

# **Borehole Summary Report for the Installation of Two Boreholes in the 200-DV-1 Operable Unit, FY202**

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

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

**CH2MHILL**  
Plateau Remediation Company

**P.O. Box 1600  
Richland, Washington 99352**

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T. Mallgren  
Freestone Environmental, Inc.

Date Published  
November 2020

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**APPROVED**  
*By Sarah Harrison at 4:03 pm, Nov 16, 2020*

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Release Approval

Date

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## Terms

bgs	below ground surface
Cascade	Cascade Environmental
CHPRC	CH2M Hill Plateau Remediation Company
ft	feet or foot
HEIS	Hanford Environmental Information System
ID	identification
in.	inch
OD	outer diameter
SAP	sampling and analysis plan
TD	total depth
OU	Operable Unit
VOC	volatile organic compound
WAC	<i>Washington Administrative Code</i>

### Metric Conversion Chart

<b>Into Metric Units</b>			<b>Out of Metric Units</b>		
<i>If you know</i>	<i>Multiply by</i>	<i>To get</i>	<i>If you know</i>	<i>Multiply by</i>	<i>To get</i>
<b>Length</b>			<b>Length</b>		
inches	25.40	millimeters	millimeters	0.0394	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles (statute)	1.609	kilometers	kilometers	0.621	miles (statute)
<b>Area</b>			<b>Area</b>		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.0929	sq. meters	sq. meters	10.764	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.591	sq. kilometers	sq. kilometers	0.386	sq. miles
acres	0.405	hectares	hectares	2.471	acres
<b>Mass (weight)</b>			<b>Mass (weight)</b>		
ounces (avoir)	28.349	grams	grams	0.0353	ounces (avoir)
pounds	0.454	kilograms	kilograms	2.205	pounds (avoir)
tons (short)	0.907	ton (metric)	ton (metric)	1.102	tons (short)
<b>Volume</b>			<b>Volume</b>		
teaspoons	5	milliliters	milliliters	0.034	ounces
tablespoons	15	milliliters	liters	2.113	pints
ounces	29.573	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.473	liters	cubic meters	35.315	cubic feet
quarts	0.946	liters	cubic meters	1.308	cubic yards
gallons	3.785	liters			
cubic feet	0.0283	cubic meters			
cubic yards	0.764	cubic meters			
<b>Radioactivity</b>			<b>Radioactivity</b>		
picocurie	37	millibecquerel	millibecquerel	0.027	picocurie

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# 1 Introduction

This report presents field-generated records and summarizes field activities performed during the drilling, core sampling, and decommissioning of two boreholes in the 200-DV-1 Operable Unit (OU) of the Hanford Site, Richland, Washington. This report focuses on the advancement of boreholes in accordance with SGW-64755, *Description of Work for the Installation Two Boreholes in the 200-DV-1 Operable Unit, FY2020*, Rev. 0 and DOE/RL-2011-104, *Characterization Sampling and Analysis Plan for the 200-DV-1 Operable Unit*: (hereafter referred to as the sampling and analysis plan [SAP]) and Tri-Party Agreement Change Notice (Ecology et al., 1989) TPA-CN-0884. The purpose of advancing the boreholes was to collect polychlorinated biphenyl (PCB) characterization information from the 216-T-19 crib for D0208 and the 216-S-13 crib for D0209.

The drilling of the two boreholes supports Ecology et al., (1989), *Hanford Federal Facility Agreement and Consent Order*, also known as the Tri-Party Agreement (TPA), and will be in compliance with substantive requirements of the *Resource Conservation and Recovery Act of 1976* (RCRA), as well as the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA).

The two 200-DV-1 OU boreholes are located in two areas on the Central Plateau at the Hanford Site. The 200-DV-1 OU boreholes are within, and associated with, the 216-S-13 crib, and 216-T-19 crib. The 216-S-13 crib and 216-T-19 crib are within, and will be referred to as the T Complex, and the S Complex, respectively. The 200-DV-1 OU was created in 2010 to support remedy selection for waste sites with deep vadose zone contamination. In general, deep vadose zone contamination poses a potential threat to the local groundwater and is not easily remediated using typical surface remedies.

The 200-DV-1 OU contaminants of potential concern are identified in Table 3 of the SAP as revised by Tri-Party Agreement (Ecology et al., (1989), the *Hanford Federal Facility Agreement and Consent Order*) change order TPA-CN-0884.

Cascade Environmental (Cascade) under the direction of CH2M Hill Plateau Remediation Company (CHPRC), conducted drilling and decommissioning activities associated with the 200-DV-1 OU boreholes on September 22, 2020. Freestone Environmental Services, Inc., provided well-site geology and well decommissioning documentation services.

## 1.1 Purpose and Scope

The purpose of this report is to compile field data and summarize observations made during drilling, core sampling, and decommissioning activities for the 200-DV-1 OU boreholes. This report includes field notes and completed field forms, borehole decommissioning information, radiological data, geologic observations, civil survey results, and records of investigation-derived waste management and disposition.

Technical requirements, applicable CHPRC procedures, and other supporting information were summarized in SGW-64755, and the SAP.

Drilling and sampling of the two boreholes support the planned characterization activities detailed in the SAP. Figure 1-1 and Figure 1-2 depict the borehole location and associated waste sites. Borehole identification, location, and drilling summary information are presented in Table 1.

Appendices A (D0208) and B (D0209) contain the Well Summary Sheet, borehole geologic log, drill cutting photographs, and Well Survey Data Reports for each respective borehole. Sample details

including Hanford Environmental Information System (HEIS) numbers, sample interval depths, dates, and percent recovery are summarized in Section 3.

**Table 1-1. Borehole Identification, Location, Waste Site Association, and Drilling Information**

Borehole ID	Associated Waste Site	Northing <sup>a</sup>	Easting <sup>a</sup>	Elevation of Brass Survey Marker <sup>b</sup>	Total Drilled Depth (ft bgs)	Field Activity Dates	
						Initiate Drilling	Conclude Field Work
		(meters) <sup>c</sup>					
D0208	216-T-19 Crib	136031.92	566849.76	202.65	6.0	Sept. 22 2020	Sept. 22 2020
D0209	216-S-13 Crib	134013.28	567157.45	204.93	15.0	Sept. 22 2020	Sept. 22 2020

a. Coordinates are in Washington State Plane South (FIPS 4602) using the *North American Datum of 1983* (NAD83).

b. Elevation values are based on NAVD88, *North American Vertical Datum of 1988*.

ID = identification.



Figure 1-1. Borehole D0208 Location in T Complex

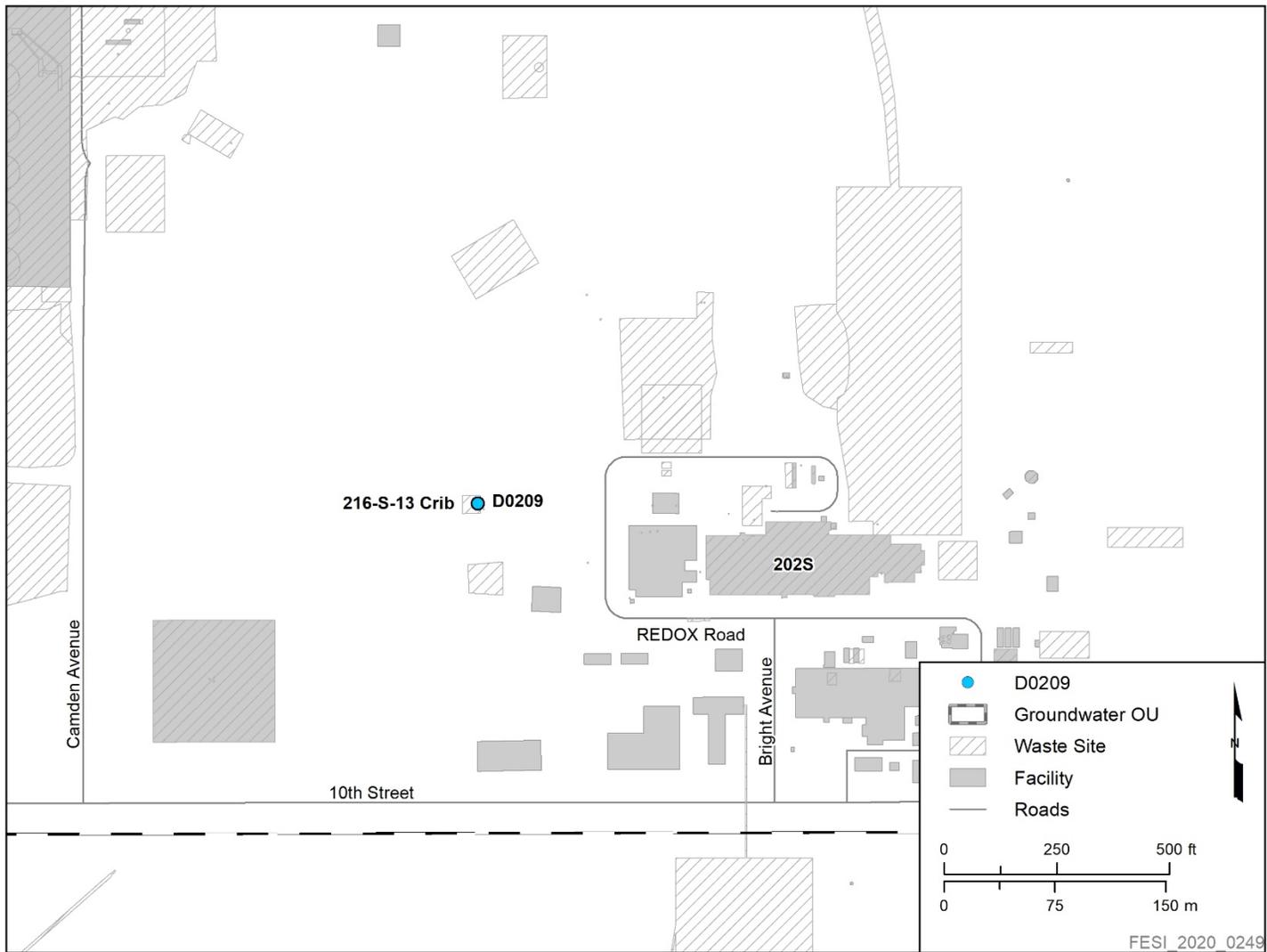


Figure 1-2. Borehole D0209 Location in S Complex

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## 2 General Description of Field Activities

This section summarizes the drilling, sampling, and decommissioning details common to all of the 200-DV-1 OU boreholes. Borehole-specific details are included in Chapter 3. The boreholes were drilled and decommissioned to Washington State standards as detailed in the Washington Administrative Code (WAC) 173-160, *Minimum Standards for Construction and Maintenance of Wells*. Radiological surveys and borehole decommissioning activities were recorded, and borehole geology was logged in accordance with applicable procedures.

### 2.1 Drilling, Sampling and Borehole Decommissioning

The 200-DV-1 OU boreholes were drilled in areas with the potential for elevated levels of radiological contamination. Sonic drilling, without placing casing in the borehole, was used to reduce the potential for worker exposure to contaminated soil cuttings and reduce investigation-derived waste.

The SAP (DOE/RL-2011-104) was written to support the use of sonic drilling to advance the boreholes without casing and collect the required soil samples. TPA-CN-0884 incorporates the resampling of 216-T-19 and 216-S-13 waste sites for PCBs and PCB Congeners. Drilling activities, performed by Cascade, began September 22, 2020, using a Terra Sonic drill rig (Figure 2-1), a 4 1/2 inch (in.) outer diameter (OD) core barrel, and 3 1/2-in. OD drill rod. The drilling and decommissioning activities, performed by Cascade, concluded September 22, 2020.

Samples for laboratory analysis were collected during drilling using LEXAN™ liners. Continuous core samples were collected by driving a decontaminated 3 in. OD LEXAN™ liner, within the core barrel sampler, through the sampling interval or until refusal. LEXAN™ liner sample depths and associated HEIS numbers are included for each individual borehole in Section 3.

Well summary sheets included in Appendix A (D0208) and B (D0209) provide each decommissioning profile. Annular seal materials include granular bentonite crumbles. High-strength concrete mix was used to seal the top two feet (ft) of annular space. Borehole-specific decommissioning details are listed in Table 3-1, and discussed in Section 3.

The surface completion consists of a cement marker at the location of the decommissioned borehole. The cement marker contains a brass survey marker that is die-stamped with the borehole identification (ID) and date of decommissioning.

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™ LEXAN is a trademark of Saudi Basic Industries Corporation, Houston, Texas.



**Figure 2-1. Terra Sonic Drill Rig.**

## **2.2 Health and Safety Screening**

A radiological control technician performed continuous radiological surveys of any soil cuttings generated during drilling, LEXAN™ liners, temporary drive casing, core barrel and drill rods, and driller's control station using standard field screening instruments. No radiological activity levels greater than background were recorded.

Air quality monitoring for volatile organic compounds (VOCs) and ammonia was performed during drilling and sampling activities by an industrial hygienist technician. The drillers' breathing zone near the wellhead, and the fresh soil generated during drilling were surveyed for VOCs using a photo-ionization detector. No field measurements of contaminant concentrations above background levels were recorded.

### 3 Borehole-Specific Summary of Field Activities

This section summarizes the borehole drilling, sampling, and decommissioning activities specific to each borehole. All measurements are reported in the original units in which they were measured in the field. Decommissioning information for each borehole is summarized in Table 3-1.

**Table 3-1. Decommissioning Information**

Borehole ID	Total Depth Drilled (ft bgs)	Surface Seal <sup>a</sup> (ft bgs)	Bentonite Backfill (ft bgs)	Natural Fill
D0208	6.0	0.0 – 2.0	2.0 – 3.0	3.0 – 6.0
D0209	15.0	0.0 – 2.0	2.0 – 15.0	N/A

a. High-strength concrete mix.

ft bgs = feet below ground surface

ID = identification

N/A = not applicable

#### 3.1 Borehole D0208

Borehole D0208, located at 216-T-19 Crib, was drilled from ground surface to a total depth (TD) of 6.0 ft bgs on September 22, 2020. One continuous core sample was successfully collected using a 4 1/2-in. OD core barrel with 3-in. OD LEXAN™ liners.

Borehole decommissioning was performed on September 22 2020. The borehole was filled from depth to surface with 3.0 ft of natural fill, 1.0 ft of bentonite chips, and 2.0 ft of high-strength concrete. All drilling rods and the 4 1/2-in. OD core barrel were removed during decommissioning activities.

All sample information is presented in Table 3-2.

**Table 3-2. D0208 Sediment Collection Summary**

Date	Sample Depth (ft bgs)	Recovery %	HEIS number
9/22/2020	1.0 – 6.0	100	B3W265, B3W266

ft bgs = feet below ground surface

HEIS = Hanford Environmental Information System.

#### 3.2 Borehole D0209

Borehole D0209, located at 216-S-13 Crib, was drilled from ground surface to a TD of 15.0 ft bgs on September 22, 2020. Seven continuous core samples were collected using a 4 1/2-in. OD core barrel with 3-in. OD LEXAN™ liners.

Borehole decommissioning was performed on September 22, 2020. The borehole was filled from depth to surface with 13.0 ft of bentonite chips and 2.0 ft of high-strength concrete. All drilling rods and the 4 1/2-in. OD core barrel were removed during decommissioning activities.

All sample information is presented in Table 3-3.

**Table 3-3. D0209 Sediment Collection Summary**

<b>Date</b>	<b>Sample Depth (ft bgs)</b>	<b>Recovery %</b>	<b>HEIS number</b>
9/22/2020	0.0 – 2.0	80	B3W267, B3W268
9/22/2020	2.0 – 4.0	80	B3W269, B3W270
9/22/2020	4.0 – 6.0	80	B3W271, B3W272
9/22/2020	6.0 – 8.0	75	B3W273, B3W274
9/22/2020	8.0 – 10.0	75	B3W275, B3W276
9/22/2020	10.0 – 12.0	75	B3W277, B3W278
9/22/2020	13.0 – 15.0	75	B3W279, B3W280

ft bgs = feet below ground surface  
 HEIS = Hanford Environmental Information System.

## 4 Geologic Observations

This section summarizes the general geology in the area of the 200-DV-1 OU boreholes and present the stratigraphy encountered during the drilling of each borehole. No sieve analyses were performed on the samples. Due to the sampling method, limited visual observations of sediments were available. The stratigraphic unit included in this document is based on soil cuttings examination in the field, when possible, and drilling observations (e.g. drill rate).

### 4.1 Geology of the T Complex

The stratigraphic unit encountered during drilling in the T Complex consisted of sandy gravel of the Hanford formation and/or surficial deposits.

The following discussion focuses on the geologic conditions encountered at D0208. The borehole log for D0208 is presented in Appendix A.

#### 4.1.1 Borehole Geology for D0208

Sediments extracted from D0208 are comprised of the Hanford formation and/or surficial deposits. From ground surface to 6.0 ft bgs sediment consisted of sandy gravel of the Hanford formation. The sandy gravel consists of approximately 55% gravel, 40% sand, and 5% silt. The gravel fraction contains clasts between fine pebbles and very coarse pebbles (4 to 64 mm in diameter) that are sub-angular to sub-round. The sand grain size varies between very fine to very coarse. The sandy gravel extends to a TD of 6.0 ft bgs.

### 4.2 Geology of the S Complex

The stratigraphic unit encountered during drilling in the S Complex consisted of silty sand and gravelly sand of the Hanford formation and/or surficial deposits.

The following discussion focuses on the geologic conditions encountered at D0209. The borehole log for D0209 is presented in Appendix B.

#### 4.2.1 Borehole Geology for D0209

Sediments extracted from D0209 are comprised of the Hanford formation and/or surficial deposits. From ground surface to 5.0 ft bgs sediment consisted of silty sand of the Hanford formation and/or surficial deposits. The silty sand consists of approximately 70% sand and 30% silt with trace gravel. The gravel fraction contains clasts between very fine pebbles and fine pebbles (2 to 8 mm in diameter) that are sub-angular to sub-round. The sand grain size varies between very fine and very coarse. The silty sand extends to 10.0 ft bgs. At 10.0 ft bgs, gravelly sand is present and consists of approximately 20% gravel, 70% sand, and 10% silt. The gravel fraction contains clasts between very fine pebbles to small cobbles (2 to 126 mm in diameter) that are sub-angular to sub-round. The sand grain size varies from very fine to very coarse. The gravelly sand extends to a TD of 15.0 ft bgs.

## 5 Waste Management

Waste from individual boreholes was managed according to DOE/RL-2012-20, *Waste Control Plan for the 200-DV-1 Operable Unit* and Tri-Party Agreement Change Notice TPA-CN-0896. Tri-Party Agreement Change Notice TPA-CN-0896 incorporates boreholes D0208 and D0209 to collect discrete soil samples from the 216-T-19 crib and 216-S-13 crib, respectively. Waste generated during drilling activities included soil cuttings, decontamination water, personal protective equipment, and miscellaneous solid waste.

All vadose zone soil cuttings were released into tip dumpsters, and placed in designated waste roll-off boxes. Miscellaneous solid waste associated with soil cuttings, including nitrile gloves, plastic bags used to collect soil cuttings, and other waste associated with sampling activities, were contained in clear plastic bags and placed in the designated roll-off box. All waste was managed as investigation-derived waste and surveyed by the industrial hygienist technician and radiological control technician in accordance with the site-specific Health and Safety Plan, and transferred for disposal to the Environmental Restoration Disposal Facility.

Decontamination fluids generated during borehole drilling and sample screening was managed as purgewater in accordance with purgewater guidance provided in DOE/RL-2009-80, *Investigation Derived Waste Purgewater Management Work Plan*, and DOE/RL-2011-41, *Hanford Site Strategy for the Management of Investigation Derived Waste*.

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## 6 Civil Survey

Vertical and horizontal surveys were performed following borehole decommissioning. Vertical survey data were recorded using NAVD88, *North American Vertical Datum of 1988* and the horizontal coordinates were recorded using the Washington State Plane (South Zone) NAD83, *North American Datum of 1983*, with the 1991 adjustment for horizontal coordinates. Surveyed coordinates and elevation for all borehole locations are presented in Table 1-1 and Well Survey Data Reports are included in Appendices A (D0208) and B (D0209).

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## **7 Borehole Acceptance**

Borehole acceptance is the final step in the decommissioning process and represents confirmation of meeting requirements of the work scope. Borehole acceptance also serves as the contractual completion of the finished product.

Representatives from CHPRC and Cascade participated in the acceptance inspection for the two 200-DV-1 OU boreholes on September 28, 2020. Final acceptance was documented by completion of a checklist and signatures from representatives of the drilling contractor and CHPRC. A Quality Assurance Work Site Assessment will be prepared to document acceptance of the work.

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## 8 References

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- TPA-CN-0884, 2020, *Tri-Party Agreement Change Notice Form TPA-CN-0884, DOE/RL-2011-104, Characterization Sampling and Analysis Plan for the 200-DV-1 Operable Unit*. Available at: <https://pdw.hanford.gov/document/AR-03696>.
- TPA-CN-0896, 2020, *Tri-Party Agreement Change Notice Form TPA-CN-0896, DOE/RL-2012-20, Waste Control Plan for the 200-DV-1 Operable Unit*. Available at: <https://pdw.hanford.gov/document/AR-04053>.
- WAC 173-160, “Minimum Standards for Construction and Maintenance of Wells,” *Washington Administrative Code*, as amended, Washington State Department of Ecology, Olympia, Washington.

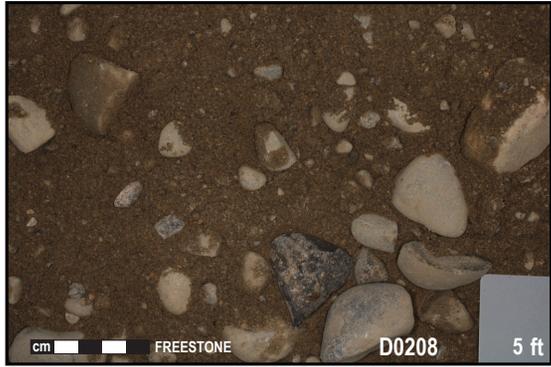
**Appendix A**  
**Well Documentation for D0208**

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Borehole Log .....	A-2
Drill Cutting Photographs .....	A-3
Well Survey Data Report.....	A-4

WELL SUMMARY SHEET			Page 1 of 1	
Well ID : D0208		Well Name: N/A		Start Date: 9-22-2020
Project: Installation of 2 Boreholes in 200-DV-1 OU		Location: 216-T-19		Finish Date: 9-22-2020
CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram	Graphic Log	Lithologic Description (ft bgs)	
Sakrete Concrete Mix: → 0.0 - 2.0 ft bgs Medium Bentonite Chips: → 2.0 - 3.0 ft bgs Natural Fill: → 3.0 - 6.0 ft bgs		0 10 20 30 40 50 60		0.0 - 6.0 Sandy Gravel (sG)  Total Depth: 6.0 ft bgs
Depths are in ft below ground surface. Borehole drilled with 4 1/2-in O.D. core barrel from 0.0 - 6.0 ft bgs No temporary casing was used.				
<b>Reported By:</b> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center;">                         Beth Morter  <i>Print Name</i> </div> <div style="text-align: center;">                         Geologist  <i>Title</i> </div> <div style="text-align: center;">   <i>Signature</i> </div> <div style="text-align: center;">                         9-29-2020  <i>Date</i> </div> </div>				
<b>Reviewed By:</b> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center;">                         Jennifer Richard  <i>Print Name</i> </div> <div style="text-align: center;">                         Manager  <i>Title</i> </div> <div style="text-align: center;">   <i>Signature</i> </div> <div style="text-align: center;">                         10/8/20  <i>Date</i> </div> </div>				
<b>For Office Use Only</b>				
OR Doc Type:		WMU Code(s):		



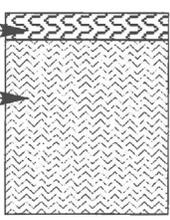


<b>WELL SURVEY DATA REPORT</b>					
<b>Project:</b>			<b>Prepared By:</b> Neil P. Fastabend		
			<b>Company:</b> CHPRC		
<b>Date Requested:</b> 09/28/20			<b>Requestor:</b> Jennifer L. Richart (CHPRC)		
<b>Date of Survey:</b> 10/06/20			<b>Surveyor / Company:</b> Neil P. Fastabend (CHPRC)		
<b>Description of Work:</b> Obtained final survey coordinates and elevation of Brass Cap Marker for decommissioned Borehole D0208 located at the 216-T-19 Crib south of TX-Farm in 200W Area.			<b>Horizontal Datum:</b> NAD83 (91)		
			<b>Vertical Datum:</b> NAVD88		
			<b>Units:</b> Meters		
			<b>Hanford Area Designation:</b> 200W		
<b>Coordinate System:</b> Washington State Plane Coordinates (South Zone)					
<b>Horizontal Control Monuments:</b> Washington State Reference Network					
<b>Vertical Control Monuments:</b> Washington State Reference Network					
Well ID	Well Name	Easting	Northing	Elevation	
D0208	D0208	566849.76	136031.92	202.65	Brass Survey Marker
<b>Notes:</b>					
Equipment Used: Trimble R8 RTK GPS					
<b>Surveyor Statement:</b>					

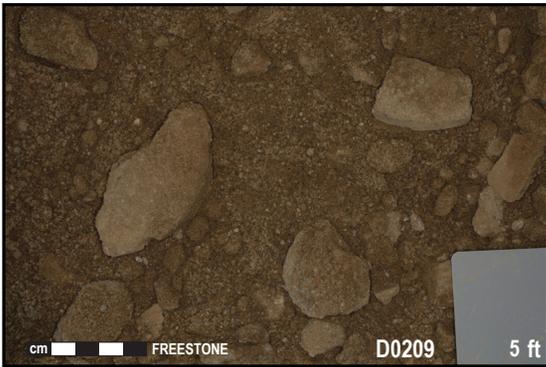
**Appendix B**  
**Well Documentation for D0209**

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Well Survey Data Report ..... B-4

WELL SUMMARY SHEET			Page 1 of 1	
Well ID : D0209		Well Name: N/A		Start Date: 9-22-2020
Project: Installation of 2 Boreholes in 200-DV-1 OU		Location: 216-S-13		Finish Date: 9-22-2020
CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description (ft bgs)
Sakrete Concrete Mix: 0.0 - 2.0 ft bgs Medium Bentonite Chips: 2.0- 15.0 ft bgs		0 10 20 30 40 50 60		0.0 - 5.0 Silty Sand (mS) 5.0 - 15.0 Gravelly Sand (gS) Total Depth: 15.0 ft bgs
Depths are in ft below ground surface. Borehole drilled with 4 1/2-in O.D. core barrel from 0.0 - 15.0 ft bgs No temporary casing was used.				
Reported By: <u>Beth Morter</u> Geologist <u><i>Beth Morter</i></u> <u>9-29-2020</u> <small>Print Name Title Signature Date</small>				
Reviewed By: <u>Jennifer Richard</u> Manager <u><i>J. Richard</i></u> <u>10/8/20</u> <small>Print Name Title Signature Date</small>				
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OR Doc Type:		WMU Code(s):		

BOREHOLE LOG				Page <u>1</u> of <u>1</u>
Well ID: <u>D0209</u>		Well Name: <u>N/A</u>		Date: <u>9-22-20</u>
Project: <u>Installation of Two Boreholes in 200-DV-1 OU</u>			Location: <u>216-S-13</u>	
			Reference Measure Point: <u>Ground Surface</u>	
Depth (ft)	Sample	Graphic Log	Sample Description: Sediment Classification, Grain Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Particle Size, Reaction to HCl, Other	Comments: Depth of Casing, Drilling Method, Sampling Method, Sampler Size, Water Level, Other
0		●	0-5': silty Sand (mS) g=trace s=70% m=30% Gravel: trace v. fine - fine peb. Sand: v. fine - v. coarse, 70% v. fine - fine, 30% med - v. coarse, mod sort, 40% fel 60% maf, sub-ang, moist. Strong rxn HCl, 2.5Y 9/4 olive brown, silt/sand clumps that break easily.	Drilling with sonic using 4 1/2" / 3 1/2" core barrel, to a total depth of 15.0 ft. No temporary casing used and borehole immediately decommissioned. Grab samples collected every 5ft or change in lithology.
5	G	○	5-15': gravelly Sand (gS) g=20% s=70% m=10% Gravel: v. fine peb - v. coarse peb w/trace sml cob, avg 10mm max 70mm, mod sort, 40% fel 60% maf, sub-ang - sub-rd. Sand: v. fine - v. coarse, 70% v. fine - fine, 30% med - v. coarse, mod sort, 40% fel 60% maf, sub-ang, moist. Mod. rxn HCl, 2.5Y 3/3 dark olive brown.	
10	G	○		
15	G	○	@15': gravel: ↑ max 80mm	Total depth: 15.0 ft has (9-22-20)
<div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 30%; text-align: center;"> <p>NOT USED BM 9-22-20</p> </div> <div style="width: 30%; text-align: center;"> <p>NOT USED BM 9-22-20</p> </div> <div style="width: 30%; text-align: center;"> <p>NOT USED BM 9-22-20</p> </div> </div>				
<b>Reported By:</b> <u>Beth Mörter</u> <span style="margin-left: 100px;"><u>Geologist</u></span> <span style="margin-left: 100px;"><u>Beth Mörter</u></span> <span style="margin-left: 50px;"><u>9-22-20</u></span> <small>Print Name Title Signature Date</small>				
<b>Reviewed By:</b> <u>SARAH SPRINGER (Affiliate)</u> <span style="float: right;"><small>Digitally signed by SARAH SPRINGER (Affiliate) Date: 2020.10.13 20:27:21 -07'00'</small></span> <small>Print Name Title Signature Date</small>				
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SGW-65640, REV. 0

<b>WELL SURVEY DATA REPORT</b>					
<b>Project:</b>			<b>Prepared By:</b> Neil P. Fastabend		
			<b>Company:</b> CHPRC		
<b>Date Requested:</b> 09/28/20			<b>Requestor:</b> Jennifer L. Richart (CHPRC)		
<b>Date of Survey:</b> 10/06/20			<b>Surveyor / Company:</b> Neil P. Fastabend (CHPRC)		
<b>Description of Work:</b> Obtained final survey coordinates and elevation of Brass Cap Marker for decommissioned Borehole D0209 located at the 216-S-13 Crib west of REDOX in 200W Area.			<b>Horizontal Datum:</b> NAD83 (91)		
			<b>Vertical Datum:</b> NAVD88		
			<b>Units:</b> Meters		
			<b>Hanford Area Designation:</b> 200W		
<b>Coordinate System:</b> Washington State Plane Coordinates (South Zone)					
<b>Horizontal Control Monuments:</b> Washington State Reference Network					
<b>Vertical Control Monuments:</b> Washington State Reference Network					
Well ID	Well Name	Easting	Northing	Elevation	
D0209	D0209	567157.45	134013.28	204.93	Brass Survey Marker
<b>Notes:</b>  Equipment Used: Trimble R8 RTK GPS					
<b>Surveyor Statement:</b>          					