AR TARGET SHEET

The following document was too large to scan as one unit, therefore, it has been divided into sections.

EDMC#:	0074017
SECTION:	2 OF 2
DOCUMENT #:	DOE/RL-2006-51
TITLE:	Remedial Investigation Report for Plutonium/Organic-Rich Process Condensate/Process Waste Group OU: Includes 200-PW-1, 200-PW-3, and 200-PW-6 OUs

Figure 3-1. Topographic Map of the Hanford Site.

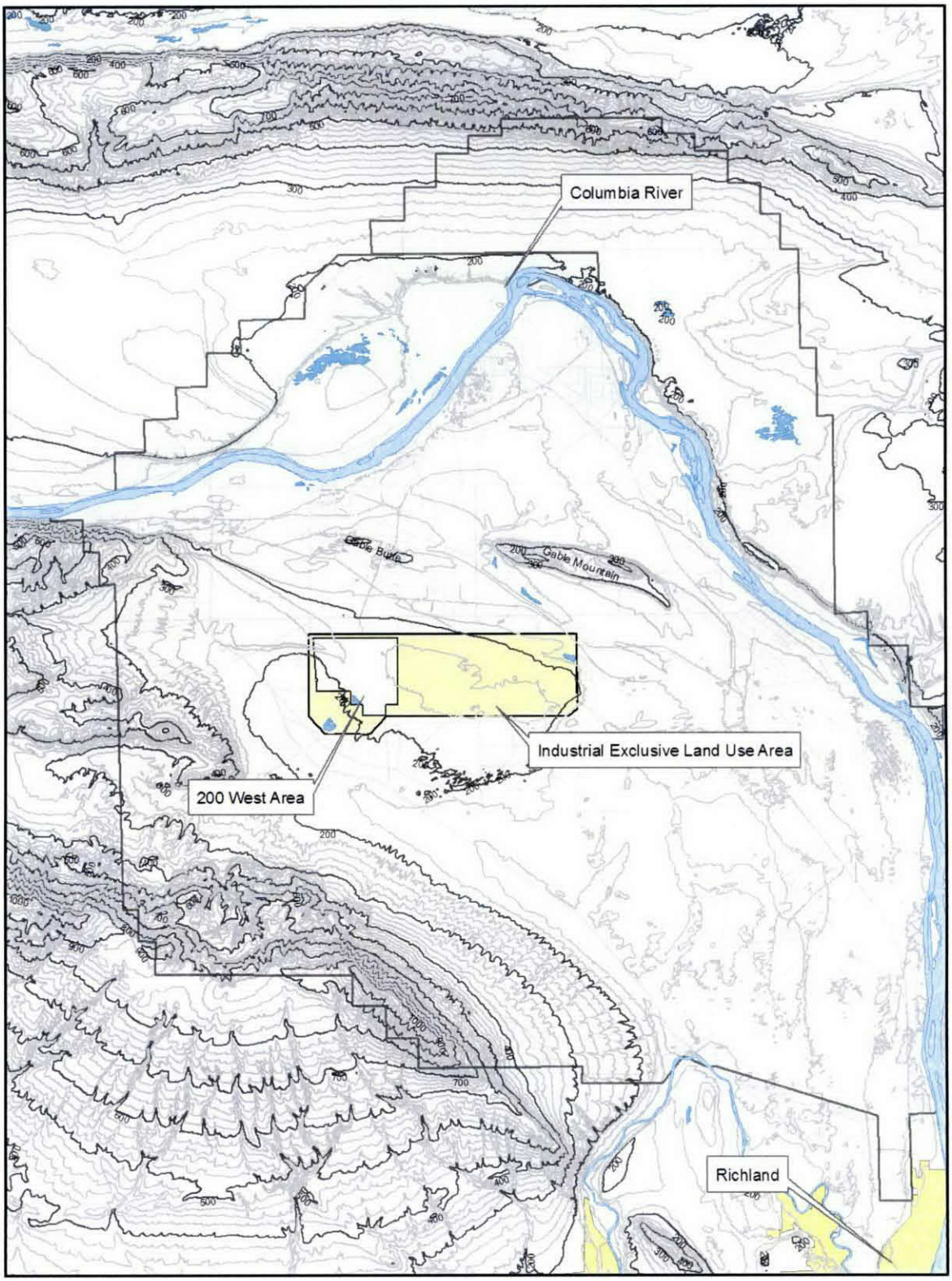
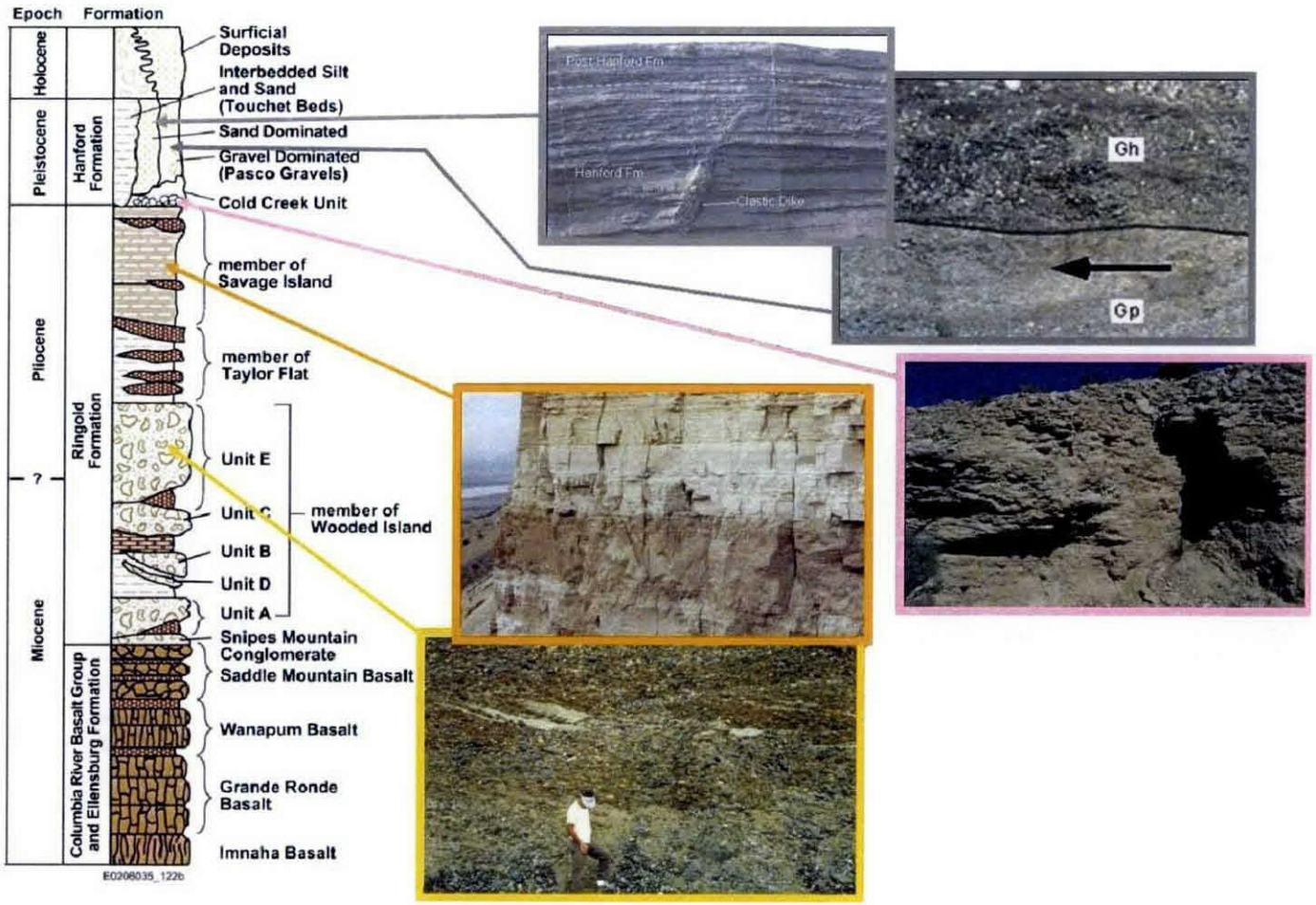


Figure 3-2. Major Geologic Units of Interest in the 200 Areas.

(After DOE/RL-2002-39)



NOTE: Gh = horizontally bedded, Gp = foreset-bedded

Figure 3-3. Generalized Stratigraphic Column for the 200 Areas.

(Modified from PNNL-15731)

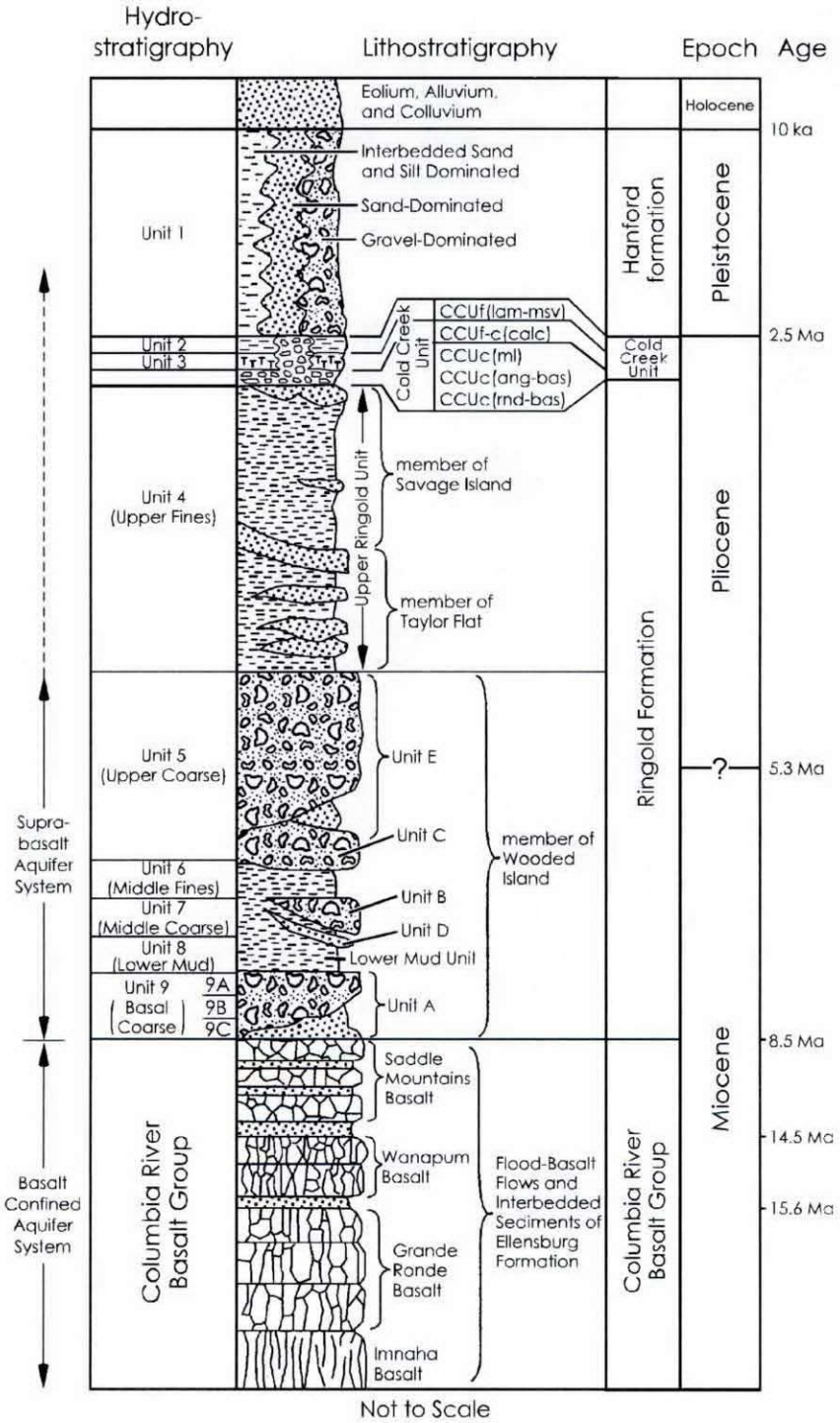


Figure 3-4. Water-Table Map of the 200 East Area, July 2006.

(From PNNL-16346)

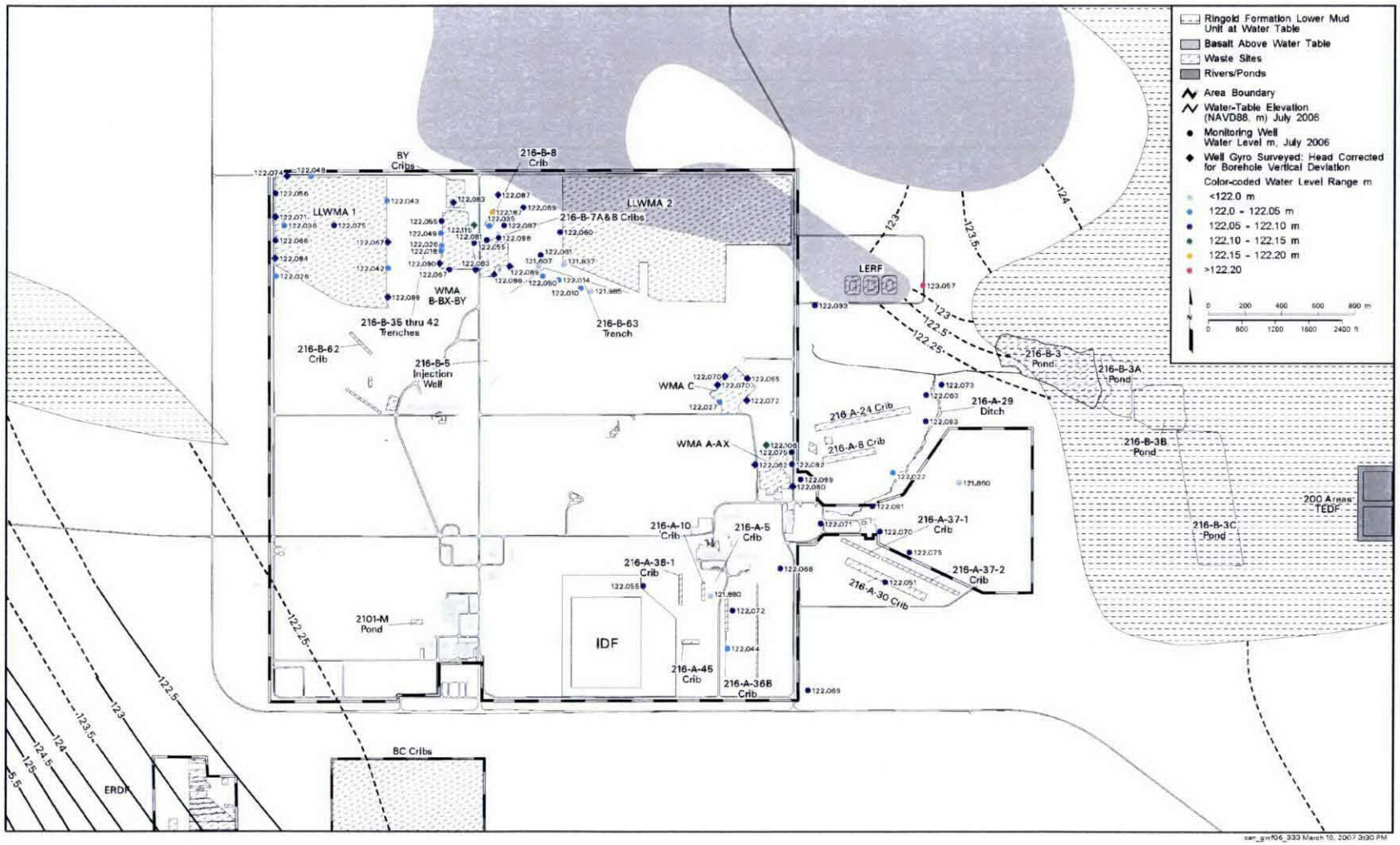


Figure 3-5. Water-Table Map of the 200 West Area, April/May 2006.
(From PNNL-16346)

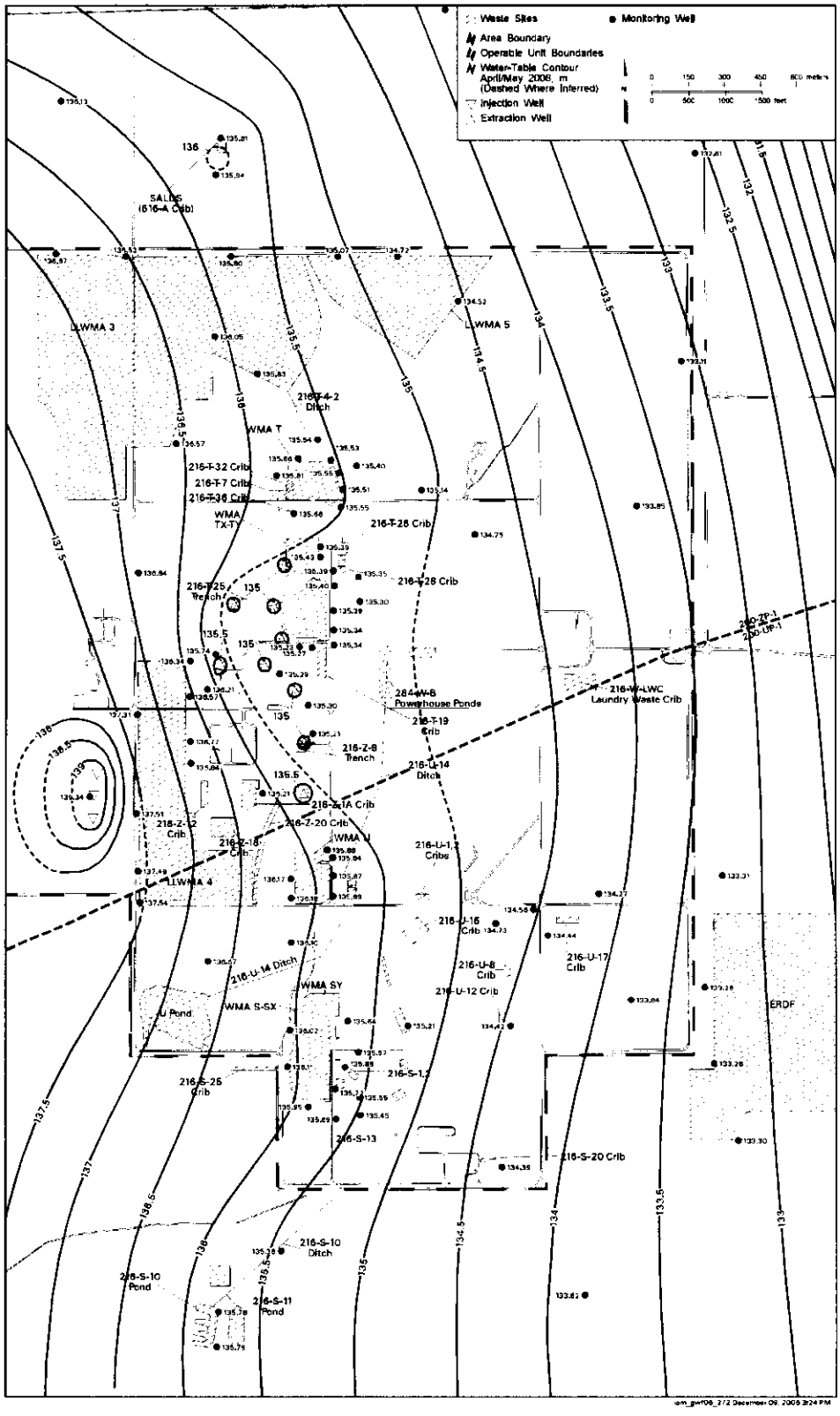


Figure 3-6. Stratigraphy of Well 299-W18-7 at the 216-Z-1A Tile Field.

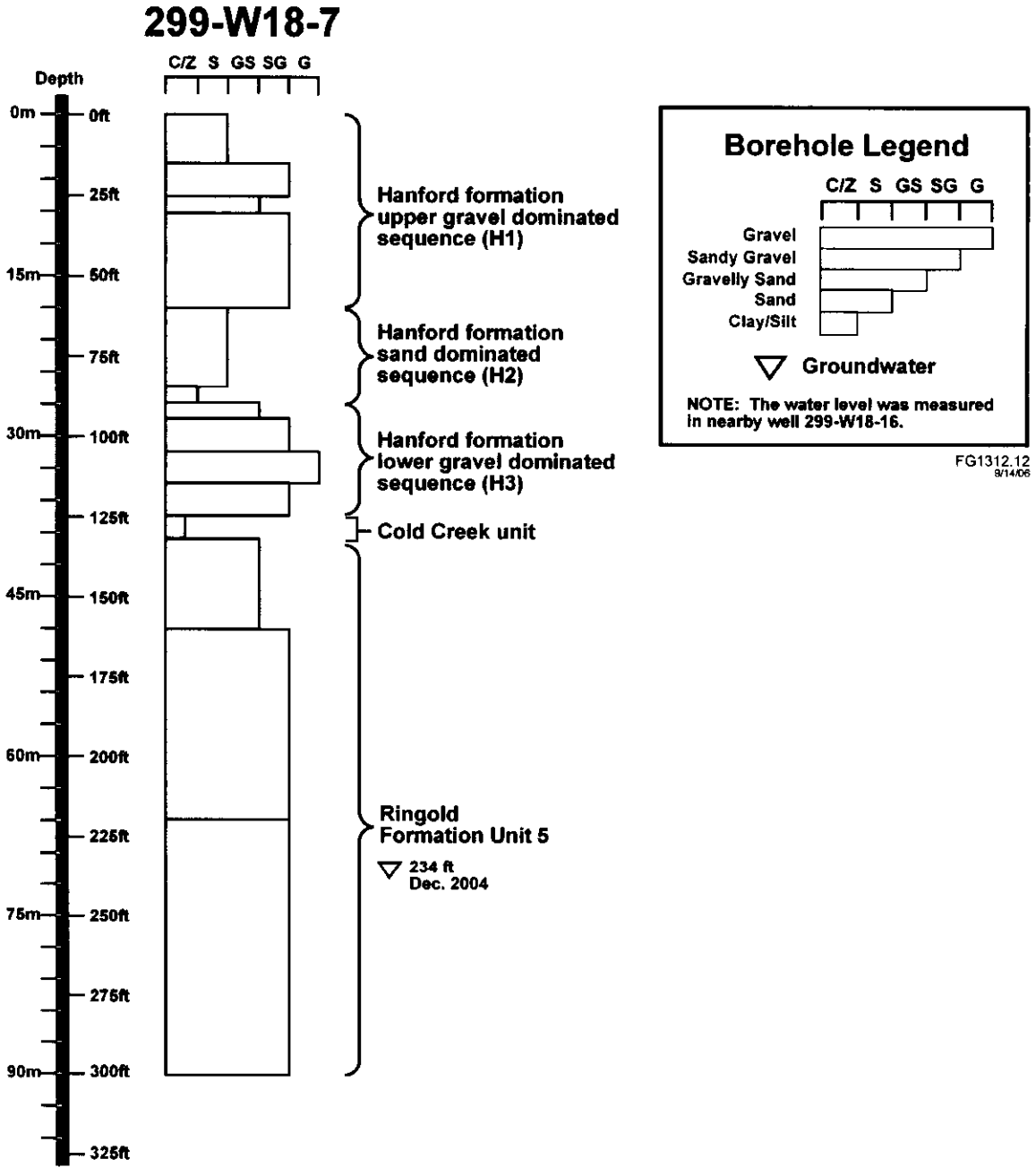


Figure 3-7. Stratigraphy of Borehole C3426 at the 216-Z-9 Trench.

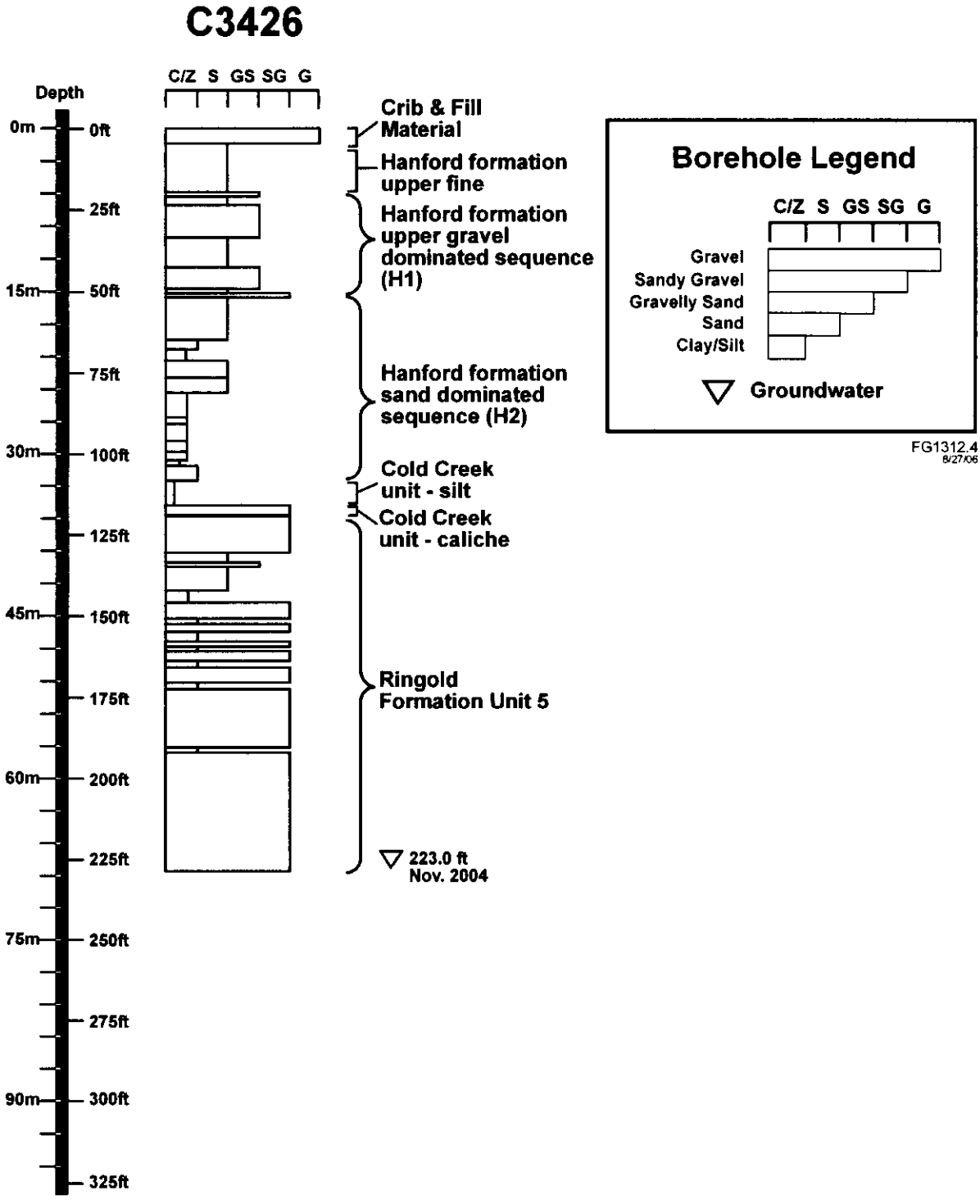


Figure 3-8. Stratigraphy of Borehole C3427 at the 216-Z-9 Trench.

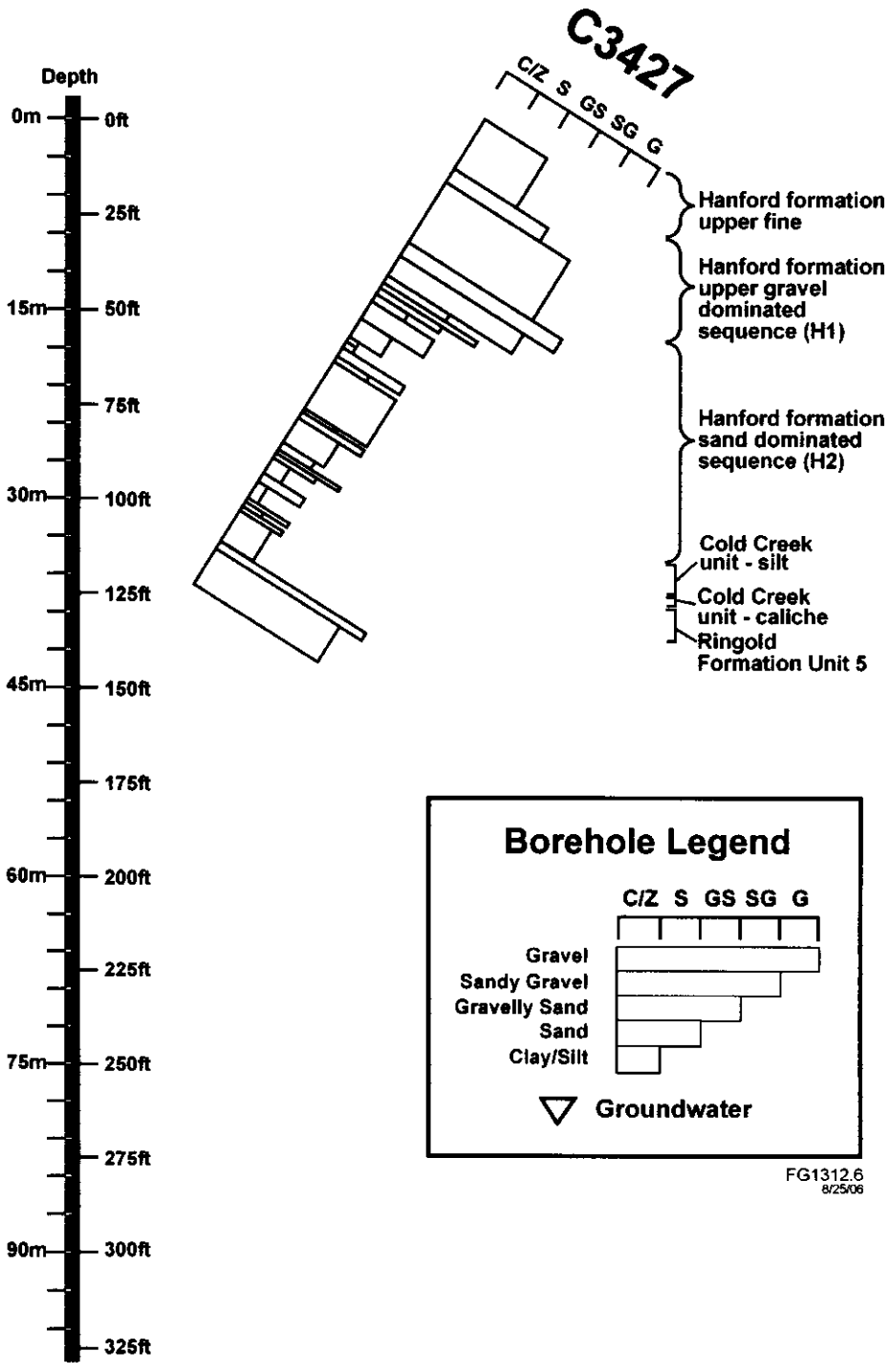
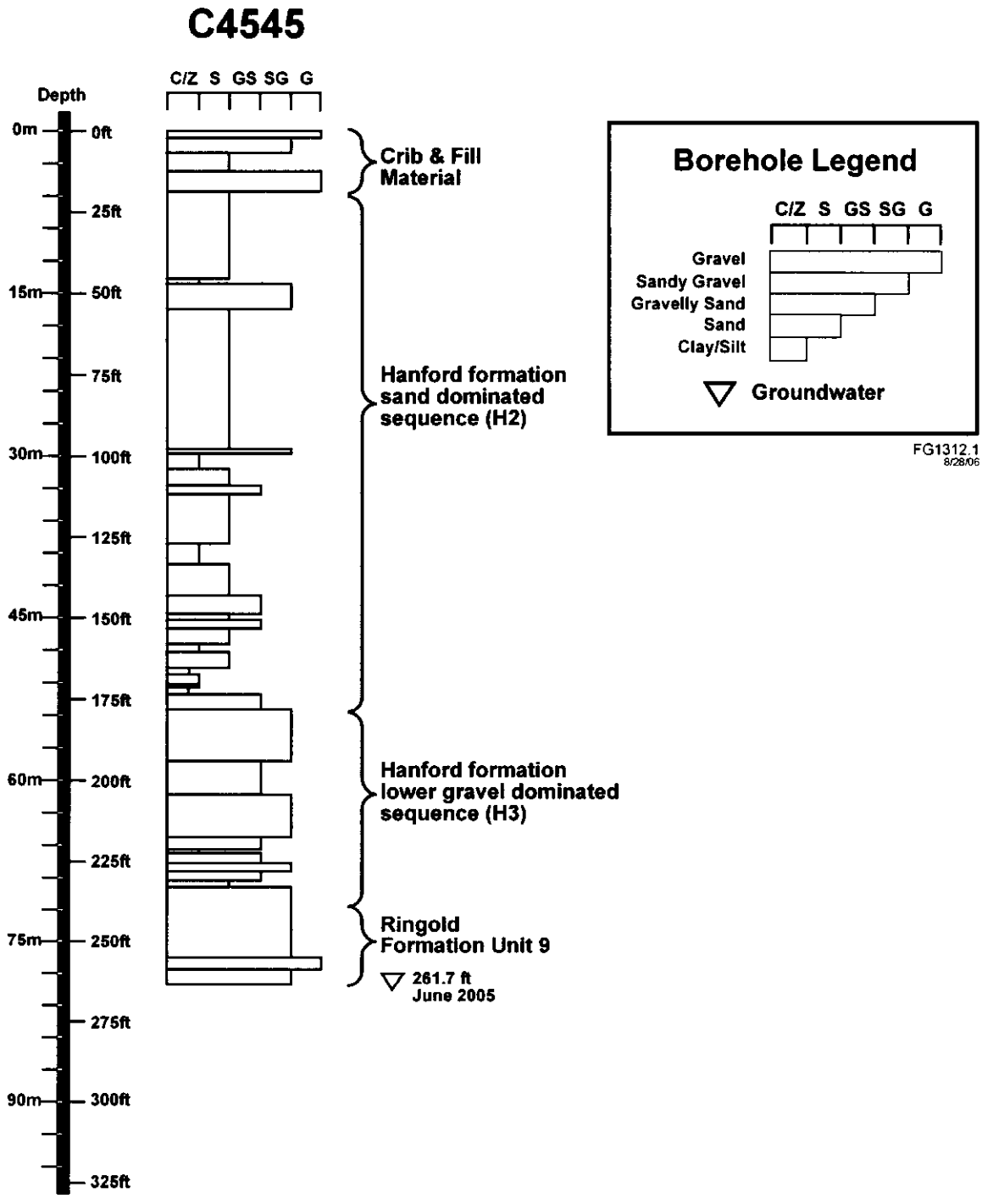


Figure 3-9. Stratigraphy of Borehole C4545 at the 216-A-8 Crib.



This page intentionally left blank.

Figure 3-10. 216-Z-9 Trench Contaminant Distribution Mode.

200-PW-1 Operable Unit
Waste Type: Process Waste

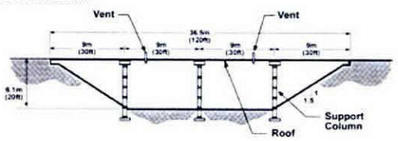
216-Z-9 Trench

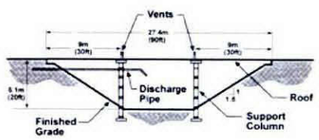
PFP Zone

History

The 216-Z-9 Trench is an enclosed, below-grade trench that was used from 1955 to 1962 for disposal of Z Plant RECUPLEX aqueous and organic liquid waste. Carbon tetrachloride was received in the aqueous phase liquid and, mixed with other organics, as a dense, non-aqueous phase liquid (DNAPL). In 1976 and 1977, the upper 0.3 m (1 ft) of the trench floor was mined to reduce the amount of plutonium in the trench; after mining, 38 to 48 kilograms (84 to 106 pounds) of plutonium were estimated to remain in the soils beneath the trench. Soil vapor extraction has been ongoing at the 216-Z-9 Trench since 1993 to remove carbon tetrachloride from the vadose zone.

CONSTRUCTION: The site is a rectangular, enclosed trench with a concrete cover supported by six columns. The trench is 18 by 9 m (60 by 30 ft) at the bottom and 6 m (21 ft) deep. The underside of the concrete cover was lined with acid resistant bricks. Two stainless steel pipes discharged effluent above the trench bottom.





WASTE VOLUME: 4,090,000 L (1,081,000 gal) (RHO-LD-114)

DURATION: 1955 to 1962

DISCHARGED INVENTORY:

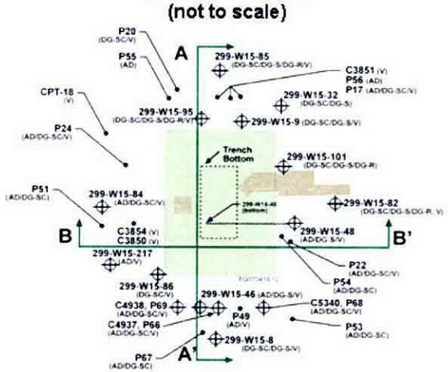
Plutonium	38-48 kg (remaining) (RHO-ST-21)
Americium-241	2.5 kg (RHO-LD-114)
Carbon tetrachloride	83,000 to 300,000 L (DOE/RL-91-32)
Tributyl phosphate	27,900 L (WHC-SD-EN-TI-248)
Dibutylbutyl phosphonate	46,500 L (WHC-SD-EN-TI-248)
Lard oil	9,300 L (WHC-SD-EN-TI-248)
Nitrate	1,361,000 kg (HNF-31792)

REFERENCES:
WIDS general summary reports
ARH-2915
RHO-ST-21
RHO-LD-114
PNNL-16103
PNNL-11978
DOE/RL-91-32
WHC-SD-EN-TI-248
BHI-00431
SGW-33746
HNF-31792

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics - Scintillation (DG-SC)
- Downhole Geophysics - Radionuclide Logging System (DG-R)
- Soil Sampling Analytical Data (AD)
- Vapor Sampling Data (V)

Site Plan View
(not to scale)



Characterization Summary

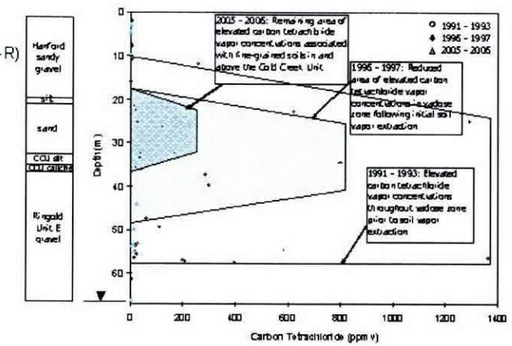
Wells were installed around the 216-Z-9 Trench beginning in the 1950s to monitor contaminant migration. Many of these wells have been geophysically logged. Characterization was conducted in 1961, 1963, and 1973 to evaluate the plutonium and americium in the trench (ARH-2915). Characterization was conducted in 1991 to 1993 to support soil vapor extraction activities. A DNAPL investigation conducted on the northeast corner of the 216-Z-9 Trench in 1995 detected no DNAPL in well 299-W15-32 (BHI-00431). Remedial investigation activities conducted at the trench included sampling from one deep well (299-W15-46) and one slant well (299-W15-48) and a phased carbon tetrachloride investigation. DNAPL was identified in a silt lens 20 m (65 ft) bgs south of the trench.

LEGEND

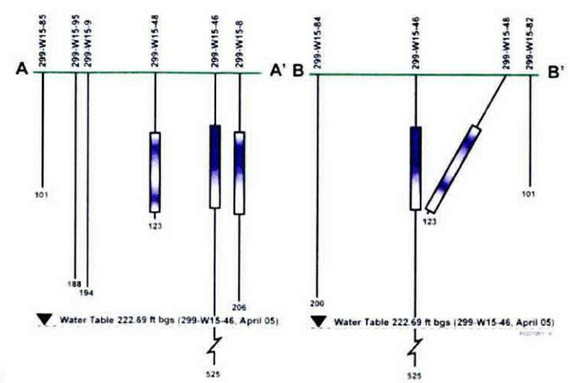
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

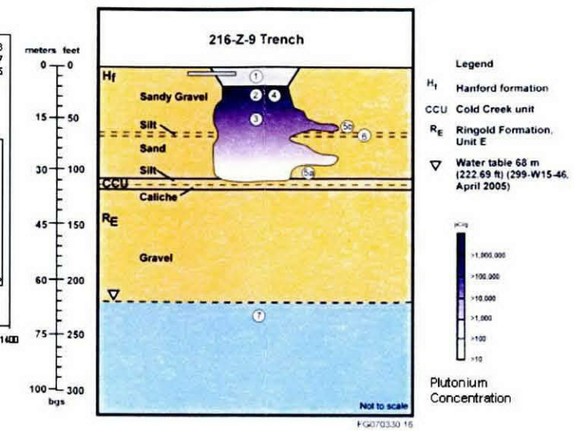
Carbon Tetrachloride Vapor Distribution



Site Section Views
(not to scale, units in feet bgs)



Contaminant Distribution Model



1. At the 216-Z-9 Trench, more than 4 million liters of plutonium/organic-rich process wastes were discharged between 1955 and 1962.
2. Effluent containing contaminants was discharged at the bottom of the unlined 216-Z-9 Trench. The trench floor slopes slightly to the south.
3. The wetting front and contaminants moved vertically beneath the trench. Lateral spreading of liquids is associated mainly with the Hanford gravel and sand contact, the Cold Creek unit, or fine-grained lenses in the Hanford or Ringold formations. In addition, vapor phase carbon tetrachloride migrated vertically and laterally beneath and around the trench, but has been considerably reduced by soil vapor extraction operations started in 1993 (see vapor distribution chart at left).
4. Constituents with large distribution coefficients, such as americium and plutonium, sorb to soils resulting in higher concentrations near the bottom of the trench. Concentrations generally decrease with depth. However, these contaminants were detected to depths up to 36.9 m (121 ft) bgs beneath the trench, indicating that plutonium and americium mobility was enhanced in the presence of the organic and acidic liquid wastes.
5. Carbon tetrachloride is present throughout the vadose zone beneath the 216-Z-9 Trench. As determined from sample data, carbon tetrachloride exists as vapor (5A), as a DNAPL near the Hanford gravel/sand contact on the south side (5B), and as a dissolved aqueous phase and/or sorbed phase in soil.
6. The highest concentrations of detected carbon tetrachloride are associated with silts in a thin lens at 20 m (65 ft) bgs.
7. Carbon tetrachloride has impacted the groundwater; impacts may have been associated with vapor, aqueous liquid, and/or organic liquid phases. In addition, carbon tetrachloride may have been dissolved in aqueous waste effluent from nearby facilities and subsequently been transported to groundwater. Plutonium and americium have been detected at low concentrations in the groundwater collected from one well near the trench. Older boreholes, and possibly clastic dikes, may have provided preferential pathways through the vadose zone.

200-PW-1FS.216-Z-9.08/28/07

Figure 3-11. Soil-Sampling Intervals, Lithology, Field-Screening Measurements, and Borehole Geophysical Logs from Borehole C3426 at the 216-Z-9 Trench.

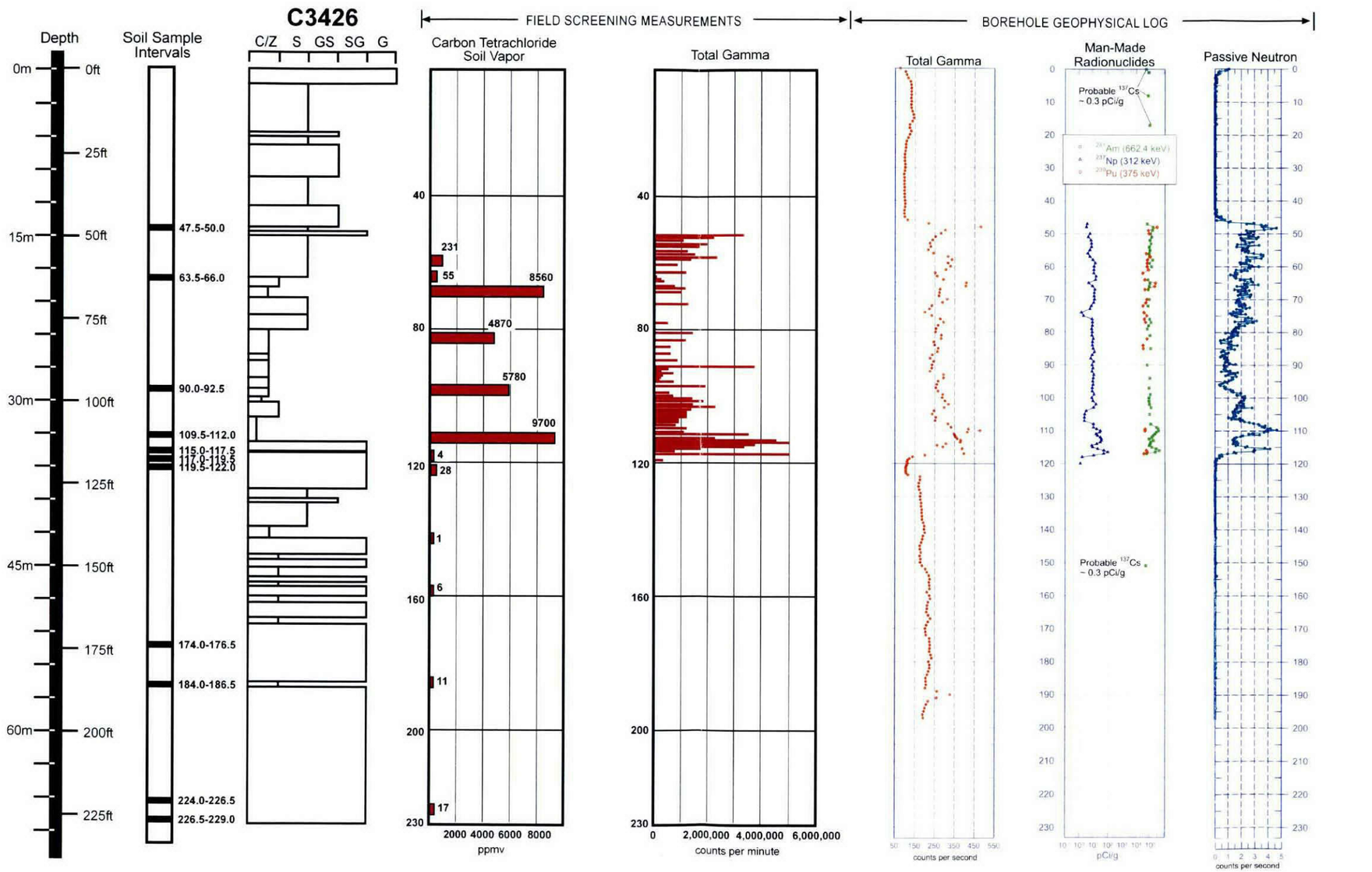
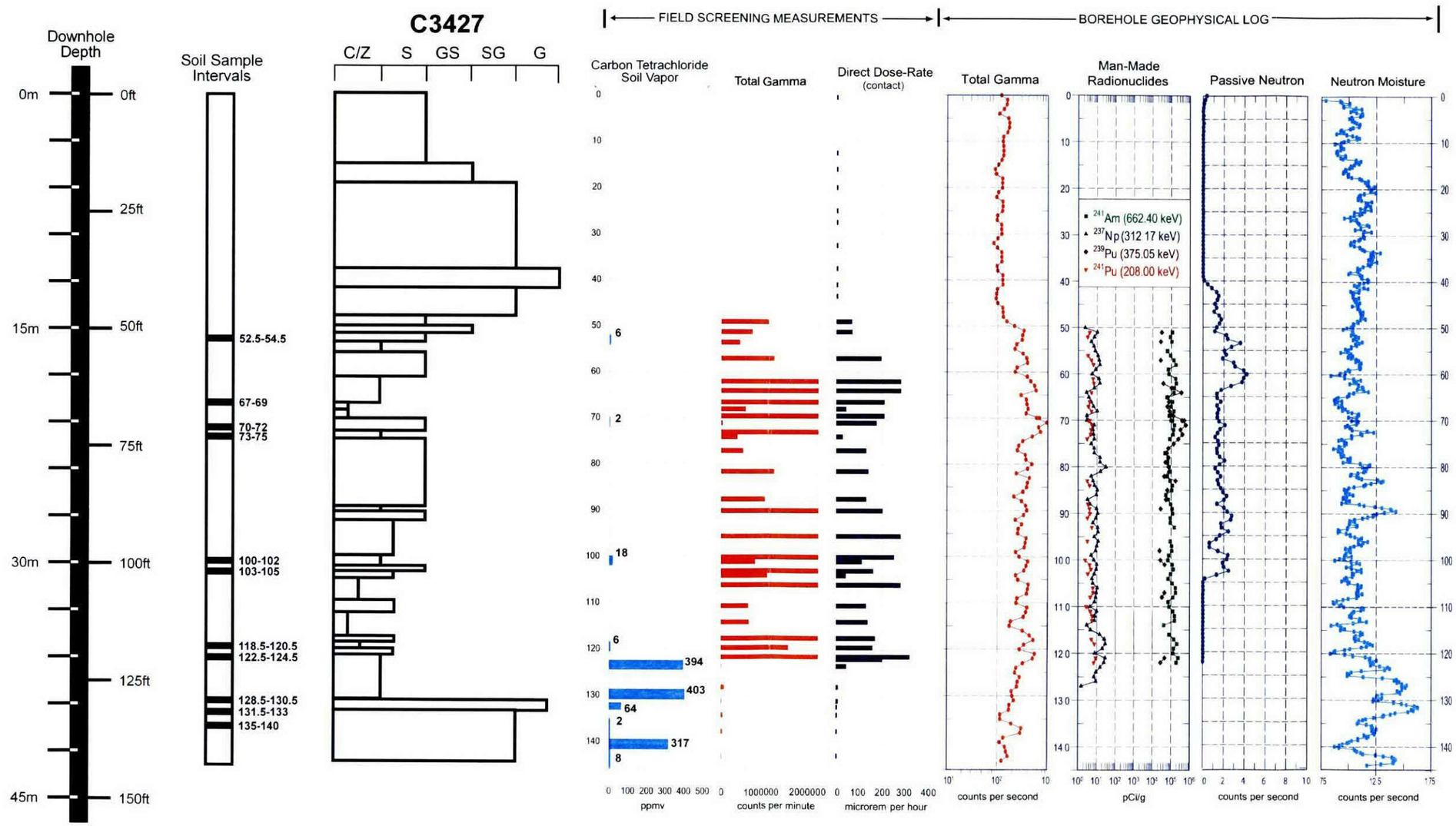
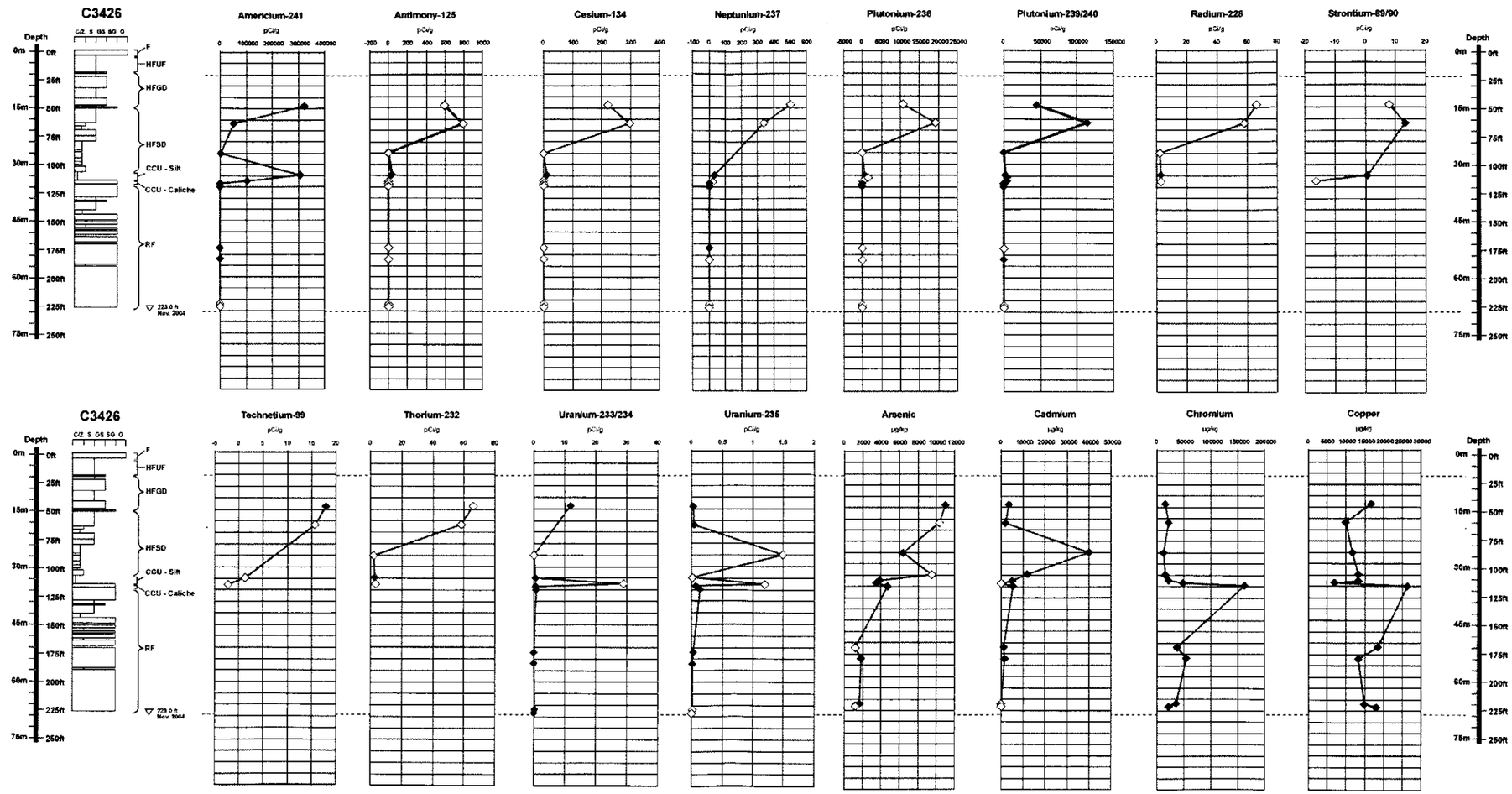


Figure 3-12. Soil-Sampling Intervals, Lithology, Field-Screening Measurements, and Borehole Geophysical Logs from Borehole C3427 at the 216-Z-9 Trench.



NOTE: C3427 was a slant borehole; all depths are measured downhole.

Figure 3-13. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern Above Background Levels from Borehole C3426 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 Trench - C3426			
F	- Fill		
HFUF	- Hanford formation upper fine		
HFGD	- Hanford formation Gravel Dominated (H1)		
HFSD	- Hanford formation Sand Dominated (H2)		
CCU	- Cold Creek unit		
CCUz	- Cold Creek unit silt		
CCUc	- Cold Creek unit caliche		
RF	- Ringold Formation Unit 5		

200-PW-1 OU Representative Sites Radiological COPCs

COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

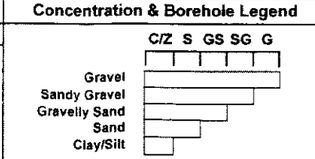
200-PW-1 OU Representative Sites Nonradiological COPCs

COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	--	Phosphate	0.79***
Cadmium	–	Silver	0.73	Sulfate	237
Chromium (III)	18.5			***Volatile Organics***	NA
Chromium (VI)	NA	***General Inorganics***			
Copper	22.0	Ammonia/Ammonium	9.23*	***Semivolatile Organics***	NA
Lead	10.2	Chloride	100		

COPC = contaminant of potential concern.
NA = no reference source available.
– = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

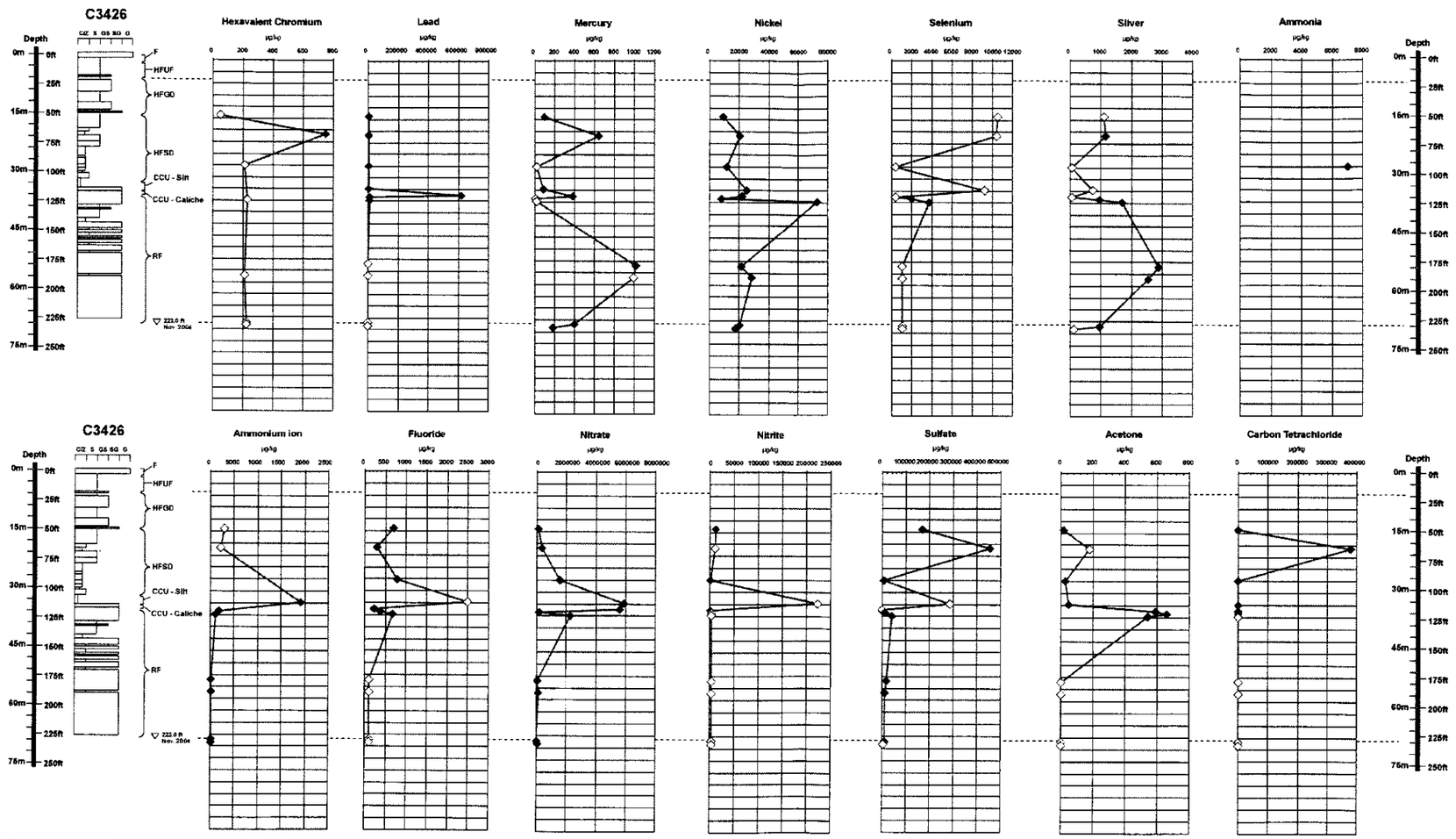
** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend



FG1312.5

Figure 3-13. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern above Background Levels from Borehole C3426 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 Trench - C3426	
F	- Fill
HFUF	- Hanford formation upper fine
HFGD	- Hanford formation Gravel Dominated (H1)
HFSD	- Hanford formation Sand Dominated (H2)
CCU	- Cold Creek unit
CCUz	- Cold Creek unit silt
CCUc	- Cold Creek unit caliche
RF	- Ringold Formation Unit 5

200-PW-1 OU Representative Sites Radiological COPCs

COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

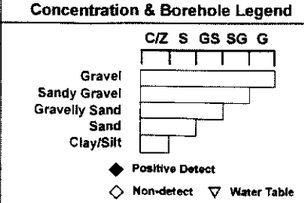
200-PW-1 OU Representative Sites Nonradiological COPCs

COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	--	Phosphate	0.79***
Cadmium	--	Silver	0.73	Sulfate	237
Chromium (III)	18.5			***Volatile Organics***	NA
Chromium (VI)	NA	***General Inorganics***			
Copper	22.0	Ammonia/Ammonium	9.23*	***Semivolatile Organics***	NA
Lead	10.2	Chloride	100		

COPC = contaminant of potential concern
NA = no reference source available
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

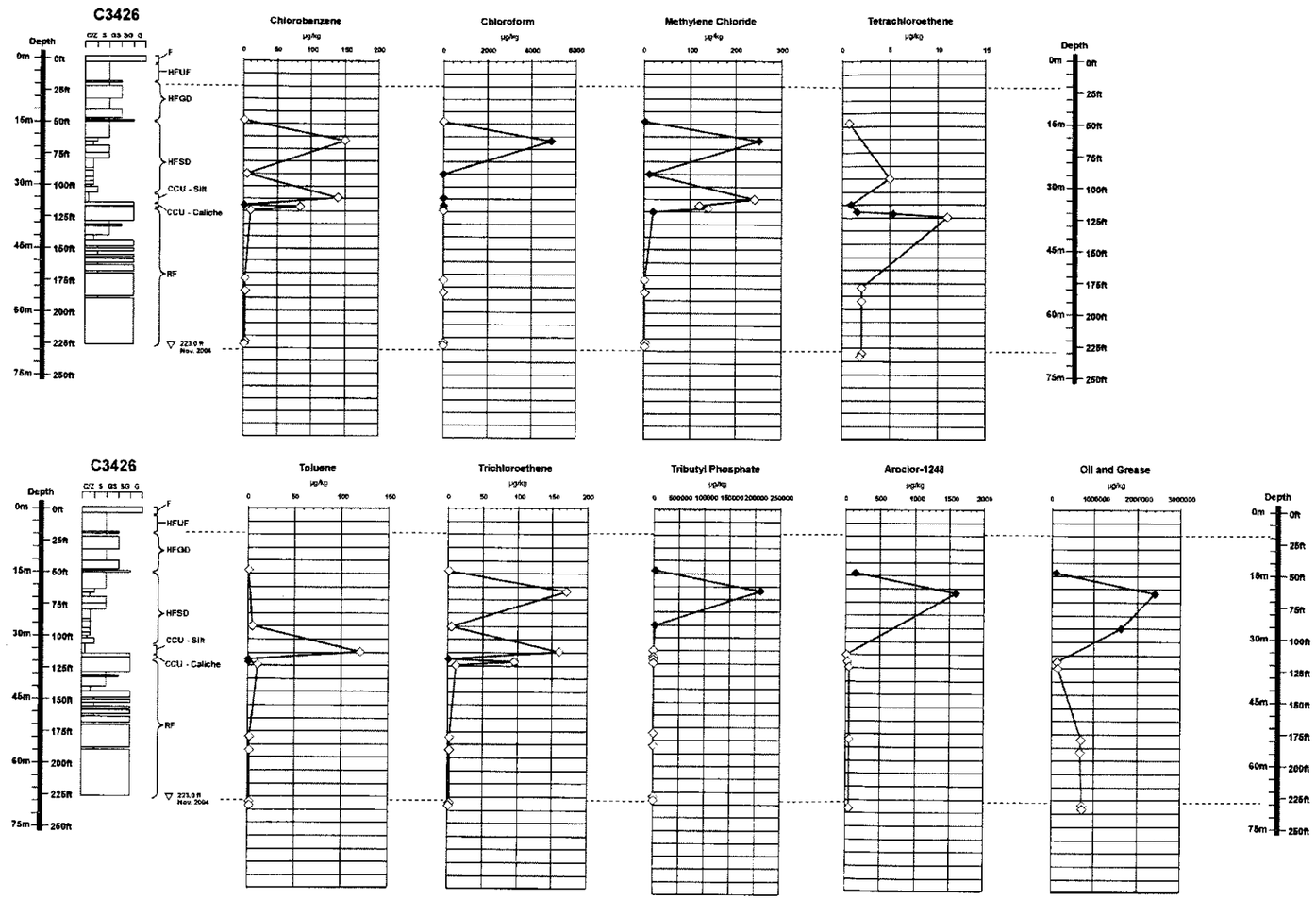
** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite.
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend



FG1312.6
7/31/07

Figure 3-13. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern above Background Levels from Borehole C3426 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 Trench - C3426	
F	- Fill
HFUF	- Hanford formation upper fine
HFGD	- Hanford formation Gravel Dominated (H1)
HFSD	- Hanford formation Sand Dominated (H2)
CCU	- Cold Creek unit
CCUz	- Cold Creek unit silt
CCUc	- Cold Creek unit caliche
RF	- Ringold Formation Unit 5

200-PW-1 OU Representative Sites Radiological COPCs

COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

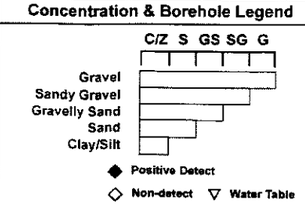
200-PW-1 OU Representative Sites Nonradiological COPCs

COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	–	Phosphate	0.79***
Cadmium	–	Silver	0.73	Sulfate	237
Chromium (III)	18.5				
Chromium (VI)	NA	***General Inorganics***		***Volatile Organics***	NA
Copper	22.0	Ammonia/Ammonium	9.23*		
Lead	10.2	Chloride	100	***Semivolatile Organics***	NA

COPC = contaminant of potential concern.
NA = no reference source available
– = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

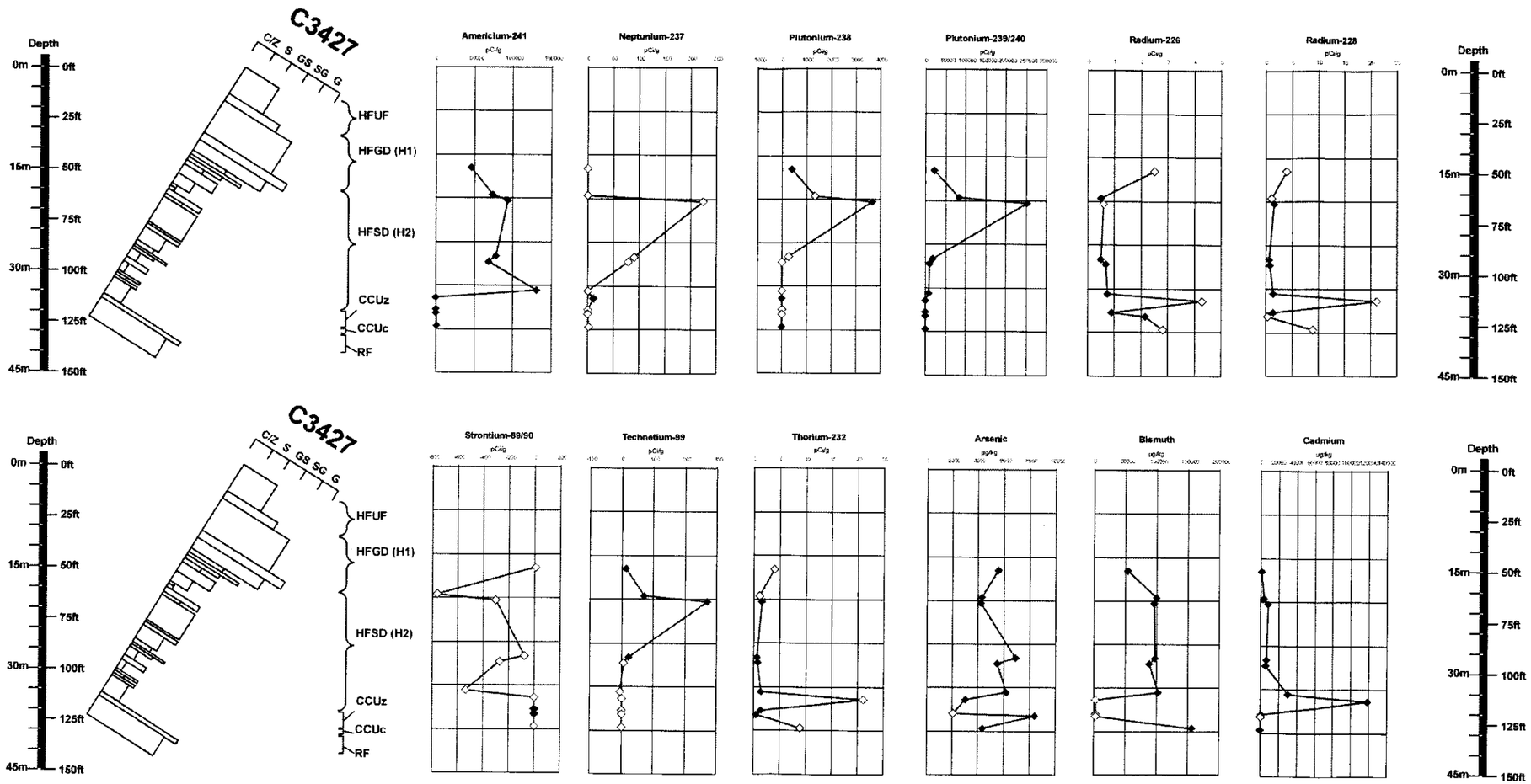
** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite.
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend



FG1312.7
7/31/07

Figure 3-14. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern above Background Levels from Borehole C3427 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 - C3427	
F	- Fill
HFUF	- Hanford formation upper fine
HFGD	- Hanford formation Gravel Dominated (H1)
HFSD	- Hanford formation Sand Dominated (H2)
CCU	- Cold Creek unit
CCUz	- Cold Creek unit silt
CCUc	- Cold Creek unit caliche
RF	- Ringold Formation Unit 5

200-PW-1 OU Representative Sites Radiological COPCs

COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

200-PW-1 OU Representative Sites Nonradiological COPCs

COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	--	Phosphate	0.79***
Cadmium	--	Silver	0.73	Sulfate	237
Chromium (III)	18.5				
Chromium (VI)	NA	***General Inorganics***		***Volatile Organics***	NA
Copper	22.0	Ammonia/Ammonium	9.23*		
Lead	10.2	Chloride	100	***Semivolatile Organics***	NA

COPC = contaminant of potential concern
NA = no reference source available
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

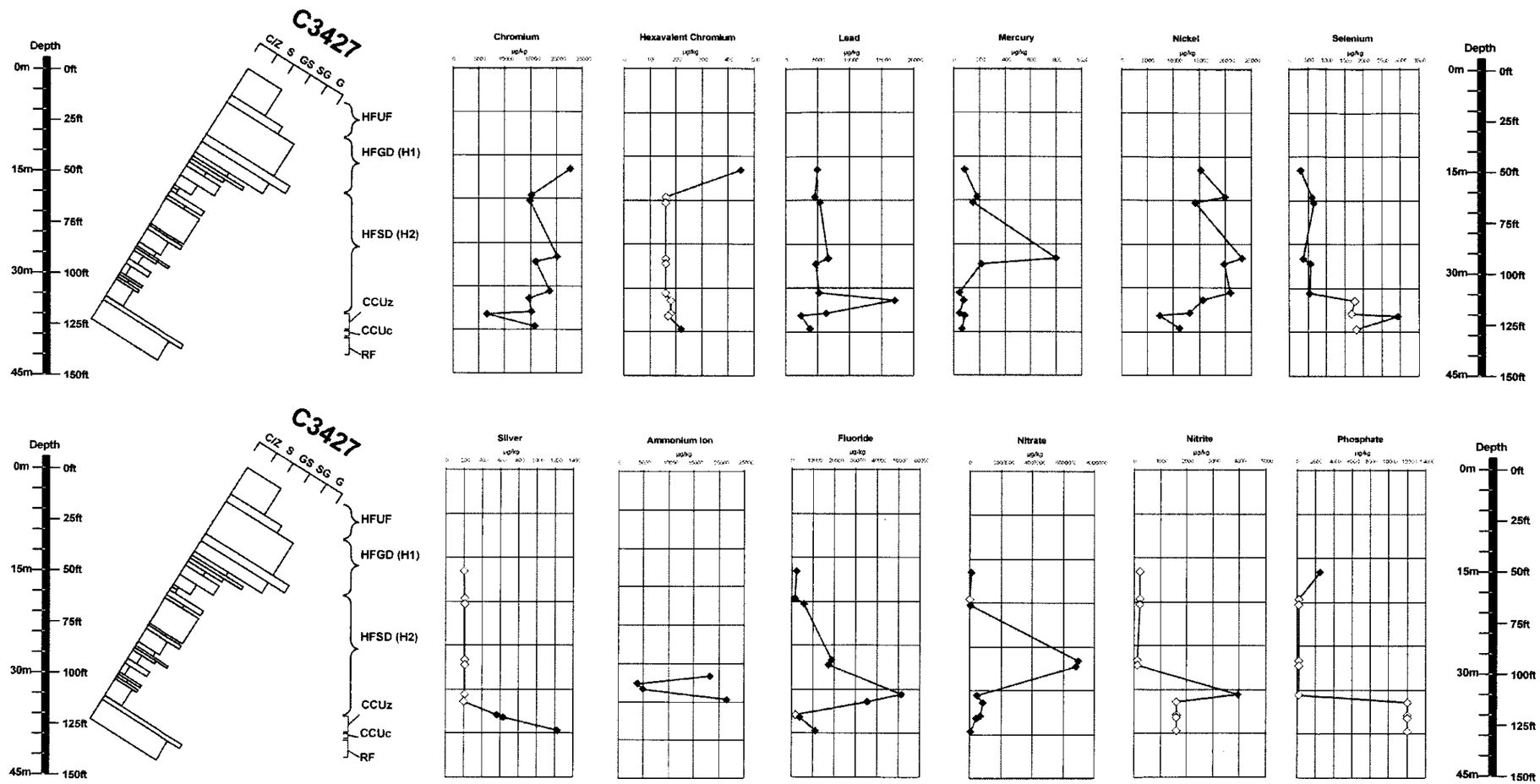
** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 6, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend

C/Z S GS SG G
Gravel
Sandy Gravel
Gravelly Sand
Sand
Clay/Silt
◆ Positive Detect
◇ Non-detect

FG1312.9
7/31/07

Figure 3-14. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern above Background Levels from Borehole C3427 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 - C3427											
F - Fill											
HFUF - Hanford formation upper fine											
HFGD - Hanford formation Gravel Dominated (H1)											
HFSD - Hanford formation Sand Dominated (H2)											
CCU - Cold Creek unit											
CCUz - Cold Creek unit silt											
CCUc - Cold Creek unit caliche											
RF - Ringold Formation Unit 5											

200-PW-1 OU Representative Sites Radiological COPCs			
COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

200-PW-1 OU Representative Sites Nonradiological COPCs					
COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	--	Phosphate	0.79***
Cadmium	--	Silver	0.73	Sulfate	237
Chromium (III)	18.5				
Chromium (VI)	NA	***General Inorganics***		***Volatile Organics***	NA
Copper	22.0	Ammonia/Ammonium	9.23*		
Lead	10.2	Chloride	100	***Semivolatile Organics***	NA

COPC = contaminant of potential concern
NA = no reference source available
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile
and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9.a, 95th percentile.

Concentration & Borehole Legend

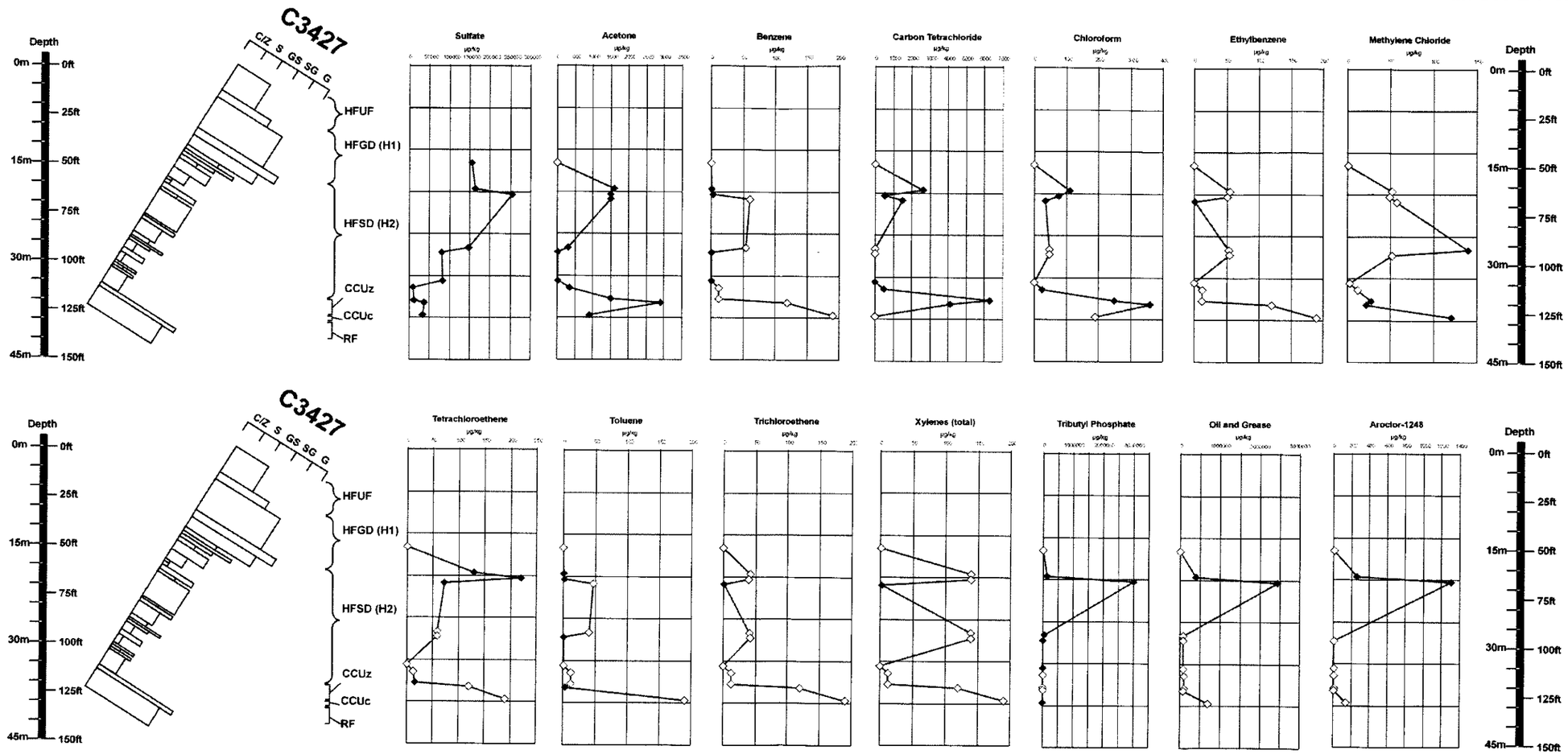
C/Z S GS SG G

Gravel
Sandy Gravel
Gravelly Sand
Sand
Clay/Silt

◆ Positive Detect
◇ Non-detect

FG1312.10
7/31/07

Figure 3-14. Vertical Concentration Profile Plots of the 200-PW-1 Operable Unit Contaminants of Potential Concern above Background Levels from Borehole C3427 at the 216-Z-9 Trench. (3 Pages)



216-Z-9 - C3427
F - Fill
HFUF - Hanford formation upper fine
HFGD - Hanford formation Gravel Dominated (H1)
HFSD - Hanford formation Sand Dominated (H2)
CCU - Cold Creek unit
CCUz - Cold Creek unit silt
CCUc - Cold Creek unit caliche
RF - Ringold Formation Unit 5

200-PW-1 OU Representative Sites Radiological COPCs

COPCs	Background (pCi/g)	COPCs	Background (pCi/g)
Americium-241	NA	Radium-226	0.815
Antimony-125	NA	Radium-228	NA
Cesium-134	NA	Strontium-90	NA
Cesium-137	NA	Technetium-99	NA
Cobalt-60	NA	Thorium-232	1.32
Hydrogen-3 (tritium)	NA	Uranium-234	1.1
Neptunium-237	NA	Uranium-235	0.109
Plutonium-238	NA	Uranium-238	1.06
Plutonium-239/240	NA		

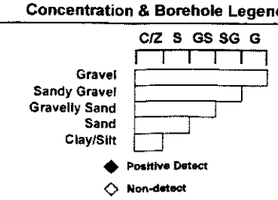
200-PW-1 OU Representative Sites Nonradiological COPCs

COPCs	Background (mg/kg)	COPCs	Background (mg/kg)	COPCs	Background (mg/kg)
Metals		Mercury	0.33	Fluoride	2.81
Arsenic	6.47	Nickel	19.1	Nitrate/Nitrite	52**
Bismuth	NA	Selenium	--	Phosphate	0.79***
Cadmium	--	Silver	0.73	Sulfate	237
Chromium (III)	18.5				
Chromium (VI)	NA	***General Inorganics***		***Volatile Organics***	NA
Copper	22.0	Ammonia/Ammonium	9.23*		
Lead	10.2	Chloride	100	***Semivolatile Organics***	NA

COPC = contaminant of potential concern
NA = no reference source available
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
* = Value provided for ammonia. No value available for ammonium

** = Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite
*** = Value provided for O-phosphate
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend



FG1312.11
7/31/07

Figure 3-15. Carbon Tetrachloride Vapor Concentration Profiles for Boreholes C3426 and C3427.

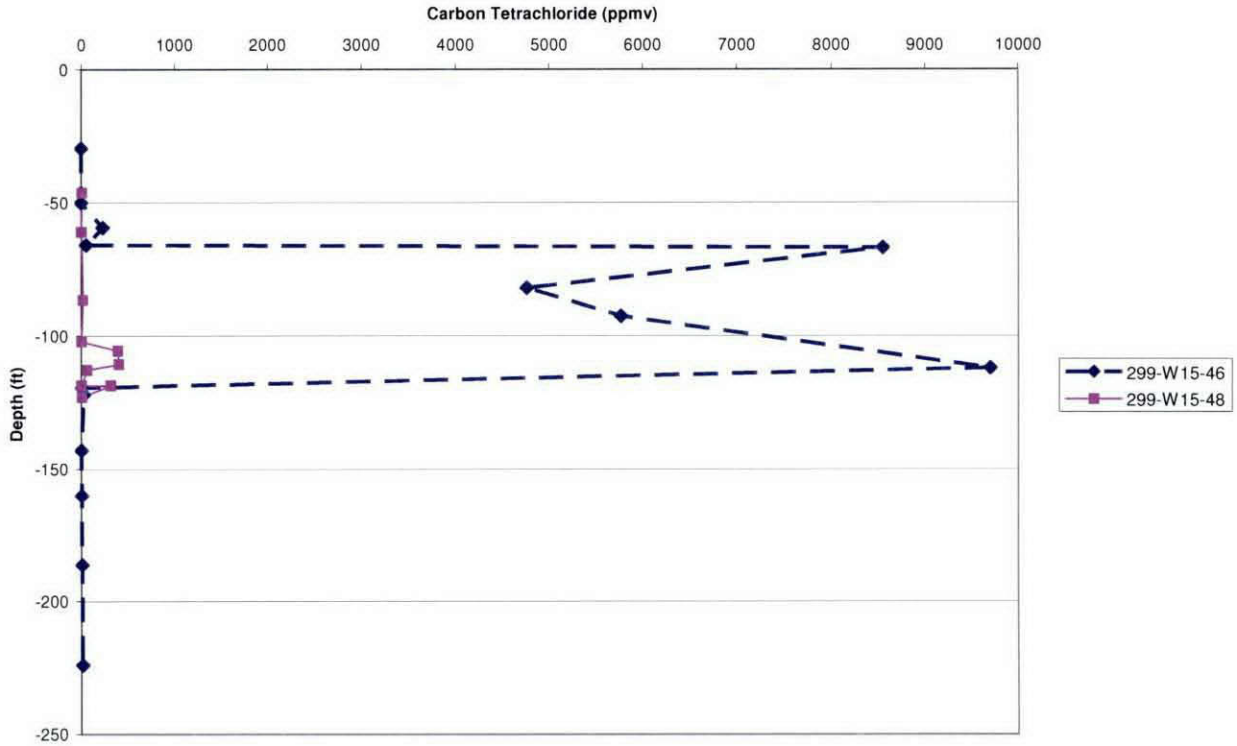


Figure 3-16. Chloroform Vapor Concentration Profiles for Boreholes C3426 and C3427.

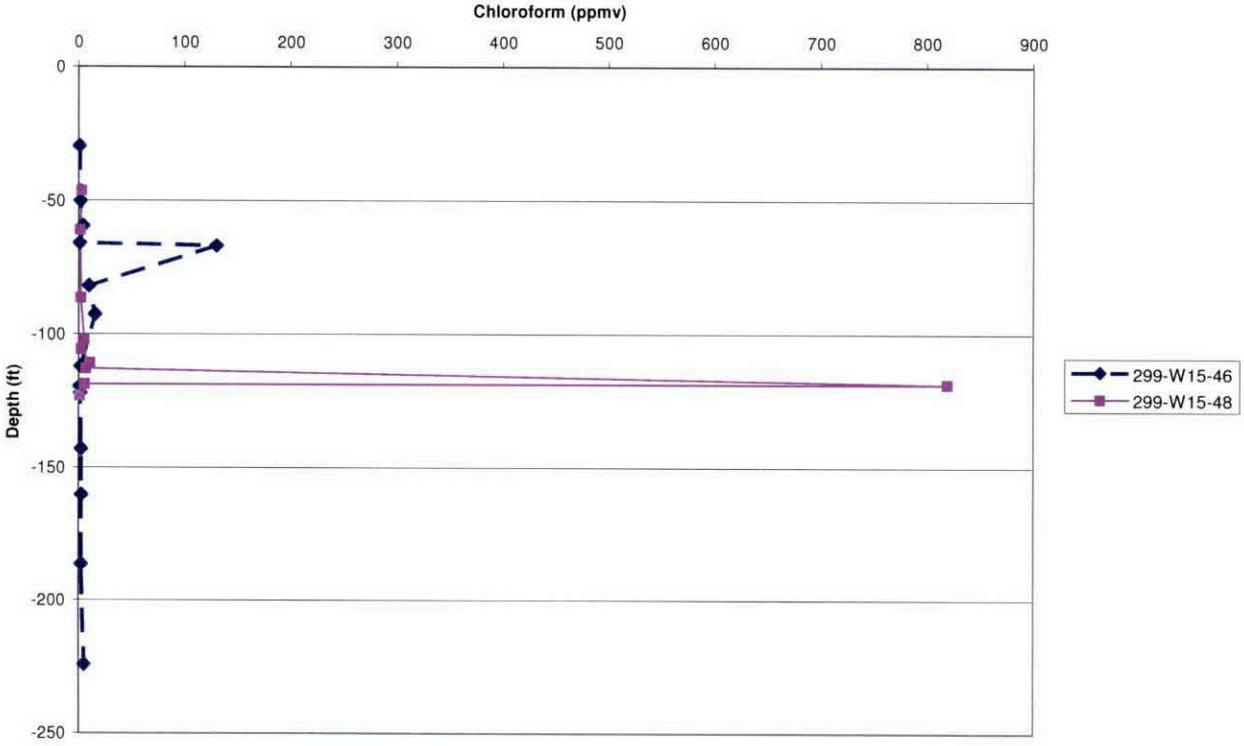


Figure 3-17. 216-Z-1A Tile Field Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

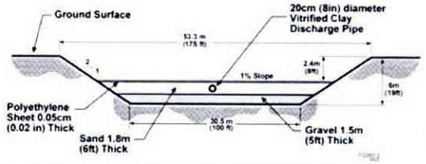
216-Z-1A Tile Field

PFP Zone

History

The 216-Z-1A Tile Field was a liquid waste site that was used to dispose of aqueous and organic liquid waste generated at the Plutonium Finishing Plant. The waste streams included overflow from the 216-Z-1, 216-Z-2, and 216-Z-3 Cribs, which received process and laboratory waste from 1949 to 1959, and 236-Z plutonium recovery waste and 242-Z americium recovery waste discharged directly to the tile field from 1964 to 1969. Carbon tetrachloride was received in the aqueous phase liquid and, mixed with other organics, as a dense, non-aqueous phase liquid (DNAPL) from 1964 to 1969. The site was deactivated in 1969 by plugging facility discharge piping to the tile field when plutonium recovery waste was diverted to the 216-Z-18 Crib. Soil vapor extraction has been ongoing at the site since 1992 to remove carbon tetrachloride from the vadose zone.

CONSTRUCTION: The 216-Z-1A Tile Field consists of a 30 m (100 ft) wide, 79 m (260 ft) long, and 5.8 m (19 ft) deep excavation. The 20-cm (8-in) diameter vitrified clay distribution pipes lie on a 1.5-m (5-ft) thick gravel bed, 4.3 m (14 ft) bgs. The distribution pipes are covered with a 1.8-m (6-ft) thick sand layer. The central distribution pipe is a continuous line without perforations; the seven pairs of lateral pipes are divided into 0.3-m (1-ft) long segments.



WASTE VOLUME: 6,200,000 L (1,600,000 gal) (RHO-LD-114)

DURATION: 1949 to 1969

ESTIMATED DISCHARGED INVENTORY:

Plutonium	57 kg (RHO-LD-114)
Americium-241	1 kg (RHO-ST-17)
Carbon tetrachloride	270,000 kg (WHC-SD-EN-TI-248)
Tributyl phosphate	23,900 L (WHC-SD-EN-TI-248)
Dibutylbutyl phosphonate	27,500 L (WHC-SD-EN-TI-248)
Lard oil	11,000 L (WHC-SD-EN-TI-248)
Nitrate	3,000 kg (DOE/RL-91-58)

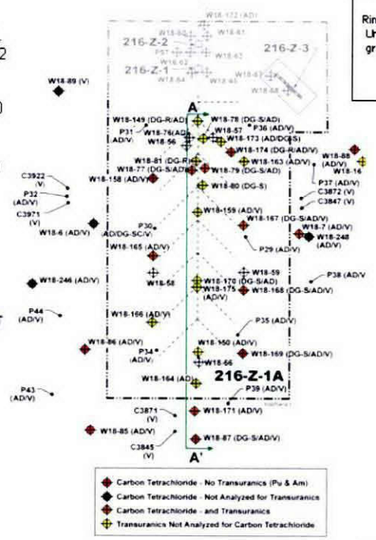
REFERENCES:
WIDS general summary reports
RHO-ST-17
RHO-LD-114
DOE/RL-91-32
WHC-SD-EN-TI-248
DOE/RL-91-58
SGW-33746
SGW-33829

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Geologic Logs (GL)
- Soil Sampling Analytical Data (AD)
- Vapor Sampling Data (V)

Site Plan View

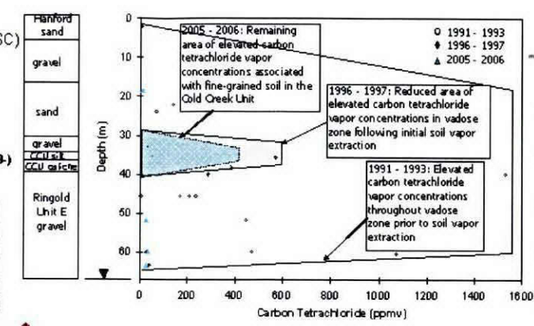
(not to scale; all well numbers prefixed with 299-)



Characterization Summary

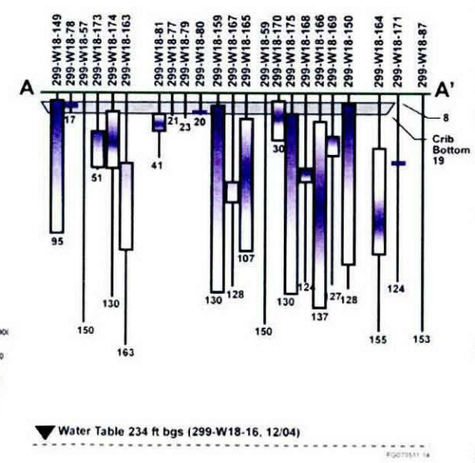
Data collection activities have been ongoing at the 216-Z-1A Tile Field since early operations. The distribution of plutonium and americium was characterized at 16 wells at this site in the 1970s (RHO-ST-17). Also, many of the wells in and around the tile field have been geophysically logged (ARH-ST-156, SGW-33829). Characterization was conducted in 1991-1993 to support soil vapor extraction, which has been ongoing at this site since 1992. As part of the remedial investigation, information from additional characterization boreholes was used to evaluate the distribution of carbon tetrachloride and other organic contaminants.

Carbon Tetrachloride Vapor Distribution



Site Section View

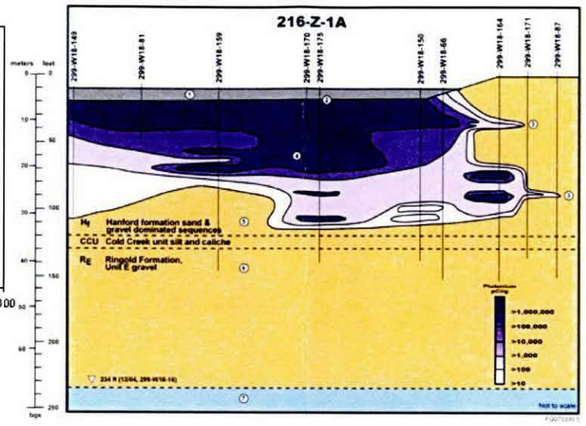
(not to scale; units in feet bgs)



Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

Contaminant Distribution Model



1. Between 1964 and 1969, the 216-Z-1A Tile Field received 5.2 million liters of high-salt, acidic liquid waste containing significant inventories of plutonium and carbon tetrachloride. From 1949 to 1959, the 216-Z-1A Tile Field received 1.0 million liters of slightly basic, aqueous waste.
2. Effluent and contaminants were released to the soil at the bottom of the tile field through a herringbone arrangement of pipes.
3. The wetting front and contaminants moved vertically beneath the tile field. Lateral spreading is mainly attributed to contact with the Cold Creek unit or fine-grained lenses in the Hanford or Ringold formations. Vapor phase carbon tetrachloride exists throughout the vadose zone in the source area.
4. Constituents such as plutonium (Pu) and americium (Am), which are generally immobile in soils, sorb readily to soils, resulting in higher concentrations directly beneath the tile field. The Am and Pu concentrations generally decrease with depth. However, radionuclides were detected to depths up to 37 m, indicating that Pu and Am mobility was enhanced in the presence of carbon tetrachloride, tributyl phosphate and derivatives, and acidic liquid wastes.
5. Carbon tetrachloride initially spread throughout the vadose zone beneath and around the 216-Z-1A Tile Field. However, soil vapor extraction operations started at the site in 1992 have considerably reduced the vadose zone carbon tetrachloride inventory (see vapor distribution chart at left). Dense non-aqueous phase liquid carbon tetrachloride was not identified during the remedial investigation.
6. The highest concentration of carbon tetrachloride is associated with the fine-grained sediments of the Cold Creek unit.
7. The effluent volume discharged to the tile field suggests that groundwater may not have been directly impacted by the wetting front unless a preferential pathway is present. Carbon tetrachloride in the soil vapor phase may have reached groundwater.

200-PW-1FS:216-Z-1A.08/30/07

Figure 3-18. 241-Z-361 Settling Tank Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

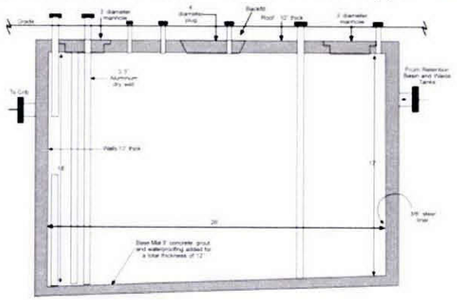
241-Z-361 Settling Tank

PFP Zone

History

The 241-Z-361 settling tank is an underground reinforced concrete structure that operated from 1949 to 1973 as a settling tank for neutralized 234-5Z, 242-Z and 236-Z liquid waste arriving from the 241-Z sump tanks. Settling tank supernatant was routed to numerous cribs, including the 216-Z-1, 216-Z-2, 216-Z-3, and 216-Z-12 cribs. The tank was isolated in 1973 and was partially pumped in May 1975 leaving approximately 800 L (210 gal) of liquid and 75 m^3 (82 yd^3) of sludge. The tank was evaluated in 1997 as part of a chemical hazard risk assessment. Characterization and analysis of the tank contents, completed in 2001, concluded that the tank contents posed no imminent threat to the environment (HNF-8735).

CONSTRUCTION: The tank interior is 7.9 by 4.0 m (26 by 13 ft) with 0.3-m (1-ft) thick walls and a sloping bottom resulting in an internal height varying between 5.2 and 5.5 m (17 and 18 ft). The top is 0.6 m (2 ft) below grade. There are two manhole covers and frames and several risers visible above grade. Waste entered the tank through two 15 cm (6 in) diameter stainless steel pipes; waste exited through a 20 cm (8 in) diameter stainless steel pipe.



WASTE VOLUME: 800 L of liquid and 75 m^3 of sludge are estimated to remain in the tank (HNF-8735)

DURATION: 1949 to 1973

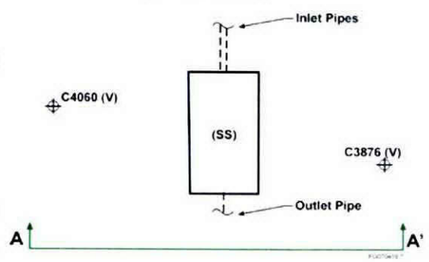
REMAINING INVENTORY:
Plutonium 29 kg (HNF-8735)

REFERENCES:
WIDS general summary reports
DOE/RL-2003-52
DOE/RL-2001-01
HNF-2867
HNF-8735
HNF-4371
FH-0002791

Basis of Knowledge (Data Types)

- Process History (PH)
- Vapor Sampling Data (V)
- Sludge Sampling Data (SS)

Site Plan View
(not to scale)

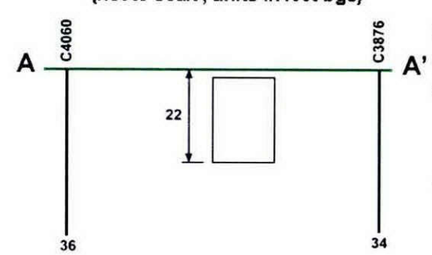


LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

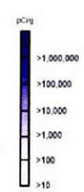
Characterization Summary

The 241-Z-361 Settling Tank and its contents were characterized from 1999 to 2001 in two phases. Phase I focused on opening the tank, characterizing the headspace vapor, and conducting a video camera survey of the tank interior (HNF-2867). Phase I identified volatile and semivolatile organics (HNF-8735). Phase II focused on characterizing the sludge (HNF-4371). Phase II identified approximately 75 m^3 (82 yd^3) of sludge with 29 kg of plutonium at concentrations of Pu-239 ranging from 428 ppm to 69 ppm and Pu-240 from 61 ppm to less than detectable. Metals (e.g., cadmium, chromium) and polychlorinated biphenyls (PCB) were detected in the sludge (HNF-8735). Helical piers installed to support tank sampling were surveyed when removed; no radiological contamination was detected (FH-0002791). Comparison of the 1999 camera survey to the 1975 photographs indicates the depth of the contents has not changed, signifying the tank has not leaked.

Site Section View
(not to scale, units in feet bgs)

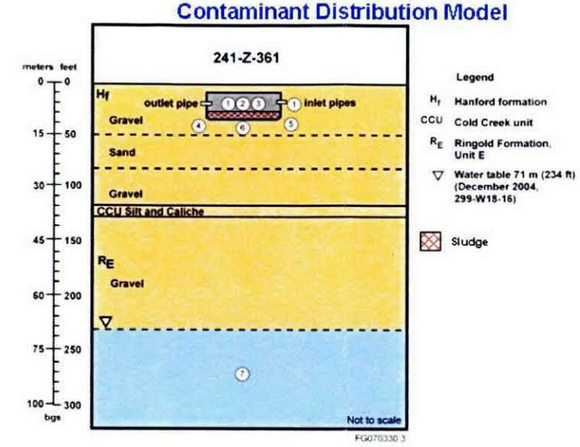


Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.



Water Table 234 ft bgs (299-W18-16, 12/04)

Contaminant Distribution Model



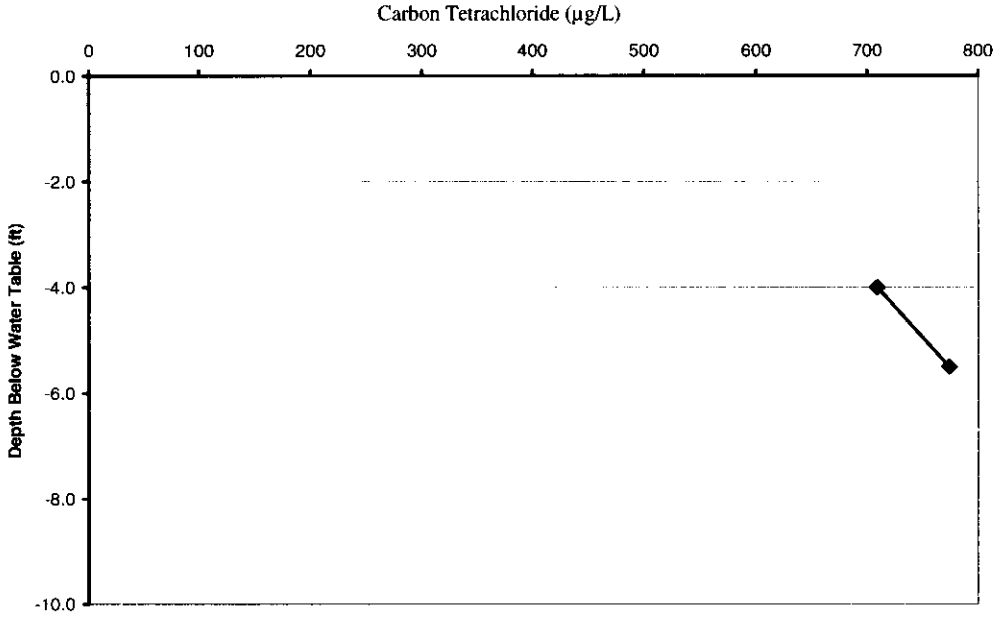
1. From 1949 to 1973, the settling tank was used to precipitate the heavier constituents from plutonium/organic rich process waste discharged to the tank.
2. After pumping in May 1975, a layer of sludge approximately 2.4 m (8 ft) thick remained with an estimated volume of 75 m^3 (82 yd^3) and containing approximately 29 kg of plutonium.
3. Characterization of the tank and its contents from 1999 to 2001 concluded that there are no imminent threats posed by the tank or its contents in their present condition and that the conditions are not likely to change in the near future. The sludge was identified as requiring remediation based on plutonium and toxic metals content.
4. Limited opportunistic survey of soils in the vicinity of the 241-Z-361 tank was conducted in 1999. Helical piers were installed and extended beneath the depth of the tank bottom within a meter from the tank. Some piers were removed and surveyed, and no radiological contamination was detected.
5. Potential leaks from this tank seem unlikely, based on comparisons of 1999 videos to 1975 still photographs showing the waste level remained unchanged and on the lack of radiological contamination from removed piers.
6. Although not expected, if tank leakage had occurred, immobile contaminants such as plutonium would be expected to sorb near the point of release. More mobile contaminants were mainly present in the remaining liquid in the tank, not in the sludge; most were removed with the supernatant.
7. Groundwater impact from this site is not expected. Evidence shows the tank likely did not leak and even had leakage occurred, the potential leak volume is much less than the soil column pore volume.

200-PW-1FS.241-Z-361 08/28/07

Figure 3-19. Depth-Discrete Carbon Tetrachloride Groundwater Sampling Results. (4 Pages)

X = sample hold time was exceeded before laboratory analysis.

Well 299-W11-10 (Area 4)



Well 299-W11-42 (Area 2)

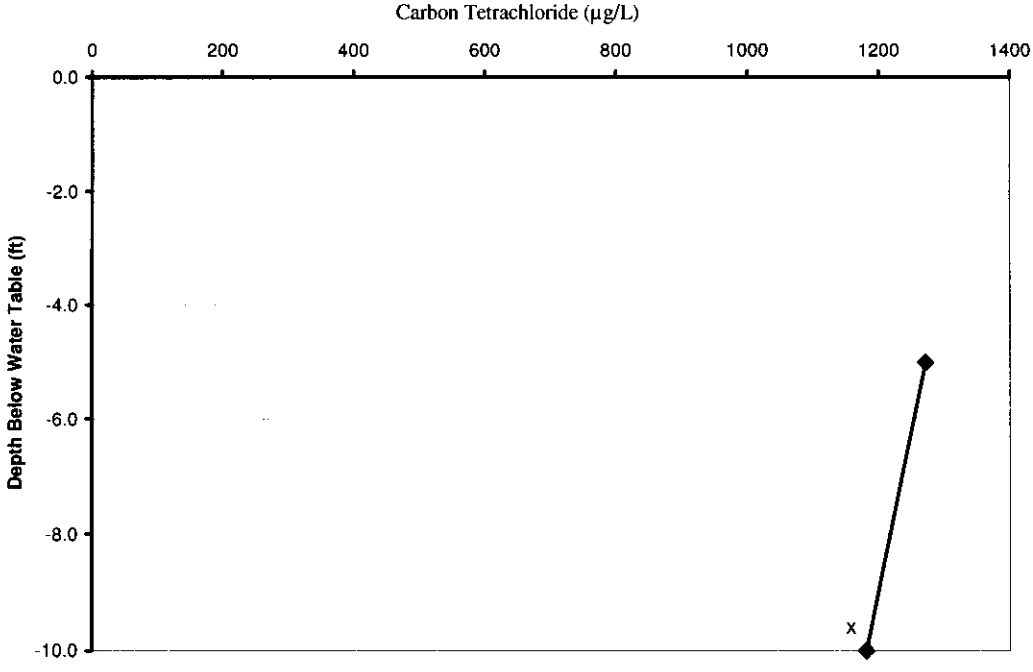
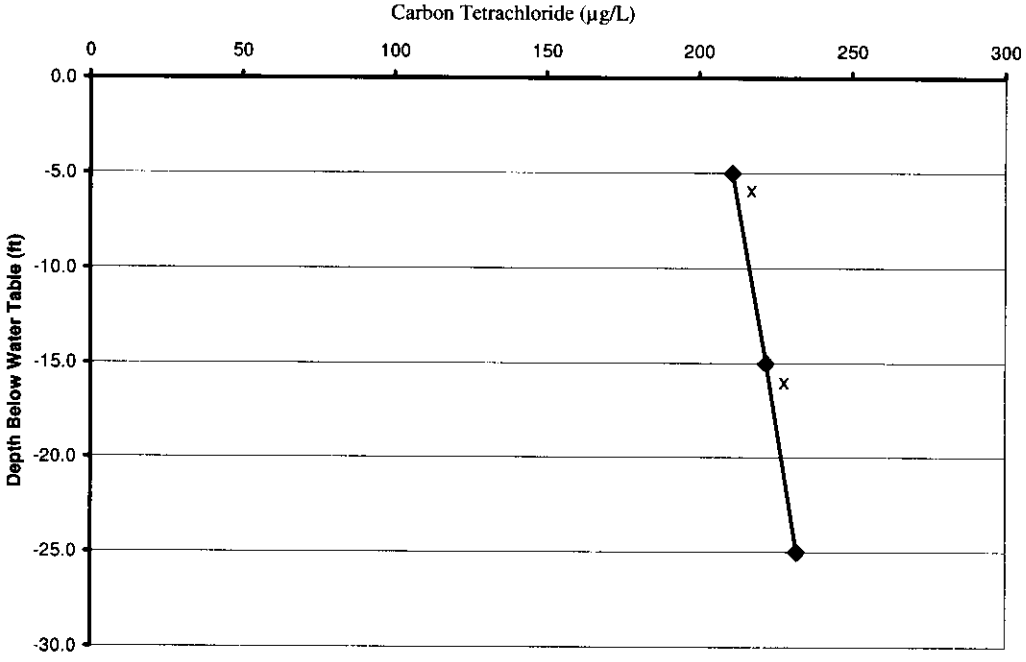


Figure 3-19. Depth-Discrete Carbon Tetrachloride Groundwater Sampling Results. (4 Pages)

Well 299-W23-4 (Area 8)



Well 299-W15-30 (Area 7)

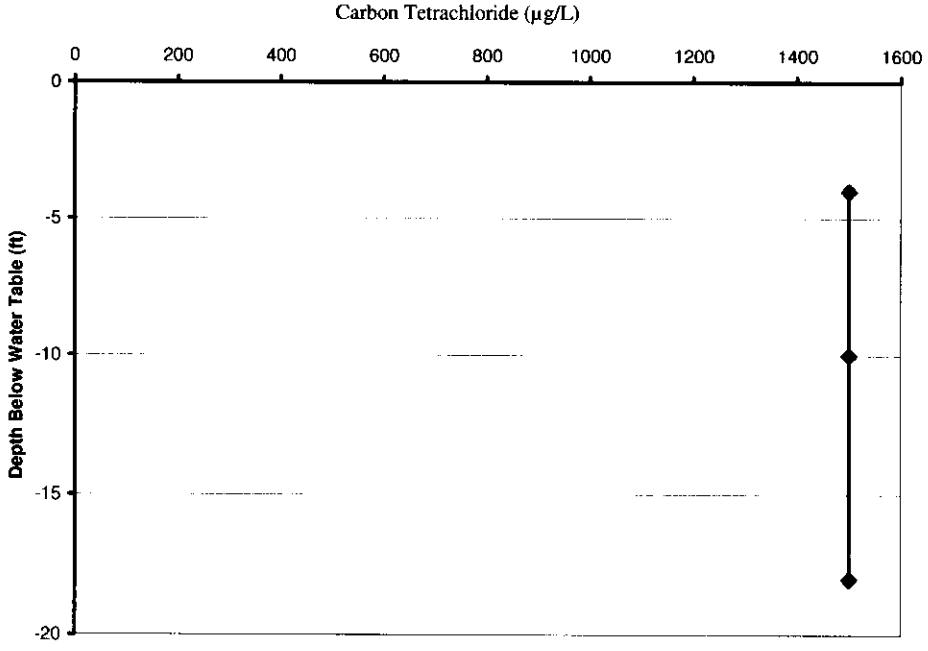
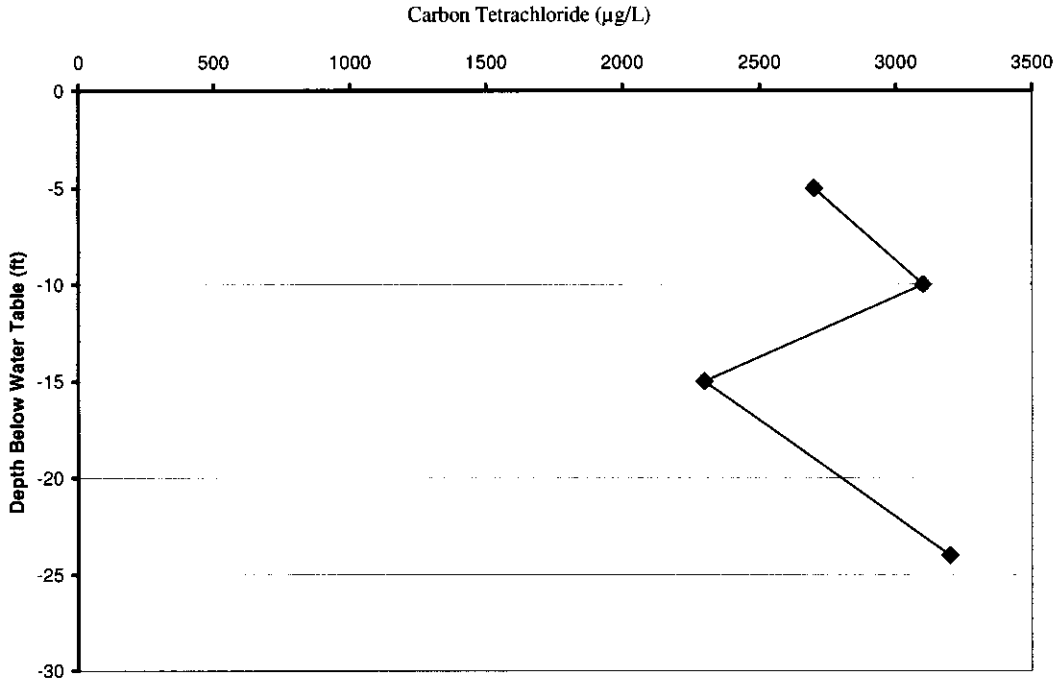


Figure 3-19. Depth-Discrete Carbon Tetrachloride Groundwater Sampling Results. (4 Pages)

Well 299-W15-40 (Area 5)



Well 299-W15-43 (Area 5)

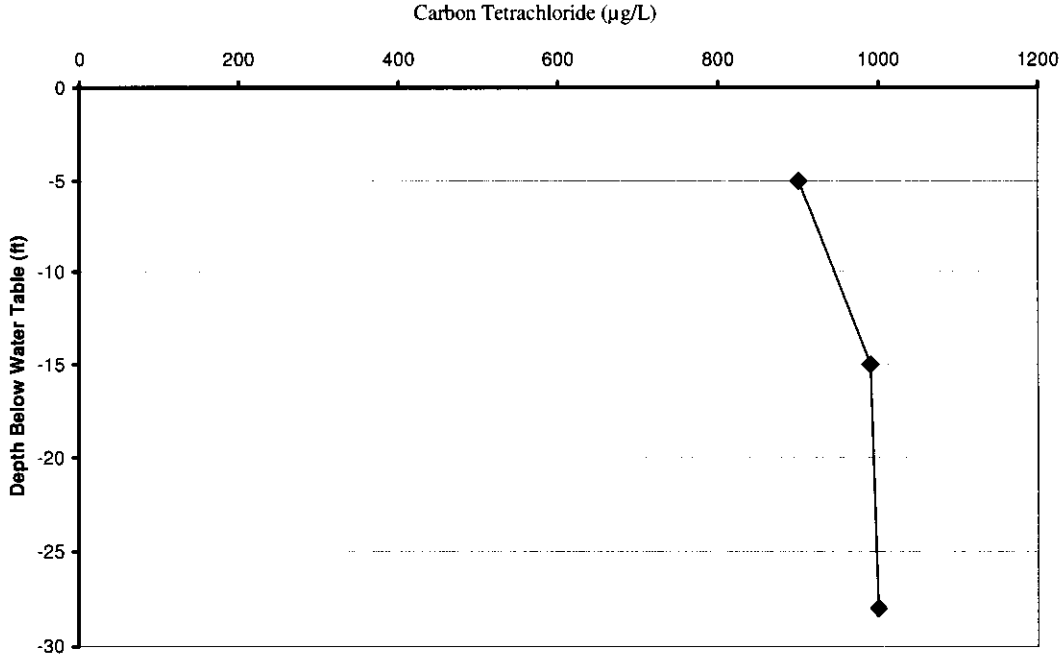
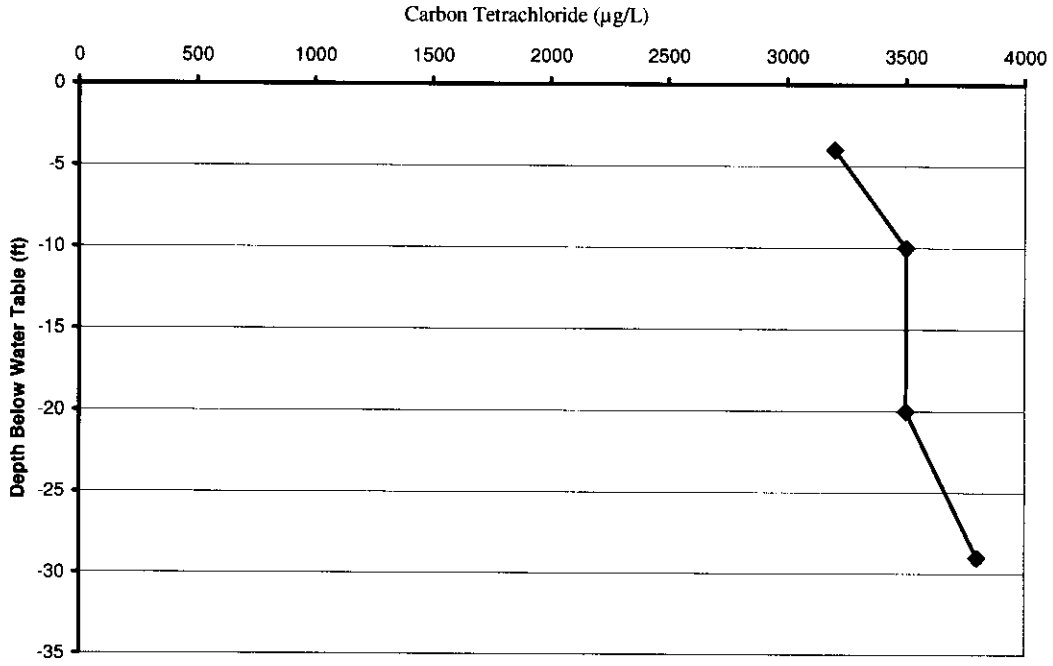


Figure 3-19. Depth-Discrete Carbon Tetrachloride Groundwater Sampling Results. (4 Pages)

Well 299-W15-765 (Area 5)



Well 299-W11-25B (Area 2)

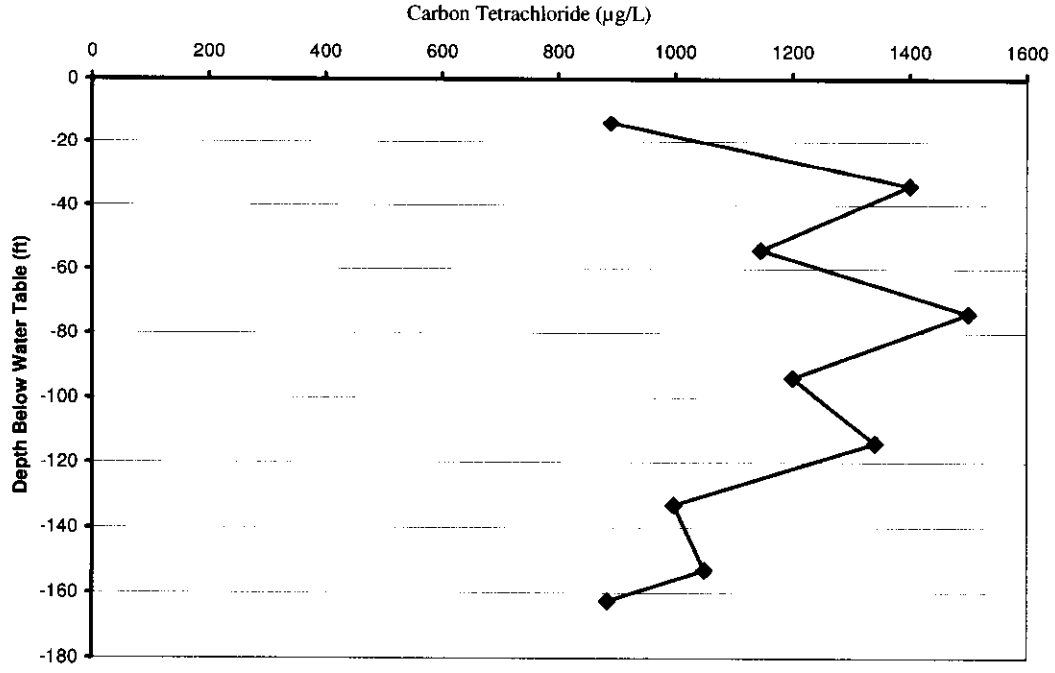


Figure 3-20. Summary of Dispersed Carbon Tetrachloride Plume Sampling Locations.

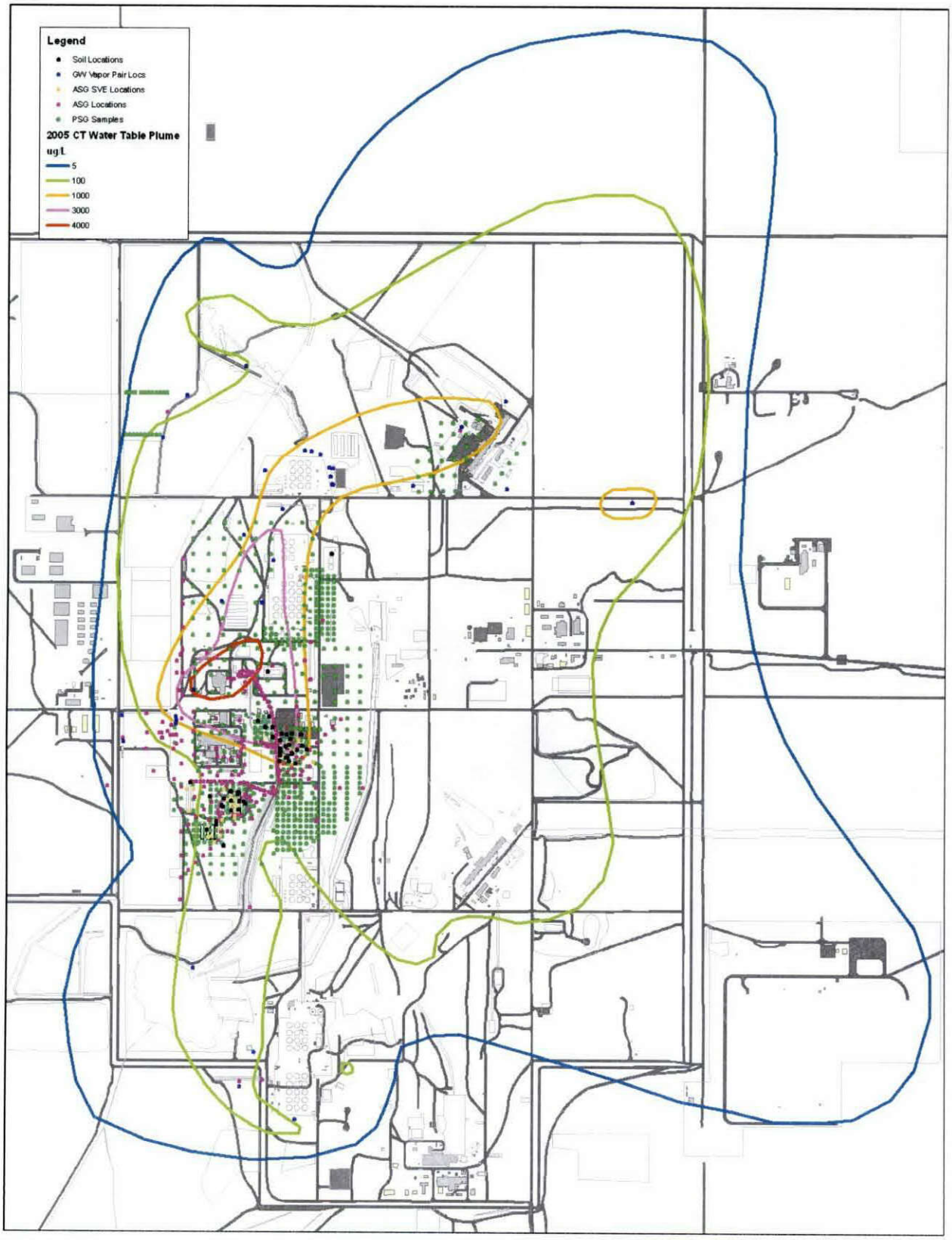


Figure 3-21. Summary of Passive Soil Vapor Sampling Results.

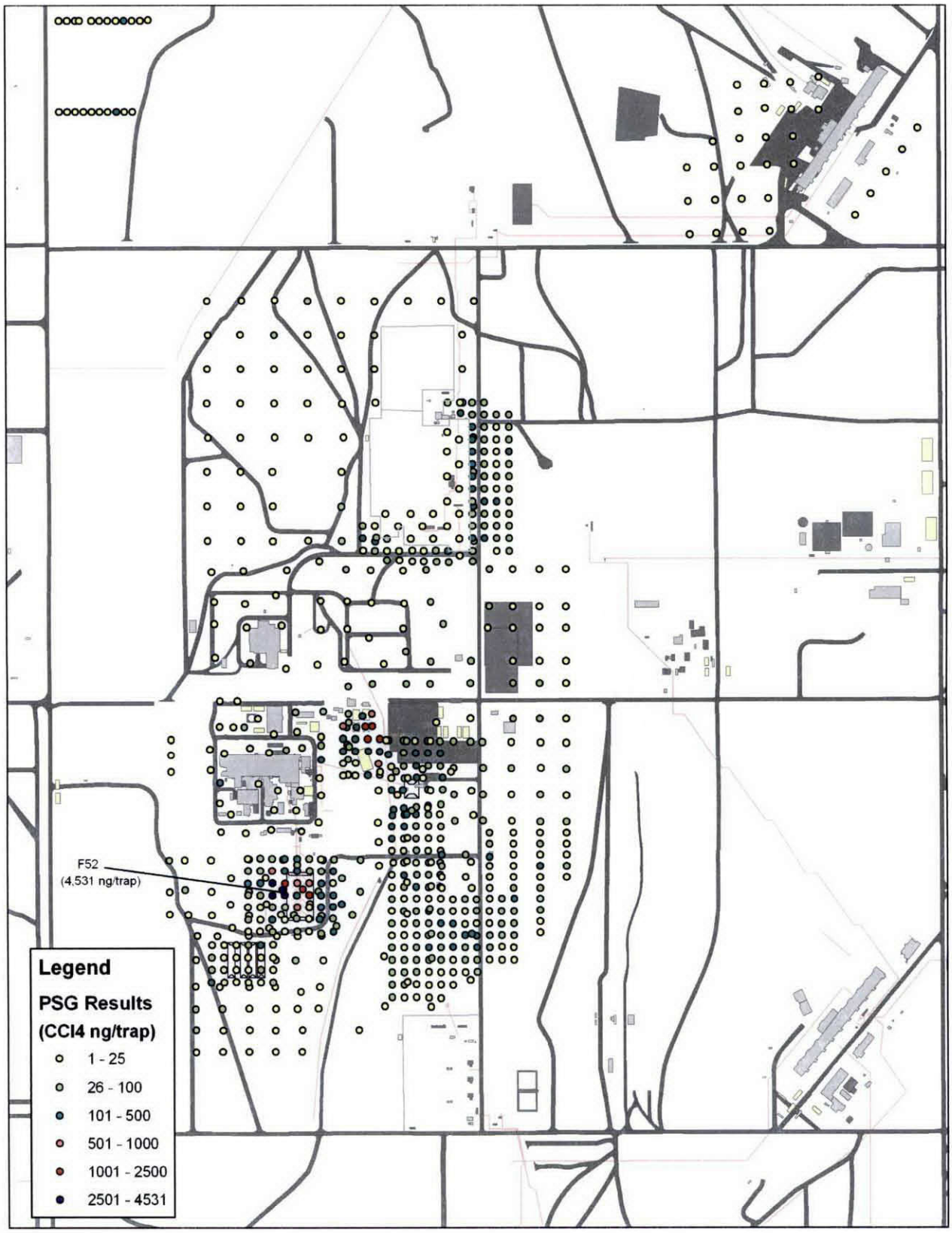


Figure 3-22. Summary of Passive Soil Vapor Sampling Results Near the Release Sites.

Figure 3-23. Shallow Vadose Zone Active Soil Vapor Sampling Results.

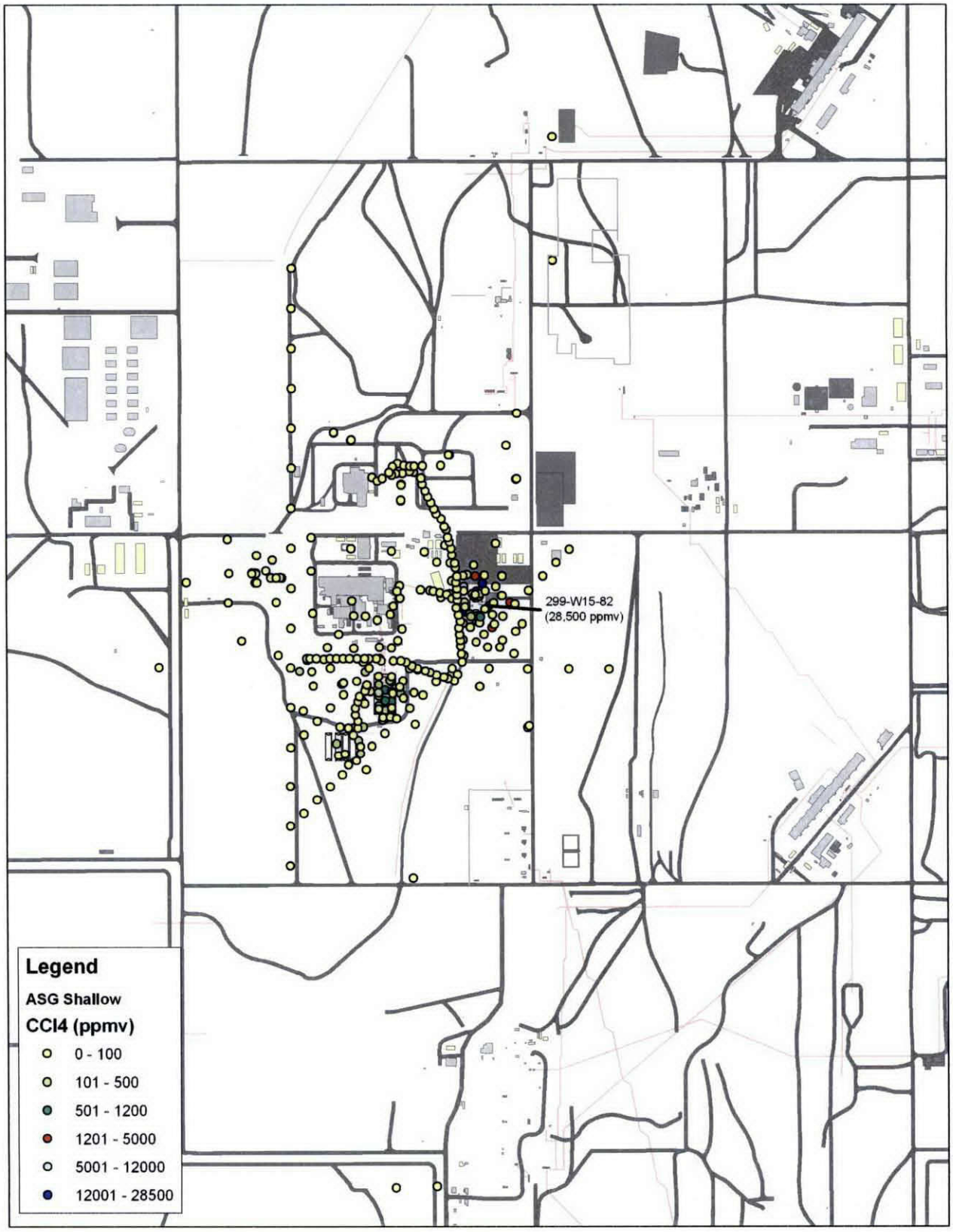


Figure 3-24. Shallow Vadose Zone Active Soil Vapor Sampling Results Near the Release Sites.

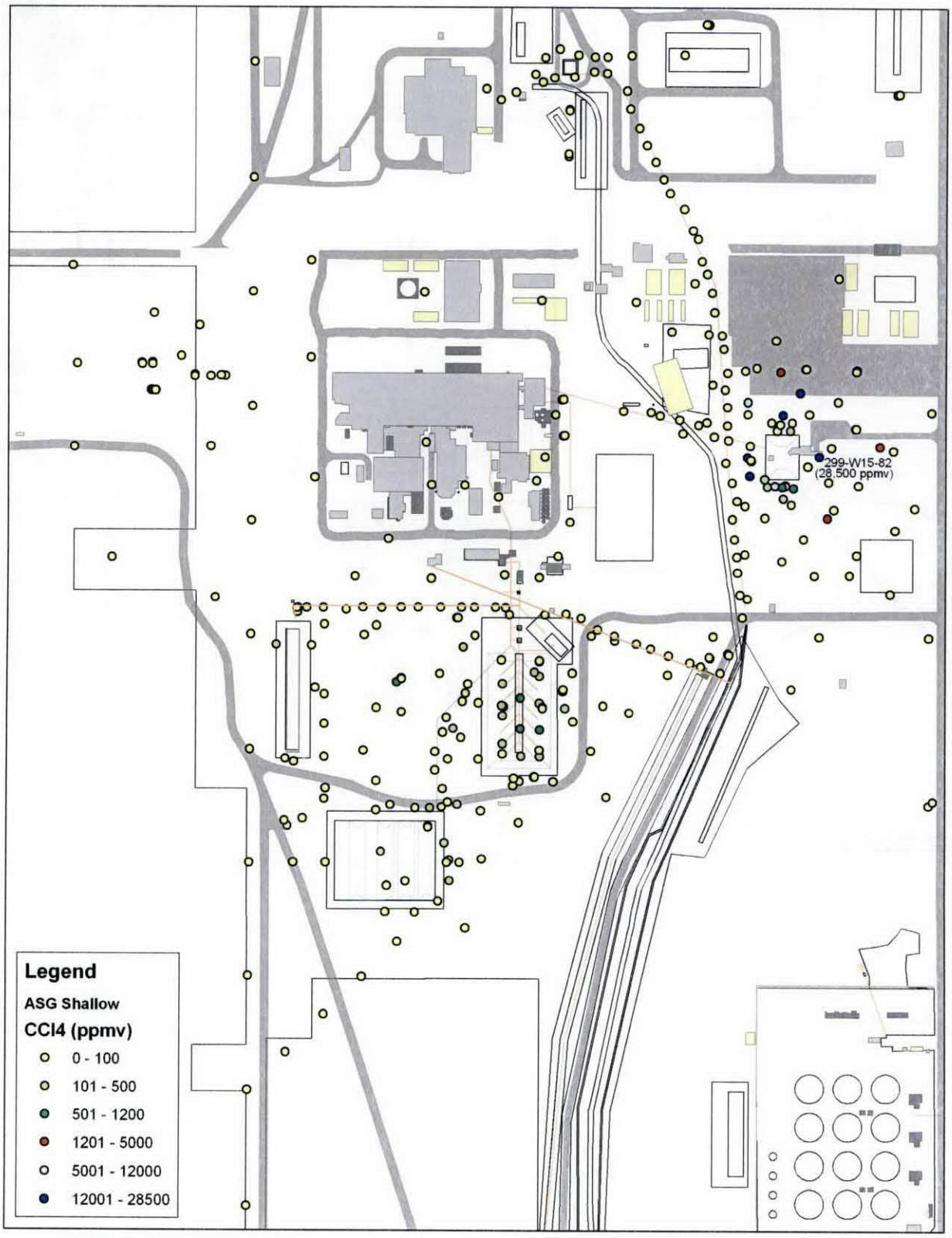


Figure 3-25. Intermediate Vadose Zone Active Soil-Vapor Sampling Summary.

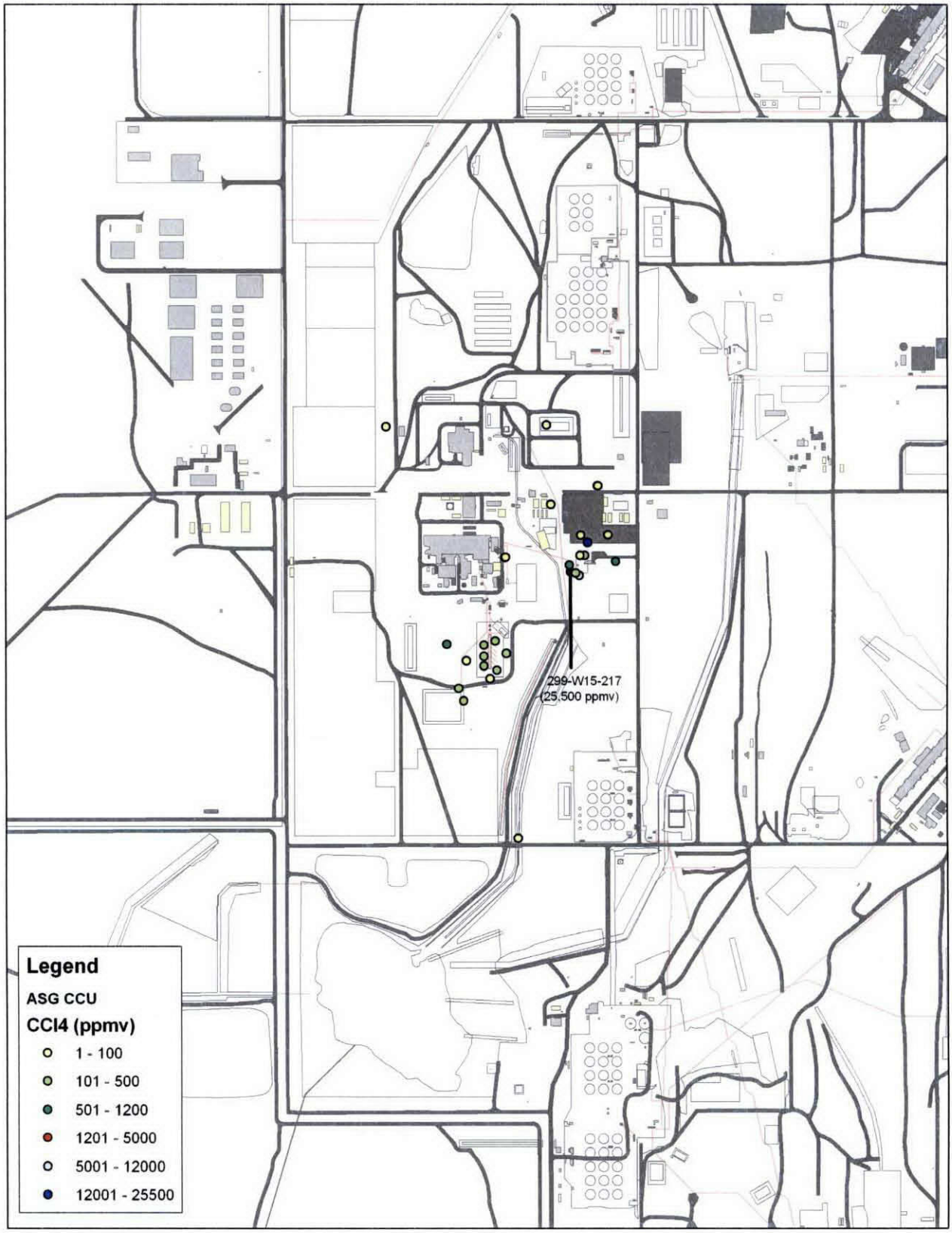


Figure 3-26. Intermediate Vadose Zone Active Soil Vapor Sampling Results Summary Near the Release Sites.

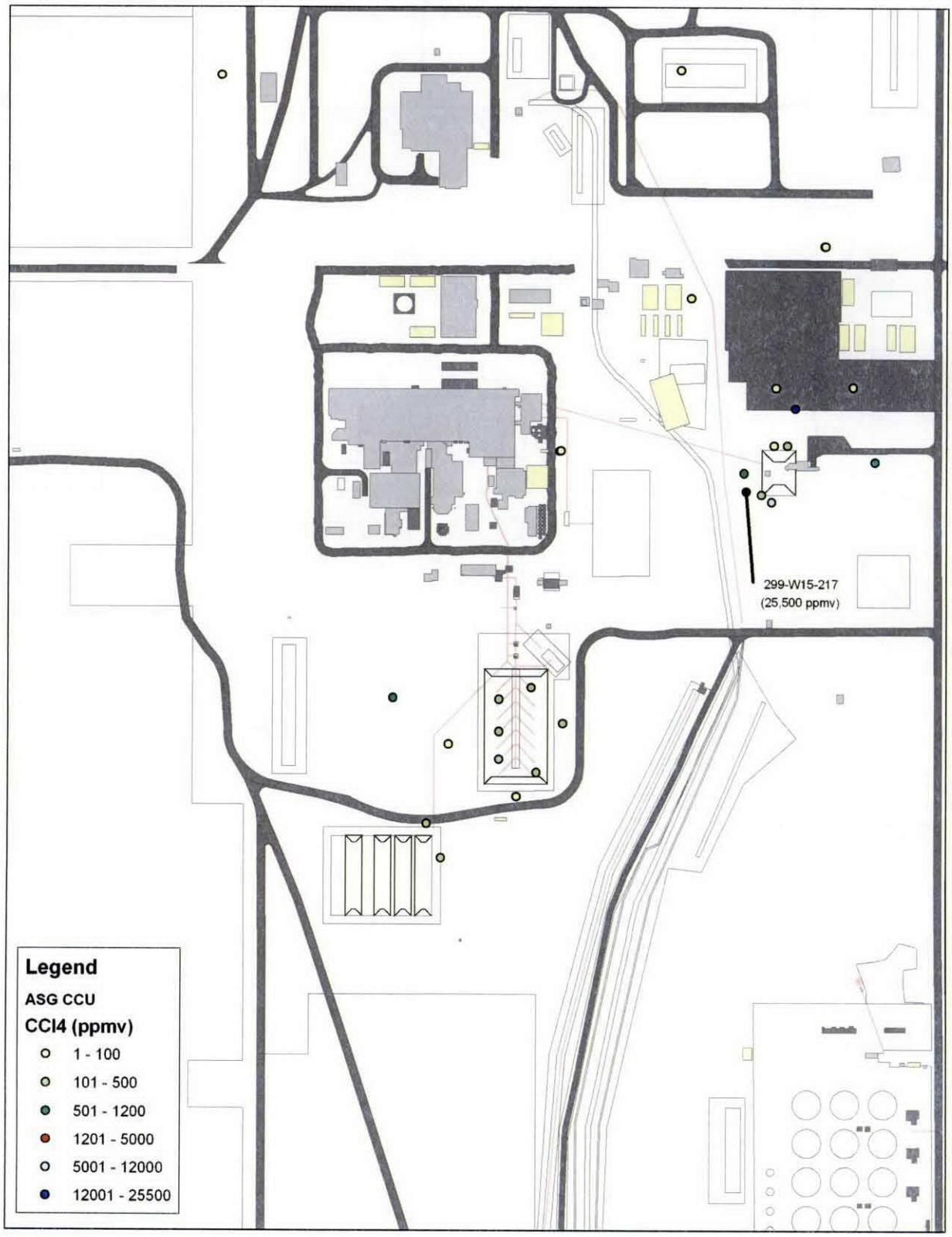


Figure 3-27. Deep Vadose Zone Active Soil Vapor Sampling Summary.

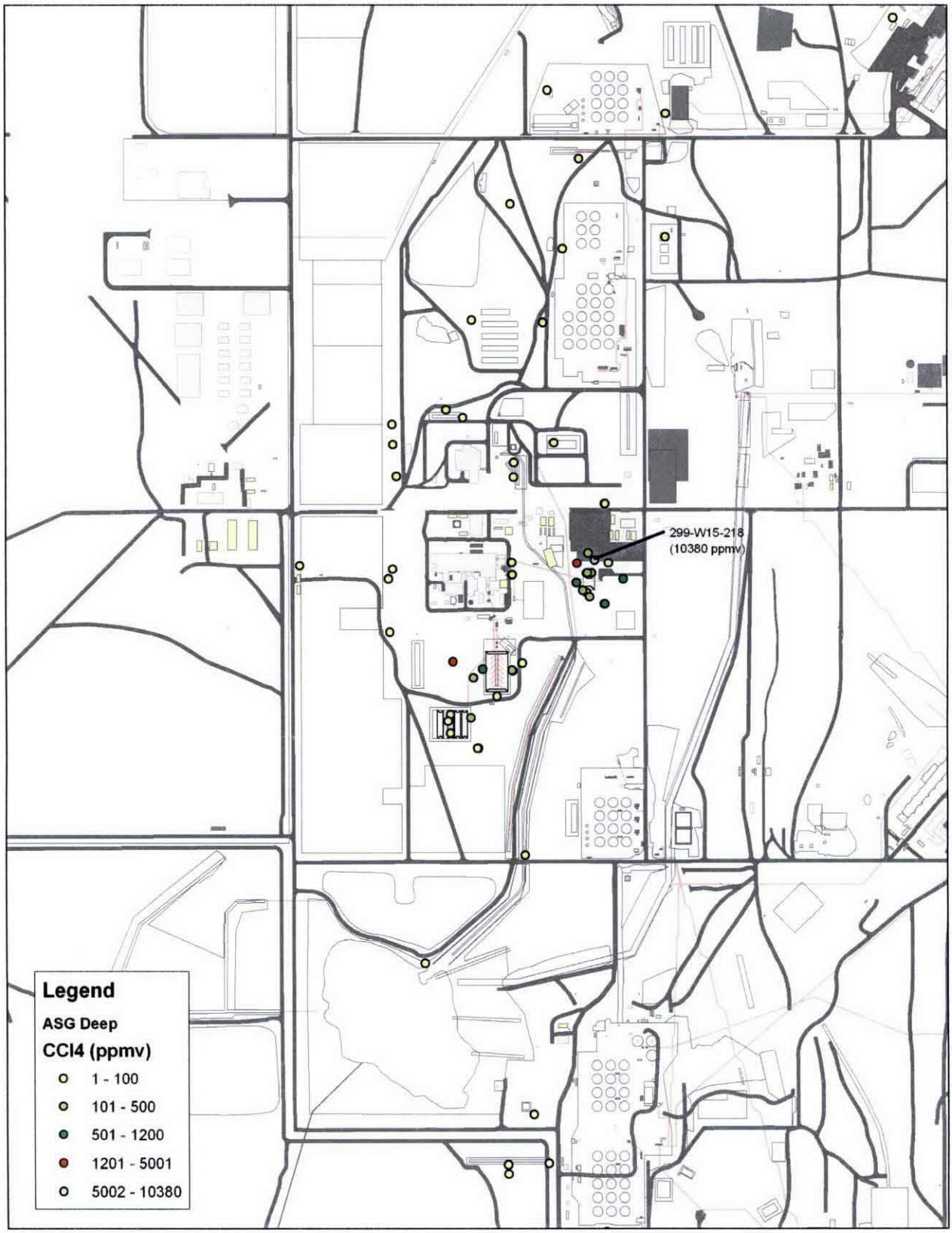


Figure 3-28. Deep Vadose Zone Active Soil Vapor Sampling Summary Near the Release Sites.

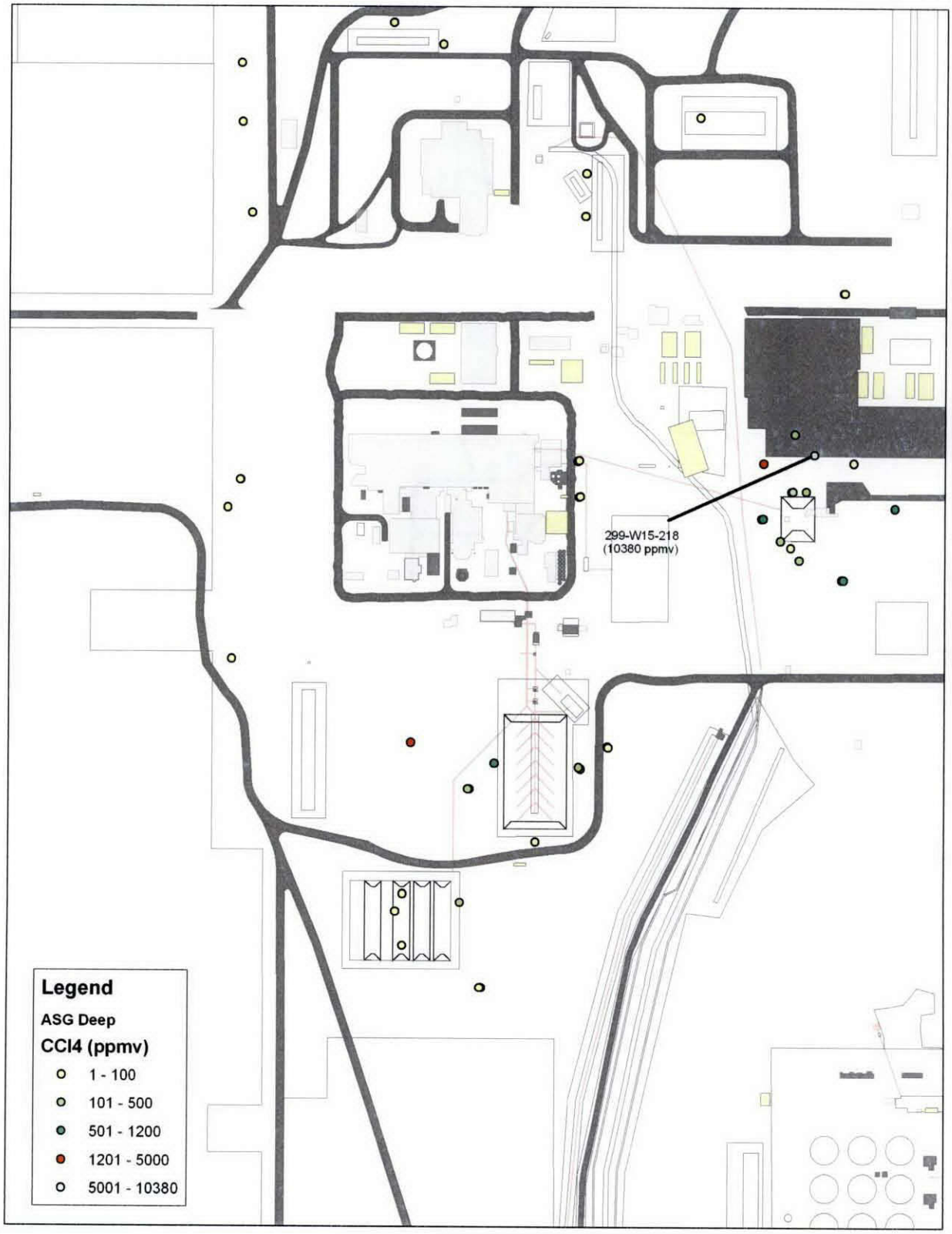


Figure 3-29. Shallow Vadose Zone Soil Sampling Results Summary.

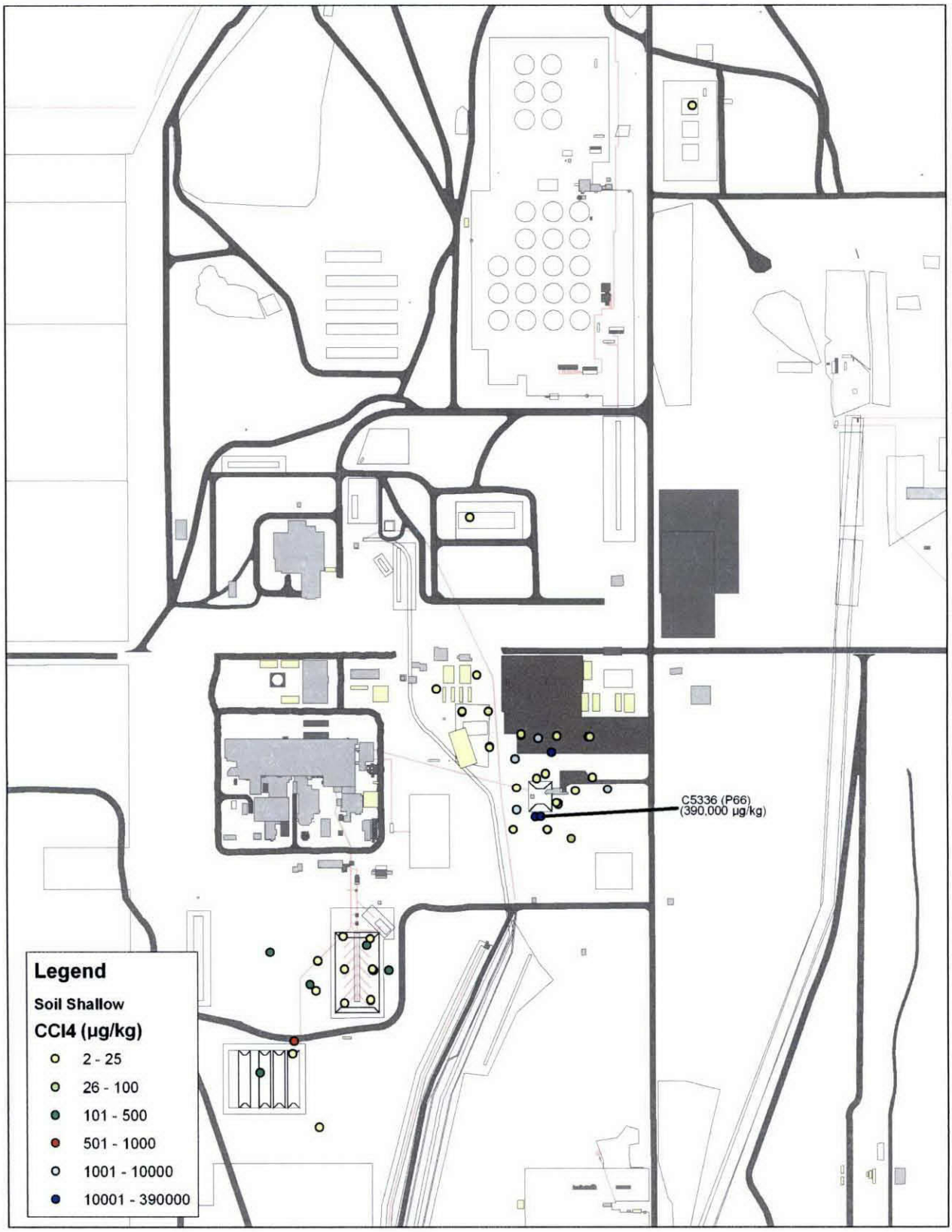


Figure 3-30. Intermediate Vadose Zone Soil Sampling Results Summary.

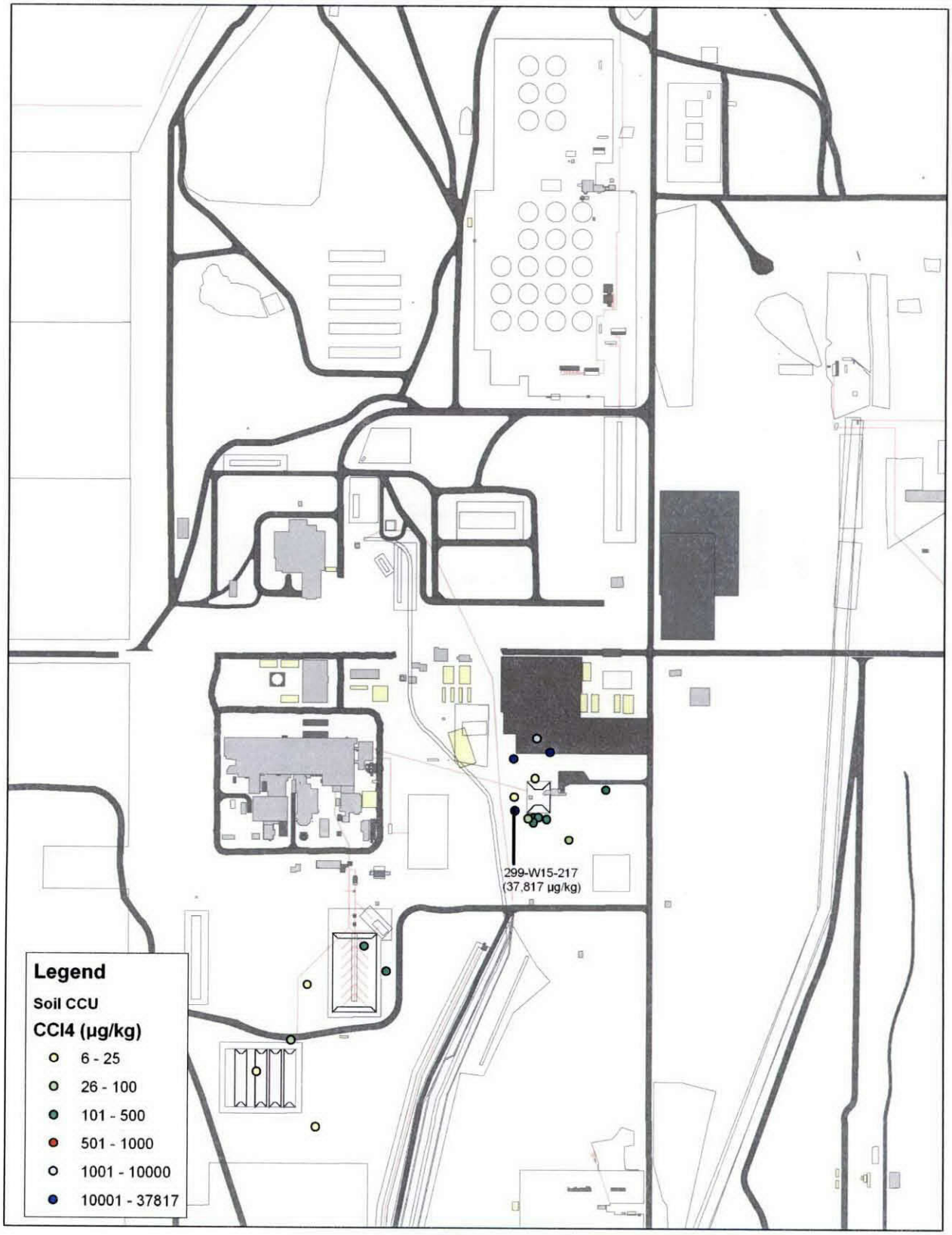


Figure 3-31. Deep Vadose Zone Soil Sampling Results Summary.

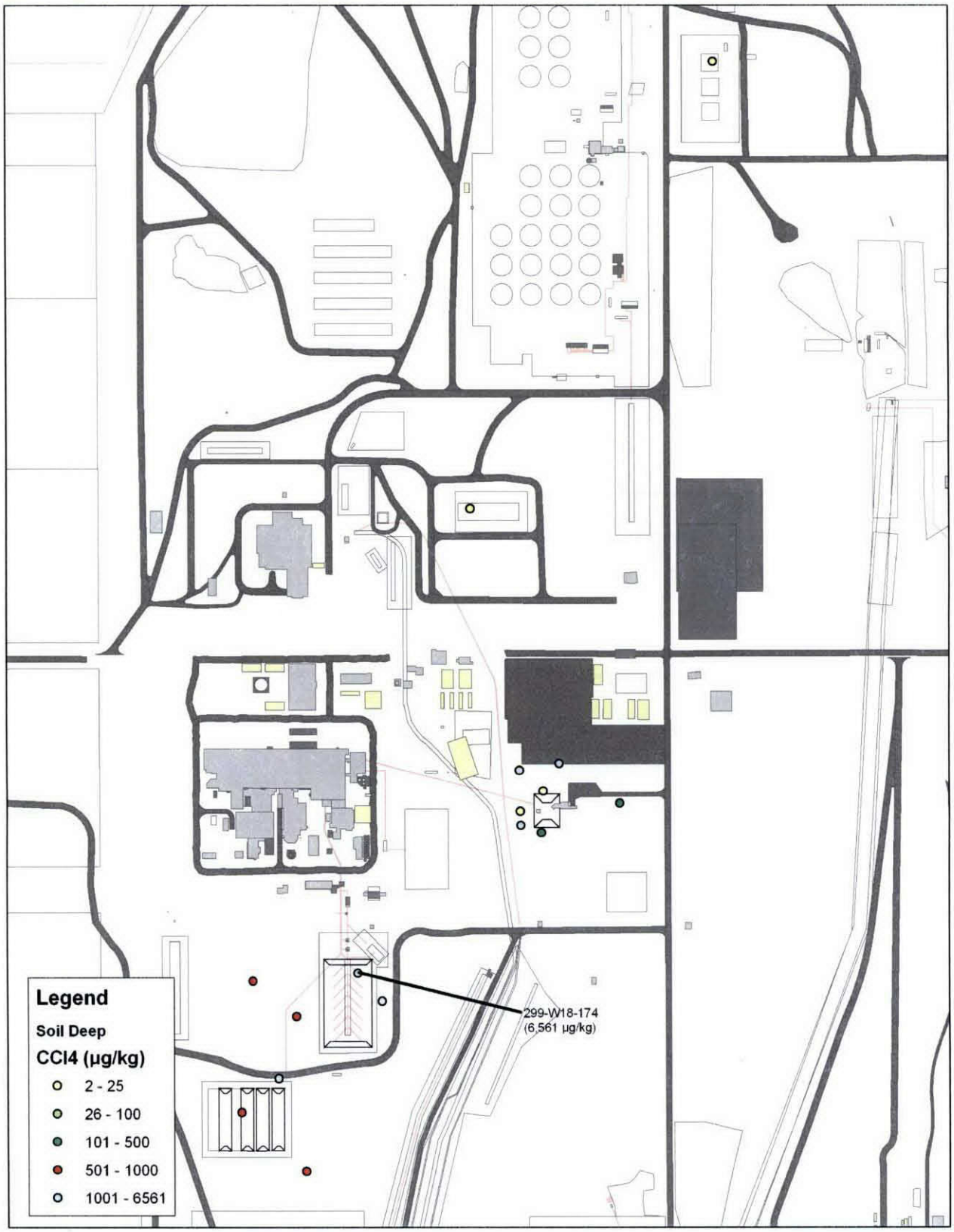
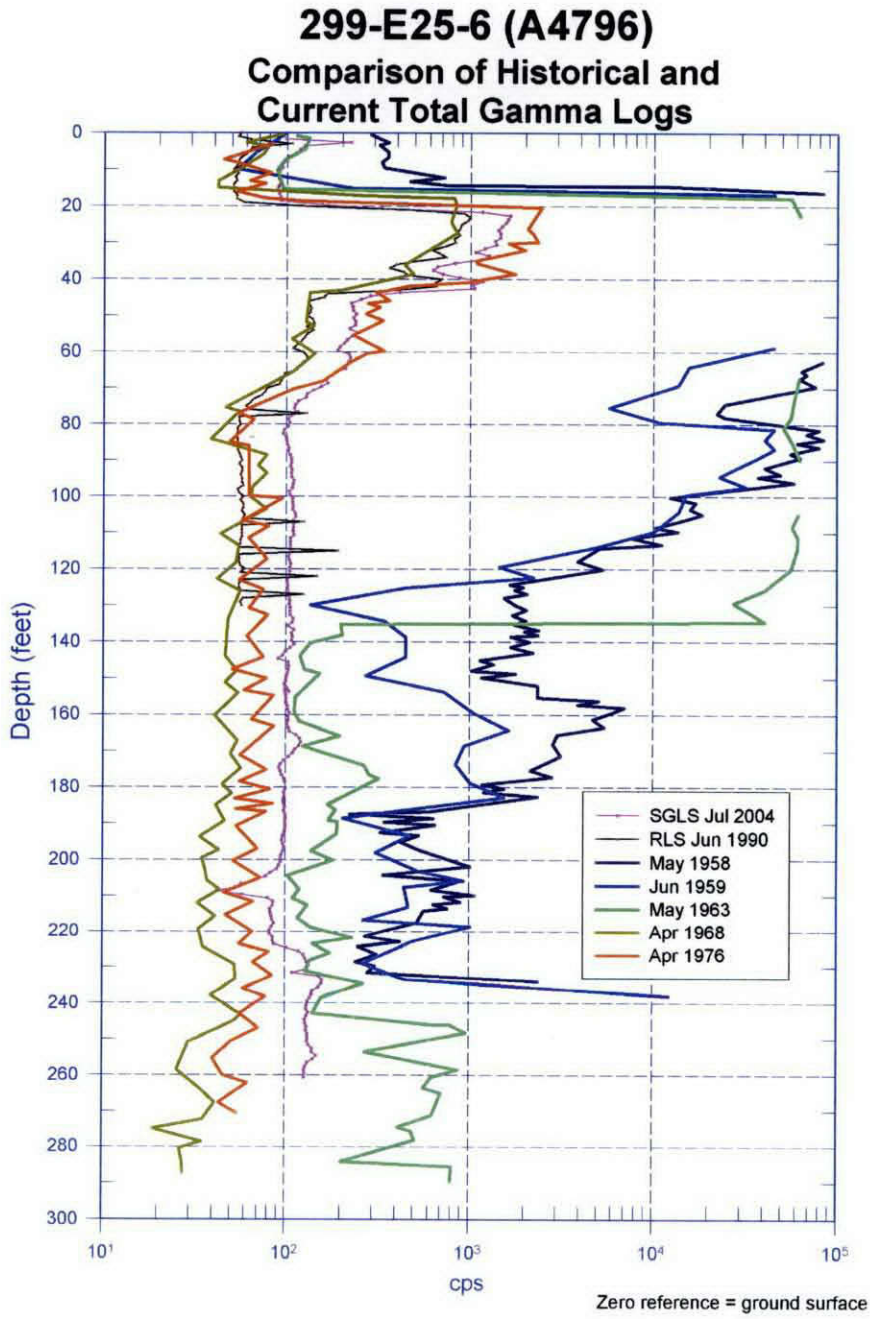


Figure 3-32. Historical and Current Total Gamma Logs for Borehole 299-E25-6 at the 216-A-8 Crib.

(From WMP-27020)



This page intentionally left blank.

Figure 3-33. 216-A-8 Crib Contaminant Distribution Model.

200-PW-3 Operable Unit
Waste Type: Process Waste

216-A-8 Crib

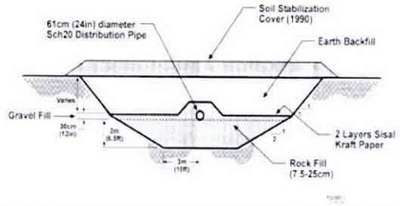
PUREX Zone

History

The 216-A-8 Crib was a liquid waste site used to dispose of vapor condensate and cooling water from operation of ventilation systems associated with the 241-A, 241-AX, 241-AY, and 241-AZ Tank Farms via the 216-A-508 Control Structure. In May 1958, when the crib approached its radionuclide capacity, the condensate was routed to the 216-A-24 Crib. Between 1966 and 1985, the 216-A-8 Crib intermittently received the vapor condensate waste. After 1985, all tank farm condensate waste was routed to the double-shell tank system. This site was surface stabilized in September 1990. The site was permanently isolated in April 1995 by filling the 216-A-508 Control Structure with concrete.

CONSTRUCTION: The 216-A-8 Crib is 6 by 259 m (20 by 850 ft) at the bottom, and ranges from 4.9 to 5.8 m (16 to 19 ft) deep. The crib was fed by a 61-cm (24 in) diameter, perforated distribution pipe located 2.6 to 3.5 m (8.5 to 11 ft) below original grade (1955) along the length of the crib on a 30-cm (12-in) thick bed of gravel. The gravel overlies 2.0 m (6.5 ft) of rock fill. The crib was covered with sisalkraft* paper and backfilled to grade. An overflow pond was excavated to the northeast of the crib. The pond was fed by a narrow ditch that was fed by a 41-cm (16-in) diameter pipe.

*Trademark of Fortifiber Corporation, Los Angeles, CA.



WASTE VOLUME: 1,150,000,000 liters (303,800,000 gal) (ARH-CD-745)

DURATION: 1955 to 1985

ESTIMATED DISCHARGED INVENTORY (RPP-26744, mean values; radionuclides decayed to 01/01/2001):

Cesium-137	2,410 Ci
Tritium	24,561 Ci
Uranium (total)	391 kg
Tributyl phosphate	128,582 kg
Normal paraffin hydrocarbon	55,107 kg
Butanol	1,364 kg

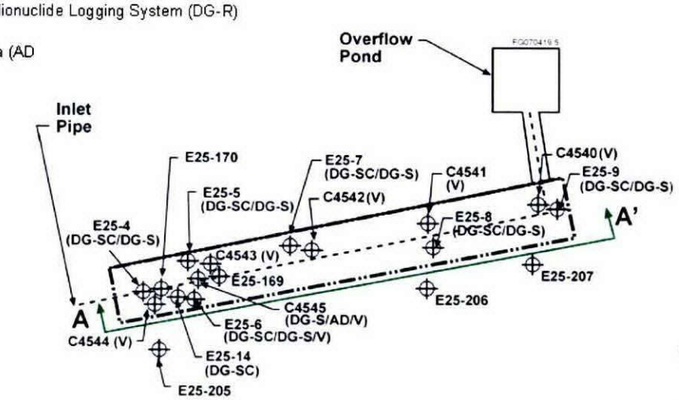
REFERENCES:
WIDS general summary reports
ARH-CD-745
RPP-26744
DOE/RL-2001-01
DOE/RL-92-04
WHC-EP-0287, Volume 3

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Downhole Geophysics – Radionuclide Logging System (DG-R)
- Geologic Logs (GL)
- Soil Sampling Analytical Data (AD
- Vapor Sampling Data (V)

Site Plan View

(not to scale; all well numbers prefixed by 299-)

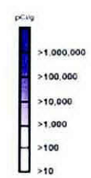


Characterization Summary

Characterization of the 216-A-8 Crib was performed during the remedial investigation. A deep borehole (C4545) was drilled, sampled, and geophysically logged at the head end of the crib (west end). Maximum cesium-137 concentrations were 877,000 pCi/g from 5.8 to 6.6 m (19 to 21.5 ft) bgs from soil sampling and 1.5 million pCi/g at 6 m (20 ft) bgs from geophysical logging. Additionally, 6 existing boreholes were geophysically logged to assess the distribution of gamma-emitting radionuclides. The highest cesium-137 concentration was 30,800 pCi/g in well 299-E25-5 at 7.6 m (25 ft) bgs. Sampling and geophysical data indicate higher contamination near the head end of the crib. An anticipated layer of organic contamination from the preliminary conceptual site model (DOE/RL-2001-01) was not observed, based on the borehole sampling.

LEGEND

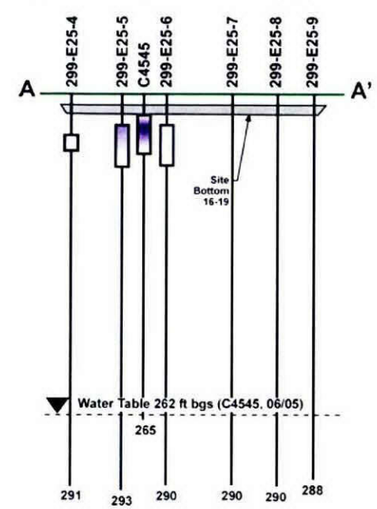
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface



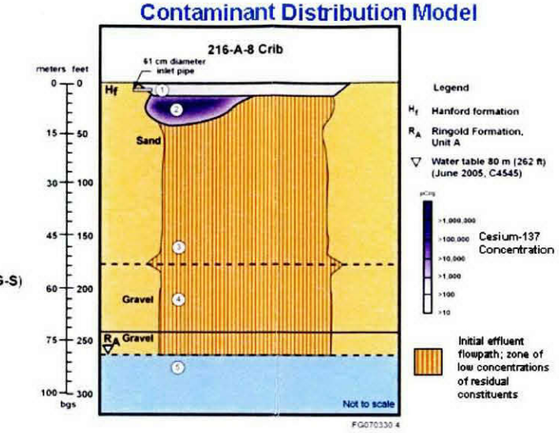
Site Section View Scale. Concentrations of cesium-137; no color bar on Site Section View indicates no contamination was identified in available data.

Site Section View

(not to scale, units in feet bgs)



Contaminant Distribution Model



1. The 216-A-8 Crib received liquid waste created by condensing vapors from self-boiling tanks in the 241-A, 241-AX, 241-AY, and 241-AZ Tank Farms. The crib received 1.15 billion liters from 1955 to 1985.
2. The more immobile radioactive contaminants (e.g., cesium-137, strontium-90) sorbed to soils at the bottom of the crib and concentrations decrease with depth. A zone of elevated cesium-137 concentrations exists between about 3.4 and 7.6 m (11 and 25 ft) bgs; concentrations in this zone range from 10 pCi/g to over 1 million pCi/g. Higher contamination is associated with the head end of the crib. Data from geophysical logging and vapor sampling show no contamination at the distal end of the crib.
3. The effluent and mobile contaminants traveled downward through coarser-grained material but tended to slow and spread at the intersection with finer-grained material. As the effluent traveled downward after discharge, contaminants may have been deposited along the top of these zones.
4. Waste water and mobile contaminants migrated downward through the vadose zone. These contaminants include both radioactive and nonradioactive constituents. A number of the radioactive constituents had short half lives and through time have decayed away. Nonradioactive constituents, especially the organics, have undergone vaporization, decay, and organic/metabolic processes that limit their persistence in the environment. The remedial investigation data indicate limited residual organic contamination in the vadose zone beneath the crib.
5. Groundwater in this area has been impacted by discharge to the crib. Based on the effluent volume and the tritium inventory for the 216-A-8 Crib, any future groundwater impacts are likely to be from tritium; however, future impacts are expected to be minimal due to the large effluent volume discharged, the mobility of tritium, and the short half life of tritium (12.3 years) (i.e., likely only a small inventory of tritium remains in the vadose zone).

200-PW-1FS.216-A-8.08/29/07

Figure 3-34. Soil-Sampling Intervals, Lithology, Field-Screening Measurements, and Borehole Geophysical Logs from Borehole C4545 at the 216-A-8 Crib.

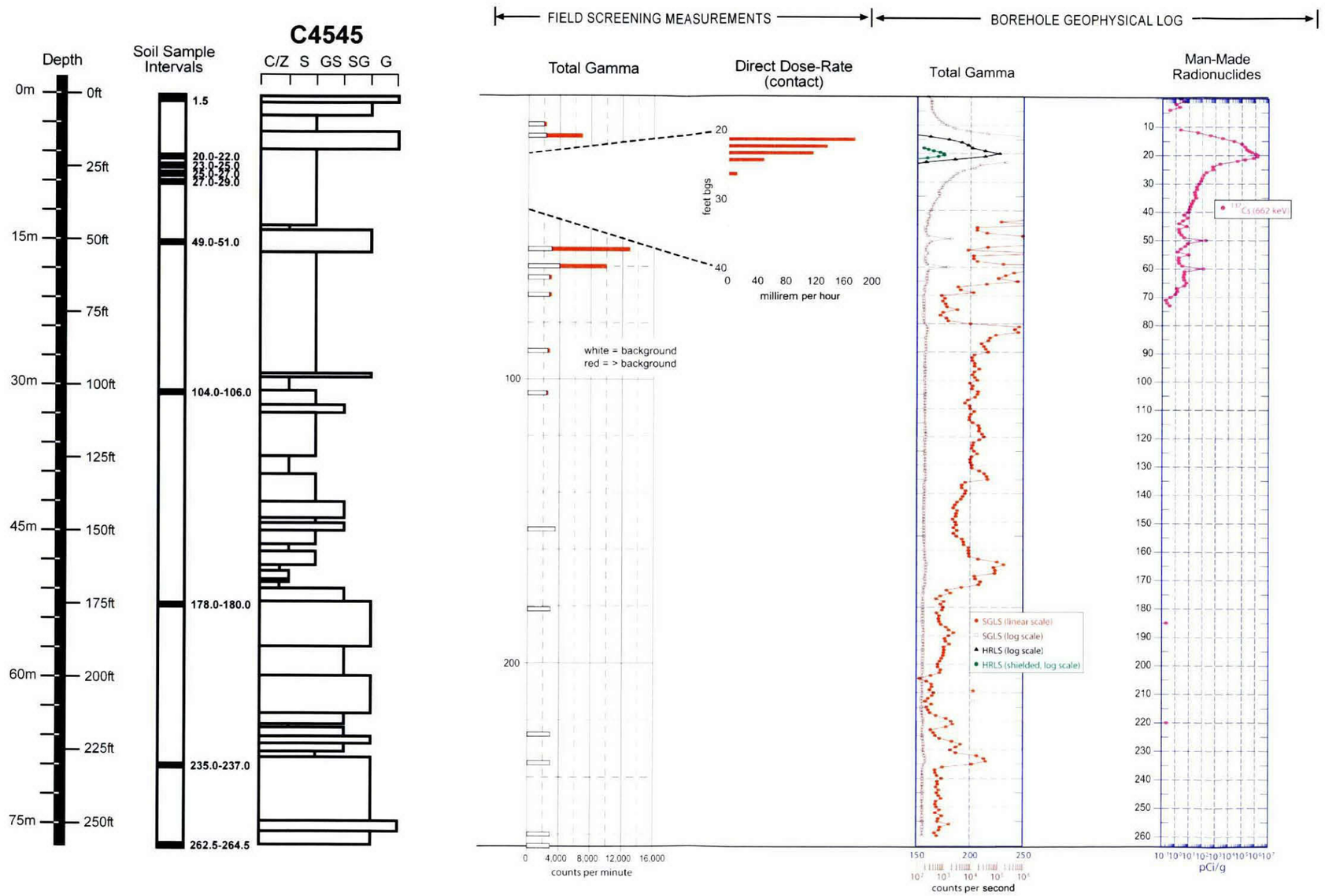
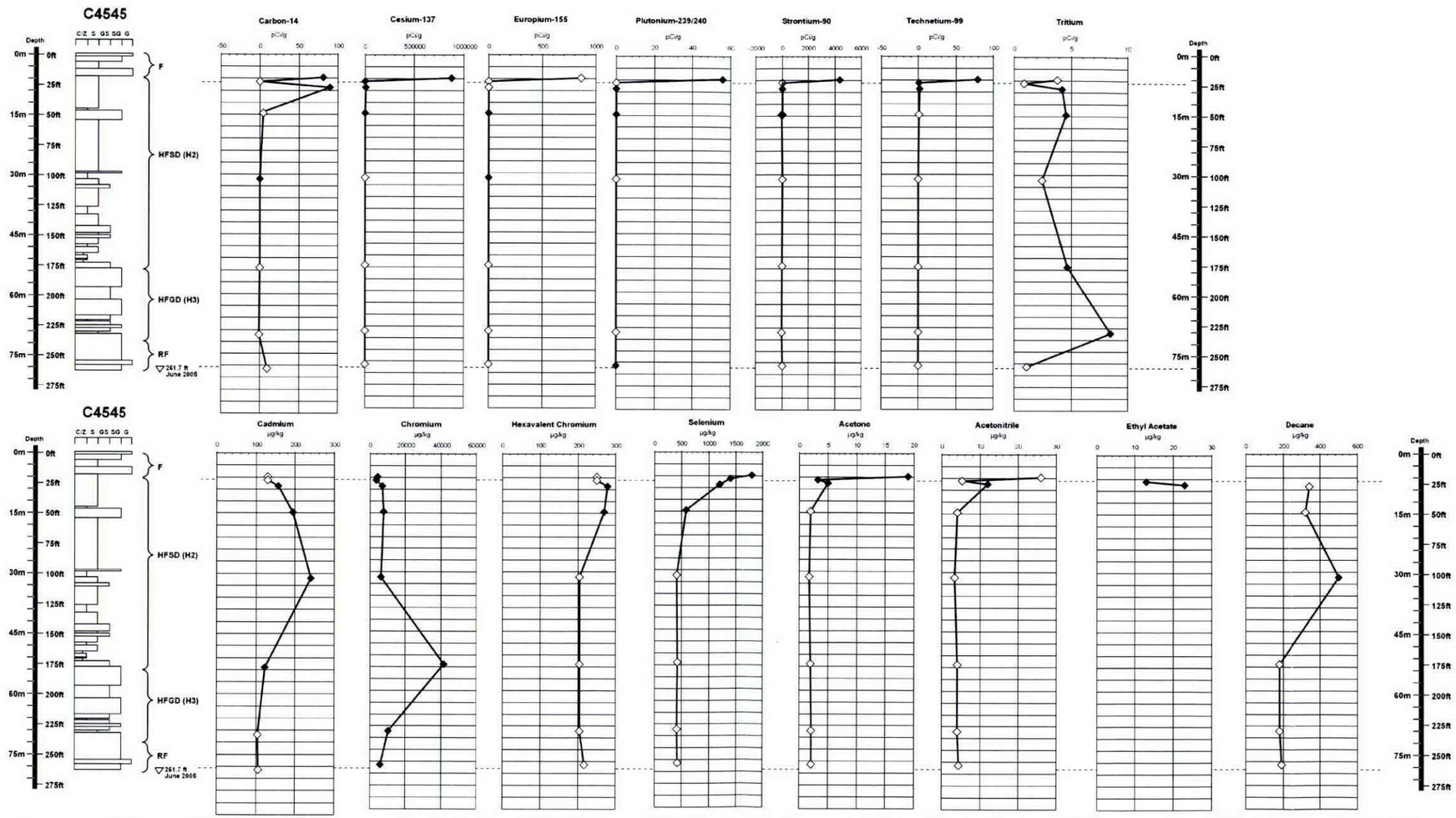


Figure 3-35. Vertical Concentration Profile Plots of the 200-PW-3 Operable Unit Contaminants of Concern above Background Levels from Borehole C4545 at the 216-A-8 Crib.



216-A-8 Crib - C4545

F - Fill

HFSD - Hanford formation Sand Dominated (H2)

HFGD - Hanford formation Gravel Dominated (H3)

RF - Ringold Formation Unit 5

Background Values Legend

COPCs	Background (pCi/g)
Americium-241	NA
Carbon-14	NA
Cesium-137	NA
Cobalt-60	NA
Europium-152	NA
Europium-154	NA

COPCs	Background (pCi/g)
Europium-155	NA
Hydrogen-3 (tritium)	NA
Iodine-129	NA
Plutonium-238	NA
Plutonium-239/240	NA
Strontium-90	NA

COPCs	Background (pCi/g)
Technetium-99	NA
Uranium-233/234	1.10
Uranium-235	0.109
Uranium-238	1.06
Volatile Organics	NA
Semivolatile Organics	NA

COPCs	Background (mg/kg)
Cadmium	--
Chromium	18.5
Hexavalent Chromium	NA
Selenium	--

COPC = contaminant of potential concern
NA = no reference source available
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24)
Values from DOE/RL-96-12, Rev. 0, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile and from DOE/RL-92-24, Rev. 4, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9 a, 90th percentile

Concentration & Borehole Legend

C/Z S GS SG G

Gravel
Sandy Gravel
Gravelly Sand
Sand
Clay/Silt

◆ Positive Detect ◇ Non-detect ▽ Water Table

FG1312.3
7/31/07

Figure 3-36. 216-Z-8 French Drain Contaminant Distribution Model.

200-PW-6 Operable Unit
Waste Type: Process Waste

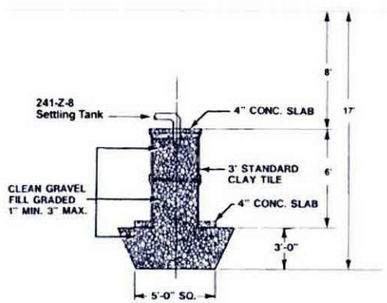
216-Z-8 French Drain

PFP Zone

History

The 216-Z-8 French drain is a liquid waste site that was used from 1955 to 1962 to dispose of overflow liquid waste from the 241-Z-8 Settling Tank. The tank was used as a solids settling tank for effluent waste from back flushes of the RECUPLEX feed filters. Tank waste flowed 11 m (36 ft) east to the French drain via a 10-cm (4-in) steel effluent pipe. Between 1957, when the tank first overflowed, and 1962, an estimated 9,590 L (2,530 gal) overflowed from the 241-Z-8 Settling Tank to the 216-Z-8 French drain. The drain ceased operations in 1962 when discharge piping in the 234-5Z Building was disconnected.

CONSTRUCTION: The 216-Z-8 French drain is constructed of two, 0.9-m (3-ft) long clay tile culverts, stacked vertically underground and filled with gravel. At the base of the culverts is a 10-cm (4-in) thick concrete collar that rests on a 1.5-m (5-ft) square by 0.9-m (3-ft) deep gravel bed that is approximately 5.6 m (17 ft) deep at the bottom.



WASTE VOLUME: 9,590 liters (2,530 gallons) (RHO-LD-114)

DURATION: 1955 to 1962

ESTIMATED DISCHARGED INVENTORY:

Plutonium	48.4 g (RHO-LD-114)

REFERENCES:
WIDS general summary reports
DOE/RL-91-58
RHO-RE-EV-46 P
RHO-LD-114

Basis of Knowledge (Data Types)

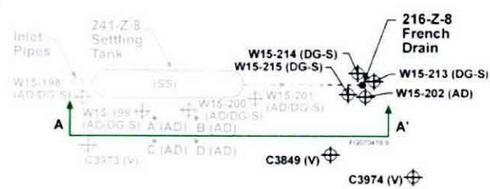
- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Downhole Geophysics – Radionuclide Logging System (DG-R)
- Geologic Logs (GL)
- Soil Sampling Analytical Data (AD)
- Vapor Sampling Data (V)

Characterization Summary

Characterization activities at the 216-Z-8 French drain consist of geophysical logging and soil sampling. A 1984 study focused on evaluating the distribution of transuranic constituents beneath the French drain. Samples were collected and analyzed from well 299-W15-202 (RHO-RE-EV-46 P). Maximum plutonium-239 and americium-241 concentrations were 4,620 and 457 pCi/g, respectively, located near the bottom of the drain structure. Geophysical logging in well 299-W15-213 in 2005 showed plutonium contamination up to 25,000 pCi/g near the bottom of the drain structure.

Site Plan View

(not to scale; all well numbers prefixed with 299-)



LEGEND

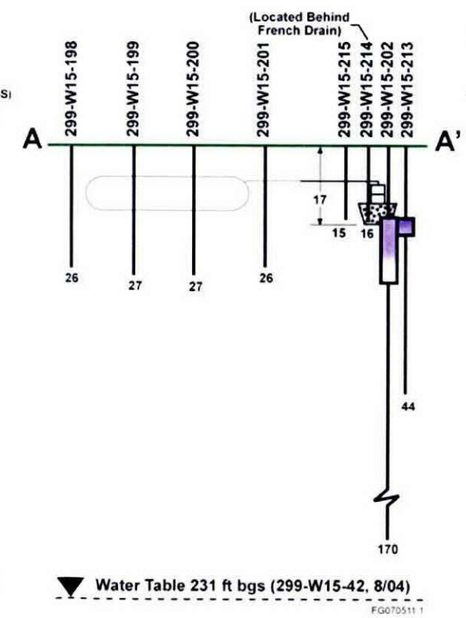
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

pCi/g
>1,000,000
>100,000
>10,000
>1,000
>100
>10

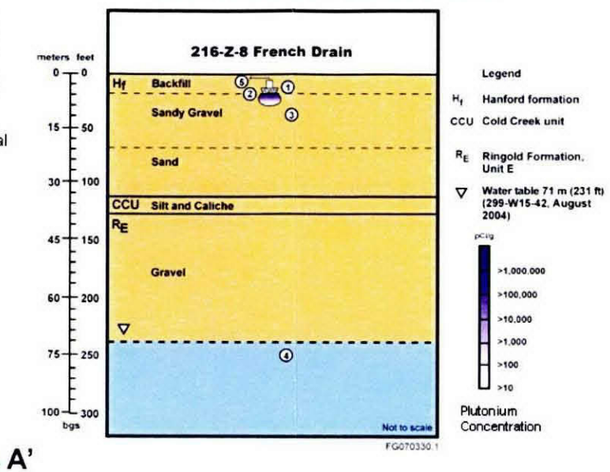
Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

Site Section View

(not to scale; units in feet bgs)



Contaminant Distribution Model



1. Approximately 9,590 L (2,530 gal) of neutral to basic waste overflowed to the 216-Z-8 French drain from the 241-Z-8 Settling Tank between 1955 and 1962. (Note: the first overflow did not occur until 1957.)
2. Soil sampling data and geophysical logging data show an area of plutonium and americium contamination near the bottom of the French drain structure. Because of the affinity of plutonium for the vadose soils, little migration away from the disposal point, either laterally or vertically, was identified.
3. Data show the immobile contaminants plutonium and americium were sorbed onto the sediments within approximately 5 m (16 ft) below the gravel bottom of the drain. Contaminant concentrations decrease with depth and are less than 1 pCi/g near the bottom of this zone. Mobile contaminants were not identified in the inventory.
4. Waste discharged to the French drain likely did not impact groundwater because the discharge volume is very low, the contaminants disposed tend to sorb to soils at the discharge point, sampling data did not identify deeper contamination, and because of the significant depth to groundwater.
5. Leaks from the settling tank, if any, are not expected to impact soils away from the tank and would not have impacted contaminant distribution at the French drain.

200-PW-1FS.216-Z-8.08/28/07

Figure 3-37. 216-Z-10 Injection Well Contaminant Distribution Model.

200-PW-6 Operable Unit
Waste Type: Process Waste

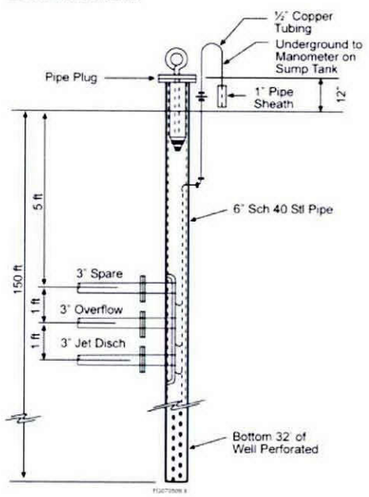
216-Z-10 Injection/Reverse Well

PFP Zone

History

The 216-Z-10 Injection/Reverse Well (well 299-W15-51) is a liquid waste disposal site that was used during 1945 to dispose of process and laboratory waste from the 231-Z building via the 231-W-151 Sump. The transuranic-contaminated process waste was discharged, at a rate of 76 L (20 gal) per minute, directly to the well through a 7.6 cm (3 in) diameter pipe from the 231-Z Building, entered the well about 1.5 m (5 ft) below grade, and was released to the soil through perforations in the well. The reverse well plugged after 4 months of use, after receiving 1,000,000 L (260,000 gal). The discharge line to the reverse well was capped and waste was diverted to the 216-Z-5 Crib.

CONSTRUCTION:



WASTE VOLUME: 1,000,000 L (260,000 gal) (HW-12468)

DURATION: February 1945 to June 1945

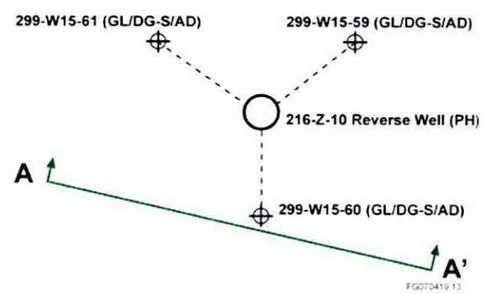
ESTIMATED DISCHARGED INVENTORY:
Plutonium 1 to 50 g (HW-12468)

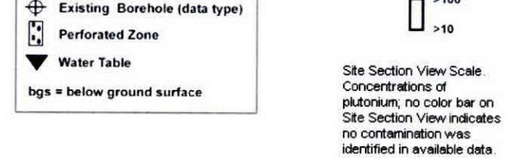
REFERENCES:
WIDS general summary reports
HW-12468
HW-9671
HW-23769
RHO-LD-114

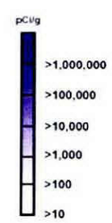
Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Geologic Logs (GL)
- Soil Sampling Analytical Data (AD)

Site Plan View
(not to scale)





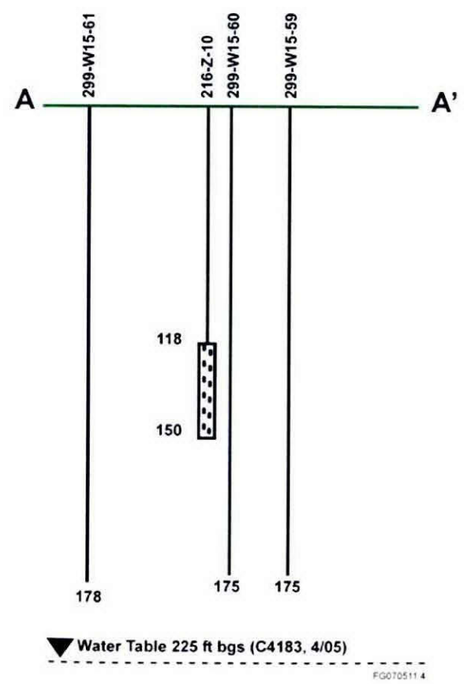


Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

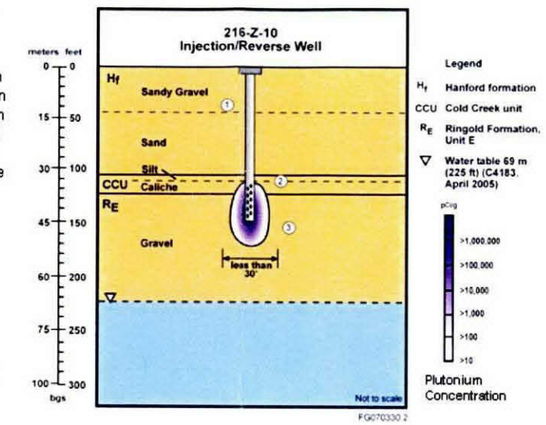
Characterization Summary

Operating history indicates plutonium (up to approximately 50 g) was the main contaminant released to the injection/reverse well. No organics are expected. Data include geophysical logging and analytical soil samples taken every 1.5 m (5 ft) in depth from three characterization wells surrounding the 216-Z-10 Injection/Reverse Well in an approximate 4.6-m (15-ft) radius and extending about 7.6 m (25 ft) deeper than the 216-Z-10 well. Soil samples did not identify plutonium contamination above a detection limit of approximately 0.15 pCi/g (HW-23769), indicating that waste spread laterally less than 4.6 m (15 ft) (HW-9671).

Site Section View
(not to scale, units in feet bgs)



Contaminant Distribution Model



1. Approximately 1 million liters of liquid waste containing up to approximately 50 g of plutonium and few other contaminants were discharged to the 216-Z-10 Injection/Reverse Well from February to June 1945.
2. Once discharged, the plutonium sorbed to soils around and below the perforations of the well. Only minor lateral spreading is expected because of the low volume of effluent discharged and the short operating period. Data show that migration is confined laterally to less than a 4.6-m (15-ft) radius around the well.
3. Downward migration is expected to be limited to within a few feet of the bottom of the well. Radionuclide impacts to groundwater are not expected. While no direct measurements of plutonium concentrations are available at the reverse well itself, concentrations are expected to be highest in the perforated well section (because the well plugged) and in the soils near the perforations. Concentrations are expected to decrease quickly with depth and with distance from the reverse well, based on the low plutonium inventory discharged, low volume of effluent discharged, and the short length of the perforated casing that distributed the waste over 10 m (32 ft) of soil column.

200-PW-1FS.216-Z-10.08/28/07

Figure 3-38. 216-Z-1 and 216-Z-2 Cribs Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

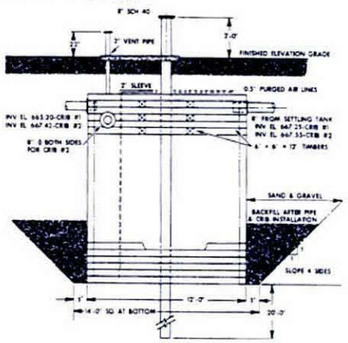
216-Z-1 and 216-Z-2 Cribs

PFP Zone

History

The 216-Z-1 Crib and 216-Z-2 Crib are wooden timber structures that were used for disposal of Z-Plant liquid waste. The 216-Z-2 Crib overflowed into the 216-Z-1 Crib, which overflowed into the 216-Z-1A Tile Field. From 1949 to 1952, the cribs received basic (pH 8 to 10) process and laboratory waste from the 234-5Z Building via the 241-Z-361 Settling Tank. The cribs received acidic (pH 1 to 2.5), high-salt aqueous and organic waste directly from the 236-Z and 242-Z Buildings during two brief periods of a few weeks in 1966 and 1967 while the 216-Z-1A Tile Field discharge point was being moved further south along the main distribution pipe. The cribs received uranium wastes directly from the 236-Z Building from 1968 to 1969. The cribs were administratively retired in 1969 and physically isolated when inlet piping was cut and blanked.

CONSTRUCTION: The 216-Z-1 Crib and 216-Z-2 Crib consist of two open-bottom, 3.7 m (12 ft) square wooden timber boxes set in excavations that were 4.3 m (14 ft) square at the bottom, 6.4 m (21 ft) deep, and backfilled to grade. The cribs were connected and fed by a 20 cm (8 in) diameter stainless steel central pipe with an outlet pipe to the 216-Z-1A Tile Field.



WASTE VOLUME: 33,700,000 L (10,271,000 gal) (RHO-LD-114)

DURATION: 1949 to 1969

ESTIMATED DISCHARGED INVENTORY:

Plutonium	7.0 kg (RHO-LD-114)
Americium-241	Unknown
Uranium (total)	80.9 kg (RHO-LD-114)
Nitrate	100,000 kg (DOE/RL-91-58)
Fluoride	30,000 kg (DOE/RL-91-58)

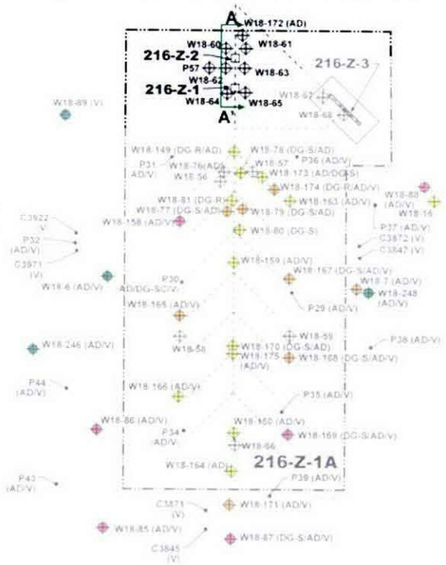
REFERENCES:
WIDS general summary reports
RHO-LD-114
DOE/RL-91-58
CCN 65632-86-095

Basis of Knowledge (Data Types)

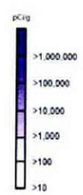
- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Other Downhole Alpha Techniques (OT)
- Soil Sampling Analytical Data (AD)

Site Plan View

(not to scale, all well numbers prefixed by 299-)



LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface



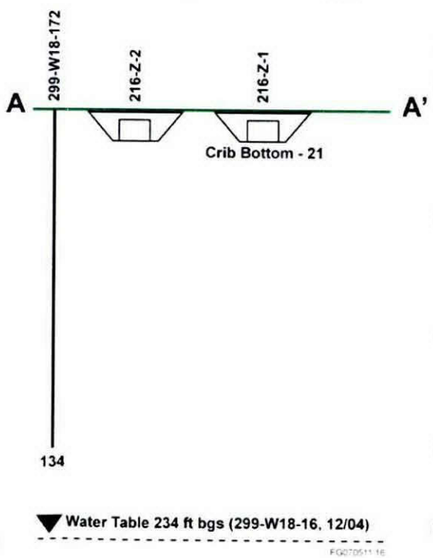
Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

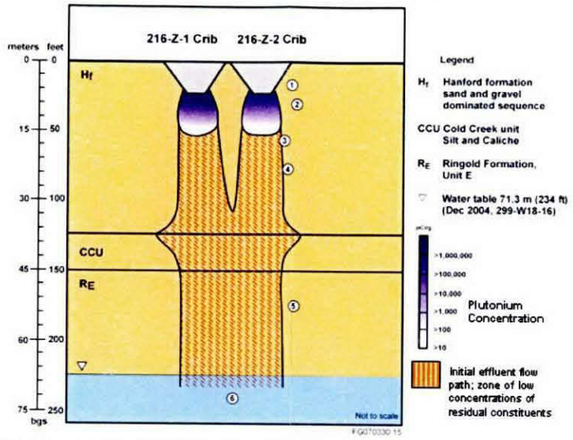
Site-specific sampling data for the 216-Z-1 Crib and 216-Z-2 Crib are limited. A borehole to the north of 216-Z-2 (299-W18-172) was geophysically logged in 2006; no manmade radionuclides were detected. No radionuclide contamination was detected during drilling of a new well (P57) west of the cribs in 2006. In 1986, drop cords, visual inspection, and foil activation methods were used to evaluate alpha contamination in 11 wells at the 216-Z-1 and 216-Z-2 Cribs and the 216-Z-1A Tile Field (CCN 65632-86-095). Wells 299-W18-60, 299-W18-61, and 299-W18-65 near the 216-Z-1 and 216-Z-2 Cribs were found to contain plutonium and americium concentrations estimated as high as 900 nCi/g. The contamination was believed to have resulted from contaminated sediments entering and accumulating in the wells.

Site Section View

(not to scale, units in feet bgs)



Contaminant Distribution Model



1. Approximately 33.7 million liters of liquid waste was discharged to these cribs from 1949 to 1969 at approximately 6.4 m (21 feet) bgs.
2. Liquid waste containing contaminants moved through the cribs where the less mobile contaminants (e.g., plutonium and americium) sorbed to soils near the bottom of the crib structures. A zone of high contamination (i.e., > 1,000,000 pCi/g of plutonium) likely extends a few feet below the crib bottoms, based on data from the 216-Z-3 Crib, which replaced the 216-Z-1 and 216-Z-2 Cribs, and the 216-Z-12 Crib, which replaced the 216-Z-3 Crib.
3. Concentrations are expected to decrease quickly with depth because waste stream contaminants did not significantly impact mobility of the alpha emitters. Significant volumes of organics likely were not discharged to these cribs during the few weeks that they received high salt waste from plutonium recovery operations in the 236-Z Building and 242-Z Building.
4. As the liquid waste continued to migrate downward, more mobile contaminants (e.g., nitrate) continued to be carried downward towards the groundwater. Fine-grained zones in the vadose zone slowed water movement and allowed contaminants to concentrate and move laterally along the interfaces between fine-grained and coarser-grained sediments.
5. Because of the proximity of these waste sites to the 216-Z-3 Crib and the 216-Z-1A Tile Field, subsurface commingling of the waste streams is anticipated. Differentiation of the more mobile contaminants is not likely between the cribs and tile field.
6. The effluent volume and nitrate inventory received at the 216-Z-1 and 216-Z-2 Cribs are sufficient to have likely impacted groundwater. Future groundwater impacts are possible, especially associated with nitrate. Organic impacts are not expected from the 216-Z-1 and 216-Z-2 Cribs.

200-PW-1RIR.216-Z-1&2.08/28/07

Figure 3-39. 216-Z-3 Crib Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

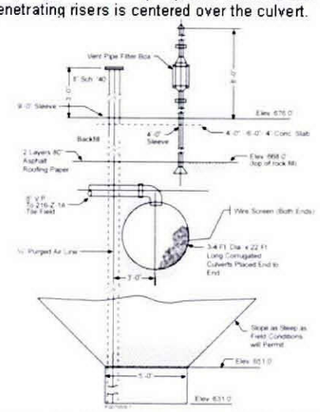
216-Z-3 Crib

PFP Zone

History

The 216-Z-3 Crib is a liquid waste site that was used from 1952 to 1959 as a replacement for the 216-Z-1 Crib and 216-Z-2 Crib for disposal of Z-Plant neutral-basic liquid process and laboratory waste received via the 241-Z-361 Settling Tank. Overflow from the crib went to the 216-Z-1A Tile Field. The site was deactivated by valving out the pipeline to the crib and plugging the overflow line to the 216-Z-1A Tile Field.

CONSTRUCTION: The crib consists of three, 1.2-m (4-ft) diameter, 6.7 m (22 ft) long, perforated corrugated metal culverts laid horizontally, end to end, in the upper portion of a 21-m (70-ft) long, 7.6-m (25-ft) deep excavation. Wire was welded on the culvert ends to prevent gravel intrusion. The culverts were approximately 2.4 m (8 ft) below grade on a 5-m (17-ft) deep bed of gravel that was covered with asphalt roofing paper and backfilled to grade. A 1.2-m (4-ft) wide, 1.8-m (6-ft) long, and 10-cm (4-in) thick concrete slab with penetrating risers is centered over the culvert.



WASTE VOLUME: 178,000,000 L (46,992,000 gal) (RHO-LD-114)

DURATION: 1952 to 1959

ESTIMATED DISCHARGED INVENTORY:

Plutonium	5.7 kg (RHO-LD-114)
Americium-241	Unknown
Nitrate	600,000 kg (DOE/RL-91-58)
Fluoride	160,000 kg (DOE/RL-91-58)

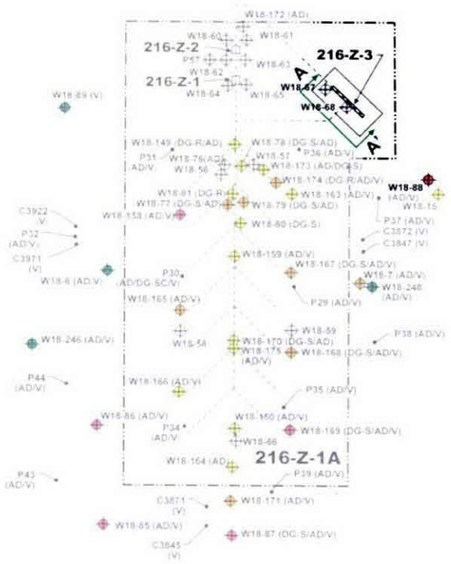
REFERENCES:
WIDS general summary reports
RHO-LD-114
DOE/RL-91-58
ARH-2155

Basis of Knowledge (Data Types)

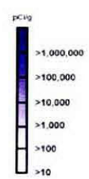
- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)

Site Plan View

(not to scale; all well numbers prefixed by 299-)



LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface



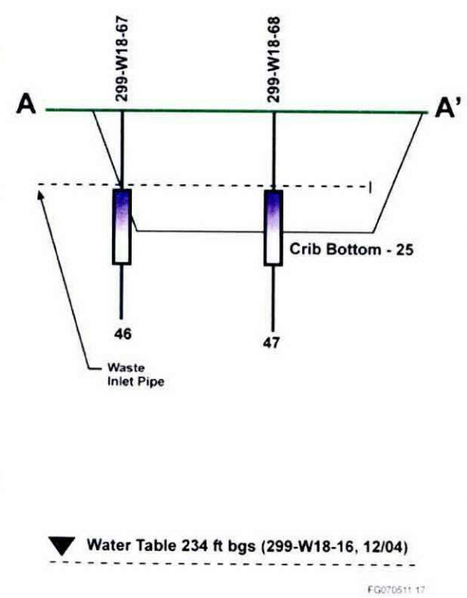
Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

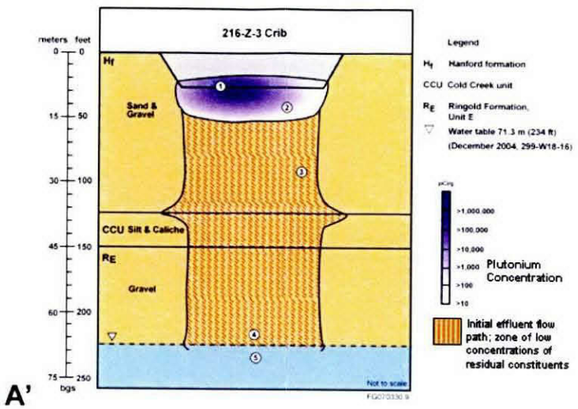
Characterization activities include geophysical logging of 2 boreholes drilled through the crib. The logs show plutonium and americium contamination from about 5.5 to 9 m (18 to 30 ft) bgs at concentrations exceeding 1,000,000 pCi/g for plutonium.

Site Section View

(not to scale; units in feet bgs)



Contaminant Distribution Model



1. Approximately 178 million liters of liquid waste was discharged to the crib from 1952 to 1959 at a depth of approximately 2.4 m (8 ft) bgs. The crib was filled with gravel to the bottom of the excavation, approximately 7.6 m (25 ft) bgs.
2. Liquid waste containing contaminants moved through the gravel bed, and the less mobile contaminants (e.g., plutonium and americium) sorbed to soils near the bottom of the crib structure. A zone of high contamination (i.e., > 1,000,000 pCi/g of plutonium) extends from about 5.5 to 9 m (18 to 30 ft) bgs. Concentrations decreased quickly with depth below 9 m (30 ft). Only a small volume of organics, if any, were likely to have been discharged to this crib in association with the laboratory development waste.
3. As the liquid waste continued to migrate downward, more mobile contaminants (e.g., nitrate) continued to be carried downward towards the groundwater. Fine-grained lenses in the vadose zone slowed water movement and allowed contaminants to concentrate and move laterally along the interfaces between fine-grained and coarser-grained sediments.
4. Because of the proximity of this site to the 216-Z-1 Crib, the 216-Z-2 Crib, and the 216-Z-1A Tile Field, subsurface commingling of the waste streams is anticipated. Differentiation of the more mobile contaminants is not likely between the cribs and tile field.
5. The effluent volume and nitrate inventory received at the 216-Z-3 Crib are sufficient to have likely impacted groundwater. Future groundwater impacts are possible, especially associated with nitrate. Organic impacts are not expected from the 216-Z-3 Crib.

200-PW-1RIR.216-Z-3.08/28/07

Figure 3-40. 216-Z-5 Crib Contaminant Distribution Model.

200-PW-6 Operable Unit
Waste Type: Process Waste

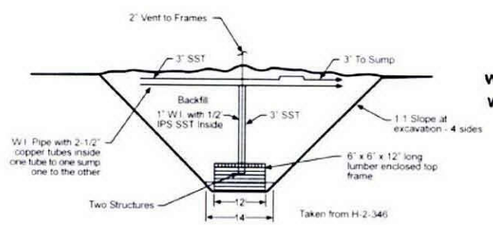
216-Z-5 Crib

PFP Zone

History

The 216-Z-5 Crib was a liquid waste disposal site that was used from 1945 to 1947 to dispose of 231-Z Building plutonium-contaminated process waste from the 231-W-151 Vault. The site ceased operations when sludge blocked the system, and waste was diverted to the 216-Z-7 Crib. The crib was deactivated by capping the inlet line from the vault. The site was stabilized in 1990.

CONSTRUCTION: The crib consists of two, in-line, interconnected 3.8-m (12-ft) square, 1.2-m (4-ft) deep wooden sump boxes that are open at the bottom and fed by the same transfer pipe. Each box was placed at the bottom of a 5.5-m (18-ft) deep rectangular excavation that was 4.3-m (14-ft) square at the bottom and then backfilled to grade. The two crib structures are about 21 m (70 ft) apart.



WASTE VOLUME: 31,000,000 L (8,184,000 gal) (RHO-LD-114)

DURATION: 1945 to 1947

ESTIMATED DISCHARGED INVENTORY:

Plutonium	340 g (RHO-LD-114)
Nitrate	100,000 kg (DOE/RL-91-58)

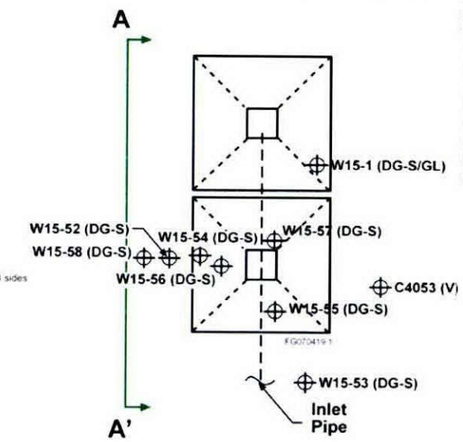
REFERENCES:
WIDS general summary reports
HW-12468
HW-9671
HW-23769
RHO-LD-114
DOE/RL-91-58

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Geologic Logs (GL)
- Vapor Sampling Data (V)

Site Plan View

(not to scale; all W15 well numbers prefixed by 299-)



LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

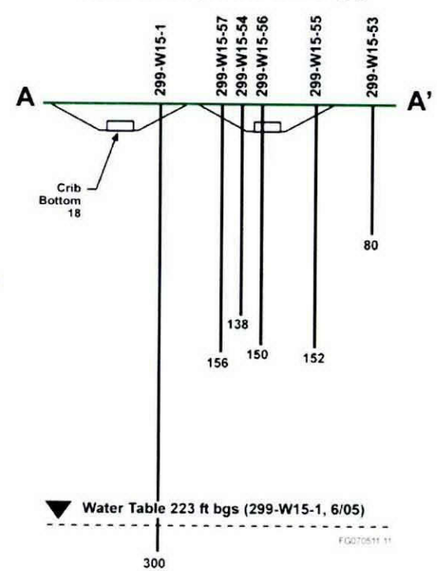
Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

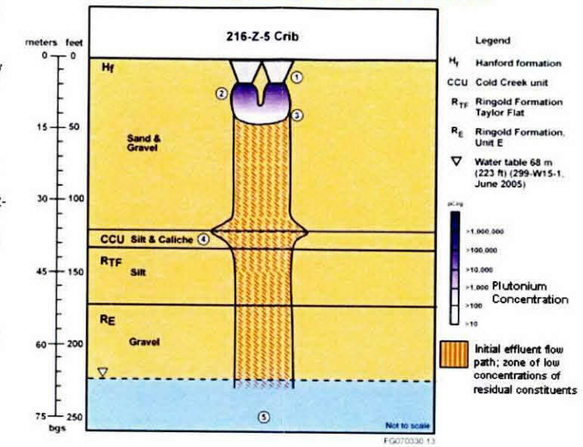
Eight wells were drilled around the first crib structure in 1947 to determine the plutonium distribution in soils around the 216-Z-5 Crib. None of the wells penetrated the bottom of the crib structures. Data indicate that only 0.5 g of the plutonium inventory could be accounted for and that the remainder of the plutonium discharged to this crib likely remains directly beneath the crib bottom (HW-9671). Sample results confirmed that the plutonium had not migrated far beneath the crib bottom. More recent geophysical logging of 6 of these wells in 2005 support the initial results of the 1947 effort. Cobalt-60 and europium-154 (which do not represent current contaminants of potential concern but do indicate where contaminants moved in the soil column) were detected at very low levels in the geophysical logs up to 150 ft bgs. This could indicate the passage of effluent containing more mobile contaminants (e.g., nitrate). Geologic changes at 18 m (60 ft) and 34 m (110 ft) may be zones of elevated concentrations of mobile contaminants.

Site Section View

(not to scale; units in feet bgs)



Contaminant Distribution Model



1. 31 million liters of liquid waste were discharged to the 216-Z-5 Crib from 1945 to 1947.
2. Liquid waste was released at the crib bottom, where immobile contaminants (e.g., plutonium) sorbed to soils. A zone of high contamination likely extends from 5.5 m (18 ft) up to 9 m (30 ft) bgs, based on data from similar sites. Concentrations are expected to decrease quickly with depth.
3. As the moisture front moved downward, more mobile contaminants (e.g., nitrate) were carried along toward groundwater. The effluent volume and nitrate inventory likely are sufficient to have impacted groundwater during operations.
4. Fine-grained zones in the vadose zone slowed water movement and allowed contaminants to concentrate and move laterally along the interfaces between fine-grained and coarser-grained sediments, such as the interface between the Hanford formation and the Cold Creek unit.
5. The effluent volume and nitrate inventory for the 216-Z-5 Crib likely are sufficient to have impacted groundwater. Future groundwater impacts from this crib may be possible, particularly associated with nitrate. However, because the waste inventory is relatively low, significant future impacts are not expected.

200-PW-1RIR.216-Z-5.08/28/07

Figure 3-41. 216-Z-12 Crib Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

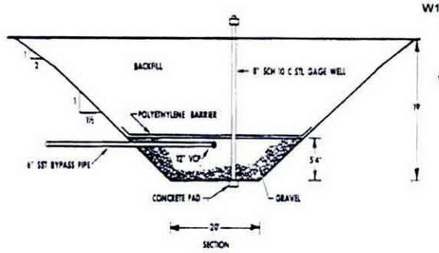
216-Z-12 Crib

PFP Zone

History

The 216-Z-12 Crib is a subsurface liquid waste site that was used from 1959 to 1973 to dispose of PFP liquid process waste, and analytical and development laboratory waste, from the 234-5Z Building via the 241-Z-361 Settling Tank. The waste was low-salt and neutral-basic (pH 8 to 10) when discharged. When the crib was deactivated, the pipeline was blanked in the 241-Z facility. A portion of the crib was vitrified in 1987. The downward progression of the melt reached about 5 m (16 ft) bgs.

CONSTRUCTION: The crib is rectangular, 91 by 6 m (300 by 20 ft) at the bottom, and 5.8 m (19 ft) deep. Waste entered at 4.6 m (15 ft) bgs through a 30-cm (12-in) diameter, perforated, vitrified clay pipe that ran the length of the crib and rested on a 1.5 m (5 ft) bed of gravel. The pipe was covered with a polyethylene barrier and backfilled to grade. In 1968, a 15-cm (6-in) diameter bypass line was installed 9 m (30 ft) west of and parallel to the original distribution line to bypass 30.5 m (100 ft) of the original line that was plugged.



WASTE VOLUME: 281,000,000 L (74,240,000 gal) (RHO-LD-114)

DURATION: 1959 to 1973

ESTIMATED DISCHARGED INVENTORY:

Plutonium	25.1 kg (RHO-LD-114)
Americium-241	Unknown
Nitrate	900,000 kg (DOE/RL-91-58)
Fluoride	300,000 kg (DOE/RL-91-58)
Carbon tetrachloride	Unknown, but limited (RHO-ST-44)

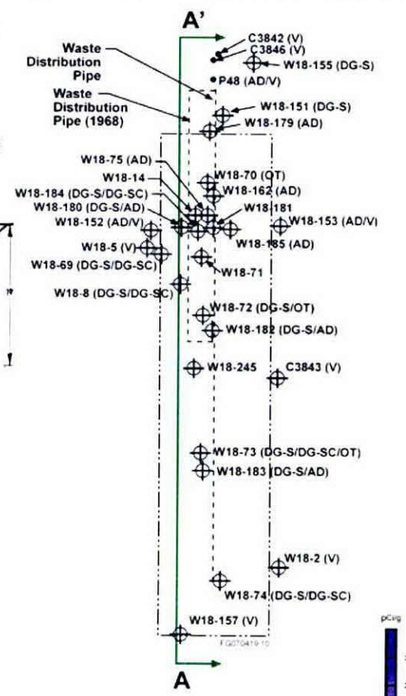
REFERENCES:
WIDS general summary reports
HW-9671
DOE/RL-91-58
RHO-LD-114
RHO-ST-44

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Geologic Logs (GL)
- Soil Sampling Analytical Data (AD)
- Other Downhole Alpha Techniques (OT)
- Vapor Sampling Data (V)

Site Plan View

(not to scale; all well numbers prefixed by 299-)



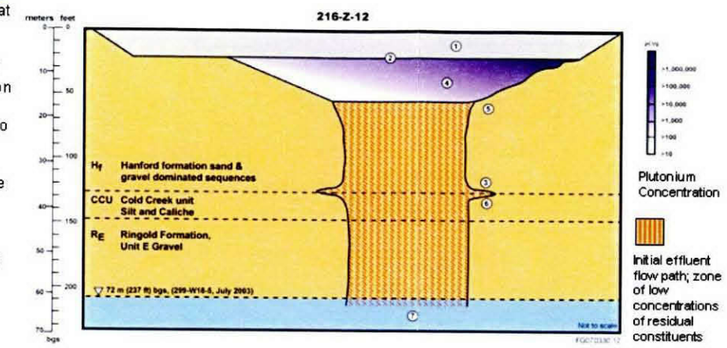
LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

Site Section View Scale. Concentrations of transuranics; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

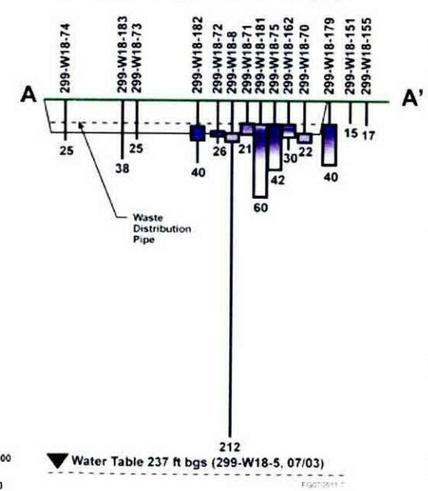
Data collection activities have been ongoing at the 216-Z-12 Crib since early operations. RHO-ST-44 summarizes these early data collection activities (surveys and sampling of shallow wells) and documents characterization activities associated with installation and sampling of additional wells starting in 1979 to better define the plutonium and americium distribution. A soil vapor survey in 1991 indicated the presence of carbon tetrachloride near the crib, and soil vapor extraction operations were initiated in 1995. As part of the remedial investigation, additional soil vapor samples were collected to evaluate the concentration of carbon tetrachloride in the vadose zone at this site.

Contaminant Distribution Model



Site Section View

(not to scale, units in feet bgs)



1. 281 million liters of plutonium process waste was discharged to the 216-Z-12 Crib from 1959 to 1973. The wastes were low-salt and neutral to slightly basic.
2. Effluent and contaminants were released to the environment near the bottom of the crib, into the Hanford formation sands.
3. The wetting front and contaminants moved vertically beneath the crib. Lateral spreading is limited and mainly associated with the Hanford formation gravel-sand contact, the Cold Creek unit, or fine-grained lenses in the Hanford or Ringold Formations. Inventory data on organic contaminants (e.g., carbon tetrachloride) are limited; however, soil vapor sampling indicates the presence of low concentrations of vapor phase carbon tetrachloride in the vadose zone in the vicinity of the crib.
4. More immobile constituents, such as americium and plutonium, generally sorb readily to soils, resulting in higher concentrations near the discharge point. Beneath the crib, however, radionuclides were detected to a depth of more than 18 m (60 ft) bgs. The americium and plutonium concentrations generally decrease with depth. The plutonium and americium are distributed in the northern half of the crib, with little evidence of contamination in the southern half.
5. Carbon tetrachloride migrated through the vadose zone beneath and around the 216-Z-12 Crib. Soil vapor extraction activities at the site have considerably reduced the carbon tetrachloride inventory in the vadose zone. The remedial investigation did not identify carbon tetrachloride in the dense, non-aqueous liquid phase at this location.
6. Low levels (up to a few tens of picocuries per gram) of plutonium and americium activity were detected from 30 to 36 m (98 to 118 ft) below the crib, associated with a thick silt layer in the Cold Creek unit
7. Discharged inventory estimates for nitrate would support potential past and/or future groundwater impacts. However, existing data do not address characterization of the deeper vadose zone.

200-PW-1RIR.216-Z-12.09/04/07

Figure 3-42. 216-Z-18 Crib Contaminant Distribution Model.

200-PW-1 Operable Unit
Waste Type: Process Waste

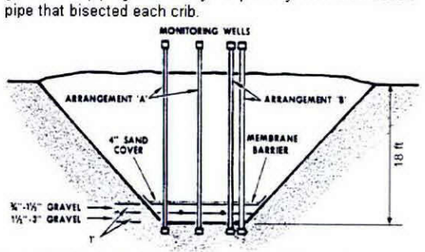
216-Z-18 Crib

PFP Zone

History

The 216-Z-18 Crib was used, as a replacement for the 216-Z-1A Tile Field, to receive high salt, acidic (pH 1 to 2.5) aqueous liquid waste and organic liquid waste from the Plutonium Finishing Plant. The waste streams included plutonium recovery waste from the 236-Z Building and americium recovery waste from the 242-Z Building. Carbon tetrachloride was received in the aqueous phase liquid and, mixed with other organics, as a dense, non-aqueous phase liquid (DNAPL). Crib structures 1 through 4 (shown numbered east to west) received waste; crib structure 5 was not used. The individual crib structures were operated for approximately 1 year each beginning with crib structure 3, followed by crib structures 2, 1, and 4, in that order. The 216-Z-18 Crib was retired in 1973 and deactivated by blanking pipelines in the 236-Z and 242-Z Buildings. Soil vapor extraction has been ongoing at the crib since 1992 to remove carbon tetrachloride from the vadose zone.

CONSTRUCTION: The 95 by 79 m (311 by 259 ft) site consists of 5 separate, parallel crib structures, each 63 m by 3 m (207 ft by 10 ft), and 5.5 m (18 ft) deep. Each crib structure has two 8-cm (3-in) diameter distribution pipes placed on a 0.3-m (1-ft) thick bed of gravel at 5.2 m (17 ft) bgs, buried under an additional 0.3 m (1 ft) of gravel, covered with a membrane and sand, and then backfilled to grade. Crib piping was fed by the primary steel distribution pipe that bisected each crib.



WASTE VOLUME: 3,860,000 L (1,020,000 gal) (RHO-LD-114)

DURATION: 1969 to 1973

ESTIMATED DISCHARGED INVENTORY:

Plutonium	23 kg (RHO-LD-114)
Americium-241	0.4 kg (DOE/RL-91-32)
Carbon tetrachloride	175,000 kg (WCH-SD-EN-TI-248)
Tributyl phosphate	16,400 kg (WCH-SD-EN-TI-248)
Dibutylbutyl phosphonate	19,100 kg (WCH-SD-EN-TI-248)
Nitrate	500,000 kg (DOE/RL-91-58)

REFERENCES:
WIDS general summary reports
RHO-LD-114
SGW-33746
WHC-SD-EN-TI-248
DOE/RL-91-32
DOE/RL-91-58

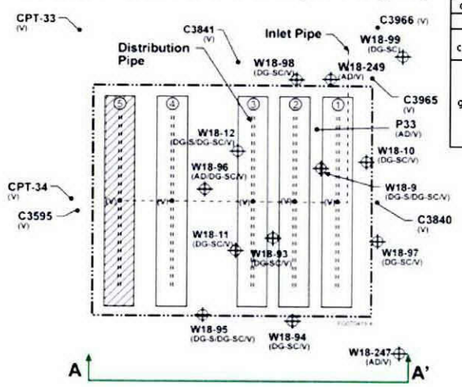
LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Soil Sampling Analytical Data (AD)
- Vapor Sampling Data (V)

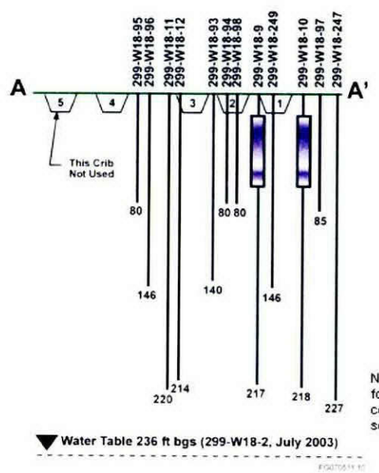
Site Plan View

(not to scale; all W18 well numbers prefixed by 299-)

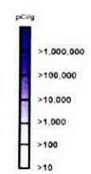


Site Section View

(not to scale, units in feet bgs)

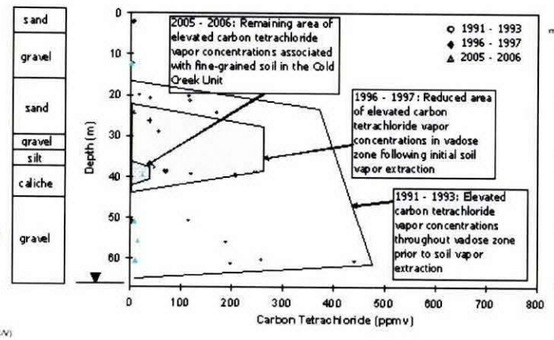


Note: Concentration profile for 299-W18-10 derived from comparison with 299-W18-9 scintillation and logging data.



Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

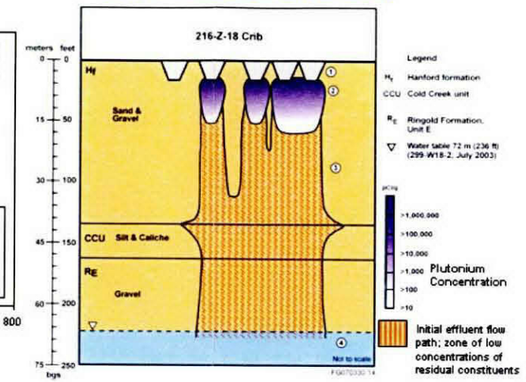
Carbon Tetrachloride Vapor Distribution



Characterization Summary

Characterization activities have been conducted at 216-Z-18 since the 1960s. Scintillation logging of site monitoring wells was conducted in 1968, 1973 and 1976. Wells 299-W18-9 and 299-W18-10 were the only wells that showed contamination above background levels; contamination was identified at about 8 to 17 m (26 to 55 ft) bgs (ARH-ST-156). Characterization was also conducted in 1992 and 1993 in support of soil vapor extraction activities. Spectral gamma logging and neutron moisture logging were conducted in 2006 at wells 299-W18-9, 299-W18-12, and 299-W18-95. Well 299-W18-9 identified plutonium and americium-241 from 7.6 to 18 m (25 to 60 ft) bgs with a maximum concentration of 400,000 pCi/g at 8.2 m (27 ft) bgs. Concentrations decreased with depth to 18 m (60 ft) bgs, where they increased to 250,000 pCi/g. Concentrations decreased to the tool detection limits below about 21 m (70 ft) bgs. Analytical soil data obtained from wells 299-W18-96, 299-W18-247, and 299-W18-249 in 1992 and 1993 did not identify significant organic chemical contamination (e.g., carbon tetrachloride was < 2 ppm). Nitrate was identified in well 299-W18-96 at 4,400 mg/kg at 25.6 m (84 ft) bgs decreasing to < 10 mg/kg at 38.1 m (125 ft) bgs. No significant concentrations of carbon tetrachloride or other volatile organic compounds were identified during soil vapor sampling conducted for the remedial investigation or soil vapor extraction operations in 2005 or 2006.

Contaminant Distribution Model



1. From 1969 to 1973, about 4 million liters of liquid waste were discharged to the 216-Z-18 Crib at a depth of about 5.2 m (17 ft) bgs. Crib operations were controlled so effluent was discharged evenly over the 4 (of 5) crib structures that received waste.
2. Liquid waste and contaminants moved through the gravel bed where the immobile radionuclides (plutonium and americium) sorbed to soils directly below the crib. Site-specific data show crib contamination extending from about 7.6 to 21 m (25 to 70 ft) bgs. Analytical sampling to date did not identify the presence of organics in soil in significant quantities. Any remaining carbon tetrachloride or other organic contaminants are likely associated with, or are directly above, the Cold Creek unit.
3. As the liquid waste continued to migrate downward, more mobile contaminants (e.g., nitrate) moved toward the groundwater. Because of the proximity of the individual crib structures to one another, subsurface intermingling of the waste streams has likely occurred. Fine-grained soils in the vadose zone slowed water movement and allowed mobile contaminants to concentrate and, to a minor extent, move laterally along the interfaces between fine-grained and coarser-grained sediments.
4. Although the overall effluent volume to each crib structure within the site was relatively low and evenly distributed throughout the crib structures, nitrate inventory was reportedly high. Analytical sample results for nitrate and soil moisture demonstrate a potential for past and/or future groundwater impacts from this site. Impacts to groundwater from organic constituents are not expected from this crib.

200-PW-1RIR.216-Z-18.08/30/07

Figure 3-43. 241-Z-8 Settling Tank Contaminant Distribution Model.

200-PW-6 Operable Unit
Waste Type: Process Waste

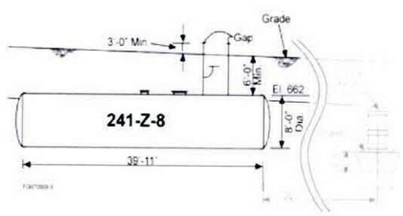
241-Z-8 Settling Tank

PFP Zone

History

The 241-Z-8 settling tank is a horizontal cylindrical tank that operated from 1955 to 1962 as a solids settling tank for effluent waste from back flushes of the RECUPLEX feed filters. Filter backflush solids and silica gel used as a settling agent were flushed to the tank with nitric acid. Overflow from the tank was piped to the 216-Z-8 French drain, located approximately 11 m (36 ft) east of the settling tank. In 1957, the tank reached overflow capacity of 58,500 L (15,435 gal). In 1974, the tank contents were reported as 29,000 L (7,650 gal) of solution, which is well below overflow capacity, and 2,000 L (530 gal) of sludge. This left about 27,580 L (7,285 gal) of waste unaccounted for, creating a concern that waste may have leaked from the tank. However, investigation of surrounding soils found no soil contamination and the unaccounted for waste likely resulted from erroneous measurement of tank contents (RHO-RE-EV-46 P). The tank was pumped in 1974, leaving approximately 18 cm (7 in) of sludge amounting to 1,890 L (500 gallons). The sludge was sampled and shown to contain 0.02 grams of plutonium per liter.

CONSTRUCTION: The tank is 12.2 m (40 ft) long and 2.4 m (8 ft) in diameter. It is constructed of 0.8 cm (5/16 in) thick steel or wrought iron plate and is located 1.8 m (6 ft) below grade. The tank was fed by two 3.8 cm (1.5 in) diameter stainless steel pipes that enter the tank 15 cm (6 in) below the top of the tank.



WASTE VOLUME: 58,500 L tank; up to 1,890 L are estimated to remain in the tank (RHO-RE-EV-46 P)

DURATION: 1955 to 1962

REMAINING INVENTORY:
Plutonium 38 g (WHC-SD-DD-TI-057)
1.5 kg (RHO-RE-EV-46 P)

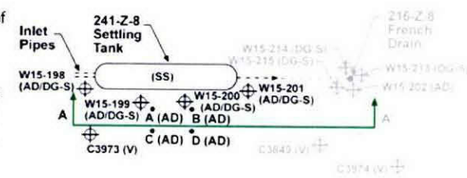
REFERENCES:
WIDS general summary reports
HW-9671
RHO-RE-EV-46 P
WHC-SD-DD-TI-057

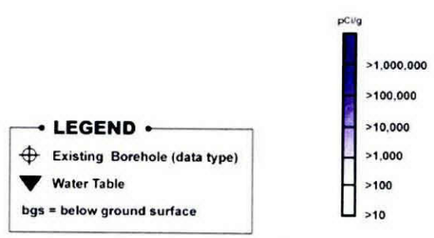
Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Radionuclide Logging System (DG-R)
- Soil Sampling Analytical Data (AD)
- Vapor Sampling Data (V)
- Sludge Sampling Data (SS)

Site Plan View

(not to scale; all well numbers prefixed by 299-)





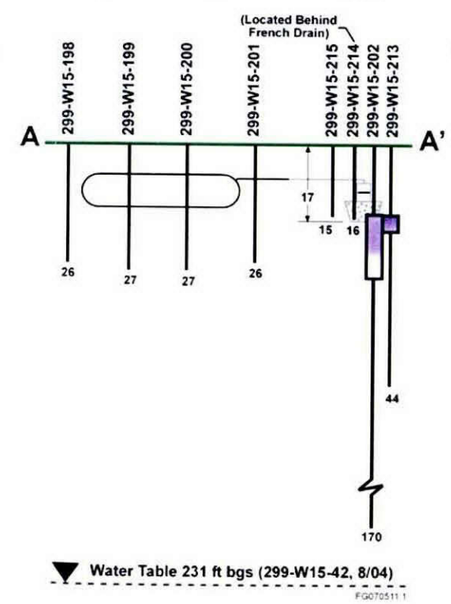
Site Section View Scale. Concentrations of plutonium; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

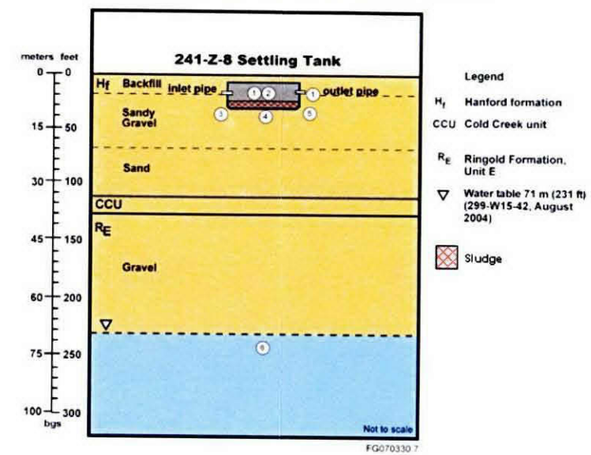
The 241-Z-8 Settling Tank was characterized in 1984 (RHO-RE-EV-46 P) by installation of four wells south of the tank to a depth of 7.6 m (25 ft) bgs (wells 299-W15-198, 299-W15-199, 299-W15-200, 299-W15-201). Two sediment samples were collected from each well at 4.6 and 6.1 m (15 and 20 ft) bgs. In addition, four core samples were collected south of the tank from 0 to 30 cm (0 to 12 in) bgs (core locations A, B, C, D). The maximum plutonium concentration detected was 44 pCi/g in the sample from 0 to 15 cm (0 to 6 in) bgs at core location D. The data do not show that this tank leaked. The tank could contain up to 1.5 kg of plutonium. The four wells south of the tank were geophysically logged in 2005 using a spectral gamma system. No contamination was noted in the logs.

Site Section View

(not to scale; units in feet bgs)



Contaminant Distribution Model



1. The 241-Z-8 Settling Tank received low-level, dilute, neutral plutonium waste from back flushes of the RECUPLEX feed filters from 1955 to 1962. The overflow supernatant liquid was discharged to the soil column through the 216-Z-8 French drain.
2. In 1974, the tank was pumped of liquids leaving approximately 1,890 liters (500 gallons) or 18 centimeters (7 inches) of sludge in the tank containing from 38 grams of plutonium (WIDS) to as much as 1.5 kilograms of plutonium (RHO-RE-EV-46 P).
3. Geophysical logging and soil sample analytical data obtained near the tank identified minimal contamination in the tank vicinity.
4. At the time the tank was pumped approximately 27,500 liters (7,285 gallons) of waste were not accounted for, identifying a potential that the waste was lost through tank leakage. However, data from borehole core samples and geophysical logging do not show that this tank has leaked.
5. If tank leakage had occurred, non-mobile contaminants, such as plutonium, would be expected to exist near the point of release, as observed at the 216-Z-8 French drain, and mobile contaminants, such as nitrate, would have migrated downward with the moisture front. However, because no leaks were identified through sampling activities, contaminant migration from the tank site is not expected.
6. Even if leaks had occurred, the potentially small waste volume and significant depth to groundwater would make impacts to groundwater unlikely.

200-PW-1FS.241-Z-8.08/30/07

Figure 3-44. 216-A-7 Crib Contaminant Distribution Model.

200-PW-3 Operable Unit
Waste Type: Process Waste

216-A-7 Crib

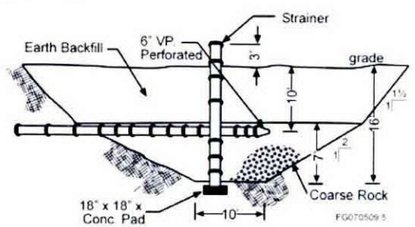
PUREX Zone

History

The 216-A-7 Crib was a liquid waste disposal site that received PUREX sump waste from the 241-A-152 Diversion Box sump at the 241-A Tank Farm from January 1956 to July 1959. After 1959, the sump waste was rerouted to a catch tank that overflowed to the 216-A-7 Crib. In November 1966, the site received the entire tributyl phosphate-Soltrol* organic inventory from the 202A Building. The waste was low salt and neutral to basic. The site was deactivated by blanking the effluent pipeline.

*Trademark of Chevron Phillips Chemical Company LP, The Woodlands, TX.

CONSTRUCTION: The crib is 3 by 3 m (10 ft by 10 ft) at the bottom and 4.9 meters (16 feet) deep. It was fed by a 15-cm (6-in) diameter perforated vitrified clay pipe placed horizontally 3.0 m (10 ft) below grade. A 3.0 m (10 ft) length of 15-cm (6-in) diameter perforated vitrified clay pipe connects perpendicularly to the inlet pipe in a horizontal cross pattern to distribute the liquid. The pipes rest on approximately 2.1 m (7 ft) of coarse rock. The site has been backfilled.



WASTE VOLUME: 326,000 L (86,100 gal) (ARH-CD-745)

DURATION: 1956 to 1966.

ESTIMATED DISCHARGED INVENTORY (RPP-26744, mean values; radionuclides decayed to 01/01/2001):

Cesium-137	2,988 Ci
Uranium (total)	481 kg
Tributyl phosphate	159,548 kg
Normal paraffin hydrocarbon	68,367 kg
Soltrol** (inventory based on tank size)	246,000 L
Nitrate	1,492 kg

**RPP-26744 lists the Soltrol, a proprietary hydrocarbon compound, as normal paraffin hydrocarbon.

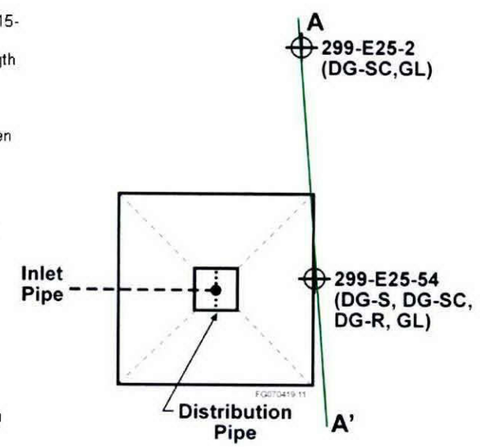
REFERENCES:
WIDS general summary reports
ARH-CD-745
RPP-26744
DOE/RL-92-04
ARH-ST-156

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Downhole Geophysics – Radionuclide Logging System (DG-R)
- Geologic Logs (GL)

Site Plan View

(not to scale)



LEGEND
- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

pCi/g: >1,000,000; >100,000; >10,000; >1,000; >100; >10

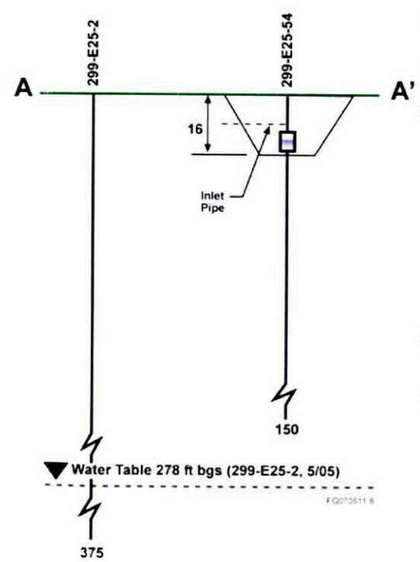
Site Section View Scale. Concentrations of cesium-137; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

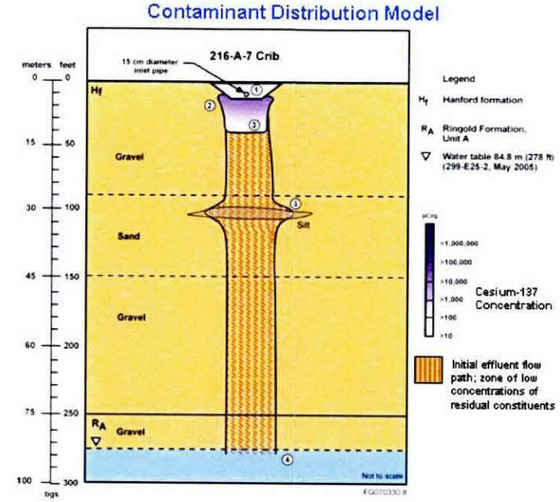
The 216-A-7 Crib operating history and downhole geophysical logs of Wells 299-E25-2 and 299-E25-54 suggest contamination associated with the waste inlet (3 m [10 ft] bgs) and the crib bottom (4.9 m [16 ft] bgs). Cesium-137 was identified in Well 299-E25-54 from 3 to 4.3 m (10 to 14 ft) bgs. The maximum concentration was 600 pCi/g at 3.7 m (12 ft) bgs. Vadose zone contamination was not identified in Well 299-E25-2. Groundwater monitoring in the area is limited to Well 299-E25-2, located 11 m (36 ft) north of the 216-A-7 Crib. The effluent volume and inventory indicate some potential for deeper contamination. Geophysical logging at Well 299-E25-54 showed cobalt-60 and europium-154, more mobile contaminants, between 8.5 and 12.8 m (28 and 42 ft) bgs, and indications of elevated moisture around 35 and 41 m (115 and 135 ft) bgs.

Site Section View

(not to scale, units in feet bgs)



Contaminant Distribution Model



1. The crib received 326 thousand liters of low salt, neutral to basic waste that contained organic chemicals and radionuclides from 1956 to 1966.
2. Cesium-137 typically sorbs to soil immediately below the release point. Cesium-137 concentrations are expected to be highest at 3 m (10 ft) bgs, potentially ranging from the tens to hundreds of thousands of pCi/g or more, based on the estimated inventory discharged and the limited volume of effluent discharged. Cesium-137 concentrations are expected to decrease with depth. Data at the edge of the crib indicate minimal spread of contaminants near the surface. Data collected at the 216-A-8 Crib, a similar site to the 216-A-7 Crib, did not show significant enhanced mobility associated with the organics discharged through the crib. The effects of the tributyl phosphate-Soltrol solution are uncertain, but should be similar to tributyl phosphate-normal paraffin hydrocarbon effects characterized at the 216-A-8 Crib.
3. Organic constituents also are expected primarily near the bottom of the crib but could have migrated downward, and possibly laterally, further than the less mobile cesium-137.
4. Groundwater impacts from the 216-A-7 Crib have not been directly identified; however, Well 299-E25-2 located north of the crib, had elevated concentrations of several constituents (e.g., cesium-137, strontium-90, nitrate) shortly after startup of the crib. These contaminants may also be associated with the 216-A-1 Crib located to the north of both the well and 216-A-7 Crib. Mobile contaminants, such as nitrate or uranium, may have impacted groundwater in the past and may pose a future threat to groundwater if these contaminants remain in the soil column. However, potential impacts to groundwater are not expected to be significant based on the lower effluent volume discharged.

200-PW-1RIR.216-A-7.09/06/07

Figure 3-45. 216-A-24 Crib Contaminant Distribution Model.

200-PW-3 Operable Unit
Waste Type: Process Waste

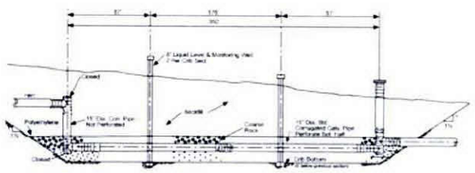
216-A-24 Crib

200-E Ponds Zone

History

The 216-A-24 Crib was a liquid waste site used for disposal of low salt, neutral/basic radioactive vapor condensate from the 241-A, 241-AX, 241-AY, and 241-AZ tank farms. This crib replaced the 216-A-8 Crib. After crib construction, surface condensers were installed in the tank farms, which greatly reduced the waste volume discharged to the crib. As a result, most of the waste volume was discharged to the first two of the four crib sections. This site is associated with UPR-200-E-56. The crib was believed to have been deactivated in 1966 by closing the valve on the inlet pipe, but the valve was discovered to be open in 1979; the crib could potentially have received waste until then. The site was surface stabilized in 1988.

CONSTRUCTION: The crib was built in four in-line sections, each 107 m (350 ft) long, separated by soil berms installed at increasingly lower elevations, to allow the effluent to cascade from one section to the next. The crib is a total of 427 m (1,400 ft) long and 6 m (20 ft) wide. The crib was constructed with a 38-cm (15-in) diameter perforated steel pipe placed horizontally 3 m (10 ft) below grade and backfilled with a polyethylene barrier between the gravel and the backfill.



WASTE VOLUME: 820,000,000 L (216,480,000 gal) (ARH-CD-745)

DURATION: 1958 to 1966 (and potentially to 1979 due to open valve)

ESTIMATED DISCHARGED INVENTORY (RPP-26744, mean values; radionuclides decayed to 01/01/2001):

Cesium-137	401 Ci
Tritium	8,798 Ci
Uranium (total)	65 kg
Tributyl phosphate	21,420 kg
Normal paraffin hydrocarbon	9,192 kg
Butanol	1,034 kg

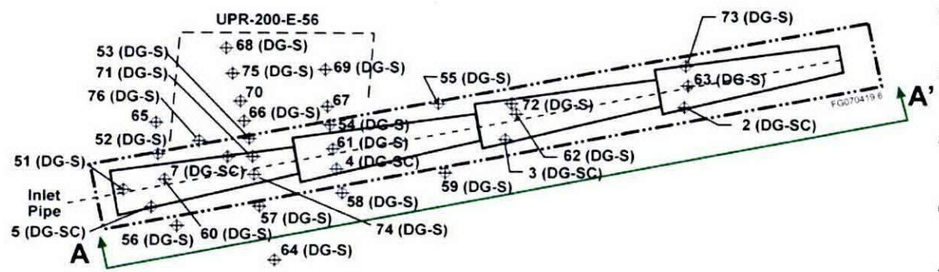
REFERENCES:
WIDS general summary reports
ARH-CD-745
RPP-26744
DOE/RL-2001-01
DOE/RL-92-04

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Scintillation (DG-SC)
- Geologic Logs (GL)

Site Plan View

(not to scale, all well numbers prefixed by 299-E26-)



Characterization Summary

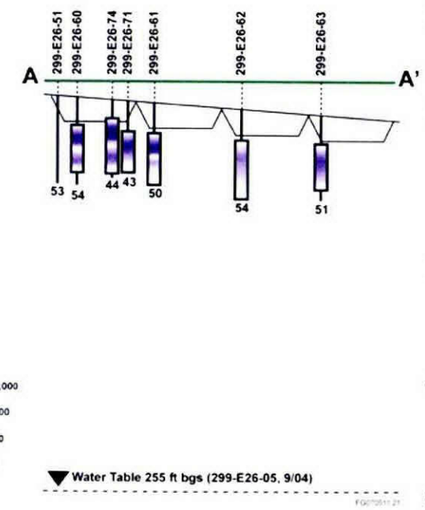
The 216-A-24 Crib has been investigated with a number of boreholes located along the discharge pipe, at the head end of each segment, and at the boundary of the crib. Geophysical logs are available for most of the boreholes. Data show that high concentrations of cesium-137 are located beneath the crib, with the highest levels associated with the two head end western segments. Concentrations exceeded 1,000,000 pCi/g at these boreholes. Concentrations decrease with depth to about 16 m (54 ft) bgs, where the cesium-137 is below 10 pCi/g. Logging data indicate the cesium-137 has not spread outside the crib boundaries except at the UPR-200-E-56 unplanned release to the north. Organics and tritium are identified as being discharged to the crib; boreholes drilled in 1981 (299-E26-53) noted a liquid, blue-green sample at 10 m (33 ft) and organic odors from 4.6 to 12 m (15 to 40 ft) bgs. Drilling logs from boreholes in the crib indicate strong organic odors. The effluent volume and inventory indicate some potential for deep contamination and groundwater monitoring indicates breakthrough (e.g., tritium) beneath the first 2 crib segments.

LEGEND

- Existing Borehole (data type)
- Water Table
- bgs = below ground surface

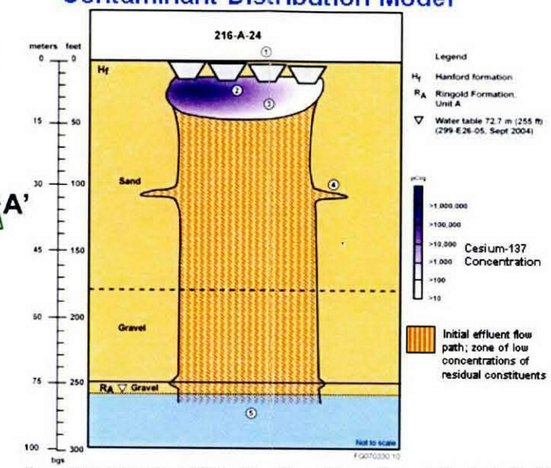
Site Section View

(not to scale, units in feet bgs)



Site Section View Scale. Concentrations of cesium-137; no color bar on Site Section View indicates no contamination was identified in available data.

Contaminant Distribution Model



1. The crib received 820 million liters of low salt, neutral to basic liquid condensate waste from 1958 to 1966; unintentionally open piping may have resulted in additional discharges until 1979. Most of the waste volume was discharged to the first 2 segments of the 4-segment crib.
2. Liquid waste containing contaminants moved through the gravel fill material of the crib, where the more immobile contaminants (e.g., cesium-137) filtered out near the bottom of the crib structure. A zone of high contamination (i.e., > 1,000,000 pCi/g of cesium-137) extends from about 4.6 to 6.7 m (15 to 22 ft) bgs. A second zone (concentrations >10,000 pCi/g) was noted in several boreholes approximately 9 to 12 m (30 to 40 ft) bgs. Concentrations decrease below this depth.
3. Based on evidence from drilling in the 1980's, organics migrated to at least 12 m (40 ft) bgs. Biological and other attenuation processes may have reduced organic contamination through time. While organic constituents still may be located in the vadose zone, data collected at the 216-A-8 Crib, which the 216-A-24 Crib replaced, did not indicate remaining organics in the vadose zone.
4. As the liquid waste continued to migrate downward, more mobile contaminants (e.g., tritium) continued to be carried downward towards the groundwater. Finer-grained zones in the vadose slowed water movement and allowed contaminants to concentrate and move laterally along the interfaces between fine-grained and coarser-grained sediments.
5. Groundwater in this area has been impacted by discharge to the crib. Based on the effluent volume and the tritium inventory for the 216-A-24 Crib, any future groundwater impacts are likely to be from tritium; however, future impacts are expected to be minimal due to the large effluent volume discharged, the mobility of tritium, and the short half life of tritium (12.3 yr) (i.e., likely only a small inventory of tritium remains in the vadose zone).

200-PW-1RIR.216-A-24.09/04/07

Figure 3-46. 216-A-31 Crib Contaminant Distribution Model.

200-PW-3 Operable Unit
Waste Type: Process Waste

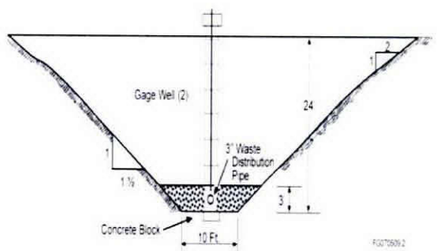
216-A-31 Crib

PUREX Zone

History

The 216-A-31 Crib was a below-grade liquid waste site that was used from 1964 to 1966 to dispose of organic and radioactive liquid waste from 202-A L-Cell, where the final plutonium concentration step of the PUREX process occurred. L-Cell waste was sent to the 216-A-31 Crib via the 241-A-151 Diversion Box after the 216-A-2 Crib was shut down. The site was deactivated in 1966 by blanking the L Cell nozzles to the diversion box.

CONSTRUCTION:. The crib is 21 by 3 m (70 by 10 ft) at the bottom and is 7.3 m (24 ft) deep. A 7.6-cm (3-in) stainless steel perforated distribution pipe was placed horizontally 6.4 m (21 ft) below grade on 0.9 m (3 ft) of gravel and then the crib was backfilled.



WASTE VOLUME: 30,545 L (8,070 gal) (ARH-231)
10,000 L (2,600 gal) (RHO-CD-673)

DURATION: 1964 to 1966

ESTIMATED DISCHARGED INVENTORY (RPP-26744, mean values; radionuclides decayed to 01/01/2001):

Cesium-137	371 Ci
Uranium (total)	60 kg
Tributyl phosphate	19,800 kg
Normal paraffin hydrocarbon	8,491 kg

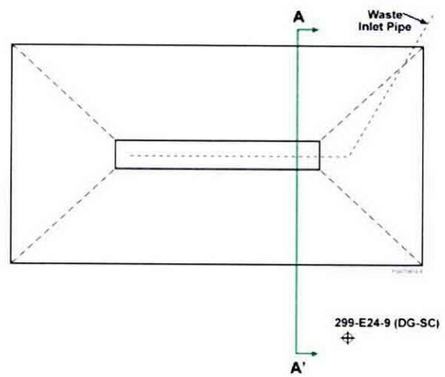
REFERENCES:
WIDS general summary reports
ARH-231
RHO-CD-673
RPP-26744
ARH-ST-156
DOE/RL-92-04

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics – Scintillation (DG-SC)

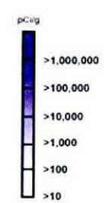
Site Plan View

(not to scale)



Legend

- ⊕ = Existing Borehole (data type)
- ▼ = Groundwater Surface
- bgs = below ground surface



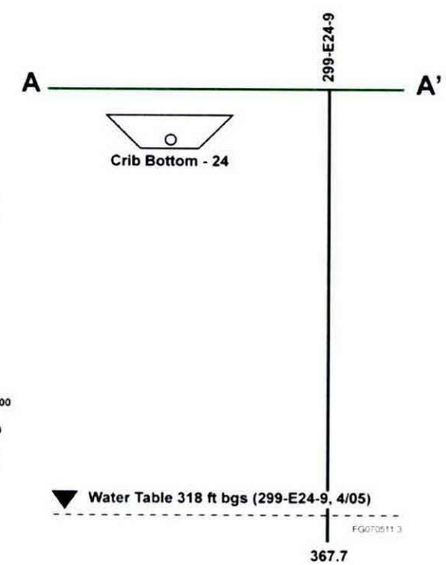
Site Section View Scale. Concentrations of cesium-137; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

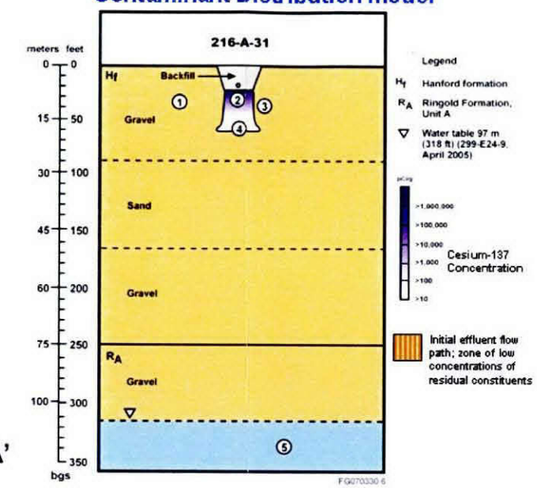
No investigation activities have been performed within the boundaries of the 216-A-31 Crib. Well 299-E24-9, located 21 m (69 ft) south of the crib, was geophysically logged in 1963, 1970, and 1975 with a scintillation logging system. No contamination was identified in the vadose zone (ARH-ST-156). The waste from the 216-A-2 Crib was redirected to the 216-A-31 Crib after the 216-A-2 Crib was shut down. The contaminant distribution model is based on an understanding of the 216-A-31 Crib waste stream, the limited contaminant inventory, the small volume discharged at the crib, and on data and information from the 216-A-2 Crib.

Site Section View

(not to scale; units in feet bgs)



Contaminant Distribution Model



1. The 216-A-31 Crib received 10 to 31 thousand liters of organic, low salt, neutral to basic liquid waste from 1964 to 1966. The primary contaminants in the waste were cesium-137 and the organic compounds tributyl phosphate and normal paraffin hydrocarbon.
2. Cesium-137 typically sorbs to soil immediately below the release point. Cesium-137 concentrations are expected to be highest at 7.3 m (24 ft) bgs, potentially ranging from the tens to hundreds of thousands of pCi/g, based on the estimated inventory discharged and the limited volume of effluent discharged. Cesium-137 concentrations are expected to decrease with depth.
3. Organic constituents also are expected primarily near the bottom of the crib but could have traveled downward, and possibly laterally, further than the less mobile cesium-137. Because of the small volume released, waste contaminants are not expected to have migrated laterally beyond the crib boundary or more than a few meters below the crib bottom. A fine-grained layer at about 15.5 m (51 ft) bgs was identified at the nearby 216-A-4 Crib. Contaminants reaching this less permeable layer may have spread laterally but are not expected to have moved deeper.
4. Volatilization and biological degradation decrease organic concentrations over time. Data from the remedial investigation at the similar 216-A-8 Crib did not show significant organic contamination in the vadose zone.
5. Groundwater impacts are not expected due to the low discharge volume.

200-PW-1RIR.216-A-31.08/29/07

Figure 3-47. UPR-200-E-56 Unplanned Release Contaminant Distribution Model.

200-PW-3 Operable Unit
Waste Type: Process Waste

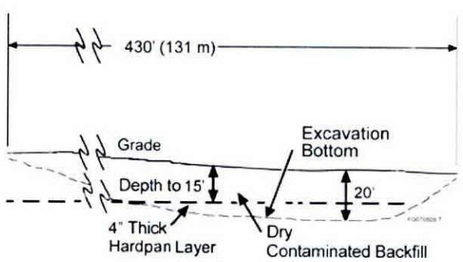
UPR-200-E-56

200-E Ponds Zone

History

The UPR-200-E-56 unplanned release site was initially a borrow pit that was used to provide clean soil to backfill around the new, below-grade 241-AN tanks. The pit was historically 1.5 to 6.1 m (5 to 20 ft) deep; however, no official depth measurement is documented. During radiation monitoring performed in June 1979, the excavation was found to be moist and radioactively contaminated. The source of the moisture and contamination was most likely effluent waste from the adjacent 216-A-24 Crib that had seeped laterally over the surface of a 10-cm (4-in) thick hardpan crust approximately 4.6 m (15 ft) bgs. The pit was refilled with contaminated soil retrieved from the 241-AN tanks location and unplanned releases associated with the 241-C Tank Farm and the 200 East Area (UPR-200-E-91, UPR-200-E-92, and UPR-200-E-93). The site was then covered with 15 to 20 cm (6 to 8 in) of clean soil. In 1985, contaminated soil from the 244-A Lift Station (UPR-200-E-100) was disposed at this site and the site was re-stabilized with 0.6 m (2 ft) of clean soil.

CONSTRUCTION: The pit was a sloping excavation dug 1.5 to 6.1 m (5 to 20 ft) deep (estimated), 131 m (430 ft) long, and an average of 33.5 (110 ft) ft wide (approximately 0.4 hectare [1 acre] overall).



WASTE VOLUME: Unknown

DURATION: 1979 (Occurrence date)

ESTIMATED DISCHARGED INVENTORY: Unknown

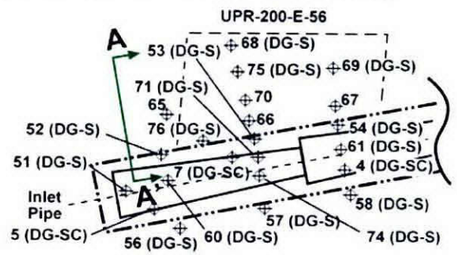
REFERENCES:
WIDS general summary reports
RHO-LD-80-75

Basis of Knowledge (Data Types)

- Process History (PH)
- Downhole Geophysics - Spectral (DG-S)
- Downhole Geophysics – Radionuclide Logging System (DG-R)
- Geologic Logs (GL)

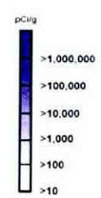
Site Plan View

(not to scale, all well numbers prefixed by 299-E26-)



LEGEND

- Existing Borehole (data type)
- Water Table
- bgs = below ground surface



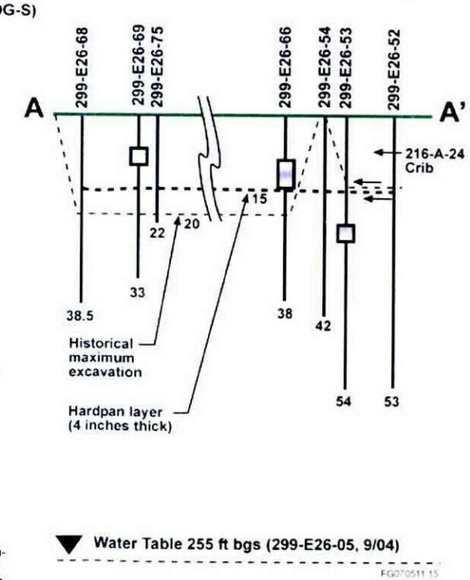
Site Section View Scale. Concentrations of cesium-137; no color bar on Site Section View indicates no contamination was identified in available data.

Characterization Summary

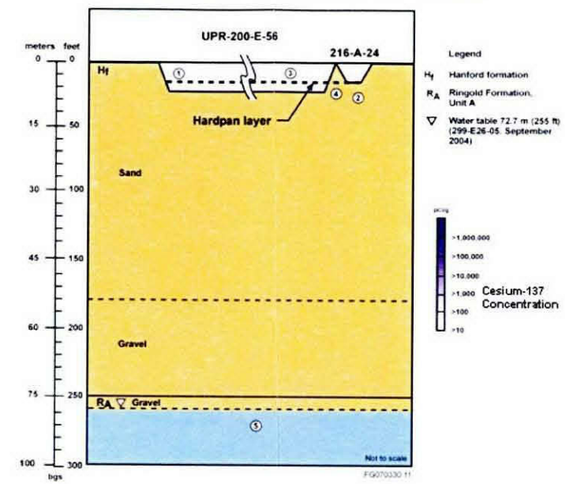
Monitoring in 1979 identified moisture and radioactive contamination of 8,000 counts per minute in the excavated borrow pit next to the 216-A-24 Crib. Radionuclide logging at the backfilled site performed in 1994 identified 21.7 pCi/g of cesium-137 at 2.3 m (7.5 ft) bgs in borehole 299-E26-68 and 5.0 pCi/g of cesium-137 at 2.3 m (7.5 ft) bgs in borehole 299-E26-75. Spectral gamma geophysical logging during 2005 identified maximum cesium-137 concentrations of 100 pCi/g at 7.3 m (24 ft) bgs in 299-E26-53, 80 pCi/g at 3.8 m (12.5 ft) bgs in 299-E26-66, and 40 Ci/g at 2.7 m (9 ft) bgs in 299-E26-69, decreasing with depth to the bottom of the excavation (approximately 6 m [20 ft] bgs), where it was generally no longer detected.

Site Section View

(not to scale, units in feet bgs)



Contaminant Distribution Model



1. During routine monitoring in 1979, a 1.5 to 6 m (5 to 20 ft) deep borrow pit was found to be moist and to contain radioactive contamination of 8,000 counts per minute. This pit was intended to be a source of clean borrow material, which was used to backfill around the new 241-AN tanks.
2. Low volumes of contaminated effluent waste from the adjacent 216-A-24 Crib most likely seeped laterally to the borrow pit area on the surface of a 10.2-cm (4-in) thick hardpan crust that is approximately 4.6 m (15 ft) bgs.
3. The borrow pit was refilled with dry, contaminated soil retrieved from the 241-AN tanks excavation and other unplanned release areas associated with the 241-C Tank Farm and 200 East Area. The soils added back to the borrow pit are expected to have low-level radioactive contamination that is homogeneously distributed as a result of mixing of soils during transfers and that is immobile because of the lack of moisture.
4. The deepest contamination was found in soil between the excavated pit and the 216-A-24 Crib, just outside the borrow pit excavation boundary and at depths slightly deeper than the historical bottom of the pit. This confirms the that the most likely source of the contamination in the excavated pit was lateral waste migration from the 216-A-24 Crib.
5. Contaminants are expected to remain contained within the 6-m (20-ft) deep excavated pit; groundwater impacts from this site are not expected. Excavation backfill material was dry and the unplanned release of effluent was not of sufficient volume to facilitate contaminant migration to groundwater.

200-PW-1RIR.UPR200-E-56.08/29/07

Table 3-1. 1961 and 1963 Historical Soil-Sample Results from 216-Z-9 Trench.* (2 Pages)

				Converted Concentration
Sample Location	**Sampler Number**	**Depth (cm)**	**Plutonium (g/L)**	**Plutonium (pCi/g)**
5	3	61-91.5	0.61	16,443,478
5	5	122-137	0.09	2,426,087
5	6	137-152	0.16	4,313,043
5	7	152-168	0.07	1,886,957
5	8	168-183	0.03	808,696
6	3	30.5-45.7	1.16	31,269,565
6	7	91.5-107	0.24	6,469,565
6	11	152-168	0.34	9,165,217
6	12	168-183	0.13	3,504,348
7	3	30.5-45.7	2.61	70,356,522
7	6	76-91.5	0.53	14,286,957
7	7	122-137	1.69	45,556,522
8	3	30.5-45.7	0.7	18,869,565
8	4	45.8-61	1.43	38,547,826
8	5	61-76	1.81	48,791,304
8	7	122-137	0.5	13,478,261
8	8	168-198	0.08	2,156,522
8	10	213-229	0.07	1,886,957
8	11	229-244	0.1	2,695,652
9	2	30.5-61	0.6	16,173,913
9	3	61-81.3	0.3	8,086,957
9	4	81.3-102	0.12	3,234,783
9	5	102-122	0.12	3,234,783
9	6	122-137	0.13	3,504,348
9	7	137-152	0.18	4,852,174
9	8	152-168	0.15	4,043,478
9	9	168-183	0.18	4,852,174
10	3	30.5-45.7	0.35	9,434,783
10	5	61-76.2	0.23	6,200,000
10	7	91.5-107	0.06	1,617,391
10	10	137-152	0.51	13,747,826
10	11	152-168	0.14	3,773,913
10	12	168-183	0.08	2,156,522

Table 3-1. 1961 and 1963 Historical Soil-Sample Results from 216-Z-9 Trench.* (2 Pages)

				Converted Concentration
Sample Location	**Sampler Number**	**Depth (cm)**	**Plutonium (g/L)**	**Plutonium (pCi/g)**
12	4	45.7-61	0.06	1,617,391
12	10	76.2-91.5	0.62	16,713,043
12	11	122-137	0.62	16,713,043
12	12	137-152	0.41	11,052,174

*Results are from ARH-2915, *Nuclear Reactivity Evaluations of 216-Z-9 Enclosed Trench*. Results less than 30 cm depth are not included because material was removed by the 1976-78 mining operation. See Figure 2-3 for sample locations.

g/L to pCi/g conversion = g/L × (0.062 Ci/1g) × (1L/1000 cm^3) × (1/2.3 g/cm^3) × (1 pCi/(1 × 10^{-12} Ci)).
2.3 g/cm^3 soil density is reported in ARH-2915, Appendix L, Table I.
Specific activity of Pu-239 (0.06214029 Ci/g) from Lide, 2006, *CRC Handbook of Chemistry and Physics*.

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (µCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
A	4-6	30-46	142	12	999	0.8	3,827,826	434,348
A	4-6	30-46	174	10	1110	0.8	4,690,435	482,609
A	4-7	45-69	399	9	2640	0.7	10,755,652	1,147,826
A	4-7	45-69	418	8	2660	0.6	11,267,826	1,156,522
A	4-7	69-84	145	16	823	1	3,908,696	357,826
A	4-7	69-84	153	15	818	1	4,124,348	355,652
A	4-7	84-99	60	5	343	0.3	1,617,391	149,130
A	4-7	84-99	60	5	350	0.3	1,617,391	152,174
A	4-7	99-114	76	4	386	0.3	2,048,696	167,826
A	4-7	99-114	84	4	438	0.3	2,264,348	190,435
A	4-7	114-125	91	5	426	0.4	2,453,043	185,217
A	4-7	114-125	79	5	363	0.4	2,129,565	157,826
A	3-1	107-117	421	4	2370	0.4	11,348,696	1,030,435
A	3-1	107-117	412	6	2350	0.5	11,106,087	1,021,739
A	3-1	117-132	381	9	2260	0.7	10,270,435	982,609
A	3-1	132-147	66	16	270	1	1,779,130	117,391
A	3-1	132-147	94	5	424	0.4	2,533,913	184,348
A	3-1	147-163	89	5	395	0.4	2,399,130	171,739
A	3-1	147-163	92	5	413	0.4	2,480,000	179,565
A	3-2	178-193	85	21	385	2	2,291,304	167,391
A	3-2	178-193	88	4	420	0.3	2,372,174	182,609
A	3-2	193-208	58	6	302	0.5	1,563,478	131,304
A	3-2	193-208	56	5	277	0.4	1,509,565	120,435
A	3-2	208-224	49	5	262	0.4	1,320,870	113,913
A	3-2	208-224	52	6	270	0.4	1,401,739	117,391

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (µCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
A	4-2	30.5-38	137	16	1050	1	3,693,043	456,522
A	4-2	38-45.7	128	4	987	0.3	3,450,435	429,130
A	4-4	30.5-38.1	121	11	680	0.9	3,261,739	295,652
A	4-4	38.1-45.7	144	9	858	0.7	3,881,739	373,043
A	4-4	53.3-61	112	18	610	1	3,019,130	265,217
A	4-4	61-68.6	58	6	289	0.5	1,563,478	125,652
A	4-4	61-68.6	58	6	295	0.5	1,563,478	128,261
A	4-5	N/A	407	11	N/A	N/A	10,971,304	N/A
A	4-5	N/A	N/A	N/A	2470	0.6	N/A	1,073,913
A	4-5	N/A	208	10	1140	0.7	5,606,957	495,652
B	4-1	30-46	105	12	580	0.9	2,830,435	252,174
B	4-1	30-46	130	11	716	0.9	3,504,348	311,304
B	4-1	46-61	115	11	614	0.9	3,100,000	266,957
B	4-1	46-61	122	10	646	0.9	3,288,696	280,870
B	4-9	48-64	275	8	1670	0.6	7,413,043	726,087
B	4-9	48-64	171	10	1010	0.8	4,609,565	439,130
B	4-9	64-79	104	8	579	0.6	2,803,478	251,739
B	4-9	64-79	91	13	465	1	2,453,043	202,174
B	4-9	79-94	88	5	503	0.4	2,372,174	218,696
B	4-9	79-94	98	10	480	0.9	2,641,739	208,696
B	3-3	76-107	264	7	1730	0.5	7,116,522	752,174
B	3-3	76-107	309	7	2040	0.5	8,329,565	886,957
B	3-3	?-122	599	5	3890	0.4	16,146,957	1,691,304
B	2.5-1	157-173	110	12	604	1	2,965,217	262,609
B	2.5-1	157-173	126	10	684	0.9	3,396,522	297,391

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (µCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
B	2.5-1	173-188	92	13	434	1	2,480,000	188,696
B	2.5-1	173-188	117	10	556	1	3,153,913	241,739
B	2-1	206-221	110	10	491	1	2,965,217	213,478
B	2-1	206-221	93	12	420	1	2,506,957	182,609
B	2-1	221-236	103	5	494	0.4	2,776,522	214,783
B	2-1	221-236	110	10	478	1	2,965,217	207,826
B	2-1	236-251	119	10	543	1	3,207,826	236,087
B	2-1	236-251	106	5	512	0.4	2,857,391	222,609
C	4-13	30-46	140	11	788	1	3,773,913	342,609
C	4-13	30-46	115	12	633	1	3,100,000	275,217
C	4-13	46-61	120	10	565	0.9	3,234,783	245,652
C	4-13	46-61	148	10	725	0.9	3,989,565	315,217
C	4-13	61-71	119	11	558	1	3,207,826	242,609
C	4-13	61-71	15000	2	100000	0.1	404,347,826	43,478,261
C	4-12	61-76	1980	8	12700	0.2	53,373,913	5,521,739
C	4-12	61-76	2250	8	14800	0.6	60,652,174	6,434,783
C	4-12	76-91	110	10	479	0.9	2,965,217	208,261
C	4-12	76-91	102	19	477	0.2	2,749,565	207,391
C	4-12	91-102	76	10	339	0.9	2,048,696	147,391
C	4-12	91-102	106	11	486	1	2,857,391	211,304
C	3-5	102-122	850	4	5060	0.3	22,913,043	2,200,000
C	3-5	102-122	1280	4	7680	0.3	34,504,348	3,339,130
C	3-5	122-152	233	9	1240	0.8	6,280,870	539,130
C	3-5	122-152	260	8	1530	0.6	7,008,696	665,217
C	3-5	152-168	86	11	395	0.9	2,318,261	171,739

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (µCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
C	3-5	152-168	90	10	411	0.9	2,426,087	178,696
C	3-5	168-183	55	15	263	1	1,482,609	114,348
C	3-5	168-183	51	16	246	1	1,374,783	106,957
C	2.5-2	168-183	89	13	497	1	2,399,130	216,087
C	2.5-2	168-183	81	14	463	1	2,183,478	201,304
C	2.5-2	183-198	29	21	145	18	781,739	63,043
C	2.5-2	183-198	41	19	171	2	1,105,217	74,348
C	2.5-2	198-213	21	13	126	1	566,087	54,783
C	2.5-2	198-213	16	16	105	1	431,304	45,652
C	2-2	211-226	120	11	663	0.9	3,234,783	288,261
C	2-2	211-266	118	12	635	1	3,180,870	276,087
C	2-2	226-241	42	17	210	1	1,132,174	91,304
C	2-2	226-241	51	18	297	2	1,374,783	129,130
C	2-2	241-256	39	16	222	1	1,051,304	96,522
C	2-2	241-256	45	13	252	1	1,213,043	109,565
C	2-2	256-272	31	18	124	2	835,652	53,913
C	2-2	256-272	33	14	139	1	889,565	60,435
C	4-8	20-36	118	12	674	1	3,180,870	293,043
C	4-8	20-36	102	12	601	1	2,749,565	261,304
C	4-8	36-51	127	11	645	1	3,423,478	280,435
C	4-8	36-51	90	11	443	0.9	2,426,087	192,609
C	4-10	30-46	120	11	558	0.9	3,234,783	242,609
C	4-10	30-46	129	11	649	0.9	3,477,391	282,174
C	4-10	46-61	103	4	541	0.3	2,776,522	235,217
C	4-10	46-61	134	11	609	1	3,612,174	264,783

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (µCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
C	4-11	N/A	263	9	2470	0.8	7,089,565	1,073,913
C	4-11	N/A	170	7	946	0.7	4,582,609	411,304
C	4-11	61-71	164	10	708	0.9	4,420,870	307,826
C	4-11	61-71	168	10	765	0.9	4,528,696	332,609
D	4-14	30-46	100	10	397	1	2,695,652	172,609
D	4-14	30-46	74	10	288	0.9	1,994,783	125,217
D	4-14	46-61	100	7	370	0.7	2,695,652	160,870
D	4-14	46-61	93	9	327	0.9	2,506,957	142,174
D	4-14	61-71	114	9	395	1	3,073,043	171,739
D	4-14	61-71	106	10	358	1	2,857,391	155,652
G	4-16	30-46	111	10	836	0.7	2,992,174	363,478
G	4-16	30-46	89	11	620	0.8	2,399,130	269,565
G	4-16	46-61	115	9	627	0.8	3,100,000	272,609
G	4-16	46-61	104	8	524	0.7	2,803,478	227,826
G	4-17	30-46	132	9	723	0.7	3,558,261	314,348
G	4-17	30-46	145	8	869	0.7	3,908,696	377,826
G	4-17	46-61	104	2	562	0.1	2,803,478	244,348
G	4-17	46-61	106	8	570	0.6	2,857,391	247,826
G	4-18	30-46	119	11	695	0.9	3,207,826	302,174
G	4-18	30-46	115	9	672	0.8	3,100,000	292,174
G	4-18	46-61	110	8	607	0.7	2,965,217	263,913
G	4-18	46-61	136	7	795	0.6	3,666,087	345,652

Table 3-2. 1973 Historical Soil Sample Results from 216-Z-9 Trench.* (6 Pages)

							Converted Concentrations	
Sample Location	**Sampler Number**	**Depth (cm)**	**Pu-239 (mg/L)**	**+/- % 2σ**	**Am-241 (μCi/L)**	**+/- % 2σ**	**Pu-239 (pCi/g)**	**Am-241 (pCi/g)**
H	4-15	30-46	121	9	644	0.7	3,261,739	280,000
H	4-15	30-46	123	9	611	0.8	3,315,652	265,652
H	4-15	46-61	137	9	700	0.8	3,693,043	304,348
H	4-15	46-61	120	6	573	0.5	3,234,783	249,130

*Results are from ARH-2915, *Nuclear Reactivity Evaluations of 216-Z-9 Enclosed Trench.* Results less than 30 cm depth are not included because material was removed by the 1976-78 mining operation.

See Figure 2-3 for sample locations.
mg/L to pCi/g conversion = mg/L × (1g/1000 mg) × (0.062 Ci/1g) × (1L/1000 cm^3) × (1/2.3 g/cm^3) × (1 pCi/(1 × 10^{-12} Ci))
μCi/L to pCi/g conversion = μCi/L × (1L/1000 cm^3) × (1/2.3 g/cm^3) × (1 × 10^6 pCi/1 μCi).
2.3 g/cm^3 soil density is reported in ARH-2915, Appendix L, Table I.
Specific activity of Pu-239 (0.06214029 Ci/g) from Lide, 2006, *CRC Handbook of Chemistry and Physics*.

N/A = not available.

Table 3-3. Evaluation of the Presence of DBBP, DBP, and MBP in Samples from Well 299-W15-46.

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	Sample Date	TBP (CAS 126-73-8)			Phosphorus (CAS 7723-14-0)			Phosphorus in TBP (µg/kg)	Phosphorus Result Minus Phosphorus in TBP (µg/kg)
				8270			6010				
				µg/kg	Q	VQ	µg/kg	Q	VQ		
47.5	50	B17N46	10/20/2003	35,000			464,000			4,071	459,930
63.5	66	B17TM6	10/29/2003	2,100,000			595,000			244,230	350,770
90	92.5	B17N52	3/23/2004	40,633.34	D		476,000			4,726	471,274

Four-digit U.S. Environmental Protection Agency methods are found in SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-A*, as amended.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
D = analyzed at a secondary dilution factor.
DBBP = dibutyl butyl phosphonate.
DBP = dibutyl phosphate.
MBP = monobutyl phosphate.
Q = laboratory data qualifier.
TBP = tributyl phosphate.
VQ = validation qualifier.

Table 3-4. Evaluation of the Presence of DBBP, DBP, and MBP in Samples from Well 299-W15-48.

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	Sample Date	TBP (CAS 126-73-8)			Phosphorus (CAS 7723-14-0)			Phosphorus in TBP (µg/kg)	Phosphorus Result Minus Phosphorus in TBP (µg/kg)
				8270			6010				
				µg/kg	Q	VQ	µg/kg	Q	VQ		
67	69	B1HK27	3/20/2006	120,000			621,000			13,956	607,044
70	72	B1HK32	3/22/2006	3,000,000	D		897,000			348,900	548,100
100	102	B1HK52	4/4/2006	46,000	D		704,000			5,350	698,650
118.5	120.5	B1HK42	4/13/2006	4,200			636,000			488	635,512

Four-digit U.S. Environmental Protection Agency methods are found in SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-A*, as amended.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
D = analyzed at a secondary dilution factor.
DBBP = dibutyl butyl phosphonate.
DBP = dibutyl phosphate.
MBP = monobutyl phosphate.
Q = laboratory data qualifier.
TBP = tributyl phosphate.
VQ = validation qualifier.

Table 3-5. Background Values for the 200-PW-1 Operable Unit Representative Waste Sites Radiological Contaminants of Potential Concern.

Radiological Contaminant of Potential Concern	Background Concentration (pCi/g)
Americium-241	N/A
Antimony-125	N/A
Cesium-134	N/A
Cesium-137	N/A
Cobalt-60	N/A
Hydrogen-3 (tritium)	N/A
Neptunium-237	N/A
Plutonium-238	N/A
Plutonium-239	N/A
Plutonium-240	N/A
Radium-226	0.815
Radium-228	N/A
Strontium-90	N/A
Technetium-99	N/A
Thorium-232	1.32
Uranium-234	1.1
Uranium-235	0.109
Uranium-238	1.06

Values are from DOE/RL-96-12, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile.

N/A = no reference source available.

Table 3-6. Background Values for the 200-PW-1 Operable Unit Representative Sites Nonradiological Contaminants of Potential Concern. (2 Pages)

Nonradiological Contaminant of Potential Concern	Background Concentration (mg/kg)
Nonradiological Constituents – Metals	
Arsenic	6.47
Bismuth	N/A
Cadmium	--
Chromium (III)	18.5
Chromium (VI)	N/A
Copper	22.0
Lead	10.2
Mercury	0.33
Nickel	19.1
Selenium	--
Silver	0.73
Nonradiological Constituents – General Inorganics	
Ammonia/ammonium	9.23 [a]
Chloride	100
Fluoride	2.81
Nitrate/Nitrite	52 [b]
Phosphate	0.79 [c]
Sulfate	237
Nonradiological Constituents – Volatile Organics	
1,1-Dichloroethane (DCA)	N/A
1,2-Dichloroethane (DCA)	N/A
1,1,1-Trichloroethane (TCA)	N/A
Acetone	N/A
Benzene	N/A
Carbon tetrachloride	N/A
Cis-1,2-Dichloroethylene	N/A
Chlorobenzene	N/A
Chloroform	N/A
Ethlybenzene	N/A
Hydraulic fluids (greases)	N/A
Methyl ethyl ketone (MEK)	N/A
Methyl isobutyl ketone (MIBK or hexone)	N/A
Methylene chloride	N/A
n-Butyl benzene	N/A
Toluene	N/A

Table 3-6. Background Values for the 200-PW-1 Operable Unit Representative Sites Nonradiological Contaminants of Potential Concern. (2 Pages)

Nonradiological Contaminant of Potential Concern	Background Concentration (mg/kg)
Tetrachloroehtylene (PCE)	N/A
Trans-1,2-Dichloroethylene	N/A
Trichloroethylene (TCE)	N/A
Xylene	N/A
Nonradiological Constituents – Semivolatile Organics	
Normal paraffins (greases and cutting oils)	N/A
Polychlorinated biphenyls (PCBs)	N/A
Phenol	N/A
Tributyl phosphate and derivatives (mono, di)	N/A

Values are from DOE/RL-92-24, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9.a, 90th percentile.

[a]Value provided for ammonia. No value available for ammonium.
[b]Value provided for nitrate. Not enough data above the reporting limit to provide for a distribution fit for nitrite.
[c]Value provide for O-phosphate.

-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24).
N/A = no reference source available.

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample Date	Sample Time					
Pipeline to 216-Z-1D/-Z-11/and-Z-19 Ditches and 216-Z-20 Crib from 231-Z Building									
5.2	6.5	B15JN2	09/25/2002	10:45	C4047	1.0	U	1.0	U
15.2	16.8	B15JN1	09/25/2002	10:33	C4047	1.0	U	1.0	U
24.2	25.4	B15JN0	09/25/2002	10:15	C4047	1.0	U	1.49	
5.2	6.8	B15JN5	09/25/2002	11:53	C4048	1.0	U	1.0	U
5.2	6.8	B15JN6 Duplicate	09/25/2002	11:53	C4048	1.0	U	1.0	U
15.2	16	B15JN4	09/25/2002	11:36	C4048	1.0	U	1.0	U
24.2	25.4	B15JN3	09/25/2002	11:20	C4048	1.0	U	1.0	U
5.2	6.7	B15JR7	09/26/2002	14:47	C4055	1.0	U	1.0	U
15.2	16.5	B15JR6	09/26/2002	14:31	C4055	1.0	U	1.0	U
24.2	25.4	B15JR5	09/26/2002	14:15	C4055	1.0	U	1.0	U
24.2	25.4	B15JR8 Duplicate	09/26/2002	14:15	C4055	1.0	U	1.0	U
7.7	9.1	B156R7	08/29/2002	08:55	C4035	1.0	U	1.0	U
15.2	16.4	B156R6	08/29/2002	08:39	C4035	1.0	U	1.24	
24.2	25.1	B156R5	08/29/2002	07:15	C4035	1.0	U	1.54	
8.2	9.5	B156R3	08/28/2002	15:00	C4034	1.0	U	2.47	
15.2	16.8	B156R2	08/28/2002	14:46	C4034	1.0	U	3.56	
24.2	25.3	B156R1	08/28/2002	14:22	C4034	1.0	U	4.22	
24.2	25.3	B156R4 Duplicate	08/28/2002	14:22	C4034	1.0	U	4.43	
6.2	7.7	B156R0	08/28/2002	13:39	C4033	1.0	U	1.14	
15.2	16.8	B156P9	08/28/2002	13:19	C4033	1.0	U	2.23	
24.2	24.9	B156P8	08/28/2002	12:56	C4033	1.0	U	3.51	
6.2	7.5	B156P7	08/28/2002	11:28	C4032	1.0	U	2.58	
15.2	16.5	B156P6	08/28/2002	10:43	C4032	1.0	U	2.27	
24.2	25.5	B156P5	08/28/2002	10:02	C4032	1.0	U	2.15	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
5.2	6.4	B156P4	08/28/2002	10:02	C4031	1.0	U	1.04	
15.2	15.5	B156P3	08/28/2002	09:43	C4031	1.0	U	1.13	
18.7	19.8	B156P2	08/28/2002	09:29	C4031	1.0	U	1.34	
5.2	6.5	B156P1	08/28/2002	08:55	C4030	1.0	U	1.0	U
15.2	16.5	B156P0	08/28/2002	08:38	C4030	1.0	U	1.0	U
24.2	25.4	B156N9	08/28/2002	08:20	C4030	1.0	U	1.68	
5.2	6.7	B156N8	08/28/2002	07:45	C4029	1.0	U	1.03	
15.2	15.5	B156N7	08/28/2002	07:26	C4029	1.0	U	1.36	
24.2	25.4	B156N6	08/28/2002	07:03	C4029	1.0	U	1.51	
5.2	6.5	B154X8	08/27/2002	14:48	C4028	1.0	U	1.47	
15.2	15.5	B154X7	08/27/2002	14:24	C4028	1.0	U	1.51	
24.2	24.9	B154X6	08/27/2002	13:57	C4028	1.0	U	1.80	
5.2	6.8	B154X5	08/27/2002	13:27	C4027	1.0	U	1.0	U
15.2	16.5	B154X4	08/27/2002	13:09	C4027	1.0	U	1.50	
24.2	25.2	B154X3	08/27/2002	12:47	C4027	1.0	U	1.79	
5.2	6.9	B154X2	08/27/2002	11:39	C4026	1.0	U	1.0	U
15.2	16.5	B154X1	08/27/2002	10:53	C4026	1.0	U	1.40	
24.2	25.4	B154X0	08/27/2002	10:33	C4026	1.0	U	1.80	
5.2	6.5	B154W9	08/27/2002	09:52	C4025	1.0	U	1.55	
15.2	16.8	B154W8	08/27/2002	09:24	C4025	1.0	U	1.29	
24.2	25.4	B154W7	08/27/2002	08:56	C4025	1.0	U	2.01	
5.2	6.5	B154W2	08/26/2002	14:39	C4024	1.0	U	2.13	
15.2	15.5	B154W1	08/26/2002	14:15	C4024	1.0	U	2.38	
24.2	25.4	B154W0	08/26/2002	13:53	C4024	1.0	U	3.81	
24.2	25.4	B154W4 Duplicate	08/26/2002	13:53	C4024	1.0	U	3.97	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
5.2	6.3	B154V9	08/26/2002	13:13	C4023	1.0	U	1.87	
15.2	16.8	B154V8	08/26/2002	12:50	C4023	1.0	U	1.87	
24.1	25.4	B154V7	08/26/2002	12:24	C4023	1.0	U	2.11	
5.1	6.7	B154N4	08/19/2002	12:10	C4010	1.0	U	1.0	U
15.2	16.9	B154N3	08/19/2002	11:49	C4010	1.16		1.26	
24.2	25.4	B154N2	08/19/2002	11:23	C4010	1.11		1.49	
5.2	6.9	B154N7	08/19/2002	14:03	C4009	1.0	U	2.22	
15.2	16.5	B154N6	08/19/2002	13:46	C4009	1.25		3.77	
24.2	25.4	B154N5	08/19/2002	13:19	C4009	1.31		3.81	
5.2	6.5	B154P0	08/19/2002	15:17	C4008	1.0	U	1.43	
15.2	16.7	B154N9	08/19/2002	14:58	C4008	1.63		2.34	
24.2	25.4	B154N8	08/19/2002	14:35	C4008	1.72		2.03	
24.2	25.4	B154P1 Duplicate	08/19/2002	14:35	C4008	1.71		2.13	
5.2	6.4	B154M2	08/15/2002	12:15	C4007	1.0	U	2.26	
15.2	16.5	B154M1	08/15/2002	11:52	C4007	1.68		2.58	
24.2	25.4	B154M0	08/15/2002	11:25	C4007	1.80		2.34	
24.2	25.4	B154P9 Duplicate	08/15/2002	11:25	C4007	1.76		2.29	
5.2	6.6	B154L9	08/15/2002	10:30	C4006	1.0	U	2.89	
15.2	16.3	B154L8	08/15/2002	10:12	C4006	1.53		3.17	
24.2	25.4	B154L7	08/15/2002	09:55	C4006	1.87		3.27	
5.2	6.8	B154L6	08/15/2002	09:21	C4005	1.0	U	2.29	
15.2	16.8	B154L5	08/15/2002	08:59	C4005	1.0	U	2.11	
24.2	25.4	B154L4	08/15/2002	08:37	C4005	1.0	U	2.79	
5.2	5.8	B154L3	08/15/2002	07:56	C4004	1.0	U	1.0	U
15.2	16.5	B154L2	08/15/2002	07:38	C4004	1.0	U	1.13	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24.2	25.4	B154L1	08/15/2002	07:12	C4004	1.0	U	1.31	
5.2	6.8	B154W6	08/27/2002	07:53	C4003	1.0	U	2.64	
15.2	16.7	B154W5	08/27/2002	07:30	C4003	1.0	U	1.64	
24.2	25.4	B154W3	08/27/2002	07:07	C4003	1.0	U	1.59	
5.2	6.6	B154M8	08/19/2002	09:07	C4002	1.0	U	7.75	
15.2	16.8	B154M7	08/19/2002	08:50	C4002	1.0	U	13.6	
24.2	25.4	B154M6	08/19/2002	08:29	C4002	1.10		8.09	
5.2	6.3	B154M5	08/19/2002	07:54	C4001	1.0	U	2.92	
15.2	16.8	B154M4	08/19/2002	07:37	C4001	1.0	U	3.16	
24.2	25.3	B154M3	08/19/2002	07:17	C4001	1.0	U	11.4	
5.2	6.4	B154N1	08/19/2002	10:24	C4000	1.0	U	1.0	U
15.2	16.8	B154N0	08/19/2002	10:05	C4000	1.0	U	4.36	
24.2	25.4	B154M9	08/19/2002	09:42	C4000	1.0	U	4.19	
5.2	6.5	B154L0	08/14/2002	15:20	C3999	1.0	U	2.63	
5.2	6.5	B154P8 Duplicate	08/14/2002	15:20	C3999	1.0	U	2.77	
15.2	16.7	B154K9	08/14/2002	15:01	C3999	1.0	U	3.08	
24.2	24.8	B154K8	08/14/2002	14:33	C3999	1.0	U	4.51	
10	11.6	B15499	08/8/2002	08:15	C3978	1.0	U	1.0	U
15.2	16.2	B15498	08/8/2002	07:53	C3978	1.0	U	1.43	
24	25.5	B15497	08/8/2002	07:24	C3978	1.0	U	2.13	
5.2	5.8	B154K7	08/14/2002	13:10	C3998	1.0	U	3.64	
5	5.5	B154J2	08/13/2002	14:44	C3997	1.0	U	2.41	
5	5.5	B154P7 Duplicate	08/13/2002	14:44	C3997	1.0	U	2.29	
15.2	16.9	B154J1	08/13/2002	14:23	C3997	1.0	U	3.08	
24.2	25.4	B154J0	08/13/2002	14:01	C3997	1.0	U	2.84	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
5.2	6.8	B154K6	08/14/2002	12:02	C3996	1.0	U	1.27	
15.2	16.8	B154K5	08/14/2002	11:42	C3996	1.0	U	2.36	
24.2	24.9	B154K4	08/14/2002	11:20	C3996	1.0	U	3.00	
5.2	6.9	B154H9	08/13/2002	13:03	C3995	1.0	U	2.14	
15.2	16.8	B154H8	08/13/2002	12:44	C3995	1.0	U	3.29	
24.2	25.5	B154H7	08/13/2002	12:17	C3995	1.0	U	3.12	
5.2	8	B154K3	08/14/2002	10:45	C3994	1.0	U	1.76	
15.2	16.6	B154K2	08/14/2002	10:30	C3994	1.0	U	2.27	
24.2	25.4	B154K1	08/14/2002	10:01	C3994	1.0	U	3.34	
5.2	7	B154K0	08/14/2002	09:23	C3993	1.0	U	3.49	
15.2	16.8	B154J7	08/14/2002	09:04	C3993	1.0	U	4.56	
24.2	25.4	B154J6	08/14/2002	08:39	C3993	1.0	U	7.22	
5	6	B154H6	08/13/2002	11:14	C3992	1.0	U	3.50	
15.2	16.5	B154H5	08/13/2002	10:49	C3992	1.0	U	4.57	
24.2	25.4	B154H4	08/13/2002	10:22	C3992	1.49		7.30	
5.2	6.1	B154J5	08/14/2002	07:59	C3991	1.0	U	2.24	
15.2	16.6	B154J4	08/14/2002	07:41	C3991	1.0	U	3.30	
24.2	25.4	B154J3	08/14/2002	07:10	C3991	1.0	U	3.76	
5.2	6.5	B154H3	08/13/2002	08:45	C3990	1.0	U	1.73	
15.1	16.5	B154H2	08/13/2002	08:23	C3990	1.0	U	1.77	
24.2	25.4	B154H0	08/13/2002	07:50	C3990	1.0	U	1.74	
24.2	25.4	B154H1	08/13/2002	07:55	C3990	1.0	U	2.32	
Pipeline to 216-Z-1D/-Z-11/and -Z-19 Ditches and 216-Z-20 Crib from 234-5Z Building									
5	6.2	B154B3	08/08/2002	10:41	C3979	1.0	U	1.43	
15	16.9	B154B2	08/08/2002	10:20	C3979	1.0	U	1.11	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24	25.4	B154B1	08/08/2002	09:47	C3979	1.22		1.31	
5	6.5	B154B6	08/08/2002	12:22	C3980	1.0	U	1.27	
15	16.8	B154B5	08/08/2002	11:57	C3980	1.0	U	1.14	
24	25.4	B154B4	08/08/2002	11:32	C3980	1.29		1.17	
8	9.4	B154B9	08/08/2002	14:32	C3981	1.0	U	1.13	
15	16.8	B154B8	08/08/2002	14:15	C3981	1.0	U	1.20	
24	25.4	B154B7	08/08/2002	13:47	C3981	1.02		1.18	
8	9.2	B154C2	08/08/2002	15:49	C3982	1.0	U	1.0	U
15	16	B154C1	08/08/2002	15:35	C3982	1.0	U	1.0	U
24.1	25.4	B154C0	08/08/2002	15:16	C3982	1.08		1.0	U
24.1	25.4	B154P5 Duplicate	08/08/2002	15:16	C3982	1.06		1.0	U
8	9.4	B154C5	08/09/2002	07:36	C3983	1.0	U	1.0	U
15.2	16.8	B154C4	08/09/2002	07:18	C3983	1.0	U	1.0	U
23.3	24.5	B154C3	08/09/2002	07:02	C3983	1.0	U	1.0	U
8.2	9.1	B154C8	08/09/2002	09:04	C3984	1.0	U	1.0	U
15.2	16.8	B154C7	08/09/2002	08:43	C3984	1.0	U	1.11	
24.2	25.3	B154C6	08/09/2002	08:16	C3984	1.0	U	1.03	
8.2	9.2	B154D1	08/09/2002	10:20	C3985	1.0	U	1.0	U
15.2	16.7	B154D0	08/09/2002	10:03	C3985	1.0	U	1.28	
24.2	25.4	B154C9	08/09/2002	09:46	C3985	1.58		1.39	
8.2	9.6	B154D4	08/09/2002	11:40	C3986	1.0	U	1.71	
15.2	16.5	B154D3	08/09/2002	11:24	C3986	1.0	U	1.88	
24.2	25.4	B154D2	08/09/2002	11:06	C3986	1.56		2.01	
8.2	9.4	B154F8	08/12/2002	14:32	C3987	1.0	U	2.02	
8.2	9.4	B154F9	08/12/2002	14:37	C3987	1.0	U	2.12	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
8.2	9.4	B154P6 Duplicate	08/12/2002	14:37	C3987	1.0	U	2.15	
15.2	16.9	B154F6	08/12/2002	14:09	C3987	1.0	U	2.03	
15.2	16.9	B154F7	08/12/2002	14:14	C3987	1.0	U	2.76	
23.2	24.7	B154F4	08/12/2002	13:40	C3987	1.0	U	1.65	
23.2	24.7	B154F5	08/12/2002	13:45	C3987	1.0	U	2.08	
8.2	9.5	B154F2	08/12/2002	12:06	C3988	1.0	U	2.24	
8.2	9.5	B154F3	08/12/2002	12:11	C3988	1.0	U	2.69	
15.2	16.8	B154F0	08/12/2002	11:42	C3988	1.0	U	2.67	
15.2	16.8	B154F1	08/12/2002	11:47	C3988	1.0	U	3.81	
22.5	23.9	B154D8	08/12/2002	11:15	C3988	1.0	U	3.39	
22.5	23.9	B154D9	08/12/2002	11:20	C3988	1.0	U	5.06	
7	8.2	B154D7	08/12/2002	10:24	C3989	1.0	U	2.15	
14.4	16.2	B154D6	08/12/2002	09:15	C3989	1.0	U	3.20	
24	25.2	B154D5	08/12/2002	07:23	C3989	1.0	U	3.58	
Pipeline to 216-Z-7 Crib									
5.2	6.5	B15JN2	09/25/2002	10:45	C4047	1.0	U	1.0	U
15.2	16.8	B15JN1	09/25/2002	10:33	C4047	1.0	U	1.0	U
24.2	25.4	B15JN0	09/25/2002	10:15	C4047	1.0	U	1.49	
5.2	6.8	B15JN5	09/25/2002	11:53	C4048	1.0	U	1.0	U
5.2	6.8	B15JN6 Duplicate	09/25/2002	11:53	C4048	1.0	U	1.0	U
15.2	16	B15JN4	09/25/2002	11:36	C4048	1.0	U	1.0	U
24.2	25.4	B15JN3	09/25/2002	11:20	C4048	1.0	U	1.0	U
5.2	6.7	B15JR7	09/26/2002	14:47	C4055	1.0	U	1.0	U
15.2	16.5	B15JR6	09/26/2002	14:31	C4055	1.0	U	1.0	U
24.2	25.4	B15JR5	09/26/2002	14:15	C4055	1.0	U	1.0	U

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24.2	25.4	B15JR8 Duplicate	09/26/2002	14:15	C4055	1.0	U	1.0	U
8.2	9.5	B15JR4	09/26/2002	13:37	C4054	1.0	U	1.0	U
15.2	16.4	B15JR3	09/26/2002	13:26	C4054	1.0	U	1.31	
24.2	24.7	B15JR2	09/26/2002	13:10	C4054	1.0	U	1.39	
8.2	9.7	B15JR1	09/26/2002	12:09	C4053	1.0	U	1.42	
15.2	15.7	B15JR0	09/26/2002	11:57	C4053	1.0	U	1.27	
24.2	25.4	B15JP9	09/26/2002	11:40	C4053	1.0	U	1.52	
7	7.4	B15JN9	09/26/2002	07:42	C4049	1.0	U	1.0	U
14.4	14.8	B15JN8	09/26/2002	07:28	C4049	1.0	U	1.0	U
24.2	25	B15JN7	09/26/2002	07:10	C4049	1.0	U	1.0	U
8.2	9.2	B15JP2	09/26/2002	08:47	C4050	1.0	U	1.0	U
15.2	15.8	B15JP1	09/26/2002	08:36	C4050	1.0	U	1.0	U
24.2	25.4	B15JP0	09/26/2002	08:23	C4050	1.0	U	1.0	U
8.2	9.9	B15JP5	09/26/2002	09:50	C4051	1.0	U	1.0	U
15.2	16.5	B15JP4	09/26/2002	09:39	C4051	1.0	U	1.09	
24.2	25.4	B15JP3	09/26/2002	09:23	C4051	1.0	U	1.0	U
8.2	9.4	B15JP8	09/26/2002	10:56	C4052	1.0	U	1.0	U
15.2	15.5	B15JP7	09/26/2002	10:46	C4052	1.0	U	1.0	U
24.2	25.4	B15JP6	09/26/2002	10:28	C4052	1.0	U	1.22	
8	9	B15CM0-a	09/13/2002	14:10	C3861	1.0	U	1.65	
14	15	B15CM1-a	09/13/2002	14:21	C3861	1.0	U	1.95	
24	25	B15CM2-a	09/16/2002	06:37	C3861	1.0	U	1.06	
43	44	B15CM3-a	09/16/2002	07:04	C3861	1.0	U	1.01	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
Pipeline to 216-Z-9 Trench									
5	6.5	B15484	08/07/2002	08:48	C3973	1.0	U	1.0	U
15.2	16.9	B15483	08/07/2002	08:18	C3973	1.0	U	1.0	U
24	25.2	B15482	08/07/2002	07:45	C3973	1.0	U	1.0	U
14	15	B15BV0	09/10/2002	07:44	C3849	1.0	U	1.0	U
20	21	B15BV1	09/10/2002	07:54	C3849	1.0	U	9.80	
20	21	B15BV2	09/10/2002	07:58	C3849	1.0	U	8.72	
20	21	B15BV3	09/10/2002	09:00	C3849	1.0	U	3.66	
20	21	B15BV4	09/10/2002	09:05	C3849	1.0	U	1.0	U
24	25	B15BV5	09/10/2002	09:17	C3849	1.0	U	1.0	U
38	39	B15VB6	09/10/2002	09:33	C3849	1.0	U	1.0	U
48	49	B15BV7	09/10/2002	11:53	C3849	1.0	U	1.0	U
5	6.4	B15487	08/07/2002	10:10	C3974	1.0	U	1.0	U
15	16.5	B15486	08/07/2002	09:50	C3974	1.0	U	1.0	U
24.2	25.5	B15485	08/07/2002	09:28	C3974	1.0	U	1.0	U
5	6	B15490	08/07/2002	11:36	C3975	1.0	U	1.29	
9.2	10.2	B154B0	08/07/2002	08:46	C3975	1.0	U	1.0	U
15	15.5	B15489	08/07/2002	11:27	C3975	1.0	U	1.0	U
24.2	25.5	B15488	08/07/2002	10:47	C3975	1.0	U	1.02	
10	11.5	B15493	08/07/2002	13:34	C3976	1.0	U	1.0	U
15	16.2	B15492	08/07/2002	13:23	C3976	1.0	U	1.0	U
24	25.5	B15491	08/07/2002	13:03	C3976	1.0	U	1.0	U
10	11.5	B15496	08/07/2002	14:50	C3977	1.0	U	1.0	U
10	11.5	B154P4 Duplicate	08/07/2002	14:50	C3977	1.0	U	1.0	U
15	16.2	B15495	08/07/2002	14:37	C3977	1.0	U	1.0	U

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24	25.5	B15494	08/07/2002	14:16	C3977	1.0	U	1.0	U
10	11.6	B15499	08/08/2002	08:15	C3978	1.0	U	1.0	U
15.2	16.2	B15498	08/08/2002	07:53	C3978	1.0	U	1.43	
24	25.5	B15497	08/08/2002	07:24	C3978	1.0	U	2.13	
14	15	B15BV8	09/10/2002	13:06	C3850	1.0	U	1.62	
24	25	B15BV9	09/10/2002	13:24	C3850	1.0	U	1.86	
32	33	B15BW0	09/10/2002	13:37	C3850	1.0	U	1.39	
39	40	B15BW1	09/10/2002	13:52	C3850	1.0	U	16.8	
43.52	44.52	B15BW2	09/10/2002	14:14	C3850	1.0	U	1.22	
15	N/A	B15BX4	09/11/2002	13:27	C3854	1.0	U	1.59	
25	N/A	B15BX5	09/11/2002	13:40	C3854	1.0	U	2.83	
33	N/A	B15BX6	09/11/2002	13:49	C3854	1.0	U	2.78	
40	N/A	B15BX7	09/11/2002	14:03	C3854	1.0	U	2.74	
40.89	N/A	B15BX8	09/11/2002	14:14	C3854	1.0	U	2.04	
Pipeline to 216-Z-12 Crib									
15	N/A	B156V2	09/05/2002	10:26	C3842	1.0	U	2.04	
25	N/A	B156V3	09/05/2002	10:46	C3842	1.0	U	2.23	
49.4	N/A	B156V4	09/05/2002	11:14	C3842	8.04		1.88	
49.4	N/A	B156W0 Duplicate	09/05/2002	11:14	C3842	7.95		1.78	
47.0	48.0	B15BR6	09/09/2002	07:18	C3846	1.0	U	3.51	
10.2	11	B15JJ6-a	09/24/2002	07:53	C4038	1.0	U	1.0	U
15.2	16.7	B15JJ5-a	09/24/2002	07:41	C4038	1.0	U	1.0	U
24.2	25.4	B15JJ4-a	09/24/2002	07:18	C4038	1.0	U	1.0	U
10.2	11.2	B15JJ9-a	09/24/2002	08:57	C4039	1.0	U	1.03	
15.2	15.8	B15JJ8-a	09/24/2002	08:45	C4039	1.0	U	1.11	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24.2	25.4	B15JJ7-a	09/24/2002	08:24	C4039	1.0	U	2.35	
10.2	11.2	B15JK2-a	09/24/2002	09:59	C4040	1.0	U	2.52	
15.2	15.5	B15JK1-a	09/24/2002	09:49	C4040	1.0	U	2.87	
24.2	25.4	B15JK0-a	09/24/2002	09:33	C4040	1.0	U	3.35	
10.2	10.5	B15JK5-a	09/24/2002	11:05	C4041	1.0	U	1.0	U
14.2	14.6	B15JK4-a	09/24/2002	10:56	C4041	1.0	U	1.0	U
24.2	25.4	B15JK3-a	09/24/2002	10:38	C4041	1.0	U	1.67	
10.2	11	B15JK8-a	09/24/2002	12:15	C4042	1.0	U	1.03	
15.2	15.5	B15JK7-a	09/24/2002	12:03	C4042	1.0	U	1.82	
24.2	25.4	B15JK6-a	09/24/2002	11:40	C4042	1.0	U	1.72	
10.2	11.1	B15JL1-a	09/24/2002	13:44	C4043	1.0	U	1.0	U
15.2	15.5	B15JL0-a	09/24/2002	13:33	C4043	1.0	U	1.73	
24.2	25.5	B15JK9-a	09/24/2002	13:18	C4043	1.0	U	2.06	
10.2	11.5	B15JL4-a	09/24/2002	15:15	C4044	1.0	U	1.0	U
15.2	16	B15JL3-a	09/24/2002	15:05	C4044	1.0	U	1.0	U
22.2	23.2	B15JL2-a	09/24/2002	14:46	C4044	1.0	U	1.36	
22.2	23.2	B15JL5-a Duplicate	09/24/2002	14:46	C4044	1.0	U	1.27	
10.2	11.3	B15JL8-a	09/25/2002	07:51	C4045	1.0	U	1.0	U
15.2	16.5	B15JL7-a	09/25/2002	07:35	C4045	1.0	U	1.0	U
24.2	25.4	B15JL6-a	09/25/2002	07:16	C4045	1.0	U	1.0	U
10.2	11	B15JM9	09/25/2002	08:56	C4046	1.0	U	1.0	U
15.2	16.1	B15JM8	09/25/2002	08:45	C4046	1.05		1.0	U
24.2	25.4	B15JL9-a	09/25/2002	08:29	C4046	1.32		1.0	U
10.2	11	B156T3	08/29/2002	11:59	C4037	1.0	U	2.28	
15.2	16.2	B156T2	08/29/2002	11:43	C4037	1.0	U	2.08	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
24.2	25.4	B156T1	08/29/2002	11:23	C4037	3.63		3.09	
10.2	11	B156T0	08/29/2002	10:39	C4036	1.0	U	1.55	
15.2	16.7	B156R9	08/29/2002	10:24	C4036	1.0	U	1.44	
24.2	25.4	B156R8	08/29/2002	09:58	C4036	1.0	U	2.25	
Pipeline to 216-Z-18 Crib									
15	N/A	B156T4	09/04/2002	07:49	C3840	1.0	U	1.99	
25	N/A	B156T5	09/04/2002	08:13	C3840	1.0	U	2.25	
50	N/A	B156T6	09/04/2002	08:44	C3840	1.0	U	2.76	
60.1	N/A	B156T7	09/04/2002	09:25	C3840	1.0	U	9.37	
5	5.5	B15460	08/05/2002	10:05	C3965	1.0	U	1.17	
13	13.5	B15459	08/05/2002	09:20	C3965	1.0	U	1.49	
24.2	25	B15458	08/05/2002	08:32	C3965	1.0	U	1.77	
5	6.2	B15463	08/05/2002	12:10	C3966	1.0	U	1.60	
14	15.2	B15462	08/05/2002	11:40	C3966	1.0	U	1.77	
24.2	25.2	B15461	08/05/2002	11:15	C3966	1.0	U	1.72	
5	7.5	B15466	08/05/2002	14:38	C3967	1.0	U	1.17	
5	7.5	B154P2 Duplicate	08/05/2002	14:38	C3967	1.0	U	1.13	
15.5	17.5	B15465	08/05/2002	14:03	C3967	1.0	U	1.36	
24.5	25	B15464	08/05/2002	13:18	C3967	1.0	U	2.10	
5	6.2	B15469	08/06/2002	08:05	C3968	1.0	U	1.0	U
14.9	15.3	B15468	08/06/2002	07:35	C3968	1.0	U	1.0	U
24.2	25	B15467	08/06/2002	07:10	C3968	1.0	U	1.0	U
3.85	4.9	B15472	08/06/2002	10:05	C3969	1.0	U	1.0	U
15	15.8	B15471	08/06/2002	09:44	C3969	1.0	U	1.06	
24.2	25.2	B15470	08/06/2002	09:11	C3969	1.0	U	1.33	

Table 3-7. Step I Analytical Results for Samples Collected Along Pipelines. (13 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
4.9	6.5	B15475	08/06/2002	11:47	C3970	1.0	U	2.07	
15	15.5	B15474	08/06/2002	11:30	C3970	1.0	U	1.68	
24.2	25.2	B15473	08/06/2002	11:05	C3970	1.0	U	2.10	
4.9	6.4	B15478	08/06/2002	13:58	C3971	1.0	U	1.11	
15.1	15.8	B15477	08/06/2002	13:28	C3971	1.0	U	1.0	U
24.2	25.4	B15476	08/06/2002	13:08	C3971	4.03		1.98	
5	6.2	B15481	08/06/2002	15:05	C3972	1.0	U	1.0	U
15	16.4	B15480	08/06/2002	14:51	C3972	1.0	U	1.0	U
24	25.4	B15479	08/06/2002	14:35	C3972	4.00		1.79	
24	25.4	B154P3 Duplicate	08/06/2002	14:35	C3972	3.53		1.77	

Table is modified from CP-13514, *200-PW-1 Operable Unit Report on Step I Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose Zone Plume*, Table 5.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
N/A = not applicable.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
RL = reporting limit.
SAF = Sampling Authorization Form.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
216-T-19 Crib and Tile Field									
14	15	B15J25	09/16/2002	12:30	C3864	1.0	U	1.99	
24	25	B15J26	09/16/2002	12:42	C3864	1.0	U	3.22	
35	36	B15J27	09/16/2002	13:07	C3864	1.0	U	4.60	
49	50	B15J28	09/16/2002	13:32	C3864	1.0	U	7.36	
69	70	B15J29	09/16/2002	14:09	C3864	1.0	U	11.5	
14	15	B15CK7-a	09/13/2002	06:47	C3858	1.0	U	1.21	
24	25	B15CK8-a	09/13/2002	07:00	C3858	1.0	U	1.02	
32	33	B15CK9-a	09/13/2002	07:16	C3858	1.54		5.66	
48.9	49.9	B15CL0-a	09/13/2002	07:45	C3858	1.03		9.04	
14	15	B15CL1-a	09/13/2002	08:41	C3859	1.0	U	1.0	U
24	25	B15CL2-a	09/13/2002	09:02	C3859	1.0	U	1.27	
27.8	28.8	B15CL3-a	09/13/2002	10:40	C3859	1.09		1.47	
27.8	28.8	B15CL4-a Duplicate	09/13/2002	10:40	C3859	1.11		1.5	
216-Z-1D/-Z-11/and -Z-19 Ditches and 216-Z-20 Crib									
12	13	B15BY3	09/12/2002	11:45	C3856	1.0	U	1.46	
14	15	B15BY4	09/12/2002	11:56	C3856	1.0	U	2.09	
24	25	B15BY5	09/12/2002	12:35	C3856	1.0	U	1.71	
29	30	B15CK1-a	09/12/2002	12:53	C3856	1.0	U	1.93	
39	40	B15CK2-a	09/12/2002	13:19	C3856	1.0	U	1.26	
39	40	B15CK3-a Duplicate	09/12/2002	13:19	C3856	1.0	U	1.27	
9	10	B15BT4	09/09/2002	14:53	C3848	1.0	U	1.33	
14	15	B15BT5	09/09/2002	15:03	C3848	1.0	U	1.54	

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample Date	Sample Time					
24	25	B15BT6	09/09/2002	15:14	C3848	2.03		1.01	
38	39	B15BT7	09/09/2002	15:27	C3848	2.94		1.01	
38	39	B15BT9 Duplicate	09/09/2002	15:27	C3848	2.88		1.15	
44.2	45.2	B15BT8	09/09/2002	15:38	C3848	1.64		1.17	
216-Z-1A Tile Field									
14.1	15	B156W1	09/06/2002	09:04	C3844	1.0	U	1.0	U
24	25	B156W2	09/06/2002	09:14	C3844	1.0	U	1.16	
41	41.9	B156W3	09/06/2002	09:48	C3844	4.01		1.0	U
14	15	B15BR7	09/09/2002	08:34	C3847	1.0	U	1.06	
24	25	B15BR8	09/09/2002	08:45	C3847	1.0	U	1.75	
30	31	B15BR9	09/09/2002	09:00	C3847	1.0	U	1.92	
30	31	B15BT0	09/09/2002	12:29	C3847	1.0	U	1.75	
40	41.6	B15BT1	09/09/2002	12:45	C3847	1.10		1.53	
49	50	B15BT2	09/09/2002	13:00	C3847	1.0	U	1.49	
61.2	62.2	B15BT3	09/09/2002	13:36	C3847	1.0	U	1.98	
14	15	B156W4	09/06/2002	11:07	C3845	1.0	U	1.0	U
19	20	B156W5	09/06/2002	11:20	C3845	1.0	U	1.0	U
24	25	B15WC9	09/06/2002	11:41	C3845	4.5		57.8	
49	50	B15WD0	09/06/2002	12:14	C3845	7.2		114.00	
49	50	B15WD1	09/06/2002	13:58	C3845	1.0	U	1.44	
47.5	48.8	B15WD2	09/06/2002	15:36	C3845	1.0	U	3.03	
216-Z-7 Crib									
8	9	B15CM0-a	09/13/2002	14:10	C3861	1.0	U	1.65	
14	15	B15CM1-a	09/13/2002	14:21	C3861	1.0	U	1.95	

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample Date	Sample Time					
24	25	B15CM2-a	09/16/2002	06:37	C3861	1.0	U	1.06	
43	44	B15CM3-a	09/16/2002	07:04	C3861	1.0	U	1.01	
5	6	B15CL5-a	09/13/2002	11:57	C3860	1.0	U	1.63	
14	15	B15CL6-a	09/13/2002	12:09	C3860	1.0	U	1.73	
24	25	B15CL7-a	09/13/2002	12:20	C3860	1.0	U	1.61	
49	50	B15CL8-a	09/13/2002	12:45	C3860	1.0	U	2.04	
60	61	B15CL9-a	09/13/2002	13:18	C3860	2.06		1.43	
216-Z-8 French Drain									
14	15	B15BV0	09/10/2002	07:44	C3849	1.0	U	1.0	U
20	21	B15BV1	09/10/2002	07:54	C3849	1.0	U	9.80	
20	21	B15BV2	09/10/2002	07:58	C3849	1.0	U	8.72	
20	21	B15BV3	09/10/2002	09:00	C3849	1.0	U	3.66	
20	21	B15BV4	09/10/2002	09:05	C3849	1.0	U	1.0	U
24	25	B15BV5	09/10/2002	09:17	C3849	1.0	U	1.0	U
38	39	B15VB6	09/10/2002	09:33	C3849	1.0	U	1.0	U
48	49	B15BV7	09/10/2002	11:53	C3849	1.0	U	1.0	U
216-Z-9 Trench									
14	15	B15BV8	09/10/2002	13:06	C3850	1.0	U	1.62	
24	25	B15BV9	09/10/2002	13:24	C3850	1.0	U	1.86	
32	33	B15BW0	09/10/2002	13:37	C3850	1.0	U	1.39	
39	40	B15BW1	09/10/2002	13:52	C3850	1.0	U	16.8	
43.52	44.52	B15BW2	09/10/2002	14:14	C3850	1.0	U	1.22	
15	N/A	B15BX4	09/11/2002	13:27	C3854	1.0	U	1.59	
25	N/A	B15BX5	09/11/2002	13:40	C3854	1.0	U	2.83	

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample Date	Sample Time					
33	N/A	B15BX6	09/11/2002	13:49	C3854	1.0	U	2.78	
40	N/A	B15BX7	09/11/2002	14:03	C3854	1.0	U	2.74	
40.89	N/A	B15BX8	09/11/2002	14:14	C3854	1.0	U	2.04	
14	15	B15BW3	09/11/2002	06:40	C3851	1.0	U	1.0	U
24	25	B15BW4	09/11/2002	06:52	C3851	1.0	U	1.0	U
49	50	B15BW5	09/11/2002	07:25	C3851	1.0	U	1.14	
216-Z-12 Crib									
15	N/A	B156V2	09/05/2002	10:26	C3842	1.0	U	2.04	
25	N/A	B156V3	09/05/2002	10:46	C3842	1.0	U	2.23	
49.4	N/A	B156V4	09/05/2002	11:14	C3842	8.04		1.88	
49.4	N/A	B156W0 Duplicate	09/05/2002	11:14	C3842	7.95		1.78	
47	48	B15BR6	09/09/2002	07:18	C3846	1.0	U	3.51	
15	N/A	B156V5	09/05/2002	14:48	C3843	1.0	U	1.35	
21	N/A	B156V6	09/05/2002	14:58	C3843	1.0	U	1.91	
25	N/A	B156V7	09/05/2002	15:09	C3843	1.0	U	1.50	
50	N/A	B156V8	09/05/2002	15:29	C3843	1.0	U	1.64	
65	N/A	B156V9	09/05/2002	15:59	C3843	1.0	U	2.00	
216-Z-16 Crib									
14	15	B15CM4-a	09/16/2002	08:00	C3862	1.0	U	1.03	
19	20	B15CM5-a	09/16/2002	08:13	C3862	1.0	U	1.04	
24	25	B15CM6-a	09/16/2002	08:24	C3862	1.0	U	1.21	
49	50.2	B15J17	09/16/2002	08:48	C3862	1.0	U	1.35	
59	60	B15J18	09/16/2002	09:11	C3862	1.0	U	1.13	
14	15	B15J19	09/16/2002	10:03	C3863	1.0	U	1.0	U

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample Date	Sample Time					
20	21	B15J20	09/16/2002	10:14	C3863	1.0	U	1.02	
24	25	B15J21	09/16/2002	10:23	C3863	1.0	U	1.92	
49	50	B15J22	09/16/2002	10:49	C3863	1.0	U	1.38	
66	67	B15J23	09/16/2002	11:14	C3863	1.0	U	1.42	
66	67	B15J24 Duplicate	09/16/2002	11:14	C3863	1.0	U	1.43	
216-Z-17 Trench									
12	13	B15BY3	09/12/2002	11:45	C3856	1.0	U	1.46	
14	15	B15BY4	09/12/2002	11:56	C3856	1.0	U	2.09	
24	25	B15BY5	09/12/2002	12:35	C3856	1.0	U	1.71	
29	30	B15CK1-a	09/12/2002	12:53	C3856	1.0	U	1.93	
39	40	B15CK2-a	09/12/2002	13:19	C3856	1.0	U	1.26	
39	40	B15CK3-a Duplicate	09/12/2002	13:19	C3856	1.0	U	1.27	
14	15	B15CK4-a	09/12/2002	14:19	C3857	1.0	U	1.40	
24	25	B15CK5-a	09/12/2002	15:14	C3857	1.0	U	2.48	
39	40	B15CK6-a	09/12/2002	15:38	C3857	1.0	U	2.10	
216-Z-18 Crib									
15	N/A	B156T4	09/04/2002	07:49	C3840	1.0	U	1.99	
25	N/A	B156T5	09/04/2002	08:13	C3840	1.0	U	2.25	
50	N/A	B156T6	09/04/2002	08:44	C3840	1.0	U	2.76	
60.1	N/A	B156T7	09/04/2002	09:25	C3840	1.0	U	9.37	
15.1	N/A	B156T8	09/04/2002	12:42	C3841	1.0	U	16.2	
15.1	N/A	B156V1 Duplicate	09/04/2002	12:42	C3841	1.0	U	16.4	

Table 3-8. Step I Analytical Results for Samples Collected at Liquid-Waste Discharge Sites and Heating, Ventilation, and Air-Conditioning Condensate Sites. (6 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
Top (ft bgs)	Bottom (ft bgs)	HEIS Number	Sample						
			Date	Time					
25	N/A	B156T9	09/04/2002	12:56	C3841	1.0	U	1.75	
50	N/A	B156V0	09/04/2002	13:26	C3841	1.0	U	1.12	
216-Z-21 Pond									
5	6	B15BX9	09/12/2002	06:53	C3855	1.0	U	1.0	U
14	15	B15BY0	09/12/2002	07:07	C3855	1.0	U	1.0	U
24	25	B15BY1	09/12/2002	07:22	C3855	1.0	U	1.0	U
29	30	B15BY2	09/12/2002	07:39	C3855	1.0	U	1.0	U
7	8	B15BW9	09/11/2002	10:44	C3853	1.0	U	1.07	
14	15	B15BX0	09/11/2002	10:54	C3853	1.0	U	1.56	
24	25	B15BX1	09/11/2002	11:11	C3853	1.0	U	1.55	
27.7	28.7	B15BX2	09/11/2002	11:38	C3853	1.0	U	1.30	
27.7	28.7	B15BX3 Duplicate	09/11/2002	11:38	C3853	1.0	U	1.32	
4	5	B15BW6	09/11/2002	08:35	C3852	1.0	U	1.0	U
14	15	B15BW7	09/11/2002	08:48	C3852	1.0	U	1.27	
18.66	19.66	B15BW8	09/11/2002	09:09	C3852	1.0	U	1.17	

Table is modified from CP-13514, *200-PW-1 Operable Unit Report on Step I Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose Zone Plume*, Table 6.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
N/A = not applicable.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
RL = reporting limit.
SAF = sampling authorization form.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-9. Step I Analytical Results for Samples Collected from Vadose Zone in 218-W-4C Burial Ground. (3 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
		HEIS Number	Sample						
Top (ft bgs)	Bottom (ft bgs)		Date	Time					
15.2	16.1	B154R1	08/21/2002	09:50	C4011	10.5		2.80	
24.4	25.4	B154R0	08/21/2002	09:27	C4011	6.91		2.07	
12.4	13.4	B154T3	08/22/2002	14:55	C4012	62.1		12.2	
15.2	15.8	B154R3	08/21/2002	11:44	C4012	7.25		2.32	
24.4	25.4	B154R2	08/21/2002	11:07	C4012	15.6		4.10	
15.2	16.4	B154T6	08/23/2002	08:29	C4017	1.0	U	1.41	
24.2	25.4	B154T5	08/23/2002	08:03	C4017	1.0	U	1.72	
15.2	16.2	B154R7	08/22/2002	08:37	C4014	1.0	U	1.07	
23.2	24.2	B154R6	08/22/2002	08:06	C4014	1.36		1.85	
15.2	16.5	B154V0	08/23/2002	11:35	C4019	1.0	U	1.55	
24.2	25.4	B154T9	08/23/2002	11:12	C4019	1.0	U	2.57	
15.2	16.7	B154V6	08/26/2002	10:42	C4022	1.0	U	1.56	
24.2	25.4	B154V5	08/26/2002	10:14	C4022	2.4		2.78	
15.2	16.5	B154T8	08/23/2002	09:55	C4018	1.0	U	1.16	
24.2	25.4	B154T7	08/23/2002	09:28	C4018	1.0	U	1.50	
15.2	16.5	B154V4	08/26/2002	09:15	C4021	1.0	U	1.62	
24.2	25.4	B154V3	08/26/2002	08:48	C4021	1.0	U	1.83	
15.8	16.8	B154R9	08/22/2002	10:23	C4015	1.0	U	2.09	
24.4	25.4	B154R8	08/22/2002	09:53	C4015	1.0	U	2.31	
15.2	16.7	B154V2	08/26/2002	07:43	C4020	1.0	U	1.47	
24.2	25.4	B154V1	08/26/2002	07:27	C4020	1.0	U	1.52	
15.7	16.7	B154R5	08/21/2002	13:58	C4013	1.0	U	1.0	U
24.4	25.4	B154R4	08/21/2002	13:34	C4013	1.0	U	1.08	
15.2	16.5	B154T2	08/22/2002	14:10	C4016	12.7		5.77	

Table 3-9. Step I Analytical Results for Samples Collected from Vadose Zone in 218-W-4C Burial Ground. (3 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
		HEIS Number	Sample						
Top (ft bgs)	Bottom (ft bgs)		Date	Time					
19.6	23.3	B154T1	08/22/2002	11:53	C4016	14.8		4.48	
19.6	23.3	B154T4 Duplicate	08/22/2002	11:53	C4016	14.3		4.51	
24.2	25.4	B154T0	08/22/2002	11:30	C4016	4.80		3.37	
10	N/A	B15J55	09/18/2002	07:30	C3869	9.61		3.12	
15	N/A	B15J56	09/18/2002	07:37	C3869	16.0		5.08	
20	N/A	B15J57	09/18/2002	07:44	C3869	12.9		4.40	
25	N/A	B15J58	09/18/2002	07:50	C3869	14.0		5.63	
33	N/A	B15J59	09/18/2002	08:02	C3869	11.3		4.75	
10	N/A	B15J37	09/17/2002	08:38	C3866	1.0	U	1.0	U
13	N/A	B15J38	09/17/2002	08:44	C3866	1.0	U	1.0	U
15	N/A	B15J39	09/17/2002	08:48	C3866	1.0	U	1.0	U
20	N/A	B15J40	09/17/2002	08:54	C3866	1.0	U	1.0	U
25	N/A	B15J41	09/17/2002	08:59	C3866	1.0	U	1.0	U
33.5	N/A	B15J42	09/17/2002	09:16	C3866	1.0	U	1.0	U
10	N/A	B15J43	09/17/2002	11:03	C3867	45.8		9.53	
10	N/A	B15J49 Duplicate	09/17/2002	11:03	C3867	47.6		9.59	
13	N/A	B15J44	09/17/2002	11:12	C3867	7.34		1.71	
15	N/A	B15J45	09/17/2002	11:19	C3867	14.9		3.64	
20	N/A	B15J46	09/17/2002	11:26	C3867	23.9		5.48	
25	N/A	B15J47	09/17/2002	11:32	C3867	35.8		8.30	
35	N/A	B15J48	09/17/2002	11:41	C3867	24.9		6.77	
7	N/A	B15J50	09/17/2002	13:09	C3868	5.23		3.13	
15	N/A	B15J51	09/17/2002	13:14	C3868	3.95		3.98	
20	N/A	B15J52	09/17/2002	13:24	C3868	4.88		3.88	
25	N/A	B15J53	09/17/2002	13:30	C3868	7.26		4.24	

Table 3-9. Step I Analytical Results for Samples Collected from Vadose Zone in 218-W-4C Burial Ground. (3 Pages)

Sample Interval		SAF F02-011			Borehole Number	Carbon Tetrachloride (CAS 56-23-5) (ppmv) RL = 1	Q	Chloroform (CAS 67-66-3) (ppmv) RL = 1	Q
		HEIS Number	Sample						
Top (ft bgs)	Bottom (ft bgs)		Date	Time					
32.1	N/A	B15J54	09/17/2002	13:42	C3868	8.73		4.27	
4	5	B15J30	09/16/2002	15:07	C3865	1.0	U	1.0	U
14	15	B15J31	09/16/2002	15:18	C3865	1.0	U	1.13	
19	20	B15J32	09/16/2002	15:26	C3865	1.0	U	1.28	
24	25	B15J33	09/16/2002	15:35	C3865	3.49		1.90	
36	37	B15J34	09/16/2002	15:49	C3865	6.20		2.13	
36	37	B15J36 Duplicate	09/16/2002	15:49	C3865	6.19		2.10	
49	50	B15J35	09/16/2002	16:12	C3865	1.95		1.73	
11	N/A	B15J60	09/18/2002	09:24	C3870	3.58		2.11	
15	N/A	B15J61	09/18/2002	09:44	C3870	5.13		2.99	
20	N/A	B15J62	09/18/2002	09:58	C3870	5.15		3.11	
25	N/A	B15J63	09/18/2002	10:11	C3870	6.37		3.67	
33	N/A	B15J64	09/18/2002	10:28	C3870	6.15		3.93	
33	N/A	B15J65 Duplicate	09/18/2002	10:28	C3870	6.12		3.71	

Table is modified from CP-13514, *200-PW-1 Operable Unit Report on Step I Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose Zone Plume*, Table 9.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
N/A = not applicable.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
RL = reporting limit.
SAF = Sampling Authorization Form.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
216-Z-1A Tile Field, east side Borehole C3872	62.0 – 62.5	B15WC3	10/30/02	9:36	2.38		1.0	U
		B163F2	11/27/02	10:58	1.0	U	1.0	U
		B167T6	12/31/02	8:30	1.39		1.0	U
		B167V1 (duplicate)	12/31/02	8:30	1.30		1.0	U
		B16KF6	03/04/03	10:02	3.10		1.0	U
		B17990	07/21/03	8:00	1.0	U	1.0	U
		B17JK2	09/09/03	10:18	1.0	U	1.0	U
		B17X73	10/31/03	9:43	1.30		1.0	U
		B184L7	12/04/03	8:53	1.89		1.0	U
		B18D29	01/20/04	9:49	8.33		2.57	
		B18K57	02/19/04	9:24	8.04		1.04	
		B18K62 (duplicate)	02/19/04	9:24	7.92		1.04	
		B18P91	03/30/04	11:02	3.01		1.0	U
		B199X9	06/03/04	8:30	3.57		2.33	
		B19LP0	06/24/04	8:57	1.60		2.21	
		B19TM7	07/23/04	11:25	1.0	U	1.12	
		B1B3J4	08/26/04	11:59	1.01		1.56	
		B1BFK8	10/07/04	12:57	1.15		1.0	U
		B1C3L4	11/15/04	12:55	1.07		1.0	U

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
216-Z-1A Tile Field, south side Borehole C3871	57.0 – 57.6	B15WC4	10/30/02	9:30	1.0	U	1.0	U
		B163F3	11/27/02	11:02	1.0	U	1.0	U
		B167T7	12/31/02	8:18	1.0	U	1.0	U
		B16KF7	03/04/03	9:54	1.0	U	1.0	U
		B17991	07/21/03	10:05	1.0	U	2.46	
		B17JK3	09/09/03	10:30	1.0	U	1.0	U
		B17X74	10/31/03	11:25	1.0	U	1.0	U
		B184L8	12/04/03	8:39	1.0	U	1.0	U
		B18D30	01/20/04	9:34	30.5		1.94	
		B18D34 (duplicate)	01/20/04	9:34	30.6		2.12	
		B18K58	02/19/04	9:06	1.33		1.33	
		B18P92	03/30/04	10:54	1.0	U	1.0	U
		B199Y0	06/03/04	8:22	1.0	U	2.17	
		B19LP1	06/24/04	8:46	1.0	U	2.69	
		B19TM8	07/23/04	11:00	2.02		1.0	U
		B1B3J5	08/26/04	12:15	1.0	U	1.45	
		B1BFK9	10/07/04	14:03	1.0	U	1.0	U
		B1BFL4 (duplicate)	10/07/04	14:03	1.0	U	1.0	U
		B1C3L3	11/15/04	12:46	1.0	U	1.0	U

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
216-Z Ditches Borehole C3873	44.0 – 44.5	B15WC5	10/30/02	10:01	4.28		1.0	U
		B15WC8 (duplicate)	10/30/02	10:01	4.29		1.0	U
		B163F4	11/27/02	10:14	1.90		1.0	U
		B163H0 (duplicate)	11/27/02	10:14	1.87		1.0	U
		B167T8	12/31/02	8:52	2.15		1.0	U
		B16KF8	03/04/03	10:07	1.88		1.0	U
		B17992	07/21/03	8:10	3.06		1.0	U
		B17996 (duplicate)	07/21/03	8:10	3.10		1.0	U
		B17JK4	09/09/03	10:23	2.25		1.0	U
		B17X75	10/31/03	10:07	3.03		1.0	U
		B17X78 (duplicate)	10/31/03	10:07	3.02		1.0	U
		B184L9	12/04/03	9:16	3.59		1.0	U
		B184M2 (duplicate)	12/04/03	9:16	3.62		1.0	U
		B18D31	01/20/04	10:14	2.93		1.0	U
		B18K59	02/19/04	10:21	3.22		1.15	
		B18P93	03/30/04	13:17	3.39		1.0	U
		B199Y1	06/03/04	8:40	5.07		2.60	
		B199Y5 (duplicate)	06/03/04	8:40	5.13		2.64	
		B19LP2	06/24/04	9:07	4.56		1.92	
		B19LP6 (duplicate)	06/24/04	9:07	4.77		2.01	
		B19TM9	07/23/04	11:38	4.77		1.0	U
		B1B3J6	08/26/04	16:42	4.42		1.43	
		B1B3K0 (duplicate)	08/26/04	16:42	4.42		1.44	
		B1BFL0	10/07/04	12:23	3.88		1.18	
		B1C3L5	11/15/04	14:05	3.70		1.0	U

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
216-Z-7 Crib Borehole C3875	61.5 – 62.0		10/30/02	Unable to sample (no flow).				
		B163F5	11/27/02	9:24	1.0	U	1.0	U
		B167T9	12/31/02	9:43	1.0	U	1.0	U
		B16KF9	03/04/03	10:15	1.0	U	1.0	U
		B17993	07/21/03	9:14	1.0	U	1.0	U
		B17JK5	09/09/03	11:00	1.0	U	1.0	U
		B17X76	10/31/03	11:19	1.0	U	1.0	U
			12/04/03	Unable to sample (no flow).				
			01/20/04	Unable to sample (no flow).				
			02/19/04	Unable to sample (no flow).				
			03/30/04	Unable to sample (no flow).				
		B199Y2	06/03/04	11:45	1.0	U	3.93	
		B19LP3	06/24/04	11:12	1.0	U	2.96	
			07/23/04	Unable to sample (construction).				
		B1B3J7	08/26/04	16:07	1.0	U	1.65	
		B1BFL1	10/07/04	14:31	1.0	U	1.17	
		B1C3L7	11/15/04	17:15	1.0	U	1.0	U

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
216-T-19 Crib Borehole C3874	31.0 – 31.5	B15WC7	10/30/02	10:18	1.52		1.0	U
		B163F6	11/27/02	9:16	1.0	U	1.0	U
		B167V0	12/31/02	9:38	1.0	U	1.0	U
		B16KH0	03/04/03	10:12	1.01		1.0	U
		B17994	07/21/03	10:31	1.23		1.0	U
		B17JK6	09/09/03	11:15	1.26		1.0	U
		B17JK7 (duplicate)	09/09/03	11:15	1.28		1.0	U
		B17X77	10/31/03	11:14	1.50		1.0	U
		B184M1	12/04/03	10:04	1.70		1.0	U
		B18D33	01/20/04	11:02	9.62		2.48	
		B18K61	02/19/04	11:22	1.43		1.43	
		B18P95	03/30/04	13:12	1.35		1.0	U
		B199Y3	06/03/04	11:24	1.0	U	2.41	
		B19LP4	06/24/04	11:06	1.26		2.03	
			07/23/04	Unable to sample (construction).				
		B1B3J8	08/26/04	16:00	1.45		1.70	
		B1BFL2	10/07/04	14:23	1.0	U	1.76	
		B1C3L6	11/15/04	17:02	1.31		1.0	U
		B1C3L9 (duplicate)	11/15/04	17:02	1.32		1.0	U
218-W-4C Burial Ground, Site 2 Borehole C4057 Well 244-W15-2	8.9 – 9.4	B163F8	12/10/02	8:45	28.6		7.43	
		B16567 (duplicate)	12/10/02	8:45	28.5		7.38	
		B16BW7	01/13/03	9:21	7.19		2.12	
		B16KH2	03/04/03	9:40	30.9		7.38	
		B16KH4 (duplicate)	03/04/03	9:40	30.9		7.30	
		B179N9	07/24/03	7:30	48.0		10.1	
		B179P1 (duplicate)	07/24/03	7:30	48.3		9.88	
		B17VB1	10/23/03	10:42	43.0		10.3	

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
		B17VB3 (duplicate)	10/23/03	10:42	44.0		10.5	
		B186J7	11/25/03	10:39	22.7		1.0	U
		B186J9 (duplicate)	11/25/03	10:39	22.7		1.0	U
		B18K66	02/25/04	13:17	9.78		3.61	
		B18P97	03/30/04	not recorded	6.58		1.0	U
		B18P99 (duplicate)	03/30/04	not recorded	6.50		1.0	U
218-W-4C Burial Ground, Site 2 Borehole C4056 Well 244-W15-1	34.3 – 34.8	B163F7	12/10/02	8:40	18.8		5.25	
		B16BW6	01/13/03	9:19	8.46		2.34	
		B16BW9 (duplicate)	01/13/03	9:19	8.63		2.40	
		B16KH1	03/04/03	9:42	18.1		4.56	
		B179N8	07/24/03	7:35	19.5		4.93	
		B17VB0	10/23/03	10:35	11.4		4.5	
		B186J6	11/25/03	10:37	6.92		1.0	U
		B18K65	02/25/04	13:15	1.0	U	1.0	U
		B18MW7 (duplicate)	02/25/04	11:53	1.0	U	1.0	U
		B18P96	03/30/04	not recorded	1.0	U	1.0	U

Table 3-10. Analytical Results for Eight Temporary Soil-Vapor Probes Installed During the Step I Investigation. (7 Pages)

Location	Depth (ft bgs)	SAF F02-011			Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
		HEIS Number	Sample					
			Date	Time				
218-W-4C Burial Ground, Site 6 Borehole C4058 Well 244-W15-3	30.5 – 31.0	B163F9	12/10/02	8:50	5.26		1.91	
		B16BW8	01/13/03	9:39	3.54		1.0	U
		B16KH3	03/04/03	9:49	4.85		1.24	
		B17995	07/21/03	7:55	2.57		1.0	U
		B179P0	07/24/03	7:45	5.52		1.29	
		B17VB2	10/23/03	11:30	4.11		1.64	
		B186J8	11/25/03	10:42	3.69		1.0	U
		B18K67	02/25/04	11:53	4.06		3.57	
		B18P98	03/30/04	14:23	3.87		1.0	U
		B199Y4	06/03/04	13:17	3.54		2.41	
		B19LP5	06/24/04	11:30	3.50		2.13	
		B19TN0	07/23/04	10:36	2.82		1.47	
		B19TN1 (duplicate)	07/23/04	10:36	2.79		1.45	
		B1B3J9	08/26/04	10:47	1.68		2.37	
		B1BFL3	10/07/04	14:10	1.0	U	16.9	
		B1C3L8	11/15/04	13:51	1.0	U	29.3	

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

After April 2004, the two sample probes (C4056 and C4057) in the 218-W-4C Burial Ground were covered with soil as a result of waste-retrieval operations and could not be sampled.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
SAF = Sampling Authorization Form.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
216-Z-9 Trench (Coarse)									
1	08/14/2003	25	U	25	U	25	U	N/A	
2	08/14/2003	25	U	25	U	25	U	N/A	
3	08/14/2003	25	U	25	U	25	U	N/A	
4	08/14/2003	25	U	25	U	25	U	N/A	
5	08/14/2003	36		25	U	25	U	N/A	
6	08/14/2003	25	U	25	U	25	U	N/A	
7	08/14/2003	22	J	25	U	25	U	N/A	
8	08/14/2003	95		25	U	25	U	N/A	
9	08/14/2003	45		25	U	25	U	N/A	
10	08/14/2003	25	U	25	U	25	U	N/A	
11	08/14/2003	25	U	25	U	25	U	N/A	
12	08/14/2003	25	U	25	U	25	U	N/A	
13	08/14/2003	25	U	25	U	25	U	N/A	
14	08/14/2003	25	U	25	U	25	U	N/A	
15	08/14/2003	20	J	25	U	25	U	N/A	
16	08/14/2003	23	J	25	U	25	U	N/A	
17	08/14/2003	77		25	U	25	U	N/A	
18	08/14/2003	57		25	U	25	U	N/A	
19	08/14/2003	25	U	25	U	25	U	N/A	
20	08/14/2003	25	U	25	U	25	U	N/A	
21	08/14/2003	25	U	25	U	25	U	N/A	
22	08/14/2003	20	J	25	U	25	U	N/A	
23	08/14/2003	25	U	25	U	25	U	N/A	

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
24	08/14/2003	25	U	25	U	25	U	N/A	
25	08/14/2003	13	J	25	U	25	U	N/A	
26	08/14/2003	78		25	U	25	U	N/A	
27	08/14/2003	25	U	25	U	25	U	N/A	
28	08/14/2003	11	J	25	U	25	U	N/A	
29	08/14/2003	26		25	U	25	U	N/A	
30	08/14/2003	25	U	25	U	25	U	N/A	
31	08/14/2003	25	U	25	U	25	U	N/A	
32	08/14/2003	25	U	25	U	25	U	N/A	
33	08/14/2003	10	J	25	U	25	U	N/A	
34	08/14/2003	74		25	U	25	U	N/A	
35	08/14/2003	48		25	U	25	U	N/A	
36	08/14/2003	70		25	U	25	U	N/A	
37	08/14/2003	45		25	U	25	U	N/A	
38	08/14/2003	60		25	U	25	U	N/A	
39	08/14/2003	29		25	U	25	U	N/A	
40	08/14/2003	72		25	U	25	U	N/A	
41	08/14/2003	27		25	U	25	U	N/A	
42	08/14/2003	56		25	U	25	U	N/A	
45	08/14/2003	25	U	25	U	25	U	N/A	
46	08/14/2003	25	U	25	U	25	U	N/A	
47	08/14/2003	25	U	25	U	25	U	N/A	
48	08/14/2003	92		25	U	25	U	N/A	
49	08/14/2003	23	J	25	U	25	U	N/A	
50	08/14/2003	33		25	U	25	U	N/A	
51	08/14/2003	25	U	25	U	25	U	N/A	

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
52	08/14/2003	79		25	U	25	U	N/A	
53	08/14/2003	15	J	25	U	25	U	N/A	
54	08/14/2003	25	U	25	U	25	U	N/A	
55	08/14/2003	25	U	25	U	25	U	N/A	
56	08/14/2003	18	J	25	U	25	U	N/A	
57	08/14/2003	25	U	25	U	25	U	N/A	
58	08/14/2003	14	J	25	U	25	U	N/A	
59	08/14/2003	18	J	25	U	25	U	N/A	
60	08/14/2003	23	J	25	U	25	U	N/A	
61	08/14/2003	25	U	25	U	25	U	N/A	
62	08/14/2003	32		25	U	25	U	N/A	
63	08/14/2003	25	U	25	U	25	U	N/A	
64	08/14/2003	190		25	U	25	U	N/A	
65	08/14/2003	25	U	25	U	25	U	N/A	
66	08/14/2003	25	U	25	U	25	U	N/A	
67	08/14/2003	25	U	25	U	25	U	N/A	
68	08/14/2003	25	U	25	U	25	U	N/A	
69	08/14/2003	24	J	25	U	25	U	N/A	
70	08/14/2003	23	J	25	U	25	U	N/A	
71	08/14/2003	25	U	25	U	25	U	N/A	
72	08/14/2003	23	J	25	U	25	U	N/A	
73	08/14/2003	10	J	25	U	25	U	N/A	
74	08/14/2003	25	U	25	U	25	U	N/A	
75	08/14/2003	25	U	25	U	25	U	N/A	
76	08/14/2003	15	J	25	U	25	U	N/A	
77	08/14/2003	31		25	U	25	U	N/A	

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
78	08/14/2003	46		25	U	25	U	N/A	
79	08/14/2003	110		25	U	25	U	N/A	
80	08/14/2003	25	U	25	U	25	U	N/A	
81	08/14/2003	99		25	U	25	U	N/A	
82	08/14/2003	18	J	25	U	25	U	N/A	
83	08/14/2003	25	U	25	U	25	U	N/A	
84	08/14/2003	25	U	25	U	25	U	N/A	
85	08/14/2003	25	U	25	U	25	U	N/A	
86	08/14/2003	25	U	25	U	25	U	N/A	
87	08/14/2003	64		25	U	25	U	N/A	
88	08/14/2003	25	U	25	U	25	U	N/A	
216-Z-9 Trench (Refined)									
A1	09/13/2004	126		25	U	25	U	25	U
A2	09/13/2004	39		25	U	25	U	25	U
A3	09/13/2004	22	J	25	U	25	U	25	U
A4	09/13/2004	168		25	U	25	U	25	U
A5	09/13/2004	37		25	U	25	U	25	U
A6	09/13/2004	38		25	U	25	U	25	U
A7	09/13/2004	34		25	U	25	U	25	U
A8	09/13/2004	13	J	25	U	25	U	25	U
A9	09/13/2004	7	J	25	U	25	U	25	U
A10	09/13/2004	212		25	U	25	U	36	U
A11	09/13/2004	47		25	U	25	U	25	U
A12	09/13/2004	251		25	U	25	U	25	U
A13	09/13/2004	149		25	U	25	U	25	U
A14	09/13/2004	190		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A15	09/13/2004	25	U	25	U	25	U	25	U
A16	09/13/2004	33		25	U	25	U	25	U
A17	09/13/2004	259		25	U	25	U	25	U
A18	09/13/2004	75		25	U	25	U	25	U
A19	09/13/2004	32		25	U	25	U	26	U
A20	09/13/2004	8	J	25	U	25	U	25	U
A21	09/13/2004	60		25	U	25	U	25	U
A22	09/13/2004	35		25	U	25	U	25	U
A23	09/13/2004	11	J	25	U	25	U	25	U
A24	09/13/2004	9	J	25	U	25	U	25	U
A25	09/13/2004	44		25	U	25	U	25	U
A26	09/13/2004	346		25	U	25	U	25	U
A27	09/13/2004	15	J	25	U	25	U	25	U
A28	09/13/2004	310		25	U	25	U	25	U
A29	09/13/2004	130		25	U	25	U	25	U
A30	09/13/2004	149		25	U	25	U	25	U
A31	09/13/2004	44		25	U	25	U	25	U
A32	09/13/2004	90		25	U	25	U	40	
A33	09/13/2004	33		25	U	25	U	25	U
A34	09/13/2004	31		25	U	25	U	25	U
A35	09/13/2004	14	J	25	U	25	U	25	U
A36	09/13/2004	29		25	U	25	U	25	U
A37	09/13/2004	111		25	U	25	U	88	
A38	09/13/2004	273		25	U	25	U	25	U
A39	09/13/2004	26		25	U	25	U	25	U
A40	09/13/2004	85		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A41	09/13/2004	78		25	U	25	U	25	U
A42	09/13/2004	138		25	U	25	U	25	U
A43	09/13/2004	229		25	U	25	U	25	U
A44	09/13/2004	165		25	U	25	U	25	U
A45	09/13/2004	51		25	U	25	U	25	U
A46	09/13/2004	23	J	25	U	25	U	25	U
A47	09/13/2004	254		25	U	25	U	25	U
A48	09/13/2004	191		25	U	25	U	25	U
A49	09/13/2004	34		25	U	25	U	25	U
A50	09/13/2004	20	J	25	U	25	U	25	U
A51	09/13/2004	27		25	U	25	U	25	U
A52	09/13/2004	30		25	U	25	U	25	U
A53	09/13/2004	65		25	U	25	U	25	U
A54	09/13/2004	21	J	25	U	25	U	25	U
A55	09/13/2004	46		25	U	25	U	25	U
A56	09/13/2004	107		25	U	25	U	25	U
A57	09/13/2004	19	J	25	U	25	U	25	U
A58	09/13/2004	54		25	U	25	U	25	U
A59	09/13/2004	14	J	25	U	25	U	25	U
A60	09/13/2004	22	J	25	U	25	U	25	U
A61	09/13/2004	12	J	25	U	25	U	25	U
A62	09/13/2004	21	J	25	U	25	U	25	U
A63	09/13/2004	33		25	U	25	U	25	U
A64	09/13/2004	22	J	25	U	25	U	29	U
A65	09/13/2004	9	J	25	U	25	U	25	U
A66	09/13/2004	16	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A67	09/13/2004	33		25	U	25	U	25	U
A68	09/13/2004	20	J	25	U	25	U	25	U
A69	09/13/2004	16	J	25	U	25	U	25	U
A70	09/13/2004	61		25	U	25	U	25	U
A71	09/13/2004	8	J	25	U	25	U	36	U
A72	09/13/2004	110		25	U	25	U	25	U
A73	09/13/2004	32		25	U	25	U	25	U
A74	09/13/2004	26		25	U	25	U	25	U
A75	09/13/2004	10	J	25	U	25	U	25	U
A76	09/13/2004	7	J	25	U	25	U	25	U
A77	09/13/2004	30		25	U	25	U	25	U
A78	09/13/2004	174		25	U	25	U	25	U
A79	09/13/2004	31		25	U	25	U	25	U
A80	09/13/2004	30		25	U	25	U	25	U
A81	09/14/2004	51		25	U	25	U	25	U
A82	09/14/2004	18	J	25	U	25	U	25	U
A83	09/14/2004	24	J	25	U	25	U	25	U
A84	09/14/2004	16	J	25	U	25	U	25	U
A85	09/14/2004	21	J	25	U	25	U	25	U
A86	09/14/2004	9	J	25	U	25	U	25	U
A87	09/14/2004	28		25	U	25	U	25	U
A88	09/14/2004	72		25	U	25	U	29	U
A89	09/14/2004	7	J	25	U	25	U	25	U
A90	09/14/2004	67		25	U	25	U	25	U
A91	09/14/2004	175		25	U	25	U	25	U
A92	09/14/2004	10	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A93	09/14/2004	28		25	U	25	U	25	U
A94	09/14/2004	54		25	U	25	U	25	U
A95	09/14/2004	113		25	U	25	U	25	U
A96	09/14/2004	29		25	U	25	U	25	U
A97	09/14/2004	11	J	25	U	25	U	25	U
A98	09/14/2004	18	J	25	U	25	U	25	U
A99	09/14/2004	33		25	U	25	U	25	U
A100	09/14/2004	15	J	25	U	25	U	25	U
A101	09/14/2004	45		25	U	25	U	25	U
A102	09/14/2004	31		25	U	25	U	25	U
A103	09/14/2004	38		25	U	25	U	25	U
A104	09/14/2004	21	J	25	U	25	U	25	U
A105	09/14/2004	35		25	U	25	U	25	U
A106	09/14/2004	27		25	U	25	U	25	U
A107	09/14/2004	135		25	U	25	U	35	U
A108	09/14/2004	121		25	U	25	U	25	U
A109	09/14/2004	25	J	25	U	25	U	25	U
A110	09/14/2004	12	J	25	U	25	U	25	U
A111	09/14/2004	12	J	25	U	25	U	25	U
A112	09/14/2004	34		25	U	25	U	25	U
A113	09/14/2004	90		25	U	25	U	25	U
A114	09/14/2004	23	J	25	U	25	U	25	U
A115	09/14/2004	16	J	25	U	25	U	25	U
A116	09/14/2004	24	J	25	U	25	U	25	U
A117	09/14/2004	85		25	U	25	U	25	U
A118	09/14/2004	90		25	U	25	U	25	

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A119	09/14/2004	98		25	U	25	U	25	
A120	09/14/2004	146		25	U	25	U	25	
A121	09/14/2004	449		25	U	25	U	25	
A122	09/14/2004	47		25	U	25	U	25	U
A123	09/14/2004	45		25	U	25	U	25	U
A124	09/14/2004	41		25	U	25	U	25	U
A125	09/14/2004	46		25	U	25	U	25	U
A126	09/14/2004	16	J	25	U	25	U	25	U
A127	09/14/2004	82		25	U	25	U	25	U
A128	09/14/2004	109		25	U	25	U	25	U
A129	09/14/2004	70		25	U	25	U	25	U
A130	09/14/2004	156		25	U	25	U	25	U
A131	09/14/2004	93		25	U	25	U	31	
A132	09/14/2004	117		25	U	25	U	25	U
A133	09/14/2004	28		25	U	25	U	25	U
A134	09/14/2004	10	J	25	U	25	U	25	U
A135	09/14/2004	18	J	25	U	25	U	25	U
A136	09/14/2004	62		25	U	25	U	25	U
A137	09/14/2004	73		25	U	25	U	25	U
A138	09/14/2004	39		25	U	25	U	25	U
A139	09/14/2004	48		25	U	25	U	25	U
A140	09/14/2004	29		25	U	25	U	25	U
A141	09/14/2004	11	J	25	U	25	U	25	U
A142	09/14/2004	41		25	U	25	U	25	U
A143	09/14/2004	78		25	U	25	U	25	U
A144	09/14/2004	1	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
A145	09/14/2004	2	J	25	U	25	U	25	U
A146	09/14/2004	1	J	25	U	25	U	25	U
A147	09/14/2004	26		25	U	25	U	25	U
A148	09/14/2004	51		25	U	25	U	25	U
A149	09/14/2004	42		25	U	25	U	25	U
A150	09/14/2004	13	J	25	U	25	U	25	U
A151	09/14/2004	25	U	25	U	25	U	25	U
A152	09/14/2004	9	J	25	U	25	U	25	U
A153	09/14/2004	4	J	25	U	25	U	25	U
A154	09/14/2004	87		25	U	25	U	25	U
A155	09/14/2004	45		25	U	25	U	52	U
A156	09/14/2004	58		25	U	25	U	25	U
A157	09/14/2004	11	J	25	U	25	U	25	U
A158	09/14/2004	7	J	25	U	25	U	25	U
A159	09/14/2004	9	J	25	U	25	U	25	U
A160	09/14/2004	23	J	25	U	25	U	25	U
A161	09/14/2004	54		25	U	25	U	30	
A162	09/14/2004	21	J	25	U	25	U	25	U
A163	09/14/2004	4	J	25	U	25	U	25	U
A164	09/14/2004	6	J	25	U	25	U	31	
A165	09/14/2004	5	J	25	U	25	U	25	U
TX-TY Tank Farms (Coarse)									
B1	09/15/2004	25	U	25	U	25	U	25	U
B2	09/15/2004	1	J	25	U	25	U	25	U
B3	09/15/2004	4	J	25	U	25	U	25	U
B4	09/15/2004	28		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
B5	09/15/2004	11	J	25	U	25	U	25	U
B6	09/15/2004	3	J	25	U	25	U	25	U
B7	09/15/2004	5	J	25	U	25	U	25	U
B8	09/15/2004	4	J	25	U	25	U	25	U
B9	09/15/2004	2	J	25	U	25	U	25	U
B10	09/15/2004	25	U	25	U	25	U	25	U
B11	09/15/2004	13	J	25	U	25	U	25	U
B12	09/15/2004	64		25	U	25	U	25	U
B13	09/15/2004	15	J	25	U	25	U	25	U
B14	09/15/2004	7	J	25	U	25	U	25	U
B15	09/15/2004	32		25	U	25	U	25	U
B16	09/15/2004	5	J	25	U	25	U	25	U
B17	09/15/2004	25	U	25	U	25	U	25	U
B18	09/15/2004	2	J	25	U	25	U	25	U
B19	09/15/2004	25	U	25	U	25	U	110	
B20	09/15/2004	2	J	25	U	25	U	25	U
B21	09/15/2004	3	J	25	U	25	U	25	U
B22	09/15/2004	5	J	25	U	25	U	25	U
B23	09/15/2004	25	U	25	U	25	U	25	U
B24	09/15/2004	25	U	25	U	25	U	25	U
B25	09/15/2004	25	U	25	U	25	U	25	U
B26	09/15/2004	25	U	25	U	25	U	25	U
B27	09/15/2004	2	J	25	U	25	U	25	U
B28	09/15/2004	15	J	25	U	25	U	25	U
B29	09/15/2004	15	J	25	U	25	U	25	U
B30	09/15/2004	20	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
B31	09/15/2004	2	J	25	U	25	U	25	U
B32	09/15/2004	25	U	25	U	25	U	25	U
B33	09/15/2004	25	U	25	U	25	U	25	U
B34	09/15/2004	2	J	25	U	25	U	25	U
B35	09/15/2004	4	J	25	U	25	U	25	U
B36	09/15/2004	222		25	U	25	U	25	U
B37	09/15/2004	25	U	25	U	25	U	25	U
B38	09/15/2004	25	U	25	U	25	U	25	U
B39	09/15/2004	25	U	25	U	25	U	25	U
B40	09/15/2004	25	U	25	U	25	U	27	
B41	09/15/2004	40		25	U	25	U	25	U
B42	09/15/2004	25	U	25	U	25	U	38	
B43	09/15/2004	25	U	25	U	25	U	25	U
B44	09/15/2004	25	U	25	U	25	U	33	
B45	09/15/2004	32		25	U	25	U	25	U
B46	09/15/2004	230		25	U	25	U	25	U
B47	09/15/2004	1	J	25	U	25	U	25	U
B48	09/15/2004	2	J	25	U	25	U	25	U
B49	09/15/2004	2	J	25	U	25	U	25	U
B50	09/15/2004	9	J	25	U	25	U	25	U
B51	09/15/2004	39		25	U	25	U	25	U
B52	09/15/2004	130		25	U	25	U	25	U
B53	09/15/2004	57		25	U	25	U	25	U
Within Plutonium Finishing Plant Protected Area (Coarse)									
C1	11/11/2004	25	U	25	U	25	U	25	U
C2	11/11/2004	14	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
C3	11/11/2004	16	J	25	U	25	U	25	U
C4	11/11/2004	30		25	U	25	U	25	U
C5	11/11/2004	32		25	U	25	U	25	U
C6	11/11/2004	10	J	25	U	25	U	25	U
C7	11/11/2004	17	J	25	U	25	U	25	U
C8	11/11/2004	26		25	U	25	U	25	U
C9	11/11/2004	6	J	25	U	25	U	25	U
C10	11/11/2004	21	J	25	U	25	U	25	U
C11	11/11/2004	16	J	25	U	25	U	25	U
C12	11/11/2004	330		25	U	25	U	25	U
C13	11/11/2004	25	U	25	U	25	U	25	U
C14	11/11/2004	10	J	25	U	25	U	25	U
C16	11/11/2004	15	J	25	U	25	U	25	U
C17	11/11/2004	23	J	25	U	25	U	25	U
C18	11/11/2004	51		25	U	25	U	25	U
C19	11/11/2004	6	J	25	U	25	U	49	
C20	11/11/2004	66		231		25	U	57	
C21	11/11/2004	280		25	U	25	U	25	U
C22	11/11/2004	145		25	U	25	U	25	U
C23	11/11/2004	29		25	U	25	U	25	U
C24	11/11/2004	13	J	25	U	25	U	25	U
C25	11/11/2004	147		25	U	25	U	25	U
C26	11/11/2004	25	U	25	U	25	U	25	U
C27	11/11/2004	6	J	25	U	25	U	25	U
C28	11/11/2004	11	J	25	U	25	U	25	U
C29	11/11/2004	6	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
C30	11/11/2004	9	J	25	U	25	U	25	U
C31	11/11/2004	25	U	25	U	25	U	25	U
C32	11/11/2004	25	U	25	U	25	U	25	U
C33	11/11/2004	25	U	25	U	25	U	25	U
C34	11/11/2004	25	U	25	U	25	U	28	
C36	11/11/2004	25	U	25	U	25	U	25	U
C37	11/11/2004	25	U	25	U	25	U	25	U
C38	11/11/2004	11	J	25	U	25	U	25	U
C39	11/11/2004	25	U	25	U	25	U	25	U
C40	11/11/2004	18	J	25	U	25	U	25	U
C41	11/11/2004	5	J	25	U	25	U	25	U
216-Z-1A Tile Field and 216-Z-12 and 216-Z-18 Cribs (Coarse)									
D1	11/11/2004	56		25	U	25	U	25	U
D2	11/11/2004	8	J	25	U	25	U	25	U
D3	11/11/2004	5	J	25	U	25	U	36	
D4	11/11/2004	6	J	25	U	25	U	25	U
D5	11/11/2004	6	J	25	U	25	U	25	U
D6	11/12/2004	35		25	U	25	U	25	U
D7	11/11/2004	19	J	25	U	25	U	26	
D8	11/11/2004	57		25	U	25	U	25	U
D9	11/11/2004	10	J	25	U	25	U	25	U
D10	11/11/2004	8	J	25	U	25	U	25	U
D11	11/11/2004	77		25	U	25	U	25	U
D12	11/11/2004	22	J	25	U	25	U	25	U
D13	11/11/2004	26		25	U	25	U	25	U
D14	11/11/2004	6	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
D15	11/11/2004	19	J	25	U	25	U	25	U
D16	11/11/2004	2175		25	U	25	U	25	U
D17	11/12/2004	1138		25	U	25	U	35	
D18	11/11/2004	72		25	U	25	U	25	U
D19	11/11/2004	56		25	U	25	U	25	U
D20	11/11/2004	8	J	25	U	25	U	25	U
D21	11/11/2004	12	J	25	U	25	U	25	U
D22	11/12/2004	23	J	25	U	25	U	25	U
D23	11/11/2004	129		25	U	25	U	25	U
D24	11/11/2004	18	J	25	U	25	U	25	U
D25	11/11/2004	23	J	25	U	25	U	25	U
D26	11/11/2004	9	J	25	U	25	U	25	U
D27	11/11/2004	5	J	25	U	25	U	28	
D28	11/11/2004	6	J	25	U	25	U	25	U
D29	11/12/2004	94		25	U	25	U	25	U
D30	11/11/2004	97		25	U	25	U	25	U
D31	11/11/2004	31		25	U	25	U	25	U
D32	11/11/2004	10	J	25	U	25	U	25	U
D33	11/11/2004	25	U	25	U	25	U	25	U
D34	11/11/2004	73		25	U	25	U	25	U
D35	11/11/2004	23	J	25	U	25	U	25	U
D36	11/11/2004	18	J	25	U	25	U	40	
D37	11/11/2004	25	U	25	U	25	U	25	U
D38	11/11/2004	25	U	25	U	25	U	25	U
D39	11/11/2004	14	J	25	U	25	U	25	U
D40	11/11/2004	21	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
D41	11/11/2004	18	J	25	U	25	U	25	U
D42	11/11/2004	25	U	25	U	25	U	25	U
D43	11/11/2004	35		25	U	25	U	25	U
D44	11/11/2004	7	J	25	U	25	U	25	U
D45	11/11/2004	15	J	25	U	25	U	25	U
D46	11/11/2004	7	J	25	U	25	U	25	U
D47	11/11/2004	25	U	25	U	25	U	25	U
D48	11/11/2004	19	J	25	U	25	U	25	U
D49	11/11/2004	25	U	25	U	25	U	25	U
D50	11/11/2004	6	J	25	U	25	U	25	U
D51	11/12/2004	35		25	U	25	U	25	U
D52	11/12/2004	27		25	U	25	U	25	U
D53	11/12/2004	25	U	25	U	25	U	25	U
D54	11/12/2004	6	J	25	U	25	U	25	U
D55	11/12/2004	8	J	25	U	25	U	25	U
D56	11/12/2004	6	J	25	U	25	U	32	
D57	11/15/2004	48		25	U	25	U	25	U
D58	11/15/2004	18	J	25	U	25	U	25	U
D59	11/15/2004	7	J	25	U	25	U	25	U
D60	11/15/2004	6	J	25	U	25	U	25	U
D61	11/15/2004	25	U	25	U	25	U	25	U
D62	11/15/2004	16	J	25	U	25	U	25	U
D63	11/15/2004	11	J	25	U	25	U	25	U
D64	11/15/2004	13	J	25	U	25	U	25	U
D65	11/15/2004	5	J	25	U	25	U	25	U
D66	11/15/2004	8	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
Outside 241-TX Tank Farm (Refined)									
E1	12/05/2005	42		25	U	25	U	25	U
E2	12/05/2005	25	U	25	U	25	U	25	U
E3	12/05/2005	25	U	25	U	25	U	25	U
E4	12/05/2005	25	U	25	U	25	U	25	U
E5	12/05/2005	47		25	U	25	U	25	U
E6	12/05/2005	46		25	U	25	U	25	U
E7	12/05/2005	25	U	25	U	25	U	25	U
E8	12/05/2005	51		25	U	25	U	25	U
E9	12/05/2005	25	U	25	U	25	U	25	U
E10	12/05/2005	29		25	U	25	U	25	U
E11	12/05/2005	25	U	25	U	25	U	25	U
E12	12/05/2005	25	U	25	U	25	U	25	U
E13	12/05/2005	25	U	25	U	25	U	25	U
E14	12/05/2005	25	U	25	U	25	U	25	U
E15	12/05/2005	68		25	U	25	U	25	U
E16	12/05/2005	148		25	U	25	U	25	U
E17	12/05/2005	56		25	U	25	U	25	U
E18	12/05/2005	25	U	25	U	25	U	25	U
E19	12/05/2005	36		25	U	25	U	25	U
E20	12/05/2005	127		25	U	25	U	25	U
E21	12/05/2005	95		25	U	25	U	25	U
E22	12/05/2005	57		25	U	25	U	25	U
E23	12/05/2005	230		25	U	25	U	25	U
E24	12/05/2005	212		25	U	25	U	25	U
E25	12/05/2005	52		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
E26	12/05/2005	36		25	U	25	U	25	U
E27	12/05/2005	99		25	U	25	U	25	U
E28	12/05/2005	25	U	25	U	25	U	25	U
E29	12/05/2005	76		25	U	25	U	25	U
E30	12/05/2005	40		25	U	25	U	25	U
E31	12/05/2005	34		25	U	25	U	25	U
E32	12/05/2005	64		25	U	25	U	25	U
E33	12/05/2005	33		25	U	25	U	25	U
E34	12/05/2005	81		25	U	25	U	25	U
E35	12/05/2005	96		25	U	25	U	25	U
E36	12/05/2005	35		25	U	25	U	25	U
E37	12/05/2005	45		25	U	25	U	25	U
E38	12/05/2005	254		25	U	25	U	25	U
E39	12/05/2005	101		25	U	25	U	25	U
E40	12/05/2005	94		25	U	25	U	25	U
E41	12/05/2005	314		25	U	25	U	25	U
E42	12/05/2005	72		25	U	25	U	25	U
E43	12/05/2005	25	U	25	U	25	U	25	U
E44	12/05/2005	33		25	U	25	U	25	U
E45	12/05/2005	273		25	U	25	U	25	U
E46	12/05/2005	45		25	U	25	U	25	U
E47	12/05/2005	37		25	U	25	U	25	U
E48	12/05/2005	66		25	U	25	U	25	U
E49	12/05/2005	103		25	U	25	U	25	U
E50	12/05/2005	56		25	U	25	U	25	U
E51	12/05/2005	25	U	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
E52	12/05/2005	83		25	U	25	U	25	U
E53	12/05/2005	294		25	U	25	U	25	U
E54	12/05/2005	36		25	U	25	U	25	U
E55	12/05/2005	25	U	25	U	25	U	25	U
E56	12/05/2005	123		25	U	25	U	25	U
E57	12/05/2005	260		25	U	25	U	25	U
E58	12/05/2005	27		25	U	25	U	25	U
E59	12/05/2005	25	U	25	U	25	U	25	U
E60	12/05/2005	29		25	U	25	U	25	U
E61	12/05/2005	172		25	U	25	U	25	U
E62	12/05/2005	41		25	U	25	U	25	U
E63	12/05/2005	25	U	25	U	25	U	25	U
E64	12/05/2005	77		25	U	25	U	25	U
E66	12/05/2005	102		25	U	25	U	25	U
E67	12/05/2005	73		25	U	25	U	25	U
E68	12/05/2005	31		25	U	25	U	25	U
E69	12/05/2005	96		25	U	25	U	25	U
E70	12/05/2005	41		25	U	25	U	25	U
E71	12/05/2005	33		25	U	25	U	25	U
E72	12/05/2005	25	U	25	U	25	U	25	U
E73	12/05/2005	32		25	U	25	U	25	U
E74	12/05/2005	26		25	U	25	U	25	U
216-Z-1A Tile Field and 216-Z-18 Crib (Refined)									
F1	01/31/2005	250		25	U	25	U	25	U
F2	01/31/2005	14	J	25	U	25	U	25	U
F3	01/31/2005	15	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
F4	01/31/2005	9	J	25	U	25	U	25	U
F5	01/31/2005	16	J	25	U	25	U	25	U
F6	01/31/2005	38		25	U	25	U	25	U
F7	01/31/2005	30		25	U	25	U	25	U
F8	01/31/2005	25	U	25	U	25	U	25	U
F9	01/31/2005	9	J	25	U	25	U	25	U
F10	01/31/2005	8	J	25	U	25	U	25	U
F11	01/31/2005	41		25	U	25	U	25	U
F12	01/31/2005	10	J	25	U	25	U	25	U
F13	01/31/2005	65		25	U	25	U	25	U
F14	01/31/2005	15	J	25	U	25	U	25	U
F15	01/31/2005	7	J	25	U	25	U	25	U
F16	01/31/2005	6	J	25	U	25	U	25	U
F17	01/31/2005	16	J	25	U	25	U	25	U
F18	01/31/2005	11	J	25	U	25	U	25	U
F19	01/31/2005	17	J	25	U	25	U	25	U
F20	01/31/2005	9	J	25	U	25	U	25	U
F21	01/31/2005	8	J	25	U	25	U	25	U
F22	01/31/2005	36		25	U	25	U	25	U
F23	01/31/2005	223		25	U	25	U	25	U
F24	01/31/2005	25	U	25	U	25	U	25	U
F25	01/31/2005	25	U	25	U	25	U	25	U
F26	01/31/2005	8	J	25	U	25	U	25	U
F27	01/31/2005	26		25	U	25	U	25	U
F28	01/31/2005	11	J	25	U	25	U	25	U
F29	01/31/2005	89		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
F30	01/31/2005	5	J	25	U	25	U	25	U
F31	01/31/2005	64		25	U	25	U	25	U
F32	01/31/2005	110		25	U	25	U	25	U
F33	01/31/2005	28		25	U	25	U	25	U
F34	01/31/2005	5	J	25	U	25	U	25	U
F35	01/31/2005	113		25	U	25	U	25	U
F36	01/31/2005	6	J	25	U	25	U	25	U
F37	01/31/2005	29		25	U	25	U	25	U
F38	01/31/2005	25	U	25	U	25	U	25	U
F39	01/31/2005	104		25	U	25	U	25	U
F40	01/31/2005	80		25	U	25	U	25	U
F41	01/31/2005	6	J	25	U	25	U	25	U
F42	01/31/2005	21	J	25	U	25	U	25	U
F43	01/31/2005	61		25	U	25	U	25	U
F44	01/31/2005	65		25	U	25	U	25	U
F45	01/31/2005	932		25	U	25	U	25	U
F46	01/31/2005	15	J	25	U	25	U	25	U
F47	01/31/2005	282		25	U	25	U	25	U
F48	01/31/2005	301		25	U	25	U	25	U
F49	01/31/2005	67		25	U	25	U	25	U
F50	01/31/2005	60		25	U	25	U	25	U
F51	01/31/2005	4124		27		25	U	25	U
F52	01/31/2005	4531		25	U	25	U	25	U
F53	01/31/2005	432		25	U	25	U	25	U
F54	01/31/2005	1051		25	U	25	U	25	U
F55	01/31/2005	176		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
F56	01/31/2005	412		25	U	25	U	25	U
F57	01/31/2005	381		25	U	25	U	25	U
F58	01/31/2005	486		25	U	25	U	25	U
F59	01/31/2005	3122		25	U	25	U	25	U
F60	01/31/2005	1556		25	U	25	U	25	U
F61	01/31/2005	567		25	U	25	U	25	U
F62	01/31/2005	733		25	U	25	U	25	U
F63	01/31/2005	129		25	U	25	U	25	U
F64	01/31/2005	9	J	25	U	25	U	25	U
F65	01/31/2005	77		25	U	25	U	25	U
F66	01/31/2005	87		25	U	25	U	25	U
F67	01/31/2005	916		25	U	25	U	25	U
F68	01/31/2005	498		25	U	25	U	25	U
F69	01/31/2005	198		25	U	25	U	25	U
F70	01/31/2005	80		25	U	25	U	25	U
F71	01/31/2005	39		25	U	25	U	25	U
F72	01/31/2005	148		25	U	25	U	25	U
F73	01/31/2005	25	U	25	U	25	U	25	U
F74	01/31/2005	61		25	U	25	U	25	U
F75	01/31/2005	85		25	U	25	U	25	U
F76	01/31/2005	369		25	U	25	U	25	U
F77	01/31/2005	177		25	U	25	U	25	U
F78	01/31/2005	33		25	U	25	U	25	U
F79	01/31/2005	23	J	25	U	25	U	25	U
F80	01/31/2005	78		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
East of Plutonium Finishing Plant (Refined)									
G1	01/31/2005	5	J	25	U	25	U	25	U
G2	01/31/2005	16	J	25	U	25	U	25	U
G3	01/31/2005	155		25	U	25	U	25	U
G4	01/31/2005	14	J	25	U	25	U	25	U
G5	01/31/2005	24	J	25	U	25	U	25	U
G6	01/31/2005	13	J	25	U	25	U	25	U
G7	01/31/2005	780		112		25	U	25	U
G8	01/31/2005	126		25	U	25	U	25	U
G9	01/31/2005	149		25	U	25	U	25	U
G10	01/31/2005	468		25	U	25	U	25	U
G11	01/31/2005	477		25	U	25	U	25	U
G12	01/31/2005	136		25	U	25	U	25	U
G13	01/31/2005	249		25	U	25	U	25	U
G14	01/31/2005	2028		165		25	U	25	U
G15	01/31/2005	1428		89		25	U	25	U
G16	01/31/2005	843		25	U	25	U	25	U
G17	01/31/2005	401		25	U	25	U	25	U
G18	01/31/2005	1312		47		25	U	25	U
G19	01/31/2005	1002		25	U	25	U	25	U
G20	01/31/2005	34		25	U	25	U	25	U
G21	01/31/2005	314		25	U	25	U	25	U
G22	01/31/2005	588		25	U	25	U	25	U
East and Northeast of 216-Z-9 Trench (Refined)									
B1D853	06/01/2005	25	U	25	U	25	U	25	U
B1D854	06/01/2005	25	U	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
B1D855	06/01/2005	25	U	25	U	25	U	25	U
B1D856	06/01/2005	25	U	25	U	25	U	25	U
B1D857	06/01/2005	25	U	25	U	25	U	25	U
B1D858	06/01/2005	104.66		25	U	25	U	25	U
B1D859	06/01/2005	34.89		25	U	25	U	25	U
B1D860	06/01/2005	97.32		25	U	25	U	25	U
B1D861	06/01/2005	25	U	25	U	25	U	25	U
B1D862	06/01/2005	25	U	25	U	25	U	25	U
B1D863	06/01/2005	25	U	25	U	25	U	25	U
B1D864	06/01/2005	25	U	25	U	25	U	25	U
B1D865	06/01/2005	25	U	25	U	25	U	25	U
B1D866	06/01/2005	25	U	25	U	25	U	25	U
B1D867	06/01/2005	25	U	25	U	25	U	25	U
B1D868	06/01/2005	25	U	25	U	25	U	25	U
B1D869	06/01/2005	25	U	25	U	25	U	25	U
B1D870	06/01/2005	31.53		25	U	25	U	25	U
B1D871	06/01/2005	68.94		25	U	25	U	25	U
B1D872	06/01/2005	25	U	25	U	25	U	25	U
B1D873	06/01/2005	45.45		25	U	25	U	100.54	
B1D874	06/01/2005	25	U	25	U	25	U	25	U
B1D875	06/01/2005	59.83		25	U	25	U	25	U
B1D876	06/01/2005	25	U	25	U	25	U	25	U
B1D877	06/01/2005	25	U	25	U	25	U	25	U
B1D878	06/01/2005	25	U	25	U	25	U	25	U
B1D879	06/01/2005	32.18		25	U	25	U	25	U
B1D880	06/01/2005	25	U	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
B1D881	06/01/2005	105.95		25	U	25	U	25	U
B1D882	06/01/2005	25	U	25	U	25	U	25	U
B1D883	06/01/2005	68.11		25	U	25	U	25	U
B1D884	06/01/2005	25	U	25	U	25	U	25	U
B1D888	06/02/2005	70.26		25	U	25	U	25	U
B1D889	06/02/2005	25	U	25	U	25	U	25	U
B1D890	06/02/2005	67.06		25	U	25	U	25	U
B1D891	06/02/2005	25	U	25	U	25	U	25	U
B1D892	06/02/2005	25	U	25	U	25	U	25	U
B1D893	06/02/2005	25	U	25	U	25	U	25	U
B1D894	06/02/2005	25	U	25	U	25	U	25	U
B1D895	06/02/2005	25	U	25	U	25	U	25	U
B1D896	06/02/2005	154.86		25	U	25	U	25	U
B1D897	06/02/2005	62.37		25	U	25	U	25	U
B1D898	06/02/2005	25	U	25	U	25	U	25	U
B1D899	06/02/2005	25	U	25	U	25	U	25	U
B1D8B0	06/02/2005	38.96		25	U	25	U	25	U
B1D8B1	06/02/2005	69.98		25	U	25	U	25	U
B1D8B2	06/02/2005	67.13		25	U	25	U	25	U
B1D8B3	06/02/2005	25	U	25	U	25	U	25	U
B1D8B4	06/02/2005	25	U	25	U	25	U	25	U
B1D8B5	06/02/2005	25	U	25	U	25	U	25	U
B1D8B6	06/02/2005	25	U	25	U	25	U	25	U
B1D8B7	06/02/2005	140.48		25	U	25	U	25	U
B1D8B8	06/02/2005	40.55		25	U	25	U	25	U
B1D8B9	06/02/2005	161.75		25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q
B1D8C0	06/02/2005	74.97		25	U	25	U	25	U
B1D8C1	06/02/2005	25	U	25	U	25	U	25	U
B1D8C2	06/02/2005	25	U	25	U	25	U	25	U
B1D8C3	06/02/2005	25	U	25	U	25	U	25	U
Inside 241-TX Tank Farm (Refined)									
H1	08/07/2006	10	J	25	U	25	U	25	U
H2	08/07/2006	25	U	25	U	25	U	25	U
H3	08/07/2006	23	J	25	U	25	U	25	U
H4	08/07/2006	20	J	25	U	25	U	25	U
H5	08/07/2006	25	U	25	U	25	U	25	U
H6	08/07/2006	25	U	25	U	25	U	25	U
H7	08/07/2006	25	U	25	U	25	U	25	U
H8	08/07/2006	25	U	25	U	25	U	25	U
H9	08/07/2006	12	J	25	U	25	U	25	U
H10	08/07/2006	25	U	25	U	25	U	25	U
H11	08/07/2006	25	U	25	U	25	U	25	U
H12	08/07/2006	20	J	7	J	25	U	25	U
H13	08/07/2006	25	U	25	U	25	U	25	U
H14	08/07/2006	25	U	25	U	25	U	25	U
H15	08/07/2006	25	U	25	U	25	U	25	U
H16	08/07/2006	25	U	25	U	25	U	25	U
H17	08/07/2006	23	J	25	U	25	U	25	U

Table 3-11. Passive Soil-Vapor Sampling Results at Release Sites. (27 Pages)

Sample ID	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q	Chloroform (CAS 67-66-3) (ng/trap)	Q	Methylene Chloride (CAS 75-09-2) (ng/trap)	Q	Chloromethane (CAS 74-87-3) (ng/trap)	Q

From DOE/RL-2006-58, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Interim Characterization Report*, SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose Zone Plume*; and Bratton et al., 2004, *Integrated Approach for Carbon Tetrachloride Source Term Location, 200 West Area Hanford Site, Washington, Final Report.*

CAS = Chemical Abstracts Service registry number.
ID = identification (number).
J = estimated value below the laboratory's reported quantitation level.
N/A = not analyzed.
U = analyzed for but not detected. Value reported is the reporting limit.
Q = laboratory data qualifier.

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P1A	C4743	P1A-3	3	01/12/2005	2	U	2	U
P1A	C4743	P1A-6	6	01/12/2005	2	U	2	U
P1A	C4743	P1A-9	9	01/12/2005	2	U	2	U
P1A	C4743	P1A-12	12	01/12/2005	2	U	2	U
P1A	C4743	P1A-15	15	01/12/2005	2	U	2	U
P1A	C4743	P1A-18	18	01/12/2005	2	U	2	U
P1A	C4743	P1A-21	21	01/12/2005	2	U	2	U
P1A	C4743	P1A-24	24	01/12/2005	2	U	2	U
P1A	C4743	P1A-25	25	01/12/2005	7		7	
P1A	C4743	P1A-25A	25	01/12/2005	2	U	2	U
P1A	C4743	P1A-25B	25	01/12/2005	2	U	2	U
P2	C4699	P2-4	4	01/10/2005	2	U	3	
P2	C4699	P2-6	6	01/10/2005	2	U	2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P2	C4699	P2-9	9	01/10/2005	2	U	3	
P2	C4699	P2-12	12	01/10/2005	2	U	2	
P2	C4699	P2-15	15	01/10/2005	2	U	3	
P2	C4699	P2-18	18	01/10/2005	2	U	2	U
P2	C4699	P2-21	21	01/10/2005	2	U	2	U
P2	C4699	P2-24	24	01/10/2005	2	U	2	U
P2	C4699	P2-27	27	01/10/2005	2	U	2	U
P2	C4699	P2-30	30	01/10/2005	2	U	2	U
P2	C4699	P2-33A	33	01/10/2005	2	U	2	U
P2	C4699	P2-33B	33	01/10/2005	3		3	
P2	C4699	P2-36	36	01/10/2005	2	U	2	U
P2	C4699	P2-39	39	01/10/2005	2	U	2	U
P2	C4699	P2-41A	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41B	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41C	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41D	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41E	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41F	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41G	41.25	01/10/2005	2	U	2	U
P2	C4699	P2-41H	41.25	01/10/2005	4		7	
P3	C4700	P3-3	3	01/10/2005	2	U	2	U
P3	C4700	P3-6	6	01/10/2005	2	U	2	U
P3	C4700	P3-9	9	01/10/2005	2	U	2	U
P3	C4700	P3-12	12	01/10/2005	2	U	2	U
P3	C4700	P3-15	15	01/10/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P3	C4700	P3-18	18	01/10/2005	2	U	2	U
P3	C4700	P3-21	21	01/10/2005	2	U	2	U
P3	C4700	P3-24	24	01/10/2005	2	U	2	U
P3	C4700	P3-27A	27	01/10/2005	2	U	2	U
P3	C4700	P3-27B	27	01/10/2005	2	U	3	
P3	C4700	P3-27C	27	01/10/2005	2	U	2	U
P3	C4700	P3-27D	27	01/10/2005	2	U	2	U
P3	C4700	P3-27E	27	01/10/2005	5		7	
P4	C4701	P4-3	3	01/11/2005	2	U	2	
P4	C4701	P4-6	6	01/11/2005	2	U	2	U
P4	C4701	P4-9	9	01/11/2005	2	U	2	U
P4	C4701	P4-12	12	01/11/2005	2	U	2	U
P4	C4701	P4-15	15	01/11/2005	2	U	2	U
P4	C4701	P4-18	18	01/11/2005	2	U	2	U
P4	C4701	P4-21	21	01/11/2005	2	U	2	U
P4	C4701	P4-24	24	01/11/2005	2	U	2	U
P4	C4701	P4-27	27	01/11/2005	2	U	2	U
P4	C4701	P4-30	30	01/11/2005	2	U	2	U
P4	C4701	P4-33A	33	01/11/2005	2	U	2	U
P4	C4701	P4-33B	33	01/11/2005	2	U	2	
P4	C4701	P4-36	36	01/11/2005	2	U	2	U
P4	C4701	P4-39	39	01/11/2005	2	U	2	U
P4	C4701	P4-42	42	01/11/2005	2	U	2	U
P4	C4701	P4-45	45	01/11/2005	2	U	2	U
P4	C4701	P4-48A	47.8	01/11/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P4	C4701	P4-48B	47.8	01/11/2005	2	U	2	U
P4	C4701	P4-48C	47.8	01/11/2005	37		12	
P5	C4702	P5-3	3	01/12/2005	2	U	2	U
P5	C4702	P5-6	6	01/12/2005	2	U	2	U
P5	C4702	P5-9	9	01/12/2005	2	U	2	U
P5	C4702	P5-12	12	01/12/2005	2	U	2	U
P5	C4702	P5-15	15	01/12/2005	2	U	2	U
P5	C4702	P5-18	18	01/12/2005	2	U	2	U
P5	C4702	P5-21	21	01/12/2005	2	U	2	U
P5	C4702	P5-24	24	01/12/2005	2	U	2	U
P5	C4702	P5-27A	27	01/12/2005	2	U	2	U
P5	C4702	P5-27B	27	01/12/2005	2	U	2	U
P5	C4702	P5-27C	27	01/12/2005	6		8	
P6	C4703	P6-3	3	01/10/2005	2	U	2	U
P6	C4703	P6-6	6	01/10/2005	2	U	2	U
P6	C4703	P6-9	9	01/10/2005	2	U	2	U
P6	C4703	P6-12	12	01/10/2005	2	U	2	U
P6	C4703	P6-15	15	01/10/2005	2	U	2	U
P6	C4703	P6-18	18	01/10/2005	2	U	2	U
P6	C4703	P6-21	21	01/10/2005	2	U	2	U
P6	C4703	P6-24	24	01/10/2005	2	U	2	U
P6	C4703	P6-27	27	01/10/2005	2	U	2	U
P6	C4703	P6-30	30	01/10/2005	2	U	2	U
P6	C4703	P6-33A	33	01/10/2005	2	U	2	U
P6	C4703	P6-33B	33	01/10/2005	5		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P6	C4703	P6-36	36	01/10/2005	2	U	2	U
P6	C4703	P6-39	39	01/10/2005	2	U	2	U
P6	C4703	P6-42	42	01/10/2005	2	U	2	U
P6	C4703	P6-45	45	01/10/2005	2	U	2	U
P6	C4703	P6-48	48	01/10/2005	2	U	2	U
P6	C4703	P6-51	51	01/10/2005	2	U	2	U
P6	C4703	P6-54	54	01/10/2005	2	U	2	U
P6	C4703	P6-57A	56.6	01/10/2005	2	U	2	U
P6	C4703	P6-57B	56.6	01/10/2005	2	U	3	
P6	C4703	P6-57C	56.6	01/10/2005	4		6	
P7	C4704	P7-3	3	01/11/2005	2	U	2	U
P7	C4704	P7-6	6	01/11/2005	2	U	2	U
P7	C4704	P7-9	9	01/11/2005	2	U	2	U
P7	C4704	P7-12	12	01/11/2005	2	U	2	U
P7	C4704	P7-15	15	01/11/2005	2	U	2	U
P7	C4704	P7-18	18	01/11/2005	2	U	2	U
P7	C4704	P7-21	21	01/11/2005	2	U	2	U
P7	C4704	P7-24	24	01/11/2005	2	U	2	U
P7	C4704	P7-27	27	01/11/2005	2	U	2	U
P7	C4704	P7-30	30	01/11/2005	2	U	2	U
P7	C4704	P7-33A	33	01/11/2005	2	U	2	U
P7	C4704	P7-33B	33	01/11/2005	6		8	
P7	C4704	P7-33C	33	01/11/2005	5		8	
P7	C4704	P7-36	36	01/11/2005	2	U	2	
P7	C4704	P7-39	39	01/11/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P7	C4704	P7-40A	39.9	01/11/2005	2	U	2	U
P7	C4704	P7-40B	39.9	01/11/2005	2	U	2	U
P7	C4704	P7-40C	39.9	01/11/2005	2	U	2	U
P7	C4704	P7-40D	39.9	01/11/2005	7		10	
P7	C4704	P7-40E	40.2	01/11/2005	4		6	
P8A	C4763	P8A-3	3.7	04/14/2005	4		8	
P8A	C4763	P8A-7	7	04/14/2005	2		5	
P8A	C4763	P8A-10	10.4	04/14/2005	2	U	4	
P8A	C4763	P8A-13	13.7	04/14/2005	2	U	3	
P8A	C4763	P8A-17	17	04/14/2005	2	U	4	
P8A	C4763	P8A-20	20.3	04/14/2005	2	U	4	
P8A	C4763	P8A-23	23.6	04/14/2005	2	U	3	
P8A	C4763	P8A-26	26.8	04/14/2005	2	U	3	
P8A	C4763	P8A-30	30.1	04/14/2005	2	U	3	
P8A	C4763	P8A-33	33.4	04/14/2005	13		19	
P8A	C4763	P8A-36	36.7	04/14/2005	7		11	
P8A	C4763	P8A-40	40.1	04/14/2005	4		8	
P8A	C4763	P8A-43	43.4	04/14/2005	2		6	
P8A	C4763	P8A-46	46.9	04/14/2005	2		5	
P8A	C4763	P8A-49	49.3	04/14/2005	2	U	4	
P9A	C4762	P9A-3	3.2	04/14/2005	11		19	
P9A	C4762	P9A-6	6.5	04/14/2005	6		11	
P9A	C4762	P9A-10	10.4	04/14/2005	3		7	
P9A	C4762	P9A-13	13.2	04/14/2005	3		6	
P9A	C4762	P9A-16	16.5	04/14/2005	2		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P9A	C4762	P9A-19	19.6	04/14/2005	2		5	
P9A	C4762	P9A-22	22.9	04/14/2005	2	U	5	
P9A	C4762	P9A-26	26.2	04/14/2005	2	U	4	
P9A	C4762	P9A-29	29.5	04/14/2005	2	U	4	
P9A	C4762	P9A-32	32.8	04/14/2005	6		10	
P9A	C4762	P9A-36	36	04/14/2005	5		9	
P9A	C4762	P9A-39	39.8	04/14/2005	5		9	
P9A	C4762	P9A-42	42.6	04/14/2005	5		9	
P9A	C4762	P9A-45	45.9	04/14/2005	4		7	
P9A	C4762	P9A-49	49.2	04/14/2005	10		15	
P9A	C4762	P9A-52	52.6	04/14/2005	7		12	
P9A	C4762	P9A-55	55.9	04/14/2005	22		33	
P9A	C4762	P9A-59	59.2	04/14/2005	12		21	
P9A	C4762	P9A-60	60.3	04/14/2005	8		15	
P10A	C4764	P10A-3	3.4	04/15/2005	9		16	
P10A	C4764	P10A-6	6.7	04/15/2005	4		8	
P10A	C4764	P10A-9	9.9	04/15/2005	3		6	
P10A	C4764	P10A-13	13.2	04/15/2005	2		5	
P10A	C4764	P10A-16	16.5	04/15/2005	2	U	4	
P10A	C4764	P10A-20	20.1	04/15/2005	2	U	4	
P10A	C4764	P10A-23	23.1	04/15/2005	2	U	4	
P10A	C4764	P10A-26	26.4	04/15/2005	2	U	4	
P10A	C4764	P10A-29	29.6	04/15/2005	2	U	4	
P10A	C4764	P10A-32	32.9	04/15/2005	2		4	
P10A	C4764	P10A-36	36.2	04/15/2005	2	U	4	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P10A	C4764	P10A-39	39.5	04/15/2005	2	U	3	
P10A	C4764	P10A-42	42.8	04/15/2005	2	U	3	
P10A	C4764	P10A-46	46	04/15/2005	2	U	2	
P10A	C4764	P10A-49	49.3	04/15/2005	2	U	3	
P10A	C4764	P10A-52	52.6	04/15/2005	2	U	2	
P10A	C4764	P10A-55	55.9	04/15/2005	2	U	2	
P10A	C4764	P10A-59	59.3	04/15/2005	2	U	2	
P10A	C4764	P10A-62	62.6	04/15/2005	2	U	2	
P10A	C4764	P10A-65	65.9	04/15/2005	2	U	2	
P10A	C4764	P10A-69	69.2	04/15/2005	2	U	2	
P10A	C4764	P10A-72	72.4	04/15/2005	2	U	3	
P10A	C4764	P10A-75	75.7	04/15/2005	4		36	
P10A	C4764	P10A-79	79	04/15/2005	17		7	
P10A	C4764	P10A-82	82.3	04/15/2005	29		11	
P10A	C4764	P10A-85	85.7	04/15/2005	32		7	
P10A	C4764	P10A-89	89	04/15/2005	8		3	
P10A	C4764	P10A-92	92.3	04/15/2005	45		6	
P10A	C4764	P10A-95	95.6	04/15/2005	67		7	
P10A	C4764	P10A-98	98.85	04/15/2005	69		6	
P10A	C4764	P10A-102	102.1	04/15/2005	119		5	
P10A	C4764	P10A-105	105.6	04/15/2005	94		5	
P10A	C4764	P10A-109A	109.2	04/15/2005	41		18	
P10A	C4764	P10A-109B	109.2	04/15/2005	41		18	
P10A	C4764	P10A-112	112.1	04/15/2005	50		9	
P11A	C4760	P11A-3	3.2	04/13/2005	2	U	4	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P11A	C4760	P11A-6	6.5	04/13/2005	2	U	3	
P11A	C4760	P11A-9	9.9	04/13/2005	2	U	3	
P11A	C4760	P11A-13	13.1	04/13/2005	2	U	4	
P11A	C4760	P11A-16	16.3	04/13/2005	2	U	4	
P11A	C4760	P11A-19	19.6	04/13/2005	2	U	4	
P11A	C4760	P11A-22	22.9	04/13/2005	2	U	3	
P11A	C4760	P11A-26	26.2	04/13/2005	2	U	3	
P11A	C4760	P11A-29	29.5	04/13/2005	2	U	4	
P11A	C4760	P11A-32	32.8	04/13/2005	2		5	
P11A	C4760	P11A-36	36	04/13/2005	2	U	4	
P11A	C4760	P11A-39	39.3	04/13/2005	2	U	4	
P11A	C4760	P11A-42	42.6	04/13/2005	2	U	3	
P11A	C4760	P11A-45	45.9	04/13/2005	2	U	2	
P11A	C4760	P11A-49	49.2	04/13/2005	2	U	6	
P11A	C4760	P11A-52	52.4	04/13/2005	2	U	5	
P11A	C4760	P11A-55	55.7	04/13/2005	2	U	4	
P11A	C4760	P11A-59	59	04/13/2005	2	U	2	
P11A	C4760	P11A-62	62.3	04/13/2005	2	U	4	
P11A	C4760	P11A-65	65.6	04/13/2005	7		11	
P11A	C4760	P11A-68	68.8	04/13/2005	4		6	
P11A	C4760	P11A-69	69.82	04/13/2005	3		5	
P12A	C4761	P12A-3	3.6	04/13/2005	3		8	
P12A	C4761	P12A-6	6.8	04/13/2005	2		7	
P12A	C4761	P12A-10	10.1	04/13/2005	6		13	
P12A	C4761	P12A-13	13.4	04/13/2005	15		25	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P12A	C4761	P12A-16	16.7	04/13/2005	8		15	
P12A	C4761	P12A-20	20	04/13/2005	5		12	
P12A	C4761	P12A-23	23.2	04/13/2005	4		11	
P12A	C4761	P12A-26	26.5	04/13/2005	3		10	
P12A	C4761	P12A-29	29.8	04/13/2005	3		9	
P12A	C4761	P12A-33	33.1	04/13/2005	15		25	
P12A	C4761	P12A-36	36.7	04/13/2005	9		18	
P12A	C4761	P12A-40	40	04/13/2005	5		14	
P12A	C4761	P12A-43	43.2	04/13/2005	3		14	
P12A	C4761	P12A-46	46.5	04/13/2005	3		11	
P12A	C4761	P12A-49	49.8	04/13/2005	2		11	
P12A	C4761	P12A-53	53.1	04/13/2005	2		8	
P12A	C4761	P12A-56	56.1	04/13/2005	2		9	
P12A	C4761	P12A-59	59.7	04/13/2005	2		9	
P12A	C4761	P12A-62	62.9	04/13/2005	3		11	
P12A	C4761	P12A-66	66.2	04/13/2005	2		10	
P12A	C4761	P12A-69	69.5	04/13/2005	17		24	
P12A	C4761	P12A-72	72.6	04/13/2005	5		8	
P12A	C4761	P12A-74	74.1	04/13/2005	5		8	
P13A	C4753	P13A-3	3.6	04/08/2005	2		7	
P13A	C4753	P13A-6	6.8	04/08/2005	2		5	
P13A	C4753	P13A-10	10.1	04/08/2005	2		6	
P13A	C4753	P13A-13	13.4	04/08/2005	2	U	4	
P13A	C4753	P13A-16	16.7	04/08/2005	2	U	4	
P13A	C4753	P13A-20	20.1	04/08/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P13A	C4753	P13A-23	23.4	04/08/2005	2	U	3	
P13A	C4753	P13A-26	26.5	04/08/2005	2		3	
P13A	C4753	P13A-29	29.8	04/08/2005	2		3	
P13A	C4753	P13A-33	33.1	04/08/2005	2	U	3	
P13A	C4753	P13A-36	36.4	04/08/2005	3		5	
P13A	C4753	P13A-39	39.6	04/08/2005	2		7	
P13A	C4753	P13A-42	42.9	04/08/2005	2		9	
P13A	C4753	P13A-46	46.2	04/08/2005	2		6	
P13A	C4753	P13A-49	49.5	04/08/2005	2		6	
P13A	C4753	P13A-52	52.8	04/08/2005	2		6	
P13A	C4753	P13A-56	56	04/08/2005	3		7	
P13A	C4753	P13A-59	59.3	04/08/2005	2		7	
P13A	C4753	P13A-62	62.6	04/08/2005	3		5	
P13A	C4753	P13A-65	65.9	04/08/2005	4		9	
P13A	C4753	P13A-69	69	04/08/2005	2	U	4	
P14A	C4754	P14A-3	3.4	04/08/2005	3		11	
P14A	C4754	P14A-6	6.7	04/08/2005	4		7	
P14A	C4754	P14A-9	9.9	04/08/2005	2	U	5	
P14A	C4754	P14A-13	13.2	04/08/2005	2	U	4	
P14A	C4754	P14A-16	16.5	04/08/2005	2	U	3	
P14A	C4754	P14A-19	19.8	04/08/2005	2	U	3	
P14A	C4754	P14A-23	23.1	04/08/2005	2	U	8	
P14A	C4754	P14A-26	26.4	04/08/2005	3		3	
P14A	C4754	P14A-29	29.8	04/08/2005	2		3	
P14A	C4754	P14A-33	33.4	04/08/2005	3		5	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P14A	C4754	P14A-36	36.7	04/08/2005	7		9	
P14A	C4754	P14A-40	40	04/08/2005	4		6	
P14A	C4754	P14A-41	41.3	04/08/2005	4		5	
P14B	C4755	P14B-43	43.4	04/08/2005	5		8	
P14B	C4755	P14B-46	46.7	04/08/2005	2	U	3	
P14B	C4755	P14B-50	50	04/08/2005	2	U	3	
P14B	C4755	P14B-53	53.3	04/08/2005	2	U	3	
P14B	C4755	P14B-56	56.5	04/08/2005	2	U	2	
P14B	C4755	P14B-59	59.8	04/08/2005	2	U	5	
P14B	C4755	P14B-63	63.1	04/08/2005	2	U	2	
P14B	C4755	P14B-65	65.9	04/08/2005	2	U	2	
P15A	C4756	P15A-3	3.4	04/08/2005	2	U	2	U
P15A	C4756	P15A-6	6.8	04/08/2005	2	U	4	
P15A	C4756	P15A-9	9.9	04/08/2005	2	U	3	
P15A	C4756	P15A-13	13.6	04/08/2005	7		10	
P15A	C4756	P15A-17	17.2	04/08/2005	4		7	
P15A	C4756	P15A-20	20.4	04/08/2005	3		6	
P15A	C4756	P15A-24	24.2	04/08/2005	3		6	
P15A	C4756	P15A-26	26.8	04/08/2005	2		4	
P15A	C4756	P15A-30	30	04/08/2005	6		10	
P15A	C4756	P15A-33	33.1	04/08/2005	2		4	
P15A	C4756	P15A-36	36.2	04/08/2005	2	U	4	
P15A	C4756	P15A-39	39.5	04/08/2005	2	U	3	
P15A	C4756	P15A-42	42.8	04/08/2005	2	U	3	
P15A	C4756	P15A-46	46	04/08/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P15A	C4756	P15A-49	49.3	04/08/2005	2	U	3	
P15A	C4756	P15A-53	53	04/08/2005	2	U	2	
P15A	C4756	P15A-55	55.9	04/08/2005	2	U	3	
P15A	C4756	P15A-59	59.2	04/08/2005	2	U	3	
P15A	C4756	P15A-61	61	04/08/2005	2	U	3	
P17B	C4859	P17B-3	3.22	05/19/2005	2	U	3	
P17B	C4859	P17B-6	6.5	05/19/2005	2	U	2	
P17B	C4859	P17B-9	9.78	05/19/2005	2	U	2	
P17B	C4859	P17B-13	13.06	05/19/2005	2	U	3	
P17B	C4859	P17B-16	16.34	05/19/2005	2	U	8	
P17B	C4859	P17B-19	19.62	05/19/2005	2	U	2	
P17B	C4859	P17B-22	22.9	05/19/2005	2	U	2	
P17B	C4859	P17B-26	26.18	05/19/2005	2	U	2	
P17B	C4859	P17B-29	29.46	05/19/2005	2	U	2	U
P17B	C4859	P17B-32	32.75	05/19/2005	2	U	2	U
P17B	C4859	P17B-36	36.03	05/19/2005	2	U	2	
P17B	C4859	P17B-39	39.31	05/19/2005	2	U	2	U
P17B	C4859	P17B-42	42.59	05/19/2005	2	U	2	
P17B	C4859	P17B-45	45.87	05/19/2005	2	U	2	U
P17B	C4859	P17B-49	49.15	05/19/2005	2	U	2	
P17B	C4859	P17B-52	52.43	05/19/2005	2	U	2	U
P17B	C4859	P17B-55	55.71	05/19/2005	2	U	2	U
P17B	C4859	P17B-58	58.99	05/19/2005	2	U	2	
P17B	C4859	P17B-62	62.27	05/19/2005	2	U	2	U
P17B	C4859	P17B-65	65.55	05/19/2005	2	U	4	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P17B	C4859	P17B-68	68.83	05/19/2005	2	U	3	
P17B	C4859	P17B-72	72.11	05/19/2005	2	U	2	
P17B	C4859	P17B-75	75.4	05/19/2005	2	U	2	U
P17B	C4859	P17B-78	78.02	05/19/2005	2	U	2	U
P18D	C4772	P18D-3	3.2	04/20/2005	2	U	3	
P18D	C4772	P18D-6	6.5	04/20/2005	2	U	2	
P18D	C4772	P18D-9	9.8	04/20/2005	2	U	2	
P18D	C4772	P18D-13	13.1	04/20/2005	2	U	2	
P18D	C4772	P18D-16	16.3	04/20/2005	2	U	2	
P18D	C4772	P18D-19	19.6	04/20/2005	2	U	2	
P18D	C4772	P18D-22	22.9	04/20/2005	2	U	2	
P18D	C4772	P18D-26	26.3	04/20/2005	2	U	2	
P18D	C4772	P18D-29	29.6	04/20/2005	2	U	2	U
P18D	C4772	P18D-32	32.8	04/20/2005	2	U	2	
P18D	C4772	P18D-36	36	04/20/2005	2	U	2	U
P18D	C4772	P18D-39	39.3	04/20/2005	2	U	2	U
P18D	C4772	P18D-42	42.6	04/20/2005	2	U	2	U
P18D	C4772	P18D-45	45.9	04/20/2005	2	U	2	
P18D	C4772	P18D-49	49.2	04/20/2005	2	U	2	
P18D	C4772	P18D-52	52.4	04/20/2005	2	U	2	U
P18D	C4772	P18D-55	55.7	04/20/2005	2	U	2	U
P18D	C4772	P18D-59	59	04/20/2005	2	U	2	U
P18D	C4772	P18D-62	62.3	04/20/2005	2	U	2	
P18D	C4772	P18D-65	65.7	04/20/2005	2	U	3	
P18D	C4772	P18D-68	68.3	04/20/2005	2	U	2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P19A	C4750	P19A-3	3.2	04/06/2005	2	U	2	
P19A	C4750	P19A-6	6.5	04/06/2005	2	U	3	
P19A	C4750	P19A-9	9.78	04/06/2005	2	U	3	
P19A	C4750	P19A-13	13.1	04/06/2005	2	U	3	
P19A	C4750	P19A-16	16.3	04/06/2005	2	U	4	
P19A	C4750	P19A-19	19.6	04/06/2005	2	U	3	
P19A	C4750	P19A-23	23.1	04/06/2005	2	U	3	
P19A	C4750	P19A-26	26.4	04/06/2005	2	U	3	
P19A	C4750	P19A-28A	28.5	04/06/2005	12		19	
P19A	C4750	P19A-28B	28.5	04/06/2005	12		19	
P19A	C4750	P19A-28C	28.5	04/06/2005	12		19	
P19A	C4750	P19A-28D	28.5	04/06/2005	12		19	
P19B	C4751	P19B-30A	30.1	04/07/2005	4		8	
P19B	C4751	P19B-30B	30.1	04/07/2005	4		8	
P19B	C4751	P19B-31A	31.3	04/07/2005	3		7	
P19B	C4751	P19B-31B	31.3	04/07/2005	3		7	
P20A	C4857	P20A-1	0.58	05/18/2005	5		9	
P20A	C4857	P20A-4	4.02	05/18/2005	2		5	
P20A	C4857	P20A-7	7.14	05/18/2005	2	U	4	
P20A	C4857	P20A-10	10.75	05/18/2005	2	U	3	
P20A	C4857	P20A-13	13.87	05/18/2005	2	U	3	
P20A	C4857	P20A-17	17.15	05/18/2005	2	U	3	
P20A	C4857	P20A-20	20.43	05/18/2005	2	U	3	
P20A	C4857	P20A-23	23.71	05/18/2005	2	U	3	
P20A	C4857	P20A-26	26.99	05/18/2005	2	U	2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P20A	C4857	P20A-30	30.27	05/18/2005	2	U	2	
P20A	C4857	P20A-34	34.86	05/18/2005	2	U	3	
P21A	C4757	P21A-3	3.4	04/21/2005	4		7	
P21A	C4757	P21A-6	6.8	04/21/2005	2	U	3	
P21A	C4757	P21A-10	10.1	04/21/2005	2	U	3	
P21A	C4757	P21A-13	13.2	04/21/2005	2	U	2	
P21A	C4757	P21A-16	16.5	04/21/2005	2	U	2	
P21A	C4757	P21A-19	19.8	04/21/2005	2	U	2	
P21A	C4757	P21A-23	23.1	04/21/2005	2	U	2	U
P21A	C4757	P21A-26	26.4	04/21/2005	4		3	
P21A	C4757	P21A-29	29.6	04/21/2005	5		2	
P21A	C4757	P21A-33	33.2	04/21/2005	4		2	
P22A	C4752	P22A-3	3.6	04/07/2005	2	U	4	
P22A	C4752	P22A-6	6.8	04/07/2005	2	U	4	
P22A	C4752	P22A-10	10.1	04/07/2005	2	U	4	
P22A	C4752	P22A-13	13.4	04/07/2005	2	U	3	
P22A	C4752	P22A-16	16.7	04/07/2005	2	U	3	
P22A	C4752	P22A-20	20	04/07/2005	2		3	
P22A	C4752	P22A-23	23.2	04/07/2005	2		9	
P22A	C4752	P22A-26	26.5	04/07/2005	3		4	
P22A	C4752	P22A-29	29.8	04/07/2005	2		14	
P22A	C4752	P22A-33	33.1	04/07/2005	5		5	
P22A	C4752	P22A-36	36.4	04/07/2005	5		4	
P22A	C4752	P22A-39	39.6	04/07/2005	5		8	
P22A	C4752	P22A-42	42.9	04/07/2005	16		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P22A	C4752	P22A-46	46.2	04/07/2005	48		10	
P22A	C4752	P22A-49	49.5	04/07/2005	26		10	
P22A	C4752	P22A-52	52.7	04/07/2005	20		11	
P22A	C4752	P22A-56	56	04/07/2005	6		8	
P22A	C4752	P22A-59	59.3	04/07/2005	184		9	
P22A	C4752	P22A-62	62.6	04/07/2005	101		10	
P22A	C4752	P22A-63	63.4	04/07/2005	97		7	
P23A	C4768	P23A-3	3.6	04/19/2005	2		5	
P23A	C4768	P23A-6	6.8	04/19/2005	2	U	4	
P23A	C4768	P23A-10	10.1	04/19/2005	2	U	3	
P23A	C4768	P23A-13	13.4	04/19/2005	2	U	3	
P23A	C4768	P23A-16	16.7	04/19/2005	2	U	3	
P23A	C4768	P23A-20	20	04/19/2005	2	U	3	
P23A	C4768	P23A-23	23.2	04/19/2005	2	U	3	
P23A	C4768	P23A-26	26.5	04/19/2005	2	U	3	
P23A	C4768	P23A-29	29.8	04/19/2005	2	U	3	
P23A	C4768	P23A-33	33.1	04/19/2005	9		15	
P23A	C4768	P23A-36	36.7	04/19/2005	7		12	
P23A	C4768	P23A-39	39.8	04/19/2005	5		9	
P23A	C4768	P23A-43	43.1	04/19/2005	3		6	
P23A	C4768	P23A-46	46.4	04/19/2005	4		8	
P23A	C4768	P23A-49	49.5	04/19/2005	3		7	
P23A	C4768	P23A-52	52.8	04/19/2005	3		7	
P23A	C4768	P23A-56	56	04/19/2005	3		6	
P23A	C4768	P23A-59	59.3	04/19/2005	2		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P23A	C4768	P23A-62	62.6	04/19/2005	3		7	
P23A	C4768	P23A-66	66	04/19/2005	5		9	
P23A	C4768	P23A-69	69.3	04/19/2005	2	U	5	
P23A	C4768	P23A-72	72.6	04/19/2005	2	U	4	
P23A	C4768	P23A-75	75.9	04/19/2005	2	U	4	
P23A	C4768	P23A-79	79.2	04/19/2005	2	U	3	
P23A	C4768	P23A-82	82.5	04/19/2005	2	U	3	
P23A	C4768	P23A-84	84.8	04/19/2005	2	U	3	
P24A	C4810	P24A-9	9.94	05/17/2005	2	U	3	
P24A	C4810	P24A-13	13.22	05/17/2005	2	U	2	U
P24A	C4810	P24A-16	16.51	05/17/2005	2	U	2	U
P24A	C4810	P24A-19	19.79	05/17/2005	2	U	2	U
P24A	C4810	P24A-23	23.23	05/17/2005	2	U	2	U
P24A	C4810	P24A-26	26.35	05/17/2005	2	U	2	U
P24A	C4810	P24A-29	29.63	05/17/2005	2	U	2	U
P24A	C4810	P24A-32	32.91	05/17/2005	2	U	2	U
P24A	C4810	P24A-36	36.35	05/17/2005	2	U	2	U
P24A	C4810	P24A-39	39.79	05/17/2005	2	U	2	U
P24A	C4810	P24A-43	43.08	05/17/2005	2	U	2	U
P24A	C4810	P24A-46	46.2	05/17/2005	2	U	2	U
P24A	C4810	P24A-49	49.3	05/17/2005	2	U	2	U
P24A	C4810	P24A-51	51.77	05/17/2005	2	U	2	U
P25A	C4906	P25A-3	3.55	07/27/2005	2	U	4	
P25A	C4906	P25A-6	6.66	07/27/2005	2	U	3	
P25A	C4906	P25A-9	9.78	07/27/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P25A	C4906	P25A-13	13.06	07/27/2005	2		2	U
P25A	C4906	P25A-16	16.18	07/27/2005	2		2	U
P25A	C4906	P25A-19	19.46	07/27/2005	3		2	U
P25A	C4906	P25A-22	22.74	07/27/2005	4		2	U
P25A	C4906	P25A-26	26.02	07/27/2005	5		2	U
P25A	C4906	P25A-29A	29.46	07/27/2005	5		2	U
P25A	C4906	P25A-29B	29.46	07/27/2005	5		2	U
P25A	C4906	P25A-32	32.58	07/27/2005	6		2	U
P25A	C4906	P25A-35	35.7	07/27/2005	6		2	U
P25A	C4906	P25A-38A	38.16	07/27/2005	6		2	U
P25A	C4906	P25A-38B	38.16	07/27/2005	6		2	U
P26A	C4765	P26A-3	3.1	04/18/2005	2		4	
P26A	C4765	P26A-6	6.3	04/18/2005	2	U	3	
P26A	C4765	P26A-9	9.6	04/18/2005	2	U	3	
P26A	C4765	P26A-12	12.9	04/18/2005	2	U	3	
P26A	C4765	P26A-16	16.2	04/18/2005	2	U	3	
P26A	C4765	P26A-19	19.5	04/18/2005	2	U	3	
P26A	C4765	P26A-22	22.7	04/18/2005	2	U	3	
P26A	C4765	P26A-26	26	04/18/2005	2	U	3	
P26A	C4765	P26A-29	29.5	04/18/2005	2		3	
P26A	C4765	P26A-32	32.9	04/18/2005	8		11	
P26A	C4765	P26A-35	35.9	04/18/2005	3		5	
P26A	C4765	P26A-38	38.7	04/18/2005	2		4	
P27A	C4766	P27A-3	3.7	04/18/2005	7		10	
P27A	C4766	P27A-7	7	04/18/2005	4		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P27A	C4766	P27A-10	10.3	04/18/2005	2	U	3	
P27A	C4766	P27A-13	13.9	04/18/2005	2	U	3	
P27A	C4766	P27A-18	18.2	04/18/2005	2	U	3	
P27A	C4766	P27A-20	20.3	04/18/2005	2	U	10	
P27A	C4766	P27A-24	24.1	04/18/2005	2	U	3	
P28A	C4905	P28A-3	3.38	07/27/2005	2	U	3	
P28A	C4905	P28A-5	5.35	07/27/2005	2	U	2	
P28A	C4905	P28A-6B	6.01	07/27/2005	2	U	2	U
P28A	C4905	P28A-6A	6.66	07/27/2005	2	U	2	U
P28A	C4905	P28A-9	9.78	07/27/2005	2	U	2	U
P28A	C4905	P28A-13	13.06	07/27/2005	2	U	2	U
P28A	C4905	P28A-16	16.18	07/27/2005	2	U	2	U
P28A	C4905	P28A-19	19.29	07/27/2005	2	U	2	U
P28A	C4905	P28A-22	22.74	07/27/2005	2	U	2	U
P28A	C4905	P28A-26	26.02	07/27/2005	2	U	2	U
P28A	C4905	P28A-29A	29.3	07/27/2005	2	U	2	U
P28A	C4905	P28A-29B	29.3	07/27/2005	2	U	2	U
P28A	C4905	P28A-32	32.42	07/27/2005	2	U	2	U
P28A	C4905	P28A-35	35.7	07/27/2005	2	U	2	U
P28A	C4905	P28A-38	38.98	07/27/2005	2	U	2	U
P28A	C4905	P28A-42	42.26	07/27/2005	2	U	2	U
P28A	C4905	P28A-45	45.7	07/27/2005	2	U	2	U
P28A	C4905	P28A-48	48.66	07/27/2005	2	U	3	
P28A	C4905	P28A-51	51.94	07/27/2005	2	U	4	
P28A	C4905	P28A-55	55.22	07/27/2005	2		5	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P28A	C4905	P28A-58	58.5	07/27/2005	2		2	
P28A	C4905	P28A-61A	61.78	07/27/2005	3		2	U
P28A	C4905	P28A-61B	61.78	07/27/2005	3		2	U
P28A	C4905	P28A-65	65.06	07/27/2005	3		2	U
P28A	C4905	P28A-68	68.34	07/27/2005	3		2	U
P28A	C4905	P28A-71	71.7	07/27/2005	4		2	U
P28A	C4905	P28A-73A	73.75	07/27/2005	4		2	U
P28A	C4905	P28A-73B	73.75	07/27/2005	4		2	U
P29A	C4866	P29A-3	3.55	07/19/2005	4		8	
P29A	C4866	P29A-6	6.83	07/19/2005	4		5	
P29A	C4866	P29A-10	10.11	07/19/2005	5		4	
P29A	C4866	P29A-13	13.39	07/19/2005	7		4	
P29A	C4866	P29A-16	16.67	07/19/2005	9		3	
P29A	C4866	P29A-19	19.95	07/19/2005	11		3	
P29A	C4866	P29A-23	23.23	07/19/2005	13		3	
P29A	C4866	P29A-26	26.51	07/19/2005	17		3	
P29A	C4866	P29A-29	29.79	07/19/2005	20		4	
P29A	C4866	P29A-33	33.07	07/19/2005	11		2	
P29A	C4866	P29A-36	36.35	07/19/2005	21		4	
P29A	C4866	P29A-39	39.63	07/19/2005	25		6	
P29A	C4866	P29A-42	42.92	07/19/2005	46		3	
P29A	C4866	P29A-46	46.2	07/19/2005	75		4	
P29A	C4866	P29A-49	49.48	07/19/2005	102		5	
P29A	C4866	P29A-52A	52.76	07/19/2005	252		6	
P29A	C4866	P29A-52B	52.76	07/19/2005	254		6	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P29A	C4866	P29A-59	59.32	07/19/2005	118		10	
P29A	C4866	P29A-62A	62.6	07/19/2005	194		8	
P29A	C4866	P29A-62B	62.6	07/19/2005	192		8	
P29B	C4867	P29B-52	52.76	07/20/2005	135		9	
P29B	C4867	P29B-59	59.16	07/20/2005	126		7	
P29B	C4867	P29B-62A	62.44	07/20/2005	85		8	
P29B	C4867	P29B-62B	62.44	07/20/2005	85		8	
P29B	C4867	P29B-65	65.72	07/20/2005	42		3	
P29B	C4867	P29B-69	69	07/20/2005	46		4	
P29B	C4867	P29B-72	72.28	07/20/2005	31		3	
P29B	C4867	P29B-75	75.72	07/20/2005	2	U	2	U
P29B	C4867	P29B-78	78.84	07/20/2005	2	U	2	U
P29B	C4867	P29B-82	82.45	07/20/2005	2	U	2	U
P29B	C4867	P29B-85	85.4	07/20/2005	45		3	
P29B	C4867	P29B-86A	86.55	07/20/2005	14		2	
P29B	C4867	P29B-86B	86.55	07/20/2005	14		2	
P30A	C4871	P30A-3	3.22	07/21/2005	2	U	3	
P30A	C4871	P30A-6	6.5	07/21/2005	2	U	3	
P30A	C4871	P30A-9	9.78	07/21/2005	2	U	3	
P30A	C4871	P30A-13	13.06	07/21/2005	2	U	3	
P30A	C4871	P30A-16	16.34	07/21/2005	2	U	2	
P30A	C4871	P30A-19	19.62	07/21/2005	2	U	2	
P30A	C4871	P30A-22	22.9	07/21/2005	2	U	2	
P30A	C4871	P30A-26	26.18	07/21/2005	2	U	2	U
P30A	C4871	P30A-29A	29.46	07/21/2005	3		2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P30A	C4871	P30A-29B	29.46	07/21/2005	3		2	
P30A	C4871	P30A-32A	32.91	07/21/2005	2	U	2	U
P30A	C4871	P30A-32B	32.91	07/21/2005	2	U	2	
P30E	C4934	P30E-34	34.06	08/05/2005	41		9	
P30E	C4934	P30E-37	37.5	08/05/2005	53		6	
P30E	C4934	P30E-40	40.95	08/05/2005	80		9	
P30E	C4934	P30E-44	44.56	08/05/2005	103		7	
P30E	C4934	P30E-47	47.84	08/05/2005	109		6	
P30E	C4934	P30E-51	51.28	08/05/2005	136		7	
P30E	C4934	P30E-54	54.73	08/05/2005	257		14	
P30E	C4934	P30E-58	58.01	08/05/2005	394		19	
P30E	C4934	P30E-61	61.29	08/05/2005	512		27	
P30E	C4934	P30E-64	64.73	08/05/2005	485		25	
P30E	C4934	P30E-67	67.85	08/05/2005	381		18	
P30E	C4934	P30E-69	69.49	08/05/2005	380		17	
P31A	C4873	P31A-1A	1	08/17/2005	2	U	2	U
P31A	C4873	P31A-1B	1	08/17/2005	2	U	2	U
P31A	C4873	P31A-3	3.38	08/17/2005	2	U	3	
P31A	C4873	P31A-6	6.66	08/17/2005	2	U	3	
P31A	C4873	P31A-9	9.78	08/17/2005	2	U	2	
P31A	C4873	P31A-13	13.06	08/17/2005	2	U	2	
P31A	C4873	P31A-16	16.51	08/17/2005	2	U	3	
P31A	C4873	P31A-19	19.79	08/17/2005	2	U	2	
P31A	C4873	P31A-23	23.07	08/17/2005	2	U	2	
P31A	C4873	P31A-26	26.35	08/17/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P31A	C4873	P31A-29A	29.63	08/17/2005	4		3	
P31A	C4873	P31A-29B	29.63	08/17/2005	4		3	
P31A	C4873	P31A-32	32.91	08/17/2005	2	U	2	U
P31A	C4873	P31A-36	36.19	08/17/2005	6		2	
P31A	C4873	P31A-39	39.47	08/17/2005	9		2	
P31A	C4873	P31A-42	42.75	08/17/2005	8		2	
P31A	C4873	P31A-46	46.03	08/17/2005	4		2	U
P31A	C4873	P31A-49	49.31	08/17/2005	4		2	
P31A	C4873	P31A-52	52.59	08/17/2005	2	U	2	U
P31A	C4873	P31A-55	55.87	08/17/2005	2	U	2	U
P31A	C4873	P31A-59	59.16	08/17/2005	2	U	2	U
P31A	C4873	P31A-62A	62.44	08/17/2005	2	U	2	U
P31A	C4873	P31A-62B	62.44	08/17/2005	2	U	2	U
P31A	C4873	P31A-65	65.72	08/17/2005	2	U	2	U
P31A	C4873	P31A-68A	68.51	08/17/2005	2	U	2	U
P31A	C4873	P31A-68B	68.51	08/17/2005	2	U	2	U
P32B	C4904	P32B-3	3.22	07/27/2005	2		3	
P32B	C4904	P32B-5	5.02	07/27/2005	3		2	
P32B	C4904	P32B-6A	6.01	07/27/2005	4		2	U
P32B	C4904	P32B-6B	6.5	07/27/2005	4		2	U
P32B	C4904	P32B-9	9.62	07/27/2005	6		2	U
P32B	C4904	P32B-12	12.9	07/27/2005	8		2	U
P32B	C4904	P32B-16	16.18	07/27/2005	9		2	U
P32B	C4904	P32B-19	19.46	07/27/2005	9		2	U
P32B	C4904	P32B-22	22.74	07/27/2005	11		2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P32B	C4904	P32B-26	26.02	07/27/2005	12		2	U
P32B	C4904	P32B-29A	29.14	07/27/2005	13		2	U
P32B	C4904	P32B-29B	29.14	07/27/2005	13		2	U
P32B	C4904	P32B-32	32.25	07/27/2005	15		2	U
P32B	C4904	P32B-35	35.53	07/27/2005	17		2	U
P32B	C4904	P32B-39	39.47	07/27/2005	18		2	
P32B	C4904	P32B-42	42.75	07/27/2005	23		2	
P32B	C4904	P32B-46	46.03	07/27/2005	23		2	
P32B	C4904	P32B-49	49.31	07/27/2005	19		2	
P32B	C4904	P32B-52	52.76	07/27/2005	27		3	
P32B	C4904	P32B-55	55.71	07/27/2005	27		2	
P32B	C4904	P32B-59	59.32	07/27/2005	25		4	
P32B	C4904	P32B-61A	61.94	07/27/2005	26		4	
P32B	C4904	P32B-61B	61.94	07/27/2005	26		4	
P33A	C4911	P33A-3	3.05	07/28/2005	2	U	6	
P33A	C4911	P33A-5	5.02	07/28/2005	2	U	3	
P33A	C4911	P33A-6A	6.01	07/28/2005	2	U	3	
P33A	C4911	P33A-6B	6.33	07/28/2005	2	U	2	
P33A	C4911	P33A-9	9.62	07/28/2005	2	U	2	
P33A	C4911	P33A-13	13.05	07/28/2005	2	U	2	
P33A	C4911	P33A-16	16.34	07/28/2005	2	U	3	
P33A	C4911	P33A-19	19.79	07/28/2005	2	U	3	
P33A	C4911	P33A-22	22.9	07/28/2005	2	U	3	
P33A	C4911	P33A-26	26.18	07/28/2005	2	U	5	
P33A	C4911	P33A-29A	29.46	07/28/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P33A	C4911	P33A-29B	29.46	07/28/2005	2	U	3	
P33A	C4911	P33A-32	32.91	07/28/2005	2	U	2	
P33A	C4911	P33A-36	36.19	07/28/2005	2	U	3	
P33A	C4911	P33A-37A	37.17	07/28/2005	2	U	2	
P33A	C4911	P33A-37B	37.17	07/28/2005	2	U	2	
P33B	C4912	P33B-39A	39.17	07/28/2005	2	U	6	
P33B	C4912	P33B-39B	39.96	07/28/2005	2	U	4	
P34A	C4870	P34A-3	3.54	07/21/2005	2	U	8	
P34A	C4870	P34A-6	6.66	07/21/2005	2	U	5	
P34A	C4870	P34A-9	9.78	07/21/2005	2	U	4	
P34A	C4870	P34A-13	13.06	07/21/2005	2	U	4	
P34A	C4870	P34A-16	16.34	07/21/2005	2	U	4	
P34A	C4870	P34A-19	19.62	07/21/2005	2	U	2	
P34A	C4870	P34A-22	22.9	07/21/2005	2	U	5	
P34A	C4870	P34A-26	26.18	07/21/2005	2	U	3	
P34A	C4870	P34A-29A	29.46	07/21/2005	2	U	3	
P34A	C4870	P34A-29B	29.46	07/21/2005	2	U	3	
P34A	C4870	P34A-32	32.75	07/21/2005	2	U	3	
P34A	C4870	P34A-36	36.03	07/21/2005	2	U	3	
P34A	C4870	P34A-39	39.31	07/21/2005	2	U	3	
P34A	C4870	P34A-42	42.59	07/21/2005	2	U	3	
P34A	C4870	P34A-45	45.87	07/21/2005	2	U	3	
P34A	C4870	P34A-49	49.15	07/21/2005	17		3	
P34A	C4870	P34A-52	52.43	07/21/2005	12		4	
P34A	C4870	P34A-55	55.71	07/21/2005	3		2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P34A	C4870	P34A-58	58.99	07/21/2005	2	U	2	U
P34A	C4870	P34A-62A	62.27	07/21/2005	9		3	
P34A	C4870	P34A-62B	62.27	07/21/2005	9		3	
P34A	C4870	P34A-65	65.55	07/21/2005	3		3	
P34A	C4870	P34A-68	68.83	07/21/2005	2		2	
P34A	C4870	P34A-72	72.11	07/21/2005	2		3	
P34A	C4870	P34A-75	75.4	07/21/2005	2	U	2	U
P34A	C4870	P34A-78	78.84	07/21/2005	2	U	4	
P34A	C4870	P34A-81	81.96	07/21/2005	2		4	
P34A	C4870	P34A-85	85.24	07/21/2005	2	U	3	
P34A	C4870	P34A-88A	88.52	07/21/2005	2	U	4	
P34A	C4870	P34A-88B	88.52	07/21/2005	2	U	4	
P35A	C4865	P35A-22	22.02	07/19/2005	2	U	4	
P35A	C4865	P35A-25	25.26	07/19/2005	2	U	3	
P35A	C4865	P35A-28	28.5	07/19/2005	2	U	3	
P35A	C4865	P35A-31	31.74	07/19/2005	2	U	3	
P35A	C4865	P35A-34	34.98	07/19/2005	3		3	
P35A	C4865	P35A-38	38.22	07/19/2005	5		3	
P35A	C4865	P35A-41	41.46	07/19/2005	8		3	
P35A	C4865	P35A-44	44.7	07/19/2005	10		5	
P35A	C4865	P35A-47	47.94	07/19/2005	8		6	
P35A	C4865	P35A-51	51.18	07/19/2005	10		10	
P35A	C4865	P35A-56	56.04	07/19/2005	16		4	
P35A	C4865	P35A-59	59.48	07/19/2005	20		6	
P35A	C4865	P35A-62	62.76	07/19/2005	24		9	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P35A	C4865	P35A-66	66.04	07/19/2005	19		5	
P35A	C4865	P35A-69	69.49	07/19/2005	38		6	
P35A	C4865	P35A-72	72.61	07/19/2005	4		2	
P35A	C4865	P35A-75	75.89	07/19/2005	30		6	
P35A	C4865	P35A-79	79.66	07/19/2005	42		7	
P35A	C4865	P35A-83	83.1	07/19/2005	83		10	
P35A	C4865	P35A-86A	86.06	07/19/2005	86		8	
P35A	C4865	P35A-86B	86.06	07/19/2005	89		9	
P36A	C4868	P36A-3	3.38	07/20/2005	2	U	3	
P36A	C4868	P36A-6	6.66	07/20/2005	2	U	2	
P36A	C4868	P36A-9	9.94	07/20/2005	2	U	2	
P36A	C4868	P36A-13	13.22	07/20/2005	2	U	2	U
P36A	C4868	P36A-16	16.51	07/20/2005	2	U	2	U
P36A	C4868	P36A-19	19.79	07/20/2005	2	U	2	U
P36A	C4868	P36A-23	23.07	07/20/2005	28		24	
P36A	C4868	P36A-26	26.35	07/20/2005	3		3	
P36A	C4868	P36A-29A	29.63	07/20/2005	3		2	
P36A	C4868	P36A-29B	29.63	07/20/2005	3		2	
P36A	C4868	P36A-33	33.07	07/20/2005	2		2	
P36A	C4868	P36A-34A	34.71	07/20/2005	6		3	
P36A	C4868	P36A-34B	34.71	07/20/2005	6		3	
P36B	C4869	P36B-29	29.63	07/20/2005	2		7	
P36B	C4869	P36B-33	33.07	07/20/2005	2	U	2	U
P36B	C4869	P36B-36	36.19	07/20/2005	2	U	2	U
P36B	C4869	P36B-37A	37.01	07/20/2005	2	U	2	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P36B	C4869	P36B-37B	37.01	07/20/2005	2	U	2	
P37A	C4878	P37A-3	3.55	07/22/2005	2	U	7	
P37A	C4878	P37A-6	6.83	07/22/2005	2	U	4	
P37A	C4878	P37A-10	10.11	07/22/2005	2	U	3	
P37A	C4878	P37A-13	13.39	07/22/2005	2		5	
P37A	C4878	P37A-16	16.67	07/22/2005	2	U	4	
P37A	C4878	P37A-19	19.95	07/22/2005	2	U	3	
P37A	C4878	P37A-23	23.23	07/22/2005	2	U	3	
P37A	C4878	P37A-26	26.51	07/22/2005	2	U	3	
P37A	C4878	P37A-29	29.63	07/22/2005	2	U	3	
P37A	C4878	P37A-32	32.91	07/22/2005	2	U	3	
P37A	C4878	P37A-36	36.19	07/22/2005	2	U	5	
P37A	C4878	P37A-39	39.31	07/22/2005	2	U	3	
P37A	C4878	P37A-42	42.75	07/22/2005	2	U	7	
P37A	C4878	P37A-46	46.03	07/22/2005	2	U	11	
P37A	C4878	P37A-49	49.31	07/22/2005	3		4	
P37A	C4878	P37A-52	52.59	07/22/2005	2		9	
P37A	C4878	P37A-55	55.87	07/22/2005	3		6	
P37A	C4878	P37A-59	59.16	07/22/2005	3		9	
P37A	C4878	P37A-61A	61.27	07/22/2005	4		6	
P37A	C4878	P37A-61B	61.27	07/22/2005	4		6	
P38A	C4879	P38A-3	3.55	07/25/2005	6		12	
P38A	C4879	P38A-5	5.02	07/25/2005	2	U	5	
P38A	C4879	P38A-6A	6.01	07/25/2005	2	U	4	
P38A	C4879	P38A-6B	6.83	07/25/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P38A	C4879	P38A-10	10.11	07/25/2005	2	U	3	
P38A	C4879	P38A-13	13.39	07/25/2005	2	U	234	
P38A	C4879	P38A-16	16.67	07/25/2005	2	U	8	
P38A	C4879	P38A-19	19.95	07/25/2005	2	U	3	
P38A	C4879	P38A-23	23.23	07/25/2005	2	U	3	
P38A	C4879	P38A-26	26.51	07/25/2005	2	U	2	
P38A	C4879	P38A-29A	29.79	07/25/2005	2	U	2	
P38A	C4879	P38A-29B	29.79	07/25/2005	2	U	2	
P38A	C4879	P38A-33	33.07	07/25/2005	2	U	2	
P38A	C4879	P38A-36	36.35	07/25/2005	2	U	2	U
P38A	C4879	P38A-39	39.63	07/25/2005	2	U	2	U
P38A	C4879	P38A-42	42.92	07/25/2005	2	U	2	U
P38A	C4879	P38A-46	46.2	07/25/2005	2	U	3	
P38A	C4879	P38A-49	49.48	07/25/2005	2	U	3	
P38A	C4879	P38A-52	52.76	07/25/2005	2	U	4	
P38A	C4879	P38A-56	56.04	07/25/2005	2	U	4	
P38A	C4879	P38A-59	59.32	07/25/2005	2		3	
P38A	C4879	P38A-62A	62.6	07/25/2005	3		4	
P38A	C4879	P38A-62B	62.6	07/25/2005	3		4	
P38A	C4879	P38A-66	66.04	07/25/2005	6		7	
P38A	C4879	P38A-69	69.33	07/25/2005	4		5	
P38A	C4879	P38A-72	72.44	07/25/2005	4		3	
P38A	C4879	P38A-75	75.72	07/25/2005	4		3	
P38A	C4879	P38A-79	79.17	07/25/2005	6		3	
P38A	C4879	P38A-85A	85.24	07/25/2005	13		2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P38A	C4879	P38A-85B	85.24	07/25/2005	13		2	
P39A	C4880	P39A-3	3.22	07/25/2005	3		8	
P39A	C4880	P39A-6	6.5	07/25/2005	2	U	4	
P39A	C4880	P39A-9	9.78	07/25/2005	2	U	3	
P39A	C4880	P39A-13	13.06	07/25/2005	2	U	3	
P39A	C4880	P39A-16	16.34	07/25/2005	2	U	2	U
P39A	C4880	P39A-19	19.62	07/25/2005	2	U	2	U
P39A	C4880	P39A-22	22.9	07/25/2005	2	U	2	U
P39A	C4880	P39A-26	26.18	07/25/2005	2	U	2	U
P39A	C4880	P39A-29A	29.46	07/25/2005	2	U	2	U
P39A	C4880	P39A-29B	29.46	07/25/2005	2	U	2	U
P39A	C4880	P39A-32	32.75	07/25/2005	2	U	2	U
P39A	C4880	P39A-36B	36.19	07/25/2005	2	U	2	U
P39A	C4880	P39A-36A	36.52	07/25/2005	2	U	2	U
P39A	C4880	P39A-36C	36.52	07/25/2005	2	U	2	U
P39B	C4897	P39B-5	5.02	07/25/2005	2		6	
P39B	C4897	P39B-6	6.01	07/25/2005	2	U	3	
P40A	C4903	P40A-3	3.55	07/26/2005	2	U	5	
P40A	C4903	P40A-6	6.66	07/26/2005	2	U	3	
P40A	C4903	P40A-10	10.11	07/26/2005	2	U	2	
P40A	C4903	P40A-13	13.22	07/26/2005	2	U	3	
P40A	C4903	P40A-16	16.51	07/26/2005	2	U	2	
P40A	C4903	P40A-19	19.79	07/26/2005	2	U	2	U
P40A	C4903	P40A-23	23.07	07/26/2005	2	U	2	U
P40A	C4903	P40A-26	26.35	07/26/2005	2		2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P40A	C4903	P40A-29A	29.46	07/26/2005	2		2	U
P40A	C4903	P40A-29B	29.46	07/26/2005	2		2	U
P40A	C4903	P40A-32	32.75	07/26/2005	2		2	U
P40A	C4903	P40A-36	36.03	07/26/2005	2		2	U
P40A	C4903	P40A-39	39.31	07/26/2005	2		2	U
P40A	C4903	P40A-42	42.42	07/26/2005	2		2	U
P40A	C4903	P40A-45	45.7	07/26/2005	3		2	U
P40A	C4903	P40A-48	48.82	07/26/2005	2	U	3	
P40A	C4903	P40A-55	55.05	07/26/2005	2	U	3	
P40A	C4903	P40A-58	58.01	07/26/2005	2		7	
P40A	C4903	P40A-61A	61.45	07/26/2005	2	U	5	
P40A	C4903	P40A-61B	61.94	07/26/2005	2	U	3	
P41A	C4908	P41A-2	2.89	07/28/2005	4		8	
P41A	C4908	P41A-5	5.02	07/28/2005	2	U	3	
P41A	C4908	P41A-6A	6.01	07/28/2005	2	U	2	
P41A	C4908	P41A-6B	6.17	07/28/2005	2	U	2	
P41A	C4908	P41A-9	9.45	07/28/2005	2	U	2	U
P41A	C4908	P41A-12	12.57	07/28/2005	2	U	3	
P41A	C4908	P41A-15	15.68	07/28/2005	2		2	
P41A	C4908	P41A-18	18.97	07/28/2005	2		2	U
P41A	C4908	P41A-22	22.41	07/28/2005	3		2	
P41A	C4908	P41A-25	25.53	07/28/2005	3		2	U
P41A	C4908	P41A-28A	28.81	07/28/2005	3		2	U
P41A	C4908	P41A-28B	28.81	07/28/2005	3		2	U
P41A	C4908	P41A-32	32.09	07/28/2005	3		2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P41A	C4908	P41A-35	35.21	07/28/2005	3		2	U
P41A	C4908	P41A-38	38.65	07/28/2005	3		3	
P41A	C4908	P41A-39A	39.47	07/28/2005	4		2	
P41A	C4908	P41A-39B	39.47	07/28/2005	4		2	
P41A	C4908	P41A-40	40.78	07/28/2005	4		5	
P41B	C4909	P41B-40	40.78	07/28/2005	4		5	
P42A	C4910	P42A-3	3.22	07/28/2005	2	U	3	
P42A	C4910	P42A-5	5.02	07/28/2005	2	U	2	
P42A	C4910	P42A-6B	6.01	07/28/2005	2	U	2	U
P42A	C4910	P42A-6A	6.33	07/28/2005	2	U	2	U
P42A	C4910	P42A-9	9.62	07/28/2005	2	U	3	
P42A	C4910	P42A-12	12.9	07/28/2005	2	U	2	U
P42A	C4910	P42A-16	16.01	07/28/2005	2	U	2	U
P42A	C4910	P42A-19	19.29	07/28/2005	2	U	2	U
P42A	C4910	P42A-25	25.86	07/28/2005	2	U	2	U
P42A	C4910	P42A-28A	28.97	07/28/2005	2	U	2	U
P42A	C4910	P42A-28B	28.97	07/28/2005	2	U	2	U
P42A	C4910	P42A-32A	32.25	07/28/2005	2	U	2	U
P42A	C4910	P42A-32B	32.57	07/28/2005	2	U	2	U
P42A	C4910	P42A-35	35.86	07/28/2005	2	U	2	U
P42A	C4910	P42A-39	39.14	07/28/2005	2	U	2	U
P42A	C4910	P42A-42	42.42	07/28/2005	2	U	2	U
P42A	C4910	P42A-45	45.7	07/28/2005	2	U	2	U
P42A	C4910	P42A-49	49.48	07/28/2005	2	U	2	U
P42A	C4910	P42A-52	52.59	07/28/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P42A	C4910	P42A-55	55.71	07/28/2005	2	U	2	U
P42A	C4910	P42A-58	58.99	07/28/2005	3		4	
P42A	C4910	P42A-62A	62.11	07/28/2005	2		3	
P42A	C4910	P42A-62B	62.11	07/28/2005	2		3	
P42A	C4910	P42A-65A	65.22	07/28/2005	2		2	
P42A	C4910	P42A-65B	65.22	07/28/2005	2		2	
P43A	C4875	P43A-3	3.22	07/22/2005	2	U	5	
P43A	C4875	P43A-5	5.02	07/22/2005	2	U	4	
P43A	C4875	P43A-6A	6.01	07/22/2005	2	U	2	U
P43A	C4875	P43A-6C	6.01	07/22/2005	2	U	2	U
P43A	C4875	P43A-6B	6.5	07/22/2005	2	U	4	
P43A	C4875	P43A-9	9.94	07/22/2005	2	U	2	U
P43A	C4875	P43A-13	13.22	07/22/2005	2	U	2	U
P43A	C4875	P43A-16	16.51	07/22/2005	2	U	2	U
P43A	C4875	P43A-19	19.79	07/22/2005	2	U	2	U
P43A	C4875	P43A-23	23.07	07/22/2005	2	U	2	U
P43A	C4875	P43A-26	26.35	07/22/2005	2	U	2	U
P43A	C4875	P43A-29A	29.63	07/22/2005	2	U	2	U
P43A	C4875	P43A-29B	29.63	07/22/2005	2	U	2	U
P43A	C4875	P43A-32	32.91	07/22/2005	2	U	2	U
P43A	C4875	P43A-36	36.19	07/22/2005	2	U	2	U
P43A	C4875	P43A-39	39.47	07/22/2005	2	U	2	U
P43A	C4875	P43A-42	42.75	07/22/2005	2	U	2	U
P43A	C4875	P43A-46	46.03	07/22/2005	2	U	2	U
P43A	C4875	P43A-49	49.31	07/22/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P43A	C4875	P43A-52	52.59	07/22/2005	2	U	2	U
P43A	C4875	P43A-55	55.87	07/22/2005	2	U	2	U
P43A	C4875	P43A-59	59.32	07/22/2005	2	U	2	U
P43A	C4875	P43A-62A	62.6	07/22/2005	2	U	2	U
P43A	C4875	P43A-62B	62.6	07/22/2005	2	U	2	U
P43A	C4875	P43A-66	66.05	07/22/2005	2	U	2	U
P43A	C4875	P43A-69	69.65	07/22/2005	2	U	2	U
P43A	C4875	P43A-72	72.93	07/22/2005	2	U	2	U
P43A	C4875	P43A-76	76.22	07/22/2005	2	U	2	U
P43A	C4875	P43A-77A	77.36	07/22/2005	2	U	2	U
P43A	C4875	P43A-77B	77.36	07/22/2005	2	U	2	U
P44A	C4898	P44A-3	3.22	07/25/2005	2	U	3	
P44A	C4898	P44A-5	5.02	07/25/2005	2	U	2	
P44A	C4898	P44A-6A	6.01	07/25/2005	2	U	2	U
P44A	C4898	P44A-6B	6.5	07/25/2005	2	U	2	U
P44A	C4898	P44A-9	9.78	07/25/2005	2	U	2	U
P44A	C4898	P44A-13	13.06	07/25/2005	2	U	2	U
P44A	C4898	P44A-16	16.34	07/25/2005	2	U	2	U
P44A	C4898	P44A-19	19.62	07/25/2005	2	U	2	U
P44A	C4898	P44A-22	22.9	07/25/2005	2	U	2	U
P44A	C4898	P44A-26	26.18	07/25/2005	2	U	2	U
P44A	C4898	P44A-29	29.46	07/25/2005	2	U	2	U
P44A	C4898	P44A-32	32.75	07/25/2005	2	U	2	U
P44A	C4898	P44A-36	36.03	07/25/2005	2	U	2	U
P44A	C4898	P44A-39	39.31	07/25/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P44A	C4898	P44A-42	42.75	07/25/2005	2	U	3	
P44A	C4898	P44A-46	46.03	07/25/2005	2	U	2	U
P44A	C4898	P44A-49	49.31	07/25/2005	2	U	2	U
P44A	C4898	P44A-52	52.76	07/25/2005	2	U	2	U
P44A	C4898	P44A-56	56.04	07/25/2005	2		2	U
P44A	C4898	P44A-59	59.48	07/25/2005	4		2	
P44A	C4898	P44A-62A	62.76	07/25/2005	5		3	
P44A	C4898	P44A-62B	62.76	07/25/2005	5		4	
P44A	C4898	P44A-66	66.04	07/25/2005	5		2	U
P44A	C4898	P44A-69A	69.33	07/25/2005	8		2	U
P44A	C4898	P44A-69B	69.33	07/25/2005	8		2	U
P44A	C4898	P44A-69C	69.33	07/25/2005	8		2	
P45A	C4899	P45A-3	3.55	07/25/2005	2	U	5	
P45A	C4899	P45A-5	5.19	07/25/2005	2	U	3	
P45A	C4899	P45A-6B	6.01	07/25/2005	2	U	2	U
P45A	C4899	P45A-6A	6.83	07/25/2005	2	U	2	
P45A	C4899	P45A-10	10.11	07/25/2005	2	U	2	U
P45A	C4899	P45A-13	13.39	07/25/2005	2	U	2	U
P45A	C4899	P45A-16	16.67	07/25/2005	2	U	2	U
P45A	C4899	P45A-19	19.95	07/25/2005	2	U	2	U
P45A	C4899	P45A-23	23.23	07/25/2005	2	U	2	U
P45A	C4899	P45A-26	26.51	07/25/2005	2	U	2	U
P45A	C4899	P45A-29A	29.79	07/25/2005	2	U	2	U
P45A	C4899	P45A-29B	29.79	07/25/2005	2	U	2	U
P45A	C4899	P45A-33	33.07	07/25/2005	2	U	2	U

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P45A	C4899	P45A-36	36.52	07/25/2005	2	U	3	
P45A	C4899	P45A-39	39.8	07/25/2005	2	U	3	
P45A	C4899	P45A-43	43.08	07/25/2005	2	U	2	
P45A	C4899	P45A-45A	45.21	07/25/2005	2	U	2	U
P45A	C4899	P45A-45B	45.21	07/25/2005	2	U	2	U
P45B	C4900	P45B-47	47.02	07/26/2005	3		5	
P46A	C4876	P46A-3	3.22	07/22/2005	2	U	3	
P46A	C4876	P46A-5	5.02	07/22/2005	2	U	2	
P46A	C4876	P46A-6	6.66	07/22/2005	2	U	2	U
P46A	C4876	P46A-9	9.94	07/22/2005	2	U	2	U
P46A	C4876	P46A-13	13.06	07/22/2005	2	U	2	U
P46A	C4876	P46A-19	19.62	07/22/2005	2	U	2	U
P46A	C4876	P46A-22	22.9	07/22/2005	2	U	2	U
P46A	C4876	P46A-29A	29.46	07/22/2005	7		7	
P46A	C4876	P46A-29B	29.46	07/22/2005	7		8	
P46A	C4876	P46A-32	32.75	07/22/2005	4		4	
P46A	C4876	P46A-35A	35.04	07/22/2005	5		4	
P46A	C4876	P46A-35B	35.04	07/22/2005	5		4	
P46B	C4877	P46B-6	6.01	07/22/2005	6		7	
P46B	C4877	P46B-16	16.01	07/22/2005	7		4	
P46B	C4877	P46B-26	26.02	07/22/2005	9		5	
P46B	C4877	P46B-36	36.19	07/22/2005	5		5	
P46B	C4877	P46B-37	37.34	07/22/2005	5		5	
P48A	C4902	P48A-3	3.87	07/26/2005	2	U	4	
P48A	C4902	P48A-5	5.02	07/26/2005	2	U	3	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P48A	C4902	P48A-6	6.01	07/26/2005	2	U	2	
P48A	C4902	P48A-7	7.15	07/26/2005	2	U	2	
P48A	C4902	P48A-10	10.44	07/26/2005	2	U	2	
P48A	C4902	P48A-13	13.72	07/26/2005	2	U	2	
P48A	C4902	P48A-17	17	07/26/2005	2	U	3	
P48A	C4902	P48A-20	20.28	07/26/2005	2	U	2	
P48A	C4902	P48A-23	23.56	07/26/2005	2		2	
P48A	C4902	P48A-26	26.84	07/26/2005	4		2	
P48A	C4902	P48A-30A	30.28	07/26/2005	8		3	
P48A	C4902	P48A-30B	30.28	07/26/2005	8		3	
P48A	C4902	P48A-33	33.73	07/26/2005	8		2	
P48A	C4902	P48A-37	37.01	07/26/2005	9		3	
P48A	C4902	P48A-40	40.29	07/26/2005	7		3	
P48A	C4902	P48A-43	43.74	07/26/2005	6		2	
P48A	C4902	P48A-47	47.18	07/26/2005	8		3	
P48A	C4902	P48A-50	50.3	07/26/2005	9		4	
P48A	C4902	P48A-53	53.42	07/26/2005	11		4	
P48A	C4902	P48A-56	56.86	07/26/2005	10		4	
P48A	C4902	P48A-59	59.98	07/26/2005	12		6	
P48A	C4902	P48A-63	63.26	07/26/2005	14		4	
P48A	C4902	P48A-66	66.54	07/26/2005	10		4	
P48A	C4902	P48A-69	69.82	07/26/2005	16		6	
P48A	C4902	P48A-72	72.11	07/26/2005	18		5	
P49A	C4913	P49A-3	3.22	08/01/2005	2	U	32	
P49A	C4913	P49A-5	5.02	08/01/2005	2	U	35	

Table 3-12. Active Soil-Vapor Analytical Results from Cone-Penetrometer Investigation at Release Sites. (39 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
P49A	C4913	P49A-6A	6.01	08/01/2005	2	U	9	
P49A	C4913	P49A-6B	6.33	08/01/2005	2	U	8	
P49A	C4913	P49A-9	9.45	08/01/2005	2	U	7	
P49A	C4913	P49A-12	12.9	08/01/2005	2	U	9	
P49A	C4913	P49A-16	16.18	08/01/2005	2	U	11	
P49A	C4913	P49A-19	19.62	08/01/2005	3		5	
P49A	C4913	P49A-23	23.07	08/01/2005	4		3	
P49A	C4913	P49A-26	26.84	08/01/2005	4		8	
P49A	C4913	P49A-29A	29.96	08/01/2005	6		5	
P49A	C4913	P49A-29B	29.96	08/01/2005	6		5	
P49A	C4913	P49A-33	33.4	08/01/2005	6		7	
P49A	C4913	P49A-36	36.85	08/01/2005	8		5	
P49A	C4913	P49A-39	39.96	08/01/2005	10		4	
P49A	C4913	P49A-42A	42.75	08/01/2005	12		2	U
P49A	C4913	P49A-42B	42.75	08/01/2005	12		2	U
P49B	C4914	P49B-40	40.45	08/01/2005	9		9	
P49B	C4914	P49B-43	43.9	08/01/2005	6		4	
P49B	C4914	P49B-47	47.34	08/01/2005	4		3	
P49B	C4914	P49B-49	49.15	08/01/2005	3		2	

From DOE/RL-2006-58, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Interim Characterization Report.*

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
ID = identification (number).
ppmv = parts per million by volume.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-13. Soil Analytical Results from Cone-Penetrometer Investigation at Release Sites. (3 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q	Chloroform (CAS 67-66-3) (µg/kg)	Q	Methylene Chloride (CAS 75-09-2) (µg/kg)	Q	Chloro-methane (CAS 74-87-3) (µg/kg)	Q
P8B	C4777	P8B-27	27	04/28/2005	2.5	U	2.5	U	2.5	U	2.5	U
P8B	C4777	P8B-32	32	04/28/2005	2.5	U	2.5	U	2.5	U	2.5	U
P8B	C4777	P8B-36	36	04/28/2005	2.5	U	2.5	U	2.5	U	2.5	U
P8B	C4777	P8B-40	40	04/28/2005	2.5	U	2.5	U	2.5	U	2.5	U
P9D	C4788	P9D-41	41	05/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P9F	C4790	P9F-36	36	05/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P10B	C4791	P10B-5	5	05/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P10B	C4791	P10B-6	6	05/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P11B	C4795	P11B-5	5	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P11B	C4795	P11B-33	33	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P12B	C4776	P12B-13	13	04/26/2005	2.5	U	2.5	U	2.5	U	2.5	U
P12B	C4776	P12B-32	32	04/27/2005	2.5	U	2.5	U	2.5	U	2.5	U
P12C	C4796	P12C-5	5	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P13B	C4803	P13B-36	36	05/06/2005	2.5	U	2.5	U	2.5	U	2.5	U
P13C	C4804	P13C-51	51	05/06/2005	2.5	U	2.5	U	2.5	U	2.5	U
P14C	C4797	P14C-35	35	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P15B	C4798	P15B-12	12	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P15B	C4798	P15B-30	30	05/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P15C	C4807	P15C-51	51	05/06/2005	2.5	U	2.5	U	2.5	U	2.5	U
P17C	C4860	P17C-24	24	05/19/2005	2.5	U	2.5	U	10		2.5	U
P17E	C4862	P17E-51	51	05/19/2005	2.5	U	2.5	U	10		2.5	U
P18F	C4785	P18F-31	31	05/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P19D	C4774	P19D-31	31	04/26/2005	2.5	U	2.5	U	2.5	U	2.5	U
P21D	C4783	P21D-35	35	05/02/2005	2.5	U	2.5	U	2.5	U	2.5	U

Table 3-13. Soil Analytical Results from Cone-Penetrometer Investigation at Release Sites. (3 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q	Chloroform (CAS 67-66-3) (µg/kg)	Q	Methylene Chloride (CAS 75-09-2) (µg/kg)	Q	Chloro-methane (CAS 74-87-3) (µg/kg)	Q
P22C	C4799	P22C-28	28	05/05/2005	2.5	U	2.5	U	2.5	U	2.5	U
P22C	C4799	P22C-38	38	05/05/2005	2.5	U	2.5	U	2.5	U	2.5	U
P22D	C4800	P22D-49	49	05/05/2005	2.5	U	2.5	U	2.5	U	2.5	U
P22E	C4801	P22E-53	53	05/05/2005	2.5	U	2.5	U	2.5	U	2.5	U
P22F	C4802	P22F-60	60	05/05/2005	6	U	6	U	10	B	13	U
P23D	C4780	P23D-37	37	05/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P23F	C4782	P23F-31	31	05/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P24C	C4812	P24C-42	42	05/17/2005	2.5	U	2.5	U	17		2.5	U
P29C	C4917	P29C-6	6	08/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P29C	C4917	P29C-60	60	08/02/2005	5	U	5	U	8	B	10	U
P29D	C4918	P29D-51	51	08/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P29E	C4919	P29E-53	53	08/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P30C	C4925	P30C-6	6	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P30C	C4925	P30C-33	33	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P30D	C4932	P30D-76	76	08/04/2005	4	U	4	U	6	B	9	U
P30J	C4960	P30J-58	58	08/17/2005	6	U	6	U	11	U	11	U
P30L	C4962	P30L-60	60	08/18/2005	4	U	4	U	9	U	9	U
P31B	C4926	P31B-6	6	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P31C	C4933	P31C-40	40	08/04/2005	5	U	5	U	5	B	10	U
P32C	C4927	P32C-6	6	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P32C	C4927	P32C-48	48	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P32E	C4929	P32E-67	67	08/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P33C	C4936	P33C-6	6	08/05/2005	6	U	6	U	7	B	11	U
P33C	C4936	P33C-34	34	08/05/2005	2.5	U	2.5	U	2.5	U	2.5	U
P34C	C4924	P34C-6	6	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P34C	C4924	P34C-55	55	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U

Table 3-13. Soil Analytical Results from Cone-Penetrometer Investigation at Release Sites. (3 Pages)

Sample Station	Well ID	Sample Number	Sample Depth (ft bgs)	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q	Chloroform (CAS 67-66-3) (µg/kg)	Q	Methylene Chloride (CAS 75-09-2) (µg/kg)	Q	Chloro-methane (CAS 74-87-3) (µg/kg)	Q
P35B	C4915	P35B-6	6	08/01/2005	2.5	U	2.5	U	2.5	U	2.5	U
P35B	C4915	P35B-47	47	08/01/2005	2.5	U	2.5	U	2.5	U	2.5	U
P35C	C4916	P35C-85	85	08/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P36C	C4922	P36C-6	6	08/02/2005	2.5	U	2.5	U	2.5	U	2.5	U
P36C	C4922	P36C-30	30	08/03/2005	2.5	U	2.5	U	2.5	U	2.5	U
P38B	C4935	P38B-83	83	08/05/2005	6	U	6	U	7	B	13	U
P44B	C4930	P44B-68	68	08/04/2005	2.5	U	2.5	U	2.5	U	2.5	U
P48B	C4931	P48B-73	73	08/04/2005	5	U	5	U	6	B	10	U
P49J	C4946	P49J-34	34	08/16/2005	6	U	6	U	11	U	11	U
P49L	C4957	P49L-42	42	08/12/2005	6	U	6	U	11	U	11	U

From DOE/RL-2006-58, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Interim Characterization Report.*

B = analyte also was detected in the associated blank.
bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
ID = identification (number).
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-14. Soil Analytical Results from Hydraulic Hammer Rig Investigation Adjacent to the 216-Z-9 Trench. (3 Pages)

Sample ID	Location	Sample Top (ft)	Sample Bottom (ft)	HEIS ID	Sample Date and Time	Dilution Factor	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q
P51B-64	P51	64	66	B1K789	08/22/2006 12:04	1	0.99	U
P51D-66	P51	66	68	B1KH01	08/28/2006 8:35	1	0.93	U
P51C-92	P51	92	94	B1K8D7	08/22/2006 7:56	1	0.97	U
P51G-116	P51	116	118	B1KH03	09/05/2006 7:40	1	1.1	U
P51G-116	P51	116	118	B1KH05	09/05/2006 7:40	1	1.1	U
P51A-119	P51	119	120	B1KFY9	08/22/2006 12:04	1	1	U
P51A-120	P51	120	121	B1K8D9	08/22/2006 12:04	1	1.1	U
P53D-61 Dup	P53	61	63	B1K781	08/15/2006 11:02	1	0.98	U
P53D-61 Dup	P53	61	63	B1K783	08/15/2006 11:02	1	1	U
P53B-64	P53	64	66	B1K775	08/10/2006 11:42	1	0.95	U
P53E-84	P53	84	86	B1K785	08/16/2006 8:06	1	0.94	U
P53C-103	P53	103	105	B1K777	08/14/2006 7:52	1	1	U
P53G-105	P53	105	107	B1K787	08/17/2006 9:45	1	1	U
P53A-107	P53	107	109	B1K779	08/14/2006 9:50	1	1	U
P54B-53	P54	53	55	B1K081	07/17/2006 7:02	1	1	U
P54K-56	P54	56.5	58.5	B1K767	09/12/2006 8:26	1	0.93	U
P54E-82	P54	82	84	B1K711	07/20/2006 12:27	1	0.96	U
P54C-92	P54	92	94	B1K085	07/19/2006 8:35	1	3	J
P54J-102	P54	102	104	B1K769A	07/28/2006 7:25	1	3.6	U
P54L-105	P54	105	107	B1K771	08/07/2006 11:20	1	0.99	U
P54L-105	P54	105	107	B1K6P3	08/07/2006 11:20	1	1	U
P54A-107	P54	107	109	B1K083	07/18/2006 8:06	1	0.98	U
P54M-109	P54	109	111	B1K773	08/08/2006 13:13	1	75	
P55E-64	P55	64	66	B1JH43	06/13/2006 7:00	1	0.92	U
P55E-66	P55	66	68	B1JH45	06/27/2006 9:56	1	0.93	U

Table 3-14. Soil Analytical Results from Hydraulic Hammer Rig Investigation Adjacent to the 216-Z-9 Trench. (3 Pages)

Sample ID	Location	Sample Top (ft)	Sample Bottom (ft)	HEIS ID	Sample Date and Time	Dilution Factor	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q
P56A-86	P56	86	88	B1JH47	06/30/2006 12:26	1	0.99	U
P56C-96	P56	96	98	B1JH49	07/05/2006 9:27	1	1	U
P56C-96	P56	96	98	B1JH51	07/05/2006 9:27	1	1	U
P56D-103	P56	103	105	B1JH53	07/06/2006 9:51	1	0.95	U
P56F-111	P56	111	112	B1JH57	07/10/2006 12:15	1	0.7	U
P56F-112	P56	112	113	B1K079	07/10/2006 12:15	1	0.67	U
P66C-59	P66	59	61	B1KXB3	10/18/2006 12:53	1	0.98	U
P66B-64	P66	64	66	B1KTX0	10/11/2006 11:42	100	390000	D
P66B-78	P66	78	80	B1KTX2	10/12/2006 8:51	1	0.95	U
P66B-80	P66	80	82	B1KTX4	10/13/2006 7:43	1	13	
P66B-108	P66	108	110	B1KTX6	10/16/2006 9:30	1	6.5	
P66B-110	P66	110	112	B1KX97	10/17/2006 8:05	1	1	U
P66B-112	P66	112	114	B1KX99	10/17/2006 9:40		0.3	U
P66B-112	P66	112	114	B1KXB1	10/17/2006 9:40		0.804	J
P66B-114	P66	114	116.5	B1KXB5	10/20/2006 8:00	1	380	
P66B-116	P66	116.5	117.5	B1L1D6	10/20/2006 12:04	1	5.1	J
P67B-62	P67	62	64	B1KH07	09/18/2006 8:45		0.302	UX
P67B-64	P67	64	66	B1KH09	09/22/2006 9:52	1	0.95	U
P67B-75	P67	75	77	B1KH11	09/26/2006 8:03	1	0.95	U
P67B-79	P67	79	81	B1KH13	09/26/2006 12:39	1	0.9	U
P67B-97	P67	97	99	B1KTV8	09/29/2006 8:46	1	0.96	U
P67B-99	P67	99	101	B1KTW0	10/02/2006 8:46	1	0.96	U
P67B-101	P67	101	103	B1KTW2	10/02/2006 12:26	1	20	
P67B-113	P67	113.5	115.5	B1KTW4	10/04/2006 11:33	1	140	
P67B-113	P67	113.5	115.5	B1KTW6	10/04/2006 11:33	1	180	

Table 3-14. Soil Analytical Results from Hydraulic Hammer Rig Investigation Adjacent to the 216-Z-9 Trench. (3 Pages)

Sample ID	Location	Sample Top (ft)	Sample Bottom (ft)	HEIS ID	Sample Date and Time	Dilution Factor	Carbon Tetrachloride (CAS 56-23-5) (µg/kg)	Q
P68B-58	P68	58	60	B1L8T7	11/14/2006 8:29	1	1	U
P68B-62	P68	62	64	B1L8T9	11/14/2006 10:09	1	1	U
P68B-110	P68	110	112	B1L8V3	11/15/2006 9:51	1	1.1	U
P68B-110	P68	110	112	B1L8V1	11/15/2006 9:51	1	4.2	J
P68B-112	P68	112	114	B1L8V5	11/15/2006 12:14	1	240	
P68B-114	P68	114	115	B1L8V7	11/15/2006 13:36	1	200	
P68B-115	P68	115	115.25	B1L8V9	11/15/2006 13:36	1	1.9	U
P69B-59	P69	59	61	B1L1D8	10/27/2006 7:38		0.287	U
P69B-64	P69	64	66	B1L1F0	10/30/2006 7:50	1	0.98	U
P69B-80	P69	80	82	B1L1F2	10/30/2006 12:37	1	0.99	U
P69B-80	P69	80	82	B1L1F4	10/30/2006 12:37	1	1	U
P69B-104	P69	104	106	B1L1F6	10/31/2006 9:19	1	0.94	U
P69B-106	P69	106	108	B1L1F8	10/31/2006 12:20	1	0.96	U
P69B-108	P69	108	110	B1L1H0	11/01/2006 8:45	1	1.1	U
P69B-110	P69	110	112	B1L1H2	11/01/2006 12:20	1	0.97	U
P69B-112	P69	112	114	B1L1H4	11/03/2006 7:10	1	1.2	J
P69B-114	P69	114	116	B1L8T3	11/03/2006 8:14	1	85	
P69B-116	P69	116	117	B1L8T5	11/03/2006 9:39	1	0.99	U

From DOE/RL-2007-22, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Characterization Report Addendum.*

CAS = Chemical Abstracts Service registry number.
D = analyte was identified at a secondary dilution factor.
HEIS = *Hanford Environmental Information System* database.
ID = identification (number).
J = indicates an estimated value.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.
X = analysis after the holding time.

Table 3-15. Results of Enhanced Access Penetration System Active Soil-Vapor Sampling. (4 Pages)

Sample Location	HEIS Number	Sample Date	Sample Depth	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4883	B1F5W7	08/10/2005	15	1	U	1.66		3.29	
C4883	B1F5W8	08/10/2005	15	1	U	1.89		2.9	
C4883	B1F5X0	08/10/2005	25	1	U	1.25		1.64	
C4883	B1F5W9	08/10/2005	25	1	U	1.13		1.8	
C4883	B1F5X2	08/10/2005	41	1	U	1.13		1	U
C4883	B1F5X1	08/10/2005	41	1	U	1.16		1	U
C4883	B1F5Y2	08/15/2005	50	1	U	1.46		1.46	
C4883	B1F5Y1	08/15/2005	50	1	U	1.8		1	U
C4883	B1F5Y0	08/15/2005	75	1	U	1.59		1.34	
C4883	B1F5X9	08/15/2005	75	1	U	1.76		1.12	
C4883	B1F5X7	08/15/2005	100	1	U	1.83		1.28	
C4883	B1F5X8	08/15/2005	100	1	U	2.1		1.3	
C4883	B1F5X6	08/15/2005	125	1	U	2.81		1.78	
C4883	B1F5X5	08/15/2005	125	1	U	3.03		1.78	
C4883	B1F5X4	08/12/2005	150	1	U	1	U	1	U
C4883	B1F5X3	08/12/2005	150	1	U	1	U	1	U
C4884	B1F5Y3	08/04/2005	15	1	U	3.24		3.17	
C4884	B1F5Y4	08/04/2005	15	1	U	3.22		3.26	
C4884	B1F5Y6	08/04/2005	25	1	U	2.02		2.82	
C4884	B1F5Y5	08/04/2005	25	1	U	2.06		3.05	
C4884	B1F5Y8	08/04/2005	50	1	U	2.25		2.8	
C4884	B1F5Y7	08/04/2005	50	1	U	1.95		3.14	
C4884	B1F605	08/10/2005	75	1	U	1.65		1	U

Table 3-15. Results of Enhanced Access Penetration System Active Soil-Vapor Sampling. (4 Pages)

Sample Location	HEIS Number	Sample Date	Sample Depth	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4884	B1F606	08/10/2005	75	1	U	1.42		1	U
C4884	B1F603	08/10/2005	100	1	U	1.3		1	U
C4884	B1F604	08/10/2005	100	1	U	1.22		1	U
C4884	B1F602	08/08/2005	125	1	U	1.73		4.46	
C4884	B1F601	08/08/2005	125	1	U	1.26		5.34	
C4884	B1F600	08/08/2005	150	9.06		1.79		6.16	
C4884	B1F5Y9	08/08/2005	150	9.14		1.93		5.17	
C4885	B1F608	07/26/2005	15	1	U	3.99		13.6	
C4885	B1F607	07/26/2005	15	1	U	3.91		13	
C4885	B1F609	07/26/2005	25	1	U	2.8		10.7	
C4885	B1F610	07/26/2005	25	1	U	3.06		10.8	
C4885	B1F612	07/26/2005	50	1	U	1.4		3.89	
C4885	B1F611	07/26/2005	50	1	U	1.64		3.87	
C4885	B1F614	08/03/2005	75	1	U	1.49		1	U
C4885	B1F613	08/03/2005	75	1	U	1.55		1	U
C4885	B1F618	08/03/2005	100	1	U	1	U	1	U
C4885	B1F617	08/03/2005	100	1	U	1	U	1	U
C4885	B1F616	08/03/2005	100	1	U	1	U	1	U
C4885	B1F615	08/03/2005	100	1	U	1	U	1	U
C4885	B1F620	08/03/2005	125	1	U	1	U	1	U
C4885	B1F621	08/03/2005	125	1	U	1	U	1	U
C4885	B1F622	08/03/2005	125	1	U	1	U	1.06	
C4885	B1F619	08/03/2005	125	1	U	1	U	1	U
C4885	B1F623	08/03/2005	150	1	U	1	U	1	U
C4885	B1F624	08/03/2005	150	1	U	1	U	1	U
C4885	B1F625	08/03/2005	150	1	U	1.07		1	U

Table 3-15. Results of Enhanced Access Penetration System Active Soil-Vapor Sampling. (4 Pages)

Sample Location	HEIS Number	Sample Date	Sample Depth	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4885	B1F626	08/03/2005	150	1	U	1.07		1	U
C4886	B1F628	08/16/2005	15	1	U	2.78		5.47	
C4886	B1F627	08/16/2005	15	1	U	2.95		4.94	
C4886	B1F630	08/16/2005	25	1	U	3.2		4.36	
C4886	B1F629	08/16/2005	25	1	U	3.18		4.43	
C4886	B1F632	08/16/2005	50	1	U	3.01		3.71	
C4886	B1F631	08/16/2005	50	1	U	3.32		3.54	
C4886	B1F633	08/16/2005	75	7.34		2.49		8.32	
C4886	B1F634	08/16/2005	75	7.31		2.78		8.35	
C4886	B1F640	08/19/2005	100	1	U	1	U	1.52	
C4886	B1F639	08/19/2005	100	1	U	1	U	1.49	
C4886	B1F638	08/19/2005	125	1	U	1	U	1.19	
C4886	B1F637	08/19/2005	125	1	U	1	U	1	U
C4886	B1F636	08/19/2005	150	1	U	1	U	1.51	
C4886	B1F635	08/19/2005	150	1	U	1	U	1	U
C4890	B1F642	06/27/2005	15	1	U	1.71		1.52	
C4890	B1F641	06/27/2005	15	1	U	1.63		1.43	
C4890	B1F643	06/27/2005	25	1	U	1.65		2.03	
C4890	B1F644	06/27/2005	25	1	U	1.73		2.03	
C4890	B1F646	06/27/2005	50	1	U	2.97		5.5	
C4890	B1F645	06/27/2005	50	1	U	3.11		5.52	
C4890	B1F647	07/12/2005	75	1	U	1.87		3.12	
C4890	B1F648	07/12/2005	100	1	U	1.06		1.72	
C4890	B1F649	07/12/2005	125	1	U	1.33		1.64	
C4890	B1F650	07/12/2005	150	1	U	1	U	1.26	
C4890	B1F651	07/12/2005	175	1	U	1.92		1	U

Table 3-15. Results of Enhanced Access Penetration System Active Soil-Vapor Sampling. (4 Pages)

Sample Location	HEIS Number	Sample Date	Sample Depth	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4890	B1F652	07/12/2005	200	1	U	1.69		1	U
C4890	B1F653	07/12/2005	215	1.89		2.74		3.67	
C4891	B1F654	07/13/2005	15	1	U	3.93		1	U
C4891	B1F655	07/13/2005	25	1	U	3.93		1	U
C4891	B1F656	07/14/2005	50	1	U	6.45		0.66	
C4891	B1F658	07/20/2005	75	1	U	2.94		3.76	
C4891	B1F657	07/20/2005	75	1	U	2.98		3.67	
C4891	B1F660	07/25/2005	100	1	U	1.31		2.14	
C4891	B1F659	07/25/2005	100	1	U	1.49		1.83	
C4891	B1F662	07/25/2005	125	1	U	4.39		4.91	
C4891	B1F661	07/25/2005	125	1	U	4.39		4.72	
C4891	B1F663	07/25/2005	150	1	U	6.16		3.86	
C4891	B1F664	07/25/2005	150	1	U	6.17		3.91	

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
299-W10-25	B1J2M0	04/06/06	89.0	1	U	1.29		1	U
299-W10-25	B1JN33	04/06/06	89.0	1	U	1	U	1.16	
299-W10-25	B1J2M1	04/06/06	122.0	1	U	1	U	1	U
299-W10-25	B1JN34	04/06/06	122.0	1	U	1	U	1	U
299-W10-31	B1J2M2	04/27/06	236.0	1	U	1.26		1	U
299-W10-31	B1JN35	04/27/06	236.0	1	U	1	U	1.45	
299-W11-47	B1JHB3	01/13/06	90.0	1	U	1	U	4.35	
299-W11-47	B1JHB4	01/13/06	90.0	1	U	1	U	4.34	
299-W11-47	B1JHB5	01/13/06	90.0	1	U	1	U	4.54	
299-W11-47	B1JHB6	01/13/06	90.0	1	U	2.1		1.3	
299-W11-47	B1JHB7	01/18/06	133.0	2.49		1	U	9.9	
299-W11-47	B1JHB8	01/18/06	133.0	2.49		1	U	9.84	
299-W11-47	B1JHB9	01/18/06	133.0	2.49		1	U	9.82	
299-W11-47	B1JHC0	01/18/06	133.0	2.49		1	U	9.97	
299-W11-47	B1JHC1	02/08/06	235.0	1	U	5.13		17.4	
299-W11-47	B1JHC2	02/08/06	235.0	1	U	4.91		17.9	
299-W11-86	B1JH58	06/05/06	102.0	1	U	1.3		1	U
299-W11-86	B1JH59	06/05/06	102.0	1	U	1.05		1	U
299-W11-86	B1JH60	06/06/06	149.0	1	U	1.24		2.53	
299-W11-86	B1JH61	06/06/06	149.0	1	U	1.1		2.4	
299-W11-86	B1JH62	06/28/06	285.0	1	U	2.87		6.61	
299-W11-86	B1JH63	06/28/06	285.0	1	U	3.11		8.21	
299-W14-71	B1JX04	08/08/06	149.5	1	U	1.58		2.01	
299-W14-71	B1JX05	08/08/06	149.5	1	U	1.23		1.81	
299-W14-71	B1JX06	09/14/06	275.8	1	U	1	U	1	U
299-W14-71	B1JX07	09/14/06	275.8	1	U	1	U	1.39	
299-W14-72	B1JX08	09/08/06	130.0	1	U	1	U	1.89	
299-W14-72	B1JX09	09/08/06	130.0	1	U	1	U	1.94	

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
299-W14-72	B1JX10	09/11/06	157.0	1	U	1	U	1.29	
299-W14-72	B1JX11	09/11/06	157.0	1	U	1	U	1.43	
299-W14-72	B1KL43	09/19/06	191.0	2.03		1	U	1	U
299-W14-72	B1KL44	09/19/06	191.0	1.98		1	U	1	U
299-W14-72	B1JX12	09/27/06	270.0	1	U	1	U	1.29	
299-W14-72	B1JX13	09/27/06	270.0	1	U	1	U	1	U
299-W15-224	B1JN36	02/09/06	116.0	1	U	1	U	1	U
299-W15-224	B1JN37	02/09/06	116.0	1	U	1	U	1	U
299-W15-224	B1JN38	02/14/06	146.7	2.41		1	U	1.58	
299-W15-224	B1JN39	02/14/06	146.7	2.33		1	U	1.23	
299-W15-224	B1JN40	02/15/06	230.0	26.5		1	U	1.14	
299-W15-224	B1JN41	02/15/06	230.0	26.6		1	U	1.21	
299-W15-42	B13F38	11/28/01	30.5	1	U	1	U	1	U
299-W15-42	B13F39	11/30/01	62.5	8.6		1.07		1.91	
299-W15-42	B13F40	12/04/01	81.7	48.9		1	U	1	U
299-W15-42	B13F41	12/17/01	102.0	1.56		1	U	1	U
299-W15-42	B13F42	12/19/01	119.8	10.9		1.63		1	U
299-W15-42	B13F43	12/20/01	125.5	5.9		1.48		1.25	
299-W15-42	B13F44	01/03/02	134.0	20		1.64		5.31	
299-W15-42	B13F45	01/03/02	138.7	1	U	1	U	1	U
299-W15-42	B13F46	01/04/02	161.2	1	U	1	U	1	U
299-W15-42	B13F47	01/08/02	182.1	3.61		1.43		1	U
299-W15-42	B13F48	01/14/02	190.5	24.7		6.93		2.56	
299-W15-42	B13Y00	01/15/02	201.5	1	U	1	U	1	U
299-W15-42	B13Y01	01/17/02	222.5	13		2.61		5.51	
299-W15-43	B1HL62	06/23/05	228.5	15.4		1	U	1.3	
299-W15-43	B1HL63	06/23/05	228.5	15.2		1	U	1.57	
299-W15-49	B1C7R2	11/12/04	130.0	1.35		1.18		4.01	

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
299-W15-49	B1C7R3	11/12/04	130.0	1.3		1	U	4.33	
299-W15-49	B1C7R4	11/16/04	167.8	5.17		1	U	2.64	
299-W15-49	B1C7R5	11/16/04	167.8	1	U	1	U	1.44	
299-W15-49	B1C7R6	11/16/04	167.8	1	U	1	U	1.28	
299-W15-49	B1C7R7	11/16/04	167.8	1	U	1	U	1.28	
299-W15-49	B1C7R8	11/16/04	167.8	1	U	1	U	1.54	
299-W15-49	B1C7R9	11/23/04	229.9	4.13		2.22		3.03	
299-W15-49	B1C7T0	11/23/04	229.9	3.54		1.7		2.78	
299-W15-49	B1C7T1	11/23/04	229.9	3.18		1.48		2.98	
299-W15-49	B1C7T2	11/23/04	229.9	2.81		1.46		2.45	
299-W15-49	B1C7T3	11/23/04	229.9	2.86		1.36		2.5	
299-W15-50	B1C3H9	01/10/05	109.0	1	U	1	U	1	U
299-W15-50	B1C3J0	01/10/05	109.0	1	U	1	U	1	U
299-W15-50	B1C3J1	01/10/05	109.0	1	U	1	U	1	U
299-W15-50	B1C3J2	01/10/05	111.0	1	U	1	U	1.27	
299-W15-50	B1C3J3	01/10/05	111.0	1	U	1	U	1.21	
299-W15-50	B1C3J4	01/10/05	111.0	1	U	1	U	1.19	
299-W15-50	B1C3J5	01/17/05	210.0	1	U	1	U	1	U
299-W15-50	B1C3J6	01/17/05	210.0	1	U	1	U	1	U
299-W15-50	B1C3J7	01/17/05	210.0	1	U	1	U	1	U
299-W15-764	B12XH5	10/10/01	28.0	1	U	1	U	1	U
299-W15-764	B12XH6	10/12/01	60.0	1	U	1	U	1	U
299-W15-764	B12XH7	10/15/01	80.0	17.8		1	U	1.05	
299-W15-764	B12XH8	10/16/01	100.0	1	U	1	U	1	U
299-W15-764	B12XH9	10/18/01	120.0	1	U	1.08		1.36	
299-W15-764	B12XJ0	10/18/01	125.0	1	U	1	U	1	U
299-W15-84	B124R3	06/08/01	109.5	522		2.72		4.02	
299-W15-84	B124R4	06/11/01	120.6	537		4.73		1.95	

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
299-W15-84	B124R5	06/12/01	131.0	1.5	.	1	U	1	U
299-W15-84	B124R6	06/12/01	149.8	1.13		1.18		2.35	
299-W15-84	B12621	06/13/01	170.0	34.7		1.61		4.77	
299-W15-84	B12622	06/14/01	180.8	37.6		1.59		4.24	
299-W15-84	B12693	06/15/01	193.0	1.5		5.3		14.1	
299-W15-94	B1FRW5	09/20/05	127.0	1	U	1	U	1	U
299-W15-94	B1FRW6	09/20/05	127.0	1	U	1	U	1	U
299-W15-94	B1FRW7	09/20/05	169.0	1	U	1	U	1	U
299-W15-94	B1FRW8	09/20/05	169.0	1	U	1	U	1.34	
299-W15-94	B1FRW9	09/22/05	235.0	1	U	1	U	1	U
299-W15-94	B1FRX0	09/22/05	235.0	1	U	1	U	1	U
299-W15-95	B12192	05/21/01	105.5	5.46		3.98		not analyzed	
299-W15-95	B12193	05/22/01	114.0	95.0		3.59		3.62	
299-W15-95	B12195	05/23/01	122.0	174		1	U	4.59	
299-W15-95	B12196	05/25/01	146.5	46.1		1.35		4.54	
299-W15-95	B12197	05/30/01	164.5	1	U	1.07		1.31	
299-W15-95	B12198	05/31/01	184.4	20.9		1.44		3.16	
299-W15-95	B12199	05/31/01	184.4	20.9		1.34		3.11	
299-W15-95	B121B0	06/01/01	184.4	19.7		1.46		1.80	
299-W15-95	B121B1	06/01/01	184.4	20.4		1	U	2.25	
299-W18-16	B1C7N7	11/01/04	122.0	69.8		1.8		1	U
299-W18-16	B1C7N8	11/01/04	122.0	70.4		1.42		1	U
299-W18-16	B1C7N9	11/01/04	122.0	73.5		1.28		1	U
299-W18-16	B1C7P0	11/01/04	122.0	73.6		1.25		1	U
299-W18-16	B1C7P1	11/01/04	122.0	86.9		118.7		1	U
299-W18-16	B1C7P2	11/03/04	144.0	2.6		1	U	1.13	
299-W18-16	B1C7P3	11/03/04	144.0	8.5		1	U	1.55	
299-W18-16	B1C7P4	11/03/04	144.0	14.5		1	U	1.47	

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
299-W18-16	B1C7P5	11/03/04	144.0	19.9		1	U	2.02	
299-W18-16	B1C7P6	11/03/04	144.0	19.8		1	U	1.44	
299-W18-16	B1C7P7	11/15/04	229.4	21.8		4.31		15.1	
299-W18-16	B1C7P8	11/15/04	229.4	24.7		3.37		12.9	
299-W18-16	B1C7P9	11/15/04	229.4	24.7		3.3		12.8	
299-W18-16	B1C7R0	11/15/04	229.4	26.9		2.75		10.6	
299-W18-16	B1C7R1	11/15/04	229.4	28.4		2.13		8.97	
C3102	B12D87	07/19/01	225.0	4.12		4.73		1	U
C3808	B14DM6	5/3/2002	28.5	1	U	1.72		1	U
C3808	B14DM7	5/3/2002	48.0	1	U	1	U	1	U
C3808	B14DM8	5/6/2002	75.0	1	U	1	U	1	U
C3808	B14DM9	5/7/2002	97.1	1	U	1	U	1	U
C3808	B14DN0	5/8/2002	112.0	1	U	1	U	1	U
C3808	B14DN1	5/9/2002	141.3	1	U	1	U	1	U
C3808	B14DN2	5/9/2002	143.5	1	U	1	U	1	U
C3808	B14DN3	5/10/2002	152.0	1	U	1	U	1	U
C3808	B14DN4	5/10/2002	157.0	1	U	1	U	1	U
C3808	B14DN5	5/14/2002	180.4	1	U	1	U	1	U
C3808	B14DN6	5/15/2002	202.3	1	U	1	U	1	U
C3808	B14DN7	5/17/2002	217.8	1	U	1	U	1.90	
C4183	B1CKM9	03/01/05	74.0	1	U	2.52		1	U
C4183	B1CKN0	03/01/05	74.0	1	U	2.7		1	U
C4183	B1CKN1	03/01/05	74.0	1	U	2.45		1	U
C4183	B1CKN2	03/01/05	74.0	1	U	2.59		1	U
C4183	B1CKN3	03/03/05	96.5	1	U	2.27		1	U
C4183	B1CKN4	03/03/05	96.5	1	U	2.11		1	U
C4183	B1CKN5	03/03/05	96.5	1	U	1.99		1	U
C4183	B1CKN6	03/03/05	96.5	1	U	1.98		1	U

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4183	B1CKN7	03/04/05	117.5	3.18		2.64		4.02	
C4183	B1CKN8	03/04/05	117.5	3.05		2.56		3.9	
C4183	B1CKN9	03/04/05	117.5	3.31		2.79		4	
C4183	B1CKP0	03/04/05	117.5	3.34		2.75		3.95	
C4183	B1CKP1	03/08/05	149.4	1	U	1	U	1.87	
C4183	B1CKP2	03/08/05	149.4	1	U	1	U	1.73	
C4183	B1CKP3	03/08/05	149.4	1	U	1	U	2.04	
C4183	B1CKP4	03/08/05	149.4	1	U	1	U	2.32	
C4183	B1CKP5	03/14/05	174.5	1	U	1	U	1	U
C4183	B1CKP6	03/14/05	174.5	1	U	1	U	1	U
C4183	B1CKP7	03/14/05	174.5	1	U	1	U	1	U
C4183	B1CKP8	03/14/05	174.5	1	U	1	U	1	U
C4183	B1CKP9	03/18/05	198.4	3.28		1.12		1	U
C4183	B1CKR0	03/18/05	198.4	3.32		1	U	1	U
C4183	B1CKR1	03/18/05	198.4	3.32		1	U	1	U
C4183	B1CKR2	03/18/05	198.4	3.25		1	U	1	U
C4183	B1CPR0	03/24/05	222.0	12.1		2.67		1.51	
C4183	B1CPR1	03/24/05	222.0	12.2		2.04		2.35	
C4183	B1CPR2	03/24/05	222.0	12.1		1.98		3.57	
C4183	B1CPR3	03/24/05	222.0	12.2		1.88		2.59	
C4183	B1CPR4	03/24/05	222.0	11.9		1.86		2.37	

Table 3-16. Soil-Vapor Sampling Results from Fiscal Year 2001 to Fiscal Year 2006 Well Drilling. (7 Pages)

Well Name	HEIS Number	Sample Date	Bottom Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q	Methylene Chloride (CAS 75-09-2) (ppmv)	Q
C4183	B1CPR5	03/24/05	222.0	12		1.46		2.86	
C4183	B1CPR6	03/24/05	222.0	12.1		1.48		2.63	
C4183	B1CPR7	03/24/05	222.0	11.8		1.55		2.66	
C4738	B1C7T4	02/07/05	132.5	1	U	1.72		1	U
C4738	B1C7T5	02/07/05	132.5	1	U	1.8		1	U

CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-17. Field-Screening Results for Active Soil-Vapor Samples Within the Plutonium Finishing Plant Protected Area. (3 Pages)

Location Identification	HEIS Number	Date	Sample Time	Analysis Time	Depth (ft bgs)	Innova 1312 Photoacoustic Multi-Gas Analyzer, Serial Number 010-019			
						Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
C3876	B15JT4	08/19/2003	09:55	11:52	14.0-14.5	1.0	U	1.70	
C3876	B15JT3	08/18/2003	14:25	16:45	23.7-25.0	1.0	U	1.40	
C3876	B15JT2	08/18/2003	14:02	16:40	33.2-34.2	1.0	U	1.90	
C3877	B15JV1	08/20/2003	10:48	11:32	15.0-15.6	1.0	U	1.0	U
C3877	B15JV0	08/20/2003	10:18	11:29	24.4-27.3	1.0	U	1.0	U
C3877	B15JT9	08/20/2003	09:45	11:25	43.6-44.2	1.0	U	1.0	U
C3878	B15JT1	08/18/2003	12:21	12:40	14-14.5	1.0	U	1.10	
C3878	B15JT0	08/18/2003	11:58	12:35	25.0-25.5	1.01		1.0	U
C3878	B15JR9	08/18/2003	11:22	12:30	43.6	1.78		3.20	
C3879	B15JT7	08/19/2003	12:33	12:40	13.1-13.8	1.0	U	1.0	U
C3879	B15JT6	08/19/2003	12:05	12:11	25.0-27.0	1.0	U	1.0	U
C3879	B15JT5	08/19/2003	11:40	11:55	40.3-41.1	1.0	U	1.40	
C4059	B15JV4	08/20/2003	14:05	14:16	15.5-17.6	1.0	U	1.0	U
C4059	B15JV3	08/20/2003	13:40	14:14	23.8-24.6	1.0	U	1.0	U
C4059	B15JV2	08/20/2003	13:10	14:11	41.7-42.8	1.0	U	2.40	
C4060	B15LN3	08/22/2003	13:20	13:43	13.5-14.0	1.0	U	1.62	
C4060	B15LN2	08/22/2003	12:55	13:41	25.0-25.5	1.0	U	1.69	
C4060	B15JT8	08/22/2003	11:35	13:38	35.0-35.5	1.0	U	1.71	
C4061	B15LN9	08/25/2003	13:09	13:35	15.5-16.5	1.0	U	1.0	U
C4061	B15LN8	08/25/2003	12:49	13:34	24.0-25.0	1.0	U	1.0	U
C4061	B15LN7	08/25/2003	12:24	13:33	35.5-36.5	1.0	U	2.48	
C4062	B15LP2	08/26/2003	09:47	13:04	14.0-14.7	1.0	U	1.0	U

Table 3-17. Field-Screening Results for Active Soil-Vapor Samples Within the Plutonium Finishing Plant Protected Area. (3 Pages)

Location Identification	HEIS Number	Date	Sample Time	Analysis Time	Depth (ft bgs)	Innova 1312 Photoacoustic Multi-Gas Analyzer, Serial Number 010-019			
						Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
C4062	B15LP1	08/26/2003	09:29	13:03	24.0-25.0	1.0	U	1.0	U
C4062	B15LP0	08/26/2003	09:07	13:02	30.0-31.0	1.0	U	1.0	U
C4063	B15LP5	08/26/2003	11:33	13:07	13.5-15.3	1.41		1.0	U
C4063	B15LP4	08/26/2003	11:10	13:06	22.8-23.3	2.32		1.0	U
C4063	B15LP3	08/26/2003	10:36	13:05	41.4-42.2	4.24		1.0	U
C4064	B15JV6	08/21/2003	10:18	11:07	14.0-14.5	1.0	U	1.11	
C4064	B15JV5	08/21/2003	09:45	11:04	27.3-28.5	1.0	U	1.69	
C4065	B15LN6	08/25/2003	10:17	13:32	15.0-16.0	1.0	U	1.21	
C4065	B15LN5	08/25/2003	09:57	13:31	22.2-23.2	1.0	U	1.53	
C4065	B15LN4	08/25/2003	09:20	13:30	43.0-44.0	1.22		1.76	
C4066	B15LN1	08/21/2003	14:05	12:50	14.5-15.0	1.0	U	1.0	U
C4066	B15LN0	08/21/2003	13:40	12:47	24.5-25.5	1.0	U	1.0	U
C4066	B15JV7	08/21/2003	13:10	12:44	39.0-40.0	1.33		1.13	
C4067	B15LT0	08/28/2003	14:02	14:07	15.5-17.5	1.0	U	1.0	U
C4067	B15LR9	08/28/2003	13:45	13:52	24.3-25.3	1.0	U	1.0	U
C4067	B15LR8	08/28/2003	13:23	13:50	38.0-39.0	2.41		3.64	
C4068	B15LP8	08/26/2003	13:10	13:55	14.3-14.8	1.0	U	1.0	U
C4068	B15LP7	08/26/2003	13:09	13:34	25.0-26.0	1.0	U	1.0	U
C4068	B15LP6	08/26/2003	13:18	13:08	31.0-32.0	1.0	U	1.0	U
C4136	B15LR4	08/27/2003	14:11	15:42	15.5-16.5	1.0	U	1.0	U
C4136	B15LR3	08/27/2003	13:47	15:40	23.5-25.0	1.0	U	1.0	U
C4136	B15LR2	08/27/2003	13:23	15:39	35.0-36.0	1.0	U	1.0	U
C4137	B15LR1	08/27/2003	10:47	11:02	14.0-14.5	1.0	U	1.0	U

Table 3-17. Field-Screening Results for Active Soil-Vapor Samples Within the Plutonium Finishing Plant Protected Area. (3 Pages)

Location Identification	HEIS Number	Date	Sample Time	Analysis Time	Depth (ft bgs)	Innova 1312 Photoacoustic Multi-Gas Analyzer, Serial Number 010-019			
						Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q	Chloroform (CAS 67-66-3) (ppmv)	Q
C4137	B15LR0	08/27/2003	10:21	11:00	24.8-25.3	1.0	U	1.0	U
C4137	B15LP9	08/27/2003	10:58	09:55	37.3-38.3	1.0	U	1.0	U
C4138	B15LR7	08/28/2003	12:05	13:07	14.5-15.5	1.0	U	1.0	U
C4138	B15LR6	08/28/2003	11:47	13:05	22.0-25.0	1.0	U	1.0	U
C4138	B15LR5	08/28/2003	11:21	13:02	46.5-47.5	1.21		1.0	U

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

Innova 1312 multi-gas analyzer is a trademark of Innova AirTech Instruments A/S, Ballerup, Denmark.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-18. Passive Soil-Vapor Sample Results for Carbon Tetrachloride from the 218-W-3A Burial Ground.

Field Sample Point	Sample Number	Sample Installed	Sample Retrieved	Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q
T9S-2	B1DDW5	06/30/05	07/05/05	25	U
T9S-3	B1DDW6	06/30/05	07/05/05	25	U
T9S-4	B1DDW7	06/30/05	07/05/05	25	U
T9S-5	B1DDW8	06/30/05	07/05/05	25	U
T9S-6	B1DDW9	06/30/05	07/05/05	25	U
T9S-7	B1DDX0	06/30/05	07/05/05	25	U
T9S-8	B1DDX1	06/30/05	07/05/05	25	U
T9S-9	B1DDX2	06/30/05	07/05/05	163.23	
T9S-9D	B1DDX3	06/30/05	07/05/05	81.42	
T9S-1	B1DDX4	06/30/05	07/05/05	25	U
T9S-10	B1DDX5	06/30/05	07/05/05	25	U
T06-2	B1DDX6	06/30/05	07/05/05	25	U
T06-3	B1DDX7	06/30/05	07/05/05	25	U
T06-4	B1DDX8	06/30/05	07/05/05	25	U
T06-5	B1DDX9	06/30/05	07/05/05	25	U
T06-6	B1DDY0	06/30/05	07/05/05	25	U
T06-7	B1DDY1	06/30/05	07/05/05	25	U
T06-8	B1DDY2	06/30/05	07/05/05	25	U
T06-9	B1DDY3	06/30/05	07/05/05	25.1	
T06-10	B1DDY4	06/30/05	07/05/05	110.5	
T06-10D	B1DDY5	06/30/05	07/05/05	231.08	
T06-11	B1DDY6	06/30/05	07/05/05	25	U
T06-12	B1DDY7	06/30/05	07/05/05	25	U
T06-1	B1DDY8	06/30/05	07/05/05	25	U

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

CAS = Chemical Abstracts Service registry number.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-19. Field-Screening Results for the Vapor Samples Collected Through the Vent Risers in the 218-W-3A Burial Ground Trenches.

Sample Identifier	HEIS Number	Sample Date	Sample Time	Carbon Tetrachloride (CAS 56-23-5) (ppmv)	Q
T-3S-1	B1DVM2	08/25/05	1330	0.05	U
T-3S-2	B1DVM3	08/25/05	1353	0.05	U
T-3S-3	B1DVM4	08/25/05	1425	0.05	U
T-9S-1	B1DVM5	08/25/05	1440	0.05	U
T-05-1	B1DVL6	08/25/05	0950	0.05	U
T-05-2	B1DVL7	08/25/05	1042	0.05	U
T-05-2 duplicate	B1DVN5	08/25/05	1048	0.05	U
T-05-3	B1DVL8	08/25/05	1115	0.05	U
T-05-4	B1DVL9	08/25/05	1143	0.05	U
T-05-5	B1DVM0	08/25/05	1208	0.05	U
T-05-6	B1DVM1	08/25/05	1238	0.05	U
T-05-6 duplicate	B1DVN3	08/25/05	1245	0.05	U
T-08-1	B1DVM6	09/06/05	1005	0.05	U
T-08-1 duplicate	B1DVN4	09/06/05	1012	0.05	U
T-08-2	B1DVM7	09/06/05	1050	0.05	U
T-08-3	B1DVM8	09/06/05	1120	36	
T-08-4	B1DVM9	09/06/05	1220	7	
T-08-5	B1DVN0	09/06/05	1320	5	
T-08-6	B1DVN1	09/06/05	1345	0.05	U
T-08-7	B1DVN2	09/06/05	1415	0.05	U

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

Samples were analyzed using a MIRAN SapphIRe Ambient Air Analyzer, which identifies up to five compounds with the highest concentrations in the vapor sample.

MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

CAS = Chemical Abstracts Service registry number.
HEIS = *Hanford Environmental Information System* database.
ppmv = parts per million by volume.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-20. Results and Evaluation of Groundwater "Hot-Spot" Soil-Vapor and Groundwater Sampling. (2 Pages)

Groundwater "Hot Spot" for Carbon Tetrachloride	Associated Potential Release Site	Well	Sample Date	Carbon Tetrachloride (CAS 56-23-5)					
				Soil-Vapor Concentration (ppmv)	Soil-Vapor Data Qualifier	Groundwater Concentration (µg/L)	Groundwater Data Qualifier	Calculated Groundwater Concentration (µg/L) [c]	Vapor-Source Impact to Groundwater?
1. 299-W10-20	218-W-3A Burial Ground	299-W10-19	09/06/2005	1	U	np		6.41	(a)
		299-W10-20	09/19/2005	1	U	200		6.41	No
		299-W10-21	09/19/2005	1	U	350		6.41	No
2. T Tank Farm	T Tank Farm	299-W10-1	08/29/2005	1	U	330		6.41	No
			09/27/2005	10.3		np		66.03	(a)
		299-W10-4	09/26/2005	1	U	950		6.41	No
		299-W10-8	08/25/2005	1	U	320		6.41	No
			09/27/2005	14.9		np		95.51	(a)
		299-W10-23	09/19/2005	1	U	110		6.41	No
		299-W10-24	09/20/2005	1	U	54		6.41	No
		299-W11-28	09/27/2005	1	U	np		6.41	(a)
		299-W11-40	11/23/2005	1	U	3		6.41	Possible
		299-W11-41	09/26/2005	1	U	99		6.41	No
		299-W11-42	09/30/2005	1	U	900		6.41	No
		299-W11-3	10/11/2005	1	U	210		6.41	No
		299-W11-7	09/27/2005	1	U	560		6.41	No
		299-W11-14	10/03/2005 [d]	1	U	240		6.41	No
		299-W11-37	09/27/2005	1	U	200		6.41	No
4. 299-W11-10	T Plant	299-W11-10	08/30/2005	1	U	120		6.41	No
			09/27/2005	7.61		np		48.78	(a)
5. 216-T-25 Trench	216-T-25 Trench, 218-W-1 and 218-W-2 Burial Grounds, TX-TY Tank Farms	299-W10-5	08/30/2005	7.1		86		45.51	No
			09/27/2005	1	U	np		6.41	(a)
		299-W15-40 [e]	06/22/2005	12.1		660		77.56	No
		299-W15-43 [e]	06/23/2005	15.4		340		98.72	No
		299-W15-765 [e]	06/22/2005	56.7		1700		363.46	No

Table 3-20. Results and Evaluation of Groundwater "Hot-Spot" Soil-Vapor and Groundwater Sampling. (2 Pages)

Groundwater "Hot Spot" for Carbon Tetrachloride	Associated Potential Release Site	Well	Sample Date	Carbon Tetrachloride (CAS 56-23-5)					
				Soil-Vapor Concentration (ppmv)	Soil-Vapor Data Qualifier	Groundwater Concentration (µg/L)	Groundwater Data Qualifier	Calculated Groundwater Concentration (µg/L) [c]	Vapor-Source Impact to Groundwater?
6. 299-W15-15	218-W-4B and 218-W-4C Burial Grounds	299-W15-14	08/30/2005	1	U	1	U	6.41	Inconclusive [b]
			09/27/2005	1.74		np		11.15	(a)
		299-W15-15	09/26/2005	1	U	6.9		6.41	Possible
7. 299-W15-16	218-W-4C Burial Grounds	299-W15-16	09/29/2005	1	U	np		6.41	(a)
		299-W15-17	09/29/2005	1.03		26		6.60	No
		299-W15-30	09/29/2005	1	U	720		6.41	No
		299-W15-31A	09/22/2005	2.4		850		15.38	No
8. West of S-SX Tank Farms	216-S-25 Crib, S-SX Tank Farm	299-W18-15	09/22/2005	1.65		58		10.58	No
		299-W23-4	10/03/2005 [d]	6.67		23		42.76	Yes
		299-W23-10	09/22/2005	1	U	44		6.41	No
		299-W23-15	09/22/2005	1	U	120		6.41	No

[a] No groundwater analytical data available.
[b] Not determined because soil-vapor and groundwater values are less than detection limit.
[c] Calculated using Henry's Law equilibrium partitioning between soil vapor and groundwater (0.156 ppmv vapor ~1 µg/L groundwater according to DOE/RL-2001-01, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit RI/FS Work Plan, Includes: 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units*).
[d] Groundwater samples from wells 299-W11-14 and 299-W23-4 collected on 6/21/2006.
[e] These three wells were sampled before they became extraction wells as part of the 200-ZP-1 Groundwater Operable Unit pump-and-treat system on July 27, 2005 (DOE/RL-2005-91, *Fiscal Year 2005 Annual Summary Report for 200-UP-1 and 200-ZP-1 Pump-and-Treat Operations*).

µg/L = micrograms analyte per liter of water.
np = groundwater not present for sampling.
ppmv = parts per million volume.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-21. T Plant Passive Soil-Vapor Sampling Results.

Field-Sample Points	Sample Date		Carbon Tetrachloride (CAS 56-23-5) (ng/trap)	Q
	Installed	Retrieved		
1	05/25/05	06/01/05	25	U
2-DUP	05/25/05	06/01/05	25	U
3	05/25/05	06/01/05	25	U
30	05/25/05	06/01/05	25	U
4	05/25/05	06/01/05	25	U
5	05/25/05	06/01/05	25	U
6	05/25/05	06/01/05	25	U
7	05/25/05	06/01/05	25	U
8	05/25/05	06/01/05	25	U
9	05/25/05	06/01/05	25	U
10	05/25/05	06/01/05	25	U
11	05/25/05	06/01/05	25	U
12	05/25/05	06/01/05	25	U
13	05/25/05	06/01/05	25	U
14	05/25/05	06/01/05	25	U
15	05/25/05	06/01/05	25	U
16	05/25/05	06/01/05	25	U
17	05/25/05	06/01/05	25	U
18	05/25/05	06/01/05	25	U
19	05/25/05	06/01/05	25	U
2	05/25/05	06/01/05	25	U
20	05/25/05	06/01/05	25	U
21	05/25/05	06/01/05	25	U
22	05/25/05	06/01/05	25	U
23	05/25/05	06/01/05	25	U
24	05/25/05	06/01/05	25	U
25	05/25/05	06/01/05	25	U
26	05/25/05	06/01/05	25	U
27	05/25/05	06/01/05	25	U
28	05/25/05	06/01/05	25	U
28-DUP	05/25/05	06/01/05	25	U
29	05/25/05	06/01/05	25	U

From SGW-33829, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume.*

CAS = Chemical Abstracts Service registry number.
Q = laboratory data qualifier.
U = analyzed for but not detected. Value reported is the reporting limit.

Table 3-22. Results of Active Soil Vapor Sampling from the Enhanced Access Penetration System Demonstration Boreholes in 2003.

Well Identification Number	Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv)*	Date
C4241	20.5	0.85	09/26/2003
C4241	24	1.5	09/26/2003
C4241	27	1.75	09/26/2003
C4241	30	2.5	09/26/2003
C4241	33	3	09/26/2003
C4241	37	3.15	09/26/2003
C4241	40.5	4	09/26/2003
C4241	44	4.5	09/26/2003
C4241	47	2.75	09/26/2003
C4241	162	8.2	10/02/2003
C4242	4	0.4	10/02/2003
C4242	7	0.9	10/02/2003
C4242	12.5	1.1	10/02/2003
C4242	20	1.2	10/02/2003
C4242	23	2	10/02/2003
C4242	26.5	2.4	10/02/2003
C4242	29.5	5.4	10/02/2003
C4242	33	5.1	10/02/2003
C4242	36	5.3	10/02/2003
C4242	39	6.7	10/02/2003
C4242	42.5	4.9	10/02/2003
C4242	45	8.9	10/02/2003
C4242	49	3.4	10/02/2003
C4242	52.49	12.6	10/02/2003
C4242	53.7	5.7	10/02/2003
C4242	148	12.9	10/02/2003
C4243	137.79	12.4	10/09/2003
C4244	26	6.2	10/17/2003
C4244	37	12.6	10/17/2003

*Soil-vapor concentrations are estimated from plots in Applied Research Associates, Inc., 2004, *Enhanced Access Penetration System (EAPS) Draft Final Technical Report.*

CAS = Chemical Abstracts Service registry number.
ppmv = parts per million by volume.

Table 3-23. Results of Active Soil-Vapor Sampling During the Fiscal Year 1992-Fiscal Year 1993 Well Drilling Around the Release Sites. (4 Pages)

Sample Location	Sample Date	Sample ID	Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv/v)	Q	Chloroform (CAS 67-66-3) (ppmv/v)	Q
299-W15-216	05/19/92	B1LDK4	42	39.06		NR	
299-W15-216	05/19/92	B1LDK5	48	52.74		4.68	
299-W15-216	06/01/92	B1LDK7	127	41.85		NR	
299-W15-217	06/09/92	B1LDR0	21.7	21.5		NR	
299-W15-217	06/09/92	B1LDR1	21.7	26.16		NR	
299-W15-217	06/09/92	B1LDR2	21.7	22.83		NR	
299-W15-217	06/11/92	B1LDR3	40	344.67		NR	
299-W15-217	06/11/92	B1LDR4	40	491		NR	
299-W15-217	06/16/92	B1LDR5	52	3207		4.4	
299-W15-217	06/17/92	B1LDR6	54	2811.74		2.4	
299-W15-217	06/19/92	B1LDR7	81	6766.86		10	
299-W15-217	06/19/92	B1LDR8	81	7125.22		15.78	
299-W15-217	06/29/92	B1LDR9	103	78.8		NR	
299-W15-217	06/29/92	B1LDT0	103	75.2		NR	
299-W15-217	06/30/92	B1LDT1	116.1	156		NR	
299-W15-218	02/11/93	B1LDL0	60	45.39		NR	
299-W15-218	02/16/93	B1LDL1	92	102.85		NR	
299-W15-218	02/23/93	B1LDL2	111.8	20910		96.56	
299-W15-218	02/23/93	B1LDL3	111.8	16660		18.7	
299-W15-218	03/04/93	B1LDL4	127	29.75		NR	
299-W15-218	03/10/93	B1LDL5	139	10.2		NR	
299-W15-218	03/10/93	B1LDL6	139	7.905		NR	
299-W15-218	03/11/93	B1LDL7	161	155.04		NR	
299-W15-218	03/15/93	B1LDL8	180	778.6		NR	
299-W15-218	03/16/93	B1LDL9	191	10380		0.68	

Table 3-23. Results of Active Soil-Vapor Sampling During the Fiscal Year 1992-Fiscal Year 1993 Well Drilling Around the Release Sites. (4 Pages)

Sample Location	Sample Date	Sample ID	Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv/v)	Q	Chloroform (CAS 67-66-3) (ppmv/v)	Q
299-W15-220	06/09/93	B1LDT7	50	853.7		NR	
299-W15-220	06/15/93	B1LDT8	90	1511.6		11.09	
299-W15-220	06/24/93	B1LDT9	115	633		0.99	
299-W15-220	06/30/93	B1LDV0	142	149		0.97	
299-W15-220	06/30/93	B1LDV1	142	167.2		0.45	
299-W15-220	07/13/93	B1LDV2	160	108.36		1.305	
299-W15-220	07/15/93	B1LDV3	160	83.54		0.722	
299-W15-220	07/16/93	B1LDV4	182	49.37		1.551	
299-W15-220	07/16/93	B1LDV5	182	50.16		1.435	
299-W15-223	09/20/93	B1LDT2	120	27.673		8.06	
299-W15-223	09/21/93	B1LDT3	139.5	10.597		NR	
299-W15-223	09/21/93	B1LDV9	139.5	3.366		NR	
299-W15-223	09/21/93	B1LDW0	139.5	7.109		NR	
299-W15-223	09/21/93	B1LDW1	139.5	6.943		NR	
299-W15-223	09/21/93	B1LDW2	139.5	5.253		NR	
299-W15-223	09/22/93	B1LDT4	147	36.774		319.305	
299-W15-223	09/22/93	B1LDW3	147	0.538		NR	
299-W15-223	09/22/93	B1LDW4	147	3.312		NR	
299-W15-223	09/22/93	B1LDW5	147	17.645		NR	
299-W15-223	09/23/93	B1LDT5	156	11.138		NR	
299-W15-223	09/23/93	B1LDW6	156	4.987		NR	
299-W15-223	09/23/93	B1LDW7	156	6.562		NR	
299-W15-223	09/23/93	B1LDW8	156	6.995		NR	
299-W15-223	09/23/93	B1LDW9	156	7.972		NR	
299-W15-223	09/23/93	B1LDT6	169.5	116.654		NR	

Table 3-23. Results of Active Soil-Vapor Sampling During the Fiscal Year 1992-Fiscal Year 1993 Well Drilling Around the Release Sites. (4 Pages)

Sample Location	Sample Date	Sample ID	Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv/v)	Q	Chloroform (CAS 67-66-3) (ppmv/v)	Q
299-W15-223	09/23/93	B1LDX0	169.5	2.433		NR	
299-W15-223	09/23/93	B1LDX1	169.5	0.926		NR	
299-W15-223	09/23/93	B1LDX2	169.5	25.805		NR	
299-W15-223	09/23/93	B1LDX3	169.5	73.447		NR	
299-W18-246	03/27/92	B1LDM0	57.7	46.86		NR	
299-W18-246	04/06/92	B1LDM1	85	20.82		NR	
299-W18-246	04/10/92	B1LDM2	107	14.46		NR	
299-W18-246	04/17/92	B1LDM3	146	120.96		50.64	
299-W18-246	04/21/92	B1LDM4	152	278.7		5.7	
299-W18-246	04/30/92	B1LDM5	194	20.85		21.48	
299-W18-246	04/30/92	B1LDM6	196	14.52		14.59	
299-W18-247	03/27/92	B1LDK8	167	62.04		1.44	
299-W18-247	03/30/92	B1LDK9	179.8	49.98		17.46	
299-W18-248	05/04/92	B1LDM7	20	22.26		3.03	
299-W18-248	05/06/92	B1LDM8	40	21.66		3.24	
299-W18-248	05/06/92	B1LDM9	40	20.43		2.58	
299-W18-248	05/06/92	B1LDN0	40	23.34		2.91	
299-W18-248	05/07/92	B1LDN1	59.5	207.9		NR	
299-W18-248	05/11/92	B1LDN2	61.5	209.7		NR	
299-W18-248	05/15/92	B1LDN3	80	9.9		NR	
299-W18-248	05/15/92	B1LDN4	80	15.78		NR	
299-W18-248	05/18/92	B1LDN5	87	247.5		NR	
299-W18-248	05/18/92	B1LDN6	89	207		NR	
299-W18-248	05/20/92	B1LDK6	101	33.54		3.09	
299-W18-248	05/21/92	B1LDN7	120	277.5		NR	

Table 3-23. Results of Active Soil-Vapor Sampling During the Fiscal Year 1992-Fiscal Year 1993 Well Drilling Around the Release Sites. (4 Pages)

Sample Location	Sample Date	Sample ID	Sample Depth (ft)	Carbon Tetrachloride (CAS 56-23-5) (ppmv/v)	Q	Chloroform (CAS 67-66-3) (ppmv/v)	Q
299-W18-248	05/26/92	B1LDN8	141	1300		NR	
299-W18-249	07/07/92	B1LDN9	20	75	X	NR	
299-W18-249	07/09/92	B1LDP0	42	84.7		NR	
299-W18-249	07/13/92	B1LDP1	65	48.3		NR	
299-W18-249	07/14/92	B1LDP2	84	5.6		NR	
299-W18-252	05/07/93	B1LDP3	48.9	1.734		NR	
299-W18-252	05/13/93	B1LDP4	85.7	16.32		NR	
299-W18-252	05/18/93	B1LDP5	123	5.25		NR	
299-W18-252	05/20/93	B1LDP6	138	36.41		0.177	
299-W18-252	05/26/93	B1LDP7	160	1419.62		NR	
299-W18-252	06/01/93	B1LDP8	185.8	8.92		NR	
299-W18-252	06/04/93	B1LDP9	202.2	169.71		0.511	
299-W18-96	02/11/93	B1LDV6	86.7	8.1		NR	
299-W18-96	02/12/93	B1LDV7	101.1	8.31		NR	
299-W18-96	02/17/93	B1LDV8	121.8	98.09		NR	

CAS = Chemical Abstracts Service registry number.
ID = identification (number).
NR = no result reported.
ppmv/v = parts per million by volume
ppm = parts per million.
Q = laboratory data qualifier.
X = Data sheet says "Actual Concentration: 75 ppm carbon tetrachloride" but the value printed under the concentration column (0.747 ppm) and the indicated dilution factor (500:1) do not match the result value.

Table 3-24. Summary of Highest Carbon Tetrachloride Concentrations in Soil Samples from the Fiscal Year 1992-Fiscal Year 1993 and Fiscal Year 2001 Well Drilling Around the Release Sites.

Well	Sample Date	Highest Carbon Tetrachloride Concentration (CAS 56-23-5) (µg/kg)	Sample Depth (ft bgs)
216-Z-9 Trench Wells			
299-W15-84	06/11/2001	9	119.5
299-W15-95	05/21/2001	5	102.5
299-W15-216	05/20/1992	67	49.1
299-W15-217	06/29/1992	37,817	114
299-W15-218	02/17/1993	15,794	110
299-W15-219	05/05/1993	11,688	114.5
299-W15-220	06/15/1993	1,132	90.5
216-Z-1A Tile Field Wells			
299-W18-174	04/07/1993	6,561	127.1
299-W18-246	05/07/1992	772	146
299-W18-248	05/26/1992	1,093	135
299-W18-252	05/19/1993	519	126.5
216-Z-18 Crib Wells			
299-W18-96	02/25/1993	861	143.8
299-W18-247	03/19/1992	717	135.4
299-W18-249	07/21/1992	1,957	145

See Appendix C for additional analytical results from these wells.

bgs = below ground surface.
CAS = Chemical Abstracts Service registry number.

Table 3-25. Active Soil-Vapor Results for the 1991 Investigation Around the 216-Z-1A Tile Field/216-Z-18 Crib Area.

Point Identification Number	Sample Date	Carbon Tetrachloride (CAS 56-23-5) (ppmv)
Z12S-1	03/14/1991	3.901
Z18E-1	03/14/1991	1.902
Z18E-2	03/14/1991	2.6
Z18E-3	03/14/1991	2.7
Z18N-1	03/14/1991	3.519
Z18N-10	03/14/1991	5.883
Z18N-11	03/14/1991	6.082
Z18N-12	03/14/1991	2.68
Z18N-2	03/14/1991	2.661
Z18N-3	03/14/1991	1.716
Z18N-4	03/14/1991	3.065
Z18N-5	03/14/1991	1.679
Z18N-6	03/14/1991	1.492
Z18N-7	03/14/1991	7.46
Z18N-8	03/14/1991	14.95
Z18N-9	03/14/1991	7.319
Z18W-1	03/14/1991	4.633
Z18W-2	03/14/1991	3.973
Z18W-3	03/14/1991	6.05
Z18W-4	03/14/1991	6.529
Z18W-5	03/14/1991	5.093

CAS = Chemical Abstracts Service registry number.
ppmv = parts per million by volume.

Table 3-26. Background Values for the 200-PW-3 Operable Unit Radiological Contaminants of Potential Concern.

Radiological Contaminant of Potential Concern	Background Concentration (pCi/g)
Americium-241	N/A
Carbon-14	N/A
Cesium-137	N/A
Cobalt-60	N/A
Europium-152	N/A
Europium-154	N/A
Europium-155	N/A
Hydrogen-3 (tritium)	N/A
Iodine-129	N/A
Plutonium-238	N/A
Plutonium-239/240	N/A
Strontium-90	N/A
Technetium-99	N/A
Uranium-233/234	1.10
Uranium-235	0.109
Uranium-238	1.06

Values from DOE/RL-96-12, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Table 5-1, 90th percentile.

N/A = no reference source available.

Table 3-27. Background Values for the 200-PW-3 Operable Unit Nonradiological Contaminants of Potential Concern.

Nonradiological Contaminant of Potential Concern	Background Concentration (mg/kg)
Nonradiological Constituents – Metals	
Arsenic	6.47
Barium	132
Cadmium	--
Chromium (III)	18.5
Chromium (VI)	N/A
Lead	10.2
Mercury	0.33
Selenium	--
Silver	0.73
Nonradiological Constituents – General Inorganics, Volatile Organics, Semivolatile Organics	
Nitrate	52.0
Ammonia	9.23
Hexone	N/A
Tributyl phosphate	N/A
Normal paraffin hydrocarbon	N/A
Volatile organic compounds	N/A
Semivolatile organic compounds	N/A
Polychlorinated biphenyls (PCB)	N/A

Values from DOE/RL-92-24, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Table 6-9.a, 90th percentile.

N/A = no reference source available.
-- = not enough data above the reporting limit to provide for a distribution fit (DOE/RL-92-24).

4.0 CONCLUSIONS AND PATH FORWARD

The Plutonium/Organic-Rich Group OU will be remediated under the CERCLA remedial-action process. Compliance with regulatory requirements will be documented through completion of the CERCLA process as described in DOE/RL-98-28. Tasks to complete the CERCLA remedial action process include the completion of the FS, issuing a proposed plan to the public, and the approval of a ROD. In addition, documentation will be prepared to close out the SVE expedited response action initiated in the 200-PW-1 OU in 1992.

4.1 CONCLUSIONS

The purpose of this RI report was as follows.

- Report the results of the RI work as it is described in the Work Plan (DOE/RL-2001-01).
- Determine if sufficient data have been collected to support risk assessment and remedial decision making.
- Determine the need to proceed with an FS.

These purposes were met for all six of the representative and unique waste sites evaluated and for the dispersed carbon tetrachloride vadose-zone plume (D&D-30565). The data collected were of sufficient quantity and quality to proceed to the FS to support risk-assessment activities, evaluate remedial alternatives, and identify preferred remedial actions. Additionally, the FS will provide the baseline risk assessment that was deferred.

One of the representative waste sites, the 241-Z-361 Settling Tank, contains sludge that will require remediation under CERCLA. An engineering evaluation has been prepared, and remediation of the tank contents will follow the RI/FS process (DOE/RL-2003-52).

The significant RI findings for each representative and unique waste site and for the dispersed carbon tetrachloride vadose-zone plume are summarized below.

216-Z-9 Trench

- Approximately 58 kg (128 lb) of plutonium were removed from the 216-Z-9 Trench as part of trench floor mining activities completed from 1976 to 1978. An estimated 48 kg (106 lb) of plutonium remain in the trench.
- The highest concentrations of plutonium and americium are located at the trench floor and generally decrease with depth below the floor.
- Radioactive contamination was identified in several boreholes, using geophysical logging methods. Contamination (Am-241, Pa-233, Pu-239, Pu-241) was detected to a maximum depth of 59.4 m (195 ft) bgs. Radioactive contamination in soil samples (predominantly Am-241 and Pu-239/240) was detected to a maximum depth of 37.2 m (122 ft) bgs.

- Soil-vapor samples collected from boreholes drilled in the vicinity of the trench revealed carbon tetrachloride at concentrations up to 20,910 ppmv in 1993. This is 17 percent of the soil-vapor concentration, indicating carbon tetrachloride saturation in the vadose zone.

- Soil samples from boreholes near the 216-Z-9 Trench revealed carbon tetrachloride DNAPL in soil of up to 380,000 μg/kg in well 299-W15-46 from 19.4 to 20.1 m (63.5 to 66 ft) bgs. At adjacent HHR push location Borehole C5336 (P66), the maximum carbon tetrachloride detected in soil was 390,000 μg/kg in the same silt lens.

- An SVE system has been operated near the 216-Z-9 Trench as an expedited response action. Between March 1993 and September 2006, approximately 54,280 kg of carbon tetrachloride was removed from the 216-Z-9 well field by the SVE system.

- In general, the highest concentrations of COPCs detected in the vadose-zone soils have been in fine-grained layers (i.e., silts and the CCU).

Based on the RI data, the following refinements were made to the preliminary contaminant distribution model presented in the Work Plan.

- The maximum concentration of radioactive contaminants was deeper than expected.

  Based on the preliminary contaminant distribution model in the Work Plan, the highest radioactive contamination was expected from the base of the trench (6 m [21 ft] bgs) to several meters below and then was expected to decrease with depth. For the radionuclides detected above background levels in soil samples (Am-241, Np-237, Pu-238, Pu-239/240, Ra-226, Ra-228, Sr-90, Tc-99, Th-232, U-234, U-235), all of the highest concentrations were at a depth of 14 m (45.93 ft) bgs or deeper; i.e., deeper than initially postulated in the preliminary contaminant distribution model. The maximum concentrations of Pu-239/240 and Am-241, the primary radionuclides at the site, were near the base of the 216-Z-9 Trench, at 18 to 19 m (59.06 to 62.34 ft) bgs and at 31 to 33 m (101.71 to 108.27 ft) bgs, respectively.

- Carbon tetrachloride DNAPL was found in two soil samples from the 216-Z-9 Trench.

  These represent the first detections of DNAPL at any location in the subsurface of the 200 West Area since the beginning of the carbon tetrachloride contamination investigation in the early 1990s. The high concentrations of carbon tetrachloride detected within the silt layer are consistent with the Work Plan conceptual model (i.e., carbon tetrachloride is present in finer grained layers).

- A higher percentage of the carbon tetrachloride inventory than previously estimated likely was lost to the atmosphere through evaporation during disposal. A higher percentage of the carbon tetrachloride inventory than previously estimated is present in the unconfined aquifer.

- Based on evaluation of new geophysical logging, Am-241 previously was misidentified in spectral gamma logs as Cs-137.

216-Z-1A Tile Field

- The highest concentrations of radionuclides (Pu-239/240 and Am-241) in sediments are located immediately beneath the tile field, below the distribution pipe.
- The maximum vertical extent of radiological contamination (predominantly Am-241, Pa-233, Pu-239) in soil, as detected by borehole geophysical logging, is 37 m (121 ft).
- The maximum vertical extent of radioactive contamination detected above background levels in soil samples (Am-241, Np-237, Pu-239/240, Pa-233) from the tile field area was 46.8 m (153.5 ft) bgs.
- Soil samples from the tile field area revealed a maximum carbon tetrachloride concentration of 6,561 mg/kg in the CCU in 1993.
- An SVE system has been operated near the 216-Z-1A Tile Field. Between April 1991 (when the pilot test was conducted) and July 2006, approximately 24,604 kg of carbon tetrachloride were removed from the 216-Z-1A/Z-18/Z-12 well field by the SVE system.

During the DQO process, the existing data at the 216-Z-1A Tile Field were determined to be sufficient to support selection of remedial alternatives, so no new characterization boreholes were required for the RI. The refinements to the 216-Z-9 Trench conceptual model (above) regarding the presence of discontinuous silt layers and the previous misidentification of Am-241 as Cs-137 apply to the 216-Z-1A Tile Field conceptual model as well.

241-Z-361 Settling Tank

- The settling tank currently contains approximately 75 m^3 (82 yd^3) of sludge. The sludge is contaminated with radionuclides (primarily Pu-239), metals (cadmium, chromium, lead, mercury, silver, arsenic, barium, nickel, zinc), organics (1-butanol, acetone, benzene, methylene chloride, toluene), and polychlorinated biphenyls.
- Soils beneath the tank were scanned for radioactive contamination in 1999 during installation of piers to support the tank sampling. No radioactive contamination was detected.
- The lack of detected radioactive contamination on the piers installed beneath the depth of the tank bottom, and the apparent stability in the tank sludge level since 1975, suggest that there has been no leak of tank contents to the soil column.

During the DQO process, the existing data at the 241-Z-361 Settling Tank were determined to be sufficient to support selection of remedial alternatives, so no new characterization was required for the RI.

Dispersed Carbon Tetrachloride Vadose-Zone Plume

- The highest carbon tetrachloride concentrations in the shallow, intermediate, and deep vadose zone generally are located within about 75 to 150 m (246 to 492 ft) of the release sites.
- The carbon tetrachloride concentrations in the vadose zone around the release sites are being reduced by the SVE system and are significantly less than the initial concentrations measured in 1992-1993.
- Outside of the area around the release sites, carbon tetrachloride vapor concentrations up to about 10 to 12 ppmv were found at various locations in the vadose zone, but these concentrations are not considered to have the potential for significant current or future groundwater impacts.
- The soil-vapor and shallow-groundwater sampling at wells within the eight carbon tetrachloride groundwater "hot spot" areas indicated that the deep vadose-zone soil-vapor concentrations are not significant sources of groundwater contamination in these areas.
- Carbon tetrachloride DNAPL has been identified in two soil samples at the same sample depth, adjacent to the south side of the 216-Z-9 Trench.

The preliminary contaminant distribution model presented in the Work Plan has been revised, based on the RI data, as follows.

- No evidence was found for significant lateral migration of carbon tetrachloride (aqueous and/or nonaqueous-phase liquid) along the top of the CCU.
- No evidence was found for downward migration of carbon tetrachloride (aqueous and/or nonaqueous-phase liquid) from an undocumented source.
- Carbon tetrachloride DNAPL was found in both well 299-W15-46 and Borehole C5336 (P66) in the shallow vadose zone, adjacent to the south side of the 216-Z-9 Trench.

216-A-8 Crib

- The highest radioactive contamination (Cs-137) associated with the crib that was detected during the RI was within 8 m (25 ft) of the ground surface.
- The maximum extent of radioactive contamination (Cs-137) detected near the crib, by geophysical logging techniques, was 76.5 m (251 ft) bgs. However, the source of the contamination at this depth is not known.
- Radioactive COPCs were detected above background levels in soil samples (C-14, Cs-137, Eu-155, Pu-239/240, Tc-99, Sr-90, H-3) beneath the 216-A-8 Crib to total depth (80 m [264.5 ft] bgs).

Based on the RI data, the following refinements were made to the preliminary contaminant distribution model presented in the Work Plan:

- A separate organic-rich layer was not detected beneath the crib.

  The contaminant distribution model in the Work Plan predicted a possible organic-rich layer, with no significant radionuclide content, directly beneath the crib. Low concentrations of several organic compounds (acetone, acetonitrile, and ethyl acetate) were present in the sample intervals beneath the crib where the highest radiological contamination also was found, but a separate organic-rich layer was not present.

Impacts to Groundwater

- Two of the representative waste sites, the 216-Z-9 Trench and the 216-A-8 Crib, have discharged effluent volumes greater than their soil-column pore volume, which indicates that the volume of effluent released was sufficient to reach the unconfined aquifer during operation of these waste sites. However, based on currently available site data, including soil-moisture content measurements, these waste sites are not considered to be significant current sources of groundwater contamination.

- All available information indicates that the 241-Z-361 Settling Tank has not leaked, so this site is not considered to be a past or current source of groundwater contamination.

- The 216-Z-1A Tile Field has not been considered to be a past source of groundwater contamination, because the effluent volume discharged at this site was much less than the soil-column pore volume. However, based on the dispersed carbon tetrachloride vadose-zone plume data presented in Section 3.2.4.9, significant concentrations of carbon tetrachloride are in the vadose zone adjacent to this site, so it is possible that this site was a past source of groundwater contamination, but it is not a significant current source.

- The 216-Z-8 French Drain is unlikely to be a significant past or current source of groundwater contamination. Results indicate that plutonium and americium are sorbed onto sediments within a few meters beneath the french drain.

- The plutonium discharged at the 216-Z-10 Injection/Reverse Well is sorbed to the soils around and below the well perforations. Soil-sampling results show that the contamination is confined laterally to within the 9.1 m (30-ft)-diameter circle formed by the three vadose-zone wells around the injection/reverse well. Downward migration is expected to be limited to within a few meters of the bottom of the well, so it is unlikely that this well was a past or current source of groundwater contamination by radionuclides.

Some of the analogous waste sites may require additional characterization as part of the supplemental DQO process currently being conducted. Discussions with RL, the EPA, and Ecology on the supplemental DQO and SAP are ongoing to determine a path forward. The following sites potentially are affected:

- 216-Z-5 Crib (200-PW-6 OU): Direct push in the crib would allow site-specific evaluation of plutonium concentrations.
- 216-Z-12 Crib (200-PW-1 OU): Although existing data are sufficient for decision-making, use of HRR would further define the extent of contamination and would refine the understanding of the potential impacts to groundwater.

4.2 PATH FORWARD

4.2.1 Feasibility Study

The FS will follow EPA/540/G-89/004, *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final*, OSWER 9355.3-01, and the strategy in DOE/RL-98-28. Although some refinement is expected during the FS, Appendix D of DOE/RL-98-28 fulfills many of the requirements for the screening phase (Steps 1 through 6) of the FS process. The potential ARARs, preliminary remedial-action objectives, preliminary remediation goals, general-response actions, and the screening-level analysis of alternatives are identified in that appendix. The information is not repeated here but is incorporated by this reference into this RI report. Potential ARARs will be fully developed in the FS. The FS also will identify any applicable treatability studies that are needed.

As a result of the work completed in DOE/RL-98-28, the FS report will focus on the final phase of the FS, which consists of refining and analyzing in detail a limited number of alternatives identified in the screening phase. General-response actions considered applicable to the Plutonium/Organic-Rich Group OU are as follows:

- No action
- Institutional controls and monitored natural attenuation
- Engineered surface barriers
- Excavation and disposal with or without ex situ treatment
- In situ grouting or stabilization
- In situ vitrification
- SVE
- Electrical resistance heating.

An initial activity of the FS will be the detailed evaluation of available information for the analogous waste sites in the OU. Data will be compiled to evaluate the applicability of the representative waste sites to the analogous waste sites, based on the contaminant distribution models developed in this RI report. Any waste sites that are determined not to be analogous to the representative waste sites will be evaluated against representative waste sites from other OUs. Based on the specific characteristics, such a waste site may be reassigned to a more

appropriate OU or may be maintained in the current OU with a requirement for confirmatory sampling. Changes to the preferred alternative would be evaluated, as needed, based on confirmatory data. The waste sites that are determined to be analogous to one or more of the representative waste sites will be evaluated for appropriate remedial measures through the FS process. Additional data needs may be identified during the FS process and during the DQO to support the confirmatory sampling for these analogous waste sites.

The baseline risk assessment was deferred to the FS. To support evaluation of the CERCLA criteria in the FS, additional risk-assessment activities also will be conducted to evaluate the potential risks to inadvertent intruders. The inadvertent intruder scenario focuses on someone 150 years in the future who engages in an activity that results in contact with wastes that have been left in place. This could include a construction trench worker, a well driller, or a rural resident.

4.2.2 Ecological Evaluations

Ecological evaluations will be conducted as part of the FS.

4.2.3 Proposed Plan

The proposed plan is the document issued to the public that identifies the EPA's preferred alternative for each waste site in the 200-PW-1/3/6 OUs. The document outlines pertinent information from the RI and FS and provides a summary of the alternatives that were evaluated. When the proposed plan for the 200-PW-1/3/6 OUs is issued, the EPA will hold public meetings at which the proposed plan will be formally presented. The EPA also will open a public-comment period during which oral and written comments from the public on the proposed plan will be considered. After the public comments have been reviewed, the EPA will sign a ROD that documents the final decision for the assessment. Along with the ROD, the EPA will issue a responsive summary that provides the response to all significant comments submitted during the public-comment period.

4.3 POST-RECORD OF DECISION ACTIVITIES AND ANALOGOUS WASTE SITE APPROACH

The ROD for the 200-PW-1/3/6 OUs will cover all of the waste sites in these OUs, not just the six representative and unique waste sites and the dispersed carbon tetrachloride vadose-zone plume characterized under the RI. This analogous waste site approach is described in more detail in DOE/RL-98-28. The basic approach is that the representative waste sites contain types, concentrations, and distributions of contaminants similar to those at the other sites in the OU, because the waste sites are grouped on the basis of similar site histories and processes. The waste sites, therefore, share similar risks and a similar need for remedial action. The data collected for the representative waste sites will be considered to be analogous to the remaining sites in these OUs (Section 1.3.5).

After the ROD has been issued, a remedial-design report and remedial-action work plan will be prepared to detail the scope of the remedial action. As part of this activity, DQOs will be established and SAPs will be prepared to direct confirmatory and/or remedial design and verification sampling and analysis activities. Before remediation is started, confirmation and/or remedial-design sampling will be performed to ensure that sufficient characterization data are available to confirm that the selected remedy is appropriate for the waste sites covered by the ROD, to collect data necessary for the remedial design, and to support delisting the 200 Areas from the National Priorities List (CERCLA) site (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List"). Verification sampling will be performed after the remedial action is complete to determine if ROD requirements have been met and if the remedy was protective of human health and the environment. Additional guidance for confirmatory and verification sampling is provided in Section 6.2 of DOE/RL-98-28.

The remedial-design report/remedial-action work plan will include an integrated schedule of remediation activities for waste sites and releases covered by the RODs. The available options for remedy implementation throughout the 200 Areas will be explored during the course of the RI/FS process and may be reflected in the remedial action-work plan. Following the completion of the remediation activity, closeout activities will be performed as discussed in Section 2.4 of DOE/RL-98-28.

5.0 REFERENCES

02-RCA-0341, 2002, "Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Change Requests for the Central Plateau Project (CPP) Activities," (Letter to T. Fitzsimmons, Washington State Department of Ecology; M. C. Hughes, Bechtel Hanford, Inc.; L. J. Iani, U.S. Environmental Protection Agency; and T. E. Logan, Bechtel Hanford, Inc., from K. A. Klein), U.S. Department of Energy, Richland Operations Office, Richland, Washington, June 3; contains Modifications M-013-02-01, M-015-02-01, M-016-02-01, and M-020-02-01.

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List," Title 40, *Code of Federal Regulations*, Part 300, as amended.

Applied Research Associates, Inc., 2004, *Enhanced Access Penetration System (EAPS) Draft Final Technical Report*, Applied Research Associates, Inc., South Royalton, Vermont.

ARH-231, 1967, *Hanford Low Level Waste Management Reevaluation Study*, Atlantic Richfield Hanford Company, Richland, Washington.

ARH-2155, 1970, *Radioactive Liquid Waste Disposal Facilities—200 West Area*, Atlantic Richfield Hanford Company, Richland, Washington.

ARH-2915, 1973, *Nuclear Reactivity Evaluations of 216-Z-9 Enclosed Trench*, Atlantic Richfield Hanford Company, Richland, Washington.

ARH-CD-745, 1976, *Input and Decayed Values of Radioactive Liquid Wastes Discharged to the Ground in the 200 Areas Through 1975*, Atlantic Richfield Hanford Company, Richland, Washington.

ARH-ST-156, 1977, *Evaluation of Scintillation Probe Profiles from 200 Area Crib Monitoring Wells*, Atlantic Richfield Hanford Company, Richland, Washington.

Atomic Energy Act of 1954, 42 USC 2011, et seq.

BHI-00105, 1995, *FY 1993 Wellfield Enhancement Status Report and Data Package for the 200 West Area Carbon Tetrachloride Expedited Response Action*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-00184, 1995, *Miocene- to Pliocene-Aged Suprabasalt Sediments of the Hanford Site, South-Central Washington*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-00431, 1995, *DNAPL Investigation Report*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-00720, 2002, *Performance Evaluation Report for Soil Vapor Extraction Operations at the Carbon Tetrachloride Site, February 1992 - September 2001*, Rev. 6, Bechtel Hanford, Inc., Richland, Washington.

BHI-00882, 1996, *Airflow Modeling Report for Vapor Extraction Operations at the 200-ZP-2 Operable Unit (Carbon Tetrachloride Expedited Response Action)*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-00952-02, 1997, *200-ZP-1 Interim Remedial Measure Quarterly Report, October – December 1996*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-01105, 1997, *Rebound Study Report for the Carbon Tetrachloride Soil Vapor Extraction Site, Fiscal Year 1997*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-01436, 2000, *Proof-of-Principle Demonstration of a Passive Neutron Tool for Detection of TRU-Contaminated Soil at the 216-Z-1A Tile Field*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-01496, 2001, *Groundwater/Vadose Zone Integration Project Hanford Soil Inventory Model*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-01544, 2002, *Remedial Investigation Data Quality Objective Summary Report for the 200-PW-1 Operable Unit Dispersed Carbon Tetrachloride Vadose Zone Plume – Step I*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BHI-01606, 2002, *Borehole Summary Report for Borehole C3102 in the 216-T-26 Crib, 200-TW-1 Scavenged Waste Group Operable Unit*, Bechtel Hanford, Inc., Richland, Washington.

BHI-01631, 2001, *Carbon Tetrachloride Field Investigation Report for Drilling in the Vicinity of the PFP and the 216-Z-9 Trench*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

Bratton, W. L., K. R. Moser, W. E. Lowry, D. G. Levitt, S. Dalvit-Dunn, S. Orr, M. G. Waddell, and J. Rossabi, 2004, *Integrated Approach for Carbon Tetrachloride Source Term Location, 200 West Area Hanford Site, Washington*, Final Report, Vista Engineering Technologies, LLC, Kennewick, Washington.

C-07-01 April 2007, *Federal Facility Agreement and Consent Order Change Control Form Transfer Waste Sites From 200-PW-1 And 200-PW-3 OU To Other OU*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

CCN 65632-86-095, 1986, "Alpha Contamination in the Z-1/Z-1A Crib Complex," (Internal Letter to V. W. Hall from R. C. Routson), Rockwell International, Richland, Washington, September 23.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

CP-12134, 2002, *Borehole Summary Report for Borehole C3808 in the 216-Z-11 Ditch, 200-CW-5, U-Pond /Z-Ditches Cooling Water Operable Unit*, Fluor Hanford, Inc., Richland, Washington.

CP-13514, 2003, *200-PW-1 Operable Unit Report on Step I Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose Zone Plume*, Fluor Hanford, Inc., Richland, Washington.

CP-15371, 2003, *Remedial Investigation Data Quality Objectives Summary Report for the Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Representative Waste Sites*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

CP-15372, 2004, *Remedial Investigation Data Quality Objectives Summary Report for the 200-PW-1 Operable Unit Dispersed Carbon Tetrachloride Vadose Zone Plume – Step II*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

CP-15373, 2004, *Data Quality Objectives Summary Report for Investigation of Dense, Nonaqueous-Phase Liquid Carbon Tetrachloride in the 200 West Area*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

D&D-25461, 2005, *200-LW-1 and 200-LW-2 Operable Units - Borehole Summary for Boreholes in the 216-S-20, 216-T-28, and 216-Z-7 Cribs*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

D&D-28283, 20006, *Sampling and Analysis Instruction for Non-Intrusive Characterization of Bin 3A and Bin 3B Waste Sites in the 200-SW-2 Operable Unit*, Rev. 0 Reissue, Fluor Hanford, Inc., Richland, Washington.

D&D-28793, 2006, *Particle Tracking Analysis and Animations Depicting Movement of the Carbon Tetrachloride Plume*, Fluor Hanford, Inc., Richland, Washington.

D&D-30565, 2007 anticipated, *Data Quality Assessment Reports for the 200-PW-1 and 200-PW-3 Operable Units: 216-A-8 Crib Borehole, 216-Z-9 Trench Vertical Borehole, 216-Z-9 Trench Slant Borehole, and Dispersed Carbon Tetrachloride Vadose-Zone Plume*, Fluor Hanford, Inc., Richland, Washington.

D&D-32015, 2007, *Sampling and Analysis Instruction for Artificial Animal Burrows, in Support of the Central Plateau Ecological Risk Assessment*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

DOE-EM/GJ918-2005, 2005, *Log Data Report for 299-W15-59 (A7360)*, Stoller Hanford Office, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-EM/GJ919-2005, 2005, *Log Data Report for 299-W15-60 (A7361)*, Stoller Hanford Office, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-EM/GJ920-2005, 2005, *Log Data Report for 299-W15-61 (A7362)*, Stoller Hanford Office, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-32, 1991, *Expedited Response Action Proposal (EE/CA & EA) for 200 West Area Carbon Tetrachloride Plume*, Draft B, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-58, 1992, *Z Plant Source Aggregate Area Management Study Report*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-92-04, 1993, *PUREX Plant Source Aggregate Area Management Study Report*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-92-24, 2001, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 4, 2 vols., U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-30, 1995, *200-ZP-1 Operable Unit Treatability Test Report*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-12, 1996, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-81, 1997, *Waste Site Grouping for 200 Areas Soil Investigations*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-98-28, 1999, *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2001-01, 2004, *Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit RI/FS Work Plan, Includes: 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units*, Rev. 0, Reissue, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2001-53, 2002, *Fiscal Year 2001 Annual Summary Report for the 200-UP-1 and 200-ZP-1 Pump and Treat Operations*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2001-66, 2002, *Chemical Laboratory Waste Group Operable Units RI/FS Work Plan, Includes: 200-LW-1 and 200-LW-2 Operable Units*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2002-39, 2002, *Standardized Stratigraphic Nomenclature for Post-Ringold Formation Sediments Within the Central Pasco Basin*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2002-42, 2003, *Remedial Investigation Report for the 200-TW-1 and 200-TW-2 Operable Units (Includes the 200-PW-5 Operable Unit)*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2002-68, 2002, *Hanford's Groundwater Management Plan: Accelerated Cleanup and Protection*, Draft, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2003-48, 2003, *218-W-4C Burial Ground Sampling and Analysis Plan*, Rev. 0, U.S. Department of Energy, Richland, Operations Office, Richland, Washington.

DOE/RL-2003-52, 2003, *Tank 241-Z-361 Engineering Evaluation/Cost Analysis*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2004-78, 2004, *Work Plan for Integrated Approach for Carbon Tetrachloride Source Term Location in the 200 West Area of the Hanford Site*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-61, 2006, *Remedial Investigation Report for the 200-LW-1 (300 Area Chemical Laboratory Waste Group) and 200-LW-2 (200 Area Chemical Laboratory Waste Group) Operable Units*, Draft A, U.S. Department of Energy, Richland Operations Office, Richland Washington.

DOE/RL-2005-91, 2006, *Fiscal Year 2005 Annual Summary Report for 200-UP-1 and 200-ZP-1 Pump-and-Treat Operations*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2006-24, 2006, *Remedial Investigation Report for 200-ZP-1 Groundwater Operable Unit*, Draft A, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2006-58, 2006, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Interim Characterization Report*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2007-22, 2007, *Carbon Tetrachloride Dense Non-Aqueous Phase Liquid (DNAPL) Source Term Characterization Report Addendum*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington, as amended.

EPA/540/G-89/004, 1988, *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final*, OSWER 9355.3-01, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

EPA/ROD/R10-95/114, 1995, *Declaration of the Interim Record of Decision for the 200-ZP-1 Operable Unit*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.

FH-0002791, 2000, "Submittal of Documentation in Fulfillment of TPA Milestone M-15-37B," (letter to P. M. Knollmeyer, U.S. Department of Energy, Richland Operations Office, from G. W. Jackson and B. K. Hampton), Fluor Hanford, Inc., Richland, Washington, June 15.

FH-0602151, 2006, "Area Unit Managers' Meeting, 200 Area Groundwater and Source Operable Units," Attachment 12, "Source Operable Units and Facilities Status," Fluor Hanford, Inc., Richland, Washington, August 23.

Hanford Environmental Information System, Hanford Site database.

Hanford Well Information System, Hanford Site database.

HNF-2012, 1997, *Engineering Study of the Criticality Issues Associated with Hanford Tank 241-Z-361*, Rev. 0, Fluor Daniel Hanford, Inc., Richland, Washington.

HNF-2867, 1999, *Tank 241-Z-361 Vapor Sampling and Analysis Plan*, Rev. 0A, Fluor Daniel Hanford, Inc., Richland, Washington.

HNF-4225, 1999, *241-Z-361 Sludge Characterization Data Quality Objectives*, Rev. 0, Fluor Daniel Hanford, Inc., Richland, Washington.

HNF-4371, 1999, *241-Z-361 Sludge Characterization Sampling and Analysis Plan*, Rev. 1, Fluor Daniel Hanford, Inc., Richland, Washington.

HNF-8735, 2001, *241-Z-361 Tank Characterization Report*, Rev. 0A, Fluor Hanford, Inc., Richland, Washington.

HNF-31792, 2007, *Characterization Information for the 216-Z-9 Crib at the Plutonium Finishing Plant*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

HNF-EP-0924, 1997, *History and Stabilization of the Plutonium Finishing Plant (PFP) Complex, Hanford Site*, Fluor Daniel Hanford, Inc., Richland, Washington.

HW-9671, 1948, *Underground Waste Disposal at Hanford Works*, General Electric Company, Richland, Washington.

HW-12468, 1949, *Audit of Radioactive Waste to Ground Through the 231 Dry Well and Cribs, February 1945 through December 1948*, General Electric Company, Richland, Washington.

HW-22682, 1952, *Calculation Constants Used by Regional Survey, Part II Alpha Sample Counting Ratite Conversion Factors*, Hanford Works, Richland, Washington.

HW-23769, 1952, *Calculation Constants Used by Regional Survey*, Part 2, "Alpha Sample Counting Rate Conversion Factors," General Electric Company, Richland, Washington.

Lide, D. R. (ed.), 2006, *CRC Handbook of Chemistry and Physics*, CRC Press, Taylor & Francis, Boca Raton, Florida.

NAD83, 1991, *North American Datum of 1983*, National Geodetic Survey, Federal Geodetic Control Committee, Silver Spring, Maryland, as revised.

NAVD88, 1988, *North American Vertical Datum of 1988*, National Geodetic Survey, Federal Geodetic Control Committee, Silver Spring, Maryland.

Personal communication, 2007, *Conversion of TBP Results*, V. J. Rohay, Fluor Hanford, Inc., with R. L. Weiss, Washington Closure Hanford, Fluor Hanford, Richland, Washington, May 24.

PNL-7866, 1991, *Characteristics of the Volatile Organic Compounds – Arid Integrated Demonstration Site*, Pacific Northwest Laboratory, Richland, Washington.

PNL-8971, 1993, *Three-Dimensional Conceptual Model for the Hanford Site Unconfined Aquifer System, FY 93 Status Report*, Pacific Northwest Laboratory, Richland, Washington.

PNNL-11978, 1998, *Results of 1998 Spectral Gamma-Ray Monitoring of Boreholes at the 216-Z-1A Tile Field, 216-Z-9 Trench, and 216-Z-12 Crib*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-12028, 2000, *STOMP Subsurface Transport Over Multiple Phases, Version 2.0, Application Guide*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-12261, 2001, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-East Area and Vicinity, Hanford Site, Washington*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13858, 2002, *Revised Hydrogeology for the Suprabasalt Aquifer System, 200-West Area and Vicinity, Hanford Site, Washington*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-14895, 2004, *Three-Dimensional Modeling of DNAPL in the Subsurface of the 216-Z-9 Trench at the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15670, 2006, *Hanford Site Groundwater Monitoring for Fiscal Year 2005*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15731, 2006, *Post-Closure RCRA Groundwater Monitoring Plan for the 216-S-10 Pond and Ditch*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15776, 2006, *Borehole Data Package for Two RCRA Wells 299-W11-25B and 299-W11-46 at Single-Shell Tank Waste Management Area T, Hanford Site, Washington*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15914, 2006, *Carbon Tetrachloride Flow and Transport in the Subsurface of the 216-Z-9 Trench at the Hanford Site: Heterogeneous Model Development and Soil Vapor Extraction Modeling*, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-16103, 2006, *Borehole Geologic Data for the 216-Z Crib Facilities: A Status of Data Assembled Through the Hanford Borehole Geologic Information System (HBGIS)*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-16198, 2006, *Carbon Tetrachloride Flow and Transport in the Subsurface of the 216-Z-18 Crib and 216-Z-1A Tile Field at the Hanford Site, Multifluid Flow Simulations and Conceptual Model Update*, Rev. 0, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-16346, 2007, *Hanford Site Groundwater Monitoring for Fiscal Year 2006*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-16509, 2007, *Geostatistical Analyses of the Persistence and Inventory of Carbon Tetrachloride in the 200 West Area of the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

RHO-CD-673, 1979, *Handbook 200 Areas Waste Sites*, 3 vols., Rockwell Hanford Operations, Richland, Washington.

RHO-LD-28, 1978, *Scintillation Probe Profiles From 200 East Area Crib Monitoring Wells*, Rockwell Hanford Operations, Richland, Washington.

RHO-LD-80-75, 1980, *Effluent Controls Group Annual Report – CY1979*, Rockwell Hanford Operations, Rockwell Hanford Operations, Richland, Washington.

RHO-LD-114, 1981, *Existing Data On the 216-Z Liquid Waste Sites*, Rockwell International, Richland, Washington.

RHO-RE-EV-46P, 1984, *216-Z-8 French Drain Characterization Study*, Rockwell Hanford Operations, Richland, Washington.

RHO-ST-17, 1979, *Distribution of Plutonium and Americium Beneath the 216-Z-1A Crib: A Status Report*, Rockwell Hanford, Inc., Richland, Washington.

RHO-ST-21, 1978, *Report on Plutonium Mining Activities at 216-Z-9 Enclosed Trench*, Rockwell Hanford Operations, Richland, Washington.

RHO-ST-44, 1982, *216-Z-12 Transuranic Crib Characterization: Operational History and Distribution of Plutonium and Americium*, Rockwell Hanford Operations, Richland, Washington.

Robertson, P. K., 1990, "Soil Classification Using the Cone Penetration Test," *Canadian Geotechnical Journal*, Vol. 27, pp. 151-158.

RPP-26744, 2005, *Hanford Soil Inventory Model, Rev. 1*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington.

SW-846, 1999, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-A*, as amended, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

SGW-32683, 2007, *Results of Passive Organic-Vapor Sampling*, Fluor Hanford, Inc., Richland, Washington.

SGW-33746, 2007, *Performance Evaluation Report for Soil Vapor Extraction Operations at the 200-PW-1 Carbon Tetrachloride Site, Fiscal Year 2006*, Fluor Hanford, Inc., Richland, Washington.

SGW-33829, 2007, *200-PW-1 Operable Unit Report on Step II Sampling and Analysis of the Dispersed Carbon Tetrachloride Vadose-Zone Plume*, Fluor Hanford, Inc., Richland, Washington.

TPA-CN-146, 2005, *Change Notice for Modifying Approved Documents/Work Plans In Accordance with the Tri-Party Agreement Action Plan, Section 9.0, Documentation and Records, DOE/RL-2001-01, Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit RI/FS Work Plan: Includes the 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units*, dated December 27, U.S. Department of Energy, Richland Operations Office, and U.S. Environmental Protection Agency, Richland, Washington.

Waddell, M. G., W J. Domoracki, and J. Eyer, 2003, *Non-Invasive Determination of the Location and Distribution of Free-Phase Dense Nonaqueous Phase Liquids (DNAPL) by Seismic Reflection Techniques, Final Report*, University of South Carolina, Columbia, South Carolina.

Waste Information Data System, Hanford Site database.

WHC-EP-0287, 1989, *Waste Stream Characterization Report*, Volume 3, "Receiving Sites," Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-EP-0367, 1990, *Liquid Effluent Study Final Project Report*, Westinghouse Hanford Company, Richland, Washington.

WHC-MR-0391, 1992, *Field Trip Guide to the Hanford Site*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-DD-TI-057, 1991, *Summary of Radioactive Underground Tanks Managed by Hanford Restoration Operations*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-ES-040, 1994, *Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-TI-008, 1991, *Geologic Setting of the 200 West Area: An Update*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-TI-021, 1993, *Results of Spectral Gamma-Ray Logging of Select Boreholes for the 200 Aggregate Area Management Study*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-TI-063, 1993, *FY1992 Site Characterization Status Report and Data Package for Carbon Tetrachloride*, Westinghouse Hanford, Inc., Richland, Washington.

WHC-SD-EN-TI-202, 1993, *FY93 Site Characterization Status Report and Data Package for the Carbon Tetrachloride Site*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-TI-248, 1994, *Conceptual Model of the Carbon Tetrachloride Contamination in the 200 West Area at the Hanford Site*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-NR-ER-103, 1993, *Final Report for the Remote CCTV Survey of the Abandoned Process Effluent Drain Lines 840 and 840D in Support of the 200 West Area Carbon Tetrachloride ERA*, Rev. 0, Westinghouse Hanford, Inc., Richland, Washington.

WMP-22817, 2004, *Geologic Contacts Database for the 200 Areas of the Hanford Site*, Fluor Hanford, Inc., Richland, Washington.

WMP-26178, 2005, *Performance Evaluation Report for Soil Vapor Extraction Operations at the 200-PW-1 Carbon Tetrachloride Site, Fiscal Year 2004*, Rev. 0, Westinghouse Hanford, Inc., Richland, Washington.

WMP-26264, 2005, *Borehole Summary Report for Well 299-W15-46 (C3426) Drilled at the 216-Z-9 Trench*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

WMP-27020, 2006, *Borehole Summary Report for Characterization Borehole C4545 Drilled at the 216-A-8 Crib*, Rev. 0, Fluor Hanford, Inc., Richland, Washington.

WMP-29253, 2006, *Central Plateau Terrestrial Ecological Risk Assessment Data Quality Objectives Summary Report – Phase III*, in preparation, Fluor Hanford, Inc., Richland, Washington

WMP-30566, 2007, *Borehole Summary Report for Well 299-W15-48 (C3427) Drilled at the 216-Z-9 Trench*, Fluor Hanford, Inc., Richland, Washington.

APPENDICES A-E

ON CD

(Electronic copy only)

A FREQUENCY OF DETECTION AND DATA SUMMARY TABLES.....A-i

B DATA EVALUATION AND DATA SUMMARY TABLES.....B-i

C HISTORICAL BOREHOLE SOIL ANALYTICAL RESULTS.....C-i

D AMERICIUM AND PLUTONIUM RESULTS FROM THE 216-Z-1A TILE FIELD.....D-i

E DATA SUMMARY TABLES FOR WASTE SITES.....E-i

DISTRIBUTION

Offsite

3	Vista Engineering 8203 W. Quinault Avenue, Building C, Suite 200 Kennewick, Washington 99336	
	W. L. Bratton	
	K. R. Moser	

Onsite

30	U.S. Department of Energy, Richland Operations Office	
	A. C. Tortoso (25) (10 hard copies)	A6-38
	J. G. Morse	A6-38
	B. L. Charboneau	A6-33
	L. D. Romine	A6-33
	R. D. Hildebrand	A6-38
	DOE Public Reading Room	H2-53
1	U.S. Department of Energy Office of River Protection	
	M. E. Burandt	H6-60
7	Fluor Hanford	
	B. A. Austin	E6-44
	A. F. Shattuck	E6-44
	V. J. Rohay	E6-44
	M. E. Byrnes	E6-44
	D. S. Miller	E6-35
	C. S. Sutter	T4-32
	G. D. Cummins	E6-35
4	Pacific Northwest National Laboratory	
	G. V. Last	K6-81
	M. J. Truex	K6-96
	M. Oostrom	K9-33
	Hanford Technical Library	P8-55

2 Lockheed Enterprise Solutions and Services

Administrative Record	H6-08
Document Clearance	H6-08