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SGW-61439
Revision 0

200-BP-5 Spill Summary

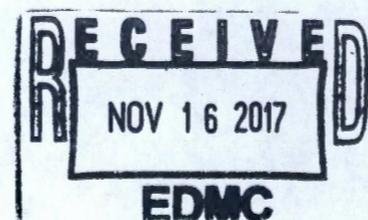
Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

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



P.O. Box 1600
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited



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APPROVED

By Erin C. Meegan at 1:10 pm, Nov 14, 2017

Release Approval

Date

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Terms

CHPRC	CH2M HILL Plateau Remediation Company
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
P&T	Pump & Treat
SGRP	Soil & Groundwater Remediation Project

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1 Summary of Events at the 200-BP-5 Cross-Site Transfer Pipeline Release

This report is a summary of the events that occurred following a release of water from the 200-BP-5 cross-site transfer line in the 200 East Area to the 200 West Pump and Treat (P&T). Details are given about the discovery, notification, excavation, sampling, and closure of the location as a spill.

1.1 Site Discovery

On May 17, 2017, CH2M HILL Plateau Remediation Company (CHPRC) discovered a leak in a cross-site transfer pipeline (transfer pipeline) located west of the BX/BY Tank Farms and south of the 216-B-41 Trench. The leak was identified by a patch of green plants in an area that had started to brown due to lack of water, typical of late spring (Figures 1 and 2). Based on a worst-case scenario, the leak (commonly called a release) was estimated by the Soil & Groundwater Remediation Project (SGRP) Operations/Engineering and the Environmental Compliance Officer to be no more than 1 L/min for a total of 84 days. Based on information that was gathered and evaluated, it has been estimated that the release in the transfer pipeline may have been from the release discovery date back to the day that the line was fully thawed during winter. The 200 West P&T Operations records identified that the transfer pipeline was thawed and back online beginning February 22, 2017. The total volume over the course of the release has been estimated to be ~32,000 gal. CHPRC shut down the transfer pipeline when the release was detected, and began work to replace the leaking section of the transfer pipeline with a spare section of piping at the site. The transfer pipeline was placed back into service on May 19, 2017.



Figure 1. Initial Release Identification



Figure 2. Initial Release Location Close-up

During the initial response on the day the release was detected, a Radiological Control Technician was requested to survey the area where the suspected release has occurred for potential spread of contamination from the transfer pipeline. The technician did not find any readings above background in the area, which is notably high due to the proximity to the BX/BY Tank Farms to the east. The suspected leaking transfer pipelines were moved a few feet away from the area where the leak occurred to prepare for replacing the transfer pipeline, and the release area was demarcated with a rope barrier and signs. Notification of the spill was made to the CHPRC's Single Point of Contact, a CHPRC Response Checklist for Environmental Events form (Appendix B) was filled out with the necessary information, and the CHPRC Single Point of Contact made the notification to U.S. Department of Energy (DOE). DOE made the notification to the Lead Regulatory Agency for the 200 West P&T, the Environmental Protection Agency. The information was also shared with the Washington State Department of Ecology (Ecology).

1.2 Surface Soil and Vegetation Sampling

On May 22, 2017, DOE and Ecology personnel visited the release location. Ecology requested split surface soil samples, as well as vegetation samples to be collected in the release area. CHPRC had already initiated paperwork to collect samples, and added the additional request to co-sample with Ecology. The initial round of sampling was performed on June 14, 2017 in coordination with Ecology. One soil sample was collected and two vegetation samples were collected. One vegetation sample was collected from the same area of the soil sample, which was as close as possible to the original release location. The second sample was collected as a "background" sample to compare data. This sample collected immediately south of the access road, north and west of the release location (Figure 3). Table 1 provides the sampling results. Table 2 provides a crosswalk of the sample locations, sample Hanford Environmental Information System (HEIS) numbers, and sample descriptions.

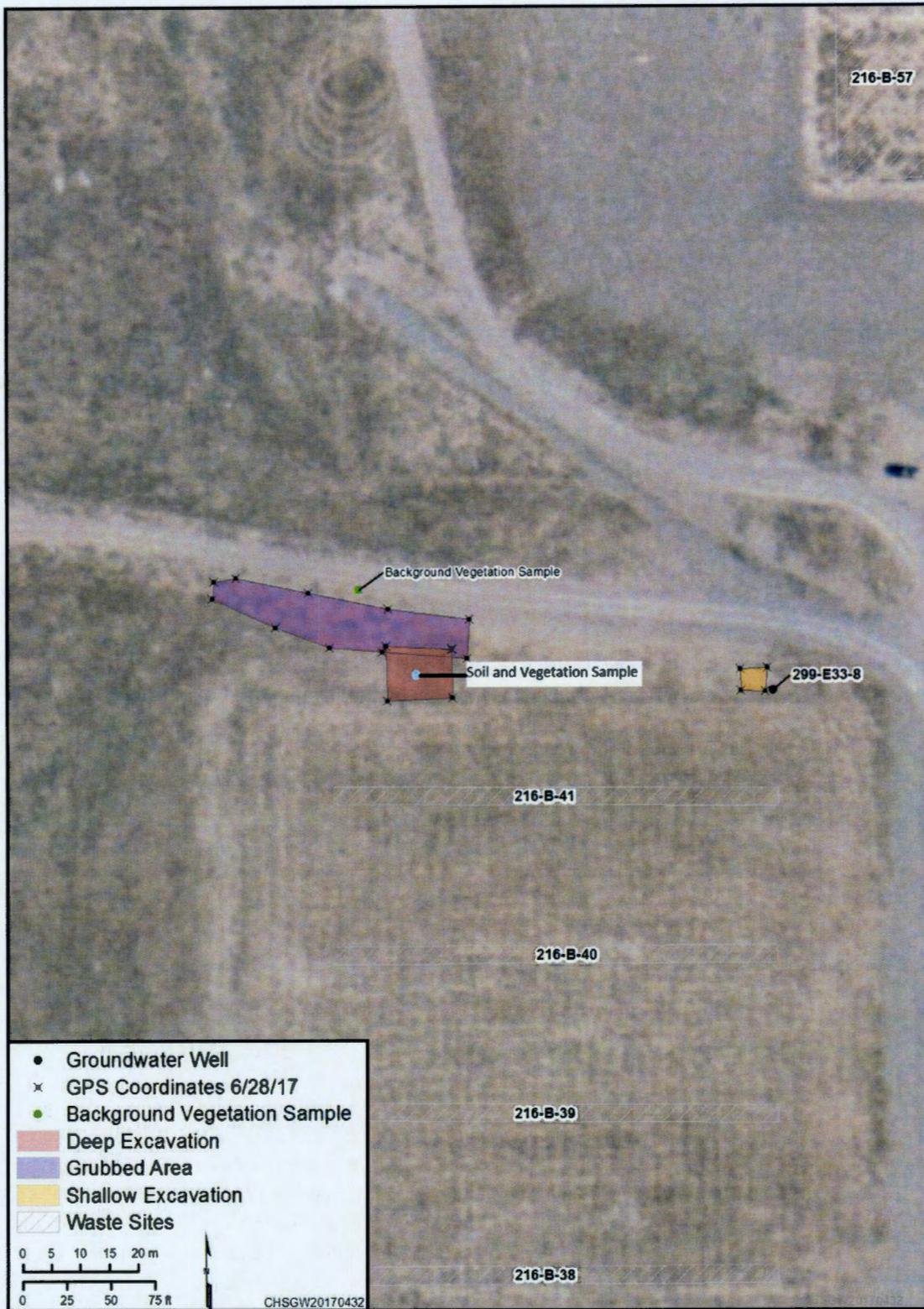


Figure 3. Release Location Map

Table 1. Contaminant of Concern Sample Results

Chemical Constituent	Average Concentration in BP-5 Transfer Line	Estimated Mass (Ci) in Release	Hanford Site Background Levels	CHPRC Soil Results		CHPRC Vegetation Results		Ecology Results		
				0 ft bgs	8 ft bgs	Discharge	Background	Vegetation		Soil (0 ft bgs)
								Discharge	Background	
Uranium	1,537 µg/L	0.186 kg (1.25×10 ⁻⁴ Ci)	3.21 mg/kg ^a	16.9 mg/kg	0.45 mg/kg	15.8 mg/kg	39.6 mg/kg	N/A	N/A	N/A
U-233/234	N/A	N/A	1.1 pCi/g ^a	5.16 pCi/g	0.176 pCi/g	N/A	N/A	4.98 pCi/g (U-234 only)	0.038 pCi/g (U-234 only)	6.0 pCi/g (U-234 only)
U-235	N/A	N/A	0.11 pCi/g ^a	0.368 pCi/g	0.00153 pCi/g	N/A	N/A	0.245 pCi/g	0.0 pCi/g	0.33 pCi/g
U-238	N/A	N/A	1.1 pCi/g ^a	5.75 pCi/g	0.271 pCi/g	N/A	N/A	5.2 pCi/g	0.042 pCi/g	6.1 pCi/g
Technetium-99	8,738 pCi/L	6.24×10 ⁻⁵ kg (1.06×10 ⁻³ Ci)	N/A	4.19 pCi/g	0.381 pCi/g	125 pCi/g	4.26E-01 pCi/g	310 pCi/g	7.5 pCi/g	5.24 pCi/g
Nitrate as N	81.4 mg/L	9.86 kg	52 mg/kg ^b	43 mg/kg	7.6 mg/kg	1.64 mg/kg	3.07 mg/kg	190 mg/kg	ND	53 mg/kg
Total Chromium	6.4 µg/L	7.75×10 ⁻⁴ kg	18.5 mg/kg ^b (total)	9.1 mg/kg	9.9 mg/kg	N/A	N/A	N/A	N/A	N/A
Iodine-129	14.3 pCi/L	1.73×10 ⁻⁶ Ci	N/A	0.0146 pCi/g	0.0176 pCi/g	6.38E-05 pCi/g	6.56E-04 pCi/g	2.7 pCi/g	5.1 pCi/g	2.9 pCi/g ^c
Cyanide (Total)	261.3 µg/L	0.032 kg	N/A	0.19 mg/kg	0.12 mg/kg	1.2 mg/kg	2.07 mg/kg	2.06 mg/kg	0.29 mg/kg	0.52 mg/kg
Tritium	7,561 pCi/L	9.16×10 ⁻⁴ Ci	N/A	9.10E-03 pCi/g	0.813 ^d pCi/g	Below MDL	8.89 pCi/g	0.57 pCi/g	0.16 pCi/g	0.242 pCi/g

References:

DOE/RL-92-24, Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes, Volume 1.

DOE/RL-96-12, Hanford Site Background: Part 2, Soil Background for Radionuclides.

a. Values from DOE/RL-96-12.

b. Values from DOE/RL-92-24.

c. Value was flagged as "U" (below the Minimum Detectable Concentration [MDC]) in the sample results. The MDC for I-129 is 5.6 pCi/g.

d. Value was flagged as "U" (below the Minimum Detectable Limit [MDL]). The MDL is given at 2.19 pCi/g.

N/A = not available ND = not detected

Table 2. Sample Delivery Group and Sample Number Crosswalk

Sample Delivery Group	HEIS Sample	Sample Location	Notes
W078721	B3BB62	8 ft bgs, spill area	Rad soil, isotopic-uranium only
W07872	B3BB62	8 ft bgs, spill area	Rad soil, no uranium
W07868	B3BB51 and B3BB55	B3BB51 (spill area) / B3BB55 (background)	Rad vegetation, no uranium
W07867	B3BB47	8 ft bgs, spill area	Rad soil, no uranium
SL2575_Add	B3BB64	8 ft bgs, spill area	Rad soil, isotopic-uranium only
SL2560_Add	B3BB48	Surface soil, spill area	Rad soil, isotopic-uranium only
GEL425646_mini	B3BB52 and B3BB56	B3BB52 (spill area) / B3BB56 (background)	Chem vegetation with uranium
SL2575	B3BB64	8 ft bgs, spill area	Chem and metals soil
SL2560	B3BB48	Surface soil, spill area	Chem and metals, soil
WC2111	B3BB58	Surface soil, spill area	Anions

1.3 Site Excavation and Subsurface Sampling

Ecology was notified that CHPRC intended to excavate the released material and collect an additional sample but were not involved in the sampling at 8 ft bgs. CHPRC had previously decided to excavate the footprint of the transfer pipeline release location, as marked by the original green vegetation. Although no longer green due to the lack of water, the area was already demarcated by the boundary and was identifiable from the taller weeds and grasses that had sprung up. Excavation began and ended on June 22, 2017. Figures 4 through 7 show the site following excavation of the spill area. One sample was collected from the base of the excavation, at ~8 ft bgs. This location was selected as close to directly vertical from the original transfer pipeline release location as possible. Only one sample location was selected due to the steep vertical walls of the excavation. The proximity of the transfer pipeline release location to the 216-B trenches and the access road prevented the excavation from having adequate sloping to safely allow workers to enter, so the sample material was collected from the excavator bucket. Tables 1 and 2 provide additional sample information.

During excavation, the team was instructed to look for any areas of wetted soils, although none were identified. The excavation area was ~20 by 20 ft and 8 ft deep. Both areas have barriers in place, as well as warnings of an open excavation and a 6 ft buffer around the main excavation.

1.4 Sample Results and Site Conclusion

Sample data were requested on a 15-day turnaround time, in expectation that the data could be analyzed and discussed before the end of the 90-day Waste Information Data System clock. Initial chemical data began arriving on July 5, 2017; however, the main chemical results for both the surface and excavation samples were not received until July 12, 2017. The SGRP Environmental Compliance Officer was informed by Sample Management and Reporting on July 17, 2017 that the radiological samples were still

expected to be an additional 2 to 3 weeks delayed. Final data packages were received from the lab on September 19, 2017. Data packages were sent to Ecology as they arrived.

On September 19, 2017, the same day the final sample data were received, notification was made to DOE, Ecology, and U.S. Environmental Protection Agency (EPA) that CHPRC would be moving forward with backfilling the excavation (Appendix A). The backfill work was initiated and completed on September 21, 2017 and DOE, Ecology, and EPA were notified that backfill was complete. Figures 8 through 10 show the site following backfill and rough grading.

Future work expected at the spill location will replace the sections of high-density polyethylene pipe that as suspected to have failed, causing the material release. To ensure that the spill release is recorded properly, an entry into the closest Waste Information Data System site record, most likely the 216-B-42 Trench, will be made that describes the event and references the information presented in this summary.



Figure 4. During Excavation



Figure 5. Final Excavation Depth Looking Southwest



Figure 6. Final Excavation Depth Looking Southeast



Figure 7. Final Excavation Depth Looking West



Figure 8. Excavation Following Backfill, Looking West



Figure 9. Excavation Following Backfill, Looking East



Figure 10. Excavation Following Backfill, Looking South

2 References

- DOE/RL-92-24, 2001, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 4, Volume 1 of 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0096062>.
- 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. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D1808987>.

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Appendix A

BP-5 Transfer Line Spill Information

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From: [Sexton, Sean M](#)
To: "[NMEN461@ECY.WA.GOV](#)"; [Goswami, Dibakar](#); "[KIWE461@ECY.WA.GOV](#)"; "[Laija, Emerald](#)"; [Yokel, Jerel W](#)
Cc: [Vannah, Benjamin W](#); [Cline, Michael](#); [Hanson, James P](#); [Fox, Randal E](#); [Williams, Joel F Jr](#)
Subject: RE: BP-5 Transfer Line Spill Information
Date: Thursday, September 21, 2017 3:52:45 PM

Good afternoon,

I just wanted to follow up with everyone on this distribution list that backfill for the BP-5 cross-site transfer line was completed today.

Please feel free to contact me if you have any questions.

Thanks!

Sean

From: Sexton, Sean M

Sent: Tuesday, September 19, 2017 4:10 PM

To: 'NMEN461@ECY.WA.GOV'; [Goswami, Dibakar](#); '[KIWE461@ECY.WA.GOV](#)'; [Laija, Emerald](#); [Yokel, Jerel W](#)

Cc: [Vannah, Benjamin W](#); [Cline, Michael](#); [Hanson, James P](#); [Fox, Randal E](#); [Williams, Joel F Jr](#)

Subject: BP-5 Transfer Line Spill Information

Good afternoon,

We have received all of the data packages from the soil and vegetation samples that were collected in response to the release of water from the BP-5 cross-site transfer line earlier this year. We have provided all of the data to Jerry Yokel of Ecology and have received Ecology's sample data as well. I have attached to this email a summary table with the sample data received from all of the samples. With all of the data received from the labs, S&GRP will be moving forward with backfilling of the excavation area in the next couple of weeks as we can get resources lined up. We informed Nina Menard earlier this afternoon by phone of our intent to backfill the excavated area.

Please feel free to contact me if you have any additional questions.

Thanks!

Sean

Sean M. Sexton

Environmental Compliance Officer

Soil & Groundwater Remediation Project

Phone: (509) 373-2285

Cell: (360) 820-4407

Sean_m_sexton@ri.gov

CH2M Hill Plateau Remediation Company

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Appendix B

CHPRC Response Checklist for Environmental Events

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CHPRC RESPONSE CHECKLIST FOR ENVIRONMENTAL EVENTS

Report Number: 170518-1

Name of person reporting incident: <u>Sean Sexton</u>	Phone No. <u>373-2285</u>
Date and time of spill or discovery: <u>05/17/17 ~1200 hours</u>	Spilled material: <input type="checkbox"/> Product <input checked="" type="checkbox"/> Waste
Date and time spill reported to CHPRC SPOC: <u>05/17/17 ~1220 hours</u>	Physical Form: <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas
Location of spill (i.e., area and facility): <u>North of 216-B-41 Trench</u>	Quantity Spilled: <u>~30,000 gallons</u>
Contractor/Subcontractor: _____	Released to: <input checked="" type="checkbox"/> Ground <input type="checkbox"/> Air
Chemical and/or Radiological Identity of released spilled material (include MSDS if appropriate): <u>Extraction well water from 200-BP-5 and 200-DV-1 Perched water.</u>	<input type="checkbox"/> Water <input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt
	<input type="checkbox"/> Secondary Containment <input type="checkbox"/> Inside Building
	<input type="checkbox"/> Other:

Cause of event: Equipment Personnel Transportation Design Other:
 Explain:
 A leak of ~1L/min was detected in the cross-site transfer line west of the BX/BY Tank Farms. The wells that feed into this line are 299-E33-360, 299-E33-268, 299-E33-350 & 299-E33-351.

Any injuries requiring medical attention? Yes No

Mitigation and immediate cleanup actions:
 All wells that feed to this line were shut off and pumping was halted to 200W P&T. Gate valves located ~1/2 mile west of the leak were closed to prevent the entirety of the line from draining back to the leak. Radcon surveyed area, no contamination found.

Method(s) used to verify adequacy of cleanup: Visual Field Instrumentation Sample & Analysis Plan

Additional actions (follow-up activities, waste disposal, remediation, etc.):
 Sampling to be performed of soil at area of release. Will collect a sample after remediating spill to verify clean.

Note: CHPRC EP must be consulted to determine reportability for transportation-related spills/releases

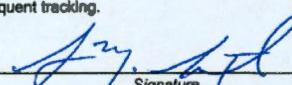
Project: S&GRP

Responsible Manager: Bill Barrett

- Has the incident been reported to ONC (see PRC-PRO-EM-060)? Yes No
- Should the RCRA Contingency Plan be implemented? (DOE/RL-94-02) Yes No
- Sampling required? if YES attach SAP Yes No
- Reportable under the following (check as appropriate):

<input type="checkbox"/> Dangerous Waste Regulations (WAC 173-303-145)	<input type="checkbox"/> DOE Order 231.1A
<input type="checkbox"/> Non-CERCLA (Petroleum Product) (40 CFR 110 & 112)	<input type="checkbox"/> CERCLA RQ (Hazardous Substance) (40 CFR 302)
<input type="checkbox"/> Air Permits/Regulations (WAC 246-247)	<input type="checkbox"/> EPCRA RQ (40 CFR 355)
<input type="checkbox"/> 216 Permit	<input type="checkbox"/> Toxic Substances Control Act (PCBs)
<input type="checkbox"/> DOT regulation	<input type="checkbox"/> CWA (40 CFR 122)
- Notification to an outside agency? (required or informational) Yes No Informational

Record copy shall be forwarded to the Environmental Event SPOC for subsequent tracking.

Sean M. Sexton  5/22/17
 Print Name Signature Date

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