B Building to the 241-BX-154 Diversion Box failed and contaminated soil. Efforts to excavate and inspect the line were abandoned due to readings of 120 R/h with 18 in. of soil remaining over the pipe. No details of a waste line repair were located.

Waste Streams

- Waste streams included radioactive waste solutions and decontamination operations from Bismuth phosphate process and waste fractionation process in B Plant.
- Suspected waste types include any of the following B Plant waste types: B, BFSH, BLEB, CF, DW, EB, IX, MW, SRS, 1C, 2c, 5-6.

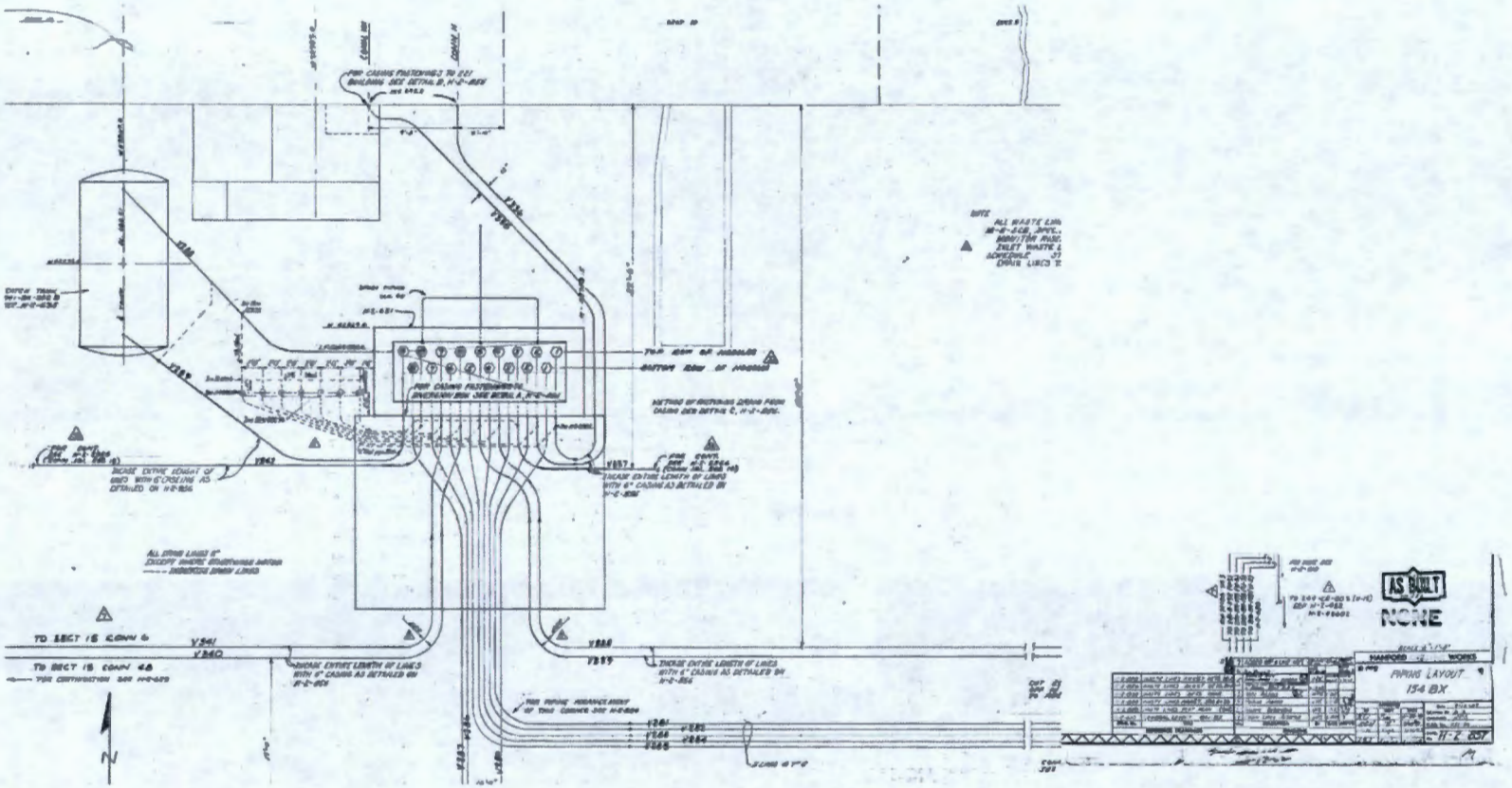
Misc./Other Relevant Information

- None noted

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-IS-1
• 200-E-198-PL (Origin)	• UPR-200-E-3
200-IS-1	
• 200-E-198-PL (Termination)	
200-CB-1	
• 241-BX-302B (Termination)	

221-B Building
241-BX-302B
UPR-200-E-3
241-BX-154
200-E-198-PL
N
0
35
70
140 Feet


AS BUILT
NONE
HANFORD WORKS
PIPING LAYOUT
154 BX
TO SECT 15 CONN 6
TO SECT 15 CONN 4B
N

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Scoping Summary: 241-BX-155

History

The 241-BX-155 waste site is a diversion box used to transfer processing and decontamination waste between B Plant and the B and BX Tank Farms. Process fluids were transferred from B Plant to the 241-BX-155 Diversion Box via the 241-BX-154 Diversion Box.

The 241-BX-155 Diversion Box was constructed in 1946 and in service from 1948 through Sep-1979. It was designed to contain leaks from transfers and drainage within the unit, and functioned as secondary containment for transfer line jumper connections. It is connected via a floor drain to the 241-B-302C Catch Tank which collected fluids that leaked in the diversion box. The diversion box was isolated in 1979 and weather sealed in Oct-2000.

This waste site is associated with UPR-200-E-78. The impacted area was stabilized by covering with clean soil and posted as a Contaminated Area (CA). In Oct-2000 a bio-barrier and approximately 6 in. of gravel were placed over the area around the diversion box and a weather shield was installed over the diversion box. The area is monitored at least annually. No radiological contamination has been reported.

Construction

Diversion Box

- Dimensions: 20 ft long x 9 ft wide x 12.5 ft tall (OD)
  16 ft long x 6 ft wide x 7.5 ft tall (ID)
- Computed Volume: 5,386 gal
- Buried depth: Bottom at 11 ft
- 16 3-in. jumper connections in/out and drain to catch tank
- Material: Reinforced concrete
- Cover Blocks: 3 layers of concrete blocks with combined thickness of 5 ft 1 in.

Lines

- Lines V315 to 241-B-151 Diversion Box (WIDS Site 200-E-201-PL)
- Line V316, V317, V318 to the 241-BX-153 Diversion Box (WIDS Site 200-E-202-PL)
- Line V319 to 241-B-152 Diversion Box (WIDS Site 200-E-202-PL)
- Line V322 - 36 ft 4 in. SST line from floor drain to 241-BX-302C
- Line V323 - 55 ft 3 in. SST line from catch tank jet pump to div box
- Lines V282, V283, and V284, from the 241-BX-154 Diversion Box (WIDS Site 200-E-198-PL)
- Lines V320, V321, V325, V326, V327 and V328 are stubs
- Lines V320, V321 were modified in Oct-1972. These lines were renamed V2000 and V2001 and extended to 241-BR-152 DB

Features of Interest

- UPR-200-E-78: unplanned release that occurred in Oct-1955 during pressure testing of transfer lines and jumpers in the 241-BX-155 Diversion Box (See Characterization Data)
- 241-BX-302C (Catch Tank) - connected to the 241-BX-155 Diversion Box via floor drains and associated lines
- Flanged connections at diversion box inlets/outlets
- A 1.5 in. line Schedule 40 steel line through the east side of the Div Box connects to a 2 in. Schedule 40 steel line and extends 3 ft above grade. The riser is equipped with a hose coupling and cap

Relevant Characterization

- The 241-BX-155 Diversion Box was the site of an unplanned release (UPR-200-E-78) in Oct-1955
  - Process fluids leaked from the diversion box during pressure testing of transfer lines and jumpers
  - Estimated 10 Ci of fission products escaped covering an area of approximately 200 sq ft
  - A maximum dose rate of 22.5 rad/hr was recorded

Waste Streams

- From 1948 to 1954 241-BX-155 transferred BiPO4 process waste from B Plant to the B and BX Tank Farms
  - The BiPO4 process extracted plutonium from irradiated nuclear fuel. The process generated four waste streams: metal waste, coating waste, first cycle decontamination waste, and second cycle decontamination waste
- From 1968 to 1978, Diversion Box supported TBP waste solidification, waste fractionization, and Cs and Sr separation
  - High levels of beta, gamma and alpha contamination are estimated to be inside this unit
  - Lead shielding material may also be present

Misc./Other Relevant Information

- None

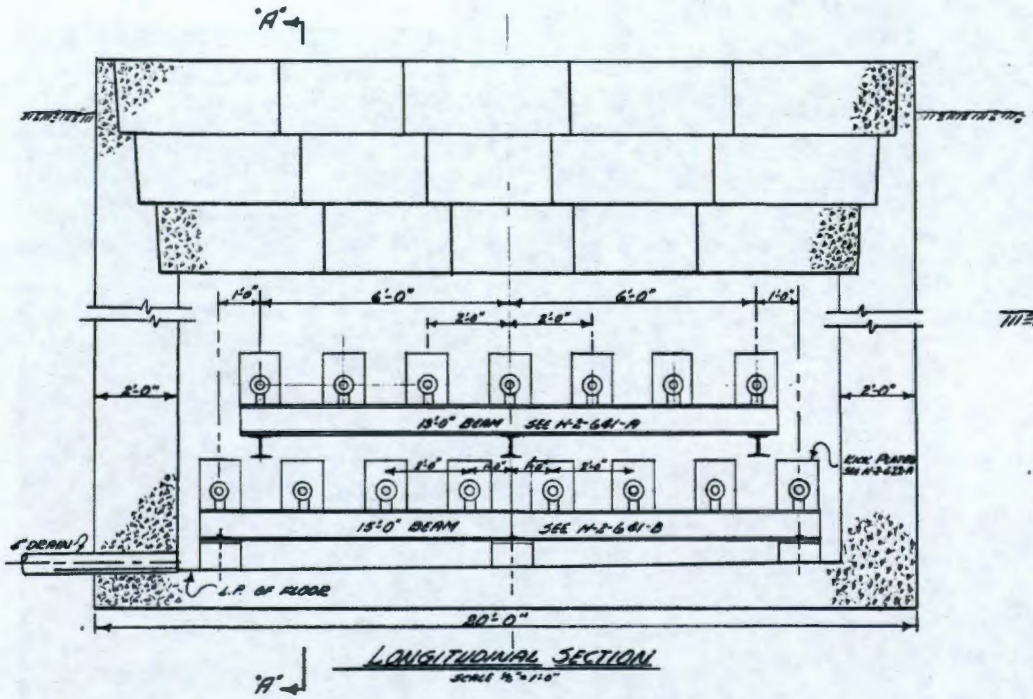
Site Interfaces

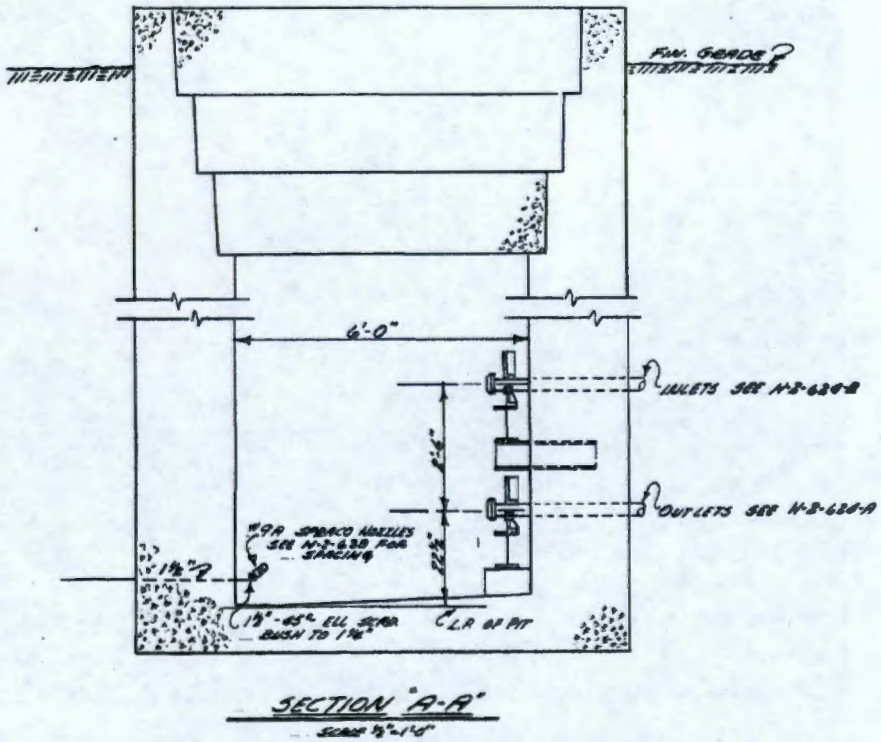
Origin/Termination	Site Intersects
Not Applicable	200-IS-1 • 200-E-198-PL • 200-E-201-PL • 200-E-202-PL • UPR-200-E-78 • 241-BX-302C (Catch Tank)

Scoping Summary: 241-BX-155

241-BX-155 Diversion Box Select Features of Interest

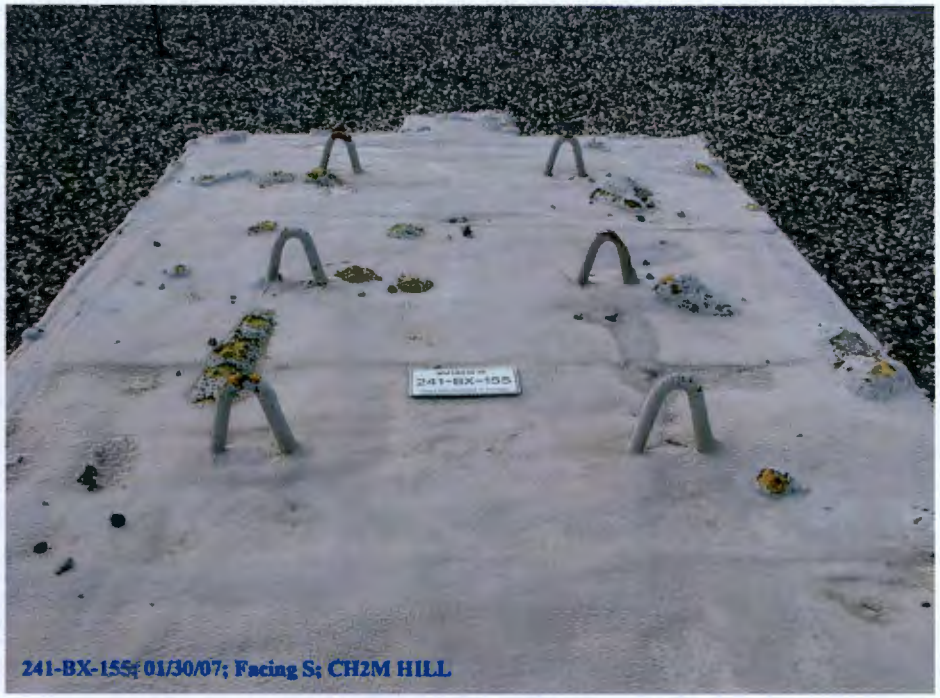
(From Drawing Number H-2-640)





241-BX-155 Diversion Box Photographs

Showing Partial Bio-Barrier



Showing Weather Sealing Foam

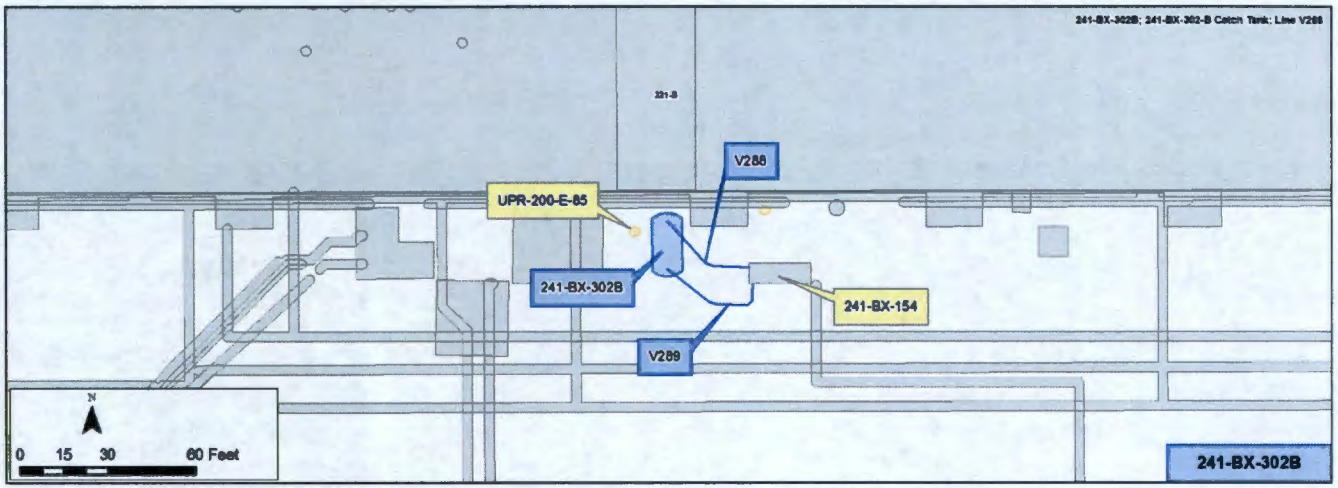
Scoping Summary: 241-BX-302B

History

The 241-BX-302B Catch Tank is a single, direct-buried, inactive, carbon steel tank that formerly collected drainage from the 241-BX-154 Diversion Box. Drainage was associated with the transfer of radioactive waste solutions from processing and decontamination operations in B Plant.

The 241-BX-302B Catch Tank is located in the 200 East Area, on the south side of the 221-B Building, and northwest of 241-BX-154 Diversion Box.

The tank was constructed in 1946 and in service from 1948 to 1985. It was isolated by sealing the three above-grade risers and the one-inch steam line. At the time of isolation, the tank contents were reported as 950 gal of sludge and 94 gal of supernatant



Construction

Catch Tank

- Dimensions: 18 ft long x 10 ft diameter, horizontal
- Capacity: 11,389 gal
- Composition: Carbon Steel (ASTM A70 Flange quality steel)
- Buried depth: Top of tank 14 ft bgs, bottom of tank 24 ft bgs
- Six penetrations: Inlet from diversion box; blind flange; steam line; liquid level dip tube; and two thermocouples

Inlet Line (V288)

- Material: Carbon Steel
- Diameter: 4 in.
- Length: 33 ft

Return Line (V289)

- Material: Stainless steel
- Diameter: 3 in. within 6 in. carbon steel
- Length: 38.5 ft

Features of Interest

- One 1 in. steam line
- Two 4 in. thermocouple risers
- One 12 in. liquid level dip tube

Relevant Characterization

- Tank area covered with gravel and surrounded with post and chain. The tank is marked with radiological signs.
- Tank contents categorized as not meeting Ecology's definition of dangerous waste

Waste Streams

Received drainage and spilled waste solutions that passed through 241-BX-154 Diversion Box. Waste streams included radioactive waste solutions and decontamination operations from bismuth phosphate process and waste fractionation process in B Plant.

Waste types reported include B Plant metal wastes (MW1, MW2), decontamination and coating waste (1C1, 1C2), cell 5-6 waste, and other wastes from B-Plant operations.

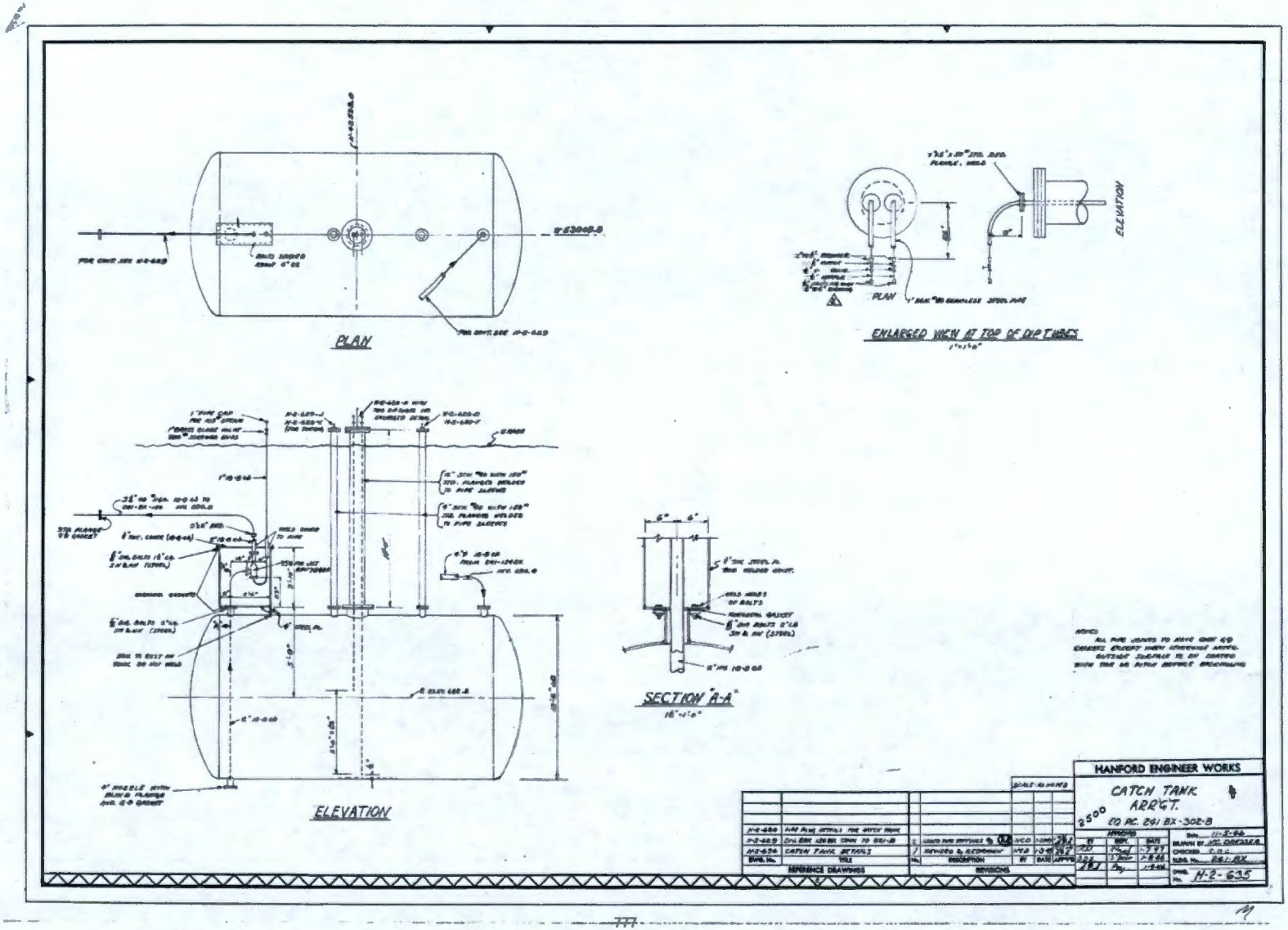
Misc./Other Relevant Information

- Tank stabilization form available in RPP-RPT-42231, Rev.0

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	200-CB-1
• 241-BX-154 Diversion Box • Line V288	• UPR-200-E-85 (not related to 241-BX-302B)

221-T
V288
UPR-200-E-85
241-BX-302B
241-BX-154
V289
N
0
35
70
140 Feet


PLAN
ENLARGED VIEW AT TOP OF DIP TUBES
ELEVATION
SECTION "A-A"
HANFORD ENGINEER WORKS
CATCH TANK
ARRG'T.
CO PC. 241 BX-302-B
H-2-635

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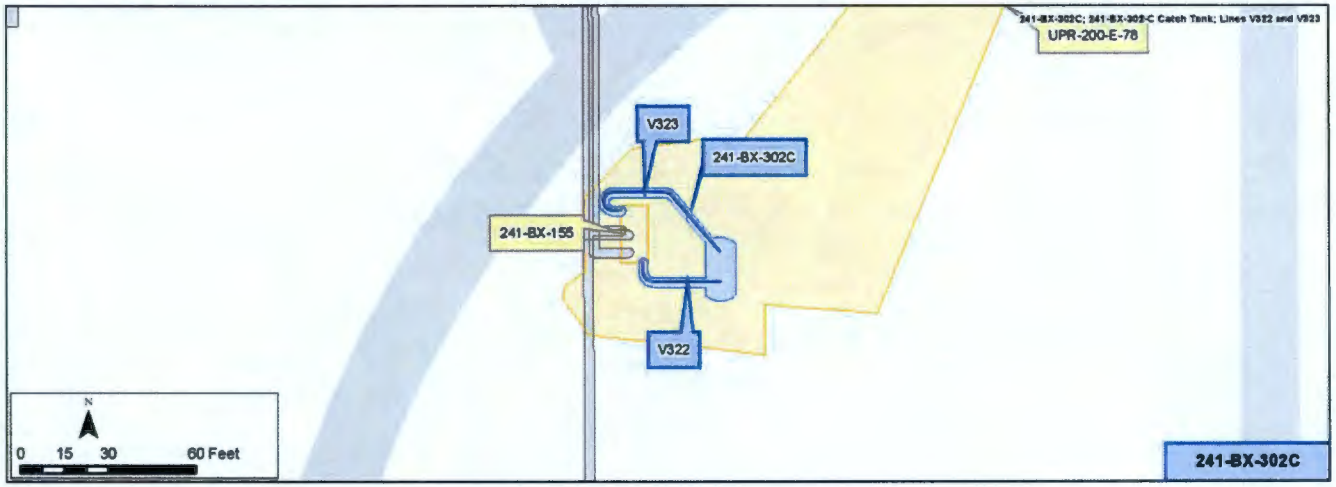
Scoping Summary: 241-BX-302C

History

The 241-BX-302C waste site is a catch tank located approximately 300 feet north northeast of B-Plant on the west side of Baltimore Avenue. The catch tank was constructed in 1947 to receive process fluids from the 241-BX-155 Diversion Box it is connected to.

The catch tank was in service from 1948 through 1985 when it was isolated and stabilized. The stainless steel lines from the diversion box to the catch tank were isolated at the diversion box. Risers extending from the top of the tank manhole and nozzles were isolated by the installation of gaskets and flanges.

In Oct-2000, a bio-barrier and approximately 6 in. of gravel were placed over the area around the diversion box and catch tank. A weather shield was also installed over the diversion box. The area was down-posted to an Underground Radioactive Materials Area (URMA), except for the area directly above the catch tank which is managed as a Contamination Area (CA).



Construction

- Dimensions: 18 ft (length) X 10 ft (diameter)
- Position: Horizontal
- Shape: Cylindrical
- Material: Carbon Steel
- Buried Depth: Top of tank 16 ft bgs
- Capacity: 11,400 gal
- Connections:
  - V322, 4 in. stainless steel drain line connected to the 241-BX-155 Diversion Box, extends ~36 ft from the diversion box to the top of the tank
  - V323, 3 in. stainless steel return line connected to the 241-BX-155 Diversion Box, extends ~55 ft from the jet pump on top of the tank to the diversion box
- Tank Penetrations:
  - One 18 in. manhole
  - Two 4 in. nozzles
    - Manhole and nozzles are equipped with risers extending to land surface and provide dip tube and thermocouple access to the tank
- Tank shell, heads, manhole, flanges, covers and nozzles are constructed of ASTM A70 steel
- No record of coating or sealing of the tank exterior was located

Features of Interest

- Drain line V322
- 4 in. drain line flange connection to the tank
- Jet box
- Return line V323
- 2x3 reducer return line connection to the jet box
- 3 each risers to the surface
- Blind flange
- One manhole with a riser
- Two nozzles with one riser each

Relevant Characterization

- No direct characterization data have been located the tank or adjacent soil
- Estimated waste remaining in the tank include 635 gal of sludge and 228 gal of supernatant
- High levels of beta, gamma and alpha contamination are estimated to be inside this unit
- The UPR area is monitored at least annually, no radiological contamination has been reported

Waste Streams

- 1948-1955: 241-BX-155 transferred BiP04 process waste from 221-B to the B and BX Tank Farms
  - Metal waste (high U, Pu concentrations), coating waste (high Al, Zr concentrations), first cycle decontamination waste, second cycle decontamination waste
- 1968-1978: Process fluids transferred through the 241-BX-155 Diversion Box supported TBP waste solidification, waste fractionization, and U recovery to separate Cs, Sr, and other fissionable materials from tank farm wastes

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

IS-200-1

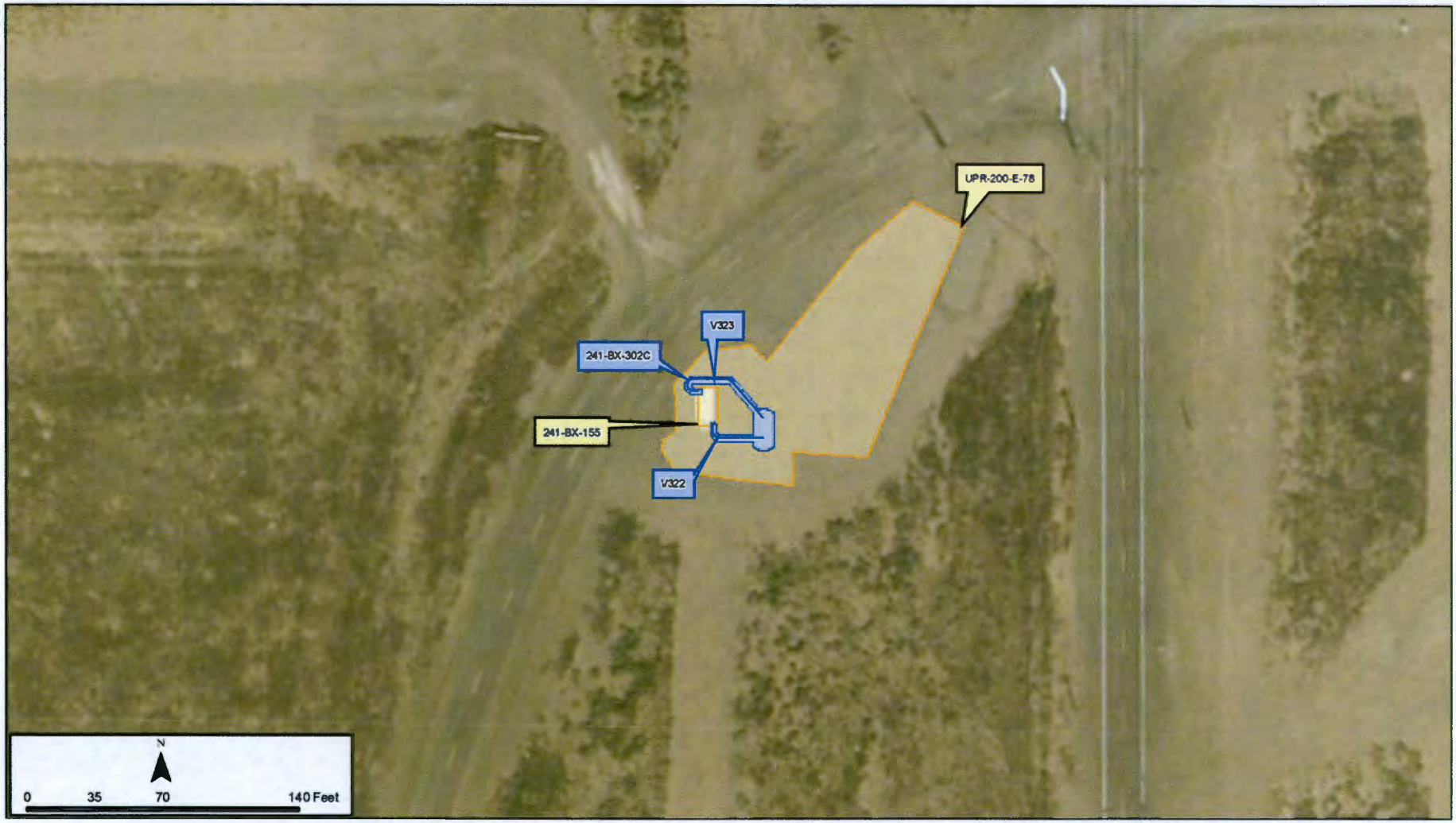
- 241-BX-155

Site Intersects

IS-200-1

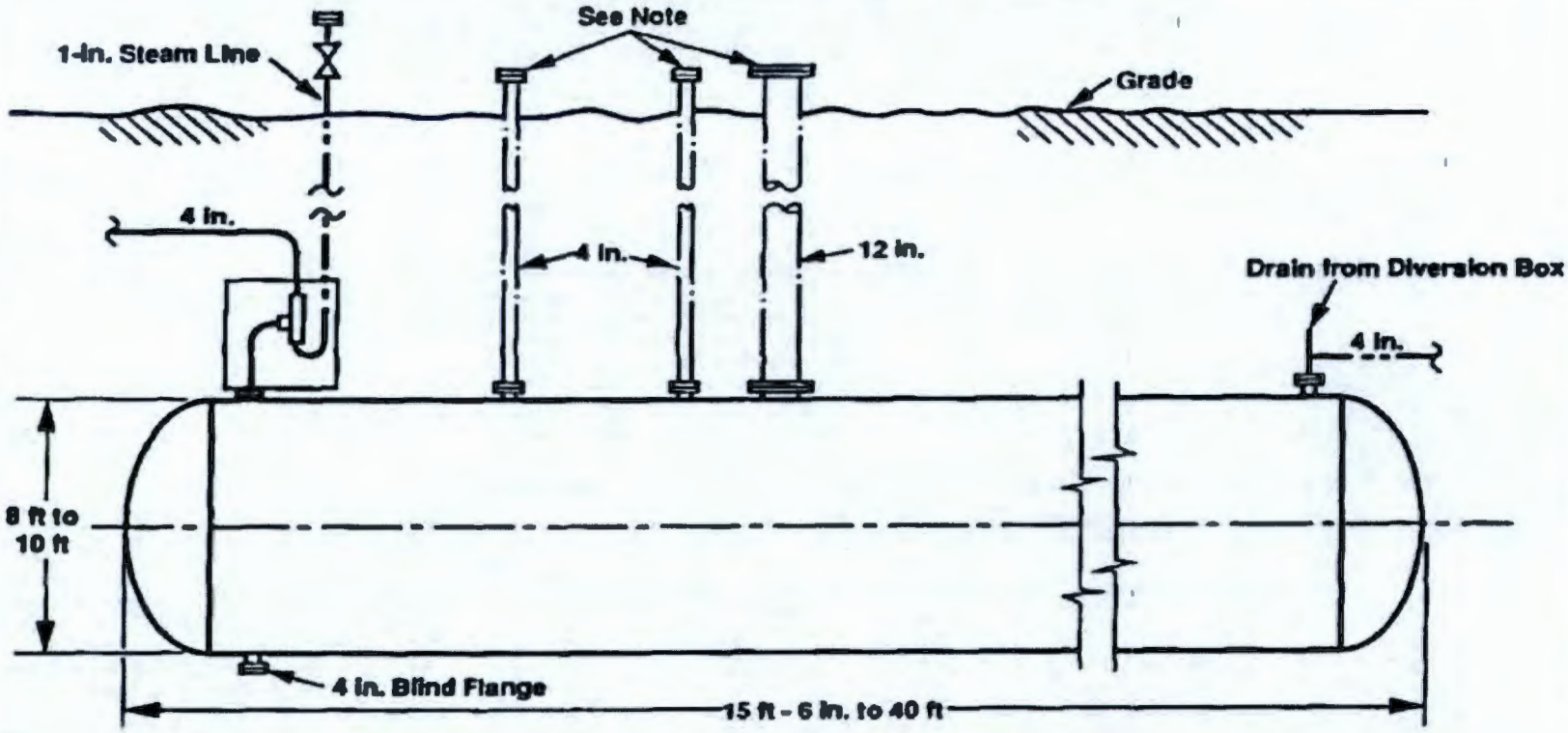
- 200-E-78
- 241-BX-155

Scoping Summary: 241-BX-302C



241-BX-302C; 5/26/09; facing South; WRPS

241-BX-302C Catch Tank Select Features of Interest
(From WHC-SD-ES-040, Rev. 0, page 2F-4)



Elevation

Scale: None

Source: Neilsen (1992)

Capacity Range: 7,800 - 17,880 gallons
Note: All risers sealed with gaskets.
4-in. risers for thermocouples.
12-in. risers for dip tube liquid level measurement.

39203001.1

Figure 2-4. 302 Series Catch Tank.

Scoping Summary: 241-C-154

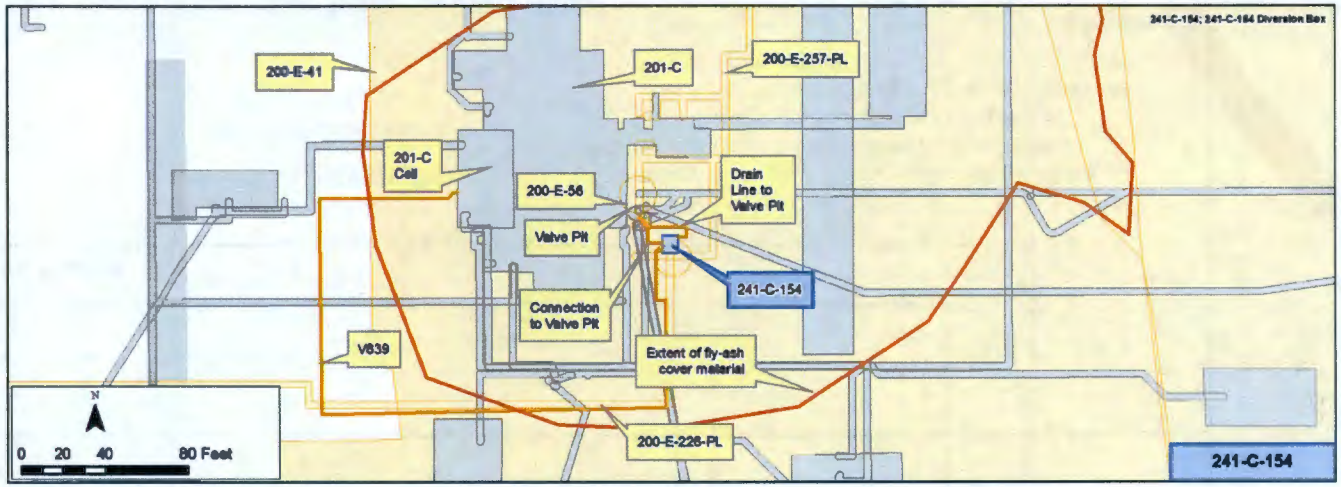
History

The 241-C-154 waste site is a square, reinforced concrete diversion box. The diversion box was used primarily to transfer promethium and strontium solutions for rare earth element purification.

Wastes were received from the 221-B Canyon Building via the 200-E-226-PL promethium transfer line and from the 201-C Building's "C" cell via line V839 (not currently assigned to a waste site). Fluids were transferred to the Hot Semiworks Valve Pit (HSVP) and from there to the 201-C Process Building and the TK-CR-011 Tank in the 244-AR Vault (these lines have not been assigned to a waste site).

Construction of the 241-C-154 Diversion Box was completed in 1966. The Hot Semiworks ceased its rare earth element purification processes in 1967, but documentation states that 241-C-154 was operational until 1985. Decommissioning of the 241-C-154 diversion box was completed in 1986 along with the Hot Semiworks area decommissioning and consisted of capping and isolating the lines, filling the diversion box with concrete, and covering the area with fly ash.

TSD Number S-2-4



Construction

- Dimensions: 8 ft long x 8 ft wide x 8 ft tall (OD)
  6 ft long x 6 ft wide x 5 ft tall (ID)
- Computed Volume: 180 cu ft
- Buried depth: top at grade, bottom at 8 ft below grade
- Four 2 in. lines in/out, one capped drain in floor, and one 1.5 in. Drain to the valve pit drain.
- Material: Reinforced concrete
- Cover Blocks: concrete slab with thickness of 2 ft

Features of Interest

- Four 2 in. diameter pipe connections for: 200-E-226-PL; V839; pipe to Tank 54 in the A Cell of 201-C, via the valve pit; and a connect to the valve pit to allow transfer to other area tanks which is identified as a "future" line in the design specification and may not have been completed
- One 1.5 in. diameter drain line, which connected to the valve pit drain.
- One capped drain line of unknown diameter.
- Approximately 50-lbs of lead shielding may be located in diversion box

Relevant Characterization

- In Apr-2009, erosion of the ash cover was noted and specks of contamination were found - documentation of the located was not located

Waste Streams

- This diversion box was used to transfer radioactive waste solutions from processing and decontamination operations
- 241-C-154 received promethium solutions through 200-E-226-PL. Waste was also received from the C cell of the 201-C Process Building; this cell was used for radioactive solvent handling and limited batch rework processing

Misc./Other Relevant Information

- 200-E-41 (1949-1992) Decommissioned area including 201-C building covered with fly ash. The area shown on the included images is approximate. Chained and posted as Underground Radioactive Material. The 241-C-154 waste site is within the area of the cover material.

Site Interfaces

Origin/Termination

200-IS-1
- 200-E-226-PL (origin)

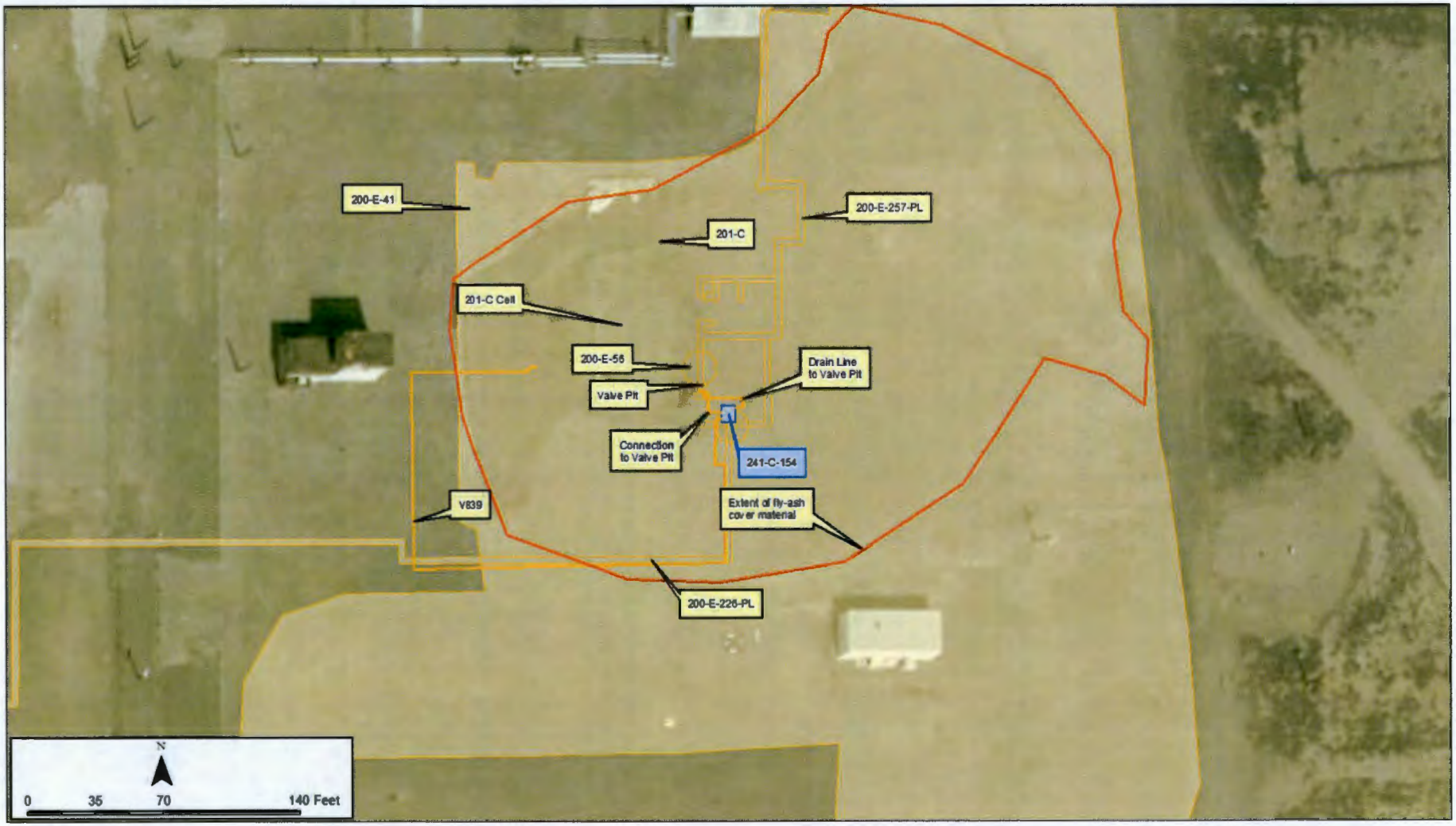
No Operable Unit
- V839 (origin)
- 2-in. transfer line to valve pit (termination)
- 1.5-in. drain line to valve pit (termination)
- 2-in. capped floor drain line (termination)

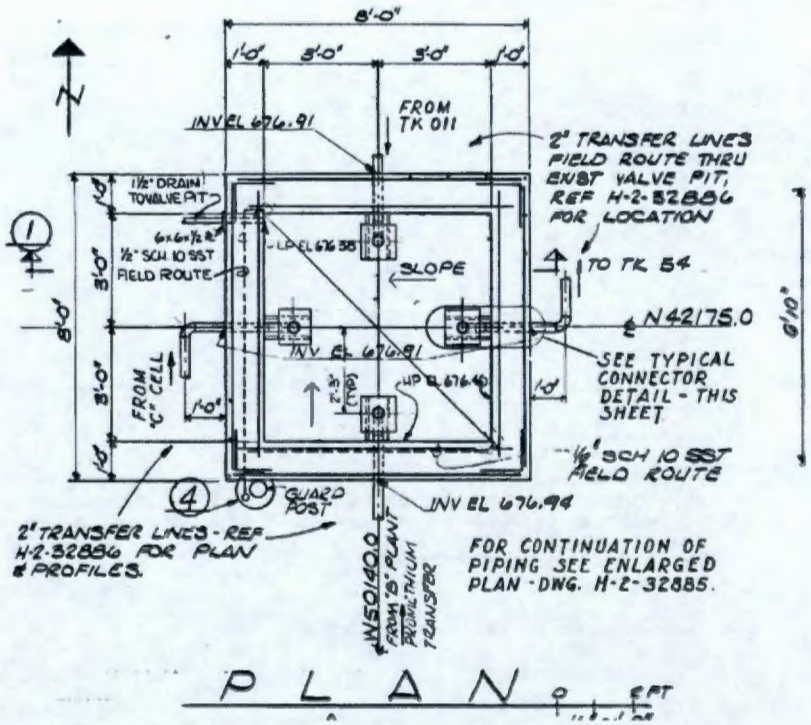
Site Intersects

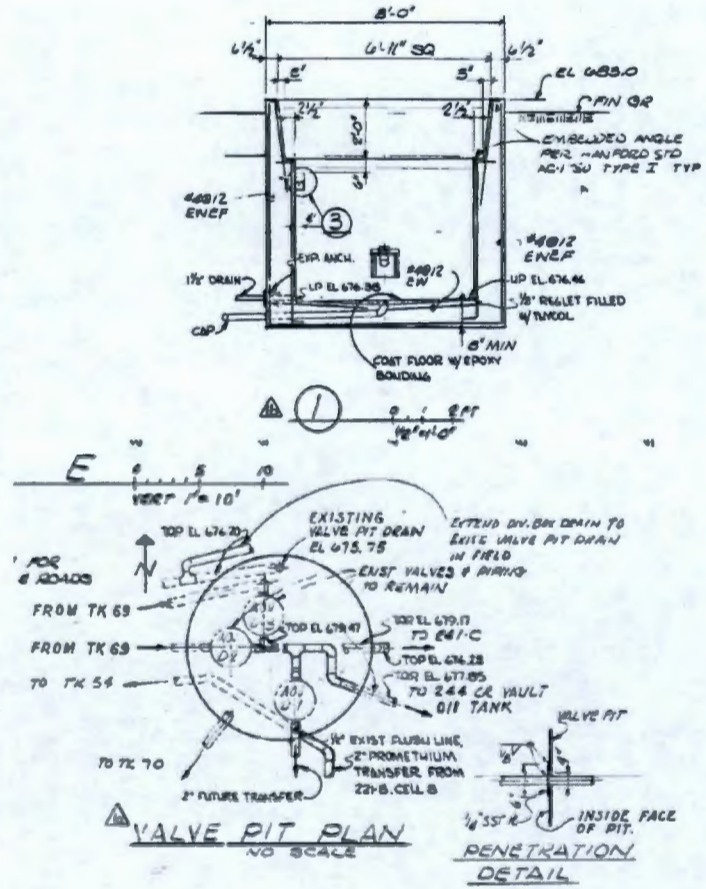
200-IS-1
- 200-E-257-PL (runs about 1 ft. south of this diversion box)

200-EA-1
- 200-E-56 (UPR associated with underground pipelines near the diversion box)

TBD
- 200-E-41 (stabilized area)


200-E-41
201-C
200-E-257-PL
201-C Cell
200-E-56
Drain Line to Valve Pit
Valve Pit
Connection to Valve Pit
241-C-154
V839
Extent of fly-ash cover material
200-E-226-PL
N
0
35
70
140 Feet


8'-0"
1'-0"
3'-0"
3'-0"
1'-0"
N
INV EL 676.91
FROM TK 011
2" TRANSFER LINES FIELD ROUTE THRU EXIST VALVE PIT, REF H-2-32886 FOR LOCATION
1½" DRAIN TO VALVE PIT
6x6x½ ℄
½" SCH 10 SST FIELD ROUTE
LP EL 676.58
SLOPE
TO TK 54
N42175.0
INV EL 676.91
FROM "C" CELL
2'-3" (TYP)
UP EL 676.40
SEE TYPICAL CONNECTOR DETAIL - THIS SHEET
½" SCH 10 SST FIELD ROUTE
GUARD POST
INV EL 676.94
2" TRANSFER LINES - REF H-2-32886 FOR PLAN & PROFILES.
W50140.0
FROM 3" PLANT PROMETHIUM TRANSFER
FOR CONTINUATION OF PIPING SEE ENLARGED PLAN - DWG. H-2-32885.
PLAN
0 1 2 FT


8'-0"
6'-11" SQ
6½"
2'
5'
EL 683.0
FIN GR
EMBEDDED ANGLE PER HANFORD STD AC-1 SU TYPE I TYP
#4@12 EWEF
EXP ANCH.
#4@12 EW
1½" DRAIN
UP EL 676.46
½" REGLET FILLED W/ TUNCOL
CAP
8" MIN
COAT FLOOR W/ EPOXY BONDING
0 1 2 FT
VERT 1" = 10'
TOP EL 676.20
EXISTING VALVE PIT DRAIN EL 675.75
EXTEND DIV. BOX DRAIN TO EXIST VALVE PIT DRAIN IN FIELD
EXIST VALVES & PIPING TO REMAIN
FROM TK 69
FROM TK 69
TO TK 54
TOP EL 679.47
TOP EL 679.17 TO 241-C
TOP EL 676.28
TOP EL 677.85 TO 244 CR VAULT
OIL TANK
TO TK 70
½" EXIST FLUSH LINE
2" PROMETHIUM TRANSFER FROM 221-B, CELL 8
2" FUTURE TRANSFER
VALVE PIT PLAN
NO SCALE
VALVE PIT
INSIDE FACE OF PIT.
PENETRATION DETAIL

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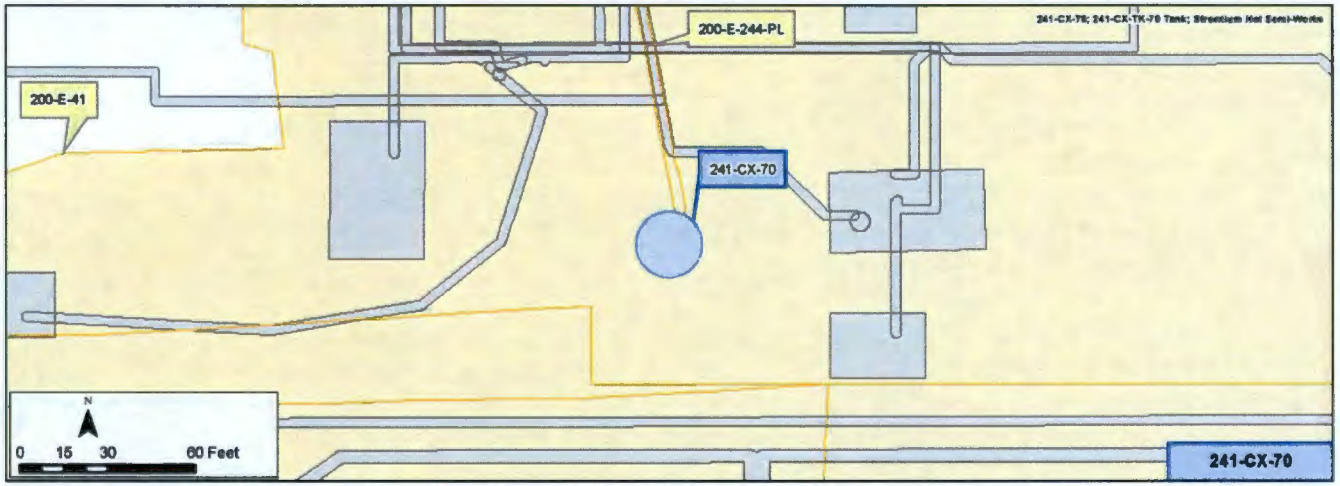
Scoping Summary: 241-CX-70

History

The 241-CX-70 waste site is an inactive underground storage tank used to store high-level process waste from REDOX process flow improvement studies conducted at the Strontium Semiworks (201-C) Facility.

These waste flows are assumed to be similar in composition to REDOX High Level waste (R1). The tank was constructed in 1949 and received waste from 1952-1953. Residual liquid waste was removed in 1979, and residual sludge removal was conducted from 1987-1992. The tank was confirmed empty in 1992. Waste feed lines and risers were isolated and capped as part of the 201-C Strontium Semiworks Complex decommissioning, most likely in 1983.

In Oct-2009, Ecology approved the 241-CX Tank Closure Plan (DOE/RL-2008-51, Rev 1) which stipulates that "...Tank 241-CX-70 and the piping will be clean closed by removal and disposal. If releases to soil occurred, the contaminated soil will be removed and the removal area soils will be sampled in accordance with an approved sampling and analysis plan (Appendix A of this plan) to verify achievement of clean closure standards."



Construction

- Dimensions - 15 ft high x 20 ft diameter, vertical
- Capacity - 30,000 gal
- Material – 1/4 in. stainless steel plate encapsulated in 1 ft thick poured concrete
- Fourteen tank penetrations
- Connections – two 2 in. stainless steel feed lines (200-E-244-PL)
- Buried depth - top of tank 11 ft bgs

Features of Interest

- Four 4 in. stainless steel risers
- Four 12 in. stainless steel risers
- One 10 in. stainless steel vent
- One 42 in. manway
- Two 2 in. stainless steel inlet pipes
- Two 4 in. x 3 in. welded stainless steel tank penetrations with Teflon filled packing glands

Relevant Characterization

- Free liquids were pumped from tank 241-CX-70 to the 101-AY Tank in 1979.
- Approximately 10,300 gal of sludge remained in the tank, which was removed by sluicing from 1987 through 1988.
- Remaining tank contents vacuum removed, and the tank was certified empty in 1991. Dose readings from the empty tank taken Feb-1992 ranged from 5 mrad/hr at the top of the tank to 15,000 mrad/hr at the bottom of the tank.

Waste Streams

- Received R1 high-level waste from pilot plant studies of the REDOX chemical separation process developed for use at S Plant from 1952 through 1953
- Received spent solvents from REDOX ion change waste (RIX), primarily hexone
- Wastes included aluminum and sodium nitrate, sodium and potassium fluoride, zirconium oxide, sodium aluminate, sodium hydroxide, sodium aluminate, chromate, sodium sulfate and mixed fission products
- Corrosive and toxic waste codes (D002, D007, WT02) indicated on the Tank Part A permit

Misc./Other Relevant Information

- In 2004, shoring constructed around and above the manway during the sluicing operations collapsed. The collapse was backfilled and stabilized in 2009.

Site Interfaces

Origin/Termination

- N/A

Site Intersects

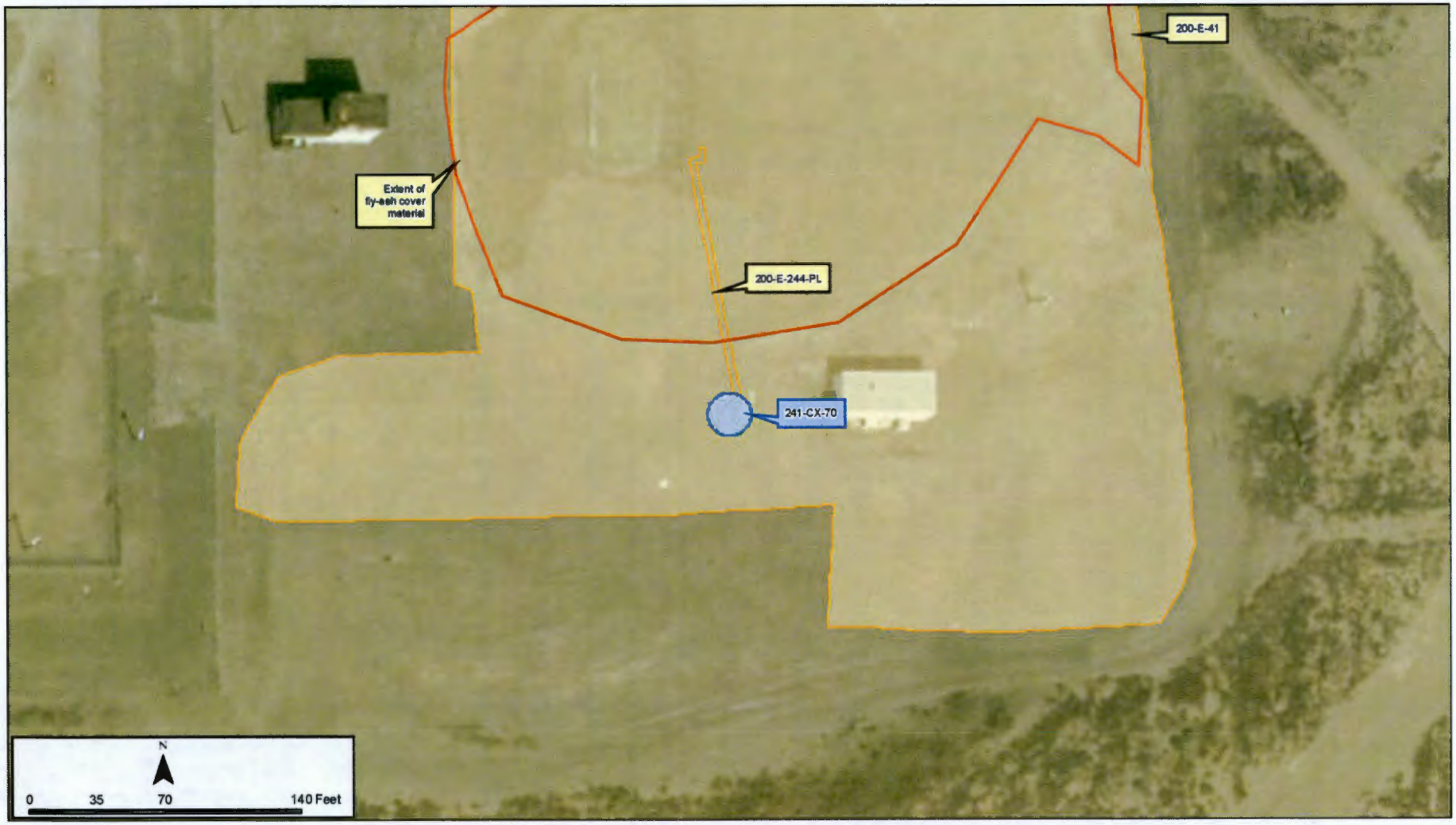
200-IS-1

- 200-E-244-PL

Other

- 200-E-41 (stabilized area)

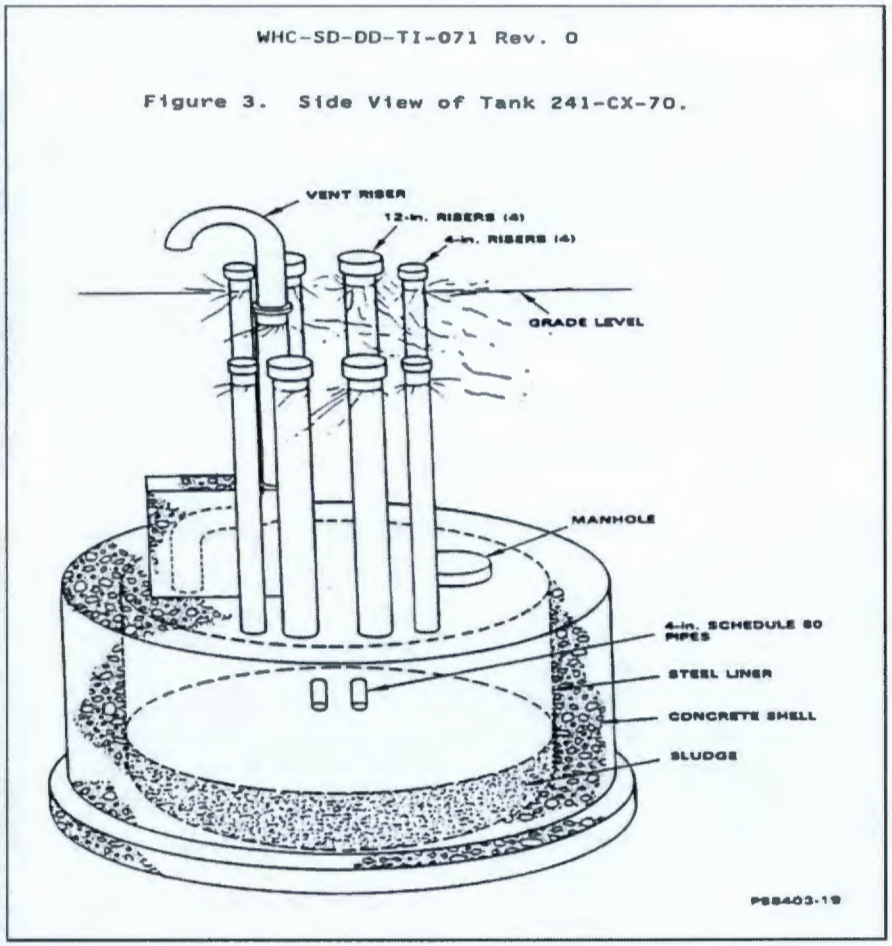
Scoping Summary: 241-CX-70



241-CX-70 Waste Storage Tank Features of Interest

Photo Taken April 2009

Photo Taken August 2009



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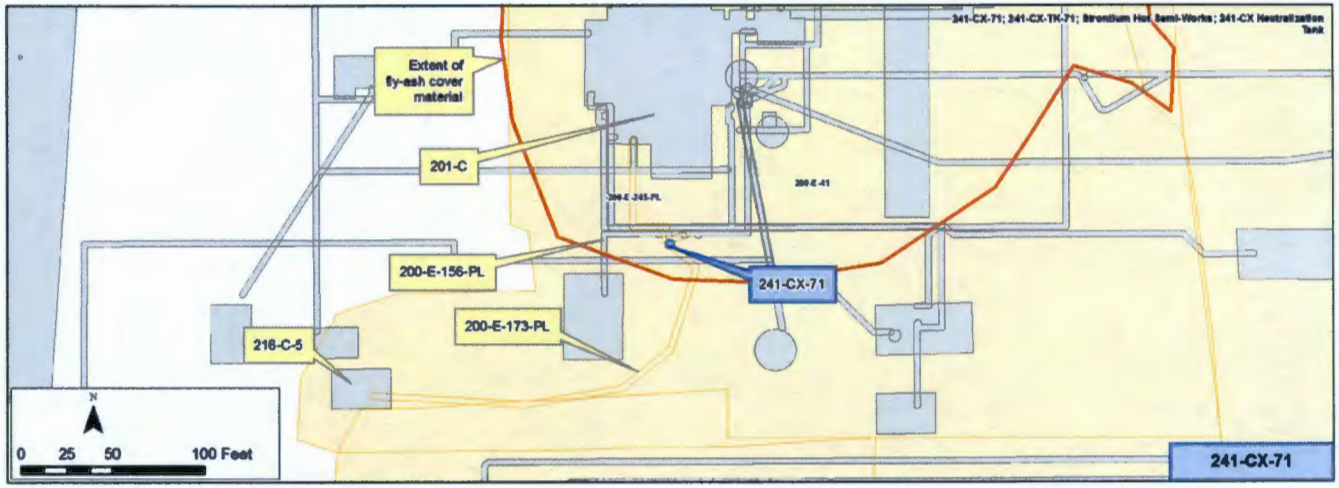
Scoping Summary: 241-CX-71

History

The 241-CX-71 Neutralization Tank is an inactive underground neutralization tank used for neutralizing the 201-C condensate and the coil and condenser cooling water from three operating campaigns, REDOX in 1953, PUREX in 1955, and flush waste during the decontamination from Dec-1956 through 1957. It also received liquids from the Hot Shop Sink from the Strontium Semiworks (201-C Building).

The neutralization process utilized crushed limestone added as needed through a central header that extended above grade. The tank was isolated from the 201-C Process Building in 1962. By Jan-1960, 200-E-156-PL was cut and a blind flange was installed near the tank. By Oct-1985, both stainless steel feed lines (201-C, and Hot Shop sink line) to the tank were cut and capped. The tank was filled with low density grout in 1986. The tank is overlain by several feet of fly ash used to cover the decommissioned Strontium Semiworks Facility.

This site is included within the 241-CX Tank Closure Plan (DOE/RL-2008-51, Rev 1).



Construction

Design drawings for the 241-CX-71 Neutralization Tank were not located. Tank dimensions and construction were determined from field investigation.

- Dimensions - 7 ft high x 5 ft diameter, vertical
- Capacity - 1,000 gal
- Material – stainless steel on reinforced concrete foundation
- Four tank penetrations
  - Two 2 in. stainless steel feed lines (200-E-156-PL and 200-E-245-PL)
  - One 2 in. carbon steel overflow line (200-E-173-PL)
  - One 2-in riser vent with moisture trap (drywell)
- Buried depth - top of tank 3.5 ft, bgs.

The actual configuration of the tank and its associated lines is in question. The tank was not pressurized and a pump would be required to transfer neutralized liquids to the crib, although no documentation of a pump used for this tank has been located.

Features of Interest

- Two 2 in. stainless steel inlet pipes (200-E-156-PL & 200-E-245-PL)
- One 2 in. stainless steel outlet pipe (200-E-173-PL)
- One 12 in. stainless steel access header
- One drywell connected to vent riser

- Operational configuration allowed by-pass of tank to cribs or diversion to various cribs.

Relevant Characterization

The contents characterized in Oct-1990. Samples were collected by coring through the grout to the bottom of the tank. Two liquid and five sludge samples were collected and analyzed for TCLP, TOX, TOC, anions, metals, Cr(VI), cyanide, gross alpha, gross beta, gamma, Pu-239/240, total U, and Sr-90. Results - MEK, xylene & toluene range from 7-54 ppb; cyanide at 21 ppm. Rad - 1.02E-03 to 3.67E-03 gr/gr U; < 4.26E-03 to 3.56E-02 uCi/gr Pu; 3.52E-02 to 5.95E-02 uCi/gr Cs-137; 3.35E-01 to 3.54E-01 uCi/gr Sr-90.

Waste Streams

- The 241-CX-71 Neutralization Tank was used to treat:
  - REDOX waste (R1, R2, CWR1, CWR2, CWZr1) from Dec-1953 through Oct-1953
  - PUREX waste (CWP1, CWP2, CWZr1, OWW1, P2) from early 1955 through early 1956
  - Facility decontamination waste from Dec-1956 though Jun-1957

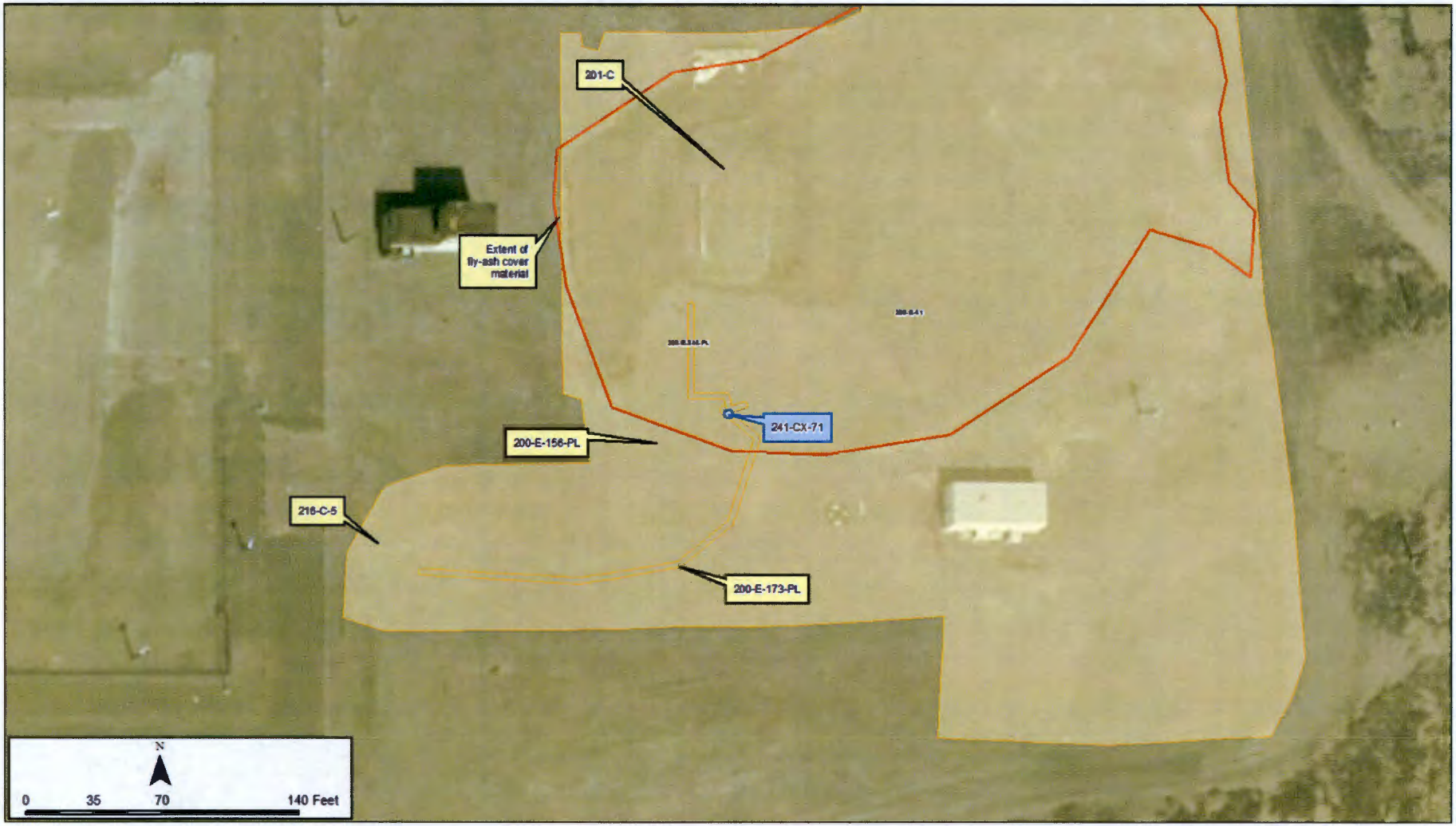
Misc./Other Relevant Information

No construction drawings located. Some uncertainty related to actual tank details. Most of the details were developed from field investigations.

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	
• 200-E-156-PL	• N/A
• 200-E-173-PL	
• 200-E-245-PL	
• 200-E-41 (stabilized area)	

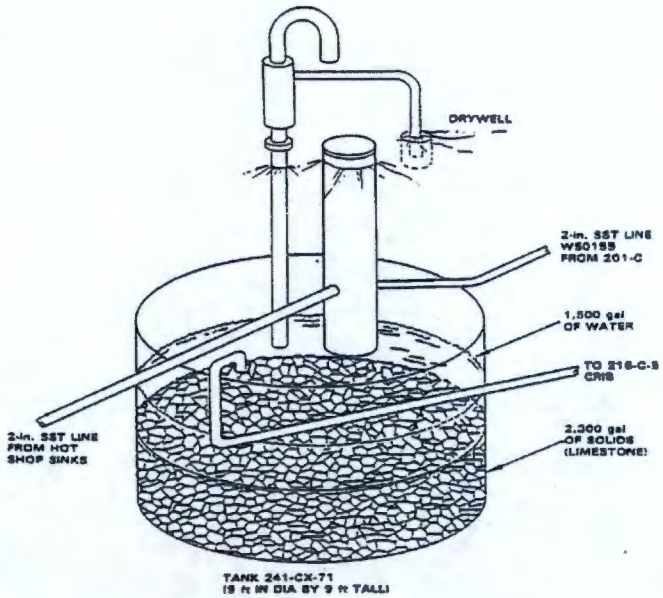
Scoping Summary: 241-CX-71



241-CX-71 Neutralization Tank Feature of Interest

Photo Taken August 1983

WHC-SD-EN-ES-019, Rev. 0



Note: Tank dimensions in schematic conflict with details presented in Closure Plan (DOE/RL-2008-51, Rev 1); actual dimensions determined by field investigation and are presented in Closure Plan and this Scoping Summary.

Figure 10. 241-CX-71 Storage Tank.

31

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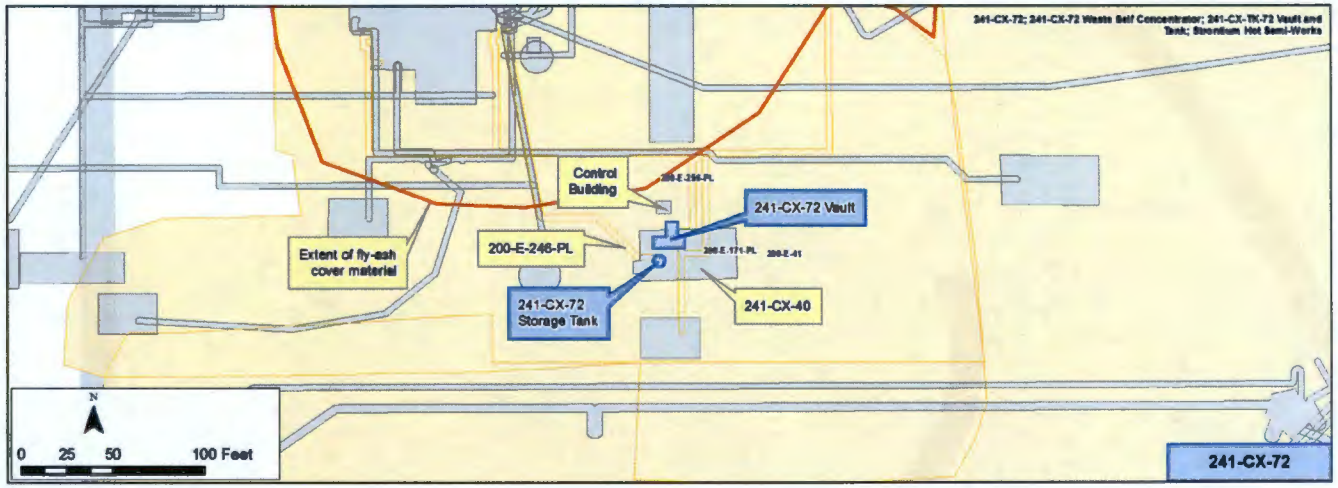
Scoping Summary: 241-CX-72

History

The 241-CX-72 waste site is an inactive below grade vault and storage tank installed in the Hot Semiworks in 1956. The tank received Strontium Semiworks Complex (SSC) waste generated from PUREX process pilot studies from 1957-1958. This site was used for experimenting the self-concentration of PUREX process waste by the application of heat. In 1986, as part of SCC decommissioning, low density grout was injected through the risers above 11 ft of sludge, filling the tank to the top of the risers. The CX Vault was also grouted and decommissioned.

Part of an agitator rod was accidentally pulled out of the tank in 1988 during activity unrelated to the tank. Plans were prepared to sample the remaining waste, remove the grout layer, and dispose of residual waste and the tank itself. As part of this process, the soil covering the upper portion of the tank and risers was excavated in 1990 and a steel caisson was constructed from land surface to the top of the tank. A large greenhouse was constructed over241-CX-72 Tank to support grout removal and sampling activities. This is now known as the Grout Removal Building. The 2008 Closure Plan for the 241-CX Tank System (DOE/RL-2008-51, Rev. 1) identified further characterization of tank contents to be performed to determine the closure pathway in a future revision of the closure plan.



Construction

Tank

- Dimensions - 36 ft high x 40 in. diameter, vertical
- Capacity - 5,000 gal
- Material – 3/8 in. carbon steel enclosed in caisson
- Six tank penetrations
- Connections – one 2 in. stainless steel inlet (200-E-246-PL)
- Buried depth - top of the tank 14 ft, bgs; bottom of tank 50 ft, bgs

Caisson

- Material - 1/2 in. carbon steel caisson place on a 12 in. reinforced concrete base pad

Features of Interest

- Two 8 in. risers
- One agitator rod (partially removed in 1988)
- One 3 in. diameter drywell
- One dip sampler tube with 8 sample levels
- One 2 in. stainless steel filler pipe (20-E-256-PL)

- 241-CX-72 was a terminal storage tank and was not equipped with an outlet pipe.

Relevant Characterization

- Radiation dose rate and neutron flux suggested the presence of a minimum 10 ft layer of radioactivity at the tank bottom. Pre 1989 report sites an earlier record, indicating the existence of 61.2-lb of uranium and 48.49-g of plutonium in the tank.
- Radiological investigations were conducted in 1988-1989 concluded that the activity layer at the bottom of Tank 241-CX-72 contains fission product activities mixed with a most probable 150 to 200 grams of the fissile isotope, Pu-239.

Waste Streams

- Strontium Semiworks Complex (SSC), a generic PUREX process waste from pilot studies of the PUREX process.
- Waste was likely P1, but possibly CWP1, totaling 2,305 gal of waste containing 61.2-lb of uranium and 48.49-g of plutonium entered this tank for terminal storage. Experimental studies of self-concentrating wastes, resulted in approximately 11 ft of sludge solids, which were overlain by 24 ft of low density grout in 1986.
- Waste codes (D002, D004-D011; WT01, WT02) are indicated on the Tank Part A application, and process knowledge indicate mixed fission products.

Misc./Other Relevant Information

- Despite extensive planning and experiments with grout removal techniques in the early 1990's, removal never proceeded. No record of sampling could be found, although reports indicated sampling was planned around 1995.
- Radiological surveys were performed in 2013 and 2014. The reports both state that with the tank's lid removed, beta background was too high for direct surveys in all areas, but no anomalies were reported.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-246-PL

Site Intersects

200-IS-1

- 200-E-171-PL
- 200-E-256-PL

No Operable Unit

- 200-E-41 (Hot Semiworks Stabilized Area)
- 241-CX-40 (Grout Removal Building)

Scoping Summary: 241-CX-72

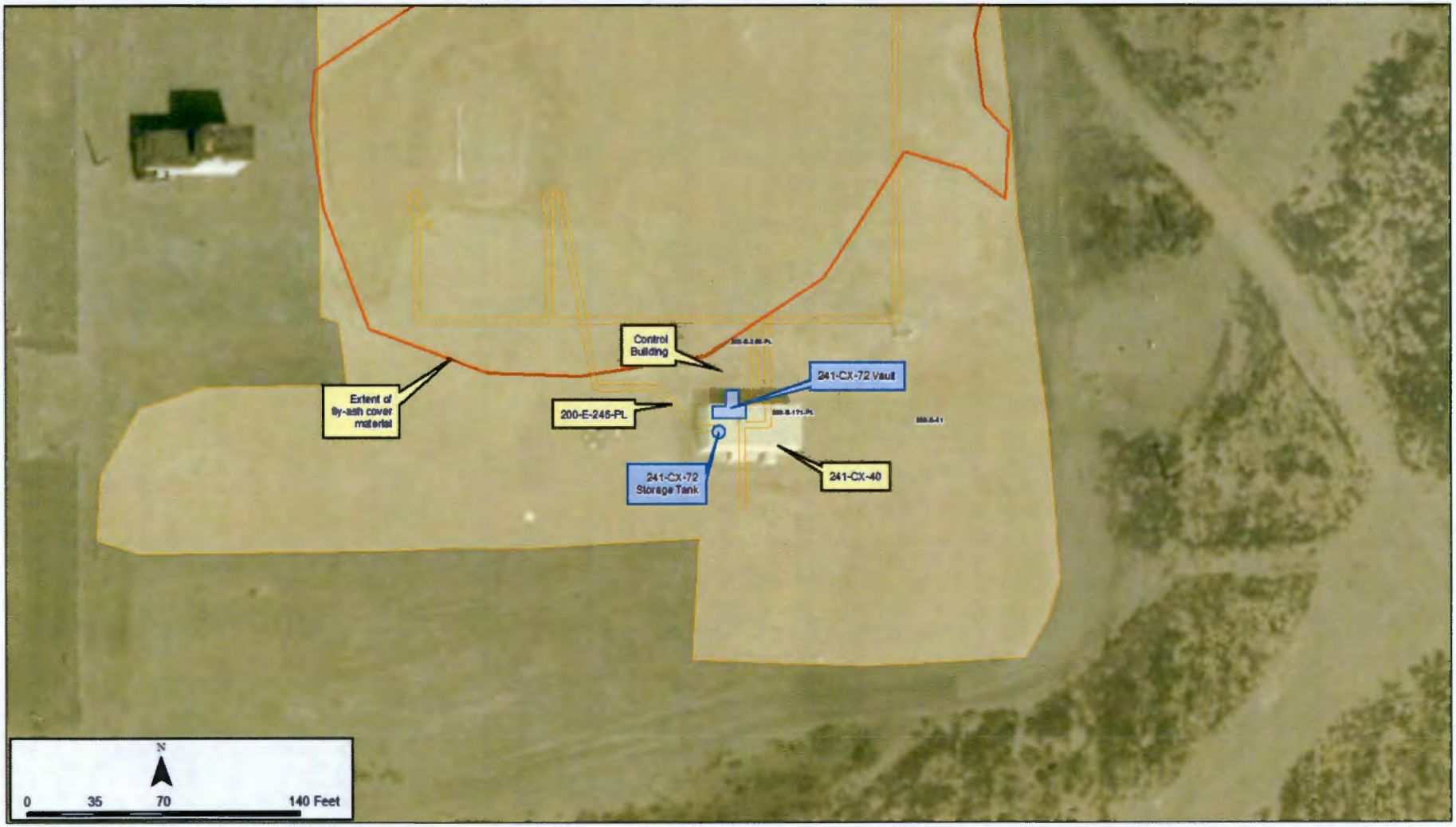
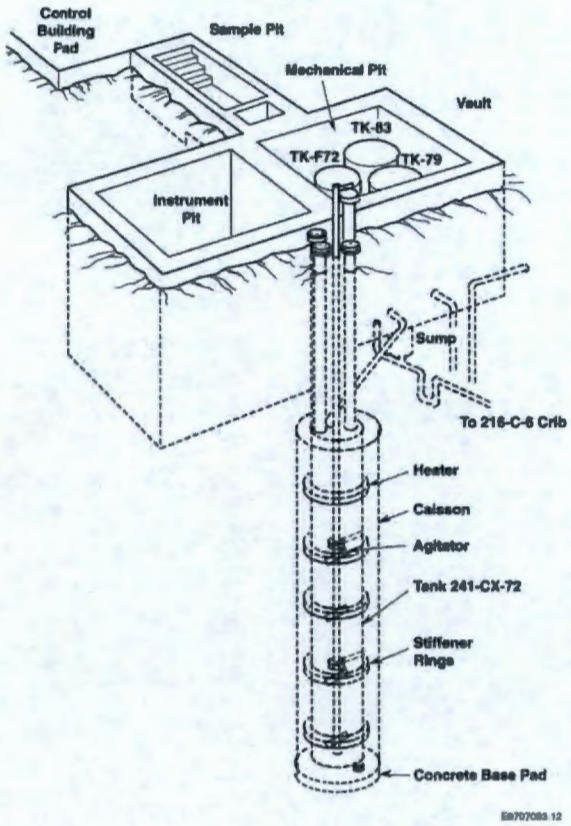


Figure 2-3. Schematic Diagram of 241-CX-72 Storage Tank.



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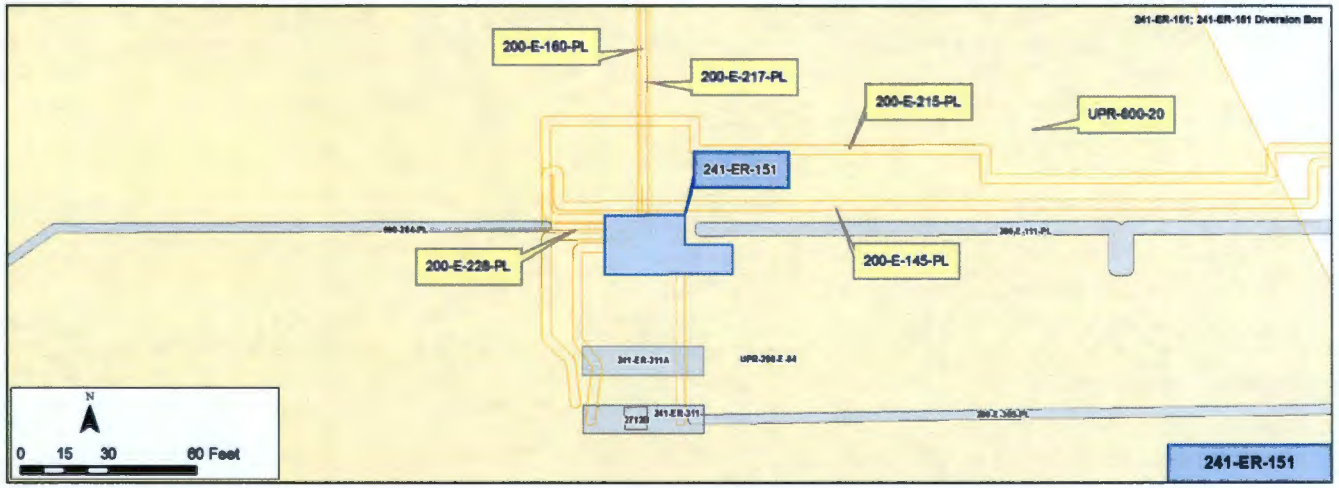
Scoping Summary: 241-ER-151

History

The 241-ER-151 waste site is a diversion box that facilitated the transfer of several waste processes from B Plant, U Plant, the BX/BY tank farms, and WMA-C . It was constructed in 1950 as part of Project C-362, and is located southeast of B Plant, and west of the 241-ER-152 Diversion Box. The following waste sites (and line numbers) fed in and out of the 241-ER-151 Diversion Box:

- 200-E-228-PL (V224)
- 600-284-PL (V360, V361, V362, V363, V364, V366)
- 200-E-145-PL (V228)
- 200-E-215-PL (V229)
- 200-E-160-PL (V219)
- 200-E-217-PL (9719, 9808, 9653, V225)
- 200-E-111-PL (8618, V108, 8653)
- Lines V227, V218, V220, V221, V222, and V223 are all stub lines.

In 1979, as part of Project B-231, the L2 (V219), L9 (8653), L3 (9719), and L10 (V225) nozzles on the box were sealed. Between 2003 and 2005, process blanks were installed to and from the diversion box, and the box was covered with a weather seal.



Construction

- Dimensions:
  - Nozzle Pit: 43 ft long x 10 ft wide x 17 ft deep
  - Concrete Pipe Pit: 31.5 ft long x 11.33 ft wide x 9.67 ft deep
- Buried depth: Bottom 17 ft bgs; Top at grade
- 24 different nozzles
- Material: reinforced concrete
- Cover Blocks (3):
  - Nozzle Pit: 2 ft thick
  - Concrete Pipe Pit: 1 ft 1 in. thick

Features of Interest

- 24 Nozzles (11 upper nozzles, 13 lower nozzles)
- Attached concrete pipe pit structure (north side)
- Pipe Pit and Nozzle Pit are equipped with drain lines which drain to the 241-ER-311 Catch Tank.

Relevant Characterization

- 1998: Contaminated soil and anthills were identified, and were later removed or treated with poison
  - Beta/Gamma reading of 100,000 dpm per 100 cm-sq
- 1999: 149,193 ft-sq adjacent to the north of the 241-ER-151 fence was posted as a Contamination Area
  - 6,000 ft-sq was treated with a fabric bio barrier and covered with gravel, and remainder was down posted
- 2009: Technicians found several small tumbleweeds
  - Max Beta/Gamma reading 60,000 dpm/100 cm-sq

Waste Streams

The 241-ER-151 Diversion Box facilitated the transfer of the following wastes:

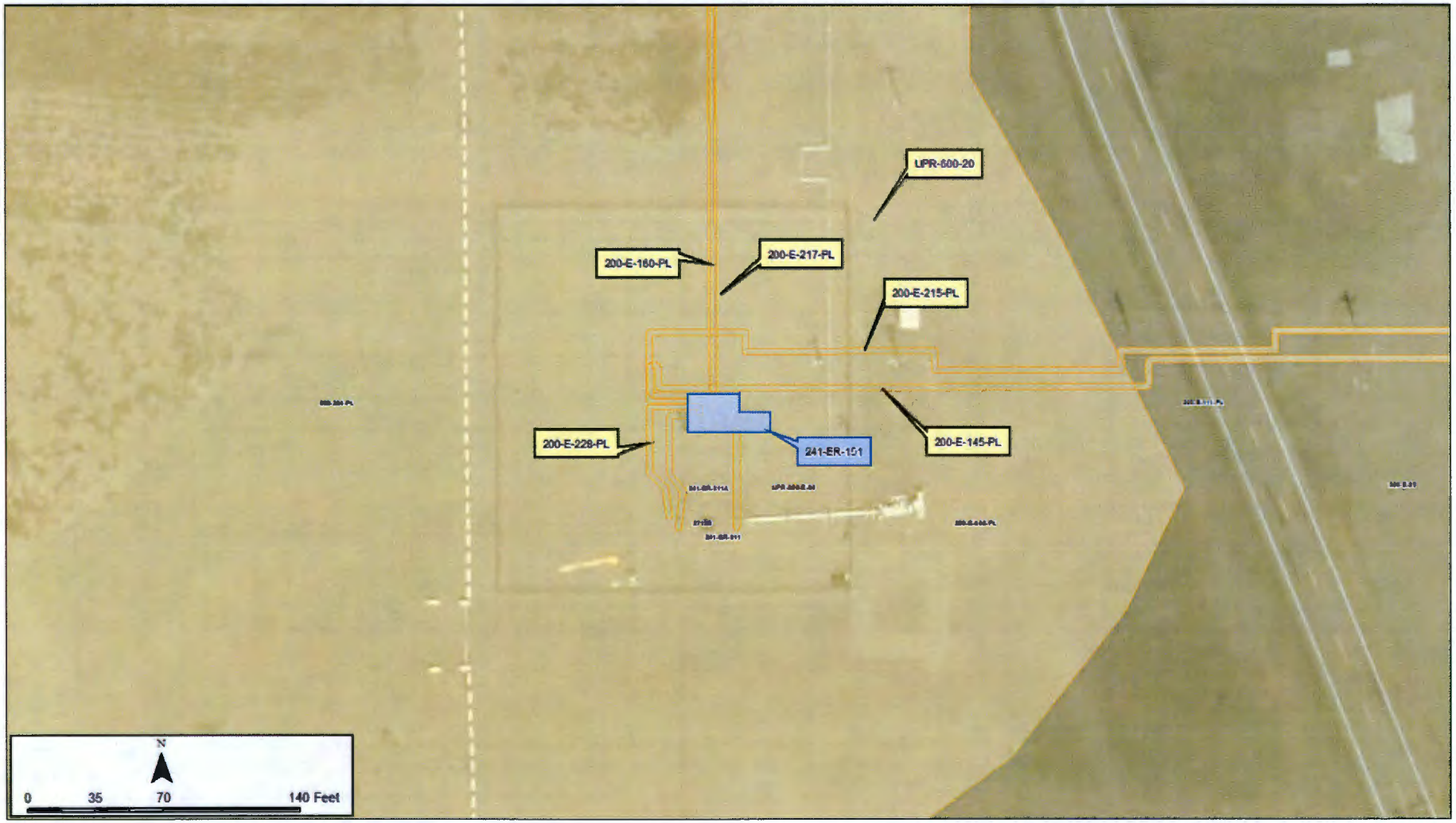
- P2 Acid Wastes (also identified as PUREX Acid Sludge [PAS] and PUREX Supernate [PSN]) to B-Plant from 1964-1972
- TBP waste from U-plant from 1952-1958
- MW1/MW2 Metals Waste and 1C1/1C2 first cycle wastes from B-Plant, which were dispatched to the BX tank farm between 1944 and 1956, and carried through the 241-ER-151 Diversion Box via the 200-E-217-PL

Misc./Other Relevant Information

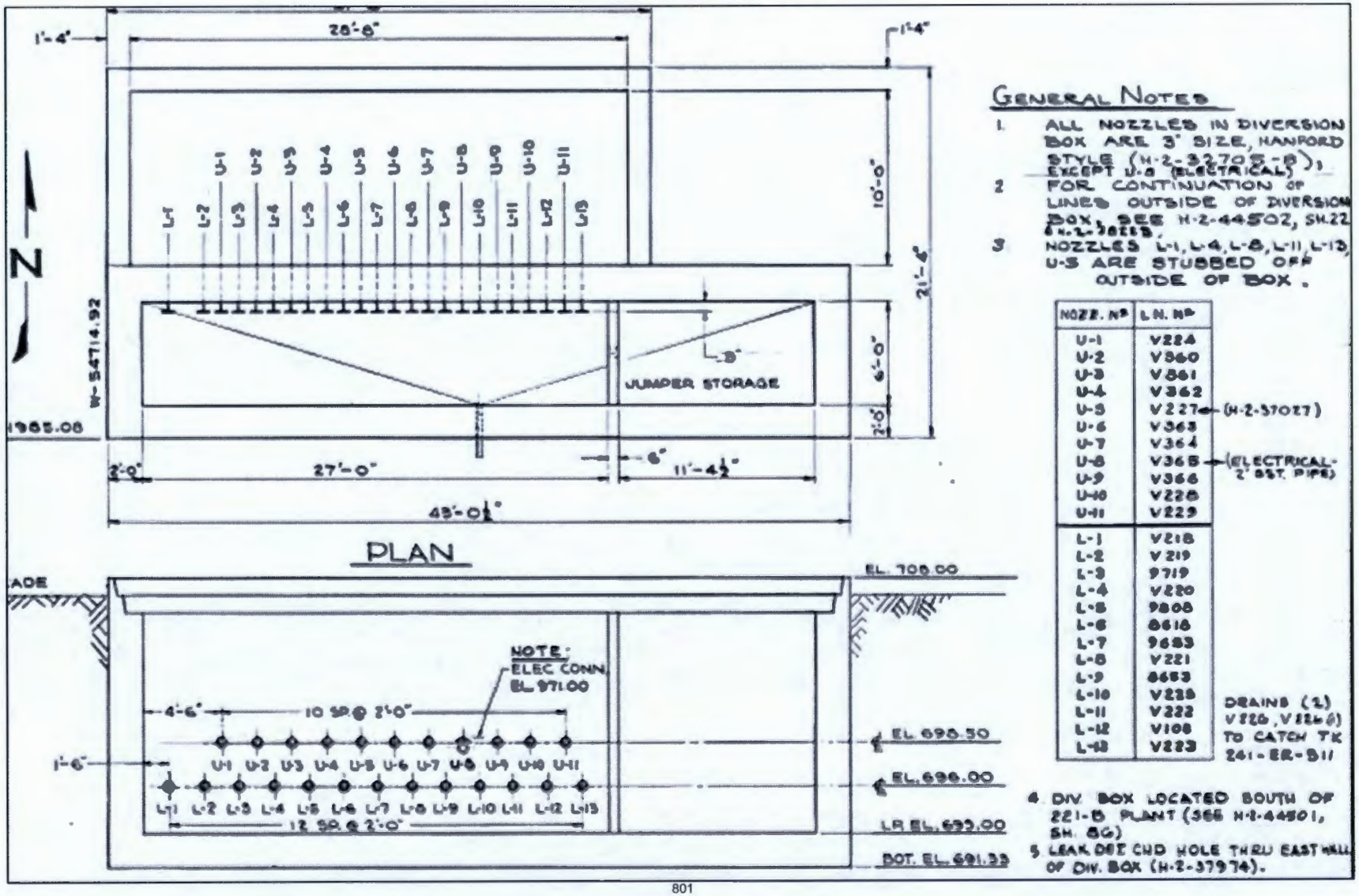
- None

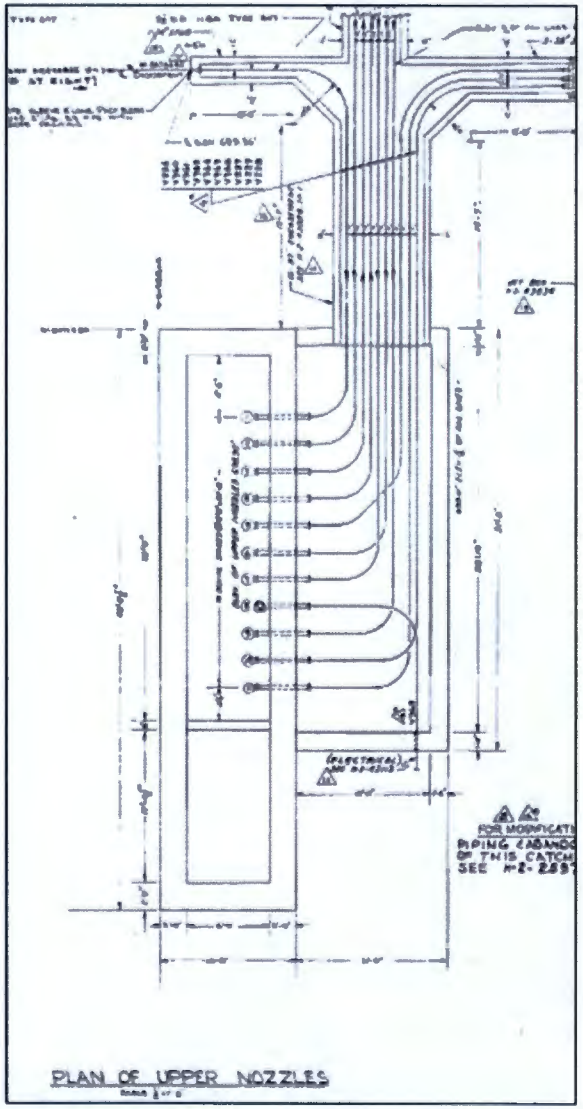
Site Interfaces

Origin/Termination	Site Intersects
Not applicable	<u>200-IS-1</u> • 200-E-111-PL • 200-E-145-PL • 200-E-215-PL • 200-E-217-PL • 200-E-228-PL • 200-E-160-PL • 600-284-PL <u>200-IS-1</u> • UPR-200-E-84 (Source: 241-ER-311A) <u>200-OA-1</u> • UPR-600-20 (Source: 600-284-PL)

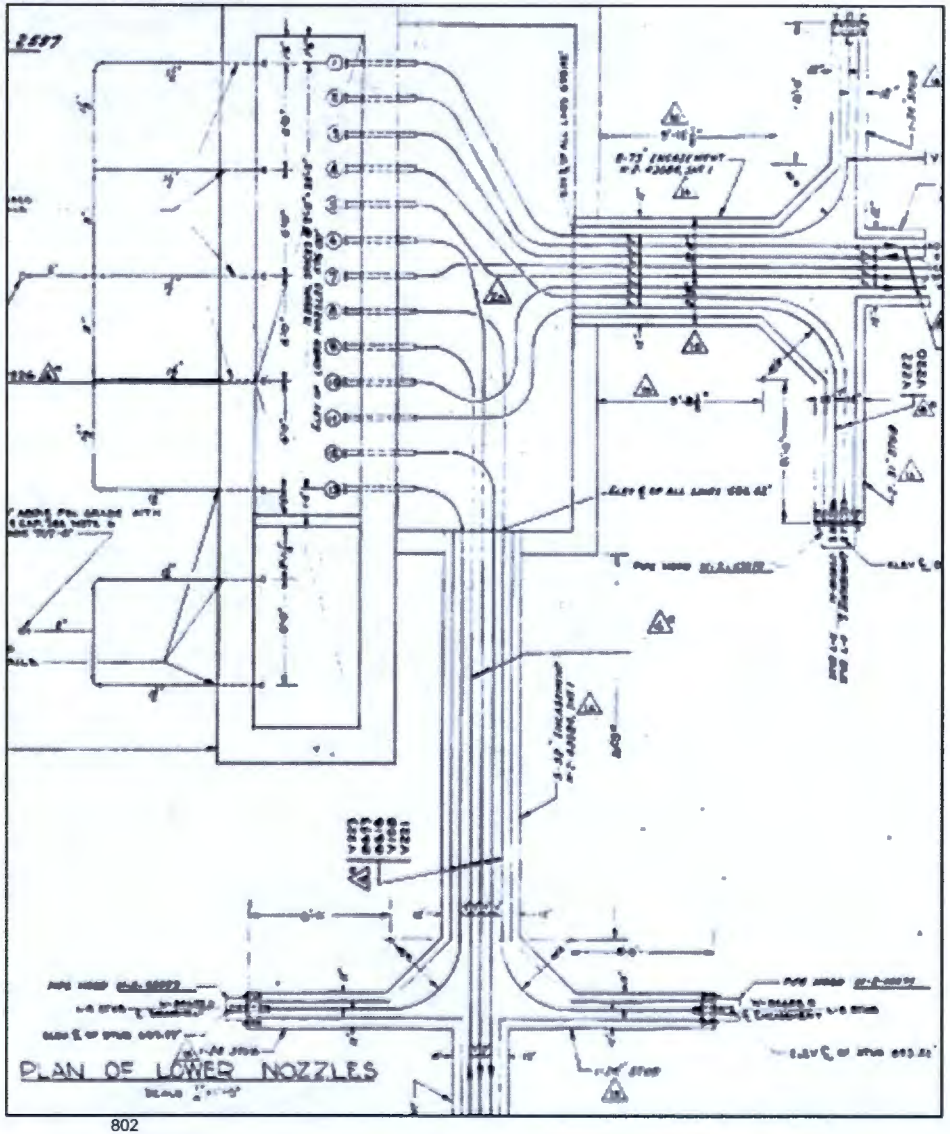

UPR-600-20
200-E-160-PL
200-E-217-PL
200-E-215-PL
200-E-228-PL
241-ER-151
200-E-145-PL
N
0
35
70
140 Feet

241-ER-151 Schematic 1





241-ER-151 Schematic 1



241-ER-151 Site Photos

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Scoping Summary: 241-ER-152

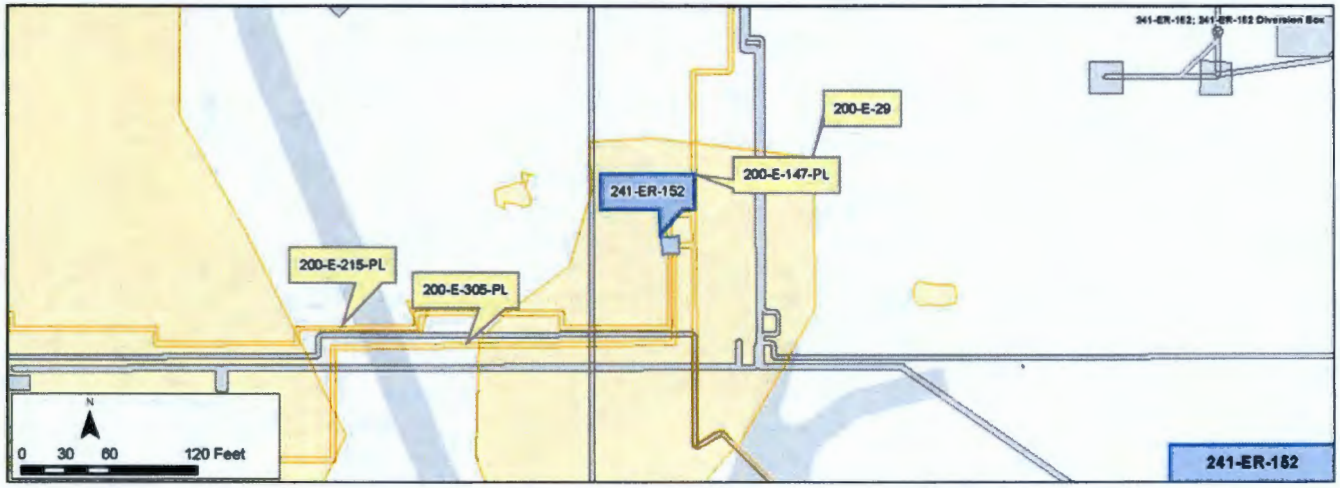
History

The 241-ER-152 waste site is an inactive diversion box that was used to facilitate the transfer of process waste between B-Plant and the tank farms. The diversion box is located southeast of the 224-B Building, east of the 241-ER-151 Diversion Box.

241-ER-152 was connected to 241-ER-151 via the 200-E-215-PL and to 241-ER-153 via the 200-E-147-PL; its drain line is 200-E-305-PL, which emptied to the 241-ER-311 Catch Tank.

The 241-ER-152 Diversion Box was constructed in 1974. In 2003, the connecting pipelines were flushed, process blank lines to and from the diversion box were installed, and the diversion box was isolated with a weather seal.

The 241-ER-152 Diversion Box is associated with the 200-E-29 Unplanned Release. The release, documented in 1996, documented contamination surrounding the diversion box due to biological intrusion by mice. The area is identified as an Underground Radioactive Material Area (URMA).



Construction

Diversion Box

- Dimensions:
  - 12 ft Long x 12 ft Wide x 15 ft Deep
- Computed Volume:
  - 2,160 gal
- Buried depth: 16 ft (Floor is 1 ft thick)
- 5 different nozzles
- Material: A240 Stainless Steel
- Cover Blocks:
  - 2 ft 8 in. thick

Features of Interest

- None identified.

Waste Streams

- Transferred process waste between B-Plant and the Tank Farms
- Waste types included:
  - PUREX Acid Sludge (PAS) transferred through the 200-E-147-PL
  - PUREX Supenate (PSN) transferred through the 200-E-215-PL

Site Interfaces

Site Intersects:

200-IS-1 OU

- 200-E-305-PL
- 200-E-147-PL
- 200-E-215-PL
- 200-E-29 (UPR)

Relevant Characterization

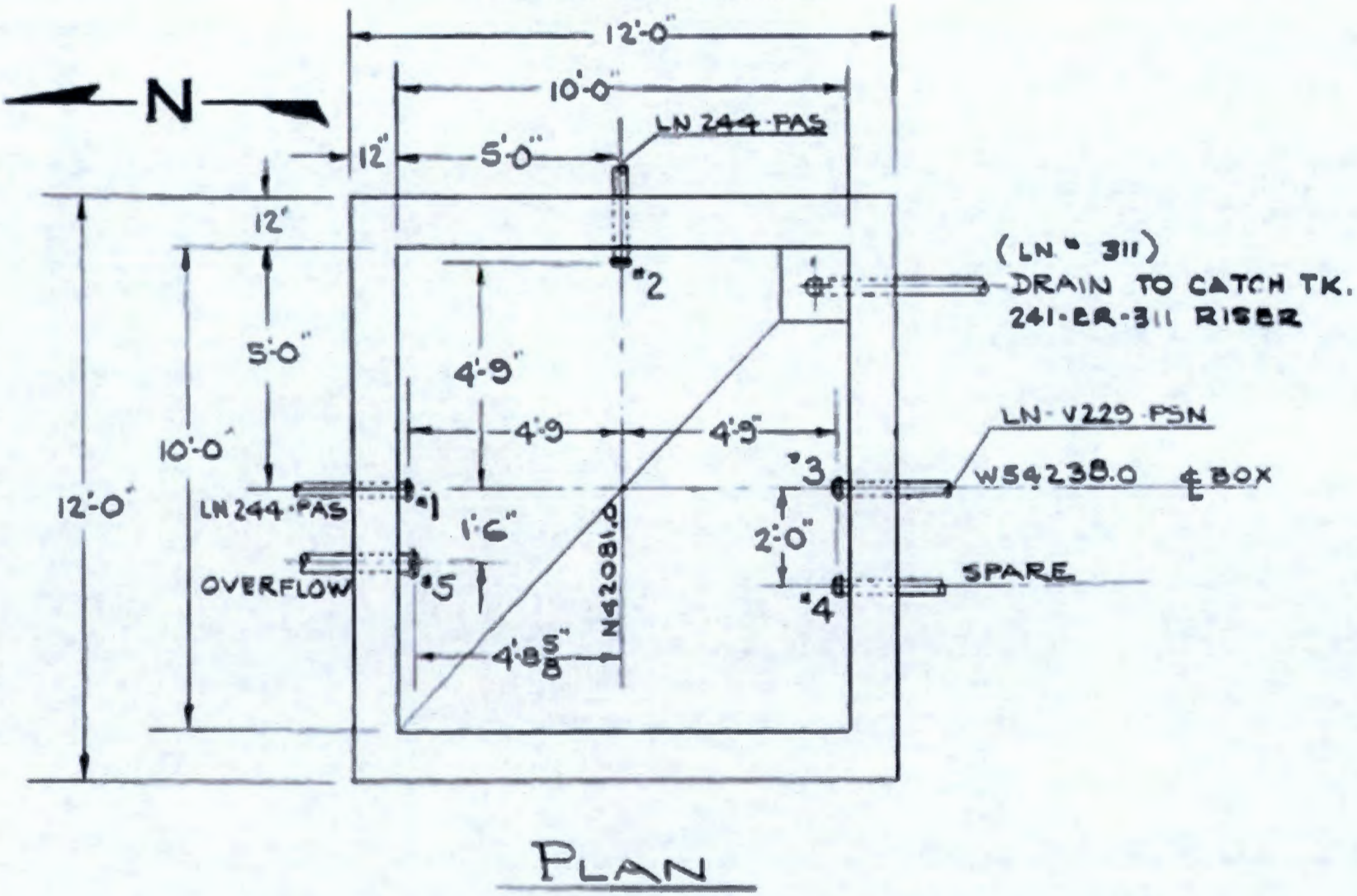
- 1996: Radiological survey recorded contamination levels between 7,000 disintegrations/min to 300 mrem/hr
  - The area, identified under WIDS site code 200-E-29, was covered with gravel and down posted to an URMA
  - The remediated area measured 49,455 sq ft. A smaller, adjacent area measured 158 sq ft
- 2000: Additional contamination located in two rodent nests in a contaminated backhoe parked near the diversion box, with levels up to 50 millirad/hour

Misc./Other Relevant Information

- None identified.

200-E-147-PL
200-E-29
241-ER-152
200-E-215-PL
200-E-305-PL
N
0
35
70
140 Feet

241-ER-152 Diversion Box Schematics



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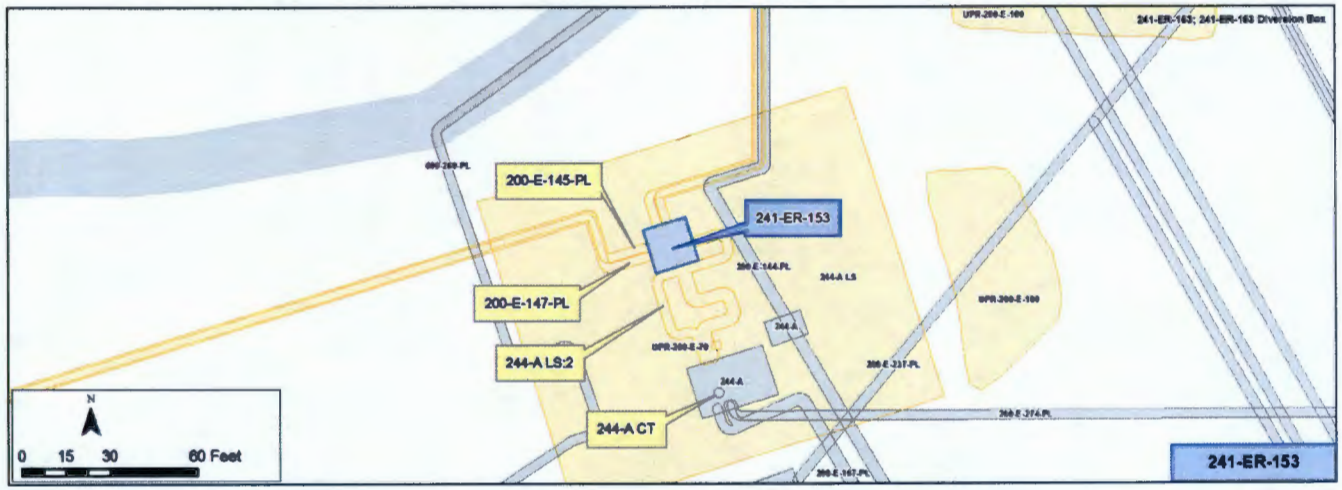
Scoping Summary: 241-ER-153

History

The 241-ER-153 waste site is an inactive diversion box located inside the fenced area surrounding the 244-A lift station. This diversion box distributed waste from the 241-C tank farm and supported the 241-ER-151 Diversion Box for 200 West Area to 200 East Area transfers.

The diversion box began operating in 1945 and service ended by 2005 when the lift station was deactivated. Two transfer lines that carried PUREX effluent pass through the diversion box: 200-E-147-PL and 200-E-145-PL.

200-E-145-PL (V228) transferred effluent both directions between the 241-CR-153 diversion box in the 241-C tank farm and the 241-ER-151 diversion box from 1976 to 1980. 200-E-147-PL (V244) transferred effluent from the 244-CR vault in the 241-C tank farm to the 221-B facility from 1976 to 1978. Three process lines connect the diversion box to the lift station, SN232, SN233 and SN234 (244-A LS:2). Lines SN232 and 233 were installed in 1974 and SN234 was installed in 1986 after SN233 failed and was abandoned.



Construction

- Length: 15 ft
- Width: 15 ft
- Height: 12 ft
- Total Calculated Volume: 2,700 cubic ft
- Depth:
  - Top of structure: 6 inches above grade
  - Bottom of structure: 11.5 ft below grade, two inch floor slope to drain
- Material: Reinforced concrete, walls 1 ft thick
- Nozzles: 9 total
- Cover blocks 1 ft 8 inches thick with lifting bails are visible on the surface and covered with waterproofing foam
- The floor and 2 ft up the walls are lined with 1/8 in. ASTM A-240 type 304L stainless steel (see figure pg 3)

Features of Interest

- 200-E-145-PL: V228, 3 inch concrete encased transfer line at nozzles 2 and 7 (blanked)
- 200-E-147-PL: V244, 3 inch concrete encased transfer line at nozzles 1 and 9 (blanked)
- 244-A LS:2: Three 3 inch process lines from nozzles 3, 4, 5 to 244-A lift station
- 3 inch spare line at horizontal nozzle 6
- 4 inch overflow line from horizontal nozzle 8 to transfer lines encasement
- 3 inch floor drain line in sump to 244-A catch tank inside the 244-A lift station (see figure pg 3)

Relevant Characterization

- No direct characterization data have been located for the diversion box, adjacent soil or connected pipelines

Waste Streams

- 200-E-145-PL carried PUREX supernatant (PSN) and acid sludge (PAS)
- 200-E-147-PL carried PAS

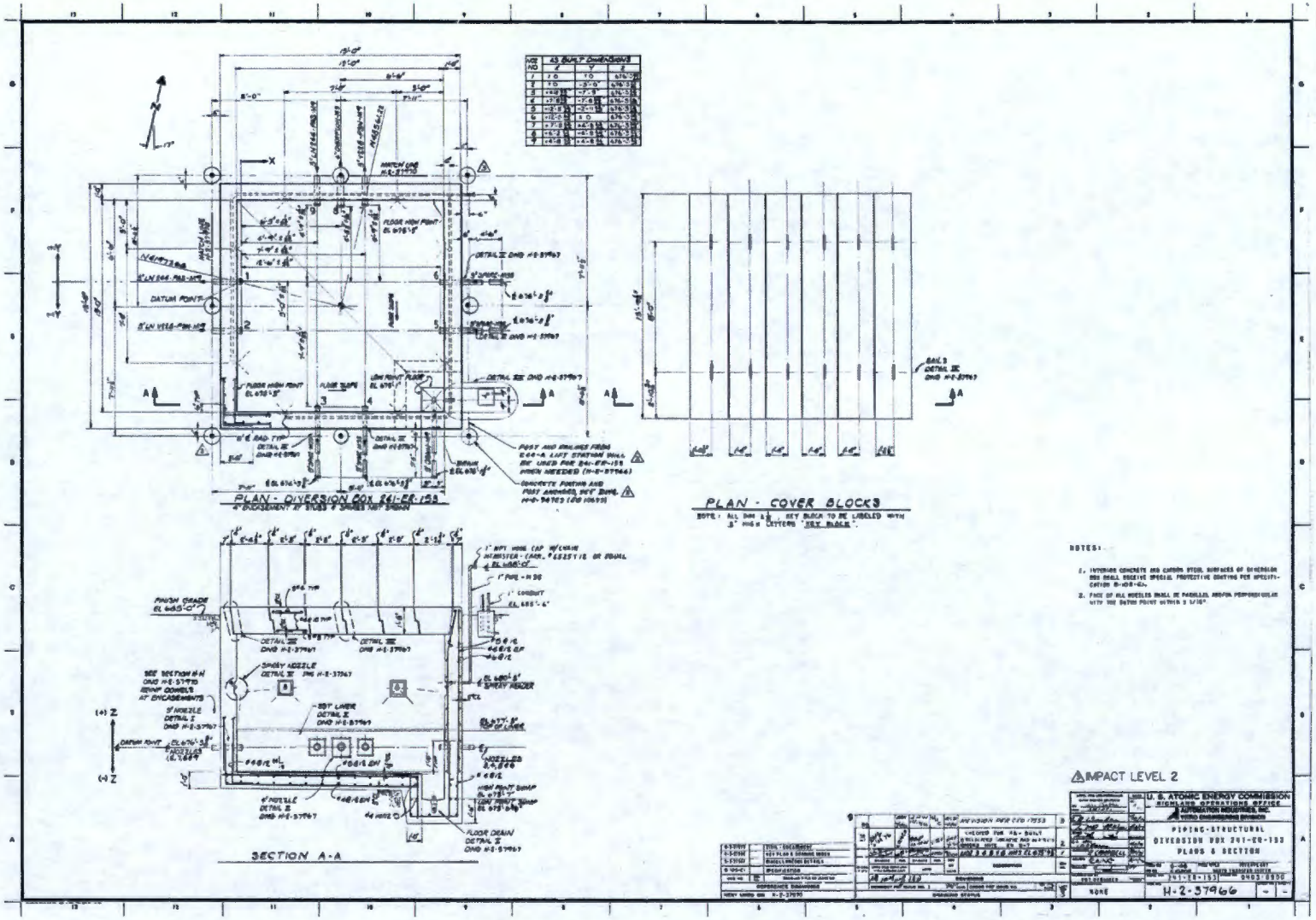
Misc./Other Relevant Information

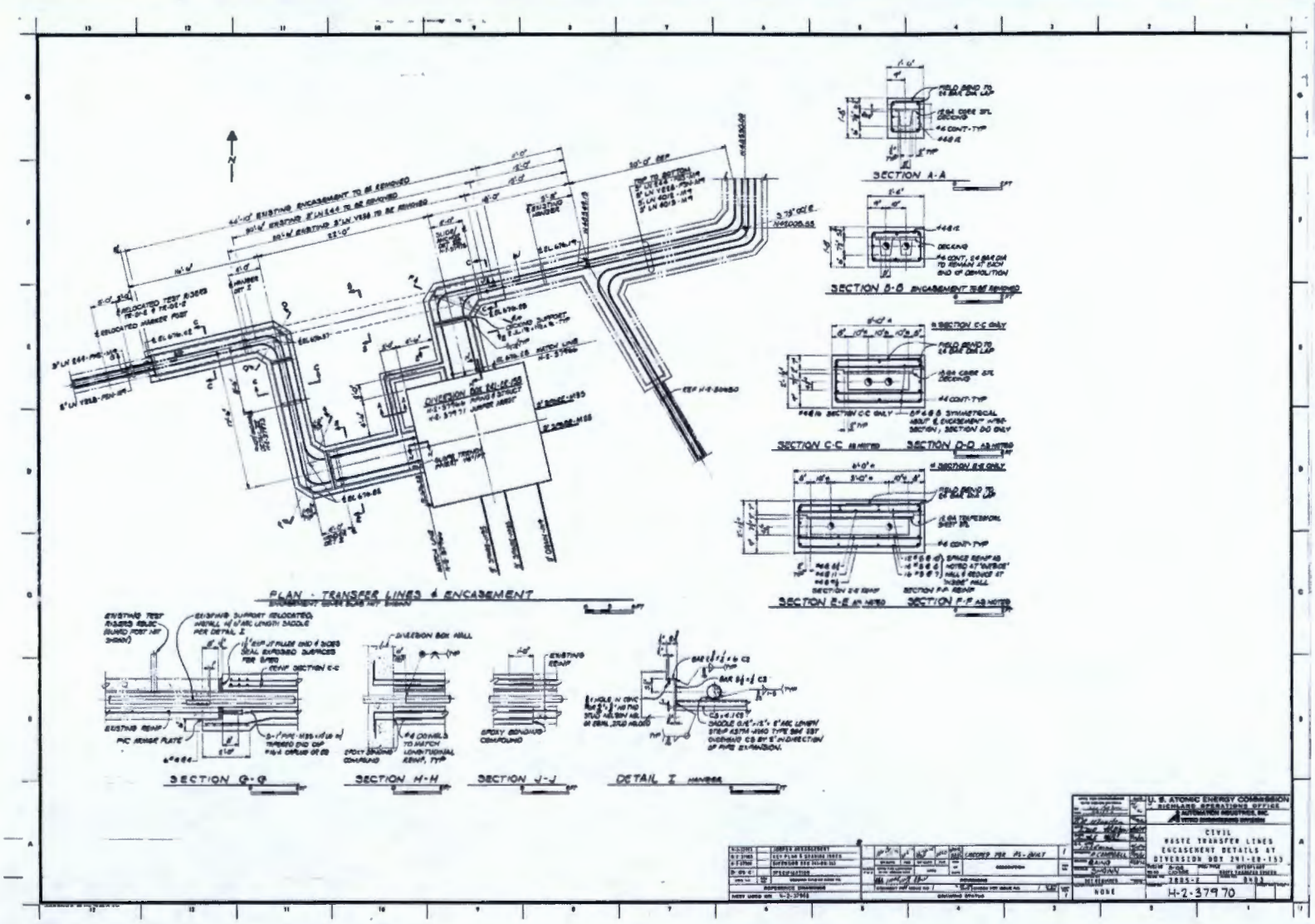
- May contain approximately 23 kilograms of lead shielding

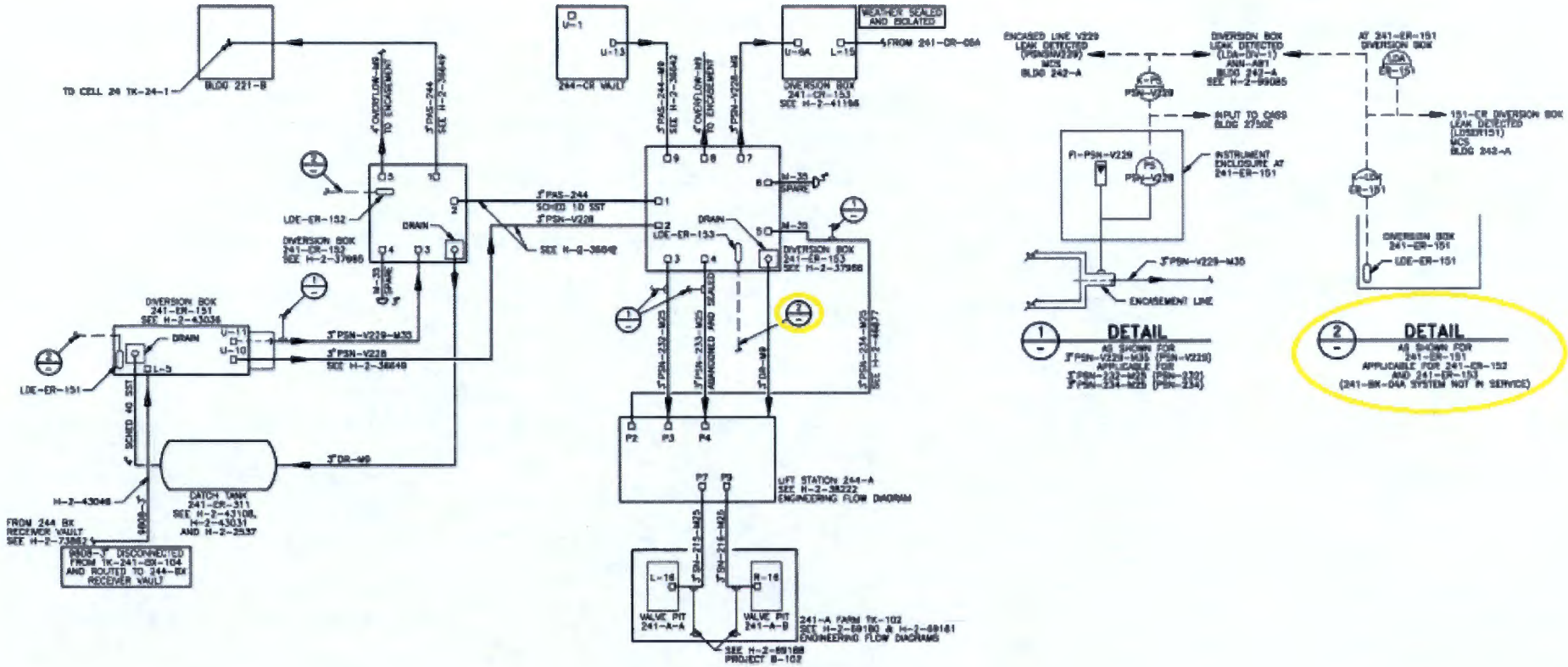
Site Interfaces

Origin/Termination	Sites that Intersect
200-IS-1	200-IS-1
• 244-A LS	• 200-E-145-PL
	• 200-E-147-PL

200-E-145-PL
241-ER-153
200-E-147-PL
244-A LS:2
244-A CT
N
0
35
70
140 Feet


PLAN - DIVERSION BOX 241-ER-153
PLAN - COVER BLOCKS
SECTION A-A
IMPACT LEVEL 2
U. S. ATOMIC ENERGY COMMISSION
PIPING-STRUCTURAL
DIVERSION BOX 241-ER-153
PLANS & SECTION
H-2-37966


PLAN - TRANSFER LINES & ENCASEMENT
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
SECTION J-J
DETAIL I
U.S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
CIVIL
WASTE TRANSFER LINES
ENCASEMENT DETAILS AT
DIVERSION BOX 241-ER-153
NONE
H-2-37970


TO CELL 24 TK-24-1
BLDG 221-B
244-CR VAULT
WEATHER SEALED AND ISOLATED
FROM 241-CR-056
DIVERSION BOX 241-CR-153
LDE-ER-152
DIVERSION BOX 241-ER-152
DIVERSION BOX 241-ER-151
LDE-ER-151
DIVERSION BOX 241-ER-153
LDE-ER-153
CATCH TANK 241-ER-311
FROM 244 BX RECEIVER VAULT
LIFT STATION 244-A
VALVE PIT 241-A-A
VALVE PIT 241-A-B
241-A FARM TK-102
ENCASED LINE V229 LEAK DETECTED
DIVERSION BOX LEAK DETECTED
AT 241-ER-151 DIVERSION BOX
INPUT TO CAGS BLDG 275GE
INSTRUMENT ENCLOSURE AT 241-ER-151
ENCASEMENT LINE
DETAIL
DETAIL

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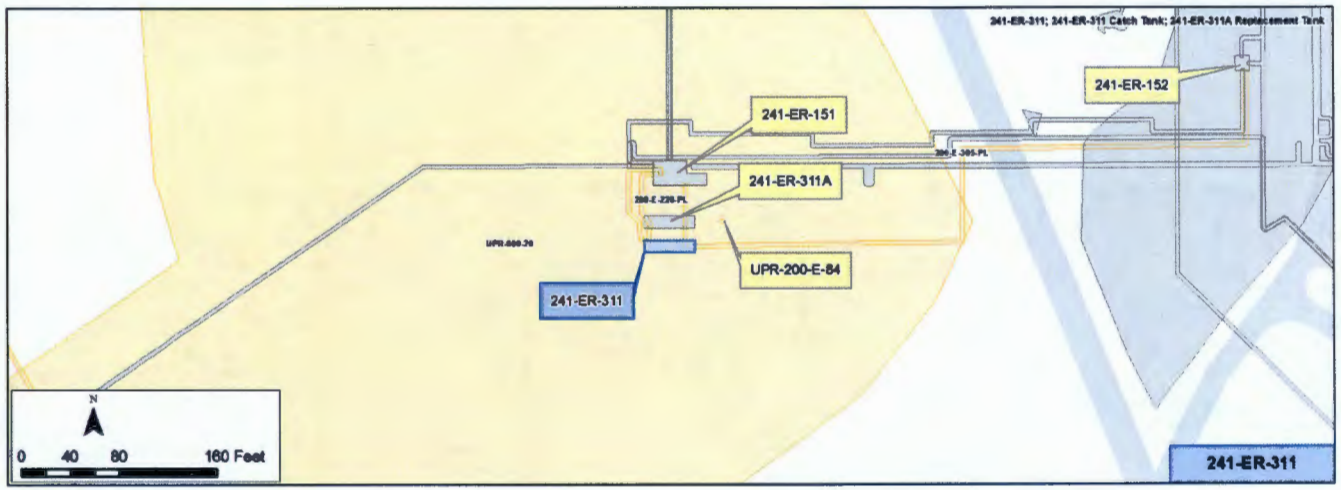
Scoping Summary: 241-ER-311

History

The 241-ER-311 waste site is a catch tank that was used to capture any process overflow from the 241-ER-151 and 241-ER-152 Diversion Boxes. The tank was built in 1954 to replace the original 241-ER-311 Catch Tank, which developed a leak in 1953. When the new tank was constructed, the original tank was abandoned and renamed 241-ER-311A. The 241-ER-311 tank is adjacent to the south side of 241-ER-311A.

When the 241-ER-152 Diversion Box was constructed in 1974, the box was attached to 241-ER-311 via drain line DR311 (200-E-305-PL). The tank is equipped with a jet siphon and pump pit, which returned waste back to the 241-ER-151 Diversion box if the tank reached capacity.

The tank underwent several isolation activities in 2005, including the installation of a weather cover over the central pump pit. In Sep-2006, DOE and Ecology agreed to suspend installation of an interim barrier over the tank and an adjacent tank (241-ER-311A) pending further information. In late 2006, a portable exhaust unit was connected to one of the tank's risers, operating from Oct-13-2006 to Feb-15-2007, at which point a video inspection indicated that the liquid had fully evaporated.



Construction

- Dimensions
  - Length: 36 ft
  - Diameter: 9 ft
- Capacity: 17,697 gal
- Stainless Steel
- Penetrations
  - Two 4 in. risers
  - One 12 in. riser
  - One 18 in. flanged connection
- Connections
  - Three drain lines from 241-ER-151 and 241-ER-152
  - One jet steam siphon
- Buried Depth
  - 17.5 ft - 26.5 ft bgs

Features of Interest

- 3 Stainless Steel test risers
- 1 Stainless Steel flanged drain connections
- 1 Steam Jet Siphon and pump pit

Relevant Characterization

- 1998: Sampling of liquid in 241-ER-311 found liquid to be >99% water, from surface intrusion to diversion boxes
- 2006: Reports of suspected leak in Oct-2005, and test risers found Sodium, Nitrate, Nitrite, Fluorine, Chlorine, Sulfate, Phosphate, Strontium-90, and Cesium-137 ("Tank 241-ER-311 Leak Assessment Report", and "Options for Responding to the Assumed Leak in Catch Tank 241-ER-311")
- 2006: Liquid volume estimated at 424 gal, leaking ~ 0.4 gal/day

Waste Streams

The 241-ER-311 Catch Tank received overflow process wastes from the 241-ER-151 and 241-ER-152 Diversion Boxes. These boxes facilitated the transfer of the following wastes:

- 1964-1972: P2' Acid Wastes (also identified as PUREX Acid Sludge [PAS] and PUREX Supernate [PSN]) to B-Plant. (241-ER-151 and 241-ER-152)
- 1952-1958: TBP waste from U-plant (241-ER-151)
- 1944-1956: MW1/MW2 Metals Waste and 1C1/1C2 first cycle wastes from B-Plant, which were dispatched to the BX tank farm and carried through the 241-ER-151 Diversion Box via the 200-E-217-PL. (241-ER-151).

Misc./Other Relevant Information

- None identified.

Site Interfaces

Origin/Termination

200-IS-1
- 200-E-228-PL

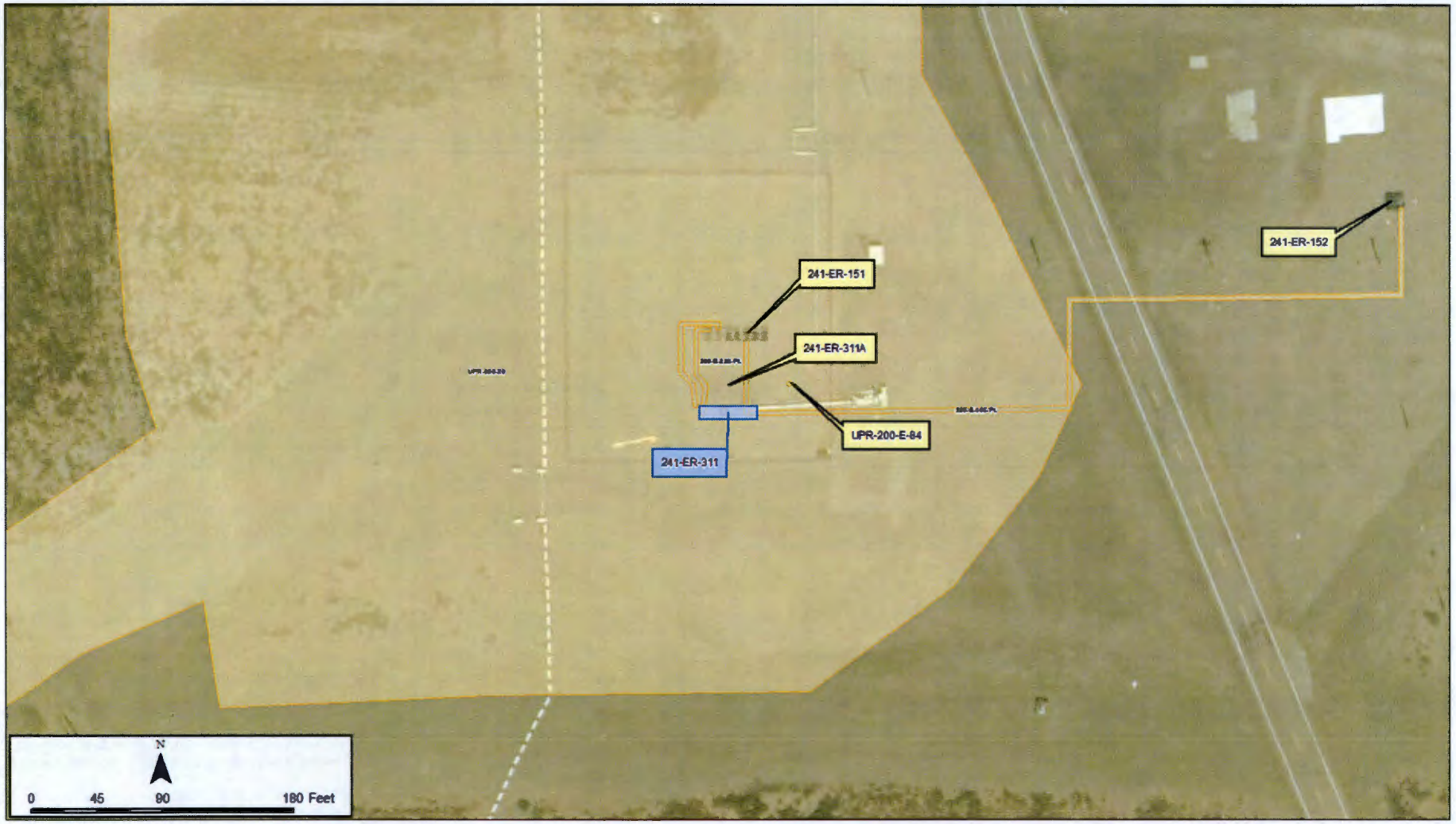
TBD
- 200-E-305-PL

Site Interfaces

200-IS-1
- 241-ER-311A (Catch Tank)
- UPR-200-E-84 (Source: 241-ER-311A)

200-OA-1
- UPR-600-20 (Sources: 600-284-PL & 241-ER-151)

Unknown
- 241-ER-151
- 241-ER-152


241-ER-151
241-ER-311A
UPR-200-E-84
241-ER-311
241-ER-152
N
0
45
90
180 Feet

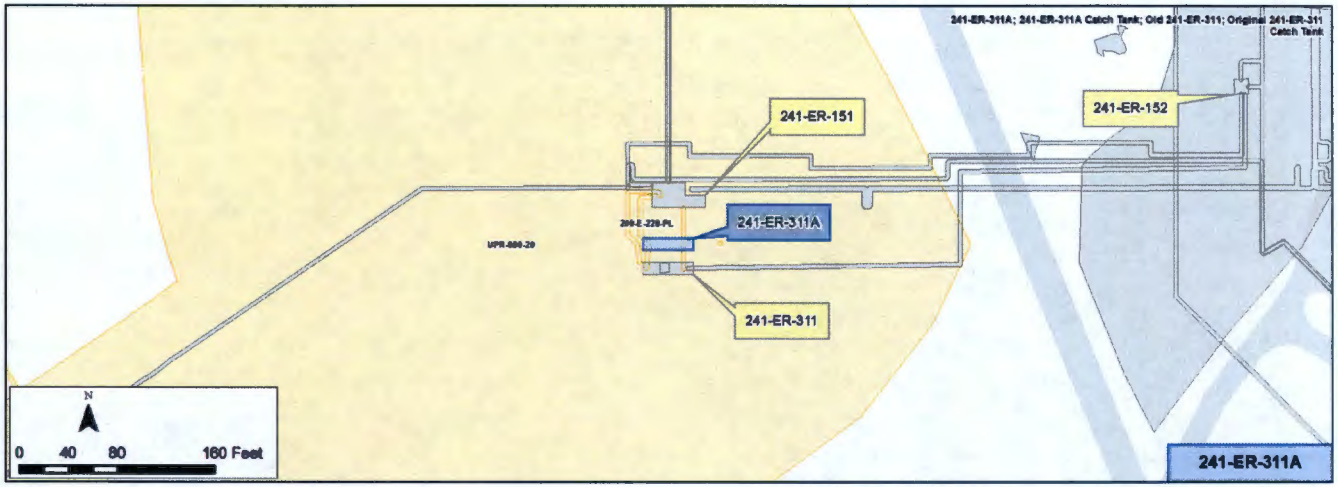
Scoping Summary: 241-ER-311A

History

The 241-ER-311A waste site is an abandoned catch tank located just south of the 241-ER-151 Diversion Box, south of B Plant and west of Atlanta Avenue.

The tank was constructed in 1950 to capture any leaks from the 241-ER-151 Diversion Box, which helped facilitate the Interplant Transfer System. The 241-ER-311A tank is adjacent to the north side of the 241-ER-311 Catch Tank.

Originally labeled 241-ER-311, this tank was abandoned in place in 1954 after it leaked in 1953. Documentation of any remediation or repair was not located. At the time of abandonment the risers were cut off 4 ft below the ground surface and sealed. The tank was re-numbered to 241-ER-311A, and a new tank was constructed and named 241-ER-311 just to the south of this tank.



Construction

- Dimensions:
  - Length: 40 ft
  - Diameter: 8 ft 10.875 in.
- Material: Carbon Steel
- Shape: Cylindrical
- Position: Horizontal
- Buried Depth: 20 ft - 30 ft bgs
- Capacity: 16,679 gal
  - 7 coats of Amercoat #55 epoxy line the interior walls
- Connections:
  - Two 4 in. pipes (both labeled V224) from 241-ER-151
  - One 3 in. return line (V226) back to 241-ER-151
  - One steam line connected to the jet pump
- Tank Penetrations:
  - 3 test risers at the tank surface (~20 ft bgs), stainless steel flanged joints with gaskets
- Before installation, the tank was pressure tested to ensure its structural integrity

Features of Interest

- 7 Schedule 40 stainless steel flanged pipe attachments with gaskets
- 1 Jet Syphon
- 1 Jet box

Relevant Characterization

- 1953 - 1,700 gal of liquid containing 10 curies of fission product leaked from the tank. No surface contamination was detected, and the cause of the leak/spill is not documented

Waste Streams

- PUREX acid sludge
- PUREX supernatant

Misc./Other Relevant Information

- No primary documents were located to confirm if the tank was pumped at the time of abandonment
- The stabilization material surrounding the tank consists primarily of sand
- The site has been ranked as a low-activity site by the CERCLA Hazard Ranking of Inactive Waste Sites at Hanford

Site Interfaces

Origin/Termination

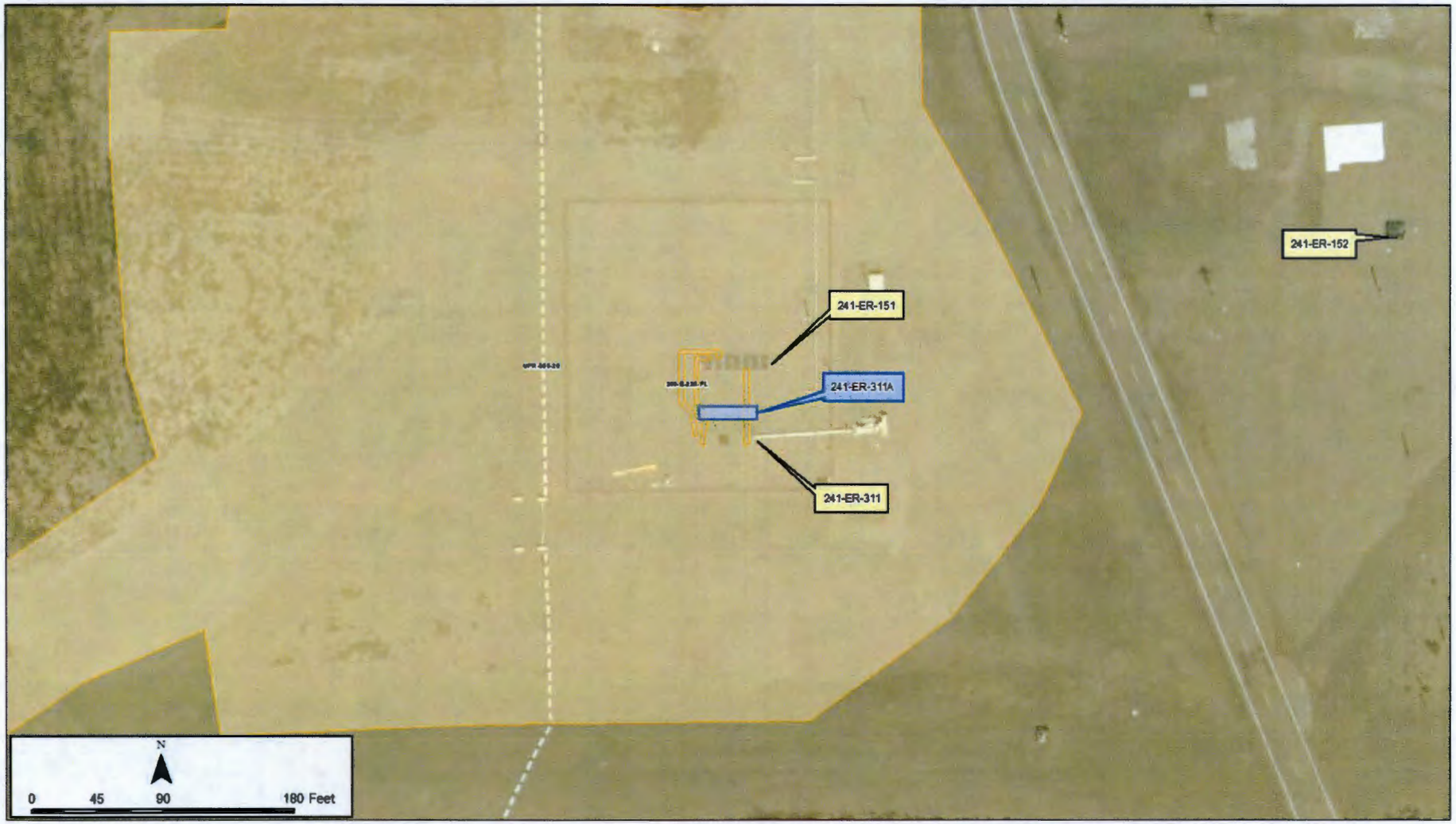
200-IS-1
- 241-ER-151

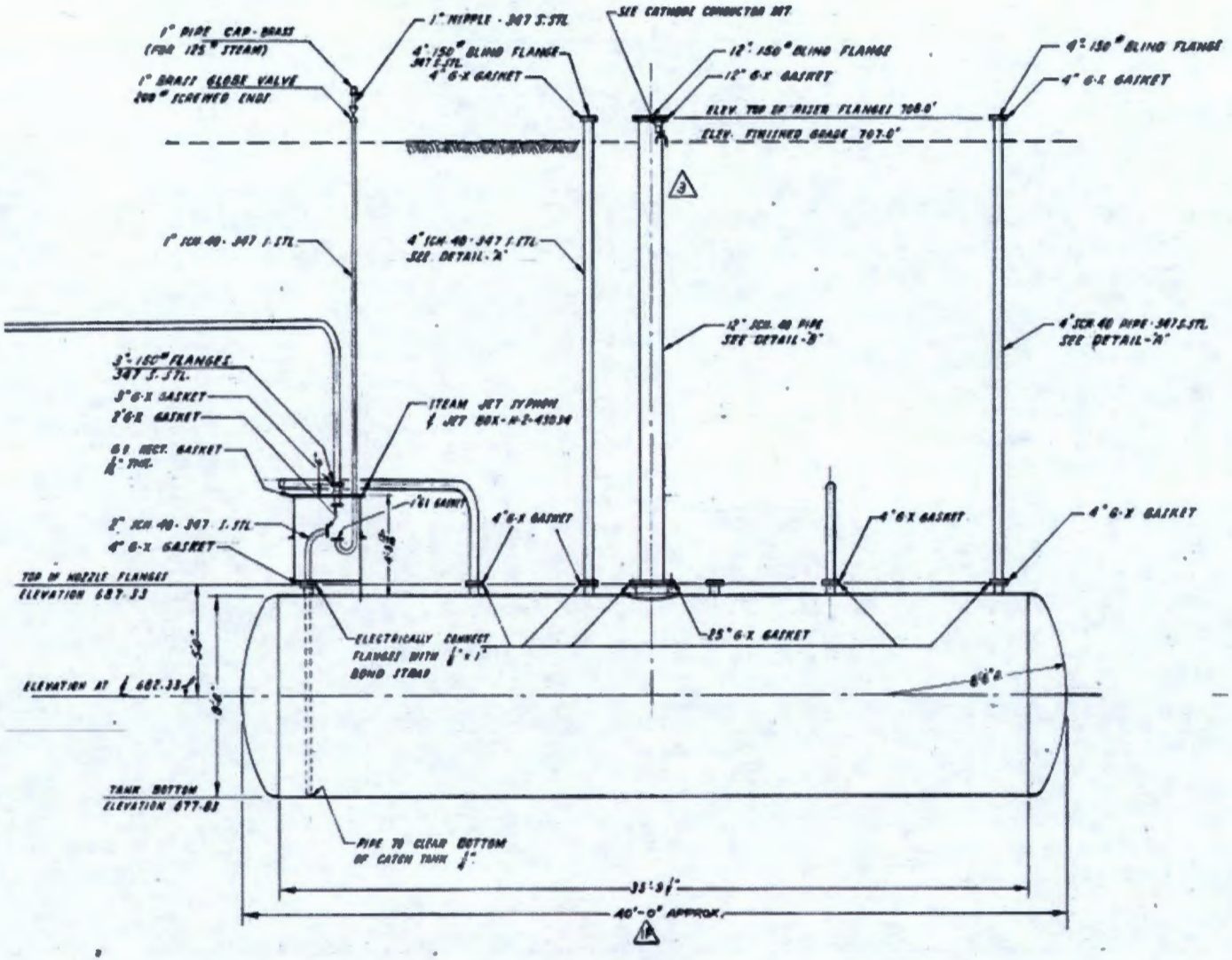
Site Intersects

200-IS-1
- 200-E-228-PL
- UPR-200-E-84

200-OA-1
- UPR-600-20

Scoping Summary: 241-ER-311A




1" PIPE CAP - BRASS (FOR 125# STEAM)
1" BRASS GLOBE VALVE 200# SCREWED ENDS
1" NIPPLE - 347 S.STL
4" 150# BLIND FLANGE 347 S.STL
4" G-X GASKET
SEE CATHODE CONDUCTOR DET
12" 150# BLIND FLANGE
12" G-X GASKET
ELEV. TOP OF RISER FLANGES 708.0'
ELEV. FINISHED GRADE 707.0'
4" 150# BLIND FLANGE
4" G-X GASKET
1" SCH 40 - 347 S.STL
4" SCH 40 - 347 S.STL SEE DETAIL-"A"
12" SCH. 40 PIPE SEE DETAIL-"B"
4" SCH 40 PIPE - 347 S.STL SEE DETAIL-"A"
3" 150# FLANGE 347 S.STL
3" G-X GASKET
2" G-X GASKET
G.I. RECT. GASKET 1/8" THK.
STEAM JET SYPHON & JET BOX - W-2-430.34
1" G.I. GASKET
2" SCH 40 - 347 S.STL
4" G-X GASKET
4" G-X GASKET
4" G-X GASKET
4" G-X GASKET
TOP OF NOZZLE FLANGES ELEVATION 687.33
ELECTRICALLY CONNECT FLANGES WITH 1/8" x 1" BOND STRAP
25" G-X GASKET
ELEVATION AT ℄ 682.33
TANK BOTTOM ELEVATION 677.83
PIPE TO CLEAR BOTTOM OF CATCH TANK 1/2"
35'-9 1/2"
40'-0" APPROX.

ELEVATION

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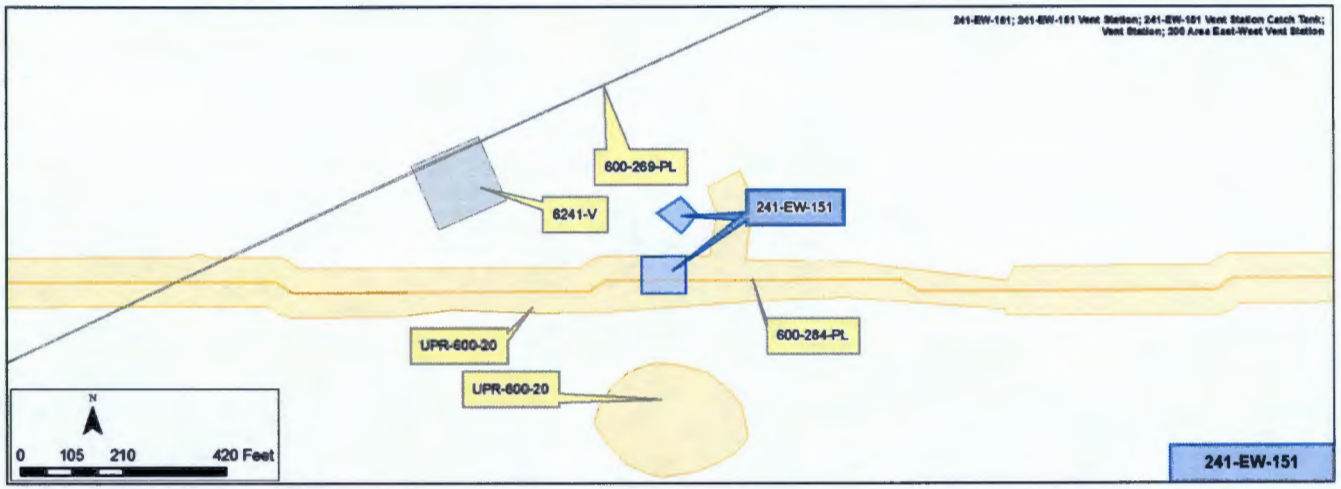
Scoping Summary: 241-EW-151

History

The 241-EW-151 waste site is an inactive ventilation system used to purge air from the 600-284-PL cross-site transfer line prior to pressure checks, and to break the syphon on the cross-site transfer pipelines. The 241-EW-151 ventilation station is a reinforced concrete structure comprised of a nozzle pit (similar in function to a diversion box) located above a below grade concrete vault. A floor drain in the nozzle pit connects to a stainless steel tank. The catch tank collected the small amount of drainage from the lines that occurred when a line was vented. The nozzle pit and the concrete vault were equipped with leak detectors. The vault connected to a French Drain that was capped and plugged in 1976 (H-2-68274). The ventilation station includes a stairway to access the below grade components.

The ventilation station is located in the Outer Area at the high point of the cross-site transfer line (600-284-PL). Fluids in the cross-site transfer line drained to both the 241-UX-154 diversion box in 200 West and the 241-ER-151 diversion box in 200 East. The ventilation station was constructed in 1955 and was in use until 1996. A weather proof cover was installed over the nozzle pit cover blocks in Mar-2006.



Construction

Catch Tank

- Position: Vertical
- Shape: Cylinder
- Dimensions: 4.5 ft diameter x 7 ft tall
- Capacity: 800 gal
- Material: Stainless Steel
- Tank housed in 11 ft x 11.5 ft x 11 ft concrete vault
- Several penetrations for connections to the jumper box and connections to vent lines from each cross-site pipeline.
- Depth: Top of tank is ~16 ft below grade

Tank Vault

- Dimension: 8 ft x 8 ft 6 in. x 8 ft 4 in.
- Reinforced concrete
- Equipped with French Drain and leak detector

French Drain

- Diameter: 5 ft
- Depth: Unknown
- Material: Concrete
- 3 in. treated wood cover

Features of Interest

- Two risers for HEPA filters
- Portable equipment connections (north side of vent station for 1 in. airline and 2 in. water line.

Relevant Characterization

- Operational tank limits exceeded in Jul-1992; cross-site transfers suspended;
- New monitoring equipment installed in Dec-1993, tank sampled; tanks contents transferred in May-1994
- Quarterly radiological monitoring performed at site;
- Posted URMA site

Waste Streams

- Received minor amounts of drain from cross-site transfer lines from venting operations.

Cross-site transfer line waste streams:

- 1952-1958 Site transported dissolved metal waste (bismuth phosphate process) from 200 East Area vaults to U Plant for uranium recovery waste (tributyl phosphate process) to the 200 East Area for disposal
- Post 1958 used to transfer REDOX supernates to B Plant for cesium recovery and to return depleted wastes to the 200 West Area for waste evaporation

Misc./Other Relevant Information

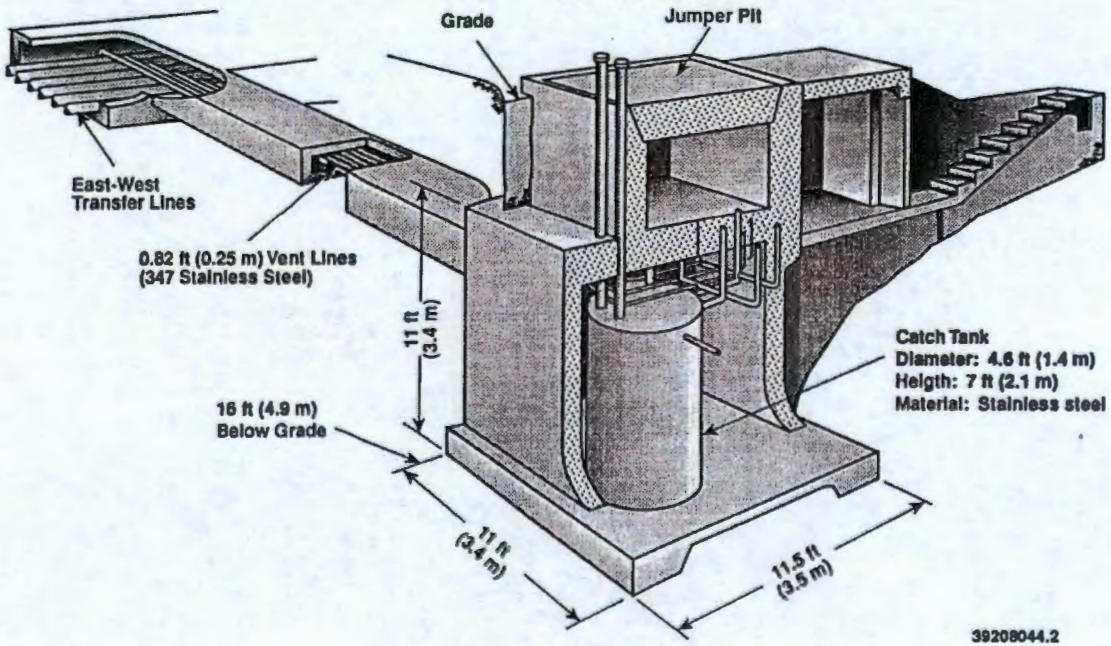
- UPR-600-20 extends over the length of the cross-site transfer line and is generally associated with biointrusion.

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-IS-1 200-OA-1 • UPR-600-20

600-269-PL
6241-V
241-EW-151
600-284-PL
UPR-600-20
UPR-600-20
N
0
60
120
240 Feet

241-EW-151 TANK
(200 AREA EAST-WEST VENT STATION)



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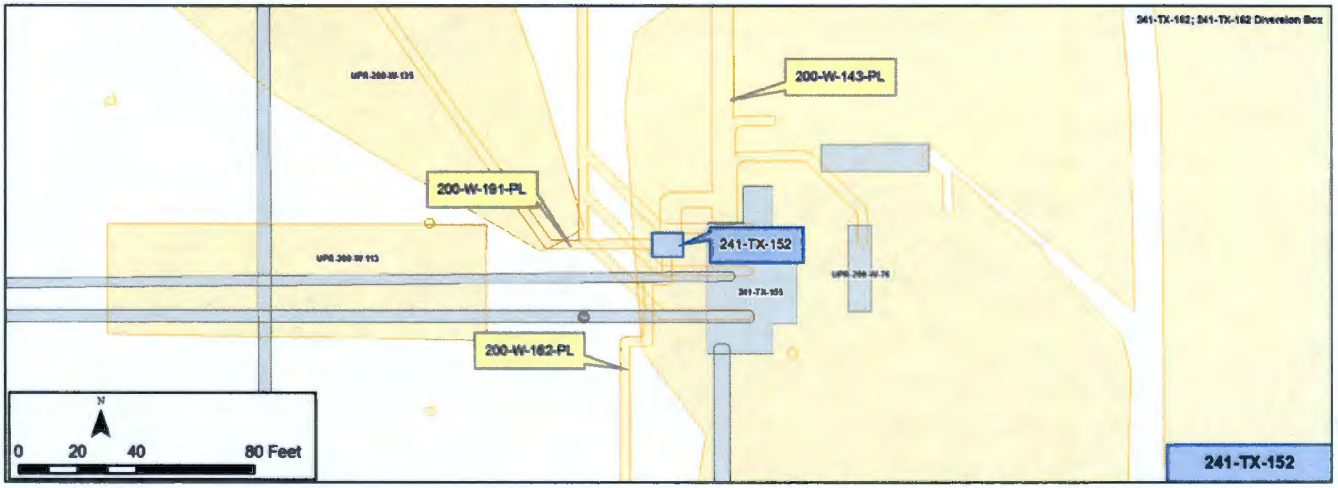
Scoping Summary: 241-TX-152

History

The 241-TX-152 waste site is an inactive diversion box used to transfer waste solutions and decontamination fluids between the 241-TX-154 diversion box, the 241-TY-153 diversion box, and the 241-U-152 diversion box. 241-TX-152 is located in the 200W Area adjacent to the 241-TX-155 diversion box.

It was constructed in 1949 and removed from service in 2005, when lines were flushed and isolation blanks or process blanks were installed on the lines. A total of nine lines enter or exit the diversion box.

Two unplanned releases are located in the vicinity of 241-TX-152. UPR-200-W-76 is an area of surface contamination attributed primarily to the 241-TX-155 diversion box and covers an area that includes 241-TX-152. Contamination from both diversion boxes has likely contributed to this UPR. UPR-200-W-135 extents north and west of 241-TX-152 and is attributed to the 241-TX-155 diversion box.



Construction

- Outside Dimensions
  - 10-1/2 ft long x 8 ft wide x 12 ft deep
- Inside Dimensions
  - 8-1/2 ft long x 6 ft wide x 8ft 9-1/2 in. deep
- Calculated volume: 448 cubic ft
- Buried depth
  - Top of structure: 2 ft above ground surface
  - Bottom of structure: 9 ft 2-1/2 in. below ground surface
- Number of lines:
  - Lines V387 and v388 enter from 241-TX-154 via the 200-W-143-PL;
  - Lines V404 and V398 exit to 241-U-152 via 200-W-182-PL;
  - Lines V402, V406 and F408 exit to 241-TY-153 via 200-W-191-PL;
  - Line V408 drains the diversion box to the 244-T salt well receiver;
  - One line drains the 200-W-143-PL pipeline encasement (DR-820) .
- Construction material – reinforce concrete with 1/8 in.stainless steel liner
- One cover block coated with weather sealant

Features of Interest

- Valve extension handle and bushing extending through cover block

Relevant Characterization

- Site is surrounded by chain barricade and posted with surface and underground contamination warning signs
- Site monitored annually as part of S&M program
- Generic reference indicates approximately 50 pounds of lead shielding may be present in each diversion box, though no reference or evidence located to verify presence of lead
- Releases of the following constituents to the soil based on associated UPRs: Cs, Ru, Sr, plutonium, gross uranium, alpha and beta, and chemical contamination

Waste Streams

- Transferred wastes associated with T Plant bismuth phosphate reprocessing until 1957. Transferred radioactive waste solutions from processing and decontamination operations at T Plant

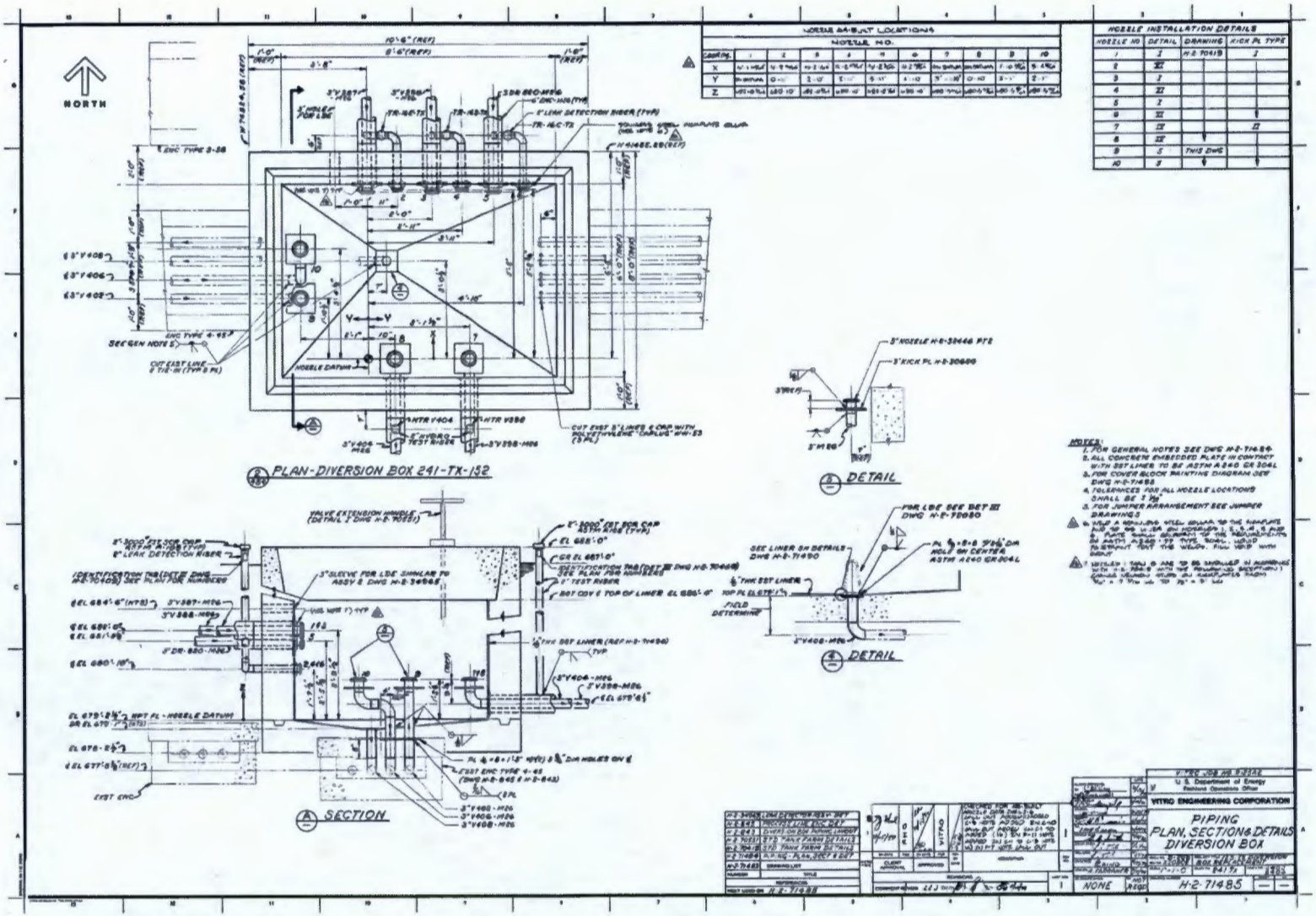
Misc./Other Relevant Information

- Line V398 failed on May 14, 1982 due to corrosion and pitting - the leak was located near test riser TR-36-TX
- UPR-200-W-113 and UPR-200-W-135 are associated with releases from 241-TX-155

Site Interfaces

Origins/Terminations	Sites That Intersect
• N/A	200-IS-1 • 200-W-143-PL • 200-W-182-PL • 200-W-191-PL

200-W-143-PL
200-W-191-PL
241-TX-152
200-W-182-PL
N
0
35
70
140 Feet


NORTH
PLAN-DIVERSION BOX 241-TX-152
SECTION
DETAIL
DETAIL
NOZZLE INSTALLATION DETAILS
NOZZLE ABSOLUTE LOCATIONS
NOTES:
PIPING
PLAN, SECTION & DETAILS
DIVERSION BOX
VITRO ENGINEERING CORPORATION
U. S. Department of Energy
NONE
H-2-71485

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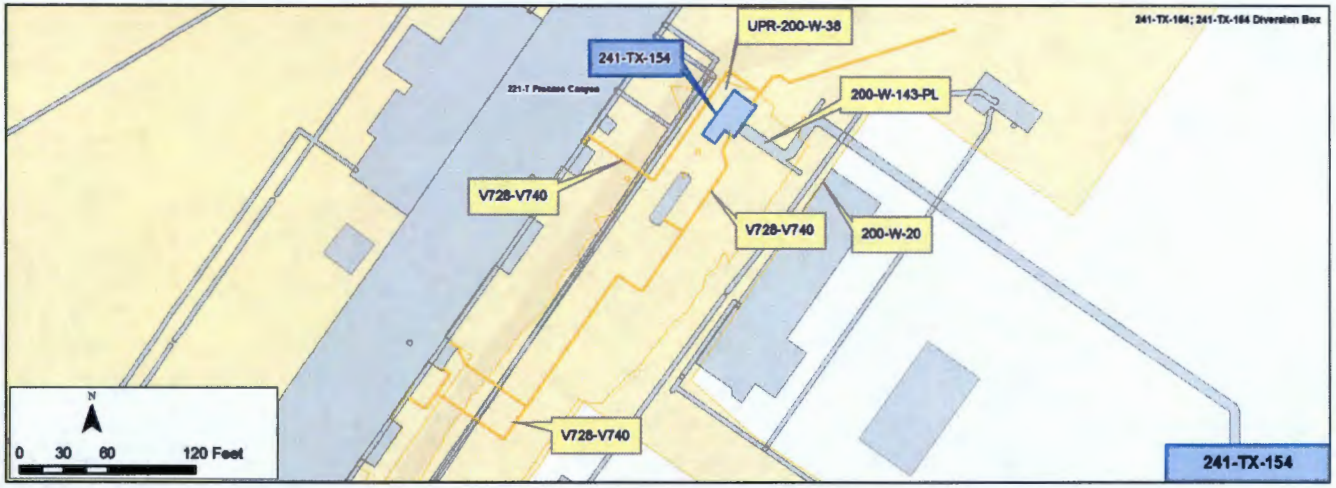
Scoping Summary: 241-TX-154

History

The 241-TX-154 waste site is a rectangular reinforced concrete diversion box located on the east side of the 221-T Building that was used to transfer waste solutions to various tank farm facilities from 1949 until 2005. The site is connected to pipeline 200-W-143 PL, which extends to the 241-TX-155 Diversion Box. The site is also connected to the 221-T Building via lines V728-V740. Spillage or drainage in the diversion box drained to the 241-TW-302C Catch Tank.

Multiple unplanned releases and transfer line breaks are associated with this diversion box. In Jul-1953, a process line failure caused a discharge to the ground (UPR-200-W-21). The area was covered with blacktop and posted "Underground Contamination." In Dec-1955, an underground transfer line from the catch tank failed (UPR-200-W-160 and UPR-200-W-38). The area was backfilled, sprayed with tar, and posted as a radiation zone. The failure flooded an area of approximately 1,500 sq ft with several thousand gallons of metal waste. The waste pooled on top of asphalt previously placed, which was covered with an unreported thickness of soil and additional asphalt was laid on top of the fill for containment. In January 1956, an unknown liquid leaked from the diversion box and catch tank (UPR-200-W-40).



Construction

- Dimensions: 36 ft long x 10 ft wide x 17 ft high
- Calculated Volume: 48,474 gal
- Buried depth: Top of structure 1 ft above ground, bottom of structure 16 ft below ground
- Nineteen 3 in. lines in/out
- Two 4 in. drains to catch tank
- Material: Reinforced concrete
- Three layers of cover blocks with a total thickness of 5 ft 1 in.

Features of Interest

- Site is surrounded by a chain barricade and is posted with surface and underground contamination warning signs
- All connected transfer lines are encased

Waste Streams

- Bismuth phosphate reprocessing and radioactive waste solutions from processing and decontamination operations

Site Interfaces

Origin/Termination

200-IS-1

- 241-TX-302C
- 200-W-143 PL
- 221-T Facility

Site Intersects

200-IS-1

- UPR-200-W-38
- UPR-200-W-40
- UPR-200-W-160

No Operable Unit

- UPR-200-W-21

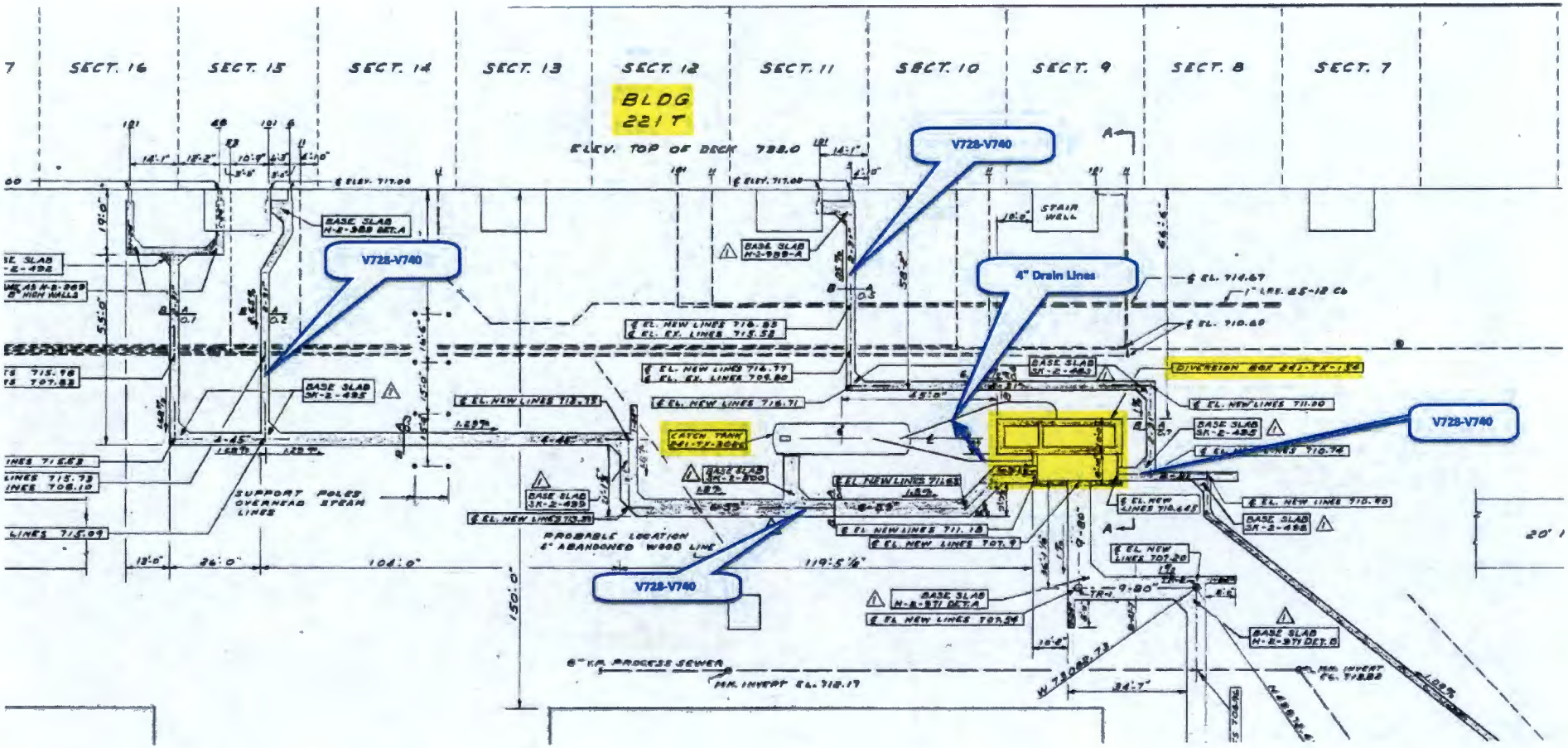
Relevant Characterization

- No direct characterization data was located for this diversion box or adjacent soil

Misc./Other Relevant Information

- Approximately 50-lbs. of lead shielding may be stored in the diversion box

221-T Process Canyon
241-TX-154
UPR-200-W-38
200-W-20
V728-V740
200-W-143-PL
V728-V740
V728-V740
N
0
35
70
140 Feet


SECT. 16
SECT. 15
SECT. 14
SECT. 13
SECT. 12
SECT. 11
SECT. 10
SECT. 9
SECT. 8
SECT. 7
BLDG 221 T
ELEV. TOP OF DECK 738.0
V728-V740
V728-V740
4" Drain Lines
V728-V740
V728-V740
STAIR WELL
CATCH TANK
SUPPORT POLES OVERHEAD STEAM LINES
PROBABLE LOCATION 4" ABANDONED WOOD LINE
6" K.P. PROCESS SEWER
119'-5 1/2"
104'-0"
26'-0"
150'-0"

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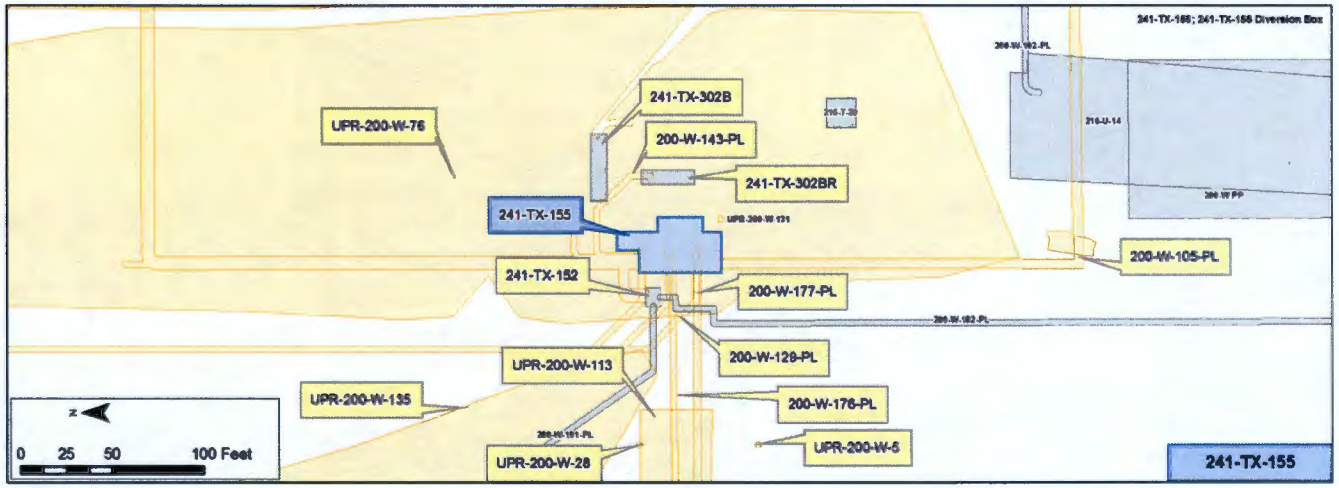
Scoping Summary: 241-TX-155

History

The 241-TX-155 waste site is a reinforced concrete diversion box (Fig. 1). It was used to transfer radioactive process wastes from the T-Plant (via the 200-W-143-PL) and the 221-U Building (via the 200-W-105-PL) to the following four diversion boxes: 241-TX-153 (via 200-W-176-PL), 241-TXR-151 (via 200-W-177-PL), and the 241-T-151 & 152 (via 200-W-129-PL). There are 19 incoming and 20 outgoing lines connecting into the diversion box (Fig. 2 & 3).

241-TX-155 was constructed in 1947-49 and operational in 1950. In 1950, there was an overflow from the diversion box that resulted in UPR-200-W-5. There were further releases recorded from the diversion box that include: UPR-200-W-28 and UPR-200-W-135 in 1954, UPR-200-W-76 in 1977, and additional areas of contamination associated with 241-TX-155 have also been identified with UPR-200-W-113. Of the 39 lines connecting into 241-TX-155 there is one recorded as a failed line/leaking nozzle (nozzle U-3).

In the 1970's, many of the lines connecting into 241-TX-155 were deactivated, with the last recorded transfer in 1980. The diversion box is coated with weatherproofing foam and has been covered with clean soil and gravel.



Construction

- Two sections, Pipe Pit and Nozzle Pit/Jumper Storage (includes an attached Encasement), of differing dimensions:
  - Pipe Pit: ~ 45 ft x 11 ft x 11.5 ft (OD); 42 ft x 8.5 ft x 9.5 ft (ID)
  - Nozzle Pit/Jumper Storage: ~ 56 ft x 10 ft x 18.75 ft (OD); 52 ft x 6 ft x 15.75 (ID)
- Composition: Reinforced concrete
- Total Computed Volume (ID): ~8,600 cu ft (includes encasement)
- Depth:
  - Top of structure: Nozzle Pit 1 ft ags; Pipe Pit 6 bgs;
  - Bottom of structures: Nozzle & Pipe Pit 18 bgs
- Cover Blocks:
  - Pipe Pit: 10 cover concrete slabs at 10.9 ft x 4.25 ft x 1 ft thick; fitted with lifting eyes
  - Nozzle Pit: 3 stacked cover block at 41 ft x (9, 8, & 7 ft) x 2 ft
- Encasement - for 3 crosslines connected to the Nozzle Pit:
  - Dimensions: 26 ft x 3.2 ft x 3.5 ft (OD)
  - Top of structure: 10 ft bgs
  - Bottom of structures: 13.5 ft bgs
- Covered with additional soil and gravel
- Nozzles/Lines: 39 nozzles (19 incoming and 20 outgoing 3 in. stainless steel lines)

Features of Interest

- 3 ft stub 4 in. stainless steel line at bottom of Nozzle Pit
- 3 ft stub 4 in. stainless steel line at bottom of Pipe Pit
- 1.5 in. stainless steel drain line at bottom of Nozzle Pit
- Drainage from the 241-TX-155 originally entered the 241-TX-302B Catch Tank, but upon acid damage in 1954 it was replaced by the 241-TX-302BR (Catch Tank)

Relevant Characterization

- Multiple surface radiological surveys show Shallow and Deep Dose readings that range from <0.5 to 6 mrem/hr
- Historical inventory reporting estimates based only on activity history from 1952 (216-T-20) and estimates are approximately 5,000 gallons that includes: 0.31 Ci Sr-90; 0.36 Ci Cs-137; 1.66E-03 Ci Total U; and 1.63 Ci Total Beta (Radionuclides decayed to 12/31/98)
- Related scoping summaries characterization data can also be seen in: 200-W-105-PL, 200-W-129-PL, & 200-W-143-PL

Waste Streams

- Waste Processes: REDOX, PUREX, T Plant, and U Plant
- Waste Streams:
  - MW2 - at least 4,912 kgals from 1952 - 1956
  - 1C2 - at least 982 kgals from 1953 - 1954
  - DW- at least 863 kgals from 1973 - 1976
  - Tributyl Phosphate Waste (TBP)
  - Nitric Acid and Thorium
  - Uranyl Nitrate Hexahydrate
  - REDOX supernates

Misc./Other Relevant Information

- 11/17/2008, tumble weeds with a maximum reading at 18,000 dpm/100cm-2 beta/gamma. Ground surface under tumble weeds was surveyed and no further contamination was detected
- In 1977, UPR-200-W-74 consisted of contaminated rabbit droppings and soil surrounding 241-TX-155, with readings as high as 100 millirads/hour. Contaminated material was removed and replaced with clean soil and gravel.

Site Interfaces

Intersecting Waste Sites:

200-IS-1
- 200-W-105-PL
- 200-W-129-PL
- 200-W-143-PL
- 200-W-176-PL
- 200-W-177-PL

200-WA-1
- UPR-200-W-76

Nearby/Associated Waste Sites:

200-IS-1
- 241-TX-152 (Diversion Box)
- 241-TX-302B (Catch Tank)
- 241-TX-302BR (Catch Tank)
- UPR-200-W-5
- UPR-200-W-28
- UPR-200-W-113
- UPR-200-W-13S

UPR-200-W-78
241-TX-302B
241-TX-302BR
200-W-143-PL
241-TX-155
200 W 129 PL
241-TX-152
200-W-105-PL
UPR-200-W-5
UPR-200-W-135
UPR-200-W-29
UPR-200-W-113
200-W-176-PL
200-W-177-PL
N
0
45
90
180 Feet

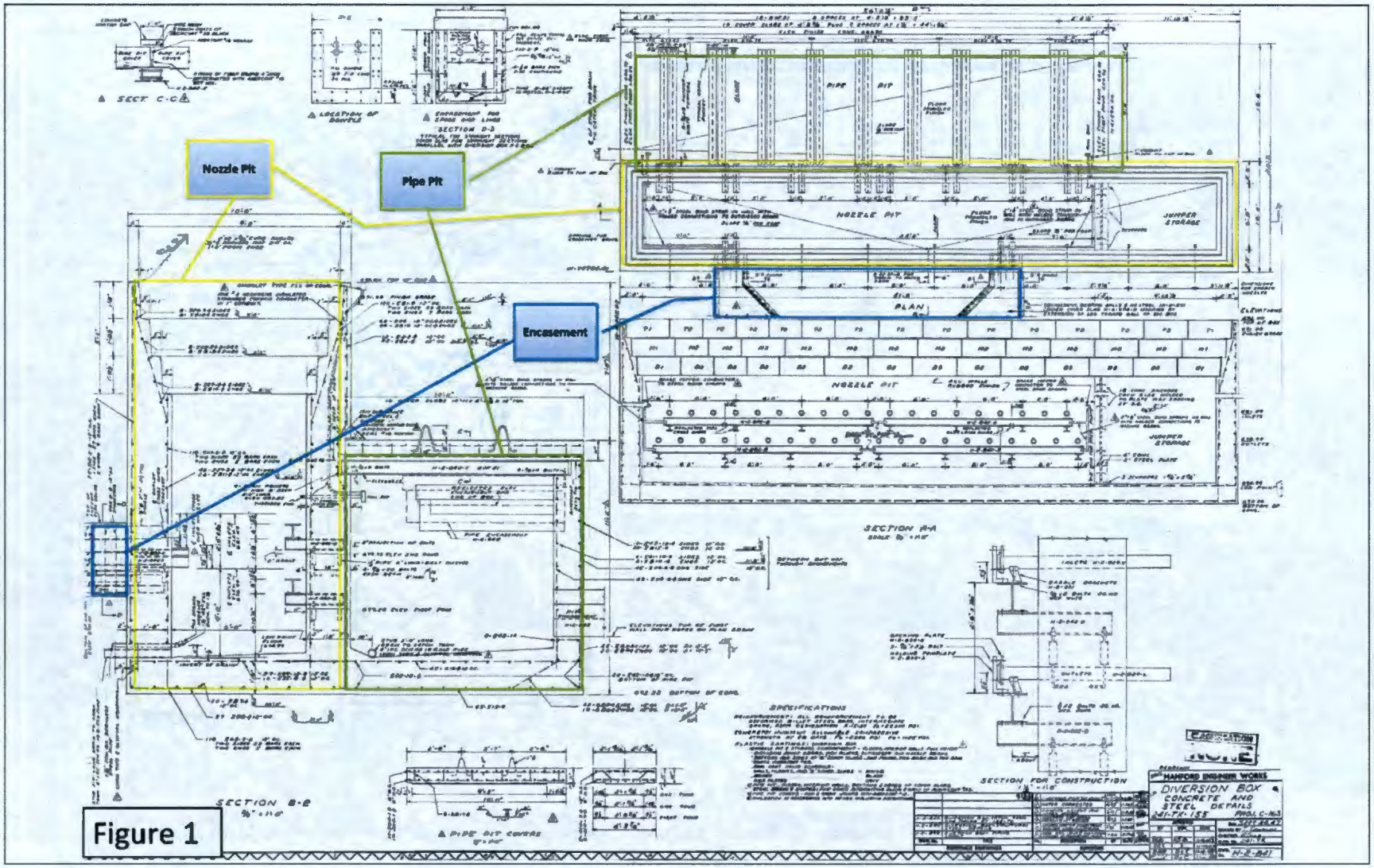
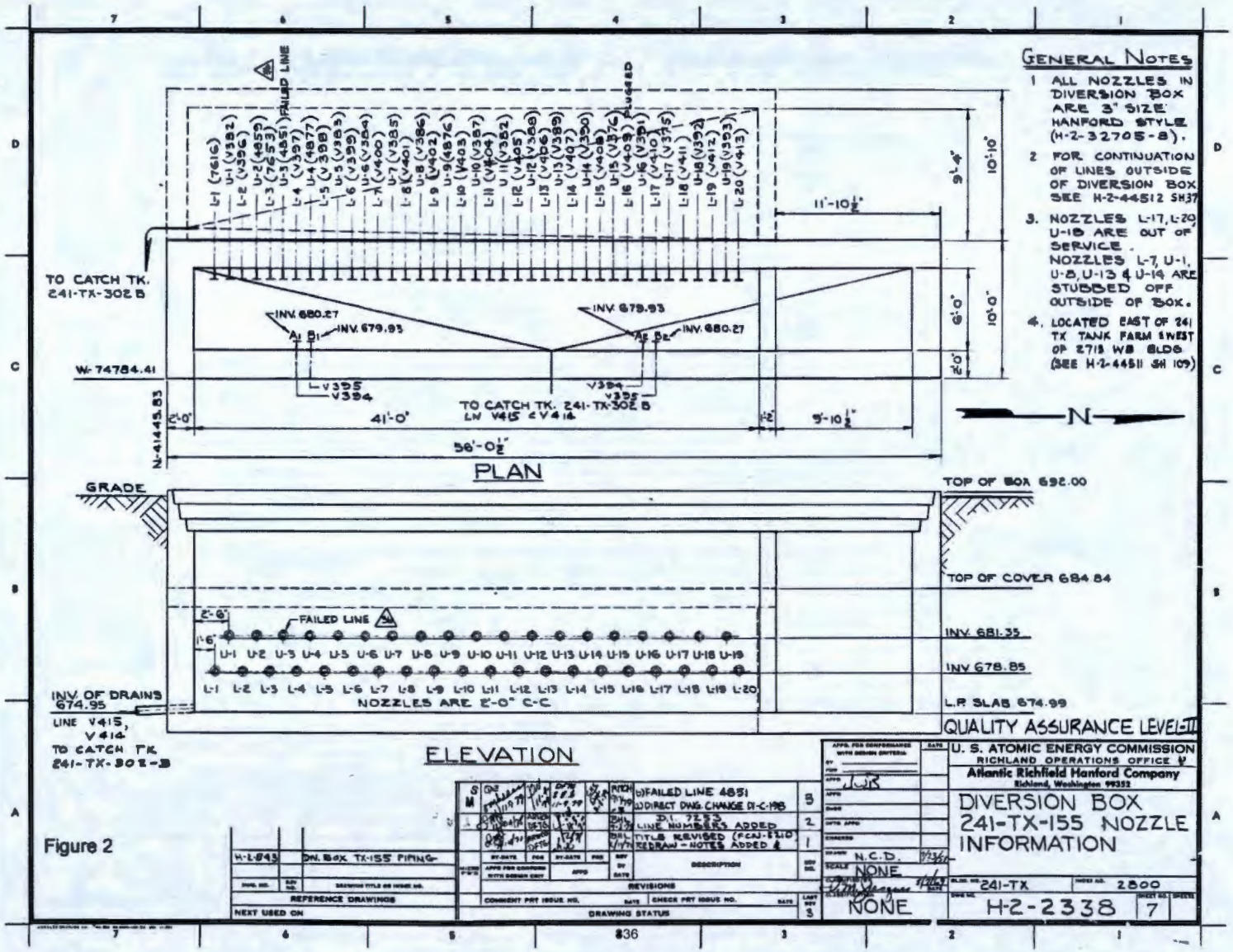

Nozzle Pit
Pipe Pit
Encasement
PIPE PIT
NOZZLE PIT
JUMPER STORAGE
PLAN
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION FOR CONSTRUCTION
SPECIFICATIONS
HANFORD ENGINEER WORKS
DIVERSION BOX
CONCRETE AND
STEEL DETAILS

Figure 1


GENERAL NOTES
1 ALL NOZZLES IN DIVERSION BOX ARE 3" SIZE HANFORD STYLE (H-2-32705-8).
2 FOR CONTINUATION OF LINES OUTSIDE OF DIVERSION BOX SEE H-2-44512 SH37
3. NOZZLES L-17, L-20 U-18 ARE OUT OF SERVICE. NOZZLES L-7, U-1, U-8, U-13 & U-14 ARE STUBBED OFF OUTSIDE OF BOX.
4. LOCATED EAST OF 241 TX TANK FARM & WEST OF 2713 WB BLDG (SEE H-2-44511 SH 109)
TO CATCH TK. 241-TX-302 B
INV. 680.27
INV. 679.93
W-74784.41
N-41445.83
TO CATCH TK. 241-TX-302 B
LN V415 & V414
41'-0"
56'-0½"
11'-10½"
9'-10½"
PLAN
GRADE
TOP OF BOX 692.00
TOP OF COVER 684.84
FAILED LINE
INV. 681.35
INV 678.85
L.P. SLAB 674.99
INV. OF DRAINS 674.95
LINE V415, V414 TO CATCH TK 241-TX-302-B
NOZZLES ARE 2'-0" C-C
ELEVATION
QUALITY ASSURANCE LEVEL-III
U. S. ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
Atlantic Richfield Hanford Company
DIVERSION BOX 241-TX-155 NOZZLE INFORMATION
H-2-2338
N.C.D.
NONE
241-TX
2800
7
REFERENCE DRAWINGS
NEXT USED ON
DRAWING STATUS
REVISIONS
Figure 2

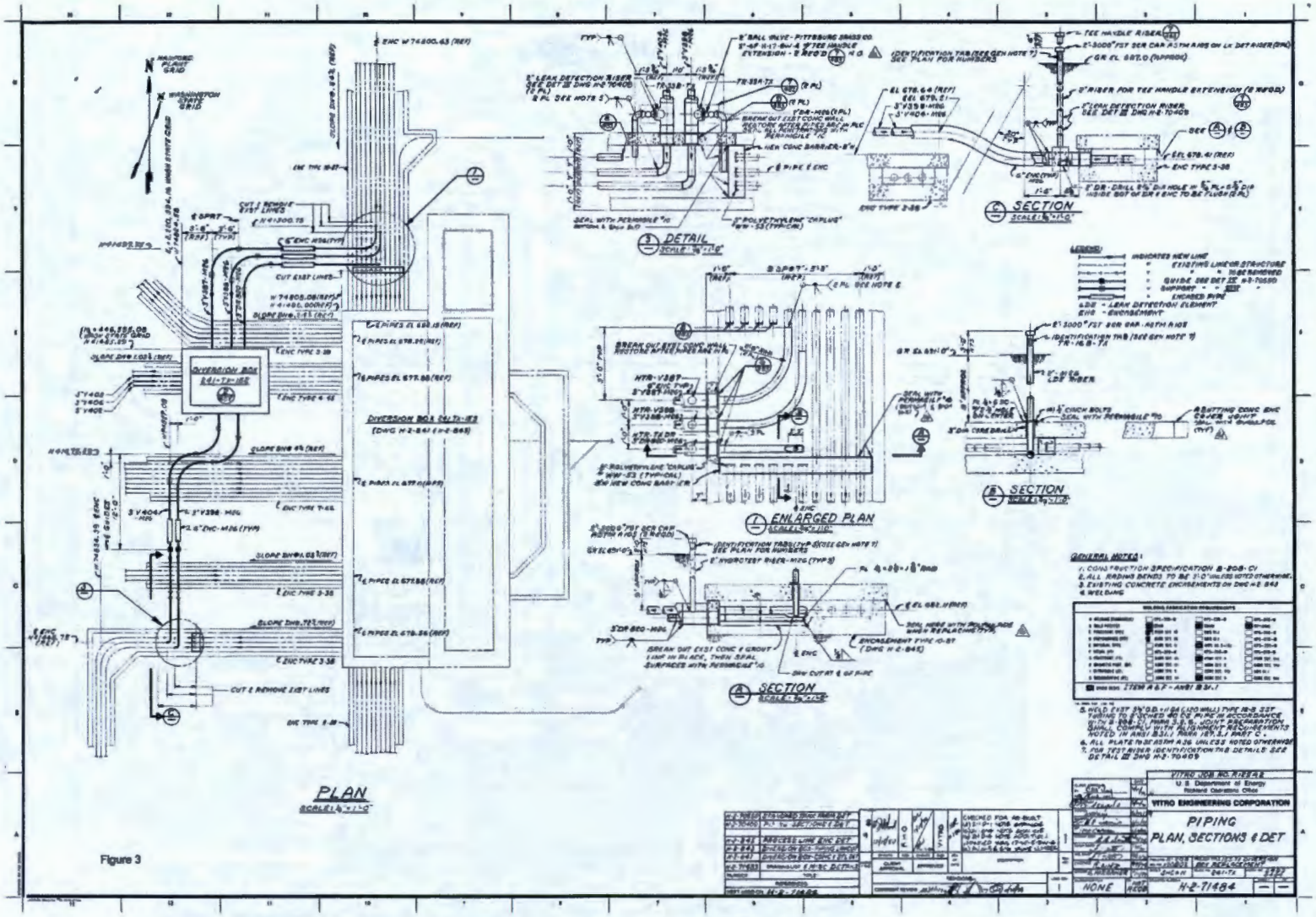

PLAN
DETAIL
SECTION
ENLARGED PLAN
SECTION
SECTION
DIVERSION BOX
VITRO ENGINEERING CORPORATION
PIPING
PLAN, SECTIONS & DET
H-2-71484

Figure 3

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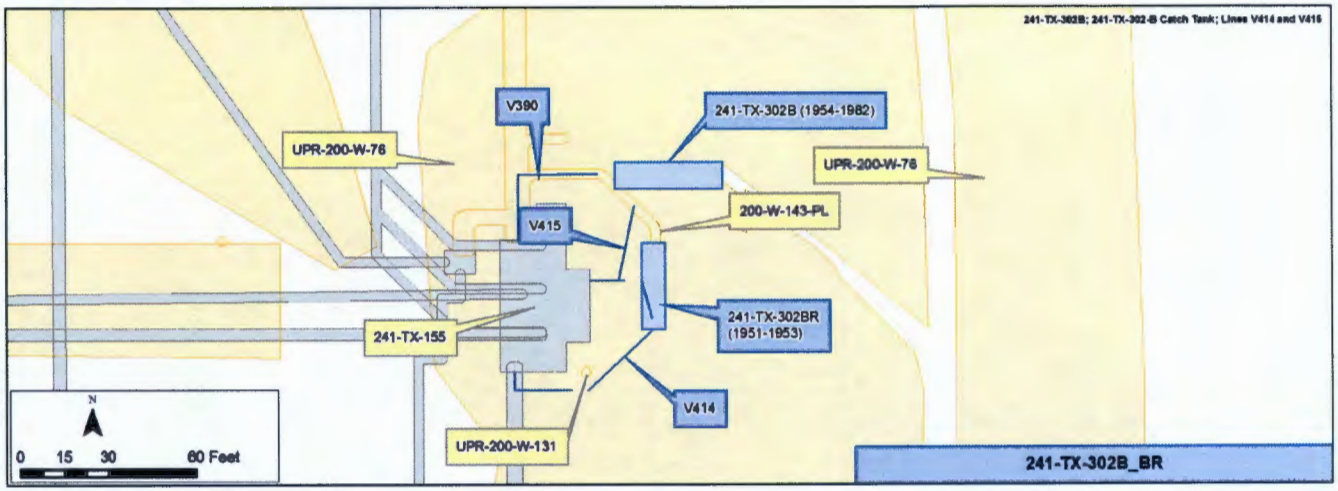
Scoping Summary: 241-TX-302B and 241-TX-302BR

History

The 241-TX-302BR (1951-1953) and the 241-TX-302B (1954-1982) waste sites are inactive catch tanks located in the east-central portion of the 200 West Area approximately 800 ft east of the TX Tank Farm and approximately 30 ft east and northeast, respectively, of the 241-TX-155 Diversion Box.

The first tank constructed at this location was *also identified as 241-TX-302B* (1948-1950), was constructed and put in service in Jan-1948, removed from service in 1950, and excavated and removed in 1951 (H-2-43011). Its replacement, tank 241-TX-302BR (1951-1953) was installed in the same location, placed into service in 1951, then taken out of service in Mar-1953, when it was damaged by acid. 241-TX-302BR (1951-1953) was abandoned in place and replaced by a second *241-TX-302B* (1954-1982) (H-2-2536).

Both tanks collected drainage from the floor drain of the diversion box. The second 241-TX-302B (1954-1982) catch tank also collected drainage from the 200-W-143-PL encasement, via line V390. Liquids collected in the tank were pumped out and transferred to tank farms. The 241-TX-302B (1954-1982) catch tank was taken out of service and stabilized in 1982.



Construction

241-TX-302BR (1951-1953)

- Horizontal, direct-buried, carbon steel tank, 8 ft x 32 ft 9.25 in.
- Nominal capacity 12,030 gal
- Top of the tank: 23 ft bgs;
- Bottom of the tank: 31 ft bgs.
- Five risers – four 4 in. stainless steel; one 12 in. carbon steel
- One 4 in. flange connection for jet box

Note – tank risers cut off minimum of 4 ft bgs and sealed or filled with earth

241-TX-302B (1954-1982)

- Horizontal, direct-buried, carbon steel tank, 9 ft x 40 ft 9/16 in. wall thickness
- Nominal capacity 19,000 gal
- Top of tank 17.25 ft bgs
- Bottom of tank 26.26 ft bgs
- Three risers – two 4 in. carbon steel; one 12 in. carbon steel
- Two drain lines – one 3 in. stainless steel from pipeline encasement; one 4 in. stainless steel from diversion box

Note – drain lines cut and capped in 1982 (H-2-2536)

Features of Interest

- 241-TX-302BR Catch Tank abandoned in-place adjacent to 241-TX-302B

Relevant Characterization

- 241-TX-302B (1954-1982) in tank sample #T2138 reported 3-6-1984 <5% wt solids, 24mR, pH 9.95
- 241-TX-302B (1954-1982) Stabilization evaluation form data dated Dec. 1984 (RPP-RPT-42331 pg B-37); 108 gal of solid waste and 70 gal liquid waste remain in the tank.

Waste Streams

- Supported waste stream and decontamination fluid transfers from T, TX, TY Tank Farms
- Process streams included BiPO4 waste/metal waste
- No Chemical Waste Inventory data identified

Misc./Other Relevant Information

- UPR-200-W-131 caused by release in Mar-1953 of waste solution from 241-TX-302BR risers, surface contamination w/ readings of 25 rad/hr (HW-27475)
- UPR-200-W-76 - two areas around 241-TX-155 Diversion Box resulting from contamination migration & biological intrusion

Site Interfaces

Origin/Termination

200-IS-1

- 241-TX-155 diversion Box
- 200-W-143-PL

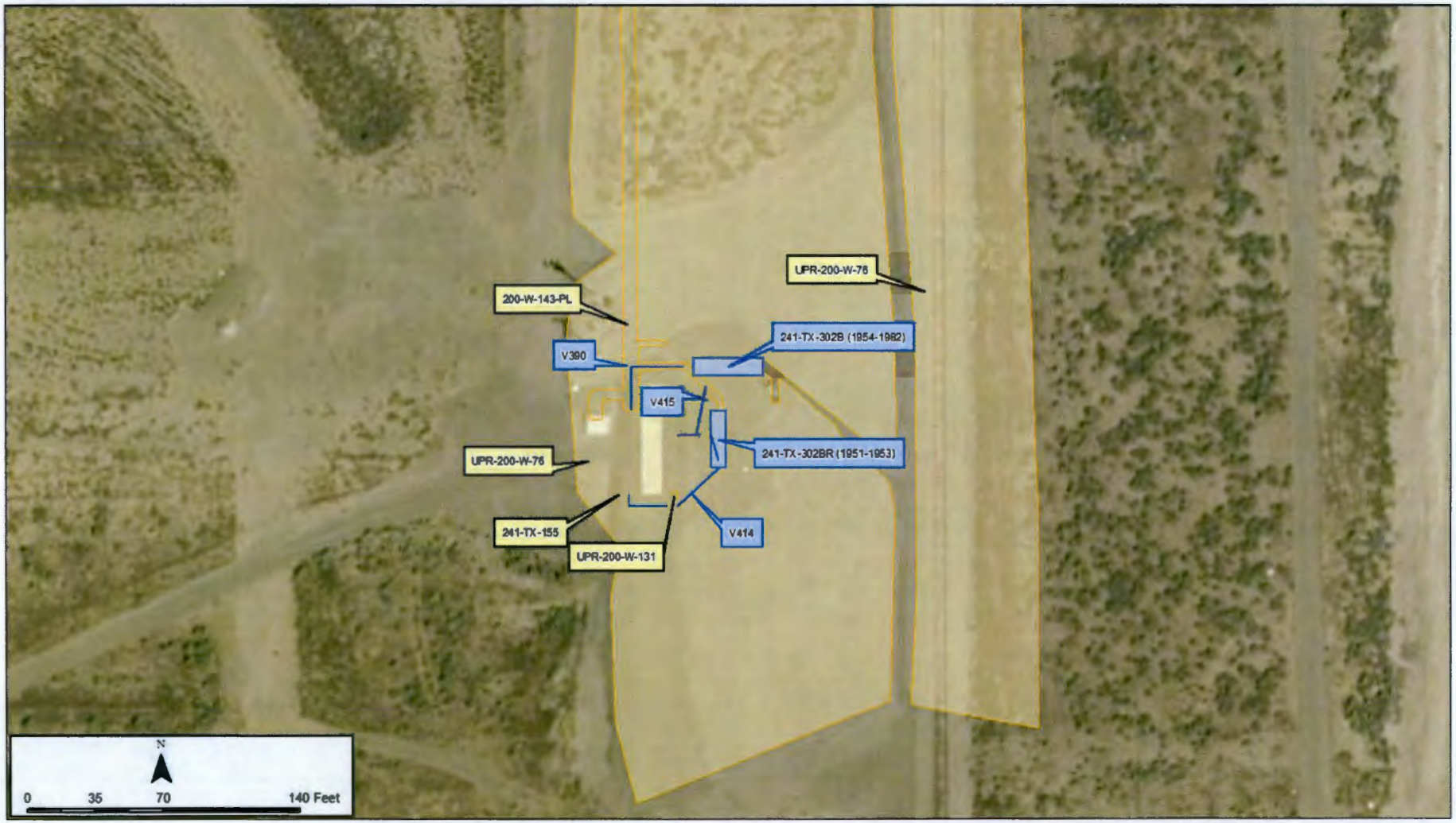
Site Intersects

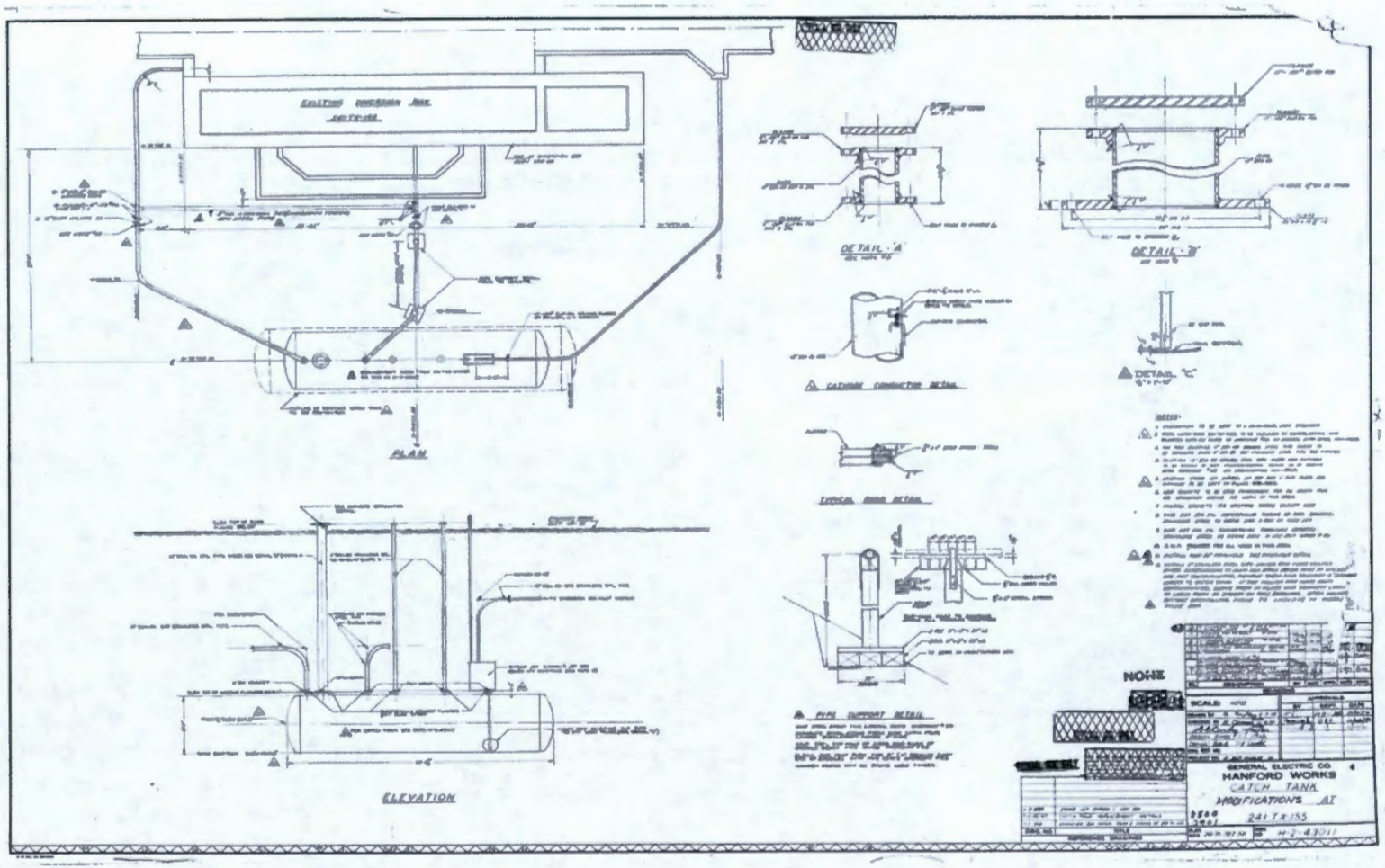
200-IS-1

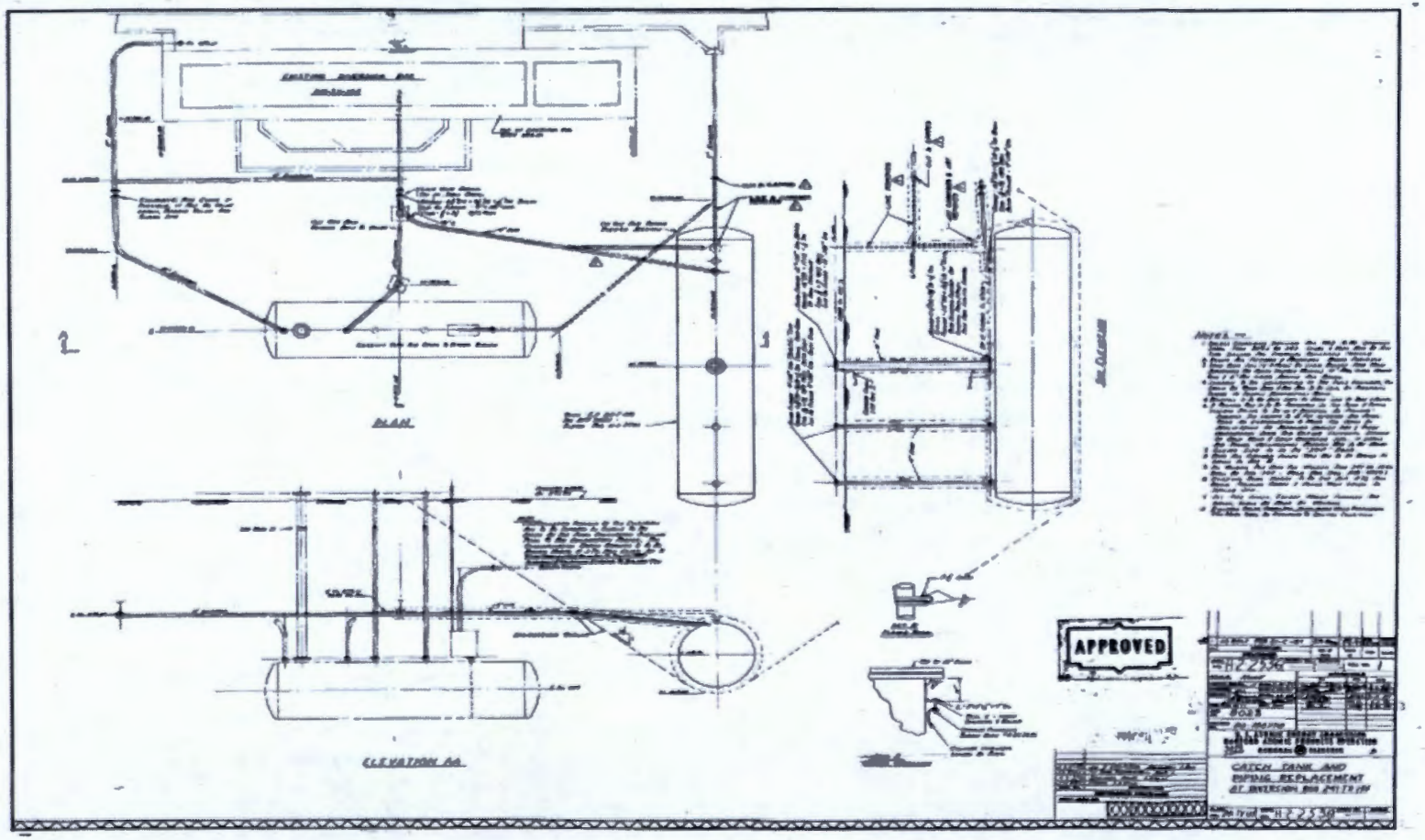
- UPR-200-W-131 (Associated with 241-TX-302BR Catch Tank)

No Operable Unit

- UPR-200-W-76 (associated with 241-TX-155 Diversion Box)


UPR-200-W-78
200-W-143-PL
241-TX-302B (1954-1982)
V390
V415
241-TX-302BR (1951-1953)
UPR-200-W-76
241-TX-155
V414
UPR-200-W-131
N
0
35
70
140 Feet


PLAN
ELEVATION
DETAIL "A"
DETAIL "B"
DETAIL "C"
NONE
GENERAL ELECTRIC CO
HANFORD WORKS
CATCH TANK
MODIFICATIONS AT
241 TX 155


PLAN
ELEVATION AA
APPROVED
CATCH TANK AND
PIPING REPLACEMENT

6

STABILIZATION EVALUATION FORM

Tank: TX-302-B

Evaluation (see continuation page for calculations and additional comments):

(X) Tank history review completed

(X) Tank composition data reviewed

Tank Description: CATCH TANK FOR TX-155 DIVERSION BOX

Solids Level: 14.50 Date: 9-84 Method: DOUGHNUT

Liquid Level: 14.75 Date: 8-84 Method: MANUAL TAPE

Estimated Supernatant Volume (gal): 70 GAL

Interim Stabilization Criteria: LESS THAN 400 GALLONS
(400 gallons or the volume of four inches of supernatant, whichever is greater)

( ) Cost/Benefit Analysis attached

Evaluation performed by: D.W. [illegible] Date: 11/16/84

Checked by: [illegible] Date: [illegible]

Disposition of Tank:

(X) Tank Interim Stabilized at 70 gallons of supernatant liquid

( ) Tank not Interim Stabilized; stabilization activities resumed

Approved by: [illegible] Manager, TF&EPC — 11/16/84 Date

[illegible] Manager, TF&O — 11/16/84 Date

[illegible] Program Manager — 12-4-84 Date

DISTRIBUTION: TF&EPC Tank File, Tank Farm Surveillance Analysis, Approval Signatures

SK-2-2419

SAMPLE-[illegible]

B-37

RPP-RPT-42231, Rev. 0

6

STABILIZATION EVALUATION FORM

Tank: TX-302-B

Evaluation (see continuation page for calculations and additional comments):

(X) Tank history review completed

(X) Tank composition data reviewed

Tank Description: CATCH TANK

Solids Level: 3" Date: 6-85 Method: DOUGHNUT

Liquid Level: 6½" Date: 6-85 Method: MANUAL TAPE

Estimated Supernatant Volume (gal): 272

Interim Stabilization Criteria: 400 gal
(400 gallons or the volume of four inches of supernatant, whichever is greater)

( ) Cost/Benefit Analysis attached

Evaluation performed by: Allen T. Gilstad Date: 6-18-85

Checked by: [illegible] Date: 6-18-85

Disposition of Tank:

(X) Tank Interim Stabilized at 272 gallons of supernatant liquid

( ) Tank not Interim Stabilized; stabilization activities resumed

Approved by: [illegible] Manager, TF&EPC — 6/18/85 Date

[illegible] Manager, TF&O — 6/19/85 Date

R.D. Wytsma Program Manager — 6/20/85 Date

DISTRIBUTION: TF&EPC Tank File, Tank Farm Surveillance Analysis, Approval Signatures

W-2-823

B-40

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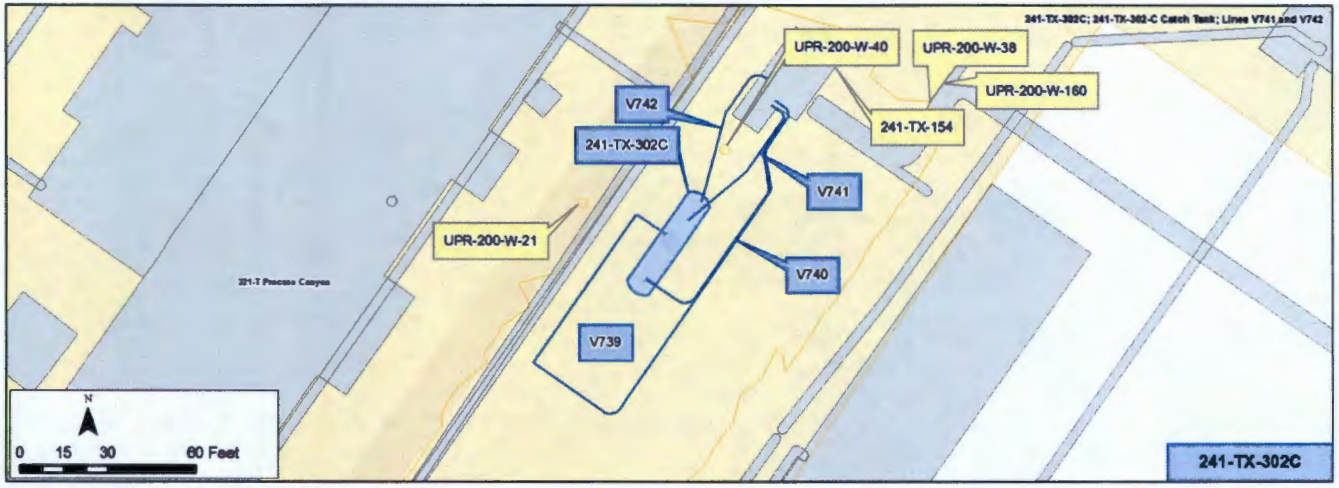
Scoping Summary: 241-TX-302C

History

The 241-TX-302C waste site is an inactive, underground catch tank located southeast of the 221-T Canyon. This catch tank received spillage and drainage from the 241-TX-154 Diversion Box between 1949 and the early 1980's. The catch tank received drainage through two lines connecting to the diversion box. A return line (line V039) equipped with a jet pump connected to the diversion box. The tank was stabilized in 1982 as part of Project B-231 when tank penetrations were flanged and/or blanked, and the tank was equipped with a dedicated pump and liquid measuring equipment.

Multiple unplanned releases are reported in the vicinity of this site. UPR-200-W-38 resulted from the failure of line V039 in Dec-1955. The release flooded an area of approximately 15,000 sq ft with several thousand gallons of metal waste. The area was covered with blacktop and posted "Underground Contamination". There are no documented failures of the tank itself. UPR-200-W-40 and UPR-200-W-160 are duplicate listings for the original UPR-200-W-38.

241-TX-302C was pumped in April 1998 to remove precipitation entering the tank from the 241-TX-154 Diversion Box. The 241-TX-302C Catch Tank was identified as a R-CPP unit in discussions with Ecology held on Nov-18-2015.



Construction

Catch Tank

- Dimensions: Horizontal 39 ft long x 9 ft diameter
- Capacity: 14,300 gal
- Composition: Carbon Steel
- Tank penetrations:
  - One 4 in. carbon steel riser, capped
  - One 4 in. carbon steel riser to liquid level gauge
  - One 12 in. carbon steel riser to pump pit
  - One 2 in. SST line from pump pit to diversion box (V039)
  - Two 4 in. SST drain pipes from diversion box (V741 and V742)
- Buried depth: Top 23 ft bgs; bottom 32 ft bgs

Features of Interest

- Line V039, the return line from 241-TX-302C to 241-TX-154 failed in Dec-1955. The failure resulted in the release of several thousand gallons of metal waste.
- Cracks in the concrete barrier over 241-TX-302C were observed in Sep-2008 with contaminated tumbleweeds growing from the cracks.
- The site has four features visible above grade:
  - Two 4 in. risers one that terminates at a cap, the second to a liquid level gauge; the top of the pump pit
  - 1 in. riser from the jet pump that terminates at a globe valve and pipe clamp

Relevant Characterization

- Portions of the surface area above the catch tank have been previously paved to contain contamination released from the 241-TX-154 diversion box.

Waste Streams

241-TX-302C received waste streams associated with bismuth phosphate (BiP4) processing of irradiated fuel rods and included metal wastes (MW1/2) and decontamination cycle wastes (1C1, 1C2, 2C1, 2C2) from 1946 through 1956. Steam condensate, decontamination waste and miscellaneous effluent streams were processed from 1959 through 1963. Miscellaneous decontamination effluent was managed until approximately 1980.

Misc./Other Relevant Information

There are duplicative listings for UPRs associated with the 241-TX-154 diversion box and the 241-TX-302C catch tank. There are two documented Unplanned Releases - UPR-200-W-21 which occurred in 1953, and UPR-200-W-38 which occurred in Dec-1955. UPR-200-W-40 and UPR-W-160 are duplicate entries for the release that occurred in Dec-1955 (UPR-200-W-38).

Site Interfaces

Origin/Termination

N/A

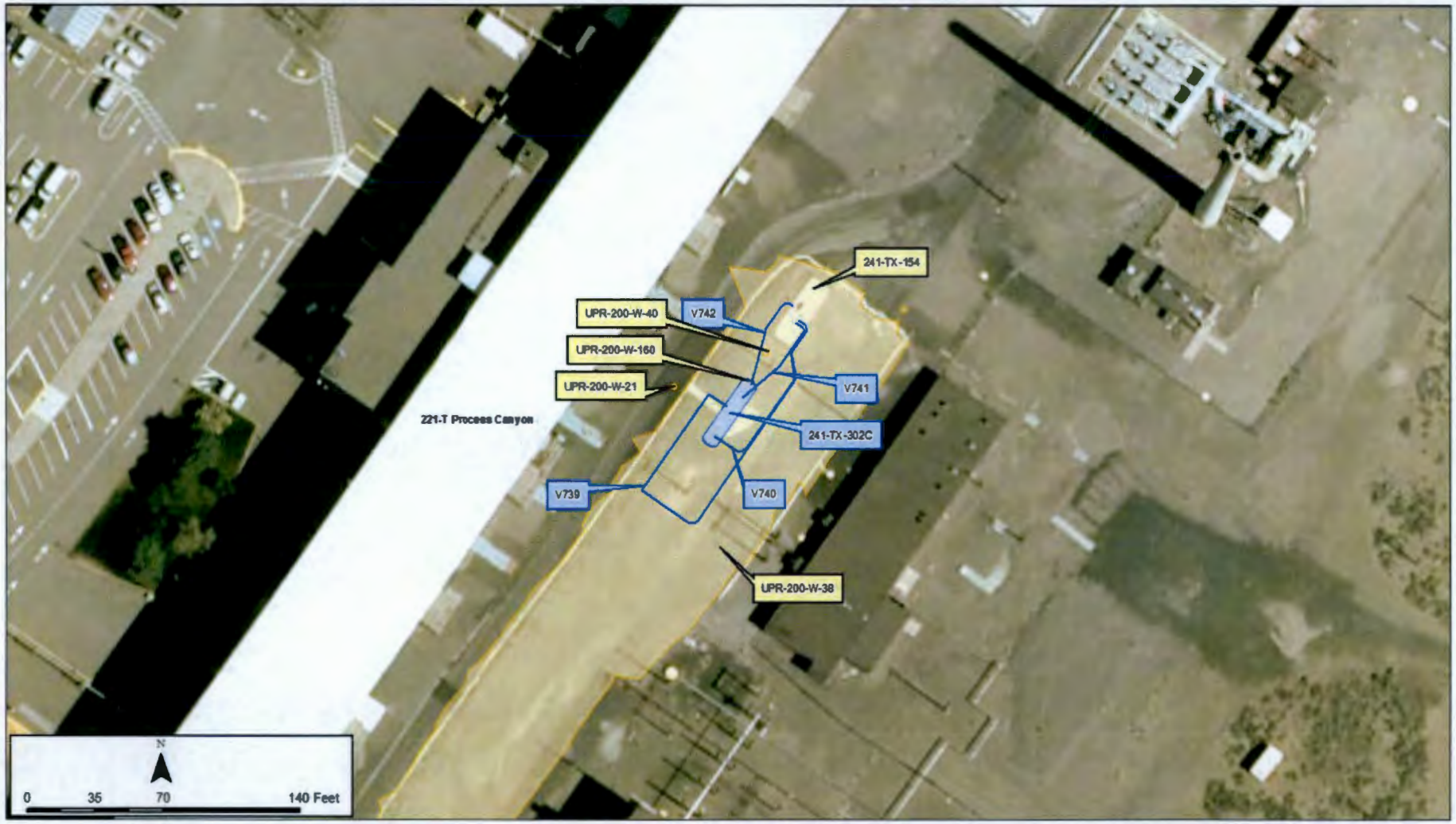
Site Intersects

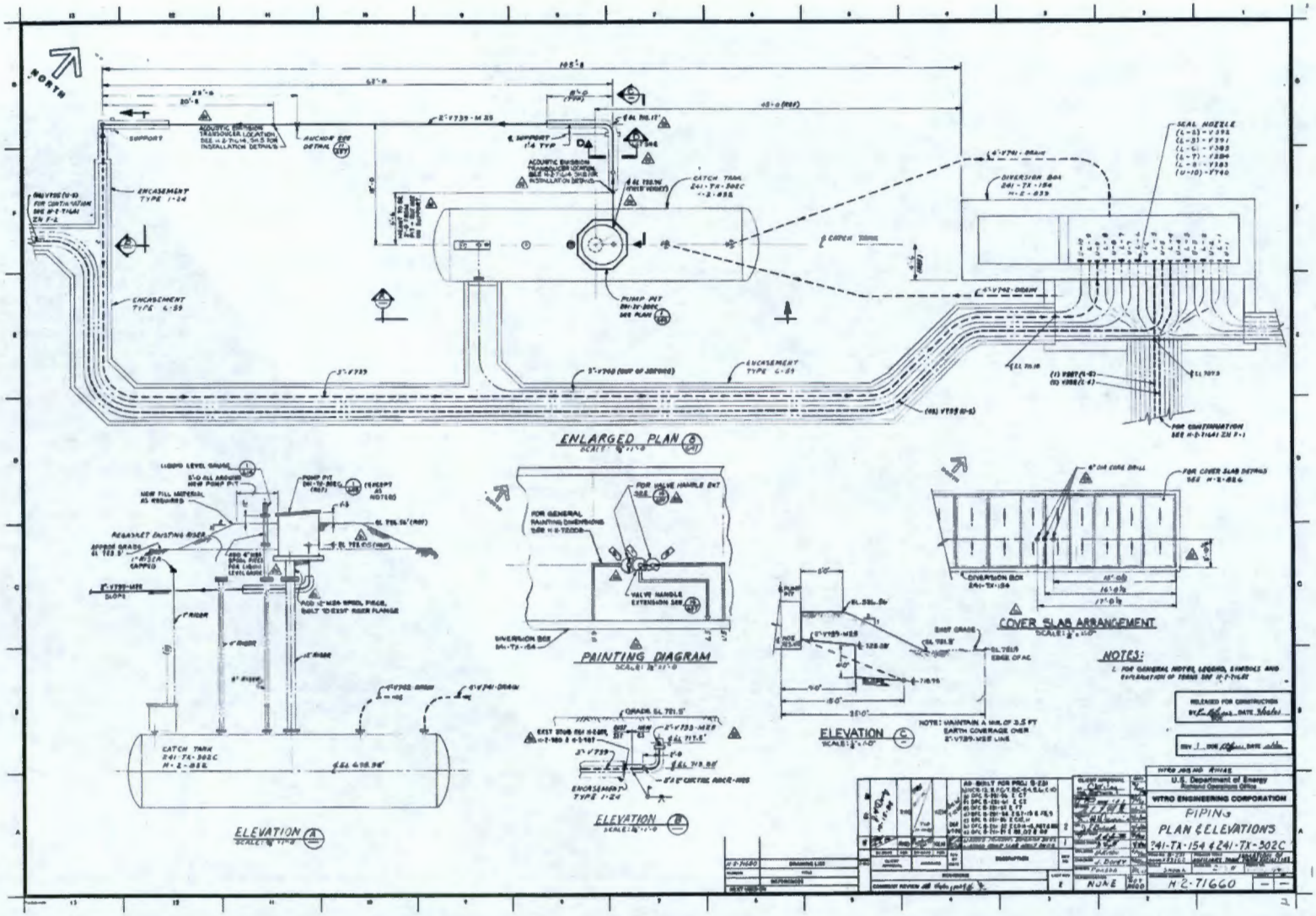
200-IS-1

- UPR-200-W-38
- UPR-200-W-40 and UPR-200-W-160 are duplicate entries of UPR-200-W-38

No Operable Unit

- UPR-200-W-21 (221-T process line failure)


241-TX-154
UPR-200-W-40
V742
UPR-200-W-160
UPR-200-W-21
V741
221-T Process Canyon
241-TX-302C
V739
V740
UPR-200-W-38
N
0
35
70
140 Feet


NORTH
ENLARGED PLAN
PAINTING DIAGRAM
COVER SLAB ARRANGEMENT
ELEVATION
NOTES:
U.S. Department of Energy
VITRO ENGINEERING CORPORATION
PIPING
PLAN & ELEVATIONS
241-TX-154 & 241-TX-302C
H-2-71660

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Scoping Summary: 241-U-151

History

The 241-U-151 waste site is an inactive diversion box that transferred process and decontamination solutions to the various tank farms. It was constructed in 1946 and operated until 1980. Initially, the diversion box transferred Bismuth Phosphate (1944-1956), then uranium recovery/TBP operations (1952-1957) and scavenging/ferrocyanide processes (1955-1958). From about 1958 to 1967, the diversion box transferred REDOX and PUREX waste streams and mixed waste for evaporator processing. Finally, it received decontamination wastes from T-Plant (1967-1976).

The Diversion Box drains to catch tank 241-U-301. When the diversion box was removed from service, the exposed surface structure(s) was weather sealed for intrusion protection.

During 1950, while working on both the 241-U-151 and 241-U-152 diversion boxes, particulate contamination was identified on the ground with readings of 20 millirads/hour. This location, UPR-200-W-6, received one foot of clean soil cover and was/is posted as URMA.

Construction

Diversion Box

- Dimensions: 20 ft long, 9 ft wide X 16 ft deep
- Buried depth: 17 ft bgs
- 14 different nozzles
  - The box drains via line V478 to catch tank 241-U-301
- Material: Reinforced Concrete
- Cover Blocks: three layers of cover blocks with a total thickness equal to 5 ft 1 in.

Pipelines attached to the 241-U-151 Div Box as follows:

- 200-W-99-PL, lines V455 and V456 to the 241-S-151 Div Box
- 200-W-130-PL, line V445 from 241-T-151 Div Box
- 200-W-183-PL, lines V422/V452 and V421/V453 transfer lines to 241-U-152 Div Box
- 200-W-184-PL, line V478 is the drain line to catch tank 241-U-301
- 200-W-185-PL, lines V450 and V451 are transfer lines to the 241-U-153 Div Box

Features of Interest

- 14 jumper/nozzle connections (6 upper, 8 lower)
- 1 drain line (V478)

Relevant Characterization

- The following CoCs were identified for the 221-U building and are assumed to have gone through the diversion boxes:
  - Am-241, Cs-137, Co-60, Np-237, Pu-239/240, Sr-90
  - Eu, Th, and U isotopes with non-radioactive constituents of As, An, Ba, Cd, Cr, Pb, Hg, phthalates, PCBs, Se, Ag, and U
- Tumbleweed found near 241-U-151 Div Box with 200,000 dpm/100 sq-cm beta/gamma with no detectable alpha

Waste Streams

- The 241-U-151 Diversion Box was constructed to transfer BiPO4 Waste Streams (MW, CW, 1C, 2C)
- Condensates were reprocessed through scavenging and tributylphosphate operations (TBP, TFeCN)
- REDOX (P1, P2, CRW1, CRW2) and uranium recovery operations
- T Plant decommissioning wastes (DW)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

- 241-U-301 Catch Tank
- 200-W-99-PL
- 200-W-130-PL
- 200-W-183-PL
- 200-W-184-PL
- 200-W-185-PL
- UPR-200-W-6 (source: 241-U-151 and 241-U-152 Diversion Boxes)
- 244-S Double Contained Receiver Tank

WMA TX

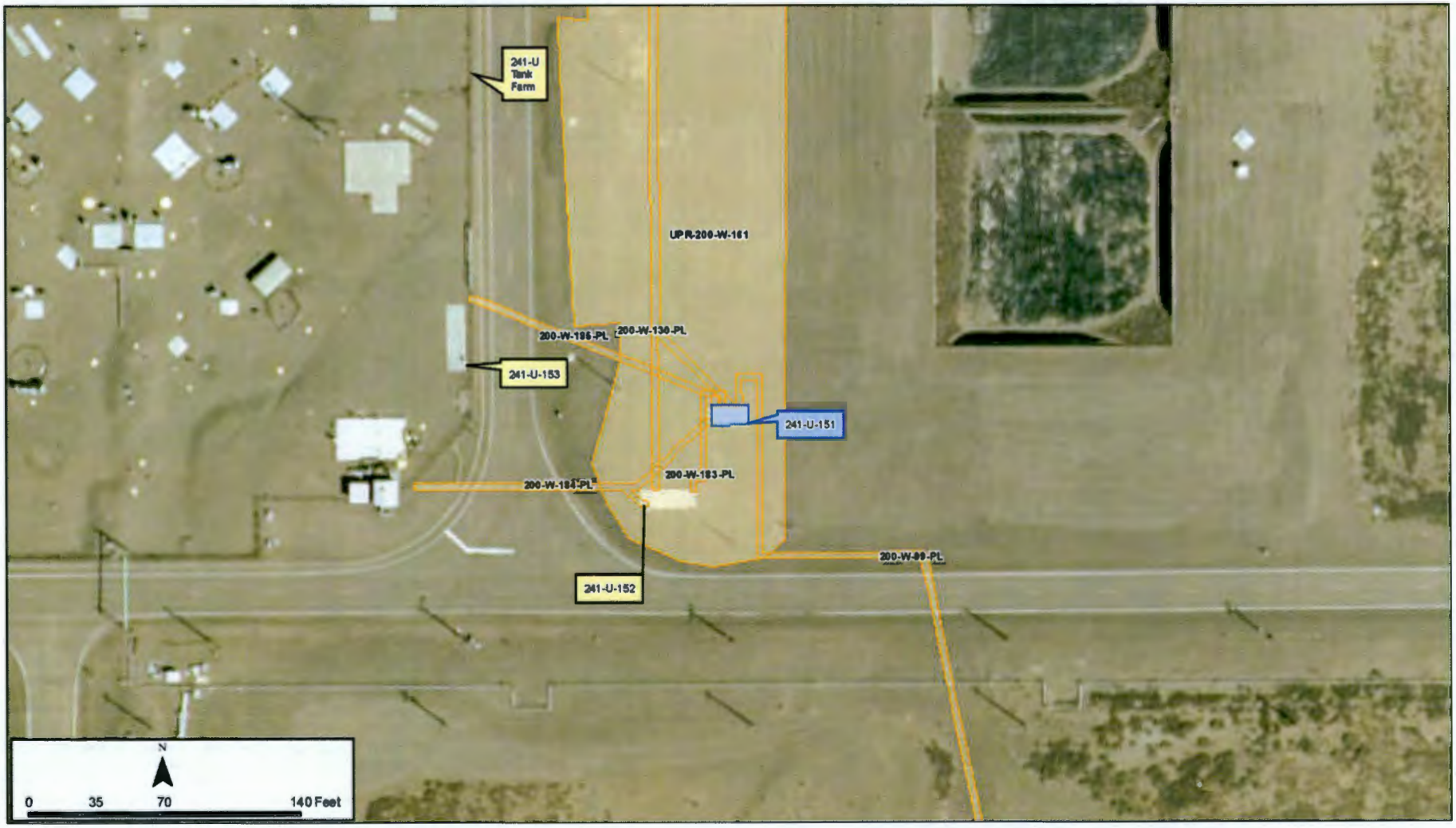
- 244-TX Double Contained Receiver Tank

Site Intersects

200-IS-1

- UPR-200-W-161 (source: 241-U Tank Farm)

Scoping Summary: 241-U-151

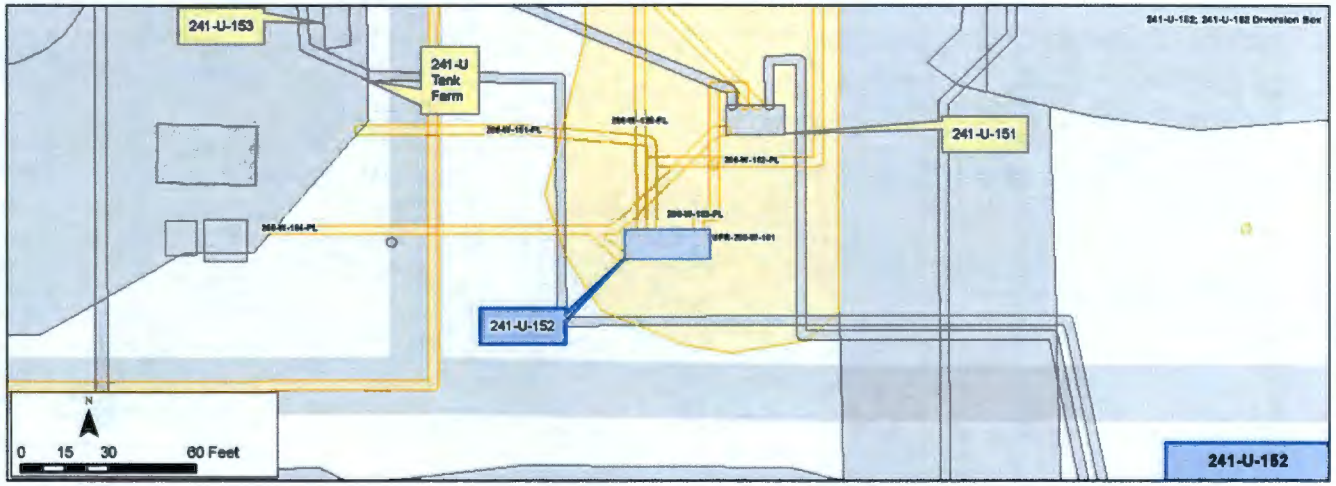


Scoping Summary: 241-U-152

History

The 241-U-152 waste site is a diversion box that was used to transfer process and decontamination solutions to catch tank 241-U-301B. Initially it transferred Bismuth Phosphate, then uranium recovery/TBP operations and scavenging/ferrocyanide processes. The diversion box also received decontamination wastes from T-Plant from 1967 to 1976. Diversion Box was constructed in 1946 and operated until 1980. When the diversion box was removed from service the exposed surface structure was weather sealed to prevent the introduction of any liquids into the system.

During 1950, while working on both the 241-U-151 and 241-U-152 diversion boxes, particulate contamination was identified on the ground, UPR-200-W-6, with readings of 20 millirads/hour. The location received one foot clean soil cover, and was/is posted as URMA.



Construction

Diversion Box

- Dimensions: 28 ft long, 9 ft wide, 17 ft deep
- Buried depth: 17 ft
- 21 different nozzles
  - Liquid waste routing occurs via changeable jumper assemblies
- Material: Concrete
- Cover Blocks: 5 ft 1 in.

Pipelines

- 200-W-130-PL, line V416 to the 241-TX-153 Div Box
- 200-W-181-PL, lines V426, V427, V461/V428 to 241-U-153 Div Box
- 200-W-182-PL, lines V398, V404, V410 to 241-TX-152 via 241-TX-155 Div Boxes
- 200-W-183-PL, lines V422/V452 and V421/V453 to 241-U-151 Div Box
- 200-W-184-PL, line V478 drain line to the 241-U-301B catch tank

Features of Interest

- 21 Nozzles, 9 upper and 12 lower
- 2 pressure relief valves
- 1 drain line to the 241-U-301B catch tank

Relevant Characterization

- 241-U-152 Diversion Box transported mixed waste
- Available characterization data is from the 221-U Facility Record of Decision
  - CoCs identified as Am-241, Cs-137, Co-60, Np-237, Pu-239/240, Sr-90 and Eu, Th, and U isotopes with non-radioactive constituents of As, An, Ba, Cd, Cr, Pb, Hg, phthalates, PCBs, Se, Ag, and U
- Contaminated tumbleweed found with 200,000 dpm/100 sq-cm beta/gamma with no detectable alpha

Waste Streams

- Bismuth Phosphate processing (1944-1956)
- Uranium recovery/tributylphosphate operations (1952-1957)
- Scavenging/ferrocyanide processes (1955-1958)
- T Plant decontamination wastes (1967-1976)

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

- 200-W-130-PL
- 200-W-181-PL
- 200-W-182-PL
- 200-W-183-PL
- 200-W-184-PL
- 241-U-301B Catch Tank
- UPR-200-W-6 (source: 241-U-151 and 241-U-152 Diversion Boxes)

WMA TX

- 244-TX Double Contained Receiver Tank

Site Intersects

200-IS-1

- UPR-200-W-161 (source:241-U Tank Farm)

Scoping Summary: 241-U-152

Scoping Summary: 241-UX-154

History

The 241-UX-154 waste site is an inactive diversion box used to transfer waste streams from U Plant to the tank farms, and served as the main transfer station connecting the 200 West Area to the 200 East Area via the 600-284-PL until 1995.

The 241-UX-154 diversion box and associated pipelines supported U Plant operations from 1948 through 1958. From 1958 to Jan-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 the diversion box (northeast segment of structure) was weather sealed in 2003. The 241-UX-154 diversion box has 25 connecting encased lines and two drain lines to the 241-UX-302A Catch Tank. The 241-UX-154 Diversion Box connects to the 221-U (lines not mapped), the 241-EW-154 vent station (600-284-PL), the 241-TX-155 diversion box (200-W-105-PL) and the 241-WR Vault (200-W-105-PL, 200-W-248-PL).

Construction

The 241-UX-154 diversion box is comprised of two abutting reinforced concrete structures - a pipe pit and a nozzle pit. A common wall separates the pipe pit from the nozzle pit.

Pipe Pit (southeast segment of diversion box)

- 37 ft 4 in. long x 10 ft wide x 9 ft 6 in. deep
- 2 ft thick reinforce concrete walls
- Interior coating: Americoat
- Calculated volume: 972.5 gal
- Top depth: 7 ft bgs
- Bottom depth: 16 ft 8 in. bgs

Nozzle Pit (northeast segment of diversion box)

- 40 ft long x 10 ft wide x 16 ft 8-in deep
- 2 ft thick reinforced concrete walls
- Interior coating: Americoat
- Calculated volume: 1,847.7 gal
- Top at ground surface
- Bottom depth: 16 ft 8 in. bgs

Transfer lines

- 25 3 in. stainless steel transfer lines enter the diversion box from pipeline encasements

Features of Interest

- Pipe pit roof surface identified as a potential source of infiltration to diversion box
  - 370 sq ft of surface area, 7 ft bgs where of percolation of precipitation can pond
  - Roof comprised of eight cover blocks with seams seal with 4 in. "mortar cap"

Relevant Characterization

- Evaluated as a potential source of liquid intrusion to 241-UX-302A (RPP-RPT-40344)
  - Roof of pipe pit ~ 7 ft bgs with mortar cap over cover blocks
  - Video inspection of concrete encasements entering 241-UX-154

Infiltration ponding on the pipe pit roof identified as a likely source of inflow to diversion box and catch tank.

Waste Streams

- U-Plant Recovery & Scavenging Waste (URP)
- Infiltration of rain & snow melt from pipeline encasements
- Infiltration from 241-UX-154 pipe and nozzle pit
- U-Plant exhaust stack drainage
- drainage from 241-UX-302A

Misc./Other Relevant Information

- None

Site Interfaces

Origin Points

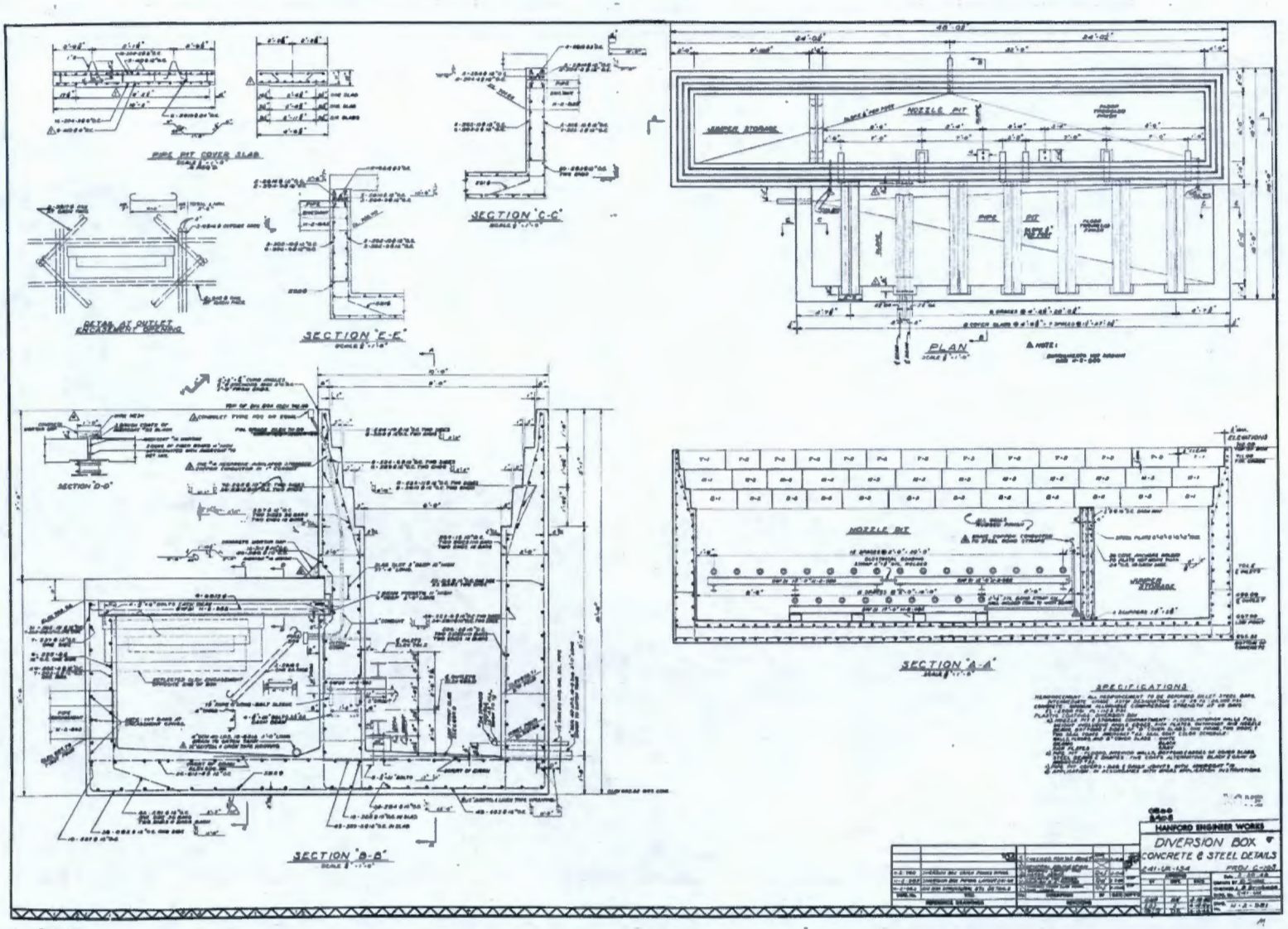
200-IS-1
- 200-W-105-PL
- 600-284-PL

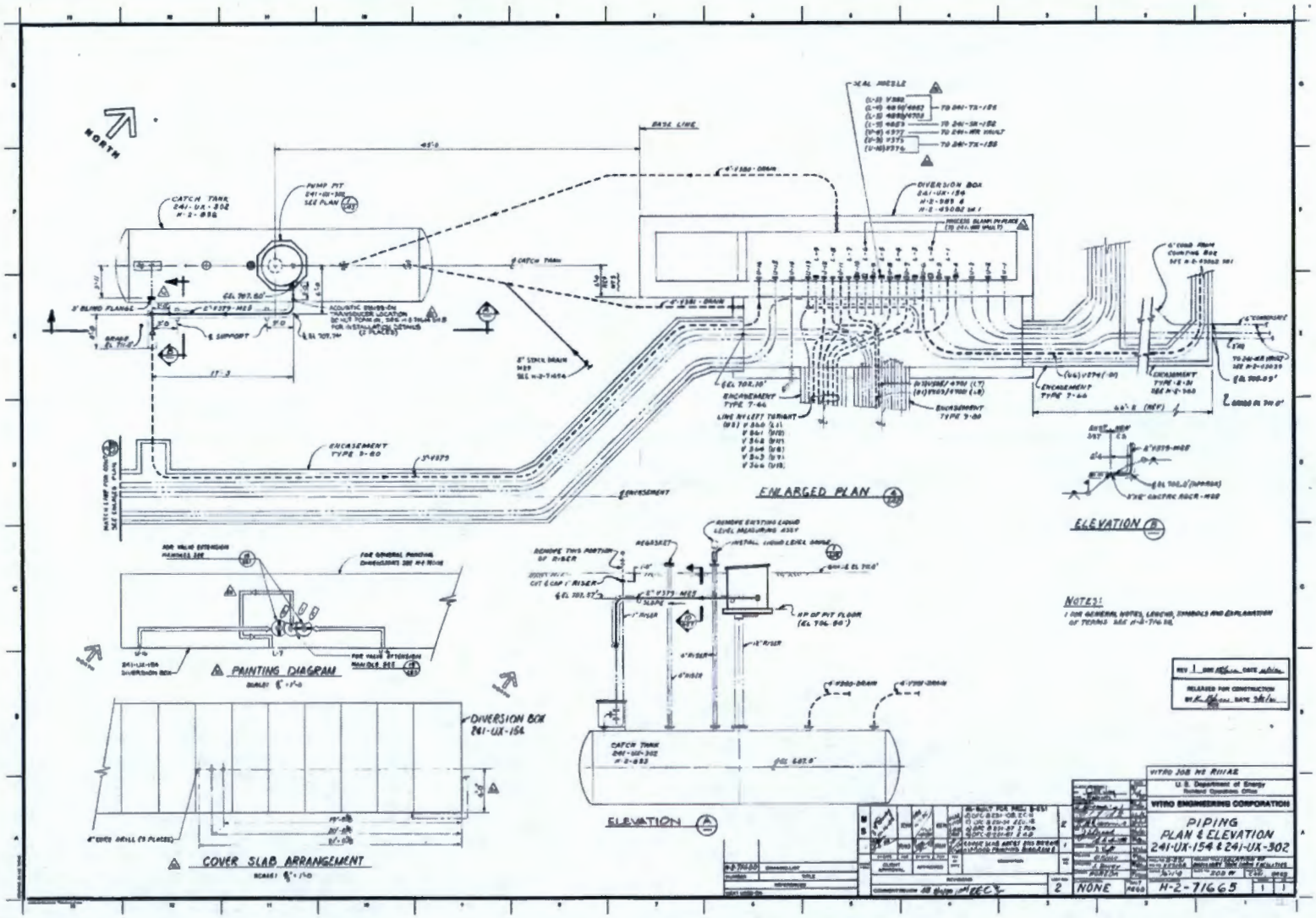
WA-1
- 200-W-248-PL

Site Intersects

200-WA-1
- 200-W-136 - (footprint of 221-U D&D area)
- UPR-200-W-162 - (associated with 221-U)

Scoping Summary: 241-UX-154


PIPE PIT COVER SLAB
SECTION "C-C"
DETAIL AT OUTLET
SECTION "E-E"
PLAN
NOZZLE PIT
PIPE PIT
SECTION "D-D"
SECTION "A-A"
SECTION "B-B"
SPECIFICATIONS
HANFORD ENGINEER WORKS
DIVERSION BOX
CONCRETE & STEEL DETAILS

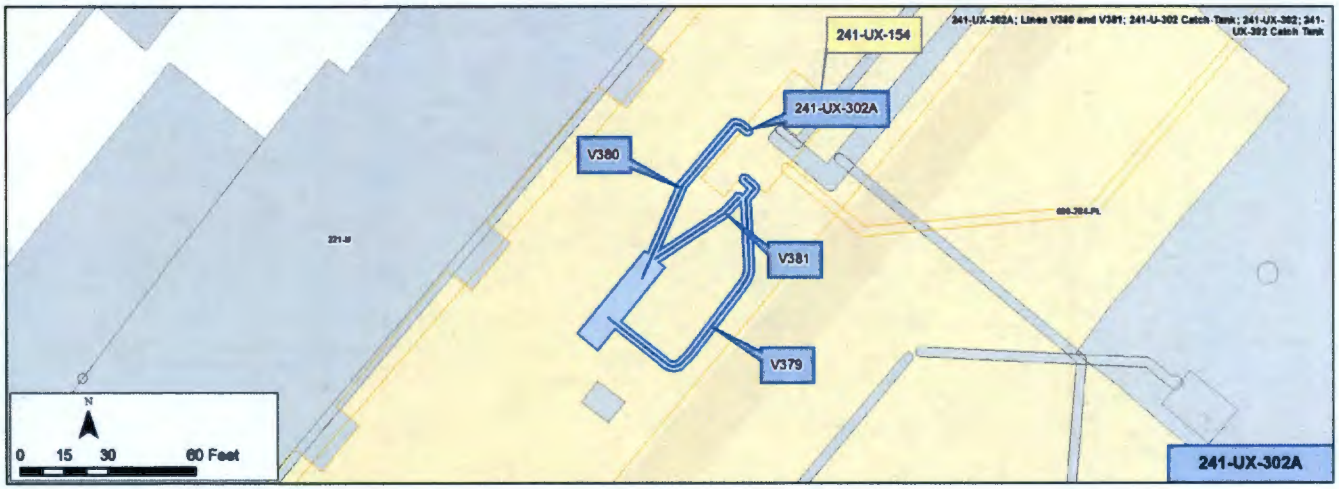

NORTH
BASE LINE
CATCH TANK
241-UX-302
PUMP PIT
DIVERSION BOX
241-UX-154
ENCASEMENT TYPE 7-66
ENCASEMENT TYPE 9-80
ENLARGED PLAN
ELEVATION
PAINTING DIAGRAM
DIVERSION BOX
241-UX-154
COVER SLAB ARRANGEMENT
ELEVATION
NOTES:
RELEASED FOR CONSTRUCTION
VITRO ENGINEERING CORPORATION
PIPING
PLAN & ELEVATION
241-UX-154 & 241-UX-302
NONE
H-2-71665

Scoping Summary: 241-UX-302A

History

The 241-UX-302A waste site is a catch tank that collected drainage from the 241-UX-154 Diversion Box and associated pipe encasement. The waste site is located approximately 40 ft southeast of U-Plant and 30 ft southwest of the 241-UX-154 Diversion Box.

This catch tank was constructed in 1947 and supported U Plant operations until 1958. From 1958 to Jan-2003, the catch tank received drainage from cross-site transfer line flushes, the U Plant exhaust stack drainage, and infiltration of rain and snow melt from the 241-UX-154 Diversion Box and pipeline encasements. The waste site includes three pipelines associated with the tank. The 241-UX-154 Diversion Box was weather sealed in 2003. Plans to cut and cap the U Plant exhaust stack drain were developed in 2004 but never implemented. A leak assessment test was conducted in March 2006 and concluded the tank was likely leaking through a pin hole at the 10.5 in. level. The tank continues to receive inflows from undetermined sources and has been pumped in 2006, 2009 and 2012. A technical evaluation of potential inflow sources indicate that possible sources of inflow are: 291-U exhaust stack drain, drain lines from the 241-UX-154 diversion box nozzle pit and pipe pit, or lateral water intrusion through corrosion sites on the tank.



Construction

- Dimensions: 39 ft long x 9 ft diameter
- Orientation: Horizontal
- Capacity: 18,500 gal
- Composition: 9/16 in. thick Carbon Steel
- Tank penetrations : 6 penetrations
  - One 3 in. carbon steel riser to abandoned jet box (V379)
  - Two 4 in. stainless steel risers
    - One blanked with 4 in. flange; one equipped with ENRAF liquid level detector
  - Two 4 in. stainless steel drain line connections
  - One 12 in. riser to pump pit weather-sealed
    - Pump manifold includes 2 in. stainless steel line expanding to 3 in. line that terminates at 241-UX-154 U-16 with closed isolation valve
- Buried depth: top 19.5 ft bgs, bottom 28.5 ft bgs

Features of Interest

- One abandoned jet box line (V379) blanked with 3 in. flange
- Two stainless steel drain line connections, both blanked
  - One (V380) from the 241-UX-154 Diversion Box
  - One (V381) from pipe encasement w/T-connection to U Plant exhaust stack drain

Relevant Characterization

- Integrity assessment conducted in 2001; tank deemed sound
- Tank grab sample in June 2002 (FH-0203447)
- Leak assessment conducted in May 2006
  - Tank presumed to leak - HOLE AT 10.5 in level
  - Tank pumped to intake level
  - 877 gal waste estimated remaining in tank
- Tank liquid pumped in October 2006 (RPP-RPT-31779)

Waste Streams

- U Plant Recovery & Scavenging Waste (URP)
- Infiltration of rain & snow melt from 241-UX-154 Diversion Box & pipeline encasement
- U Plant exhaust stack drainage

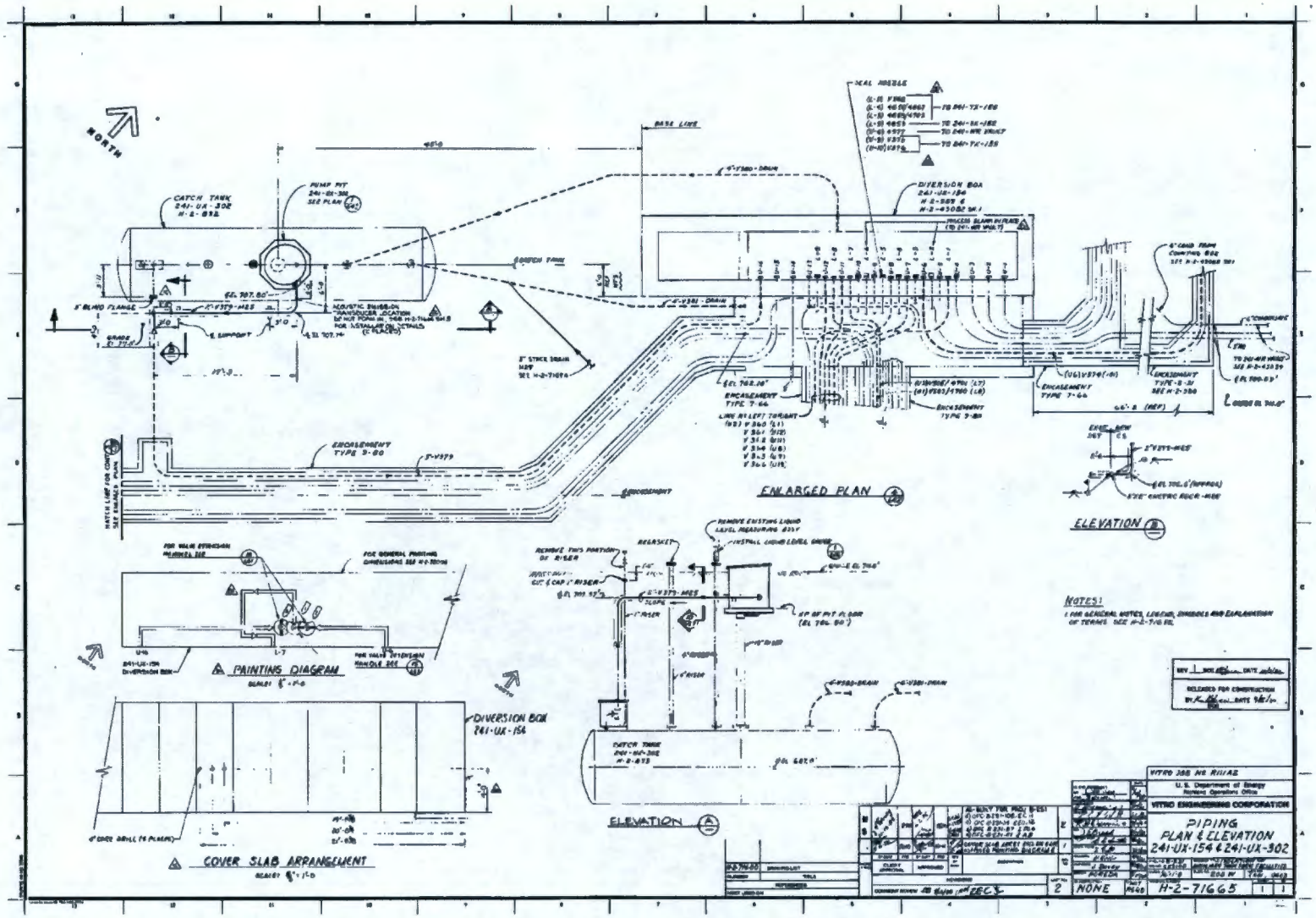
Misc./Other Relevant Information

- Tank liquid pumped in Sep-2009 (RPP-RPT-42789)
- Tank liquid pumped in Jul-2012 (TFC-WO-11-5930)
- Possible Inflow sources identified (RPP-TE-49694)
  - 241-X-154 diversion box drain lines
  - 291-U stack drain line
  - lateral inflows through corrosion sites on tank

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1 • 241-UX-154 Diversion Box	TBD • 200-W-136 - (footprint of 221-U D&D area) 200-WA-1 • UPR-200-W-162 - (associated with 221-U)

241-UX-154
V381
V380
800-284-PL
241-UX-302A
V379
221-U
N
0
35
70
140 Feet


NORTH
CATCH TANK
PUMP PIT
DIVERSION BOX
ENLARGED PLAN
ELEVATION
PAINTINGS DIAGRAM
COVER SLAB ARRANGEMENT
DIVERSION BOX 241-UX-154
NOTES:
PIPING PLAN & ELEVATION 241-UX-154 & 241-UX-302
H-2-71665
NONE

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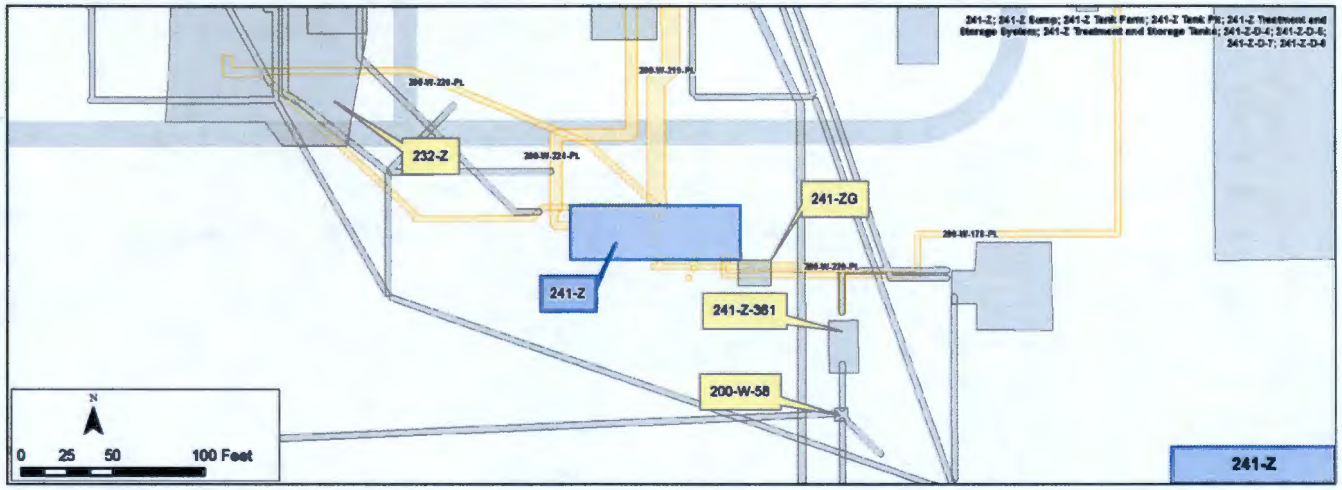
Scoping Summary: 241-Z

History

The 241-Z waste site was a RCRA-permitted TSD verified as clean closed by the Department of Ecology on February 22, 2007. The 241-Z TSD was comprised of four storage and treatment tanks (D4, D5, D7 and D8), associated piping, and equipment (waste transfer pumps, agitators) contained in a below grade concrete vault structure located within the Z-Plant security fence.

A fifth tank, D6, is co-located with the 241-Z TSD but was taken out of service in 1972, due to tank and pipe failures and is not part of the 241-Z TSD. The Hanford Facility Part A Permit Application notes the D-6 vault and tank were taken out of service and isolated from the 241-Z TSD system in 1972 and never stored dangerous waste. The RCRA Closure Certification of the 241-Z TSD Ancillary equipment certifies closure of ancillary piping including the piping in the D-6 cell and other embedded piping in the 241-Z cell walls, the PFP tunnel and underground piping between PFP and 241-Z. The closure plan does not require removal of clean closed structures pending future disposition in conjunction with PFP decommissioning activities under the CERCLA removal action (07-AMCP-0062).

The 241-Z facility was constructed in 1948 and in service from 1949 to 2004.



Construction

Below Grade Vault

- Reinforce concrete
- 19 ft 6 in. wide x 91 ft 6 in. long x 22 ft deep
- Five cells with 1 ft thick walls between cells
- No cell drains; cells equipped with sumps and steam jet pumps

Tanks - TSD Components

- Four 4,200 gal stainless steel; total capacity 16,800 gal (Excludes D6 tank)
- Vertical, 10 ft diameter, 8 ft high with concave top
- Twelve flanged nozzles on tank top of each tank – variable diameter 3 in. to 8 in.
- One 24 in. flanged nozzle center of each tank for agitator base

Features of Interest

Tank D6 is co-located with the 241-Z TSD components but is not part of the permitted unit. The D6 tank was taken out of service in 1972 prior to state RCRA authorization.

Relevant Characterization

- Sludge removed and dispositioned as transuranic mixed waste
- Process piping flushed cleaned, removed and dispositioned as transuranic mixed waste
- Ancillary equipment not removed was decontaminated in place and inspected for clean debris surface.
- No known leaks from tanks D4, DS, D7, D8
- Tanks D4, D5, D7, D8 were clean closed in place and RCRA Closure certified on Feb-22-2007

Waste Streams

The 241-Z storage and treatment tanks accumulated, stored and treated corrosive and plutonium-bearing liquid waste generated from the Plutonium Finishing Plant (PFP) activities. The 241-Z waste was then transferred to the Double Shell Tanks (DST) for storage until final disposition. Records indicate 241-Z received 740,000 gal of high-salt & low-salt waste including NaOH, KOH, nitrates, metals and trace amounts of plutonium.

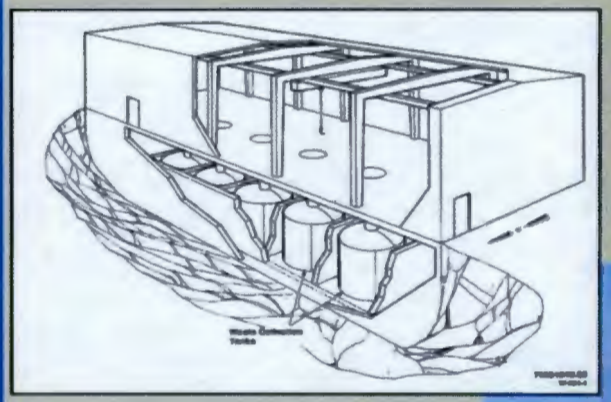
Misc./Other Relevant Information

It is estimated that 40,000 gal may have leaked to the floor of the D-6 vault and been released to the environment through cracks in the cell floor before the D-6 tank was taken out of service (HNF-30654). Approximately 24 in. of control density fill (CDF) was added to the cell post final cell survey to anchor the tank and to encapsulate the material to prevent spread of contamination. Contamination is suggested to reach approximately 4 meters below the D6 cell floor.

Site Interfaces

Origin/Termination	Site Intersects 200-IS-1
N/A	• 200-W-178-PL • 200-W-219-PL • 200-W-220-PL • 200-W-224-PL • 200-W-228-PL

232-Z
241-ZG
241-Z
241-Z-361
200-W-58
N
0
35
70
140 Feet



241-Z
Liquid Waste Treatment Facility

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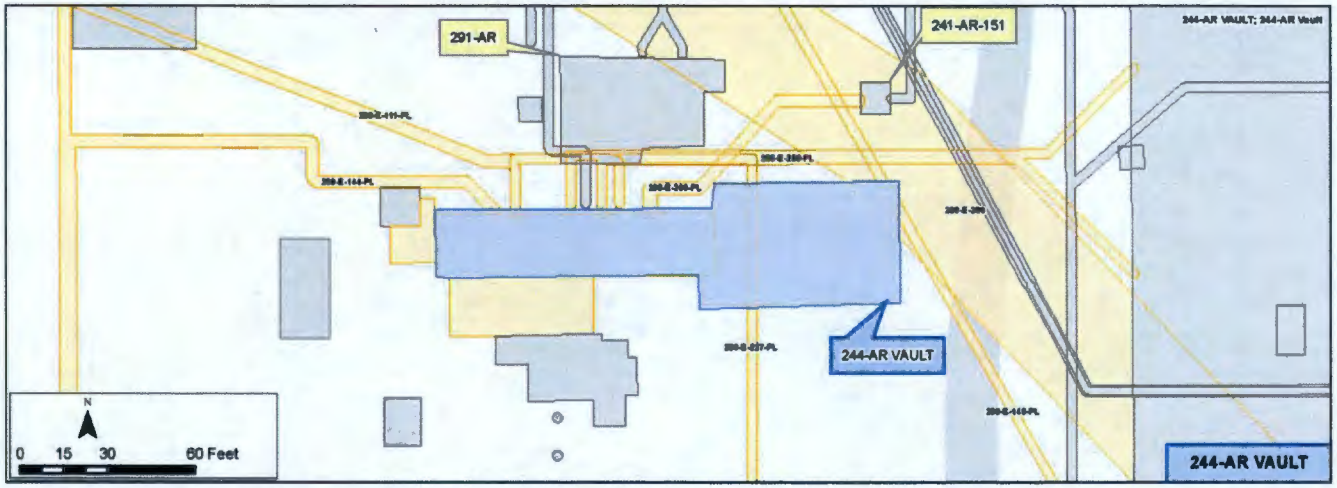
Scoping Summary: 244-AR VAULT

History

The 244-AR Vault waste site was fabricated in 1966 under Project CAC-169 (PUREX Sludge Removal and Waste Transfer Facilities). The vault facilities were designed to remove, treat, and transfer PUREX tank farm sludge to 221-B Plant for fission product removal, provide interim storage for PUREX Acid Waste (PAW) feed, and to Receive and distribute the Neutralized High-Level 221-B Plant Waste (NHW).

The 244-AR Vault was placed in standby in 1978. In 1984 it was upgraded to use as a waste transfer facility. The renovations provided safe and efficient transfers for PUREX cladding removal waste and transuranic waste. It was isolated and disconnected from steam and water in 1996. All liquid wastes in the facility (~17,600 gal, including flush water) were transferred to 241-AY-102 in 2003 when it was isolated and sealed to prevent intrusion. The Vault contains multiple radiological postings including Internally Contaminated Systems, Underground Radioactive Material Area, High Contamination Area, and Fixed Contamination Area.



Construction

244-AR Vault Canyon Building

- Dimensions: 97 ft long x 21 ft wide, with 1.5 ft thick walls
- Composition: Reinforced concrete
- Depth: Extends 36 ft above and 42 ft below grade

3 process cells located below the canyon deck

- Cell 1 – contains TK-244-AR-001
- Cell 2 – contains TK-244-AR-002
- Cell 3 – contains TK-244-AR-003 and TK-244-004

Features of Interest

Facilities that include:

- Canyon Building (vault)
- Instrument Building
- Crane Control Room
- Change House
- Filter Building
- Nitric Acid and Sodium Hydroxide Storage Tanks
- Vessel Vent Stack and Exhaust Fan
- Sluicing System
- Routing System

Relevant Characterization

- Pre-transfer compatibility sludge sampling revealed the following isotope concentrations in µCi/Liter: 90Sr at 9.96E+06; 137Cs at 2.39E+06; 235U at 9.03E-02; 241Pu at 2.96E+04; and 241Am at 3.67E+04 with the most prevalent non-radiological, in g/L, being Fe at 524.6 , Al at 101.9 , NO3 at 88.3 and Na at 83.0.

- The following analyses for the liquid remaining is an estimate for PUREX supernate combined with cooling water: 90Sr @7.9E+00,137Cs @1.8E+02, 235U @1.3E-06,241Pu @1.73E-02 and the non-radiological components, in micrograms/gram are Total U 87.3, Fe 26.3, Na 6900, NO2 6380 and NO3 1940, SO4 3600.

Waste Streams

- Wastes generated by the 202-A Plant during the separation of uranium and plutonium from irradiated aluminum-clad and Zircaloy II-clad nuclear reactor fuel elements were processed
- Neutralized High-Level Waste (NHW) that was generated during the 221-B Plant waste fractionization of PAW by solvent extraction was also processed
- "Significant" Cs-137 and Sr-90 and other isotopes; also Zirflex, Cerium-rare earth and cesium, PUREX Supernatant, and Sr and rare earths were the wastes processed.
- The last waste processed was PUREX Acid Sludge in 1978

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1 OU

- 200-E-111-PL (origin)
- 200-E-144-PL
- 200-E-153-PL (termination)
- 200-E-206-PL (origin)
- 200-E-227-PL
- 200-E-275-PL (origin)

WMA A/AX

- 200-E-200-PL (origin)

No Operable Unit

- 296-A-13 (stack)

Site Intersects

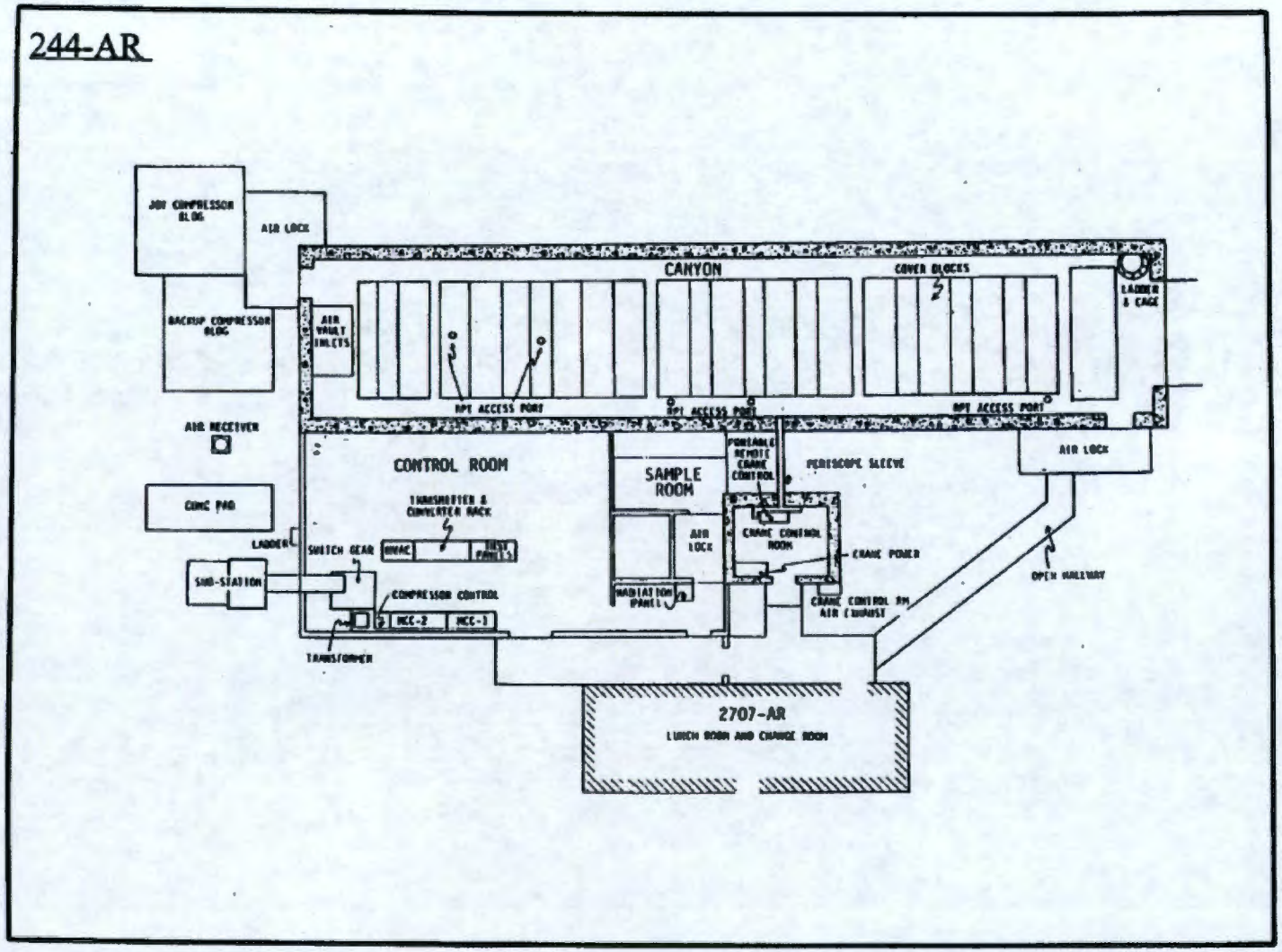
200-IS-1 OU

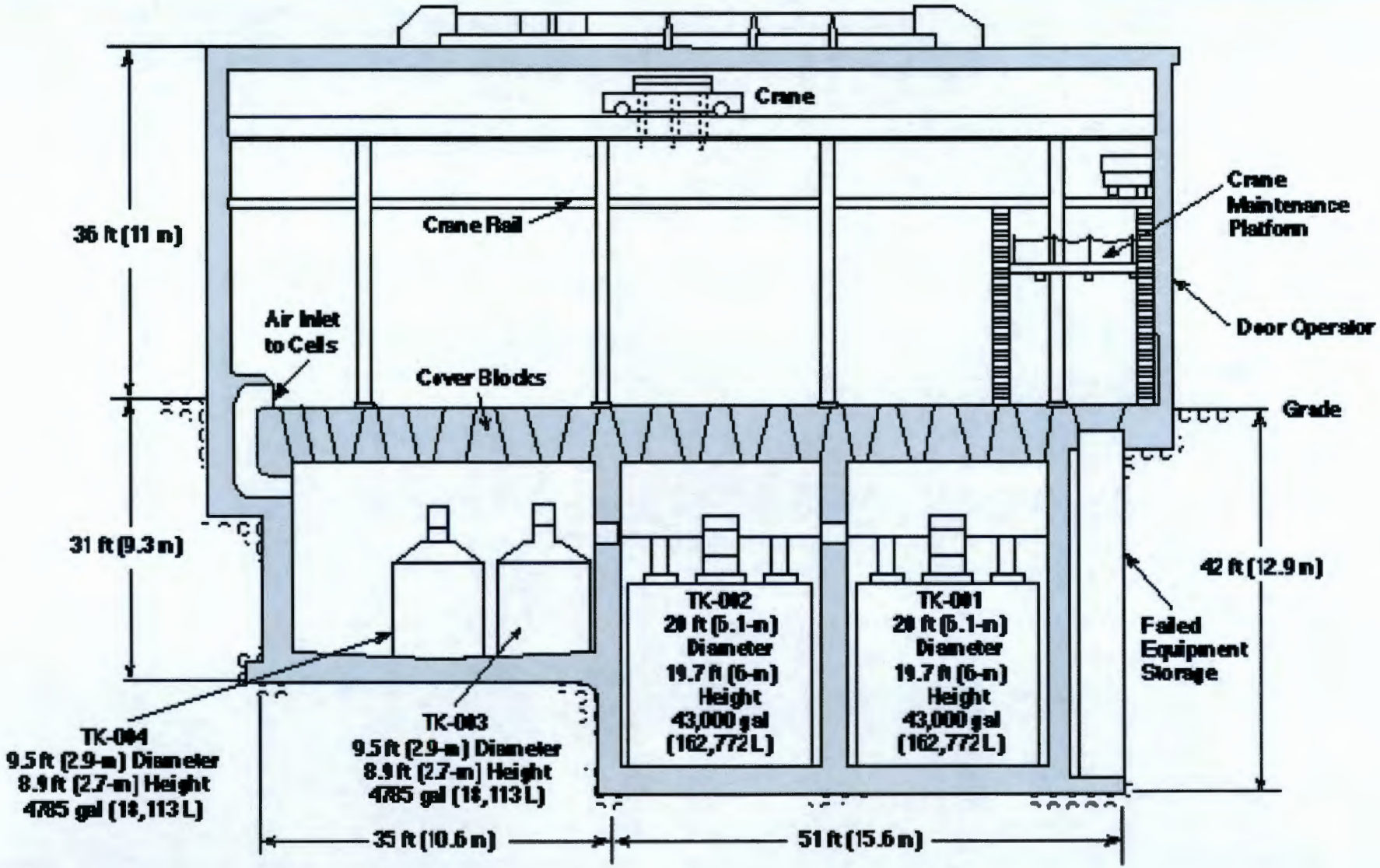
- 200-E-148-PL

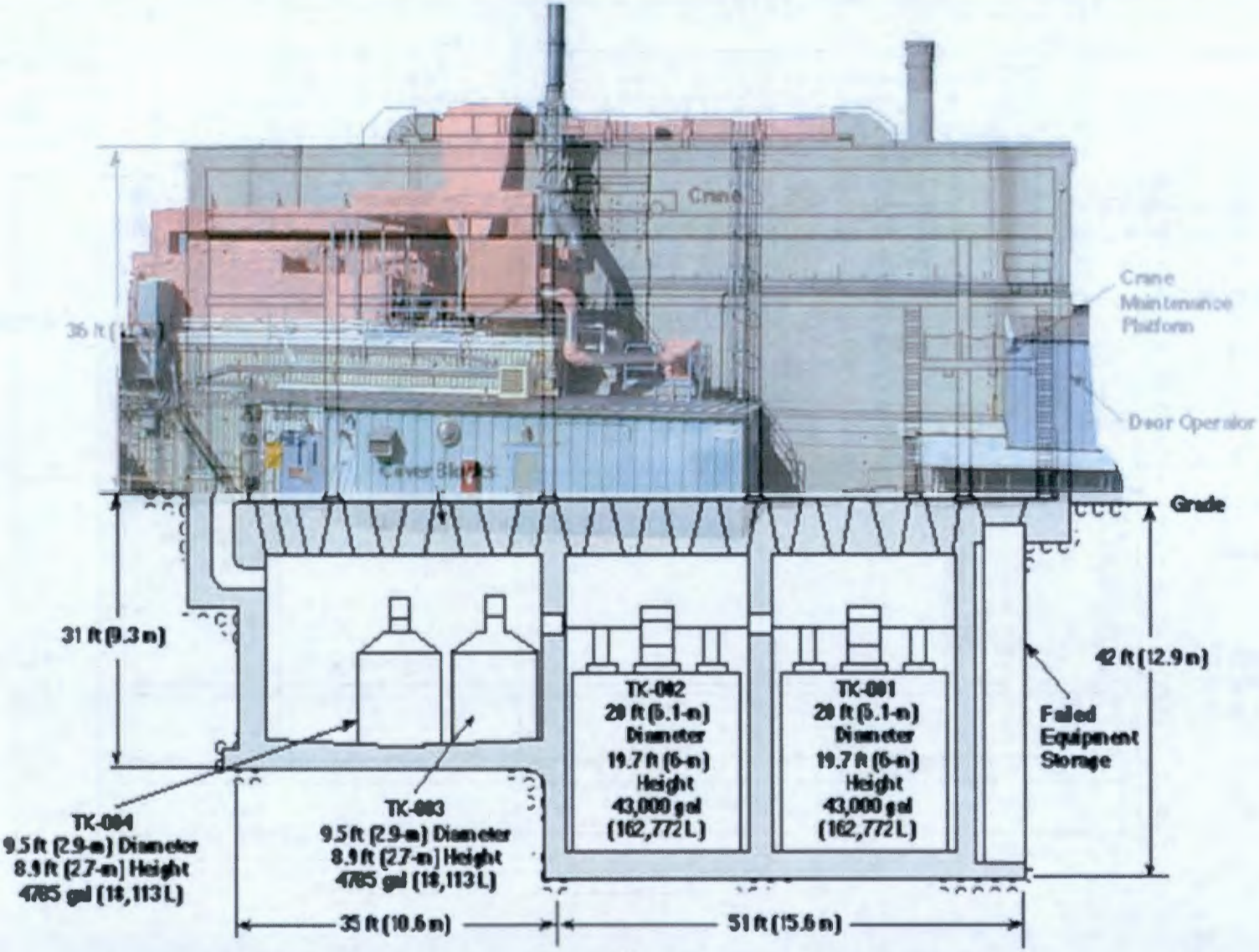
200-EA-1 OU

- 2607-EA

200-E-111-PL
291-AR
241-AR-151
241-AY
Tank Farm
200-E-286
200-E-200-PL
200-E-208-PL
244-AR VAULT
200-E-227-PL
200-E-148-PL
200-E-144-PL
N
0
35
70
140 Feet


244-AR
JOY COMPRESSOR BLDG
AIR LOCK
BACKUP COMPRESSOR BLDG
AIR VAULT INLETS
CANYON
COVER BLOCKS
LADDER & CAGE
RPT ACCESS PORT
RPT ACCESS PORT
RPT ACCESS PORT
AIR RECEIVER
CONTROL ROOM
SAMPLE ROOM
PORTABLE REMOTE CRANE CONTROL
PERISCOPE SLEEVE
AIR LOCK
CONC PAD
TRANSMITTER & CONVERTER RACK
LADDER
SWITCH GEAR
HVAC
TEST PANELS
AIR LOCK
CRANE CONTROL ROOM
CRANE POWER
SUB-STATION
COMPRESSOR CONTROL
MCC-2
MCC-1
RADIATION PANEL
CRANE CONTROL RM AIR EXHAUST
OPEN HALLWAY
TRANSFORMER
2707-AR
LUNCH ROOM AND CHANGE ROOM


Crane
Crane Rail
Crane Maintenance Platform
Door Operator
36 ft (11 m)
Air Inlet to Cells
Cover Blocks
Grade
31 ft (9.3 m)
42 ft (12.9 m)
TK-002
20 ft (6.1-m) Diameter
19.7 ft (6-m) Height
43,000 gal (162,772 L)
TK-001
20 ft (6.1-m) Diameter
19.7 ft (6-m) Height
43,000 gal (162,772 L)
Failed Equipment Storage
TK-004
9.5 ft (2.9-m) Diameter
8.9 ft (2.7-m) Height
4785 gal (18,113 L)
TK-003
9.5 ft (2.9-m) Diameter
8.9 ft (2.7-m) Height
4785 gal (18,113 L)
35 ft (10.6 m)
51 ft (15.6 m)


Crane
Crane Maintenance Platform
Door Operator
Grade
31 ft (9.3 m)
42 ft (12.9 m)
TK-002
20 ft (6.1-m) Diameter
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43,000 gal (162,772 L)
TK-001
20 ft (6.1-m) Diameter
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Failed Equipment Storage
TK-004
9.5 ft (2.9-m) Diameter
8.9 ft (2.7-m) Height
4785 gal (18,113 L)
TK-003
9.5 ft (2.9-m) Diameter
8.9 ft (2.7-m) Height
4785 gal (18,113 L)
35 ft (10.6 m)
51 ft (15.6 m)

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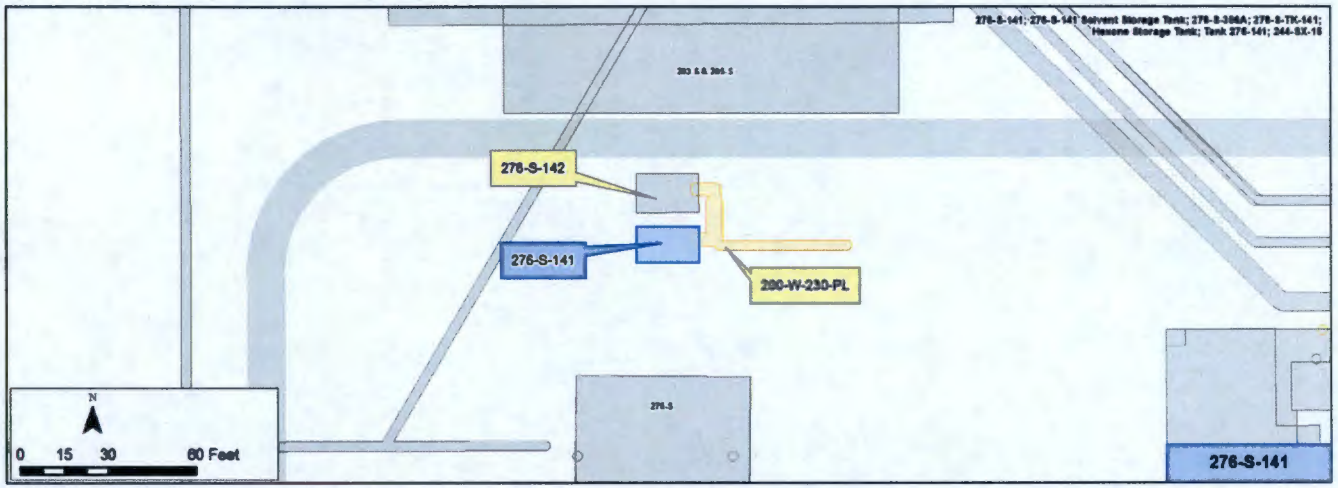
Scoping Summary: 276-S-141

History

The 276-S-141 waste site is in the SE corner of the 200 West Area within the Hexone Storage and Treatment Facility (HSTF). HSTF consisted of two underground storage tanks (276-S-141 and 276-142), ancillary equipment and piping, and a mobile distillation unit added in 1990. 276-S-141 Tank was used to store reagent grade hexone used at REDOX from 1951-1969. From 1967-1990 the 276-S-141 Tank was used for waste storage only and stored ~20,000 gal of distilled hexone with minor radionuclides from the operation and shutdown of REDOX.

The last waste transfer to this tank was 1969. The tank stored hexone until 1990, when the tank contents were pumped to the distillation system and disposed off-site. In 1990, the tank was pumped out, rinsed with water and normal paraffin hydrocarbon. The tank contents were maintained under a nitrogen suppression system, installed as part of the distillation unit. The tank was filled with grout and the nitrogen suppression system was turned off in 2002. The 276-S-141 Tank is identified as a TSD in the Facility Dangerous Waste Permit. A RCRA Closure Plan was submitted to Ecology in 2009.



Construction

- Dimensions - 28 ft x 11.5 ft, 3/8 in. wall thickness, horizontal, direct buried
- Capacity - 23,575 gal
- Material – carbon steel
- Tank penetrations –
  - One 24 in. manhole
  - One 2 in. black steel vent pipe
  - One 2.5 in. black steel suction pipe
  - One 3 in. black steel vent pipe
  - One 4 in. black steel sample pipe nozzles/lines and purpose
- Connections – 276-S-141 and 276-S-142 connected to one of two mounted transfer pumps
- Buried depth - top of tank 3 ft bgs, bottom 14.5 ft bgs

Features of Interest

- One vent (through 3 in. pipe to tank 276-S-142)
- Centrifugal pump and pipes
- All pipe connections are welded (hexone lines)
- One 2.5 in. flange on the suction side
- One 2 in. flange on the fill line
- Two bends, one each on the incoming and suction lines

Waste Streams

- Storage of reagent grade hexone
- Radioactive contaminated organic liquids added in 1967 from REDOX Plant shutdown
- In 1988, 200 gal of water were added to the tank.
- Estimated 200 gal to 250 gal of sludge and 5 gal to 30 gal of liquid residual following pumping in 1990; (primarily water with lesser amounts of paraffin hydrocarbon, tributyl phosphate and hexone)

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-230-PL • 276-S-142

Relevant Characterization

- Ultrasonic tank integrity testing 1976 - no evidence of corrosion or leakage
- 1989 in tank sample - hexone with minor amounts of water and minor rad activity
- Additional comprehensive in tank sampling conducted in Mar-2001 (Doc # 092594)
- Project Surveillance and Maintenance Plan prepared in 2003 (HNF-16558)

Misc./Other Relevant Information

- None

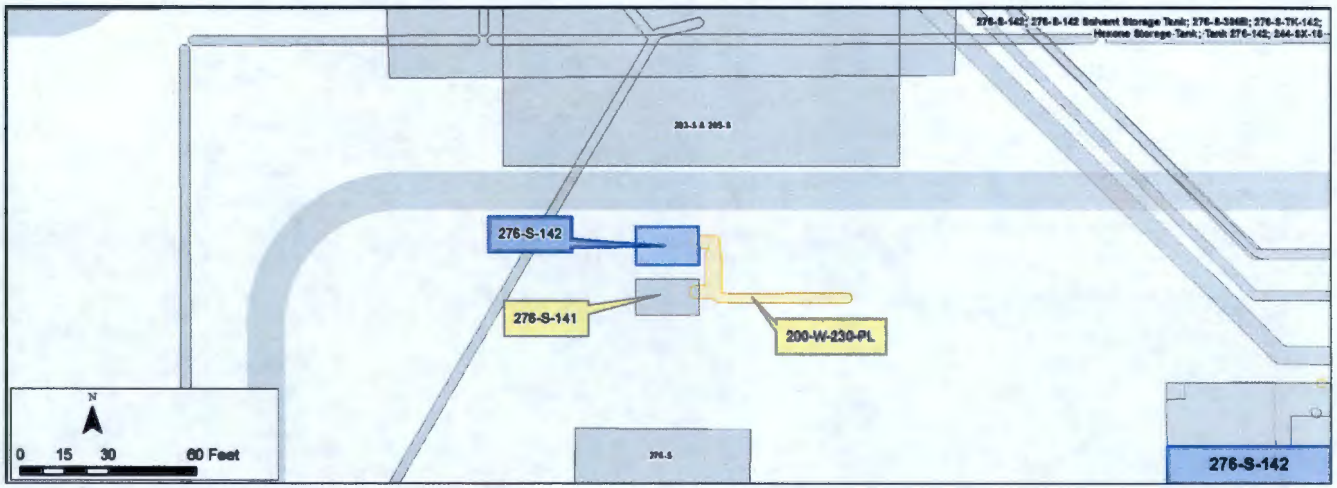
Scoping Summary: 276-S-141

Scoping Summary: 276-S-142

History

The 276-S-142 waste site is in the SD corner of the 200 West Area within the Hexone Storage and Treatment Facility (HSTF). HSTF consisted of two underground storage tanks (276-S-141 and 276-142), ancillary equipment and piping, and a mobile distillation unit added in 1990. 276-S-142 Tank was used to store reagent grade Hexone used at REDOX from 1951-1967. The last operational transfer to this tank was in 1969. From 1967-1990 the 276-S-142 Tank stored 14,000 gal of distilled hexone mixed with water, NPH and TBP. The tank stored mixed liquid wastes until 1990, when the contents were pumped to the distillation system and disposed off-site. In 1990 the tank was pumped out, rinsed with water and normal paraffin hydrocarbon. The tank contents were maintained under a nitrogen suppression system, installed as part of the distillation unit. The tank was filled with grout and the nitrogen suppression system was turned off in 2002. Approximately 100 gal of sludge remained in the tank, overlain by 5 gal to 30 gal of liquid (primarily water with lesser amounts of paraffin hydrocarbon, tributyl phosphate and hexone) when stabilized.

The 276-S-142 Tank is identified as a TSD in the Facility Dangerous Waste Permit. A RCRA Closure Plan was submitted to Ecology in 2009.



Construction

- Dimensions - 28 ft x 11.5 ft, 3/8 in. wall thickness, horizontal, direct buried
- Capacity -23,575 gal
- Material – Carbon Steel
- Tank penetrations
  - One 24 in. manhole
  - One 2 in. black steel vent pipe
  - One 2.5 in. black steel suction pipe
  - One 3 in. black steel vent pipe
  - One 4 in. black steel sample pipe nozzles/lines and purpose
- Connections – 276-S-141 and 276-S-142 connected to one of two mounted transfer pumps
- Buried depth - top of tank 3 ft bgs, bottom 14.5 ft bgs

Features of Interest

- One vent (through 3 in. pipe to tank 276-S-142)
- Centrifugal pump and pipes
- All pipe connections are welded (hexone lines)
- One 2.5 in. flange on the suction side
- One 2 in. flange on the fill line
- Two bends, one each on the incoming and suction lines

Relevant Characterization

- Ultrasonic tank integrity testing 1976 - no evidence of corrosion or leakage
- 1989 in tank sample - hexone with minor amounts of water and minor rad activity
- Additional comprehensive in tank sampling conducted in Mar-2001 (Doc # 092594)
- Project Surveillance and Maintenance Plan prepared in 2003 (HNF-16558)

Waste Streams

- Storage of reagent grade hexone
- Radioactive contaminated organic liquids added in 1967 from REDOX Plant shutdown. Normal paraffin hydrocarbon (NPH) and tributyl phosphate (TBP), minor quantities of select fission products and 2,000 gal of water were transferred into the tank in 1966, from a one-time campaign to separate select fission products from NPH/TBP waste at REDOX.
- Estimated 100 gal of sludge and 5 gal to 30 gal of liquid residual following pumping in 1990

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-230-PL • 276-S-142

Scoping Summary: 276-S-142

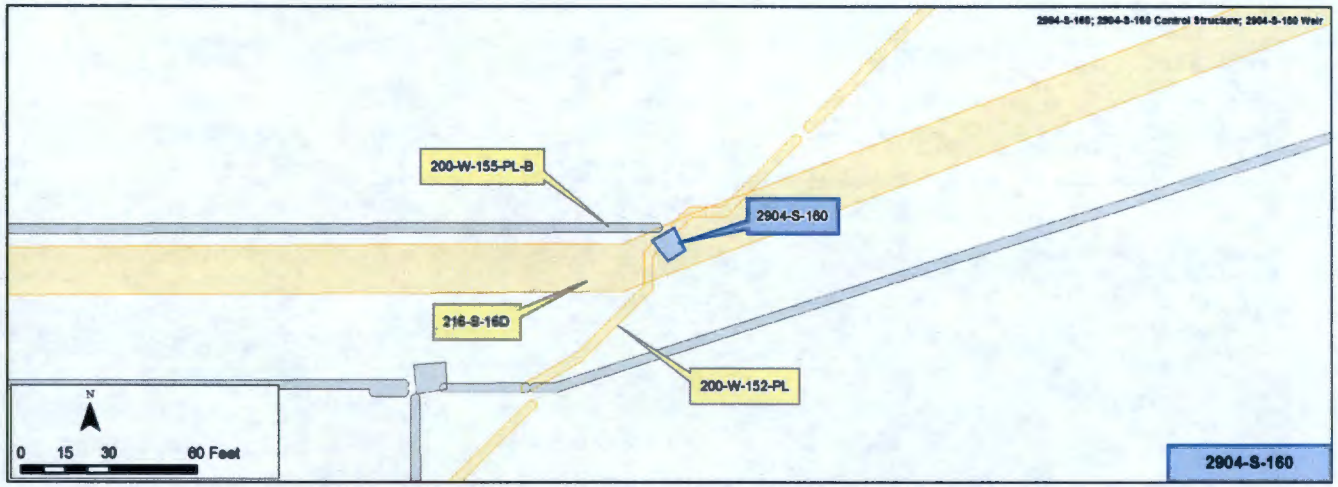
Scoping Summary: 2904-S-160

History

The 2904-S-160 waste site is an inactive control structure (weir box) used to divert process vessel cooling water and steam condensate from the 202-S Canyon Building to the 216-S-6 Crib and the 216-S-16 and 216-S-17 ponds.

The weir box was constructed in 1954 and in use until 1976. It is located southwest of the 241-SX tank farm, outside and southwest of the 200 West Area perimeter fence.

The weir box contains low-level beta-gamma contaminated concrete and piping as a result of effluents travelling through the weir. This site has been stabilized (covered with clean fill) and is posted as an underground radioactive material area, along with cave in warning signs.



Construction

- Pentagonal concrete structure that rises approximately 6 in. above ground surface
- Manhole and two sluice gate hand-operated floor stands visible from the surface
- Walls and roof: 10 in. thick
- Base of structure: 12 in. thick
- Dimensions:
  - 6.2 ft X 4 ft X 5.4 ft X 5.4 ft X 6.8 ft around
  - 9.6 ft tall
- Depth: to 9 ft bgs

Features of Interest

- None identified

Relevant Characterization

- 1990s: 5,000 cpm beta-gamma in soil; up to 300 cpm smearable on weir box surfaces. No further details were located for this data

Waste Streams

- 1954-to-1976: process vessel cooling water and steam condensate originating from 202-S (REDOX)
- Based on data from the 216-S-6 Crib, the 216-S-16 Pond, and the 216-S-17 Pond, this control structure likely contains the following isotopes: Sr-90, Tc-99, Cs-137, and U

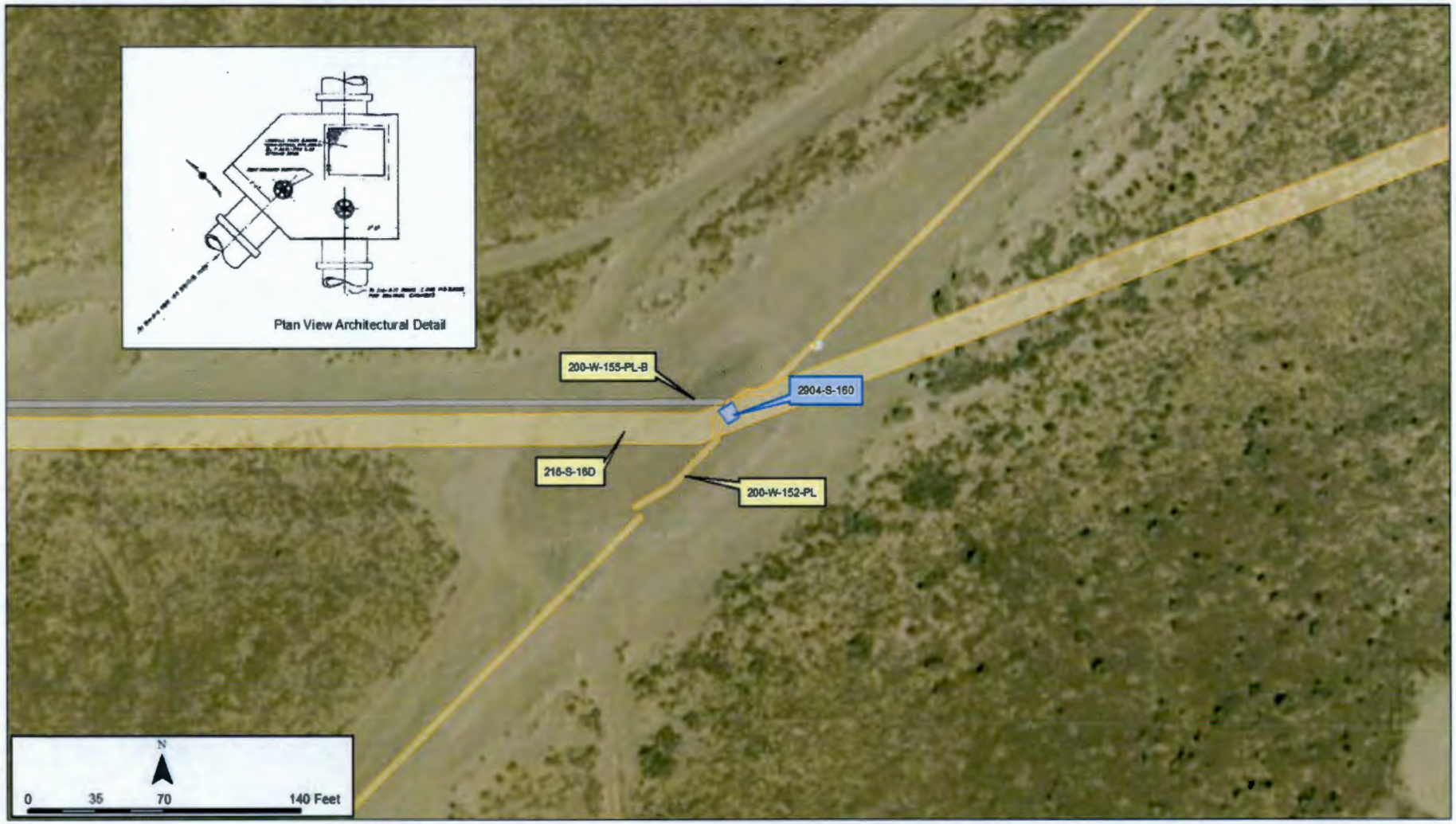
Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-OA-1 • 216-S-16D 200-IS-1 • 200-W-152-PL • 200-W-155-PL-B

Scoping Summary: 2904-S-160



Scoping Summary: 2904-S-171

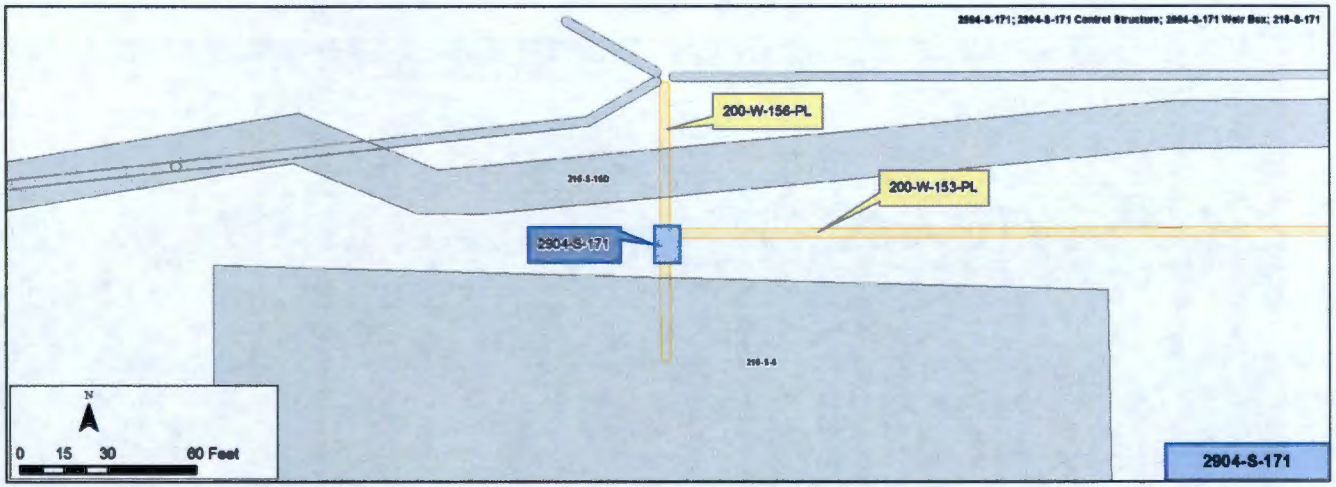
History

The 2904-S-171 waste site is an inactive control structure (weir box) that was used to measure and regulate flow of process waste being routed to the 216-S-6 Crib.

The weir box was constructed in 1954 and in use until 1972, when it was deactivated. It is located southwest of the 241-SX tank farm, outside and southwest of the 200 West Area perimeter fence. The 216-S-6 Crib is immediately south of the weir box.

The control structure contains low-level beta-gamma contaminated concrete and piping as a result of effluents travelling through it. The site was stabilized (covered with clean fill) in 1990, and again in 1992 due to a contamination breakthrough (no additional details were located). The site is posted as an underground radioactive material area with cave in warning signs surrounding it.

The 216-S-6 Crib was also stabilized in 1990.



Construction

- Dimensions: 8 ft 4 in. X 12 ft 8 in. X 10 ft 1.5 in. tall
- Composition: Reinforced Concrete
- Thickness (Walls, Roof, and Base): 10 in.

Visible above grade are:

- Stem Gate Valve with hand wheel to operate weir's sluice gate
- Flow Meter
- Vent Riser
- Manhole Cover

Features of Interest

- Float wells attached vertically to the north and south outside walls of the weir. Float wells are 16 in. diameter metal pipes centered in 2 ft concrete columns

Relevant Characterization

- 1990/92: Less than 100 cpm beta-gamma smearable contamination; 20 mR/h at contact with an open or closed window cutie pie. No additional characterization details were located

Waste Streams

- 202-S Building process cooling water and steam condensate
- Based on data from the 216-S-6 Crib, this control structure likely contains the following isotopes: Sr-90, Tc-99, Cs-137, and U

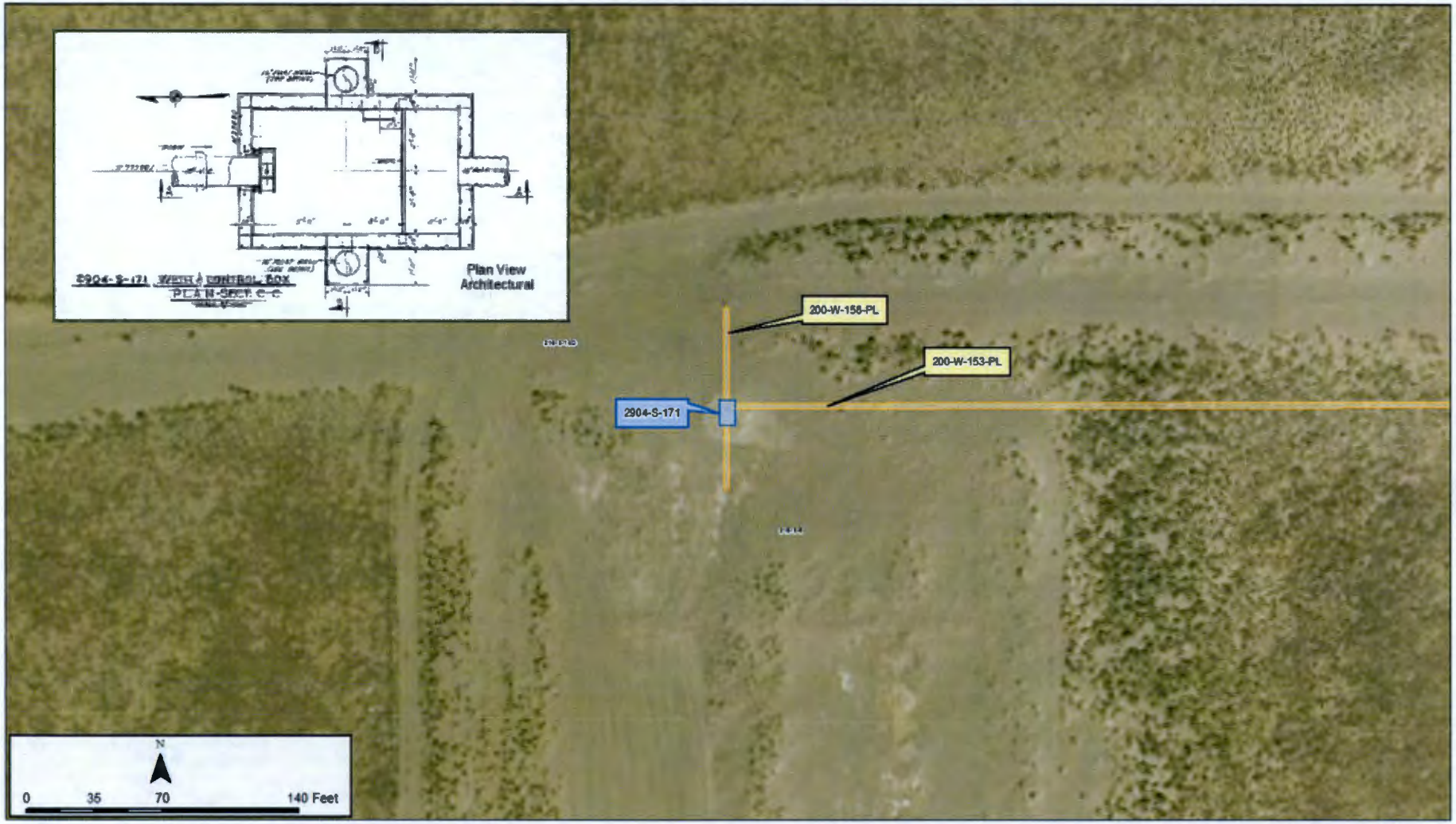
Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersects
	200-IS-1
N/A	• 200-W-153-PL
	• 200-W-156-PL

Scoping Summary: 2904-S-171



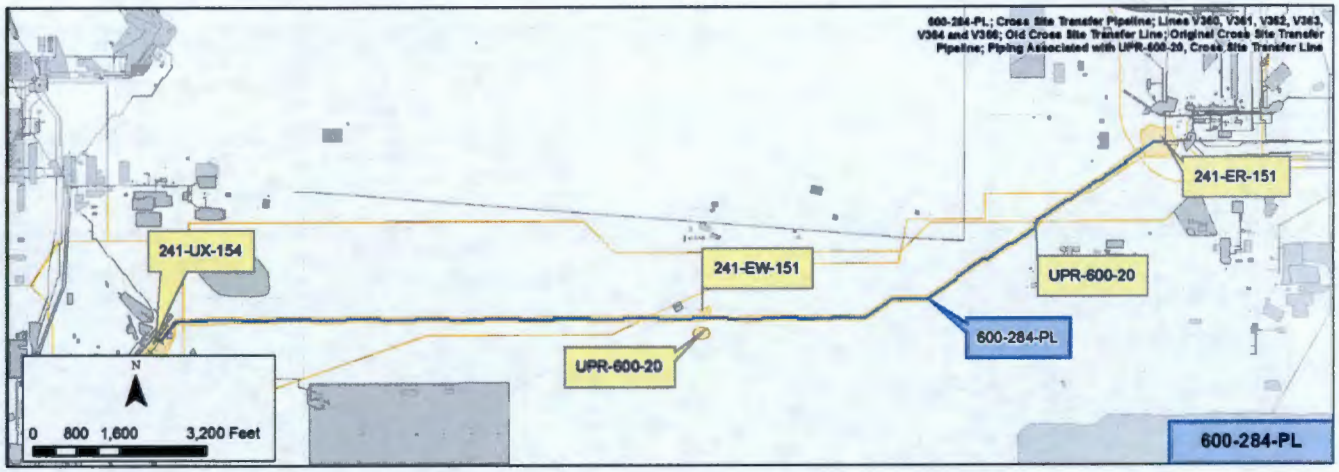
Scoping Summary: 600-284-PL

History

The 600-284-PL waste site is the old cross-site transfer line, considered part of the single-shell tank (SST) system. It includes six pipelines (V360, V361, V362, V363, V364, V366), a concrete encasement, pipe supports, test risers, 241-EW-151 vent station and its associated catch tank, and soils within the pipeline right-of-way. Two of the lines are plugged, two are either plugged or considered to be of questionable integrity, and two lines are considered to be open.

600-284-PL was constructed in 1952 to support the Uranium Metal Recovery operations in the 221-U building and was used to transport various process and tank farm waste between the 200 East and 200 West areas. The end of active site operation can be correlated to site replacement with another cross-site pipeline (600-269-PL) in 1995.

In Mar-1988, surface contamination was identified near the 241-EW-151 vent station (UPR-600-20). Documentation indicates the catch tank overflowed and spilled into the pipe encasement. No evidence indicates that the encasement leaked but bio intrusion by sagebrush was indicated. Other sources of contamination have been attributed to windblown particulate releases.



Construction

Pipeline

- Length Per Pipe: 19,767 ft
- Diameter: Six pipes, 3 in. each
- Composition: Stainless Steel
- Flow Method: Bi-directional
  - Gravity or pressurized not located
- Depth: Varies 5 ft - 15 ft, line nozzles at 241-ER-151 diversion box approx. 8 ft, line nozzles at 241-UX-154 approx. 12 ft, at 241-EW-151 vent station approx. 8 ft
- Cathodic Protection: None
- Total Calculated Volume: 43,548 gal
  - Calculated Volume Per Pipe: 7,258 gal

Encasement

- Type: 6-59
- Width: 5 ft
- Height: 2 ft
- Walls: Approx. 6 in. - 9 in. thick
- Length: 21,107 ft
- Calculated Concrete Volume: Approx. 5,600 cubic yards
- The encasement is a heavily reinforced steel concrete box with a void space in which the six pipelines rest

Features of Interest

- 241-EW-151 vent station located at the high point of the cross-country pipelines ~1,500 ft south of Bldg. 609-A
- Each site line has a 1 in. stainless steel vent line with a valve for air bleeding connecting it with the 800 gal vent station catch tank
- The vent station drains to a sump, the catch tank and sump overflow to the pipeline encasement
- 58 encasement test risers provide access to encasement void space, spaced as a pair of risers approximately 50 ft apart with approximately 700 ft between pairs
- The encasement slopes in both directions from the vent station (min. .4%) and drains to the pipe chase of each diversion box.

Relevant Characterization

- 9 boreholes drilled, four pairs and one control (indicated with circles on pg. 3)
  - Each pair was one borehole from the surface to the encasement and one borehole outside the right-of-way from the surface to below the encasement depth
  - All soil samples were determined free of contamination with the highest readings being .47 pCi/g of Cs-137, .80 pCi/g of C0-60 and 19.4 pCi/g of K-40

Waste Streams

- 1952-1958 Site transported dissolved metal waste (bismuth phosphate process) from 200 East Area vaults to U Plant for uranium recovery and to returned the recovery waste (tributyl phosphate process) to the 200 East Area for disposal
- Post 1958 site was used to transfer REDOX supernates to B Plant for cesium recovery operations and to return depleted wastes to the 200 West Area for waste evaporation

Misc./Other Relevant Information

- UPR-600-20 represents all soil and surface contamination (1988-2010) associated with the site. The surface has been stabilized and posted as Underground Radioactive Material
- There is no evidence that the encasement leaked, but evidence indicates of bio intrusion by sagebrush

Site Interfaces

Origin/Termination

200-IS-1
- 241-UX-154
- 241-ER-151

Site Intersects

200-IS-1
- 200-E-215-PL
- 200-E-228-PL
- 241-EW-151

200-WA-1
- 200-W-100-PL
- 200-W-136

Site Intersects Con't

200-CU-1
- 291-U

200-EA-1
- UPR-200-E-11

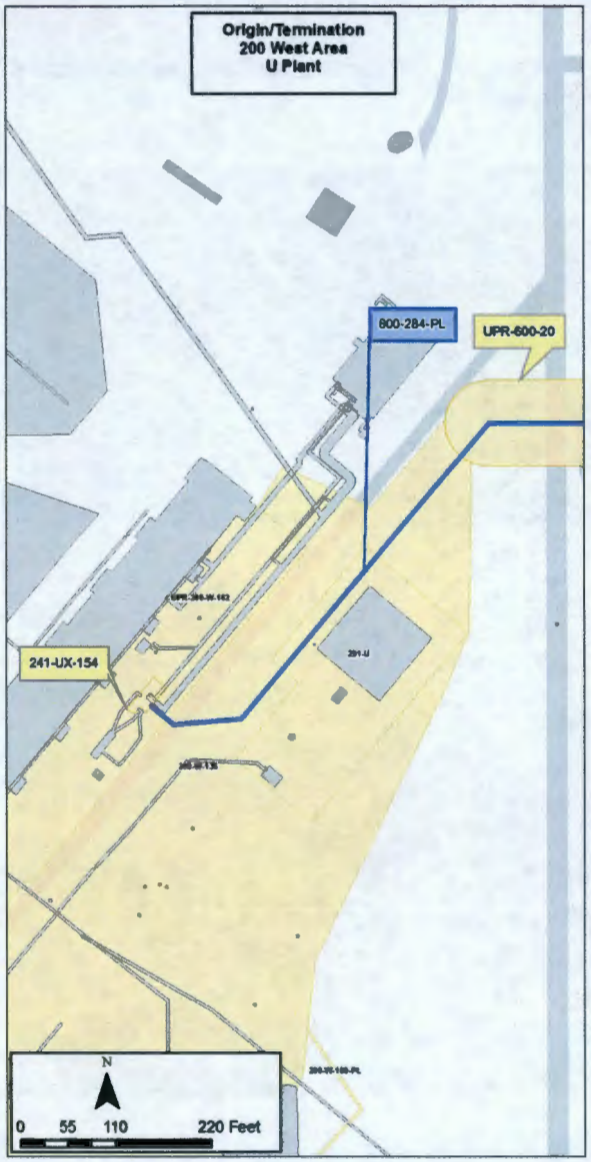
200-WA-1
- UPR-200-W-162

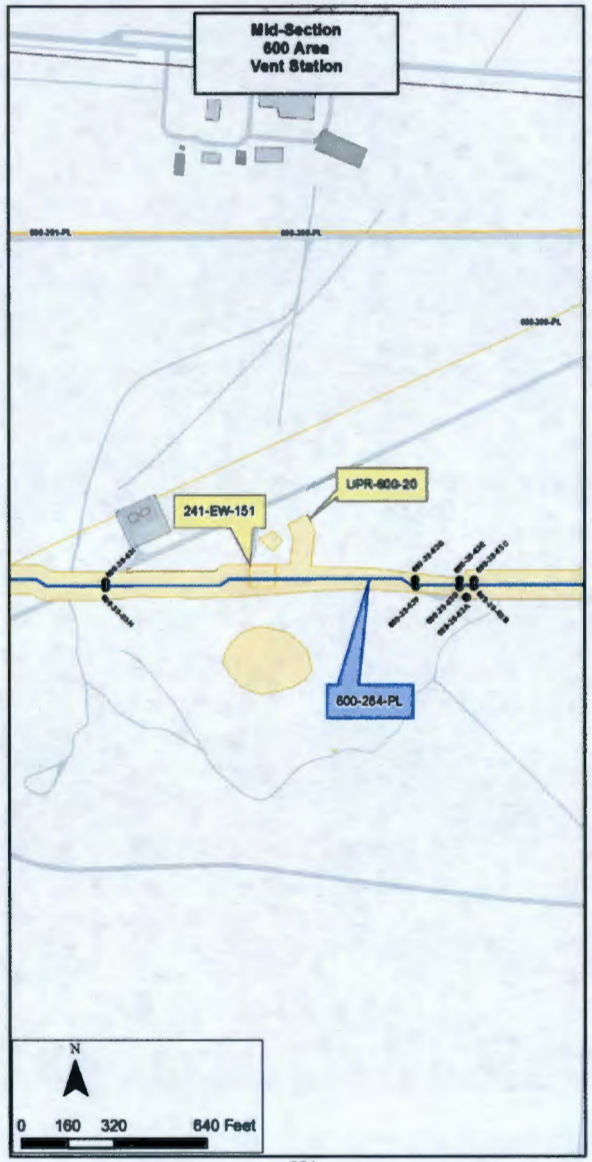
200-OA-1
- UPR-600-20

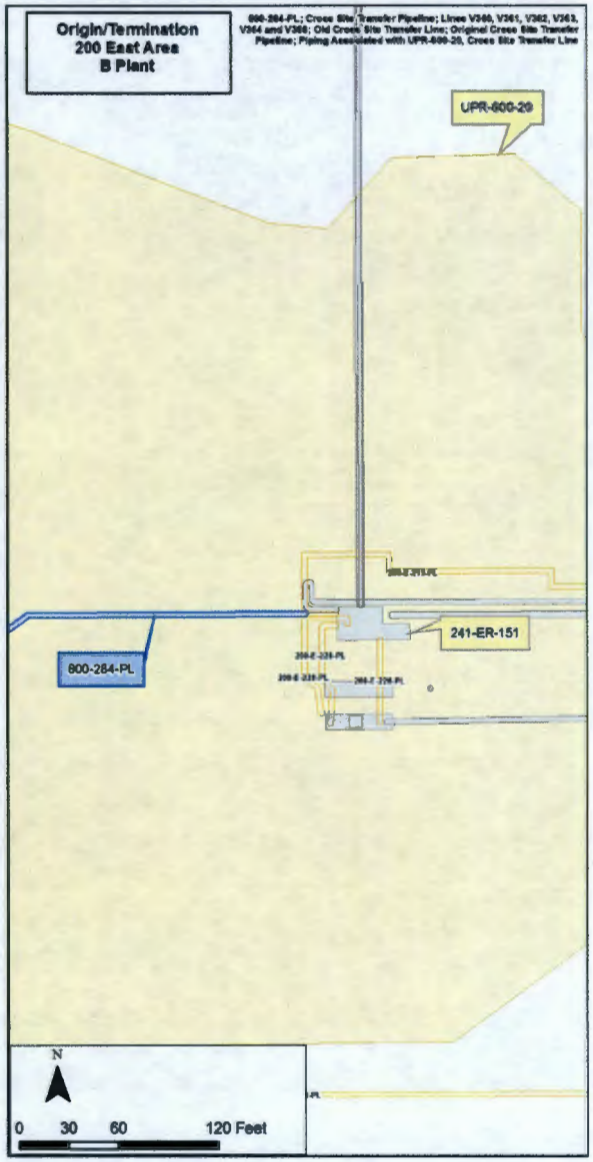
- 600-269-PL (active)
- 600-291-PL (active)
- 600-399-PL (active)

Scoping Summary: 600-284-PL

Scoping Summary: 600-284-PL







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Scoping Summary: HSVP

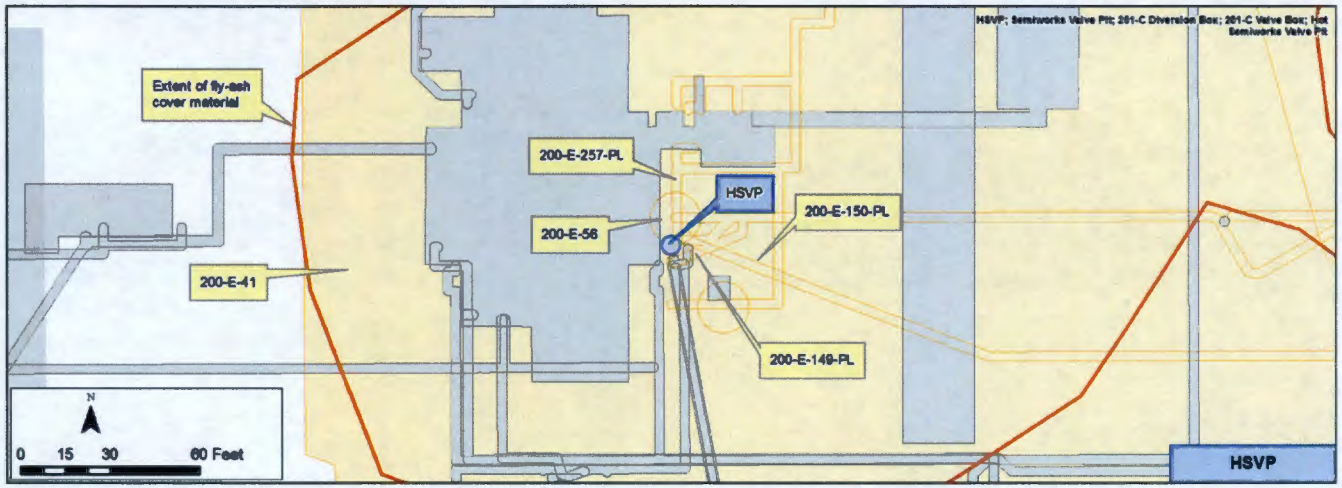
History

The HSVP waste site, or Hot Semi-Works Valve Pit, is an inactive underground cylindrical pit located adjacent to the remains of the east wall of the 201-C Process Building.

The HSVP connected lines from sources within the building to discharge locations at the 244-CR Vault in the PUREX Aggregate Area, the 241-C Tank Farm, and the 241-CX-70 Storage Tank.

The pit was operational from 1951 to 1967, when the Semi-Works pilot plant was retired; it was decommissioned in 1986, as part of the general Semi-Works decommissioning effort. The lines were sealed, isolated, and the pit was filled with concrete.

Currently, the site is buried under the ash barrier placed over the decommissioned 201-C Process Building and is not visible from the surface.



Construction

- Composition: Stainless Steel cylinder
- Diameter: 5.5 ft
- Depth: Below-grade
- Cylinder includes lid + bottom; depth of pit is unclear from As-built
- Calculated Volume of Concrete: Unknown

Features of Interest

- None identified.

Relevant Characterization

- No direct characterization data was located for the valve pit or adjacent soil. This area was decontaminated & decommissioned, and is now under a layer of ash.

Waste Streams

- 201-C Process Building wastes: Aluminum coating waste, zircaloy coating, radioactive condensates, Hot Shop sink wastes, cold run wastes, REDOX spent solvent, other REDOX wastes, PUREX organic wash waste, PUREX acid process waste, and PUREX spent solvent waste.

Misc./Other Relevant Information

- A release of radioactive waste from the 241-C waste line at the point where it entered the 201-C Process Building was reported in 1957. Excavated soil from the leak was buried at the southeast corner of the 'A Courtyard' on the east side of the 201-C Process Building. This burial is likely near HSVP.
- In various references, HSVP is commonly referred to as the 201-C Diversion Box.

Site Interfaces

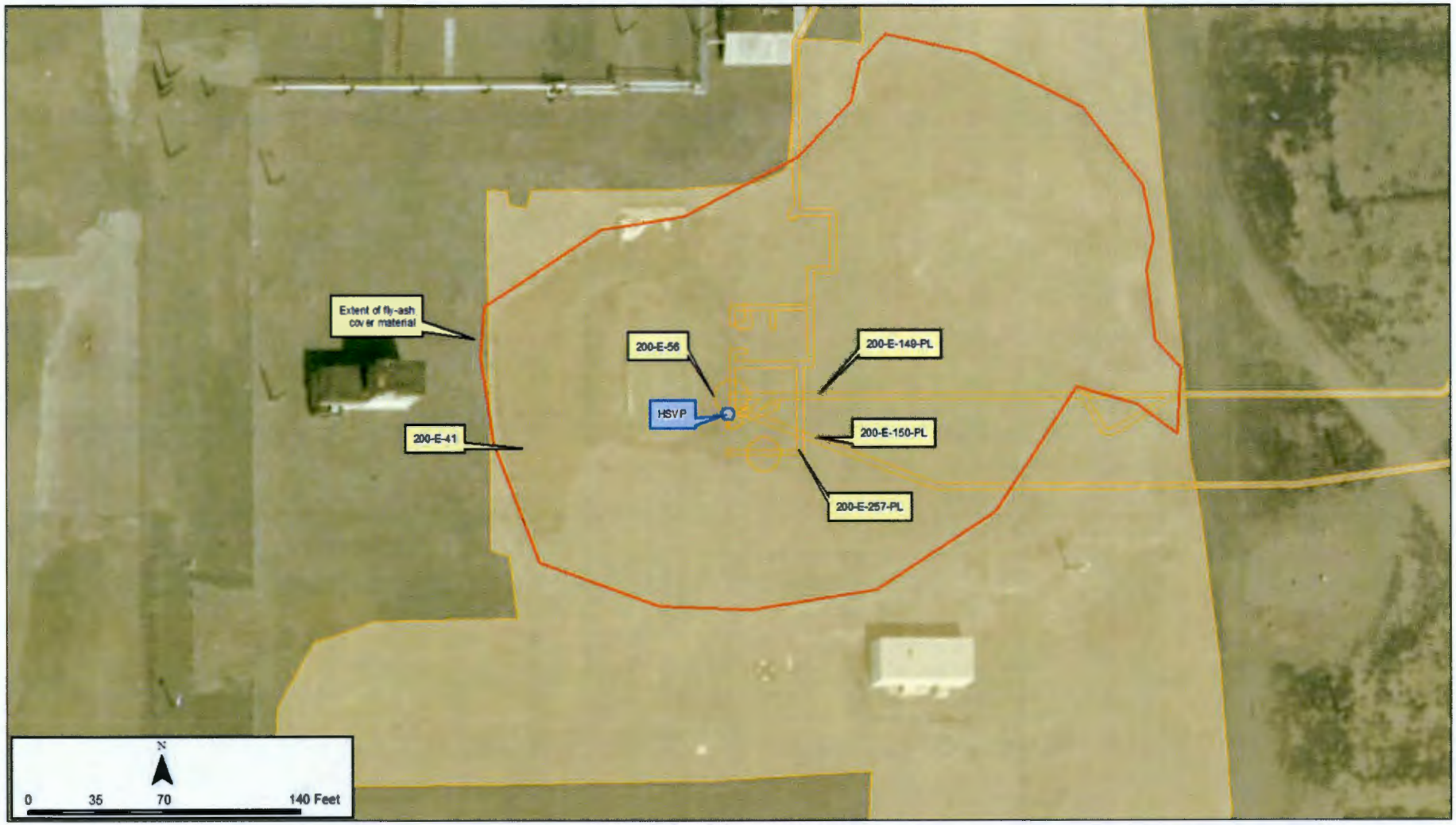
Origin/Termination

Site Intersects

200-EA-1 OU
- 200-E-56

200-IS-1 OU
- 200-E-257-PL
- 200-E-150-PL
- 200-E-149-PL

- 200-E-41 (stabilized area)


Extent of fly-ash cover material
200-E-56
200-E-149-PL
HSVP
200-E-41
200-E-150-PL
200-E-257-PL
N
0
35
70
140 Feet

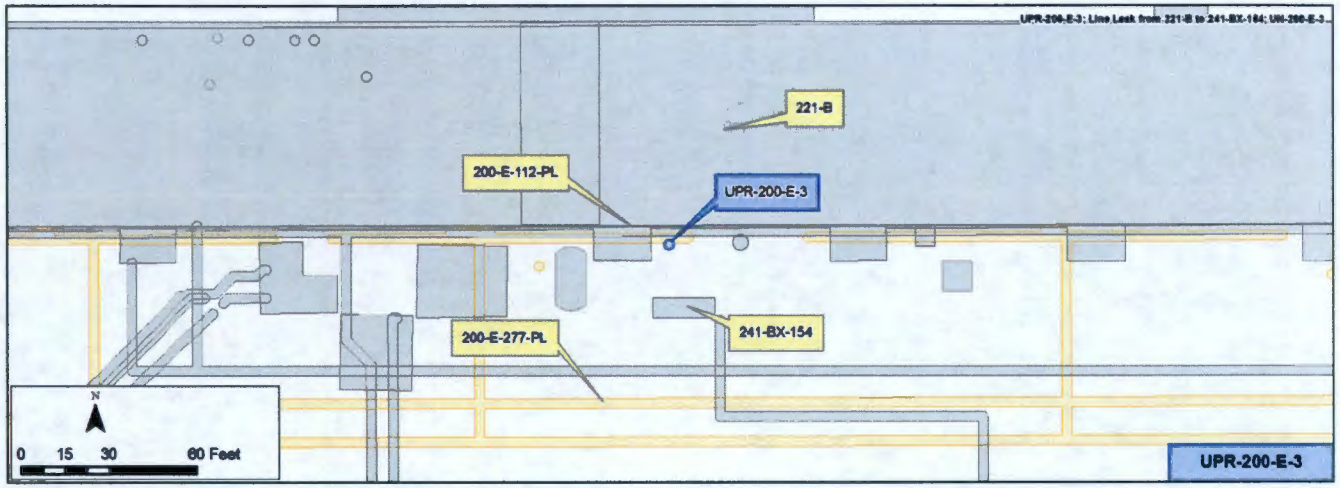
Scoping Summary: UPR-200-E-3

History

The UPR-200-E-3 waste site is an unplanned release of waste solution that was being transferred via a pipeline from the 221-B Building to the 241-BX-151 Diversion Box, some 20 ft away and immediately south. In Oct-1951, the transfer failed and released first-cycle process waste to the soil.

At the time the release was detected, this area was excavated in an attempt to isolate the line leak; however, excavation was halted some 18 in. above the pipe's depth when soil radiation levels were identified at 120 rad/hr.

Currently, this area is not separately marked or delineated. The size and extent of the contaminated area is unknown.



Construction

- Not Applicable

Features of Interest

- None identified

Waste Streams

- 1st Cycle Waste (B Plant)

Site Interfaces

Origin/Termination:

Not applicable

Site Intersects:

200-IS-1
- 200-E-112-PL
- 200-E-277-PL
- 241-BX-154 Diversion Box

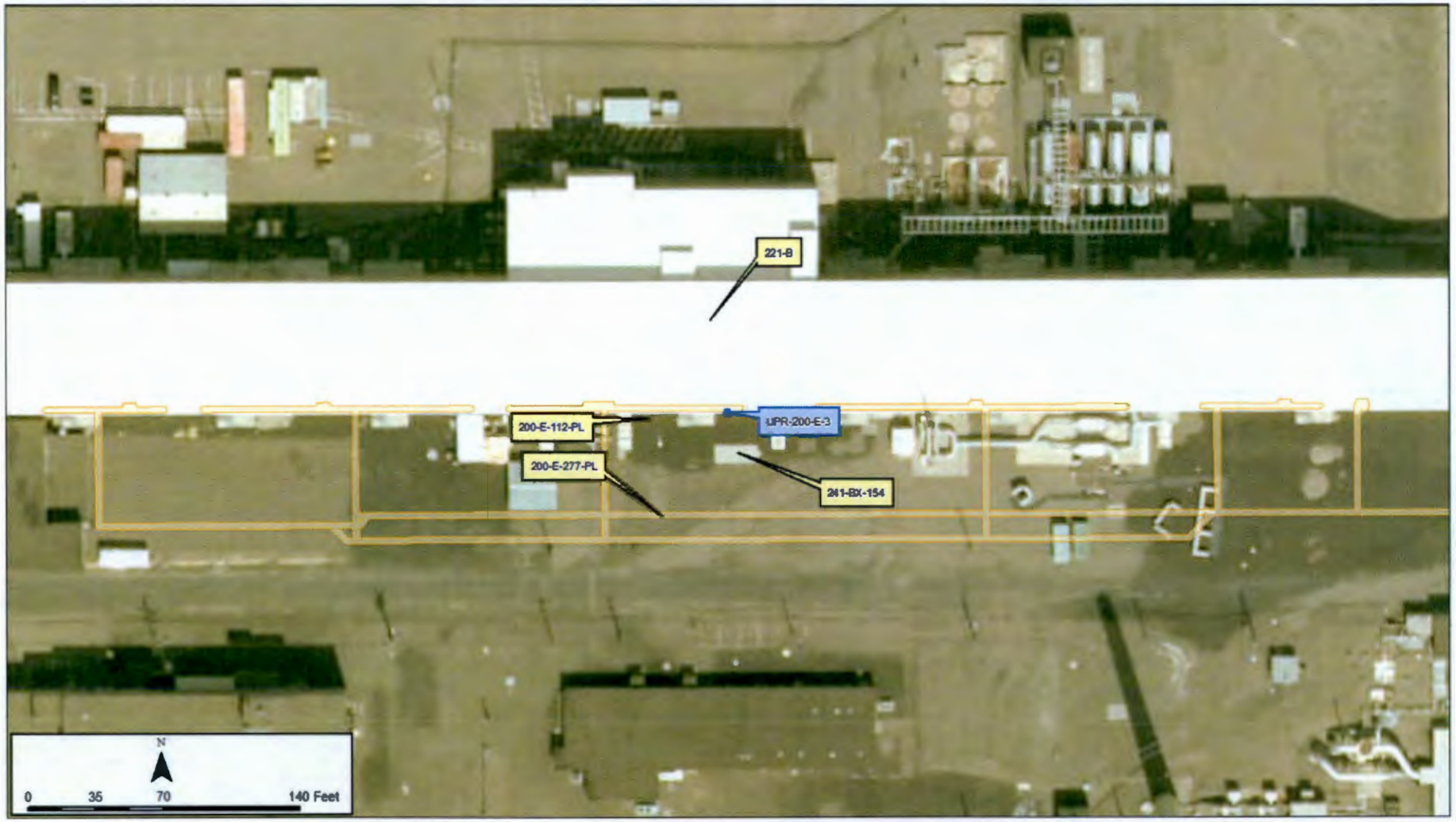
200-CB-1
- 221-B (B Plant)

Relevant Characterization

- 1951: soil radiation levels were identified at 120 rad/hr during excavation, which was halted.

Misc./Other Relevant Information

- None identified


221-B
200-E-112-PL
UPR-200-E-3
200-E-277-PL
241-BX-154
N
0
35
70
140 Feet

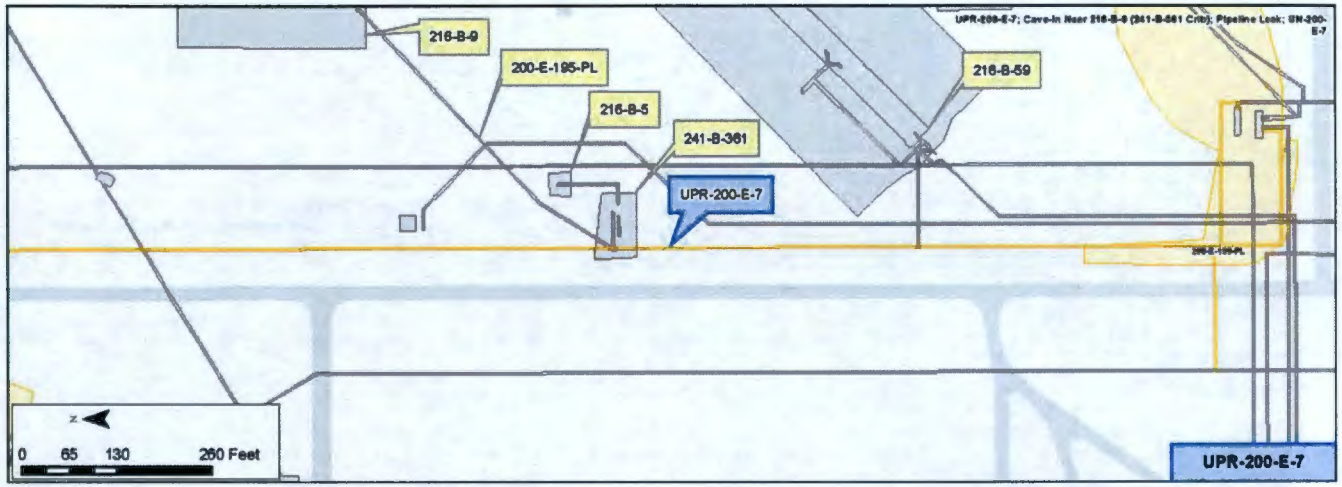
Scoping Summary: UPR-200-E-7

History

The UPR-200-E-7 waste site is an unplanned release to soil from a waste line break. Data describing the precise location of the leak is scarce; however, it is generally described as south and slightly west of the 361-B Reverse Well and approximately 400 ft southwest of the south edge of the posted 216-B-9 Crib.

The release is reported to have occurred on Nov-30-1954 on the waste line (V204) between 221-B and 241-B-9 Crib. The pipeline depth in the indicated location of UPR-200-E-7 ranges between 14 ft to 16 ft bgs.

Approximately 5,000 gal of fluid was discharged to the ground causing the soil above the underground line to collapse, impacting an area approximately 30 ft by 30 ft. The released fluids are described as B-Plant cell wash water from either the 5-9 or 5-6 cell. Line V204 was reportedly taken out of service in 1951; therefore, it is possible that this service date or the release date may be incorrect.



Construction

Not applicable

Features of Interest

- No features of interest are associated with the UPR-200-E-7 waste site

Waste Streams

- Line V204 transferred low-salt radioactive BiPO4 wash waste from the 5-6W cells in the 221-B building from 1945 to 1951
- The fluids were originally transferred to the 241-B-361 Settling Tank and then to the 216-B-5 Reverse well
- In 1947, line V204 was re-routed directly to the 216-B-9 Crib

Site Interfaces

Origin/Termination	Site Intersects
	200-IS-1
Not Applicable	• 200-E-199-PL

Relevant Characterization

- Characterization information is addressed in H-2-1031
  - Radiation surveys conducted following the line leak indicate a maximum observed dose rate of 1.7 rads/hr. over 30 sq ft.
  - The area was covered, delineated with a chain fence, and posted with "Underground Contamination" signs
  - The area is not currently posted as a URMA, but is posted with a WIDS Site ID sign (WIDS Data Summary for UPR-200-E-7)

Misc./Other Relevant Information

- None

Scoping Summary: UPR-200-E-7

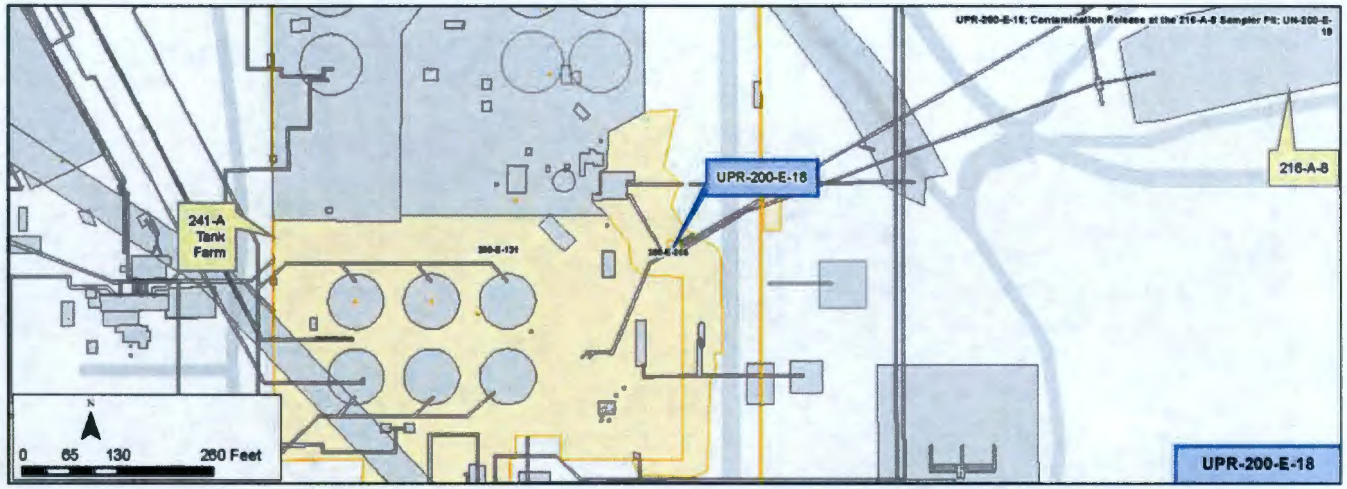
Scoping Summary: UPR-200-E-18

History

The UPR-200-E-18 waste site is approximately 30 m (100 ft) east of the 241-A-271 Building and was discovered in 1959.

It is within the 200-E-285 waste site boundary and is posted "Contamination Area/Underground Radioactive Material Area."

Contamination occurred when low-level mixed fission products transferred from the 241-A, -AX, -AY, and -AZ tank farms dripped from a vent pipe bonnet at the 200-E-285 Sample Pit contaminating the ground around the cement pad. The area is covered with gravel and asphalt.



Construction

- Not applicable

Features of Interest

- No features of interest are associated with the UPR-200-E-18 waste site

Waste Streams

- This condensate accumulated from the 241-A, 241-AX, 241-AY, and 241-AZ Tank Farms.
  - The waste included strontium and cesium depleted neutralized high level waste from B-Plant, double shell slurry feed, plutonium and uranium from PUREX Plant

Site Interfaces

Origin/Termination	Site Intersects 200-IS-1
Not Applicable	• 200-E-131 (contaminated soil) • 200-E-285 (control structure)

Relevant Characterization

- No specific data for the UPR-200-E-18 waste site was found

Misc./Other Relevant Information

- None

200-E-131
UPR-200-E-18
200-E-285
241-A
Tank Farm
N
0
35
70
140 Feet

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Scoping Summary: UPR-200-E-42

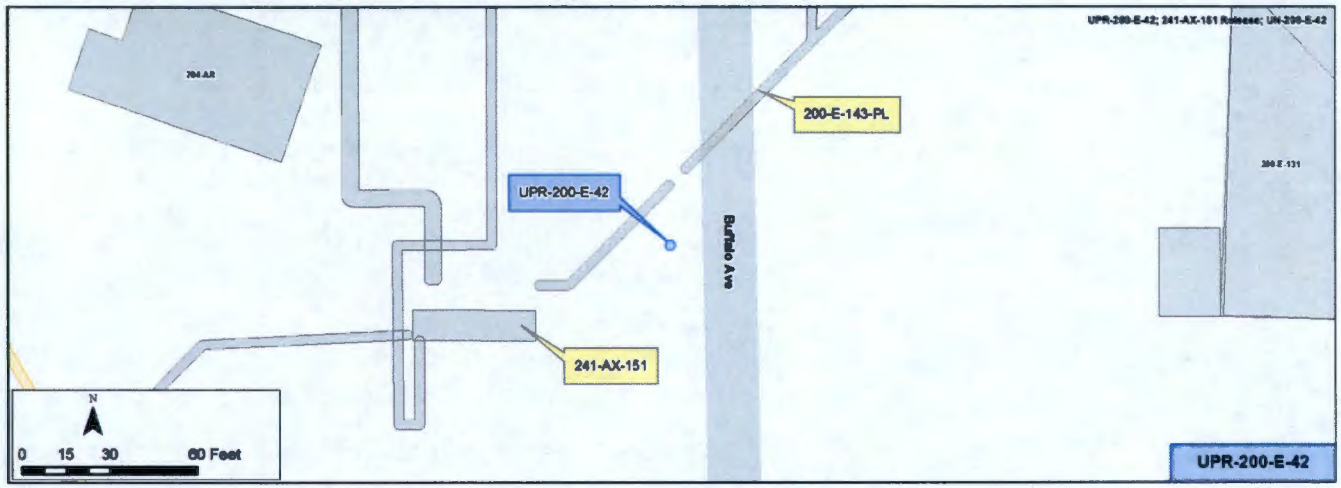
History

The UPR-200-E-42 waste site is categorized as an unplanned release near the 241-AX-151 Diversion Box, just west of Buffalo Ave. It was discovered in Nov-1972, when surveys around the diversion box revealed direct and smearable contamination.

Follow-up surveys indicated the spread of contamination to be a result of a steam jet being left on at 244-AR, which resulted in pressurization of 241-AX-151.

After discovery in 1972, the area was cleaned and the cover block cracks were sealed.

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.



Construction

- While no exact lateral extent/surface area has been recorded for this waste site, the area is well-marked with posts and chains

Features of Interest

- The 241-AX-151 Diversion Box has been inactive since 1977. It was later isolated as part of the B-231 Project in 1985. In 2005, gravel was added to two of its slopes to prevent erosion.

Relevant Characterization

- Nov-6-1972 - surveys revealed general levels of direct and smearable contamination of 200 to 300 mrads/hr, with spots in excess of 5 rads/hr; green cloth masking tape sealing the block cover cracks contaminated up to 20 rad/hr. Blacktopped surface east of the blocks smeared 3,000 cpm, dirt bank east of the zone contaminated in spots to 2,000 cpm, and weeds growing east of the parking lot contaminated 300 to 800 cpm.

Waste Streams

- Supernate waste is in the catch tank of the 241-AX-151 Diversion Box, and remaining liquid there is anticipated to consist of waste similar to that contained in AX tank farm.

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersects
N/A	N/A

Nearby Landmarks

- Buffalo Avenue

200-IS-1

- 241-AX-151
- 200-E-143-PL

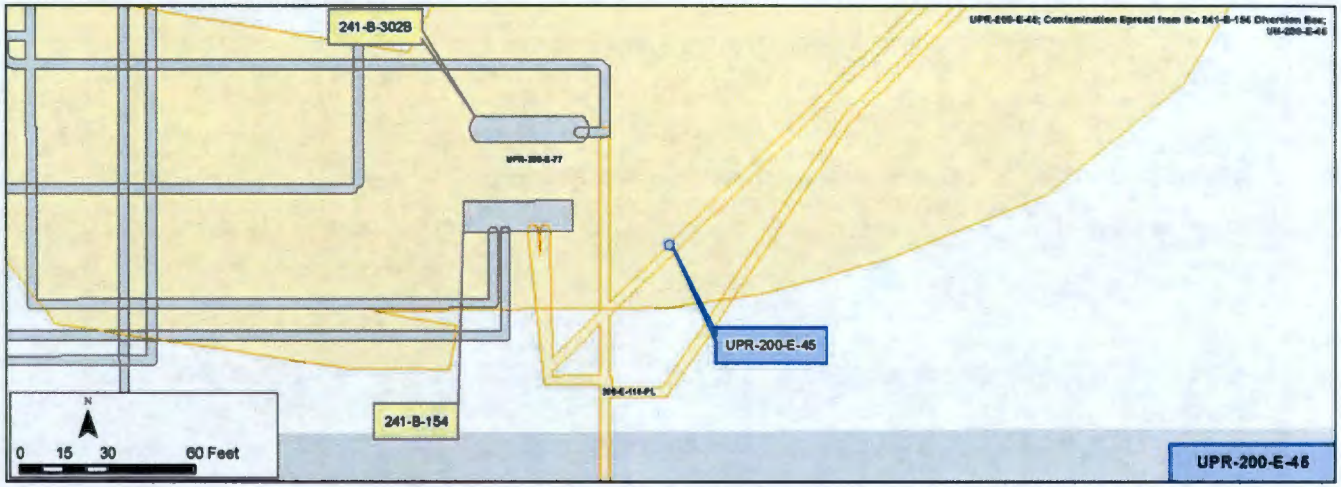
Scoping Summary: UPR-200-E-42

Scoping Summary: UPR-200-E-45

History

The UPR-200-E-45 waste site is displayed as a small circular area along the eastern fence line from the 241-B-154 Diversion Box, and within the larger UPR-200-E-77.

It is not independently marked with gravel, chains or posts. The UPR resulted from a "clean out" and jumper removal on the diversion box, and dried process effluent became airborne and windblown easterly to 7th Street in Aug-1974. The roads were cleaned and ditches bladed with the contaminated soils removed and disposed in a solid waste trench.



Construction

- There is no construction, the site is a windblown deposit.
- However the road was cleaned, the ditches were scraped and the soils disposed.

Features of Interest

- There are no features of interest as the release resulted from solid particles blown from the diversion box during jumper repairs.

Waste Streams

- Not applicable

Site Interfaces

Origin/Termination	Site Intersects
Not applicable	200-IS-1 • 241-B-154 Div Box • UPR-200-E-77

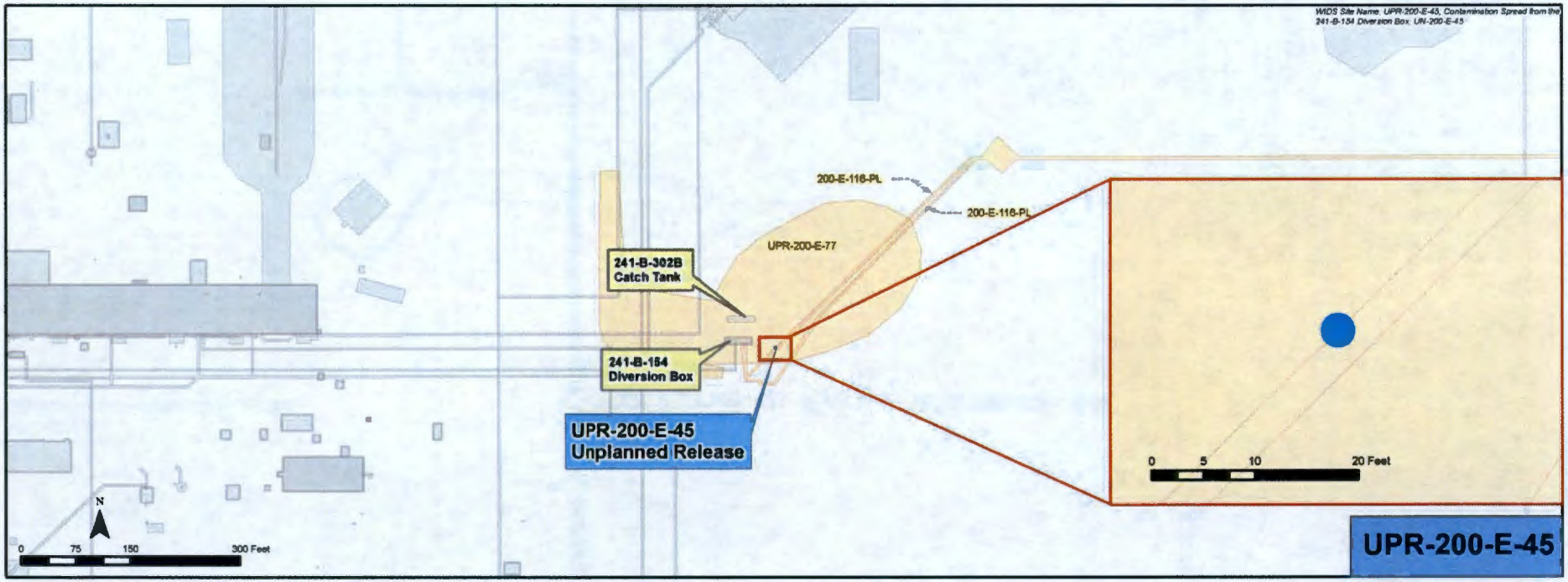
Relevant Characterization

- Aug-26-1974: Radioactive particles were blown from the diversion box.
- 1 to 30K beta/gamma measured on 7th street blacktop
- Residual soil contamination is contained within UPR-200-E-77, also associated with diversion box 241-B-154.

Misc./Other Relevant Information

- The UPR is not independently marked, and the small area should represent the radioactively hot specks.

241-B-302B
UPR-200-E-77
UPR-200-E-45
200-E-116-PL
241-B-154
N
0
35
70
140 Feet


WIDS Site Name: UPR-200-E-45, Contamination Spread from the 241-B-154 Diversion Box: UN-200-E-45
200-E-116-PL
200-E-116-PL
UPR-200-E-77
241-B-302B
Catch Tank
241-B-154
Diversion Box
UPR-200-E-45
Unplanned Release
N
0
75
150
300 Feet
0
5
10
20 Feet
UPR-200-E-45

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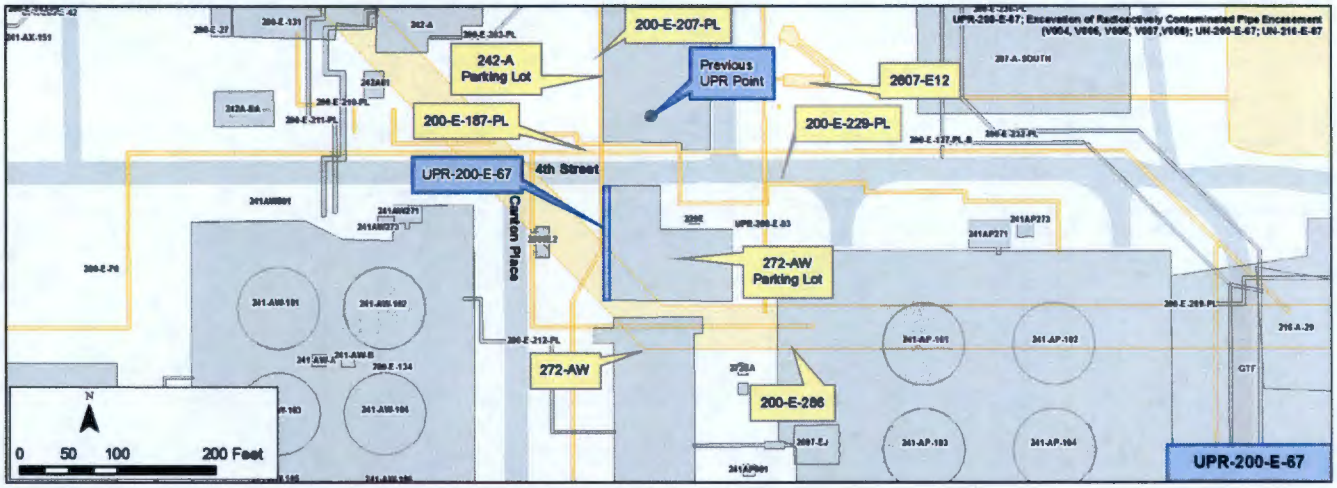
Scoping Summary: UPR-200-E-67

History

The UPR-200-E-67 waste site is an unplanned release from an old contaminated pipe encasement that was encountered during excavation, in a area north of the 272-AW parking lot on May-4-1984.

The contaminated pipe encasement is associated with five lines that make up the waste site 200-E-207-PL. Three of the five lines in the encasement had previous failures recorded in 1972 and 1965.

In May 1984, the area was stabilized by removing the contaminated soil and was decontaminated to background radiation levels (details of actions not defined).



Construction

- Size: size information is not available based on provided documentation
- Pipeline depth near the release point: ~10 ft bgs

Features of Interest

- Encasement Type 5-52 (200-E-207-PI) - contamination source of the UPR

Waste Streams

- UPR-200-E-67 is associated with the 200-E-207-PL pipelines, which were used to transfer wastes associated with PUREX processing and decontamination

Site Interfaces

Origin/Termination	Site Intersects
N/A	<u>200-IS-1</u> • 200-E-187-PL • 200-E-207-PL • 200-E-229-PL <u>200-EA-1</u> • 2607-E12 • 272-AW parking lot (Facility) • 600-291-PL (Active)

Relevant Characterization

- May-7-1984 - Beta/gamma contamination levels ranged from 1,000 to 1,500 mrad/hr. Post cleanup the area was decontaminated to background radiation levels

Misc./Other Relevant Information

- Radiation Surveys completed in 2013-2015 for UPR-200-E-67 were conducted in another location north of the UPR's location in the 242-A parking lot. All measurements were near background levels

Scoping Summary: UPR-200-E-67

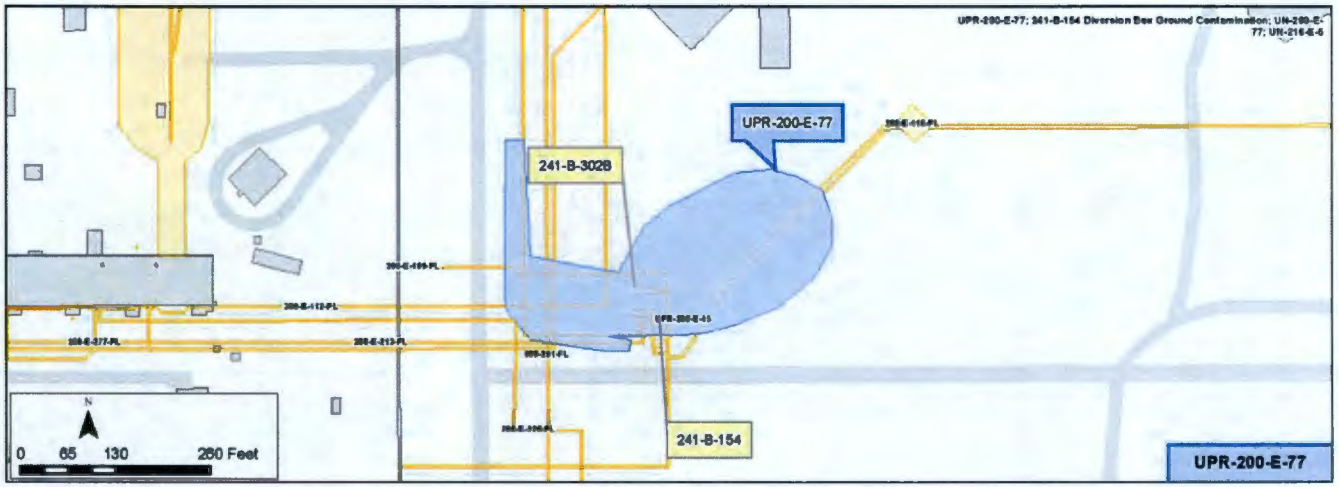
Scoping Summary: UPR-200-E-77

History

The UPR-200-E-77 waste site is an unplanned release that was the result of work on a leaky jumper in the 241-B-154 Diversion Box.

Two releases occurred here, the first in 1946 and the second in 1966.

This site is located east of the 221-B Building, at the northeast corner of Baltimore Avenue and Seventh Street. It surrounds the 241-B-154 Diversion Box. The general contaminated area is irregular, but is about 420 ft x 394 ft. A large posted oval area (URM) extends north and east from the diversion box. Another posted area (URM) extends west to Baltimore Avenue and turns northward. Shotcrete was applied to the diversion box, and it was extended an additional 20 ft in all directions.



Construction

- Site was stabilized with 1 ft of clean soil and gravel, but recontamination has occurred
- The URM surrounding the 241-B-154 Diversion Box for an additional 20 ft has been covered with a gray grout (shotcrete) coating

Features of Interest

- Release in 1946 due to a leaky jumper in the 241-B-154 Diversion box
- Diversion Boxes: 241-B-154
- Catch basins: 241-B-302B
- Airborne related UPR-200-E-45 is within this URMA (not posted separately because the contamination level is lower than the surrounding UPR-200-E-45)

Relevant Characterization

- 80,000 counts per minute of surface contamination found by a Radiological survey done in Oct- 1975
- Contamination area increased in 2002
- Nov-2008, a fixed radioactive hot spot (300,000 dpm per 100 cm2 beta gamma, 0 alpha) was located in shotcrete over part of the URMA and could not be collected
- Marked as a Fixed Contamination Area

Waste Streams

- There are no data specific to UPR-200-E-77 to verify the spills other than identifying the process waste streams during that time frame
  - 1946: Involved metal waste solution from 221-B with fission products (U, Pu, Cs, Sr, rare earths) measuring approximately 1 Curie
  - 1966: Involved Cs/Sr waste stream, Cs, Sr, fissionable materials and rare earths
- Wastes were Metal Wastes (MW), Cladding Wastes (CW) and decontamination waste (1C)
- Contents of waste: U, Pu, Cs, Sr, Al, Si, in an acidic solution

Misc./Other Relevant Information

- The 1966 spill was contained within UPR-200-E-77 boundaries and there was no additional stabilization

Site Interfaces

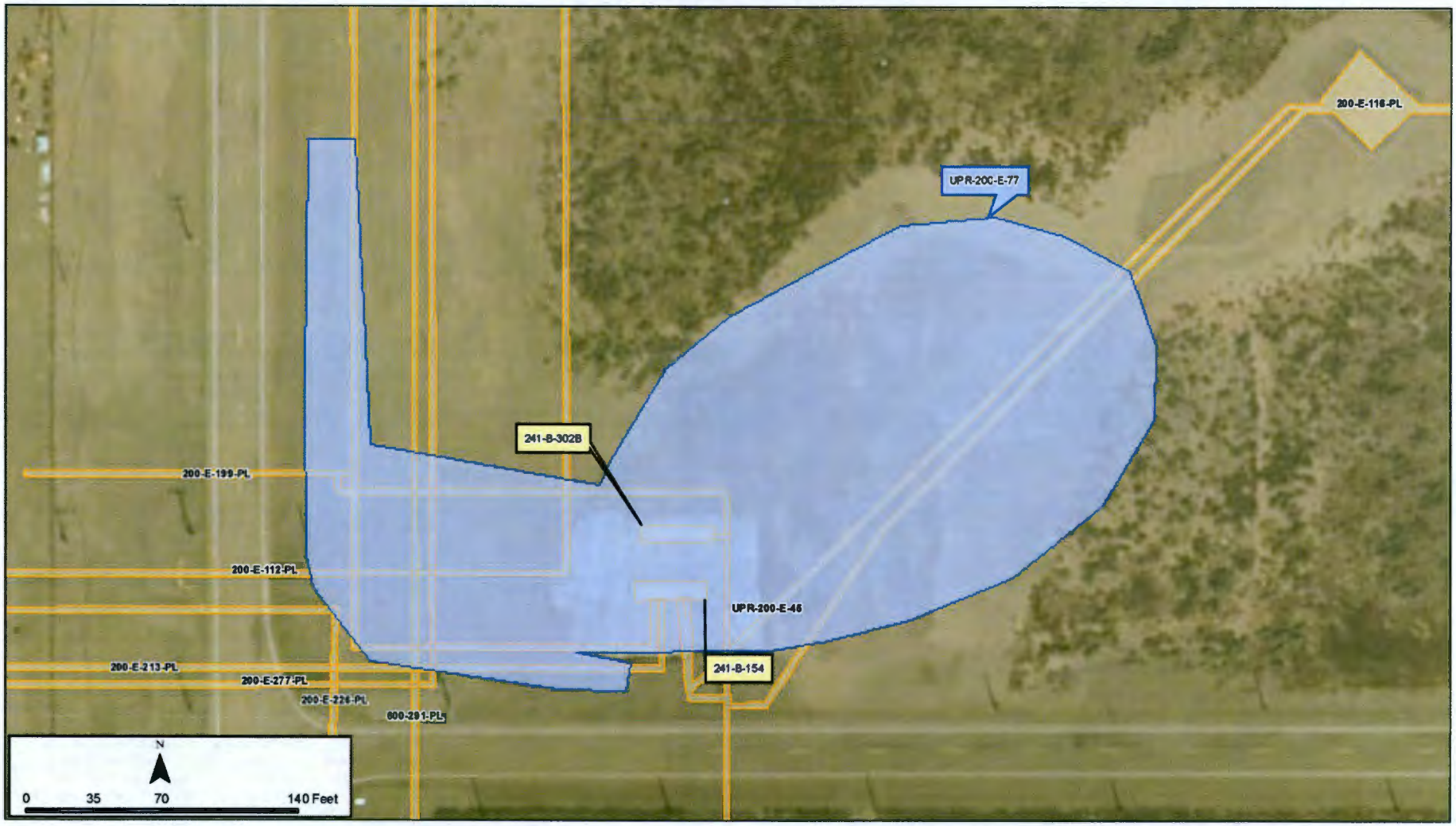
Origin/Termination
Not applicable

Site Intersects

200-IS-1
- UPR-200-E-45
- 241-B-154 Div box
- 241-B-302B Catch tank
- V201 div box return line
- V217 div box drain line
- 200-E-112-PL
- 200-E-116-PL
- 200-E-199-PL
- 200-E-213-PL
- 200-E-277-PL

Treated Effluent Disposable Facility
- 600-291-PL

Scoping Summary: UPR-200-E-77



Scoping Summary: UPR-200-E-78

History

The UPR-200-E-78 waste site is an unplanned surface release located around the 241-BX-155 Diversion Box. The leak occurred in Oct-1955 while pressure testing transfer lines and jumpers with process fluids that originated from B-Plant. Records indicate that the pressure testing may have been conducted when the cover blocks were removed, therefore the contamination may be mainly surface.

The impacted area was stabilized in 1955 by covering with clean soil and the area was posted as a Contaminated Area (CA). In Oct-2000, a bio-barrier and weather shield were installed over the 241-BX-155 Diversion Box and approximately 6 in. of gravel was placed over the UPR, except for the area overlying the 241-BX-302-C Catch Tank. The area was down-posted to an Underground Radioactive Materials Area (URMA), except for the area directly above the 241-BX-302-C Catch Tank.

UPR-200-E-78 has been variably identified in the historical record as UN 216-E-6, UN 200-E-78 and UPR-200-E-78.

Construction

- Aerial Extent: ~500 sq ft
- Surface Stabilization: Clean soil and 6 in. of gravel
- A bio-barrier and a weather shield was installed over the 241-BX-155 Diversion box

Features of Interest

- There are separate waste sites within the footprint of this UPR:
  - 241-BX-155 Diversion Box: Source of the unplanned release
  - 241-BX-302-C Catch Tank: Received spills and leaks from the 241-BX-155 Diversion Box
  - Pipelines: 200-E-202-PL, 200-E-201-PL, 200-E-198-PL

Waste Streams

- UPR 200-E-78 is the result of a leak of mixed fission product salt waste from the 24-BX-155 Diversion Box
- 241-BX-155 transferred BiPO4 process waste from B Plant (221-B) to the B and BX Tank Farms. The BiPO4 process extracted uranium and plutonium from irradiated nuclear fuel
- The process generated four waste streams: metal waste (MW) (high U, Pu concentrations), coating waste (CW) (high Al, Zr concentrations), first cycle decontamination waste (1C), and second cycle decontamination waste (2C)

Site Interfaces

Origin/Termination
Not Applicable

Site Intersects:
200-IS-1 OU
- 200-E-198-PL
- 200-E-201-PL
- 200-E-202-PL
- 241-BX-155 Diversion Box
- 241-BX-302-C Catch Tank

Relevant Characterization

- Historical records indicate an estimated 10 Ci of fission products (i.e. uranium fission products; not corrected for decay) escaped covering an area of ~200 sq ft
- A maximum dose rate of 22.5 rad/hr was recorded. Quarterly and annual radiological surveys indicate no radiological contamination
- Apr-2014: A recent radiological survey was conducted (both general field survey and smear samples from the 241-BX-155 cover) and found no radiological contamination

Misc./Other Relevant Information

- The 241-BX-302-C Catch Tank was interim stabilized in 1985 when the steam addition line was capped and three risers were equipped with gaskets
- The area overlying the catch tank is managed as a CA and is monitored at least annually

Scoping Summary: UPR-200-E-78

Scoping Summary: UPR-200-E-79

History

The UPR-200-E-79 (formerly UN-216-E-7) waste site is an unplanned release of multiple leaks from pipeline 200-E-264-PL. Five leaks of radioactive process waste from the pipeline were discovered in Jun-1953. No determination of activity below ground surface was made at the time of discovery, and the area was covered with approximately 2 in. of clean soil.

The 200-E-264-PL waste site is a 4 in. pressurized cast iron pipeline that was used to transport radioactive process waste from the 242-B Evaporator building to the 207-B Retention Basin. The pipeline was in use from approximately 1952 until it was taken out of service sometime prior to 1962.

Radiological surveys conducted in 1981, 1986, and 1997 found activity in soil directly above and adjacent to the primary north-south run of the abandoned pipeline. In Mar-1997 gravel was placed on top of a small hot spot (6 in. x 6 in.) to reduce contamination levels to less than 1,000 dpm, and the entire release zone was posted as a High Contamination Area pending further investigation.

Construction

- A site visit in Jun-1997 confirmed that an area approximately 25 ft wide by 200 ft long between the 242-B Evaporator building and the 207-B Retention Basin was posted as a High Contamination Area.
- The site is currently shown in QMap as a zone approximately 50 ft wide by 180 ft long, with an area of approximately 8,800-sq ft

Features of Interest

- Five separate leaks
- Areas of highest contamination have been measured directly above and adjacent to the main north-south run of 200-E-264-PL, roughly midway between the 242-B Evaporator building and the 207-B Retention Basin.

Relevant Characterization

- ~10 Ci of mixed fission products were released
- Contamination levels up to 2,500 c/m were measured at the point of emission prior to 1979.
- A general rad survey of the area in Sep-1981 found activity levels from 500-8,000 c/m.
- A radionuclide inventory in Mar-1986 identified 0.56000 Ci of tritium (H-3) and 5.40000 total beta activity
- An rad survey in Mar-1997 found a 1 in. x 1 in. area of 160,000 dpm/probe, and a dust particle near 700,000 dpm

Waste Streams

- The 200-E-264-PL carried 242-B Evaporator building waste, which consisted of evaporate cladding/first cycle waste and waste volume reduction
- Until Oct-1954, the evaporator treatment unit received byproduct cake solution and waste solution from the first decontamination waste cycle
- This waste contained approximately 10% original fission product, 1% plutonium, and a remainder of miscellaneous chemicals, primarily BiPO4
- Over its active life, 242-B processed 7,172,000 gal of waste; however, it is unclear what portion of the total stream was transported and released to the 207-B Retention Basin through 200-E-264-PL

Misc./Other Relevant Information

- A subsequent survey in Mar-1997 identified a 20 ft x 100 ft area with elevated readings of 500-1,000 dpm beta/gamma activity per 100 sq-cm, including a 6 in. x 6 in. area with 8,000 dpm at the surface and up to 200,000 dpm at a depth of 2 in.

Site Interfaces

Origin/Termination

200-IS-1

- 200-E-264-PL (origin and terminus)

Site Intersects

200-IS-1

- 200-E-203-PL

200-EA-1

- 216-B-2-2 Ditch

WMA B/BX/BY

- 200-E-120 (Contamination Migration Beyond 241-B Fence)

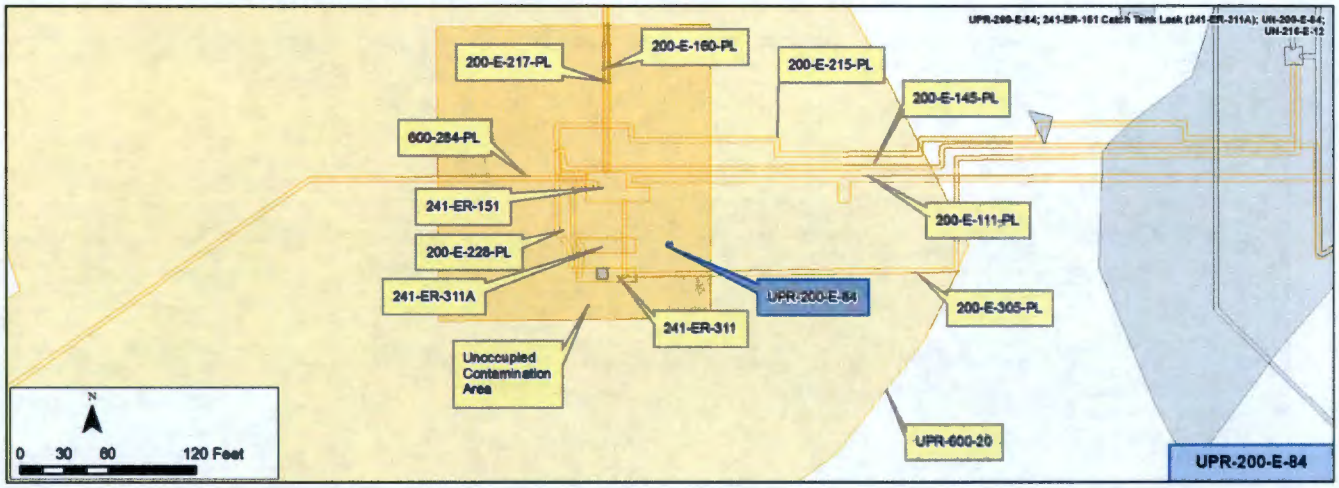
Scoping Summary: UPR-200-E-79

Scoping Summary: UPR-200-E-84

History

The UPR-200-E-84 waste site is an unplanned release associated with contamination spread from the 241-ER-311A Catch Tank in Mar-1953. The release consisted of 1,700 gal of contaminated acid with approximately 10 curies of fission products.

The area of the release is approximately 800 ft southwest of the 221-B Building near the 241-151 diversion box. The extent of the release is not fully known. Multiple radiological survey walk downs have been conducted in a posted area, which includes UPR-200-E-84, 241-151-ER, and 241-311-ER. No remediation has been performed at this site.



Construction

- Size: ~ 36,500 sq ft around the 241-ER-311A Catch Tank (based on the WIDS unoccupied CA boundaries and Radiological Surveys; See Figure 1)

Features of Interest

- No noted features of interest

Relevant Characterization

- External Radiation Survey: 90,000 ct/min in Oct-1975, 60,000 cpm in 1984, and 3,000 cpm in Sep-1990
- 2014 and 2015 Rad Surveys - SCA Soil and HPT instruments measured total alpha at <500 dpm/100 sq-cm
- 1,700 gal of liquid containing ~10 curies of fission product leaked from the tank

Waste Streams

- Process: REDOX Plant - Reduction and Oxidation Process; Miscellaneous Wastes
- Waste Streams: Contaminated acid with about 10 Ci of fission products from the 241-ER-311A Catch Tank

Misc./Other Relevant Information

- 241-ER-311A was abandoned in-place after the UPR and was replaced by 241-ER-311 catch tank in 1953

Site Interfaces

Origin/Termination

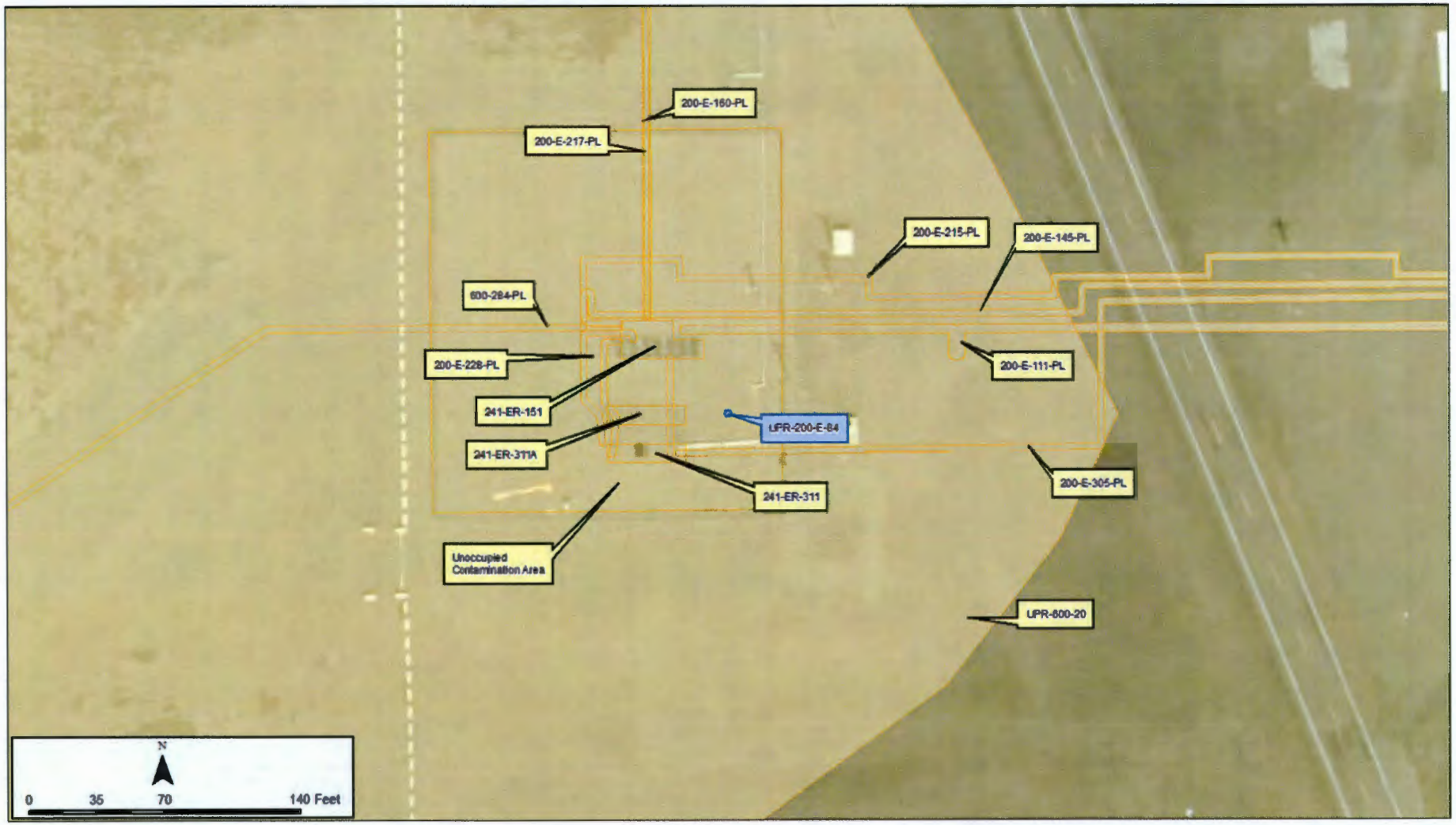
200-IS-1
- 241-ER-311A

Site Intersects

200-IS-1
- 200-E-217-PL
- 200-E-215-PL
- 200-E-145-PL
- 200-E-160-PL
- 200-E-111-PL
- 600-284-PL
- 200-E-228-PL
- 241-ER-151
- 241-ER-311

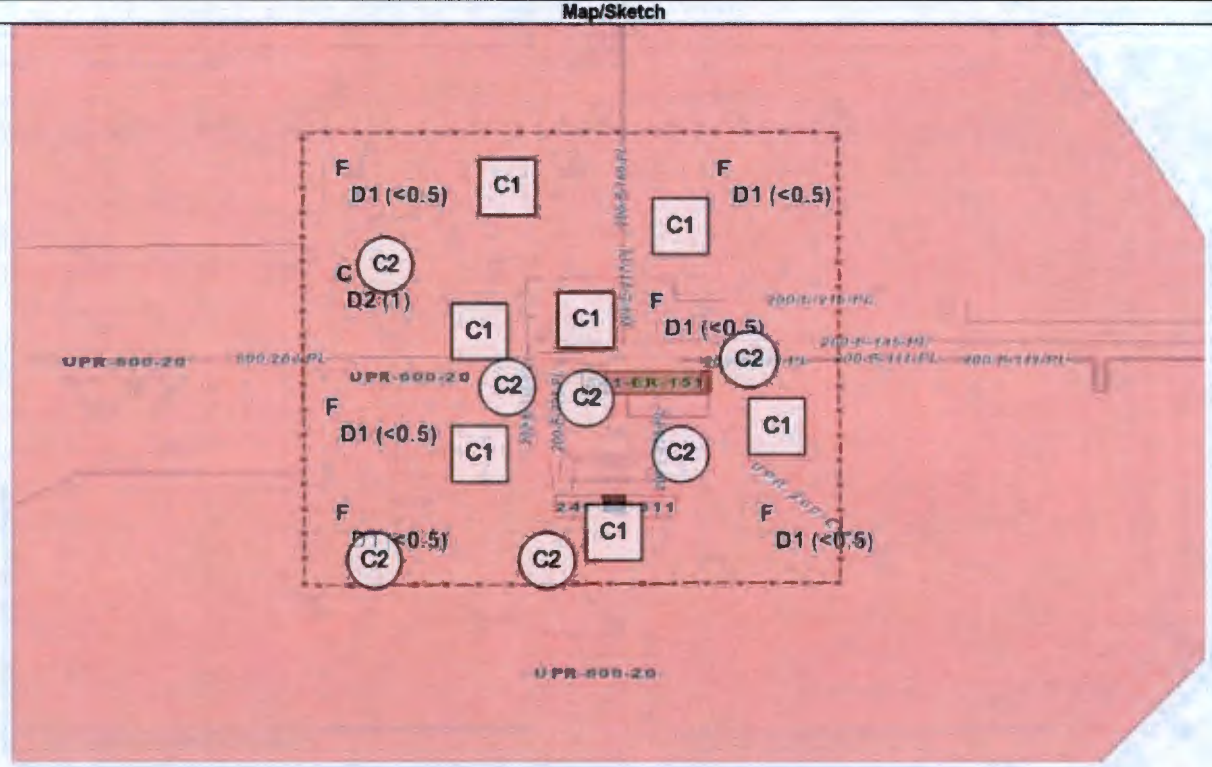
200-OA-1
- UPR-600-20

No Operable Unit
- 200-E-305-PL


200-E-160-PL
200-E-217-PL
200-E-215-PL
200-E-145-PL
600-284-PL
200-E-228-PL
200-E-111-PL
241-ER-151
UPR-200-E-84
241-ER-311A
200-E-305-PL
241-ER-311
Unoccupied Contamination Area
UPR-600-20
N
0
35
70
140 Feet

WASHINGTON RIVER PROTECTION SOLUTIONS LLC RADIOLOGICAL SURVEY REPORT (Submitted for Approval)	RSR No. BOS-1500641	Page 2 of 3

Map/Sketch



Map Name: WIDS 241-ER-151/311/UPR-200-E-84	Map Description: Annual survey of unoccupied CA

Legend	# Direct Measurement	Air Sample	Smear	L# LAW	Neutron Dose Rate	T# Transferability	F# Field	C# Contact	D# Other Distance	Other Measurement
	---------- (designation inside) ---------- Radiological Area Boundary									Note: Dose Rates in mrem/hr unless otherwise noted

Figure 1 - Radiological Survey Area around UPR-200-E-84

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Scoping Summary: UPR-200-E-100

History

The UPR-200-E-100 waste site is an unplanned release and represents an area of radioactive contamination near the 244-A Lift Station.

The waste site was identified in Apr-1985 during routine radiological surveys and initially consisted of radioactive rodent feces and contamination specks located west and north of the 244-A Lift Station.

Later that year, the top three inches of approximately 8.5 acres were scraped and transported to UPR-200-E-56. Additional soil was scraped and disposed at the 216-A-40 Basin in 1994.

Due to rodent movement and some contamination migration from wind, the size and shape of the contaminated area has evolved several times; it is now two areas located east and northeast of the 244-A Lift Station. The waste site is posted as a Contamination Area.

Construction

- Surface soil in two distinct areas with a total extent of up to 8.5 acres

Features of Interest

- None identified

Relevant Characterization

- In 1985, surface contamination ranged from 50,000 cpm to 7 rad/hr
- In 1996, a total of 18 soil specks with activity as high as 800,000 dpm beta/gamma were found along the perimeter boundary of the 244-A Lift Station

Waste Streams

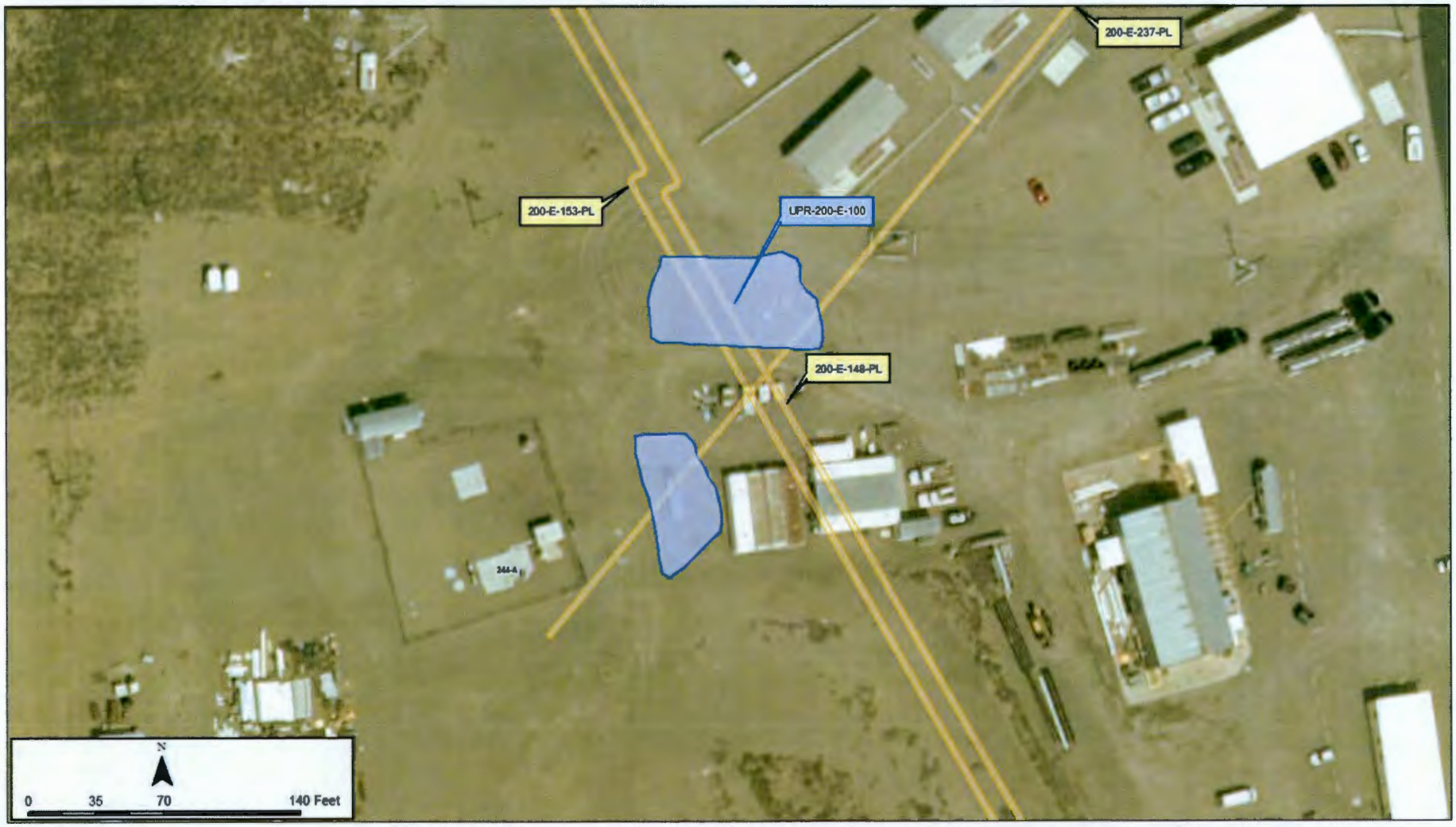
- Unknown, as the original source of contamination is in question

Misc./Other Relevant Information

- At least one reference describes this waste site as the result of a spill, but this assumption is likely incorrect based on the waste profile (rodent feces) and sporadic hits of migratory surface contamination over the years

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-E-148-PL • 200-E-153-PL OU Unassigned • 200-E-237-PL


200-E-237-PL
200-E-153-PL
UPR-200-E-100
200-E-148-PL
244-A
N
0
35
70
140 Feet

Scoping Summary: UPR-200-E-145

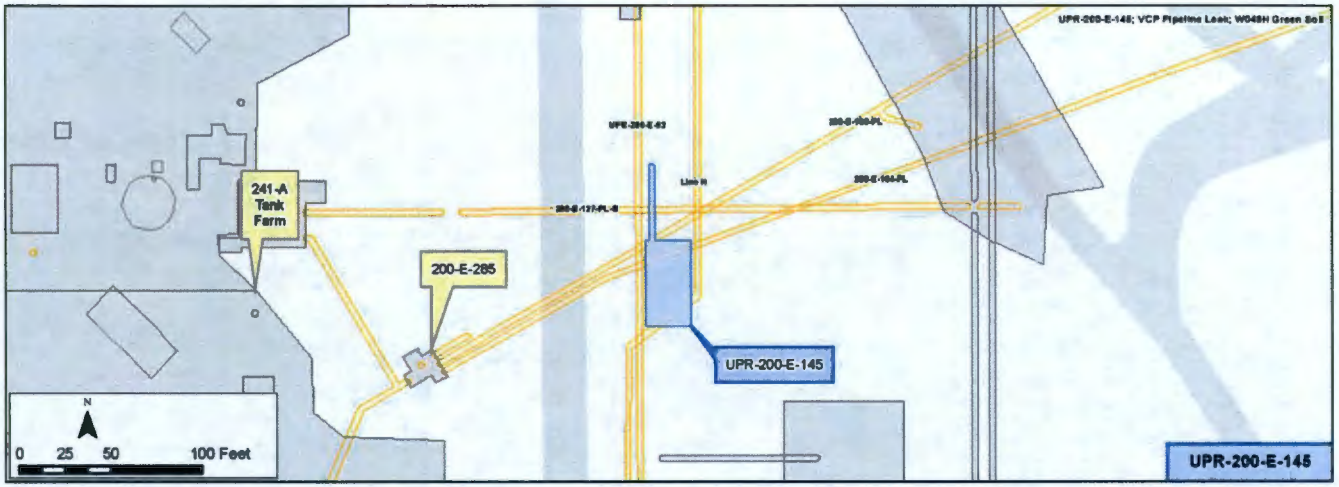
History

The UPR-200-E-145 waste site is an unplanned release discovered in December 1993 during Project W-049H (200 Area Treated Effluent Disposal Facility [TEDF] Collection System). The discovery was made when construction personnel were excavating a trench for the installation of Line "H".

200-E-166-PL is believed to be the source of the contamination at UPR-200-E-145. This pipeline conveyed condenser cooling water from the 200-E-285 Control Structure to the 216-A-34 Crib between 1955 and 1957. The condenser cooling water contained radioactive, organic, and inorganic contaminants.

The trench was lined with plastic, backfilled with the contaminated soil and covered with plastic. Three feet of clean backfill were placed on top to bring the trench to grade.

In 2003, an URMA that measured 10 ft-by-20 ft was placed at this location due to radiologically-contaminated tumbleweeds.



Construction

- UPR Area: 40 ft X 6 ft

Features of Interest

- None identified.

Waste Streams

- 200-E-166-PL transferred condenser cooling water containing radioactive, organic and inorganic contaminants
  - Significant constituents contained in the waste were identified as Cesium-137, Uranium, Tritium, Tributyl phosphate, Normal paraffin hydrocarbon and Butonal
  - Neutral/basic pH was also detected

Site Interfaces

Origin/Termination Points	Site Intersects
Not Applicable	200-IS-1 • 200-E-127-PL-B • 200-E-164-PL • 200-E-166-PL NA • UPR-200-E-93 • Line H

Relevant Characterization

- Contamination was found 2.5 ft bgs, above a 15 in. VCP:
  - 300,000 dpm beta-gamma, measured in soil
  - Grab sample results indicated elevated concentrations of U-234 (464 pCi/g), U-235 (21.1 pCi/g) and U-238 (3,610 pCi/g)
- Contamination appears to be primarily uranium oxide
- In 12/03, contaminated tumbleweeds were found in the area

Misc./Other Relevant Information

- None identified.

200-E-166-PL
UPR-200-E-93
Line H
200-E-164-PL
200-E-127-PL-B
241-A
Tank
Farm
200-E-265
UPR-200-E-145
N
0
35
70
140 Feet

Scoping Summary: UPR-200-W-2

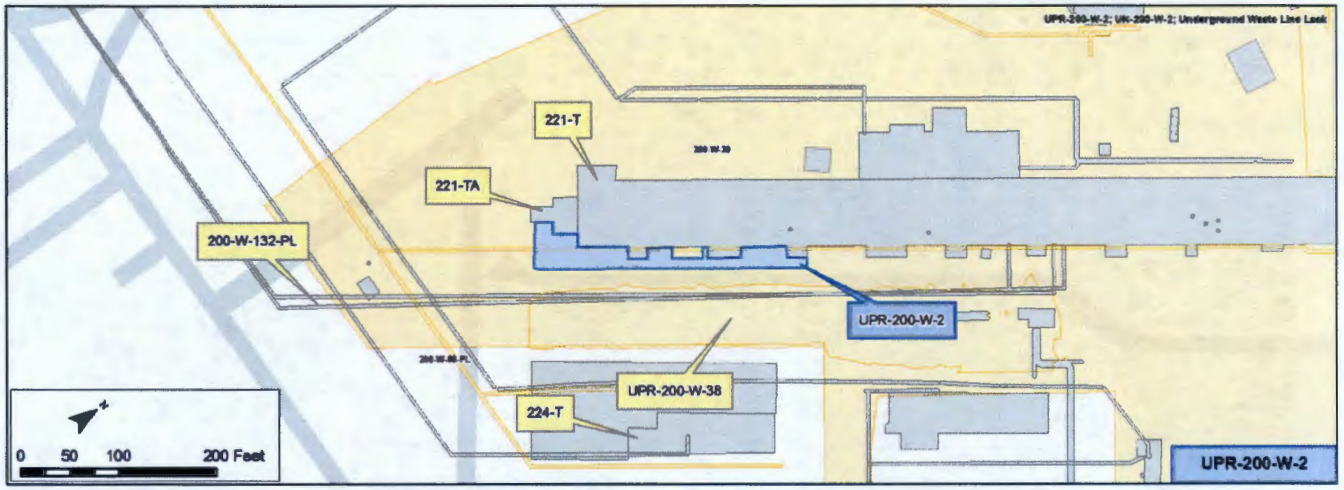
History

The UPR-200-W-2 waste site is an unplanned release in the vicinity of the southeast side of 221-T, or T Plant.

In Jun-1947, a minor ground cave-in was discovered during routine investigations opposite the R-19 stairwell of the T-Plant and directly over the underground process waste transfer lines, most likely what is now waste site 200-W-88-PL.

The cave-in was determined to be the result of a waste pipe failure, the third such instance here, cause unknown. The area was excavated down to about 7 ft, the waste line failure was determined via hydrostatic testing of all waste lines to 100 psi; and, a spare line was put into service in place of the leaker. This was most likely line V654 of the 200-W-132-PL system.

In 2000, the results of a rad survey in the area showed no notable signs of radiation.



Construction

- As of Mar-1997, this area had been paved with asphalt and marked Underground Radioactive Materials Area

Features of Interest

- None identified

Waste Streams

- 221-T Decontamination Facility Waste
  - Hydrostatic tests revealed that the 9-1 metal waste line failed and discharged liquid waste to the ground. No quantity or physical description of the waste exists

Site Interfaces

Origin/Termination	Adjacent Buildings/Waste Sites
N/A	• 221-T • 221-TA • 224-T • 200-W-20 (T Plant Complex) 200-IS-1 • 200-W-88-PL • UPR-200-W-38

Relevant Characterization

- Air samples taken while the excavation cell was open in 1947 jammed the counting equipment
- A rad survey of the paved area in Aug-2000 showed no radiological activity above background levels

Misc./Other Relevant Information

- None identified

Scoping Summary: UPR-200-W-2

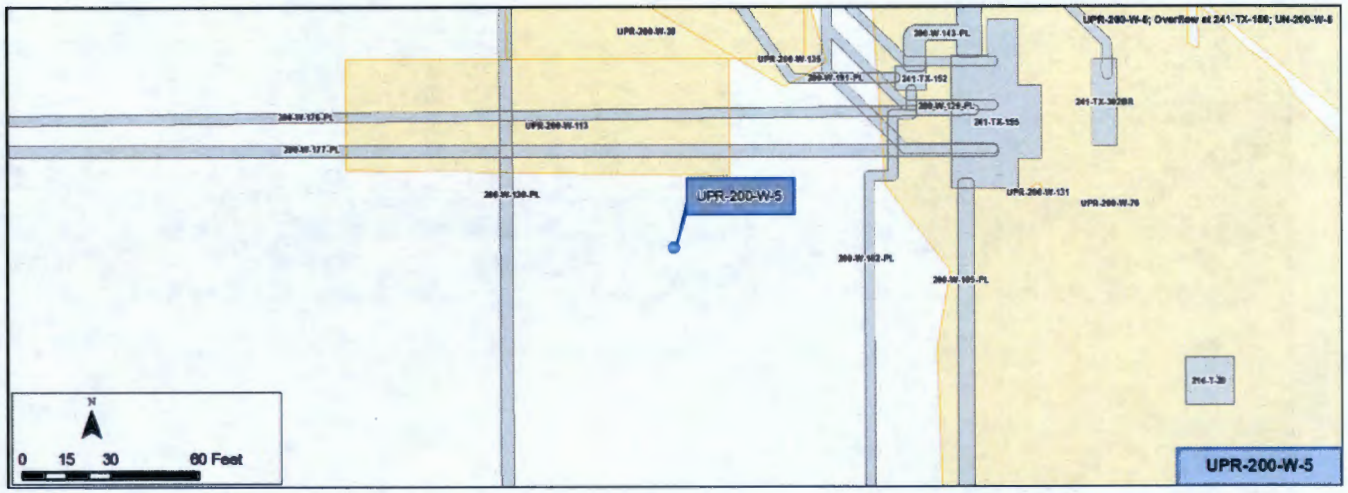
Scoping Summary: UPR-200-W-5

History

The UPR-200-W-5 waste site is an unplanned release that occurred in 1950 when the 241-TX-155 Diversion Box overflowed sending process effluent running down the hillside to the west. The diversion box was constructed in 1949, and was used to transfer waste solutions to and from various processing and decontamination facilities.

In Dec-1970, no detectable contamination was found in the soil; therefore, the type and amount of waste released is not recorded, but UPR-200-W-5 waste site was removed from radiation zone status in Dec-1970.

Radiological surveys completed indicate alpha and beta readings near background levels.



Construction

- Waste site size: unknown

Features of Interest

- No noted features of interest

Relevant Characterization

- 2009 radiological surveys measured total beta <5,000 dpm/100 sq-cm and total alpha <100 dpm/100 sq-cm

Waste Streams

- The leak associated with UPR-200-W-5 waste site was due to waste streams associated with the 241-TX-155 Diversion Box. Types of waste could not be determined.

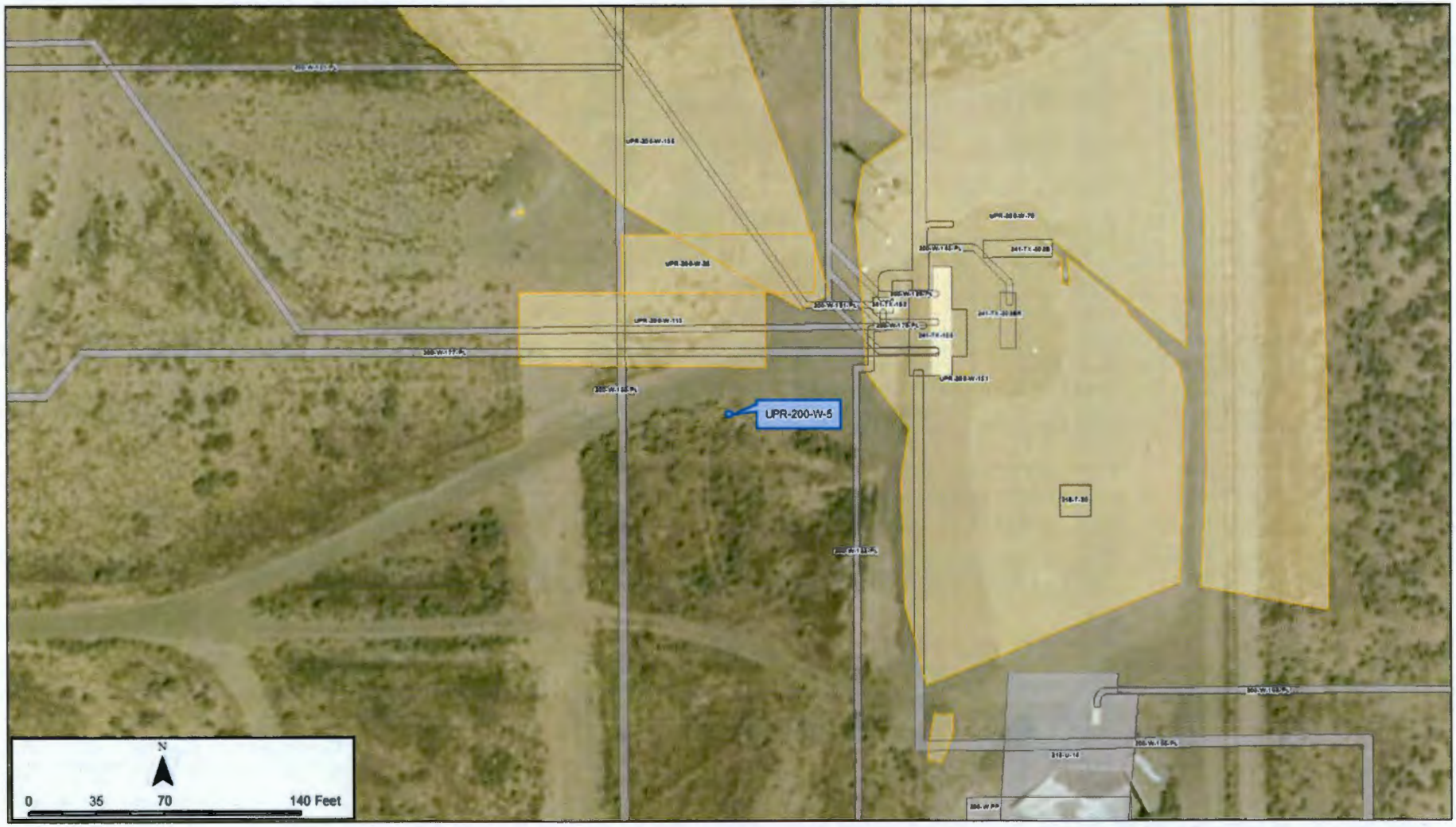
Misc./Other Relevant Information

- No additional comments noted

Site Interfaces

Origin/Termination	Nearby Waste Sites
N/A	200-IS-1 • UPR-200-W-28 • UPR-200-W-113 • 241-TX-155 (Diversion Box) 200-WA-1 • UPR-200-W-76

Scoping Summary: UPR-200-W-5



Scoping Summary: UPR-200-W-6

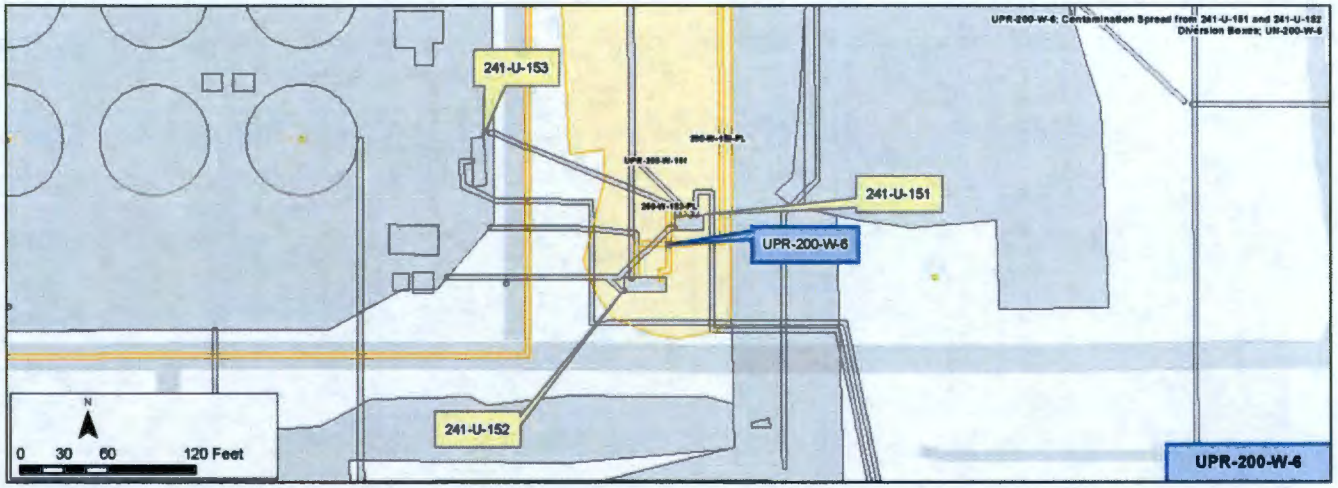
History

The UPR-200-W-6 waste site is an unplanned release that resulted from work on the 241-U-151 and 241-U-152 diversion boxes in the 200 West Area, near U-Tank Farm.

The spill was loose particulate beta/gamma from Bismuth Phosphate processing spread by personnel working on those boxes to the soil around the diversion boxes during the spring of 1950.

The maximum dose rate was 20 millirad on the soil surface, which was covered with one foot of clean soil and posted with chains and radiation signs later that same year.

UPR-200-W-6 is within the much larger UPR-200-W-161 footprint, and incorporating these sites together should be considered.



Construction

- Not Applicable

Features of Interest

- There are no features of interest with this waste site

Relevant Characterization

- The maximum dose rate was 20 millirad on the soil surface

Waste Streams

- Waste Type: Metal Waste and Cladding Waste
- Known to contain uranium, plutonium, sodium, phosphate, hydroxide, and other compounds in a caustic solution
- Waste is from the waste streams associated with Bismuth Phosphate processing and decontamination of irradiated fuel cells

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination

200-IS-1

- 200-W-182-PL: T Plant to 241-TX-152 Div Box
- 241-U-152 Div Box,
- 241-U-151 Div Box
- 102-SY tank
- 200-W-183-PL: 241-U-151 to/from 241-U-152 Div Box

Site Intersects

200-IS-1

- 241-U-151 Div Box
- 241-U-152 Div Box
- UPR-200-W-161

241-U-153
UPR-200-W-161
200-W-182-PL
200-W-183-PL
241-U-151
UPR-200-W-6
241-U-152
N
0
35
70
140 Feet

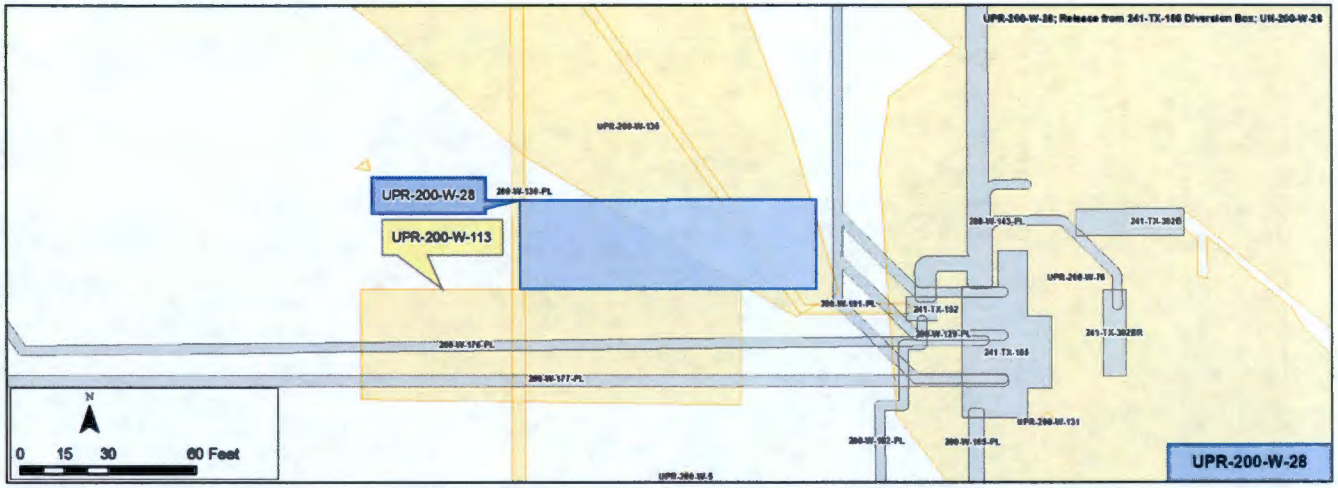
Scoping Summary: UPR-200-W-28

History

The UPR-200-W-28 waste site is an unplanned release resulting from a leaking jumper west of the 241-TX-155 Diversion Box.

The release occurred in the spring of 1954, when an estimated 210 gal of TBP-UR (BT2) waste leaked from one of the jumpers in the diversion box covering an approximate area of 30 ft by 100 ft to become contaminated. The area was covered with clean soil and temporarily posted as a radiation zone, but was removed from radiation zone status in 1970.

Radiological surveys completed indicate alpha and beta readings near background levels.



Construction

- Waste site size: 30,000 sq ft
- Contamination area was covered with clean soil

Features of Interest

- No noted features of interest

Relevant Characterization

- 2009 radiological surveys measured total beta <5,000 dpm/100 sq-cm and total alpha <100 dpm/100 sq-cm

Waste Streams

- The leak associated with UPR-200-W-28 was due to a leaking jumper in the 241-TX-155 diversion box, which was used to transfer waste solutions to and from various process and decontamination facilities. At the time, it was transferring TBP-UR (BT2). Additional waste streams associated with the 241-TX-155 Diversion Box may have been present in the catch tank prior to this leak.

Misc./Other Relevant Information

- No additional comments noted

Site Interfaces

Origin/Termination

N/A

Site Intersects

200-IS-1

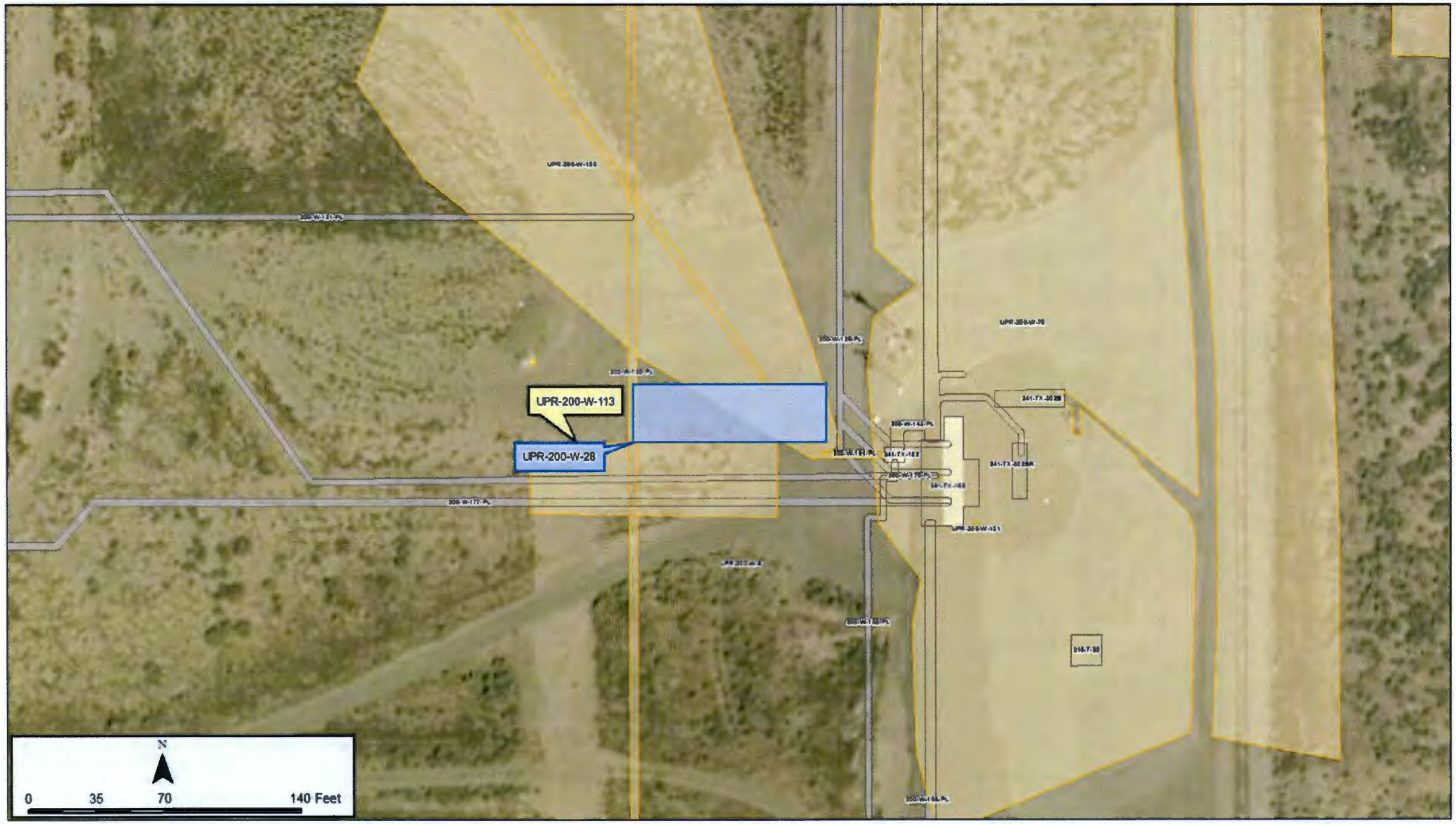
- UPR-200-W-113
- UPR-200-W-135
- 200-W-130-PL
- 200-W-191-PL

Nearby Waste Sites

200-IS-1

- UPR-200-W-5
- UPR-200-W-76
- UPR-200-W-113
- 241-TX-155 (Diversion Box)

Scoping Summary: UPR-200-W-28



Scoping Summary: UPR-200-W-29

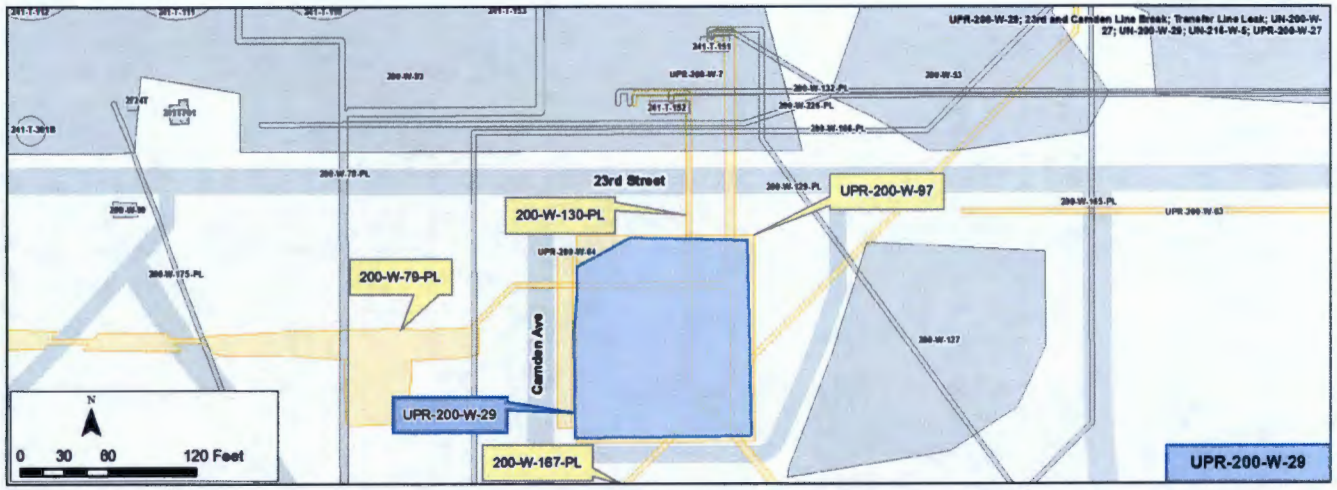
History

The UPR-200-W-29 waste site is an unplanned release resulting from a broken pipeline (200-W-130-PL) leading from the 241-T-152 Diversion Box to the 241-TX-153 Diversion Box. The pipeline was being used to transfer waste from the 241-T-105 Tank to the 241-TX-118 Tank for processing. The release was discovered on November 16, 1954, when a cave-in over the pipeline and water runoff was encountered near the northwest corner of the intersection of Camden Avenue and 23rd Street.

The day after the release was discovered, the runoff area was hosed down with water to prevent wind-borne contamination and was backfilled and covered with gravel.

Future releases that occurred in the same location as UPR-200-W-29 include UPR-200-W-97 in 1966 and UPR-200-W-64 in 1969.

In 1978, the entire area associated with the three UPRs was excavated to a depth of 1 ft bgs. The new surface was treated with a heavy coating of fiberfilm. It was covered with 4 in. of sand, treated with ureabore herbicide, and then covered with 4 in. of crushed rock.



Construction

- Size: The UPR was initially thought to be approximately 75 ft x 100 ft; however, recent radiological surveys conducted in 2015 indicate that the size of the site is 16,790 sq ft Figure 1 shows the 2015 survey findings
- Depth of pipeline near the release ~10 ft - 12 ft (based on line connections to 241-T-152 Diversion Box)

Features of Interest

- No noted features of interest

Relevant Characterization

- 2014 and 2015 radiological survey have alpha/beta cps readings > 1,500 and Total alpha <500 dpm/100 cm-2 (See Figure 1 for the approx. locations of the higher cps reading)
- 2011 - Radiological activity on an ant mound measured 18,000 dpm/100 sq-cm beta/gamma
- Inventory estimates of Tank 241-T-105 includes: 1,000 kg Total U; 360 kg Cr; 280 kg Pb; 85 kg Sr; and 4,300 kg Si (reference HNF-SD-WM-ER-369 for complete inventory estimates)

Waste Streams

- Process: T-Plant
- Waste Streams: First-cycle decontamination waste (1C), second cycle decontamination waste (2C2), and aluminum cladding waste (CW) from the 241-T-105 Tank

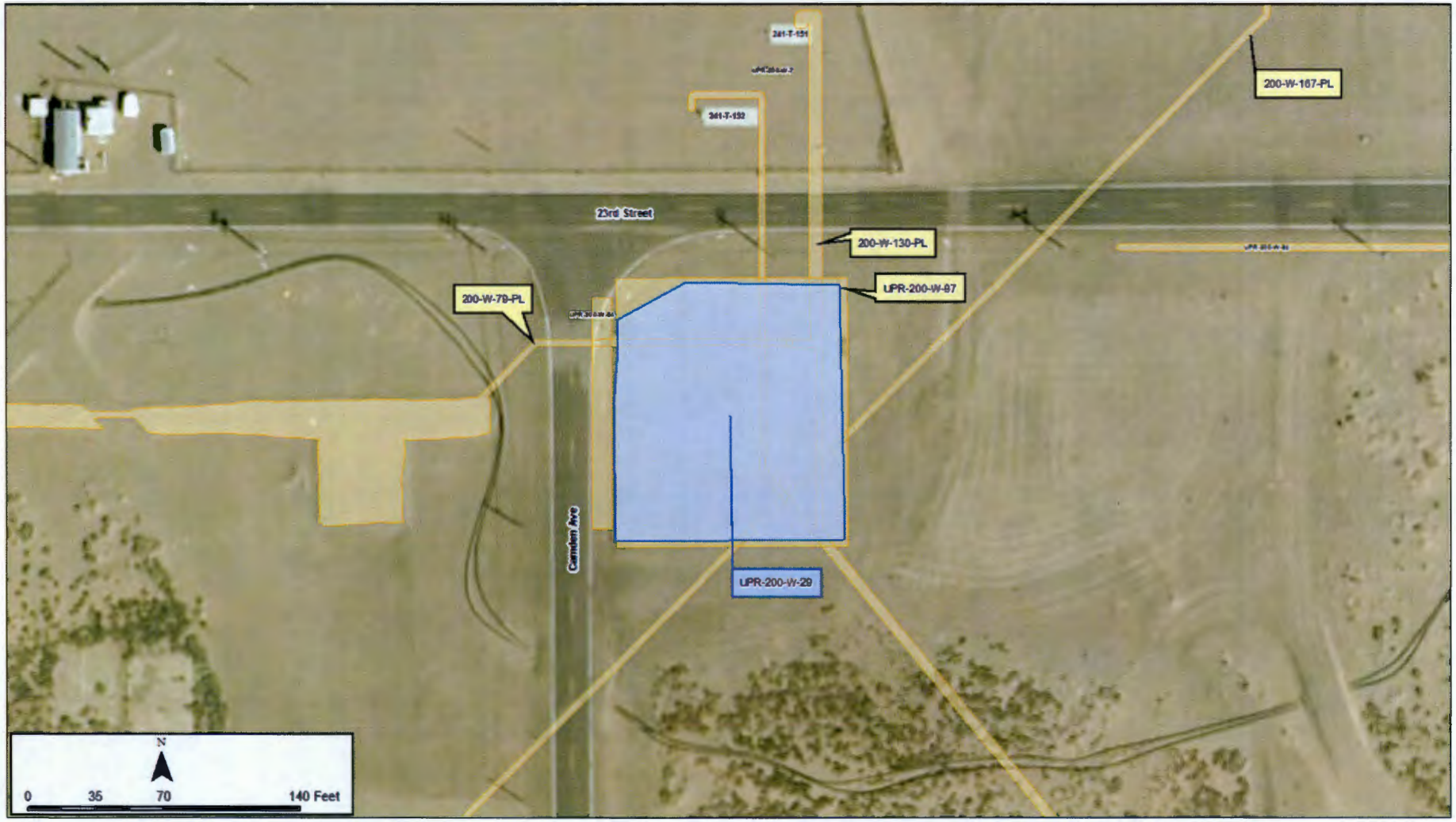
Misc./Other Relevant Information

- UPR-200-W-97occurred in 1966; waste consisted of T-Plant second cycle
- UPR-200-W-64 occurred due to snowmelt runoff in 1969 from the waste streams associated with UPR-200-W-29 and UPR-200-W-97
- There are recordings of groundwater data within the area of UPR-200-W-29 see document GW-VAR-030 for further reference

Site Interfaces

Origin/Termination	Site Intersects
Not Applicable	200-IS-1 • 200-W-79-PL • 200-W-130-PL • UPR-200-W-97 • UPR-200-W-64 • 200-W-167-PL

Scoping Summary: UPR-200-W-29



** Electronically Approved – RC-1500509 on 8/26/2015 **

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Map/Sketch

Map Name: Annual Rad Tractor	Map Description: South of T Farm								
Legend	Direct Measurement	Air Sample	Smear	LAW	Neutron Dose Rate	Transferability	Field	Contact	Other Distance	Other Measurement
	---------- (designation inside) ---------- Radiological Area Boundary							Note: Dose Rates in mrem/hr unless otherwise noted.		

Date Submitted: 08/19/2015 10:46:00

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Figure 1 – Radiological Survey from 2015 (shows the UPR coverage and higher cps spots)

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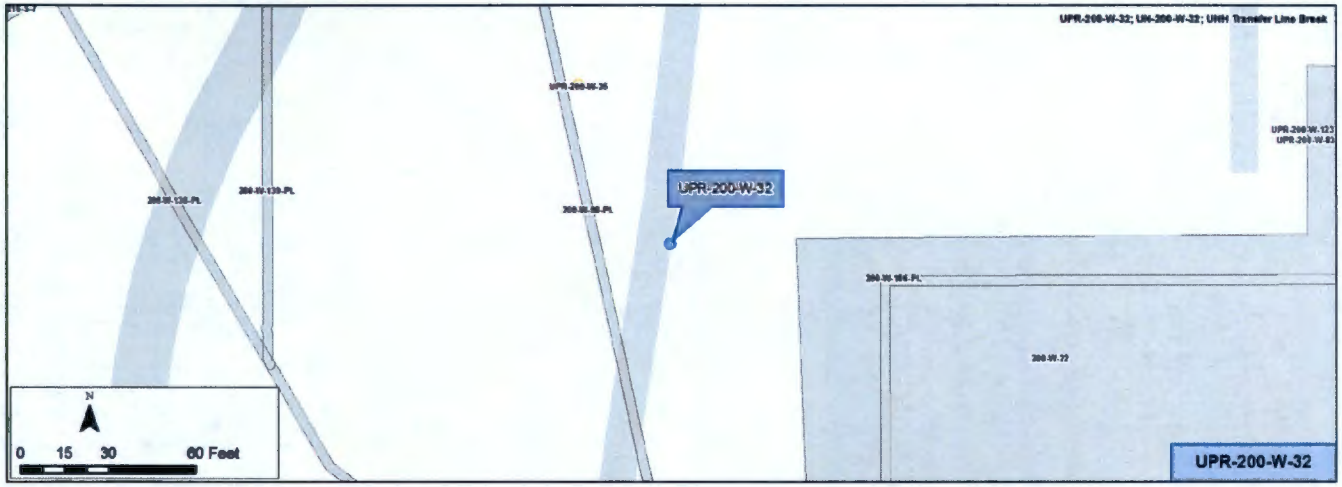
Scoping Summary: UPR-200-W-32

History

The UPR-200-W-32 waste site is an unplanned release resulting from a break in beneath a former above ground uranyl nitrate hexahydrate (UNH) transfer line that extended between the REDOX facility and the 224-U facility.

In 1954, an estimated 90 gallons of concentrated UNH was released to the ground near the northwest corner of the REDOX exclusion area. The contamination was covered with clean soil and posted as a radiation zone in 1954 (removal of soil was not recorded). The area was removed from radiation zone status in Feb-1971, and all signs and postings were removed. The above ground pipeline has also been removed.

Radiological surveys completed in 2015 and 2014 indicate alpha and beta readings near background levels.



Construction

- Waste site size: 8.5 sq-ft
- Contamination area was covered with clean soil

Features of Interest

- No noted features of interest

Relevant Characterization

- 2014 and 2015 radiological surveys measured total beta <5,000 dpm/100 sq-cm and total alpha <500 dpm/100 sq-cm
- In 2015, no levels of contamination above background detected in green tumbleweed in the southwest corner of the UPR

Waste Streams

- Uranyl nitrate hexahydrate (UNH) transferred through an above ground line (removed) (R2)

Misc./Other Relevant Information

- Hanford Soil Inventory Model, Rev. 1 estimates the contamination levels in soils (RPP-26744):
  - 7.93E-03 H-3
  - 1.56E-05 Tc-99
  - 2.83E-01 U-Total

Site Interfaces

Origin/Termination	Nearby Waste Sites
N/A	200-IS-1 • UPR-200-W-35 • 200-W-98-PL

Scoping Summary: UPR-200-W-32

Scoping Summary: UPR-200-W-35

History

The UPR-200-W-35 waste site is an unplanned release resulting from a leak beneath a former above ground uranyl nitrate hexahydrate (UNH) transfer line that extended between the REDOX facility and the 224-U facility.

The release occurred in Sep-1955 just outside and to the north of the REDOX exclusion area. The contamination was removed and taken to the 200 West Area solid waste burial grounds. The area was removed from radiation zone status in Jan-1972.

Radiological surveys completed in 2015 and 2014 indicate total alpha and beta readings near background levels.

Construction

- Waste site size: 8.5 sq ft
- Contamination area was removed and the area may have been covered with clean soil

Features of Interest

- No noted features of interest

Relevant Characterization

- 2014 and 2015 radiological surveys measured total beta <5,000 dpm/100 sq-cm and total alpha <500 dpm/100 sq-cm

Waste Streams

- Uranyl nitrate hexahydrate (UNH) transferred through an above ground line (removed)

Misc./Other Relevant Information

- No additional comments noted

Site Interfaces

Origin/Termination	Nearby Waste Sites
N/A	200-IS-1 • UPR-200-W-32 200-W-98-PL

Scoping Summary: UPR-200-W-35

Scoping Summary: UPR-200-W-38

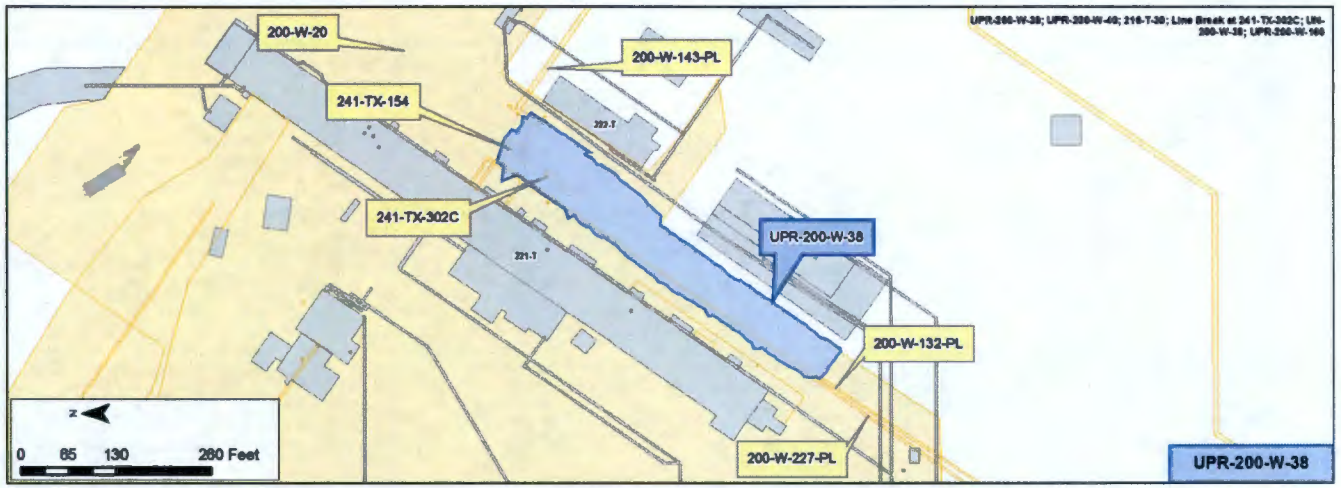
History

The UPR-200-W-38 waste site is an unplanned release of highly radioactive liquid metal waste resulting from a failure of an underground transfer line.

The release occurred in the early morning of Dec-30-1955, while the 241-TX-302 Catch Tank was being emptied via a temporary pressurized line to the 101-U metal waste tank. At some point during the transfer, the line failed and liquid seeped up to the ground surface, pooling atop the asphalt behind 221-T.

The spill was an estimated several thousand gallons of primarily metal waste and rain water. The surrounding asphalt pad and visible pool were covered with fill after discovery. Over the years, additional tar, asphalt, and most recently shotcrete have been added to limit radioactive vegetation (i.e. tumbleweed) growth.

The lateral extent of this waste site has grown since 1955, as subsequent radiation surveys continue to identify beta-gamma activity in tumbleweeds beyond the posted contamination area (CA) boundary markers.



Construction

- **Dec-30-1955**: Approximate dimensions of release - 30 ft x 15 ft x 1 ft deep
- **Sep-1-2008 and Oct-19-2010**: Contamination area (CA) boundary expanded to include radiologically-contaminated tumbleweed fragments and specks outside posted CA boundary

Features of Interest

- None identified

Waste Streams

- T-Plant liquid metal waste and rain water from 241-TX-302 Catch Tank

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-227-PL • 200-W-132-PL • 200-W-143-PL • 241-TX-154 Diversion Box • 241-TX-302 Catch Tank • 200-W-20 (T-Plant Complex)

Relevant Characterization

All activity are beta-gamma; no alpha reported.

- **1955**: 100 rad/hr (beta-gamma), 1 ft above pool; 5 rad/hr, 8 ft away; 1 rad/hr, 222-T Main Entrance
- **2008**: Dead tumbleweeds up to 18,000 dpm; fragments up to 100,000 dpm
- **2010**: Tumbleweed specks outside CA perimeter up to 80,000 dpm; inside perimeter up to 200,000 dpm

Misc./Other Relevant Information

Aliases for this waste site include:

- UPR-200-W-40; 216-T-30; UPR-200-W-160; Line Break at 241-TX-302C; UN-200-W-38

- In Jul-1953, an area within the footprint of this waste site near 241-TX-154 Diversion Box and over a line (200-W-227-PL) caved in and high levels of radiation were recorded

200-W-20
200-W-143-PL
241-TX-154
241-TX-302C
UPR-200-W-38
200-W-132-PL
200-W-227-PL
N
0
45
90
180 Feet

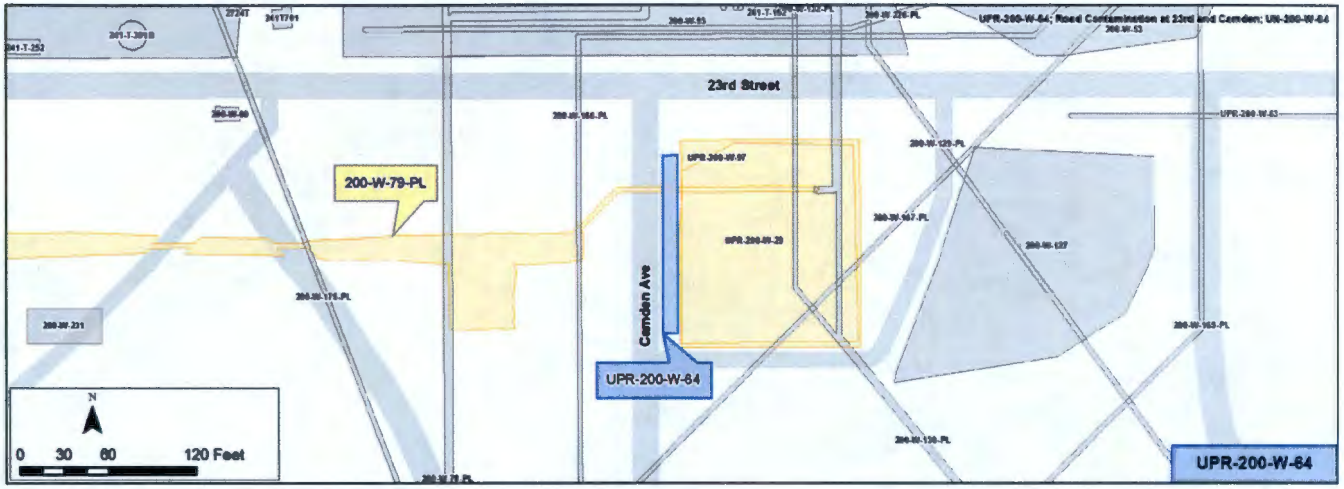
Scoping Summary: UPR-200-W-64

History

The UPR-200-W-64 waste site is an unplanned release that was discovered in Feb-1969 between the east shoulder of Camden Avenue and the posted Underground Radioactive Material Area (URMA) (UPR-200-W-29 and UPR-200-W-97 waste sites). Radioactivity was detected, up to 600 cpm, in mud samples collected next to Camden Avenue.

The release was estimated to be approximately 50 ft in length, and was believed to be the result of runoff from rain and snow melt that caused the movement of contamination from the adjacent URMA (UPR-200-W-29 and UPR-200-W-97 waste sites). Later surveys indicate the size of the release is approximately 120 ft in length.

In 1978, the entire area associated with these three UPRs was excavated to a depth of 1 ft, the new surface was treated with a heavy coating of fiberfilm. It was covered with 4 in. of sand, treated with ureabore herbicide, and then covered with 4 in. of crushed rock.



Construction

- Size: 120 ft strip along Camden Ave that is based off the most recent radiation surveys conducted in 2015 (Figure 1 shows the 2015 survey findings (RC-1500509))

Features of Interest

- No noted features of interest

Waste Streams

- Process: T-Plant
- Waste Streams: First-cycle waste from 241-T-107 tank
- Second cycle waste from 241-T-107 tank
- High salt, neutral to basic liquid tank waste solution containing approximately 10 curies of fission products, readings up to 60,000 cpm

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-79-PL • UPR-200-W-29 • UPR-200-W-97

Relevant Characterization

- Radiological survey on Jul-26-2015; readings > 1,500 cps alpha/beta and total alpha <500 dpm/100 sq-cm
- Radiological survey on Jun-11-2014; total alpha <500 dpm/100 sq-cm
- Radiological survey on Jun-05-2010; total alpha <500 dpm/100 sq-cm
- Contamination was measured up to 600 cpm in mud samples and Cs-137 was the only detectable radioactive isotope

Misc./Other Relevant Information

- UPR-200-W-29 is associated with 1,000 gal of waste released in 1954, dose rates up to 11.5 rad per hour
- UPR-200-W-97occurred in 1966 and is associated with the original release, UPR-200-W-29, dose rates up to 9 rad per hour

2nd Street
200-W-79-PL
UPR-200-W-64
Camden Ave
N
0
35
70
140 Feet

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Map/Sketch

Map Name: Annual Rad Tractor	Map Description: South of T Farm

Legend	Direct Measurement	Air Sample	Smear	LAW	Neutron Dose Rate	Transferability	Field	Contact	Other Distance	Other Measurement
	----------(designation inside)---------- Radiological Area Boundary								Note: Dose Rates in mrem/hr unless otherwise noted.	

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Figure 1 – Radiological Survey from 2015 (shows the UPR coverage and higher cps spots)

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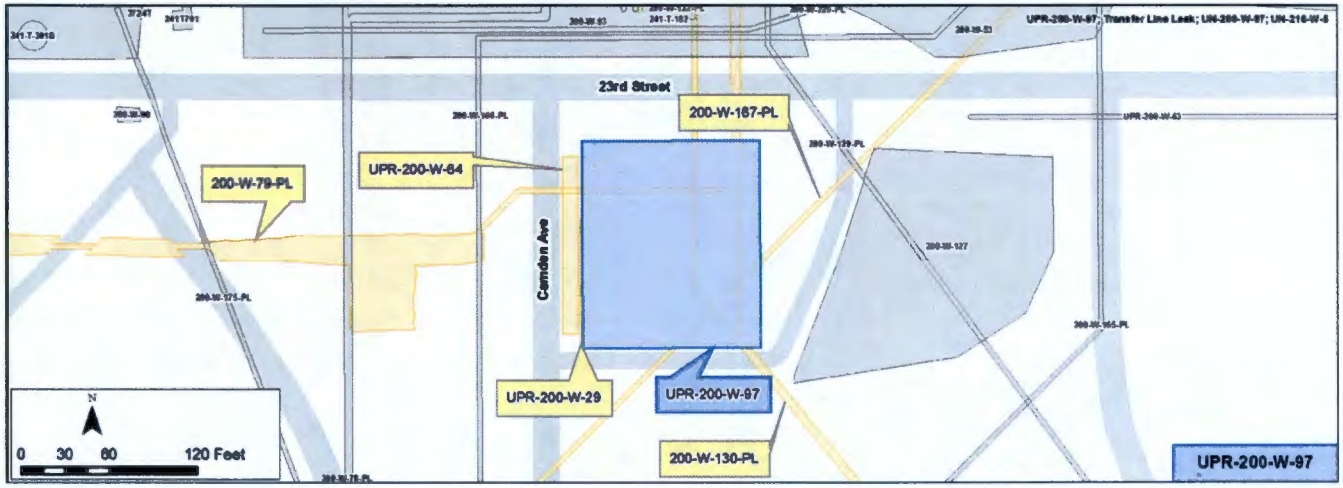
Scoping Summary: UPR-200-W-97

History

The UPR-200-W-97 waste site is an unplanned release that occurred on May-4-1966, when a broken pipeline (200-W-130-PL) leading from the 241-W-152 Diversion Box to the 241-TX-153 Diversion Box was mistakenly tested. The release, consisting of second cycle waste from 241-T-107 Tank, is located near the northwest corner of the intersection of Camden Avenue and 23rd Street; in the same location as the Nov-1954 unplanned release UPR-200-W-29.

The area with surface contamination was excavated to a depth of 3 ft and then backfilled with 3 ft of clean soil, and then an additional covering of sand and gravel was added.

Releases that occurred in the same location as UPR-200-W-97 include UPR-200-W-29 in 1954 and UPR-200-W-64 in 1969. In 1978, the entire area associated with the three UPRs was excavated to a depth of 1 ft the new surface was treated with a heavy coating of fiberfilm. It was covered with 4 in. of sand, treated with ureabore herbicide, and then covered with 4 in. of crushed rock.



Construction

- Size: Initial leak area approximately 6 ft by 120 ft; however, recent radiological surveys conducted in 2015 indicate that the size of the site is 16,790 sq ft Figure 1 shows the 2015 survey findings
- Depth of pipeline near the release ~10 ft - 12 ft (based on line connections to 241-T-152 Diversion Box)

Features of Interest

- No noted features of interest

Relevant Characterization

- 2014 and 2015 radiological survey readings of Total beta <5,000 dpm/100 sq-cm and Total alpha <500 dpm/100 sq-cm
- Maximum dose rate of 9 rads/hr
- 2011 - Radiological activity on an ant mound measured 18,000 dpm/100 sq-cm beta/gamma

Waste Streams

- Process: T-Plant
- Waste Streams: Second cycle waste from 241-T-107 Tank
- High salt, neutral to basic liquid tank waste solution containing approximately 10 curies of fission products, readings up to 60,000 c/m

Misc./Other Relevant Information

- UPR-200-W-97occurred in 1966; waste consisted of T-Plant Second Cycle Wastes
- UPR-200-W-64 occurred due to snowmelt runoff in 1969 from the waste streams associated with UPR-200-W-29 and UPR-200-W-97
- There are recordings of groundwater data within the area of UPR-200-W-29 see document GW-VAR-030 for further reference

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-79-PL • 200-W-130-PL • UPR-200-W-29 • UPR-200-W-64 • 200-W-167-PL

Scoping Summary: UPR-200-W-97

Figure 1 – Radiological Survey from 2015 (shows the UPR coverage and higher cps spots)

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Scoping Summary: UPR-200-W-98

History

The UPR-200-W-98 waste site is an unplanned release resulting from a break or leak in an underground metal waste transfer pipeline.

In the spring of 1945, liquid surfaced near the southeast corner of the 221-T Canyon Building, at door R-19. It was estimated to cover approximately 4,000 sq ft, to a depth of 10 ft bgs. The impacted area was covered with four feet of clean soil. An asphalt cover was added in the 1970s, and the area was used daily.

Construction

- **1945**: Area of contamination estimated at 4,000 sq ft; total contaminated volume approximately 40,000 cu ft
- **1988-89**: Underground Radioactive Materials (URM) Surface Contamination (SC) Radiation Area posted at 33 ft x 145 ft
- **2000**: URM posted at 200 ft x 20 ft, includes UPR-200-W-2

Features of Interest

- None identified

Relevant Characterization

- **1945**: 20 R/hr, max (no beta/gamma/alpha noted), at 2 in.
- **1968-to-1975**: Radiological activity in Russian thistle growing through cracks in the asphalt covering over top of the spill site has decreased over the years. In 1975, no radiological activity was detected.
- **1977**: No radiation detected in test boreholes to 4 ft bgs
- **1980**: 500 cpm at surface
- **1984**: one contaminated spot on east side of 221-T near R-19, at 4,000 cpm

Waste Streams

- Metal waste line spill/leak containing unknown quantities of mixed fission products

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Site Intersect
N/A	200-IS-1 • UPR-200-W-2

UPR-200-W-98
UPR-200-W-2
N
0
35
70
140 Feet

Scoping Summary: UPR-200-W-102

History

The UPR-200-W-102 waste site is classified as an unplanned release; it is immediately adjacent to the southeast side of the 224-T Building.

The suspected cause of the contamination was alpha laden moisture from process tank vent lines seeping through pipe joints during the operational years between 1945 and 1957.

The gross alpha soil contamination was discovered during a remodel of 224-T in Feb-1972. The plutonium-contaminated soil was subsequently excavated, placed into drums, and the drums then buried elsewhere on-site (burial location not discovered via research).

The 224-T Building was originally constructed with vent lines from process tanks entering tile piping at ground level to the rear (southeast) of the building. The jointed tile piping fed into a common tile header, which fed into 221-T Building cells.

Construction

- The area of contamination identified and excavated in Feb-1972 was 50 ft long by 12 ft wide by 12 ft deep, immediately adjacent to the southeast portion of the 224-T Building, where the 200-W-226-PL enters the facility
- This area is currently a gravel lot; no barricades or signs marking the area indicate historic contamination associated with UPR-200-W-102

Features of Interest

- The waste site line from 224-T in the area of this unplanned release is 200-W-226-PL

Waste Streams

- The 200-W-226-PL carried 224-T wastes, consistent with 224-T operations from 1944 to 1956 as the Plutonium Concentration Facility
- The vent lines from the process tanks in 224-T were used in conjunction with concentrating plutonium at the facility

Site Interfaces

Origin/Termination	Site Intersects
	200-IS-1
N/A	• 200-W-88-PL
	• 200-W-226-PL
	• 224-T (building)

Relevant Characterization

- 1972: Approximately 72 g Pu, including 10 g Pu-239 were excavated and removed in 139 drums containing the contaminated soil here. The drums were buried on-site.
- 1999 & 2000: Annual routine radiation survey of ground surface revealed no detectable levels above background.

Misc./Other Relevant Information

Access to 224-T is currently restricted;

- From 1944 to 1956, the building functioned as the Plutonium Concentration Facility; it concentrated liquid output from the Plutonium Separations Plant
- From 1975 to 1985, it was used as a plutonium liquid and scrap plutonium storage facility
- In 1985, it was modified to house the Transuranic Assay Facility equipment

Scoping Summary: UPR-200-W-102

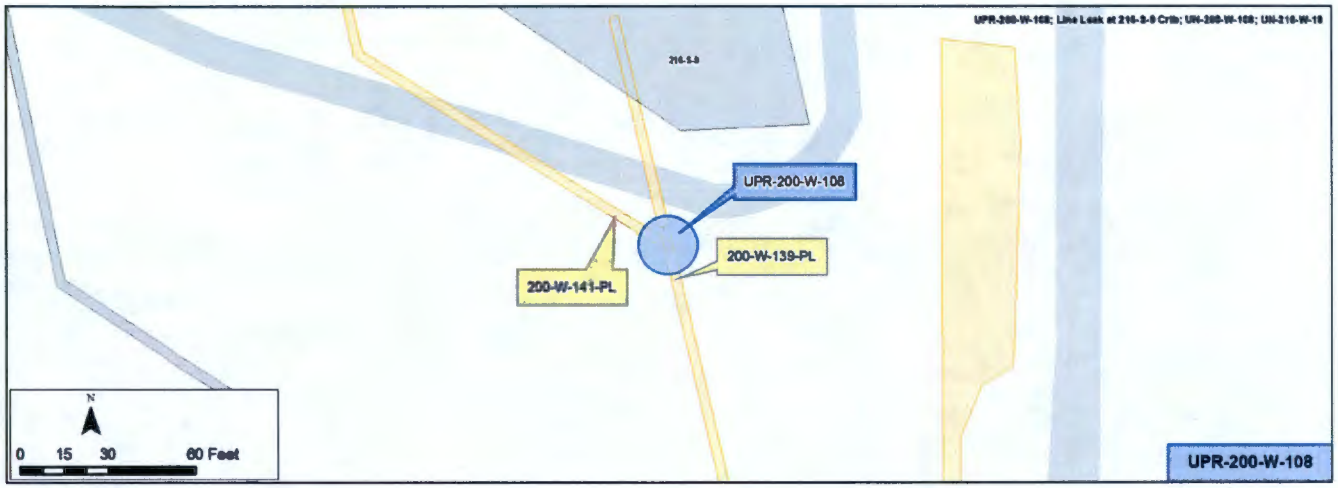
Scoping Summary: UPR-200-W-108

History

The UPR-200-W-108 waste site is an unplanned release encountered at the junction of the 216-S-9 Crib waste pipeline (200-W-139-PL) and the 216-S-23 Crib waste pipeline (200-W-141-PL).

On Jan-8-1969, an effort was under way to connect the two pipelines in order to reroute wastes, then flowing to the 216-S-9 Crib (via the 200-W-139-PL), to the 216-S-23 Crib (via the 200-W-141-PL). During this process, contaminated water was encountered. The area was excavated to 20 ft bgs, revealing a severe expansion buckle in the line at the junction, with a similar buckle 6 ft to the south. During the excavation process, approximately 30 gal of waste solution was discharged through the pipe to the soil. The date at which the pipeline was compromised and the quantity of wastes leaked are unknown.

The tie in between lines was successfully made and the excavation was filled once the work was completed.



Construction

- Size: ~20 ft in diameter around the source of the break in the junction
- Depth: 10 ft - 20 ft bgs (pipe depth - 12 ft to 16 ft bgs)

Features of Interest

- The release site is posted as a Surface Contamination Area

Waste Streams

- 200-W-139-PL transported REDOX process condensate from the D-2 Receiver Tank in the 202-S Building

Site Interfaces

Origin/Termination	Site Intersects
200-IS-1	
• 200-W-139-PL	N/A
• 200-W-141-PL	

Relevant Characterization

- Beta and gamma contamination was detected with dose rate of 40 rad/hr at the bottom of the waste line when excavated
- 1998 radionuclide curies inventory of 216-S-9 crib included: 7.78E+01 of Sr-90, 7.25E-05 of Cs-134, 5.63E-04 of Cs-135, 2.3SE+02 of Cs-137 and 1.13E-02 of U Gross
- 1998 radionuclide curies inventory of 216-S-23 crib included: 9.19E-01 of Sr-90, 8.02E-07 of Cs-134, 1.57E-06 of Cs-135, 2.82E+00 of Cs-137 and 1.29E-04 of U Gross

Misc./Other Relevant Information

- Radioactivity in 1995 was below detection for alpha and beta. Gamma activity was < 0.5 mrem/hr at surface level

200-W-141-PL
216-S-9
UPR-200-W-108
200-W-139-PL
N
0
35
70
140 Feet

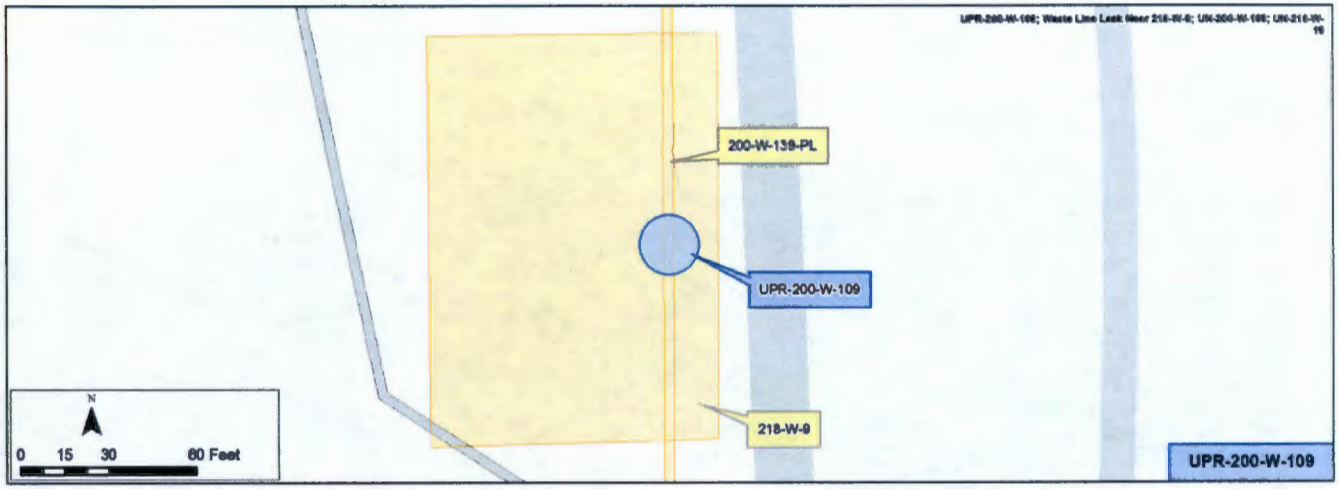
Scoping Summary: UPR-200-W-109

History

The UPR-200-W-109 waste site is an unplanned release resulting from a waste transfer line (200-W-139-PL) break that occurred along the east perimeter of the 218-W-9 Burial Ground. UPR-200-W-109 was discovered when addressing UPR-200-W-108, which was the result of buckled portions of the same waste transfer line (200-W-139-PL).

The leak was located through pressure testing and hydrostatic testing on Jan-24-1969. Excavation of the site began immediately and revealed a vertical buckling of the pipeline with a sizeable break in the line. The line was repaired and the excavation was refilled.

The 218-W-9 Area, in which UPR-200-W-109 is located, was interim stabilized in 1991 with 18 in. to 24 in. of uncontaminated backfill. The release site was covered with soil and revegetated along with 218-W-9.



Construction

- Size: 50-sq. ft, between 10 ft and 20 ft below grade
- Pipe Depth: 12 ft to 16 ft bgs

Features of Interest

- None noted

Relevant Characterization

- Dose rates on the liquid spilled during hydrostatic testing were 450 mR/hr at surface, but as the liquid sank into the ground, the surface dose rate dropped to 20 mR/hr
- Dose readings of 40 R/hr were recorded at the bottom of the waste line when excavated

Waste Streams

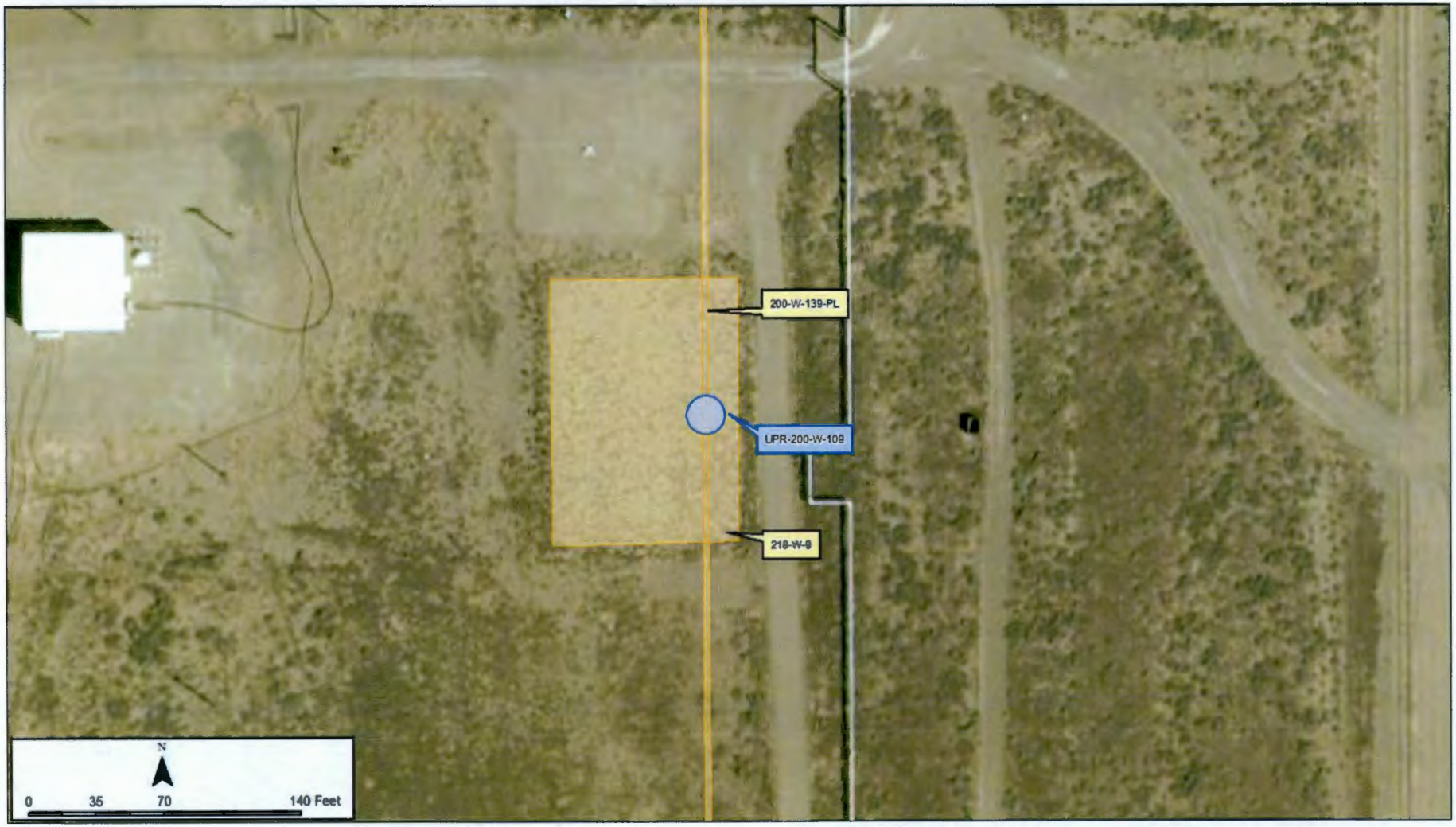
- 200-W-139-PL transported REDOX process condensate from the D-2 Receiver Tank in the 202-S Building

Misc./Other Relevant Information

- A 1984 surveillance report noted spotty contamination from 800 to 3,000 cpm at surface level in this area
- In 1991, surface contamination was measured at < 0.5 mR/h gamma, and 3,000 to 60,000 dpm beta at surface level in this area

Site Interfaces

Origin Points	Intersecting Sites
200-IS-1	200-WA-1
• 200-W-139-PL	• 218-W-9


200-W-139-PL
UPR-200-W-109
218-W-9
N
0
35
70
140 Feet

Scoping Summary: UPR-200-W-113

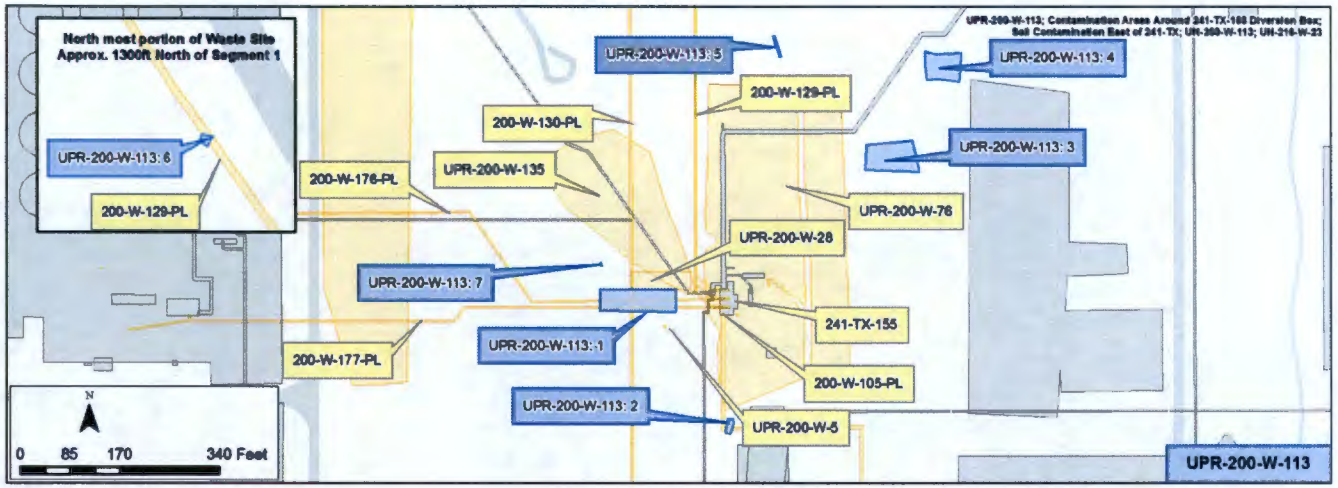
History

UPR-200-W-113 waste site is associated with nine contamination areas that are thought to be sourced from underground transfer lines going in-and-out of the 241-TX-155 Diversion Box. The original contamination area was surrounding the 241-TX-155 Diversion Box, which has since been designated as two separate UPRs (see UPR-200-W-76 and UPR-200-W-135 for further details).

Through the 1990s and 2000's, additional surface contamination areas on the north, south, east, and west sides of 241-TX-155 were identified and assigned to UPR-200-W-113. The additional seven contamination areas are due to contaminated animal feces and growing contaminated vegetation and they include:

1. UPR-200-W-113: Area 1(1)
2. UPR-200-W-113: Area 2(2) (W.L. Parnell; NA - 1011080810)
3. UPR-200-W-113: Area 3(3) (Survey Report: SS-248911)
4. UPR-200-W-113: Area 4(4)
5. UPR-200-W-113: Area 5(5) (Survey Report: SS-252961)
6. UPR-200-W-113: Area 6(6) (Plan No: 2000-DYNSS-RSP-07)
7. UPR-200-W-113: Area 7(7) (Survey Report: SS-248978)

Some of these locations have been cleaned and stabilized, but closure documents could not be located for most sections.



Construction

- Waste Sites Sizes:
  1. UPR-200-W-113:1 - 4,890 sq ft
  2. UPR-200-W-113:2 - 253 sq ft
  3. UPR-200-W-113:3 - 4,090 sq ft
  4. UPR-200-W-113:4 - 2,670 sq ft
  5. UPR-200-W-113:5 - 131 sq ft
  6. UPR-200-W-113:6 - 16 sq ft
  7. UPR-200-W-113:7 - 10 sq ft

- Cleanup/Cover of Contamination Areas:
  1. UPR-200-W-113:1 - photo indicates area has been covered with gravel (Image 1)
  2. UPR-200-W-113:2 - area posted
  3. UPR-200-W-113:3 - area posted and may have been decontaminated
  4. UPR-200-W-113:4 - documentation could not be located
  5. UPR-200-W-113:5 - contaminated specks were removed and posted (Image 2)
  6. UPR-200-W-113:6 - layer of Bio Barrier and 6 in. of gravel; post decontamination levels less than detectable for beta/gamma and alpha (Image 3)
  7. UPR-200-W-113:7 - contaminated soil removed and posted as a URM; readings near background levels for beta/gamma and alpha

Features of Interest

- No noted features of interest

Relevant Characterization

- UPR-200-W-113:2 - Soil & tumbleweeds readings up to 300,000 dpm/100 sq-cm
- UPR-200-W-113:3 - Tumbleweed fragments up to 120,000 dpm/100 sq-cm
- UPR-200-W-113:5 - speck measurements up to 1 million dpm/probe (rust material next to the rail)
- UPR-200-W-113:6 - tumbleweed fragments up to 114,000 dpm/100 sq-cm
- UPR-200-W-113:7 - up to 800,000 dpm/100 sq-cm

Waste Streams

- Waste sources are from contaminated animal feces and growing contaminated vegetation thought to be sourced from the transfer lines connected to the 241-TX-155 Diversion Box
- 241-TX-155 waste includes:
  - Waste Processes: REDOX, PUREX, T Plant, and U Plant
  - Waste Streams: MW2, 1C2, DW, Tributyl Phosphate Waste (TBP), Nitric Acid and Thorium, Uranyl Nitrate Hexahydrate, and REDOX supernates

Misc./Other Relevant Information

- Multiple radiological surveys are associated with UPR-200-W-113, but due to reassignment now belong to other UPRS: (e.g. 200-W-76; 200-W-135)

Site Interfaces

Origin/Termination	Intersecting/Nearby Waste Sites
N/A	200-IS-1 • 200-W-105-PL • 200-W-129-PL • 200-W-130-PL • 200-W-176-PL • 200-W-177-PL • UPR-200-W-135 • UPR-200-W-28 • UPR-200-W-5 • 241-TX-155 (Diversion Box) 200-WA-1 • UPR-200-W-76

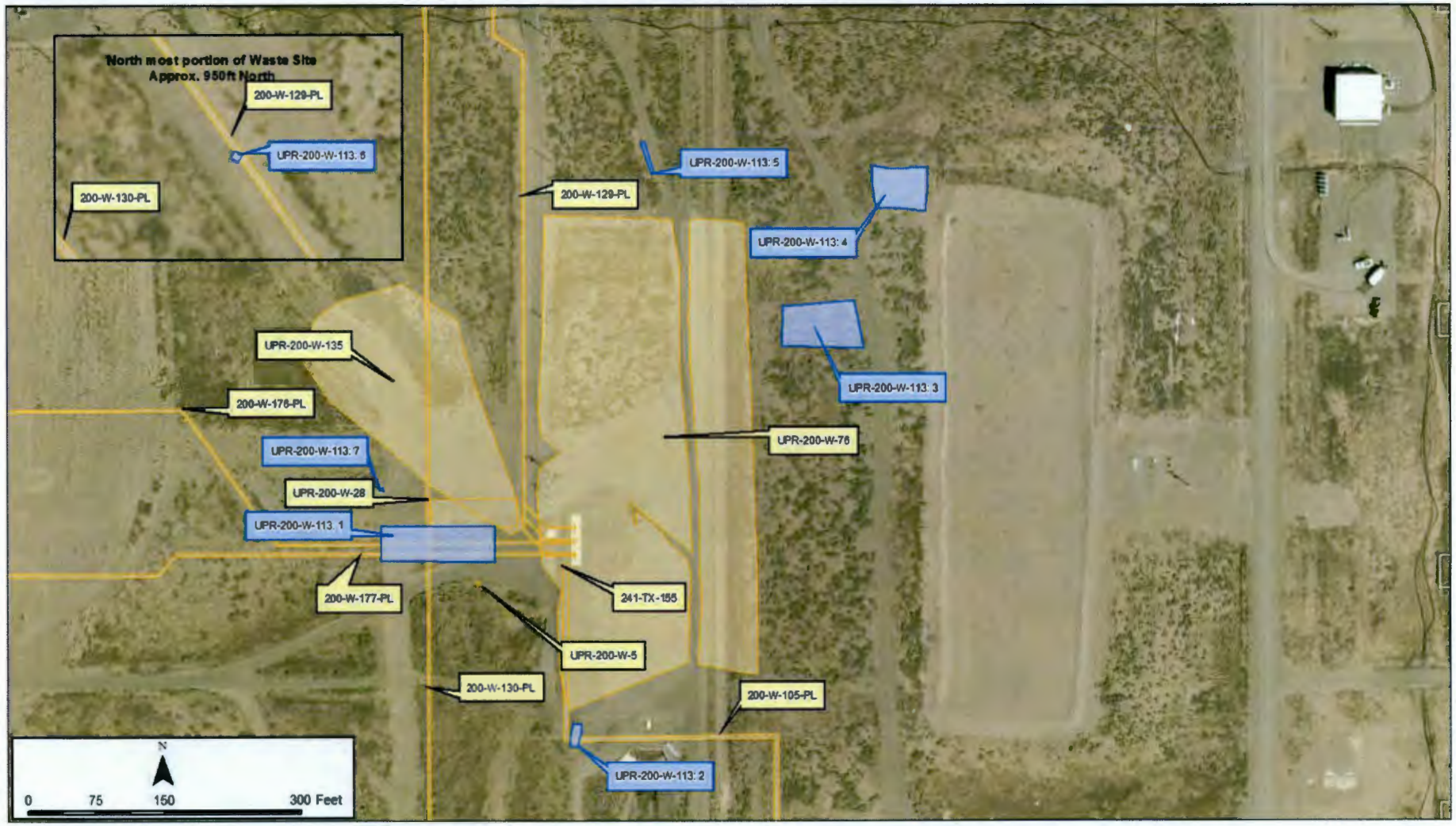

North most portion of Waste Site
Approx. 950ft North
200-W-129-PL
UPR-200-W-113: 6
200-W-130-PL
UPR-200-W-113: 5
200-W-129-PL
UPR-200-W-113: 4
UPR-200-W-135
UPR-200-W-113: 3
200-W-176-PL
UPR-200-W-76
UPR-200-W-113: 7
UPR-200-W-28
UPR-200-W-113: 1
200-W-177-PL
241-TX-155
UPR-200-W-5
200-W-130-PL
200-W-105-PL
UPR-200-W-113: 2
N
0
75
150
300 Feet

Image 1: UPR-200-W-113:1

Image 2: UPR-200-W-113:5

Image 3: UPR-200-W-113:6

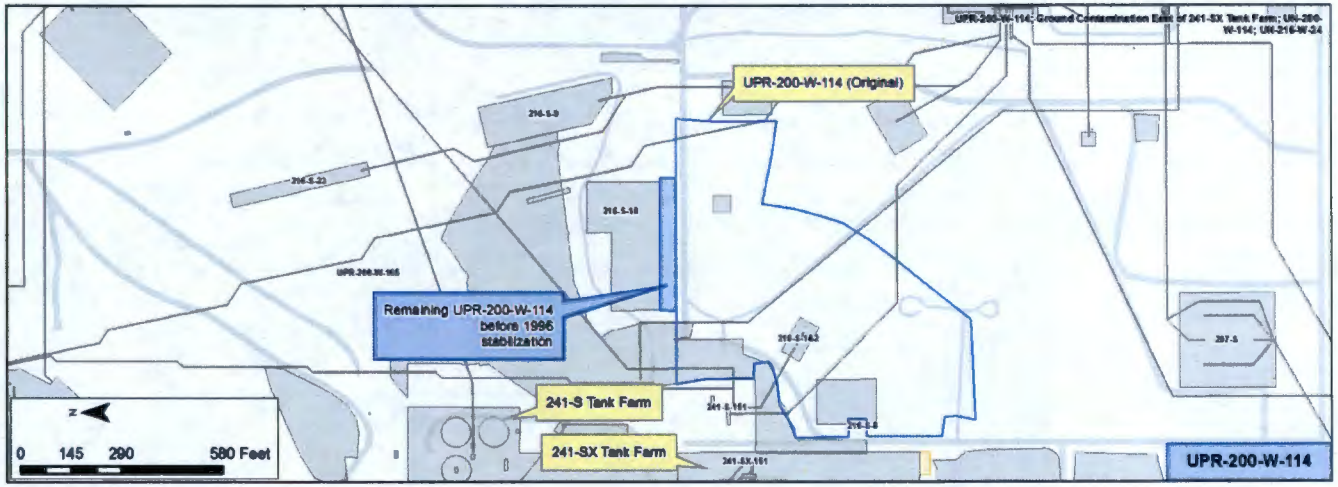
Scoping Summary: UPR-200-W-114

History

The UPR-200-W-114 waste site consists of a surface contamination area (SCA) located east of the 241-S and 241-SX tank farms that was the result of radioactive material migration from operation activities in the tank farms. The original area was approximately 12 acres discovered in 1980 (UN-216-W-24), the actual date of occurrence is unknown. Cribs 216-S-8, 216-S-1 and 216-S-2 were located within the contamination zone.

Initial stabilization efforts in 1992 excavated the contaminated soil and placed it in the 207-S retention basin. The surface of the retention basin and the three cribs were covered with 18 in. to 24 in. of clean soil. The contamination zone was reduced to approximately 2 acres, stabilized and down-posted to URMA areas.

A remaining portion of the SCA under an active steam line was not stabilized until 1996 when the line was deactivated and removed. The steam line supports and the contaminated soil from under the line were excavated and placed in the adjacent contaminated 216-S-18 trench. The trench was covered with approximately 6,700 cu-yds. of clean soil to a level even with grade and reposted as an URMA. All known surface contamination from this UPR has been excavated and there is no current waste site location or shape.



Construction

- UPR-200-W-114 SCA Dimensions (original)
  - 11.68 - 11.9 acres
  - 509,095 sq ft
- UPR-200-W-114 URMA Dimensions (prior to 1996 stabilization)
  - Length: 350 ft
  - Width: 450 ft
- Current dimensions of UPR-200-W-114 within the 216-S-18 trench were not located

Features of Interest

- The original site area is no longer marked or posted
- The 216-S-18 trench is posted with light weight chain and URMA signs

Waste Streams

- 241-S and 241-SX tank farm radioactive material
- 216-S-18 trench was originally used as a steam cleaning pit for contaminated equipment

Site Interfaces

Origins/Terminations

- 241-S tank farm
- 241-SX tank farm

200-WA-1

- 216-S-18

Site Intersects

200-WA-1

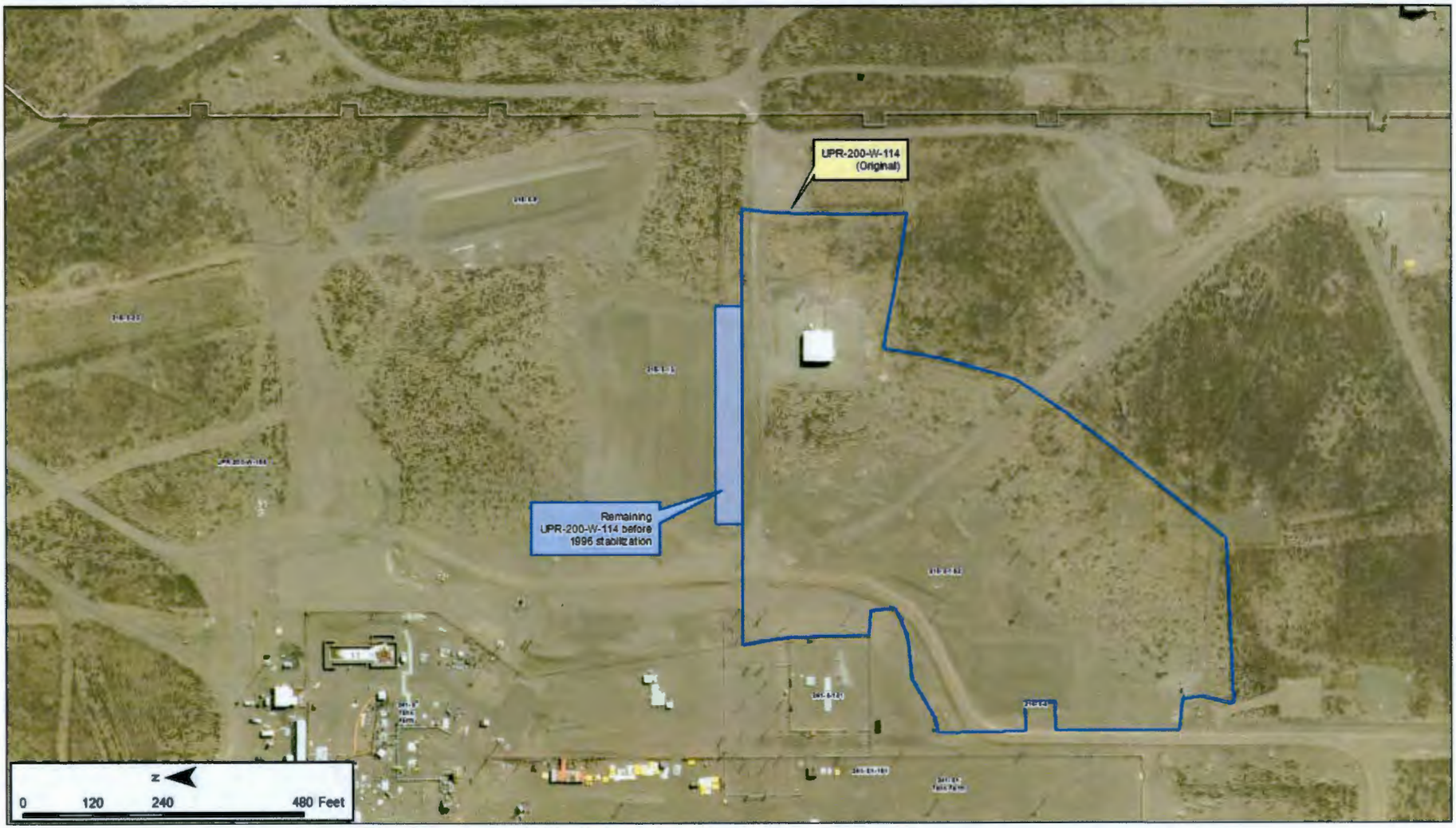
- UPR-200-W-165
- 216-S-8
- 216-S-1&2

Relevant Characterization

- 1992 Stabilization
  - 77 soil samples were collected from scraped areas - results determined the areas to be released from radiological controls
- 1996 Stabilization
  - None of the steam line sections removed were found to be radioactively contaminated
  - Scraped areas were surveyed - results determined the areas to be released from radiological controls

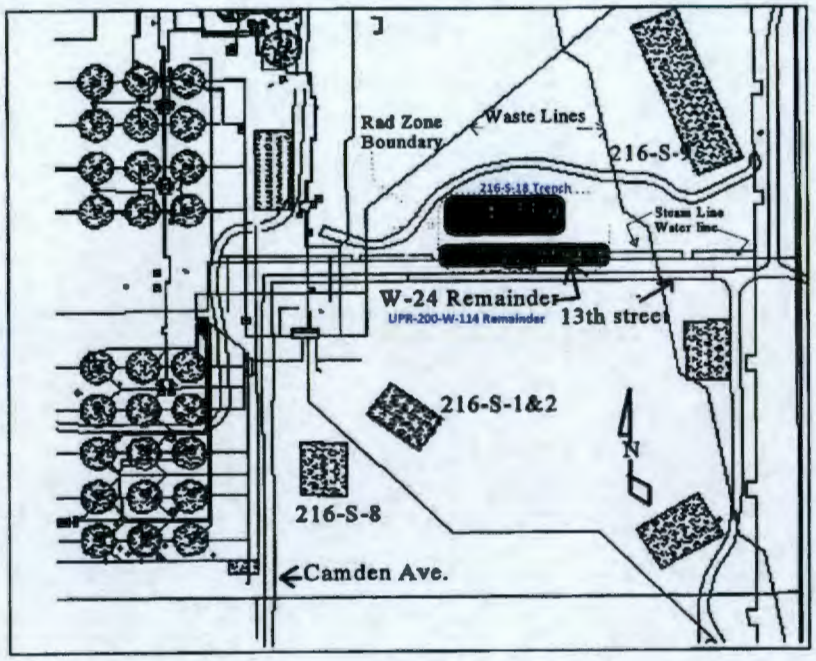
Misc./Other Relevant Information

- This site was remediated in conjunction with the adjacent UPR-200-W-165

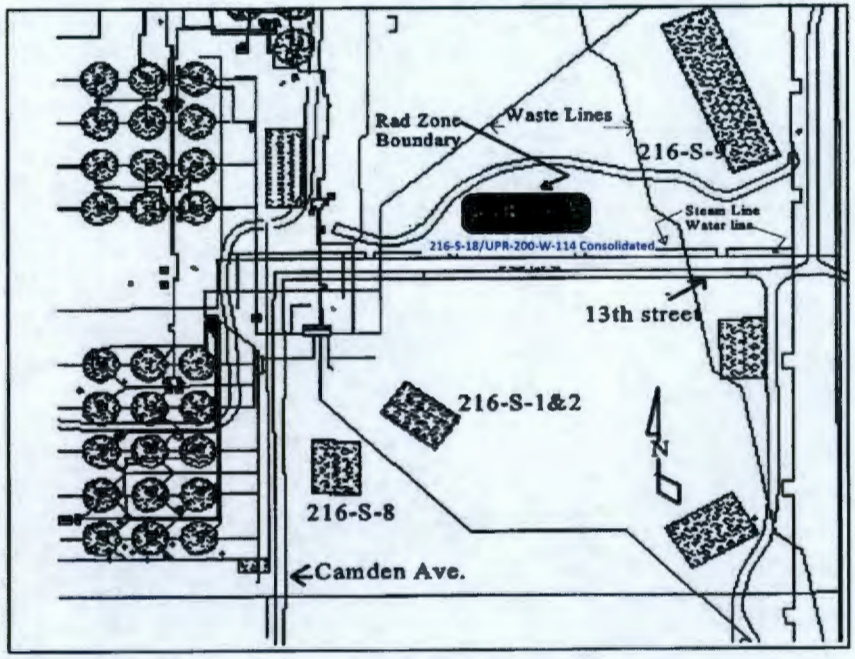

UPR-200-W-114
(Original)
Remaining
UPR-200-W-114 before
1996 stabilization
N
0
120
240
480 Feet

1996 Stabilization

Location of Project and Contamination Areas Prior to Consolidation and Stabilization.



After Consolidation and Stabilization.



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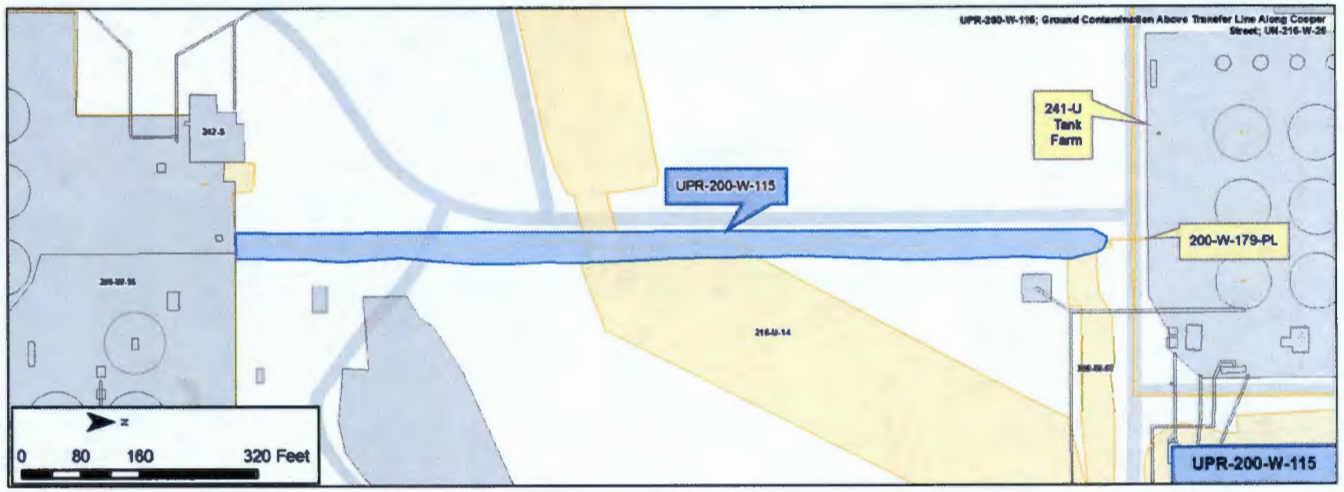
Scoping Summary: UPR-200-W-115

History

Waste site UPR-200-W-115 refers to soil contamination located above the pipe in-pipe encased transfer line 200-W-179-PL that runs between a diversion box in the 241-S tank farm to valve and pump pits in the 241-U tank farm. The site was established in Sep-1980; actual date of occurrence is unknown.

In Oct-1981 a radiation survey indicated the soil and clean out boxes on the pipeline encasement were free of contamination. The only radiation detected was a dose rate emitting from the interior of the clean out boxes. Further field work in 1988, 1994, 1998 and 2001 confirmed no contamination on the ground surface or the clean out boxes with occasional high background due to tank farm transfers. No documentation of a release was located.



Construction

- Length: Approx. 1,200 ft
- Width: 20 ft
- Area: 24,000 sq ft
- Pipeline Depth: Approx. 3 ft - 8 ft bgs
- Pipeline Total Calculated Volume: Approx. 1,553 gal

Features of Interest

- Delineated with chain barricade and Surface Contamination warning signs, covered with gravel and posted as an URMA area.
- 24 clean out boxes with risers on 200-W-179-PL, in pairs 4 ft from each other, 100 ft between pairs

Relevant Characterization

- Most recent radiological survey Jun-23-2015 investigated the clean out boxes and risers
- Both had 100 cpm background with smears of removable contamination 100 gross cpm βγ and <1,000 dpm βγ
- URMA general area was surveyed at waist level, background was N/A and net was 300 uRem/hr

Waste Streams

200-W-179-PL associated waste streams:

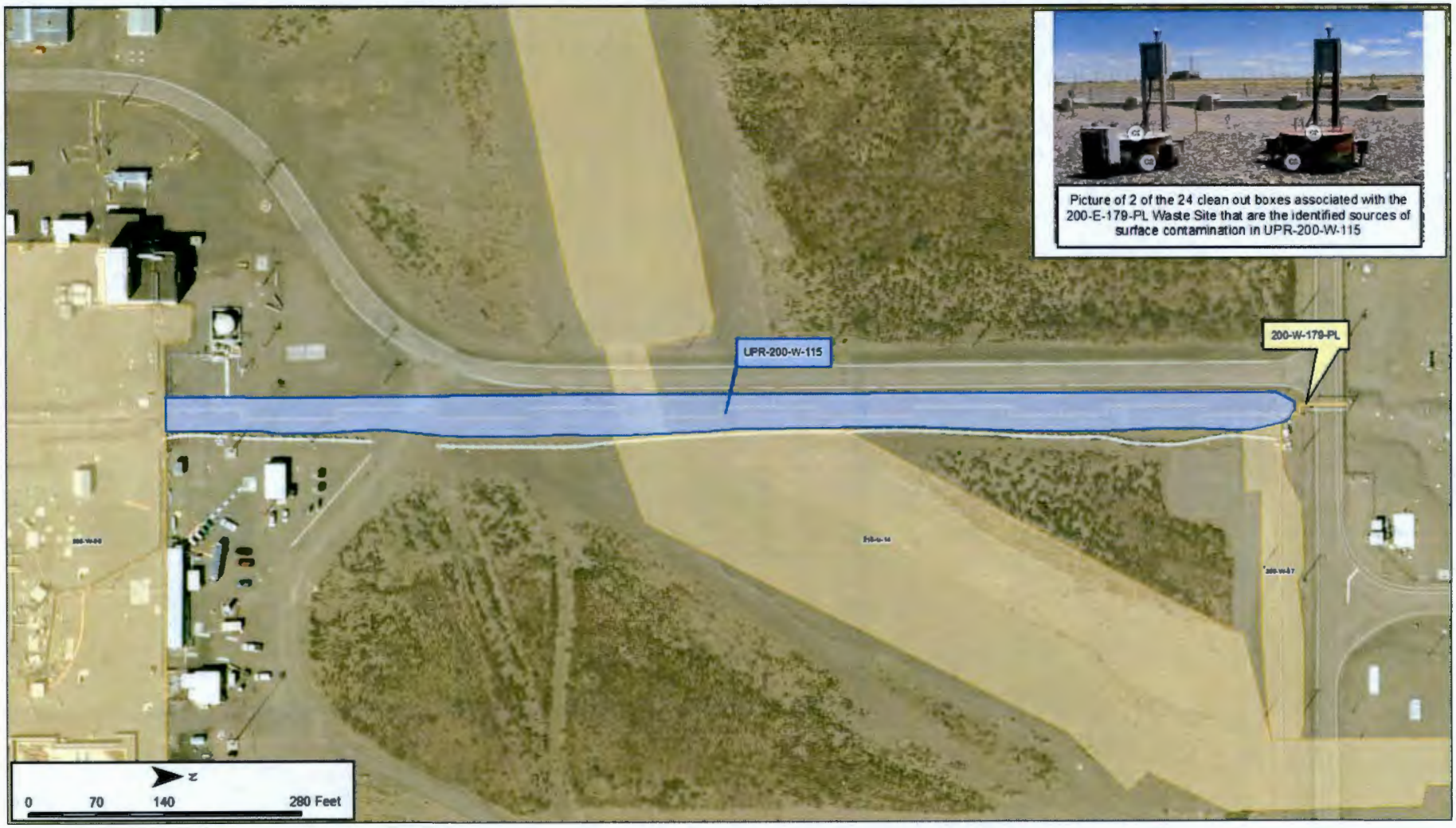
- Valve pits 241-U-C/U-D and pump pits 241-U-10A/11A are associated with 241-U-110 and 241-U-111 single shell tanks, which received BiPO4 metal waste, REDOX, lab waste, PNL waste HNO4/KMnO4, N Reactor, decontamination waste
- 241-S-152 diversion box received waste from 241-S and 241-SX tank farms and transferred it to the 242-S Evaporator, which received the following wastes: Single-shell tank supernate, phosphate, complexed radioactive, and miscellaneous dilute radioactive

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
For associated pipeline 200-W-179-PL:	200-IS-1 • 200-W-179-PL
• 241-S-152 Diversion Box (WMA 5/SX) • 241-U-C Valve Pit (WMA U) • 241-U-D (WMA U) • 241-U-10A Pump Pit • 241-U-11A Pump Pit	200-WA-1 • 200-W-67 • 216-U-14 • 200-W-96 (WMA S/SX)


UPR-200-W-115
200-W-179-PL
Picture of 2 of the 24 clean out boxes associated with the 200-E-179-PL Waste Site that are the identified sources of surface contamination in UPR-200-W-115
N
0
70
140
280 Feet

Scoping Summary: UPR-200-W-130

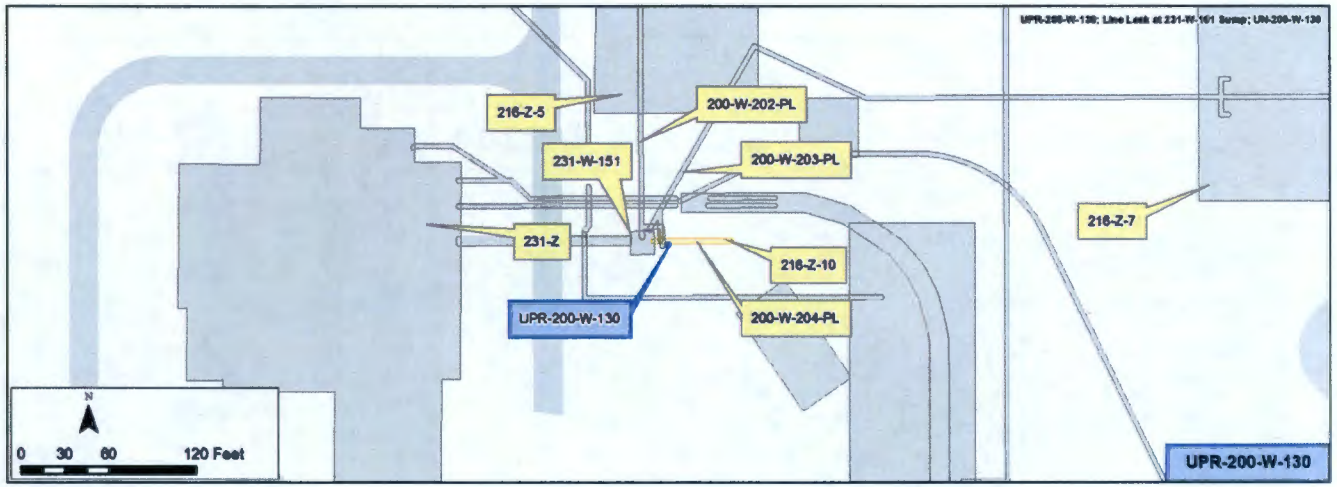
History

The UPR-200-W-130 waste site is an unplanned release resulting from a leaking pipe flange adjacent to the 231-W-151 sump. The leak was encountered in Jan-1967.

The release was exposed during hand-shovel excavation work when an unexpected pipeline was encountered during planned excavation work to divert a 231-Z waste stream from the 216-Z-7 Crib to the 216-Z-5 Crib.

The line was repaired and the excavation was covered with six inches of clean soil before work was halted.

As of 2006, the area had been posted with numerous warnings and some chain link fencing surrounds the perimeter. The 231-W-151 sump has been covered with a foam seal, circa 2003; its inlet lines blanked by 1974.



Construction

- Soil contamination is expected under approximately 6 in. of clean soil

Features of Interest

- None identified

Relevant Characterization

- Jan-1967: alpha, beta, gamma detected on soil to 40,000 d/m next to line. Beta was 100 mrem/hr, and gamma was 500 mrem/hr.

Waste Streams

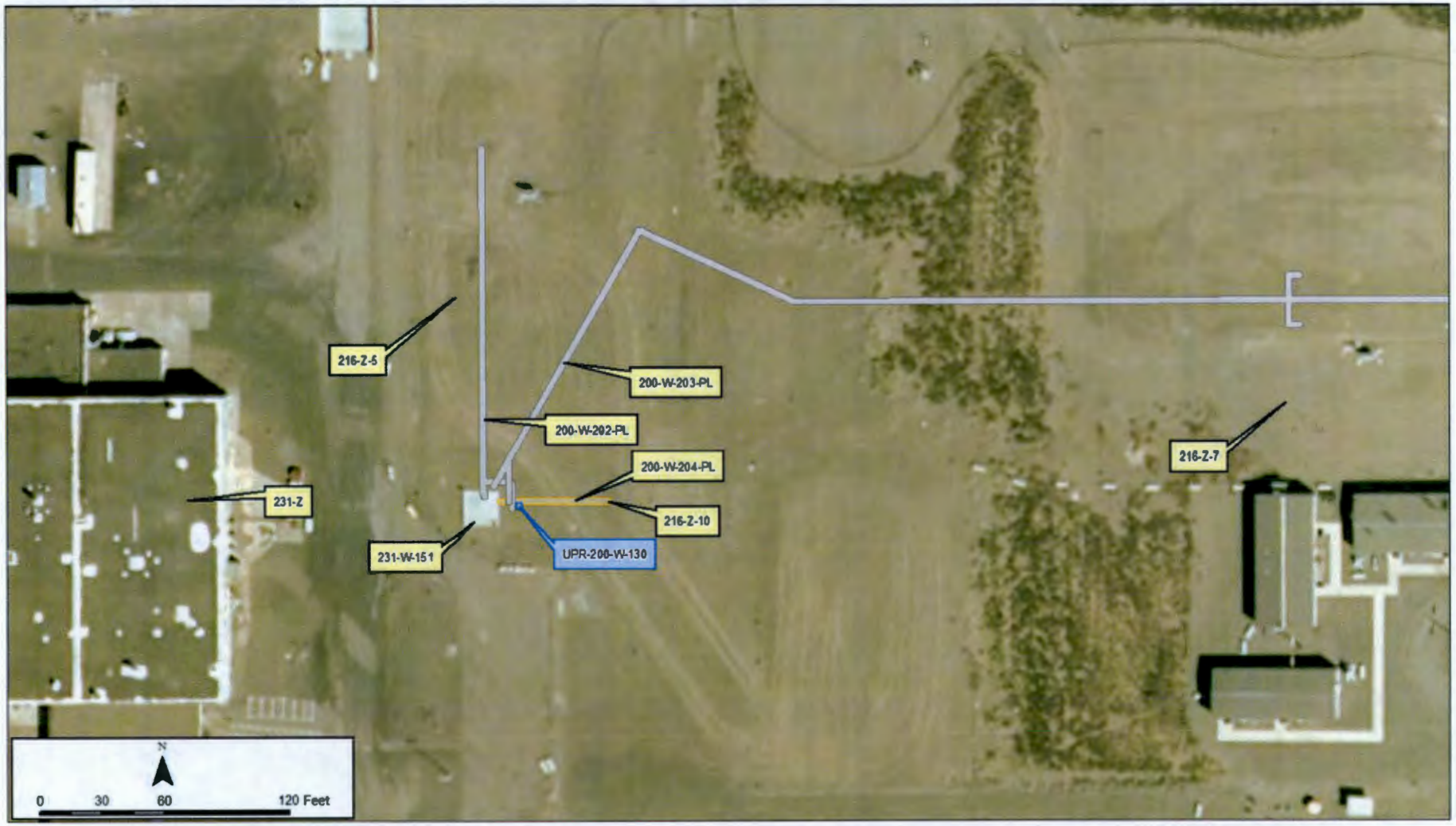
- The 231-W-151 sump received draining from 75 floor drains within the 231-Z Building. The sump emptied to a series of cribs through three separate pipe systems.
- Circa 1999:
  - The 216-Z-10 Crib includes Total Alpha at 3.07E+00
  - The 216-Z-5 Crib includes Sr-90, Cs-137, Tc-99, Total Alpha at 2.09E+01, and Total Beta at 1.03E+01
  - The 216-Z-7 Crib includes Co-60, Sr-90, Tc-99, Cs-137, Pm-147, Sm-151, U (Gross), Total Alpha at 1.23E+02, and Total Beta at 8.02E+02.

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination	Nearby Features
N/A	200-IS-1 • 200-W-202-PL • 200-W-203-PL • 200-W-204-PL 200-WA-1 • 231-W-151 • 216-Z-7 Crib 200-PW-6 • 216-Z-5 Crib • 216-Z-10 Crib


216-Z-5
200-W-203-PL
200-W-202-PL
200-W-204-PL
216-Z-10
UPR-200-W-130
231-Z
231-W-151
216-Z-7
N
0
30
60
120 Feet

UPR-200-W-130-2; 08/01/06; Facing N; CH2M HILL

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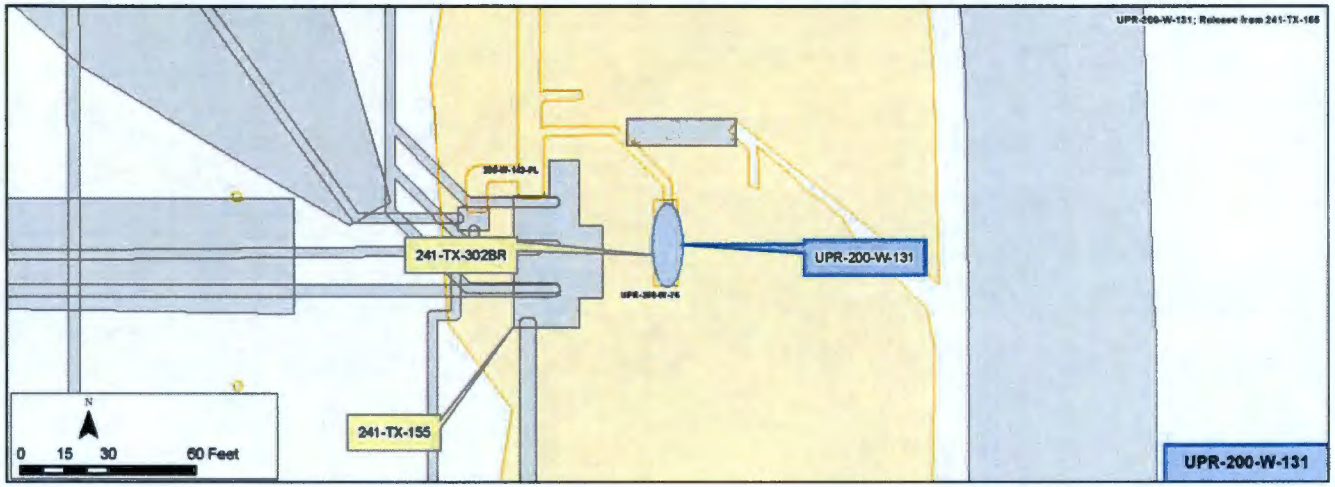
Scoping Summary: UPR-200-W-131

History

The UPR-200-W-131 waste site is associated with contamination spread from risers on the 241-TX-302BR Catch Tank on Mar-13-1953.

The discharge of contamination from the risers was associated with an effort to empty the catch tank after it was filled with a diluted acid solution (tri-butyl phosphate) from a leak in the 241-TX-155 Diversion Box. A chemical reaction occurred during the operation, resulting in a fine stream of solution escaping from a one inch riser on the tank and foam leaking out of both the 12 in. riser where neutralizing chemicals were added and another four inch riser.

The area associated with UPR-200-W-131 was covered with paper to prevent spread, covered with soil, and later covered with gravel. The 241-TX-302BR Catch Tank was abandoned in place following this incident and replaced by the 241-TX-302B Catch Tank.



Construction

- Size: ~5 ft diameter around three catch tank risers

Features of Interest

- 241-TX-302BR Catch Tank was abandoned in-place. All risers associated with UPR-200-W-131 were cut off 4 ft below grade and capped or filled with soil.

Relevant Characterization

- Ground contamination up to 25 rad/hr was observed over an area approximately 5 ftin diameter around the three risers. The contaminated soil was partially removed.

Waste Streams

- The leak associated with UPR-200-W-131 was due to a jumper in the diversion box, which was transferring Tributyl phosphate (TBP) waste
  - Waste source of TBP is the U Plant - Uranium Recovery and Scavenging (URP)
- Additional waste streams associated with the 241-TX-155 Diversion Box may have been present in the catch tank prior to this leak

Misc./Other Relevant Information

- 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.
- The UPR is within the boundary of UPR-200-W-76, which is associated with the spread of contamination due to bio intrusion.

Site Interfaces

Origin Points

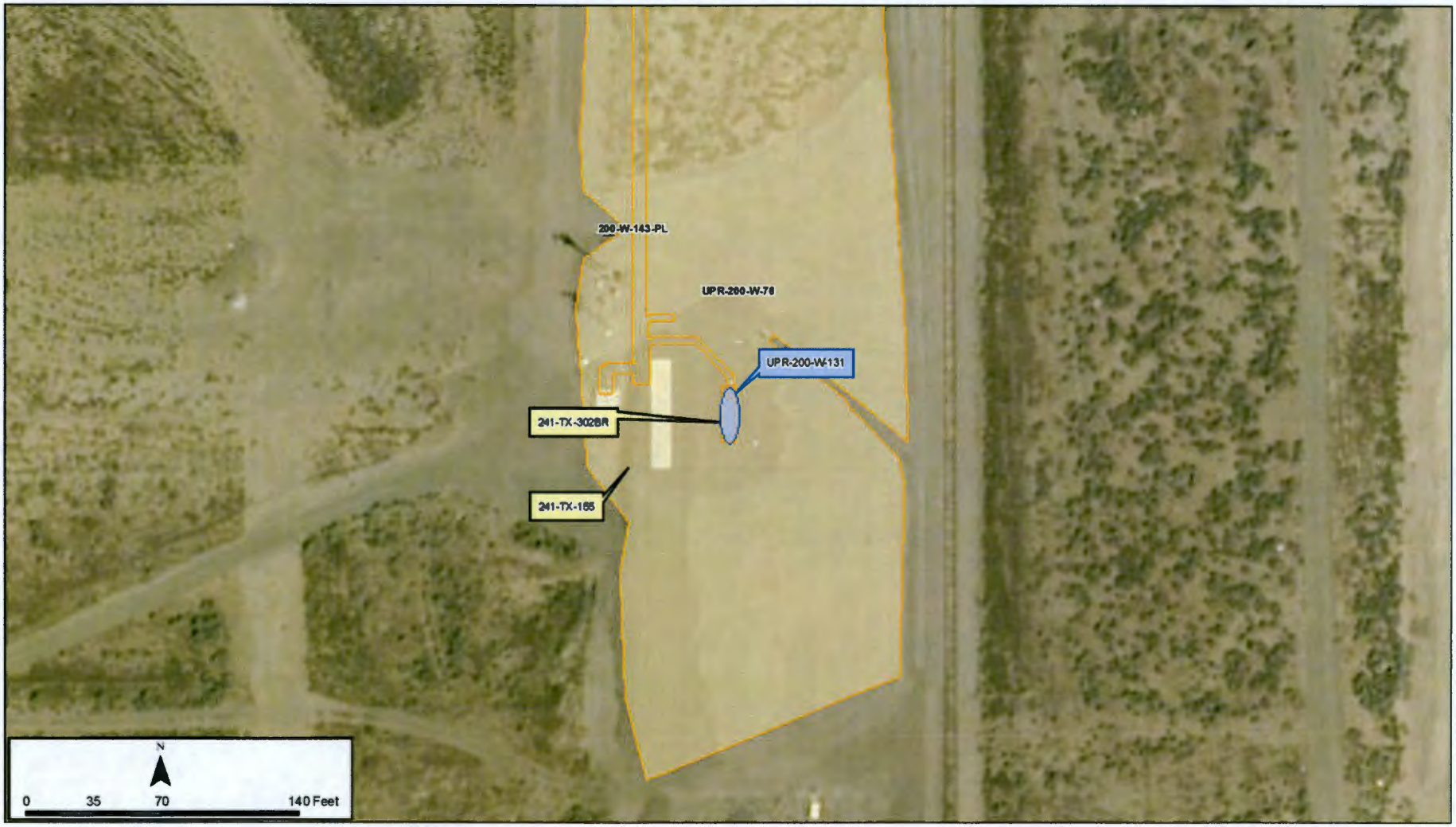
200-IS-1
- 241-TX-155
- 241-TX-302BR

Intersecting Sites

200-IS-1
- 200-W-143-PL

200-WA-1
- UPR-200-W-76 (associated with the 241-TX-155 Diversion Box)

Scoping Summary: UPR-200-W-131



Scoping Summary: UPR-200-W-135

History

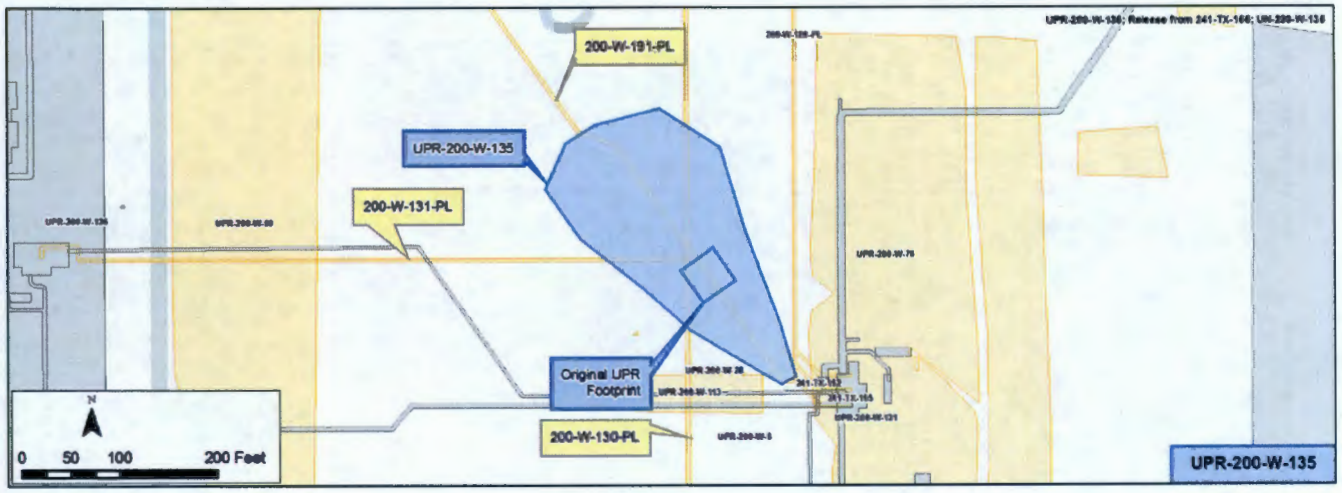
The UPR-200-W-135 waste site is an unplanned release located northwest of the 241-TX-155 Diversion Box. The waste site was discovered in April 1954, when a planned construction project encountered elevated radiation levels near the box; and, ultimately identified a cave-in some 150 ft to the NW of it.

Follow-up investigations determined the cave-in cause was a leaking connector in the diversion box.

Up until the leak discovery, approximately 60,000 gal of supernate passed through the line. The exact size of the leak to soil was not quantifiable but estimated at 1,000 gal.

After discovery and investigation, the contaminated area was sealed and covered with earth, and access roads into the area were temporarily barricaded.

As of 2008, this posted area was also marked with UPR-200-W-113 signs, suggesting overlap of the two waste sites. That same year, personnel determined the extent of the subject waste site should be increased to assume within its bounds the 40 ft run-off path that led from the hillside to the cave-in location from 1954.



Construction

- Area in 1954: 12 sq ft, approximately 150 ft NW of 241-TX-155, including 2 sq ft cave-in location
- In 2008, the footprint was expanded some 40 ft, along the 200-W-191-PL line

Features of Interest

- None identified

Relevant Characterization

Apr-5-1954:

- 30 mr/hr observed at 241-TX-155, growing higher descending the hill to NW away from diversion box;
- 5 r/hr at cave in (150 ft northwest of diversion box); 2.5 r/hr at 3 ft
- 300 r/hr at 4 in. above the major collection point.

Waste Streams

- The leaking connector (U-15) associated with the release was transferring blended metal waste supernatant from the 244-UR vault to the 241-WR vault.

Misc./Other Relevant Information

- None identified

Site Interfaces

Origin/Termination

N/A

Site Intersects

200-IS-1

- 200-W-191-PL
- 200-W-130-PL
- 200-W-131-PL
- 200-W-129-PL

Nearby Interests

200-IS-1

- UPR-200-W-113
- 241-TX-155
- 241-TX-152

Scoping Summary: UPR-200-W-135

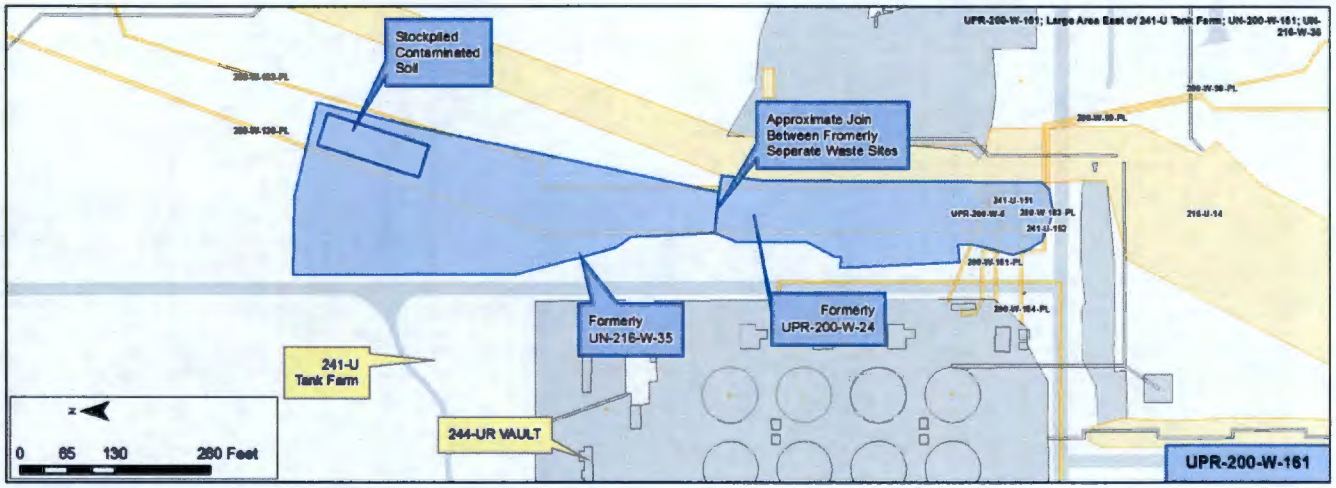
Scoping Summary: UPR-200-W-161

History

The UPR-200-W-161 waste site covers approximately 3 acres east of the 241-U Tank Farm and west of the 216-U-14 Ditch. In 1999, it was created by an administrative consolidation of two previously documented releases, UPR-200-W-24 and UN-216-W-35. Both were the result of historic releases from the 241-U Tank Farm and are discussed separately below.

UPR-200-W-24 was a release that occurred on April 30, 1953 when a "violent chemical reaction" in the 002 UR blend tank (located in the 244UR Vault) shot a combination of CW supernatant and nitric acid 30' in the air. Windblown contamination covered an area extending from the 244UR Vault to the 207-U Retention Basin.

UN-216-W-35 was identified in early 1990 and covers approximately 1.9 acres. The suspected source of contamination was windblown contaminated materials from the 241-U Tank Farm. Additional contamination was found in the area of the 241-U-151 and 242-U-152 Diversion Boxes and UPR-200-W-161 was expanded to include this area. The entire area was posted as a Contamination Area until stabilization was conducted in 1996 and 1998, and it was down-posted to an URMA.



Construction

- Stabilization of UPR-200-W-24 was implemented immediately, but details of the stabilization efforts at that time were not located
  - In Sep-1998, the area was stabilized again by placing clean soil over the contaminated areas and down-posting to a URM
- In Mar-1996, UN-216-W-35 was stabilized by scraping 2 in. to 6 in. of contaminated soil into a pile, covering the pile with clean soil and down-posting to a URM

Features of Interest

- Two diversion boxes, 241-U-151 Diversion Box and 241-U-152 Diversion Box are located within the UPR
- Several pipelines traverse beneath UPR-200-W-161
- None of these features are indicated as sources for the surface contamination identified with this waste site

Relevant Characterization

- Incident report for the 1953 release show contamination at rates of 500-1000 cpm.
- Jan-1990 data collected in the northern portion indicated contamination of 250-450 cpm (one 8,000 cpm "hot spot")
  - Soil samples collected in Jan-1990 reported the following concentrations - Sr-90 @ 2930 pCi/g; Cs-137 @6.26 pCi/g; Pu @ 3.27 pCi/g, and U @ 2.6 E-07 g/g.
- Rad surveys in Oct-1997 show "rampant" tumbleweed growth; however, only one was found @ 400 cpm in URM

Waste Streams

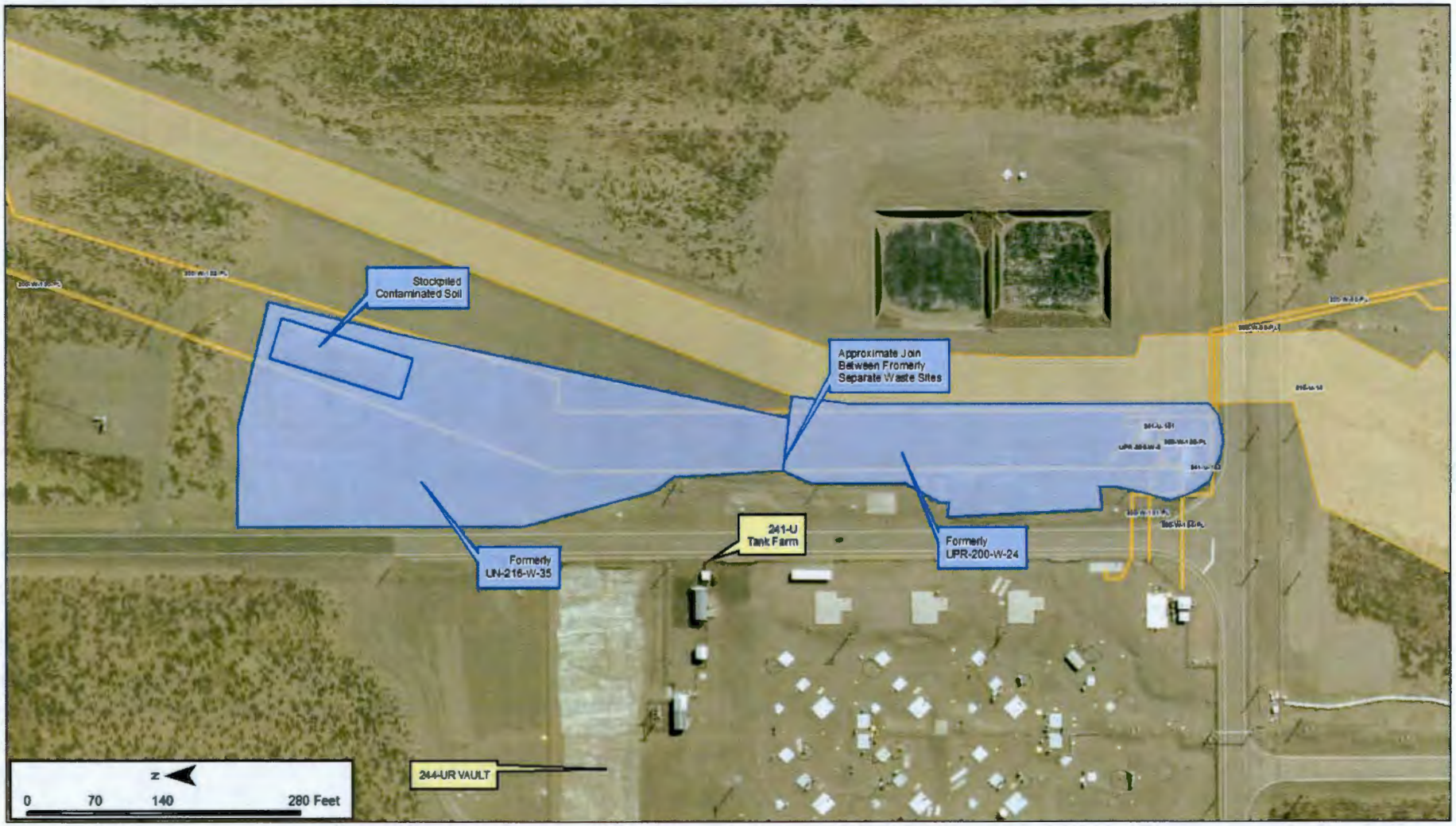
- Reports of releases associated with UPR-200-W-161 indicate that contaminants are primarily related to 241-U Tank Farm operations
- The 1953 release resulted from a violent reaction of improperly mixed CW supernatant and nitric acid
- The 1990 sampling data indicate the contamination source as windblown contamination from the 241-U Tank Farm, but no specific processes are identified

Misc./Other Relevant Information

- None

Site Interfaces

Origin/Termination	Site Intersects
Not Applicable	<u>200-IS-1</u> • 200-W-130-PL • 200-W-181-PL • 200-W-182-PL • 200-W-183-PL • 200-W-184-PL • 200-W-185-PL • 241-U-151 Diversion Box • 241-U-152 Diversion Box • UPR-200-W-6 <u>200-WA-1</u> • 216-U-14 Laundry Ditch <u>TBD</u> • 200-W-98-PL • 200-W-99-PL


Stockpiled Contaminated Soil
Approximate Join Between Fromerly Separate Waste Sites
241-U Tank Farm
Formerly UN-216-W-35
Formerly UPR-200-W-24
244-UR VAULT
N
0 70 140 280 Feet

Scoping Summary: UPR-200-W-164

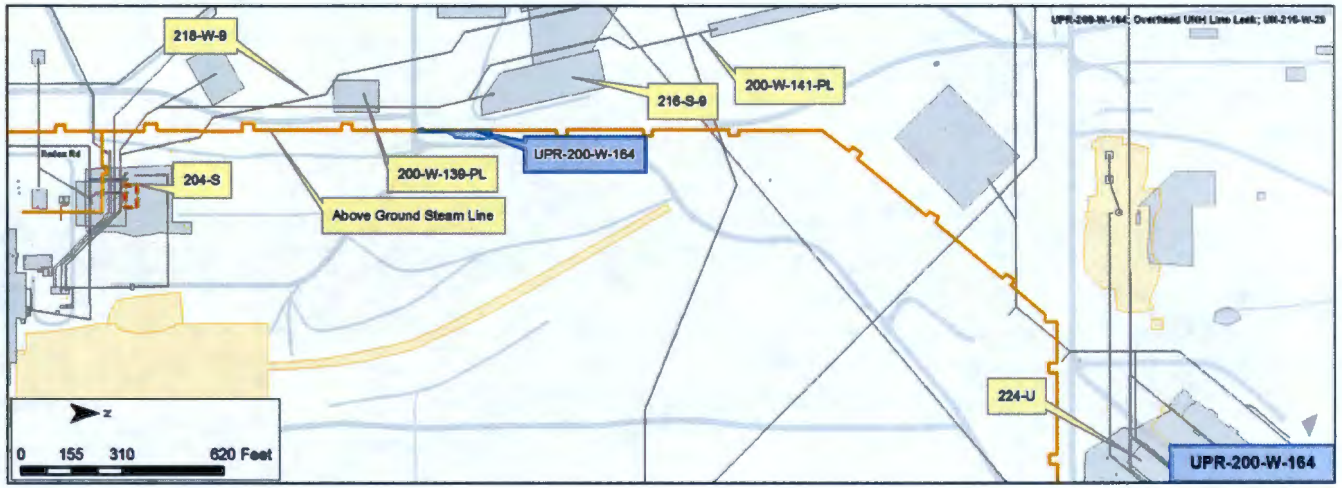
History

The UPR-200-W-164 waste site is an unplanned release, an area of soil, beneath a former above ground uranyl nitrate hexahydrate (UNH) line that extended between the 204-S storage tanks and 224-U Building.

The UNH process transfer line was identified as a radiation zone during the operation of the REDOX facility from 1952 to 1967. The zone was established because of a low level gamma field emanating from the transfer line. According to 1981 field notes, the waste site was improperly designated as an unplanned release site.

In the summer of 1992, nearby waste sites were interim stabilized via a surface scrape of radiation contamination and the addition of 18 in. to 24 in. of clean soil placed back over the cut; UPR-200-W-164 was included in this action, due to its proximity.

During the stabilization activities, decontamination efforts at this waste site were halted due to the discovery of radiation contamination at more than 12 in. bgs, as well as steam line footings interference making excavation impossible. Data verifying the rad contamination levels could not be located.



Construction

- Waste Site size: 0.07 acres
- 1992 Stabilization activities: 18 in. - 24 in. of clean soil was added over the waste site, and it was subsequently posted Underground Radioactive Material.

Features of Interest

- An above ground steam line remains throughout the length of this waste site (3 ft above ground surface)

Waste Streams

- Uranyl nitrate hexahydrate in an above ground line (removed)

Site Interfaces

Origin/Termination	Nearby Waste Sites
N/A	200-WA-1 • 218-W-9 200-DV-1 • 216-S-9 200-IS-1 • 200-W-139-PL • 200-W-141-PL

Relevant Characterization

- Jul-1992: radioactive contamination discovered at depths greater than 12 in. bgs; no data was located to verify
- Aug-2015: S&M RARA Annual Survey results showed background cpm and Direct Gross cpm/100 sq-cm: beta at 286, and alpha at 2

Misc./Other Relevant Information

- An image from 2015 identifies this area as, Contaminated Steam Line and Wooden Support Poles: it notes fixed contamination on the wooden support poles and Steam line. The area has been recently posted as a CA, as the wooden poles are rooting and starting to flake off contamination

Scoping Summary: UPR-200-W-164

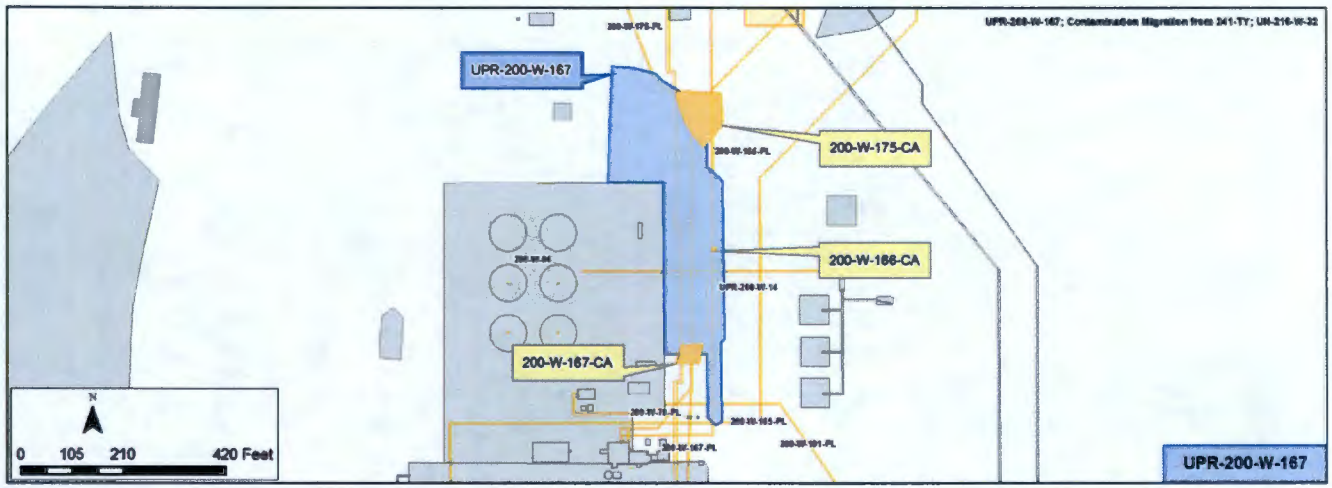
Scoping Summary: UPR-200-W-167

History

The UPR-200-W-167 waste site consists of an original contamination area identified in 1985 of approximately 90,000 sq ft adjacent to the 241-TY tank farm fence. At the time of discovery the contamination was assumed to be the result of migration from 241-TY Tank Farm operations over time. After the contamination was scraped and removed in 1986, the site was no longer marked or posted.

In 2000, three areas on the east and northeast sides of the 241-TY Tank Farm (within the original UPR boundaries) were reposted as Contamination Areas (CA). Biointrustion was found on top and near tank farm transfer line 200-W-78-PL. In Nov-2000 all bio intrusion was removed, the CA's were covered with bio-barrier material and gravel and reposted with Underground Radioactive Material signs and assigned to 200-W-78-PL.

In Jan-2015 a new walk down of the area resulted in the CA assignments being changed to match the pipeline sitecodes that the zones are above (see figure page 3): 200-W-167, 200-W-166, and 200-W-175.



Construction

Original CA

- UPR-200-W-167 - Approx. 90,000 sq ft
- Marked as primary site area on the plan view (blue)

Subsequent CAs

- CA's are covered with bio-barrier material (type not located) and six inches of gravel
- Note: Documentation from field visits indicate discrete locations with the following approximate extent of contamination:
- 1) 200-W-166 CA - Approx. 50 sq ft
- 2) 200-W-167 CA - Approx. 1,600 sq ft
- 3) 200-W-175 CA - Approx. 12,000 sq ft

Features of Interest

- None

Relevant Characterization

- 200-W-175 CA - Deep-rooted vegetation, highest reading was 54,000 dpm/100cm beta/gamma direct with no alpha contamination detected
- 200-W-166 CA - Bio intrusion was previously suspected from ants, which were exterminated in 1998. On Oct-2-2000, a survey of the area was conducted and no contamination was detected

Waste Streams

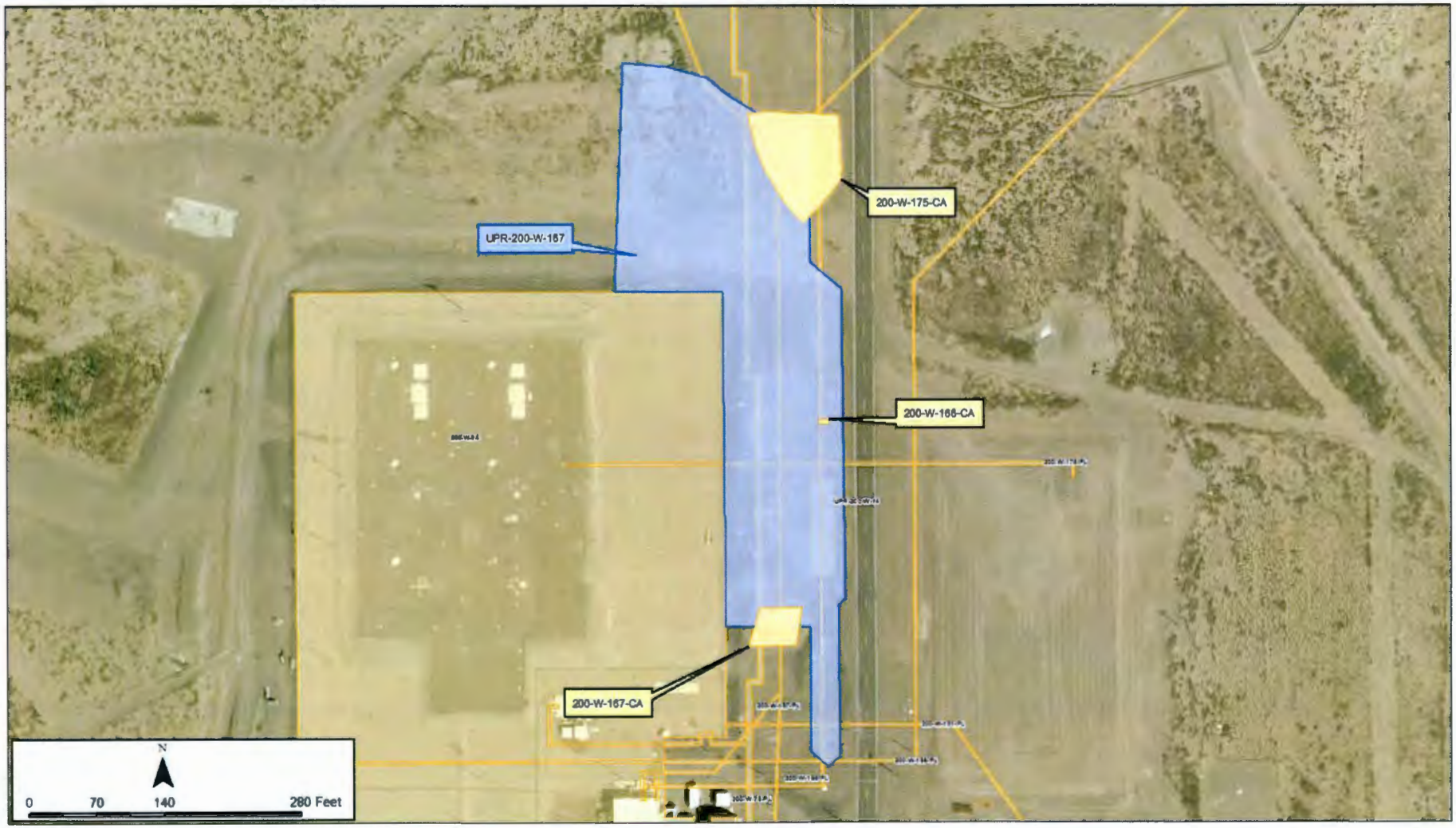
- With no clear contamination source(s) determined, waste stream could not be defined

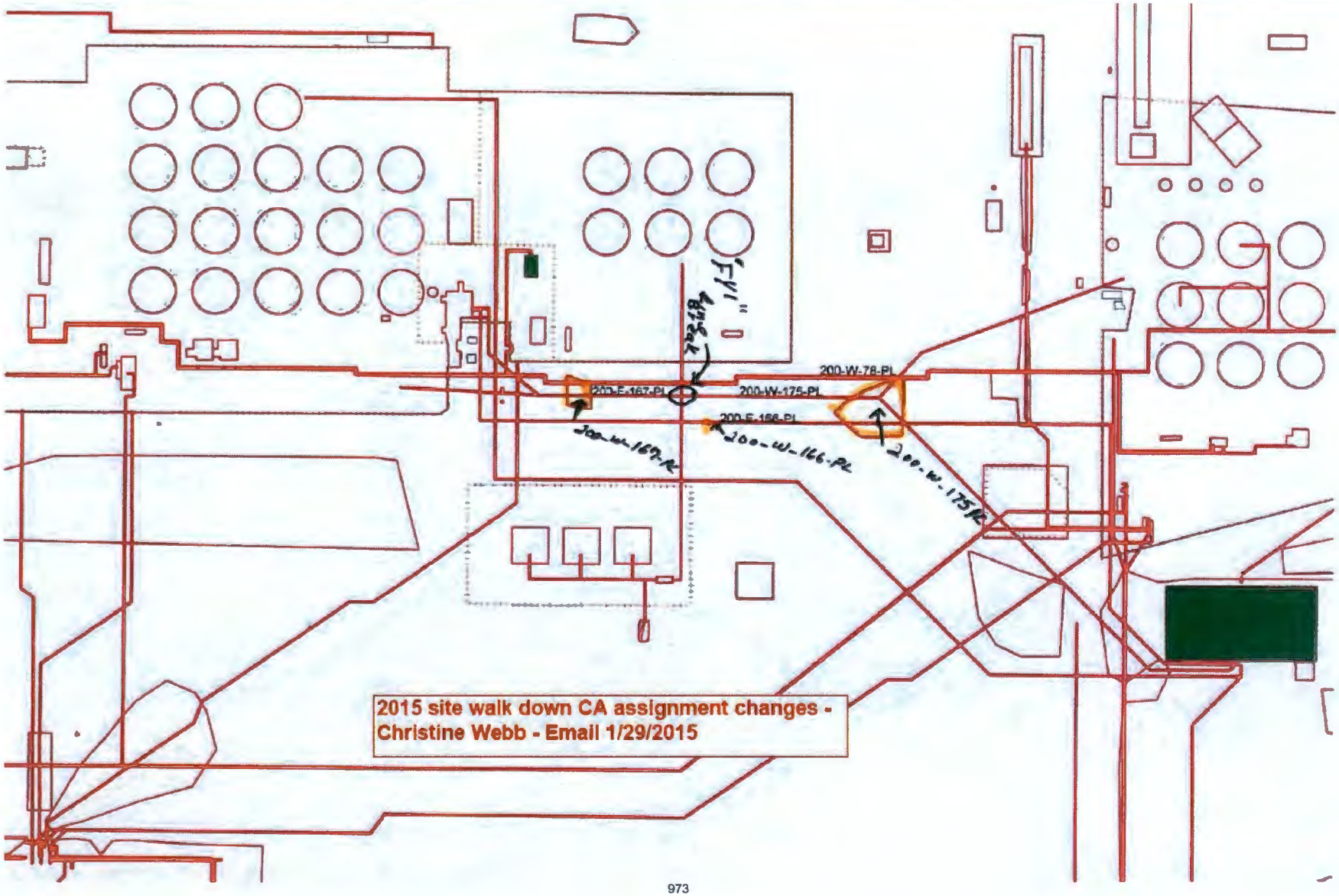
Misc./Other Relevant Information

- In Apr-2001, a fourth subsequent CA was identified near 200-W-78-PL with no evidence of an association to the pipeline, location was not found, documented as approx. 10 ft x 45 ft
- New site code assignments from the 2015 site walk down were found in a referenced email.

Site Interfaces

Origin/Termination	Site Intersects
N/A	200-IS-1 • 200-W-78-PL • 200-W-167-PL • 200-W-165-PL • 200-W-166-PL • 200-W-191-PL • 200-W-175-PL 200-WA-1 • UPR-200-W-14 WMA TX/TY • 200-W-94 Tank Farm


200-W-175-CA
UPR-200-W-167
200-W-166-CA
200-W-167-CA
N
0
70
140
280 Feet


200-W-78-PL
200-E-167-PL
200-W-175-PL
200-E-166-PL
200-W-167-PL
200-W-166-PL
200-W-175-PL
2015 site walk down CA assignment changes - Christine Webb - Email 1/29/2015

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