SGW-59648
Revision 0

Post-Closure Corrective Action Groundwater Monitoring Report for the 183-H Solar Evaporation Basins: July - December 2015

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

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Executive Summary

This is the second 2015 semiannual report on post-closure corrective action groundwater monitoring for the 183-H Solar Evaporation Basins. It fulfills the requirement of WAC 173-303-645(11)(g)[1] to report twice each year on the effectiveness of the corrective action program.

Groundwater monitoring objectives of the *Resource Conservation and Recovery Act of 1976* (RCRA);[2] the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA);[3] and the *Atomic Energy Act of 1954* (AEA)[4] often differ slightly, and the contaminants monitored are not always the same. For RCRA-regulated units, monitoring focuses on nonradioactive dangerous waste constituents. While radionuclides (source, special nuclear, and byproduct materials) may be monitored in some RCRA unit wells to support objectives of monitoring under AEA and/or CERCLA, these radionuclides are not subject to RCRA regulation. Consistent with the deferral of RCRA Sections 1004 and 1006 to the AEA, the source, special nuclear, and byproduct material components of radioactive mixed waste are regulated by the U.S. Department of Energy (DOE), acting in accordance with its AEA authority. Therefore, while this report is used to satisfy corrective action reporting requirements, the inclusion of information on radionuclides in such context is for informational purposes only and may not be used to create conditions or other restrictions set forth in any *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste*[5] (hereafter referred to as the Hanford Facility RCRA Permit, or the Permit). Uranium and other radionuclides included in this report serve only as "indicator parameters," which help to identify the presence of regulated dangerous wastes.

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[1] WAC 173-303-645, "Dangerous Waste Regulations," "Releases from Regulated Units," *Washington Administrative Code*, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-645.

[2] *Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq. Available at: http://www.epa.gov/epawaste/inforesources/online/index.htm.

[3] *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at: http://epw.senate.gov/cercla.pdf.

[4] *Atomic Energy Act of 1954*, as amended, 42 USC 2011, Pub. L. 83-703, 68 Stat. 919. Available at: http://epw.senate.gov/atomic54.pdf.

[5] *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste*, Revision 8c. Available at: http://www.ecy.wa.gov/programs/nwp/permitting/hdwp/rev/8c/.

This report covers the period from July through December 2015. Environmental data used to generate this report are available from the DOE Environmental Dashboard Application (EDA) (https://ehs.hanford.gov/eda/) or the Pacific Northwest National Laboratory Online Environmental Information Exchange (PHOENIX) application (http://phoenix.pnnl.gov). Ongoing verification, technical review, and evaluation efforts may result in differences between the data used for this publication and those available via the EDA or PHOENIX, after publication of this report.

Within the RCRA monitoring well network for the 183-H Solar Evaporation Basins, chromium and hexavalent chromium concentrations in the unconfined aquifer remained below Hanford Facility RCRA Permit concentration limits. Hexavalent chromium in deep well 199-H4-12C, screened in the semiconfined aquifer, resulted from historical releases and typically fluctuates at the Permit concentration limits but above CERCLA remedial action objectives. The addition of extraction well 199-H4-12C to the HX pump and treat system allows corrective action through the CERCLA interim action to remain effective. Significant fluctuations in hexavalent chromium and chromium concentrations in 199-H4-12C have recently been observed and these fluctuations are being investigated to ensure that the data are accurate. The flow rate at this extraction well has been decreased to reduce stress on the semiconfined aquifer and prevent the formation of a connection between the two aquifers.

Concentrations of other contaminants (nitrate and the waste indicator parameters fluoride, technetium-99, and uranium) were below monitoring levels set as concentration limits in the Hanford Facility RCRA Permit.

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Terms

AEA	*Atomic Energy Act of 1954*
AWQC	aquatic water quality criteria
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
DOE	U.S. Department of Energy
DWS	drinking water standard
EDA	Environmental Dashboard Application
gpm	gallons per minute
OU	operable unit
P&T	pump and treat
PHOENIX	Pacific Northwest National Laboratory Hanford Online Environmental Information Exchange
RCRA	*Resource Conservation and Recovery Act of 1976*
RUM	Ringold Formation upper mud
WAC	Washington Administrative Code

1 Introduction

This is the second semiannual report for 2015 regarding post-closure corrective action groundwater monitoring describing the effectiveness of corrective action at the 183-H Solar Evaporation Basins (waste site 116-H-6). This report fulfills the requirement of WAC 173-303-645(11)(g), "Dangerous Waste Regulations," "Releases from Regulated Units," to report twice each year on the effectiveness of the corrective action program. This report covers the period from July through December 2015.

Groundwater monitoring objectives of the *Resource Conservation and Recovery Act of 1976* (RCRA); the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA); and the *Atomic Energy Act of 1954* (AEA) often differ slightly, and the contaminants monitored are not always the same. For RCRA-regulated units, monitoring focuses on nonradioactive dangerous waste constituents. While radionuclides (source, special nuclear, and byproduct materials) may be monitored in some RCRA unit wells to support objectives of monitoring under AEA and/or CERCLA, these radionuclides are not subject to RCRA regulation. Consistent with the deferral of RCRA Sections 1004 and 1006 to the AEA, the source, special nuclear, and byproduct material components of radioactive mixed waste are regulated by the U.S. Department of Energy (DOE), acting in accordance with its AEA authority. Therefore, while this report is used to satisfy corrective action reporting requirements, the inclusion of information on radionuclides in such context is for informational purposes only and may not be used to create conditions or other restrictions set forth in any *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste* (hereafter referred to as the Hanford Facility RCRA Permit, or the Permit). Uranium and other radionuclides in this report serve only as "indicator parameters," which help to identify the presence of regulated dangerous wastes.

Environmental data used to generate this report are available from the DOE Environmental Dashboard Application (EDA) (https://ehs.hanford.gov/eda/) or the Pacific Northwest National Laboratory Online Environmental Information Exchange (PHOENIX) application (http://phoenix.pnnl.gov/). Ongoing data verification, technical review, and evaluation efforts by DOE contractors could result in differences between the data used for this publication and those available via the EDA or PHOENIX, after publication of this report.

2 183-H Solar Evaporation Basins

Located in the 100-H Area of the Hanford Site, the former 183-H Solar Evaporation Basins consisted of four concrete basins used for waste treatment and disposal from 1973 to 1985. The waste discharged to the basins originated in the 300 Area Fuel Fabrication Facility and included solutions of neutralized chromic, hydrofluoric, nitric, and sulfuric acids. The waste solutions contained various metallic and radioactive constituents (e.g., chromium, technetium-99, and uranium). Between 1985 and 1996, the remaining waste was removed, the facility was demolished, and underlying contaminated soil was removed and replaced with clean fill.

The site is a post-closure unit in the Hanford Facility RCRA Permit. Groundwater is monitored in accordance with WAC 173-303-645(11) and Part VI, Chapter 2 of the Permit.

The regulations in WAC 173-303-645(11) require implementation of a corrective action program to reduce contaminant concentrations in groundwater. The post-closure plan (DOE/RL-97-48, *183-H Solar Evaporation Basins Postclosure Plan*) was incorporated into Part VI of the Hanford Facility RCRA Permit in February 1998. The plan deferred further groundwater corrective action at the 183-H Solar

Evaporation Basins to CERCLA interim action for the 100-HR-3 Groundwater Operable Unit (OU). The post-closure plan (DOE/RL-97-48) also requires that monitoring be conducted as described in the Hanford Facility RCRA Permit groundwater monitoring plan for this facility (PNNL-11573, *Groundwater Monitoring Plan for the 183-H Solar Evaporation Basins*).

The groundwater monitoring objectives of RCRA, CERCLA, and AEA often differ slightly, and the contaminants monitored are not always the same. For RCRA-regulated units, monitoring focuses on nonradioactive dangerous waste constituents. While radionuclides (source, special nuclear, and byproduct materials) may be monitored in some RCRA unit wells to support the objectives of monitoring under AEA and/or CERCLA, they are not subject to RCRA regulation. Consistent with the deferral of RCRA Sections 1004 and 1006 to the AEA, the source, special nuclear, and byproduct material components of radioactive mixed waste are regulated by DOE, acting in accordance with its AEA authority. Therefore, while this report is used to satisfy corrective action reporting requirements, the inclusion of information on radionuclides in such context is for information only and may not be used to create conditions or other restrictions set forth in any Hanford Facility RCRA Permit. Uranium and other radionuclides in this report serve only as "indicator parameters," which help to identify the presence of regulated dangerous wastes.

2.1 100-HR-3 Operable Unit CERCLA Interim Remedial Action

The interim remedial action for groundwater contamination in the 100-HR-3 groundwater OU is implemented under the authority of a CERCLA Record of Decision (EPA et al., 1996, *Declaration of the Record of Decision for the USDOE Hanford 100 Area 100-HR-3 and 100-KR-4 Operable Units, Hanford Site, Benton County, Washington*). The objective of the interim remedial action is to reduce the amount of chromium entering the Columbia River, where it is a potential hazard to the ecosystem. To achieve this objective, a pump and treat (P&T) system has been implemented to extract groundwater, treat the groundwater to remove hexavalent chromium, and then reinject it into the aquifer. Figure 1 shows the locations of the active extraction and injection wells near the 183-H Solar Evaporation Basins waste site. Details of the P&T system are provided in DOE/RL-96-84, *Remedial Design and Remedial Action Work Plan for the 100-HR-3 and 100-KR-4 Groundwater Operable Units' Interim Action*, and discussed in DOE/RL-2015-05, *Calendar Year 2014 Annual Summary Report for the 100-HR-3 and 100-KR-4 Pump and Treat Operations, and 100-NR-2 Groundwater Remediation*.

The HX P&T system currently has the capacity to handle 3,407 L/min (900 gallons per minute [gpm]) and replaced the aging 1,136 L/min (300 gpm) 100-HR-3 P&T system. Together with the DX P&T system (which has a 2,650 L/min [700 gpm] capacity), the 100-HR-3 OU interim action has the expanded capacity to hydraulically contain and remediate hexavalent chromium-contaminated groundwater throughout the OU. Both the DX and HX systems were upgraded from their original design capacity to increase system throughput. The HX P&T system includes extraction from well 199-H4-12C, which is completed in the first water-bearing unit of the Ringold Formation upper mud (RUM) unit, and is located downgradient of the 183-H Solar Evaporation Basins.

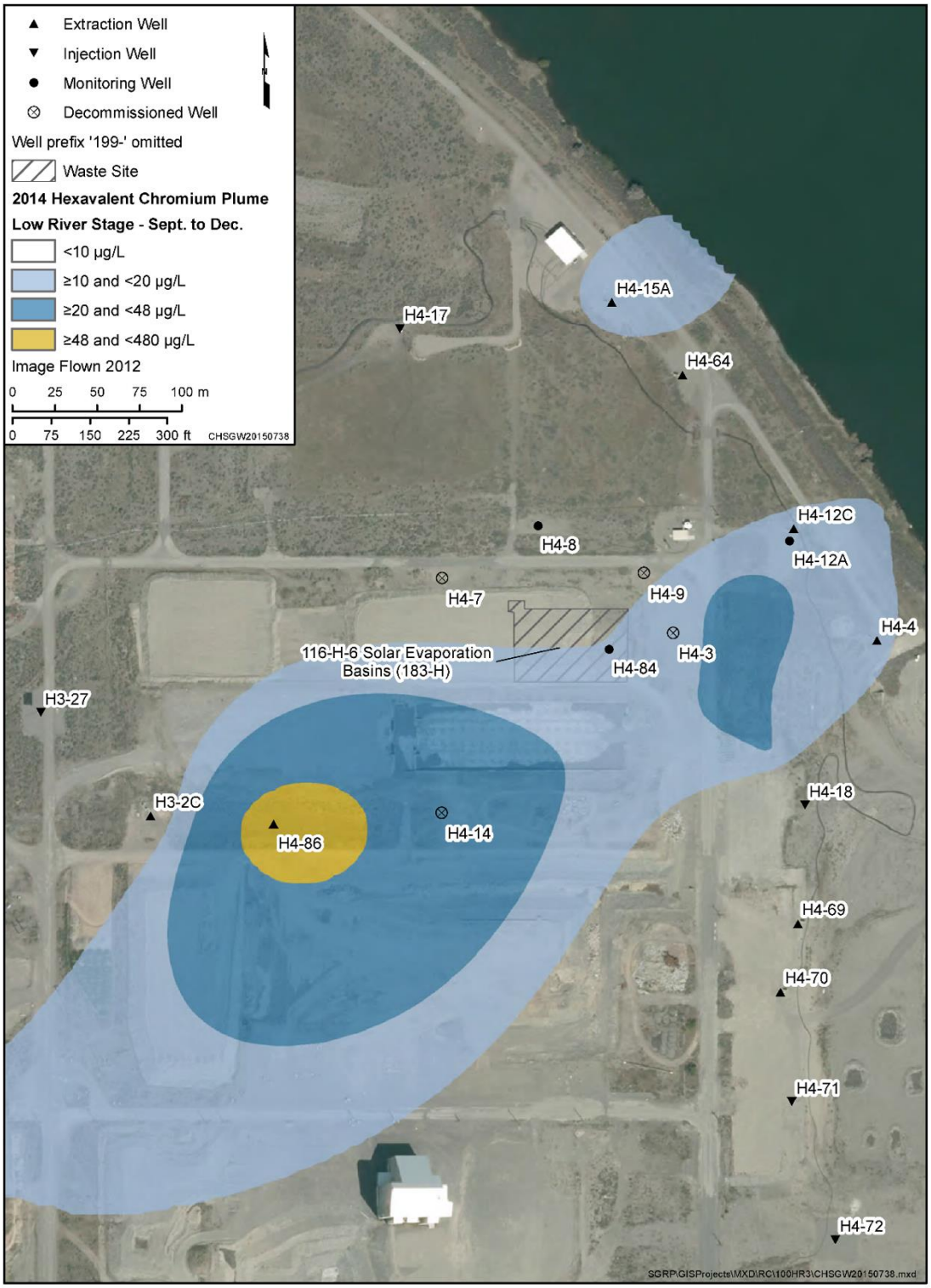

Figure 1. Monitoring Well Locations for 183-H (116-H-6) Basins

2.2 183-H Solar Evaporation Basins RCRA Groundwater Monitoring Program

During implementation of the CERCLA interim remedial action, RCRA corrective action monitoring will continue to evaluate analytical results relative to the Hanford Federal Facility RCRA Permit concentration limits (Table 1). Additionally, fluoride results are evaluated relative to established trends and the drinking water standard (DWS) for fluoride[6] (Hanford Facility RCRA Permit, Part VI, Chapter 2).

Table 1. WAC 173-303-645(5) Concentration Limits for 183-H Solar Evaporation Basins

Dangerous Waste Constituents	Concentration Limit
Chromium (total; filtered sample)	122 µg/L (local background when the compliance monitoring plan was written in 1996; upgradient sources)
Nitrate[a]	45 mg/L (nitrate as NO_3^-)
Other 183-H Waste Indicators[b]	**Concentration Limit**
Technetium-99	900 pCi/L (DWS)
Uranium (total; chemical analysis)[c]	20 µg/L (proposed DWS when the monitoring plan was written in 1996)

Reference: WAC 173-303-645, "Dangerous Waste Regulations," "Releases from Regulated Units"

a. Nitrate is not considered a dangerous waste constituent under RCRA (WAC 173-303-9905, "Dangerous Waste Regulations," "Dangerous Waste Constituents List").

b. Technetium-99 and uranium are monitored as waste indicators.

c. Current DWS for uranium is 30 µg/L.

DWS = drinking water standard

RCRA = *Resource Conservation and Recovery Act of 1976*

The RCRA groundwater monitoring network includes wells 199-H4-8, 199-H4-12A, 199-H4-12C, and 199-H4-84 (Figure 1). The wells are sampled annually for RCRA, as specified in the conditions of the Hanford Facility RCRA Permit, Part VI, Post-Closure Unit 2, as modified by Ecology (Ecology, 2013, *Ecology approves changes for Hanford's dangerous waste permit*). Additional sampling is also conducted under CERCLA, and the results are presented in this report.

Well 199-H4-12C is an extraction well completed in the first water-bearing unit of the RUM, which is a semiconfined aquifer. The other wells monitored under RCRA are completed in the overlying unconfined aquifer.

Following an aquifer test and rebound study (SGW-47776, *Aquifer Testing and Rebound Study in Support of the 100-H Deep Chromium Investigation*), well 199-H4-12C was added to the 100-HR-3 OU interim action extraction network as a replacement for well 199-H4-12A to remediate the lower aquifer. Well 199-H4-8 has been part of the RCRA monitoring network since 2006; it replaced 199-H4-7, which was converted to an injection well and connected to the P&T system. Well 199-H4-84 has been in the RCRA monitoring network since May 2013, when it replaced 199-H4-3. Wells 199-H4-3 and 199-H4-7 were decommissioned for waste site remediation.

[6] The Hanford Facility RCRA Permit gives the value 1,400 µg/L as the U.S. Environmental Protection Agency maximum contaminant level for fluoride. The current maximum contaminant level is 4,000 µg/L.

2.3 183-H Solar Evaporation Basins Contaminant Trends

This section discusses the concentrations of total chromium, fluoride, nitrate, technetium-99, and uranium in groundwater near the 183-H Solar Evaporation Basins. Hexavalent chromium results are also included. During the reporting period, wells 199-H4-8, 199-H4-84, 199-H4-12A, and 199-H4-12C were scheduled for RCRA sampling. Wells 199-H-12C and 199-H4-84 were sampled in November 2015, and wells 199-H-8 and 199-H4-12A were sampled in December. In addition, wells 199-H4-84, 199-H4-12A, and 199-H4-12C are sampled more frequently as part of the CERCLA monitoring program. Those results are included in this report. Chromium concentrations have remained below the 122 µg/L Hanford Facility RCRA Permit concentration limit in the RCRA wells completed within the unconfined aquifer since 2003.

2.3.1 Chromium and Hexavalent Chromium

The maximum concentration of total chromium in the unconfined aquifer reported during this monitoring period was 23.3 µg/L (unfiltered sample) in well 199-H4-84. The corresponding filtered sample result was 19.7 µg/L (Table 2). The corresponding hexavalent chromium results were 12.0 and 13.0 µg/L (unfiltered and filtered, respectively), indicating that total chromium and hexavalent chromium track closely with each other as expected. Concentrations in the unconfined aquifer remain below the Permit concentration limit of 122 µg/L but are fluctuating near the 20 µg/L threshold at onshore, near-river monitoring locations designed to achieve the aquatic water quality criteria (AWQC) of 10 µg/L.

In the unconfined aquifer, concentrations of total and hexavalent chromium are usually the highest in well 199-H4-84. Concentrations in this well tend to increase when the water table is high. However, contaminant levels in well 199-H4-84 fluctuated little and remained low during 2015 because water levels remained lower than average.

Extraction well 199-H4-12C is completed in the first water-bearing unit of the RUM unit. Hexavalent chromium concentrations in this well resulted from historical releases at other sources, not releases from the 183-H Solar Evaporation Basins (as discussed in SGW-52135, *First Semiannual Report for 2011 Post-Closure Corrective Action Groundwater Monitoring at the 183-H Solar Evaporation Basins and 300 Area Process Trenches*). Concentrations of hexavalent chromium measured in this well declined from about 300 µg/L in the early 1990s to about 90 µg/L in 2009. In late 2009, pumping was initiated at well 199-H4-12C during an aquifer test, and concentrations increased to 140 µg/L in December 2010, which exceeded the CERCLA threshold of 20 µg/L at onshore, near-river monitoring locations designed to achieve the AWQC of 10 µg/L and the Hanford Facility RCRA Permit concentration of 122 µg/L. The high concentrations identified in well 199-H4-12C were addressed by connecting the well to the P&T system.

Hexavalent chromium concentrations in well 199-H4-12C fluctuated during 2015 (Figure 2). When atypically low concentrations were first detected in early 2015, the concentrations were suspected to be erroneous. However, in November 2015, total chromium and hexavalent chromium concentrations were both low (less than 5 µg/L), which indicated that the change was not due to analytical error.

Table 2. Groundwater Data for 183-H Basins, July through December 2015

Well	Date	Dangerous Waste			Waste Indicator		
		Hexavalent Chromium (µg/L)	Total Chromium (µg/L)	Nitrate[a] (mg/L NO_3^-)	Fluoride (µg/L)	Technetium-99 (pCi/L)	Uranium (µg/L)
Permit Concentration Limit[b]		***122***	***122***	***45***	***1,400***	***900***	***20***
199-H4-8	12/1/2015	2.10 B	6.00	17.70 D	170.00 D	4.37 U	1.10
	12/1/2015	4.80	4.00	—	—	—	1.30
199-H4-12A	8/10/2015	3.80 B	4.74 B	—	—	—	2.02
	8/10/2015	3.70 B	4.43 B	—	—	—	1.95
	12/3/2015	3.60 B	4.08 B	0.841 B	126.00 B	0.861 U	1.23
	12/3/2015	3.10 B	3.68 B	—	—	—	1.19
199-H4-12C	7/6/2015	**125.00**	—	—	—	—	—
	8/3/2015	31.00 F	—	—	—	—	—
	8/4/2015	120.00	—	—	—	—	—
	8/12/2015	**130.00** H	**126.00**	—	—	—	1.2
	8/12/2015	**130.00** H	**127.00**	—	—	—	1.2
	9/8/2015	**129.00**	—	—	—	—	—
	10/5/2015	**137.00**	—	—	—	—	—
	11/2/2015	**125.00**	—	—	—	—	—
	11/11/2015	1.90 B, F, H	3.70 B	17.70 D	200.00 D	-0.124 U	0.78 B, F
	11/11/2015	2.20 B, F, H	3.60 B	—	—	—	0.78 B, F
	12/1/2015	**126.00**	—	—	—	—	—

Table 2. Groundwater Data for 183-H Basins, July through December 2015

Well	Date	Dangerous Waste			Waste Indicator		
		Hexavalent Chromium (µg/L)	Total Chromium (µg/L)	Nitrate[a] (mg/L NO_3^-)	Fluoride (µg/L)	Technetium-99 (pCi/L)	Uranium (µg/L)
199-H4-84	11/19/2015	12.00	23.30	26.60 D	160.00 D	11.50	10.20
	11/19/2015	13.00	19.70	—	—	—	10.30

Notes:

Shading indicates filtered samples; other results are from unfiltered samples.

Italics indicates *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste* (Hanford Facility RCRA Permit) concentration limits.

Bold indicates an exceedance of the Hanford Facility RCRA Permit concentration limit.

All samples from well 199-H4-12C are collected from within the HX pump and treat facility at a located post-system filter.

a. Nitrate is not considered a dangerous waste constituent under RCRA (WAC 173-303-9905, "Dangerous Waste Regulations," "Dangerous Waste Constituents List").

b. Concentration limits are defined in the Hanford Facility RCRA Permit (Part VI, Post-Closure Unit 2, Chapter 3, Section 3.1.1.2, , "WAC 173-303-645[5] Concentration Limits"). It should be noted that the current drinking water standard for uranium is 30 µg/L.

B = analyte detected at less than contract-required detection limit but greater than method detection limit

D = analyte reported at a secondary dilution factor

F = result suspect and under review

H = laboratory holding time exceeded before the sample was analyzed

U = undetected

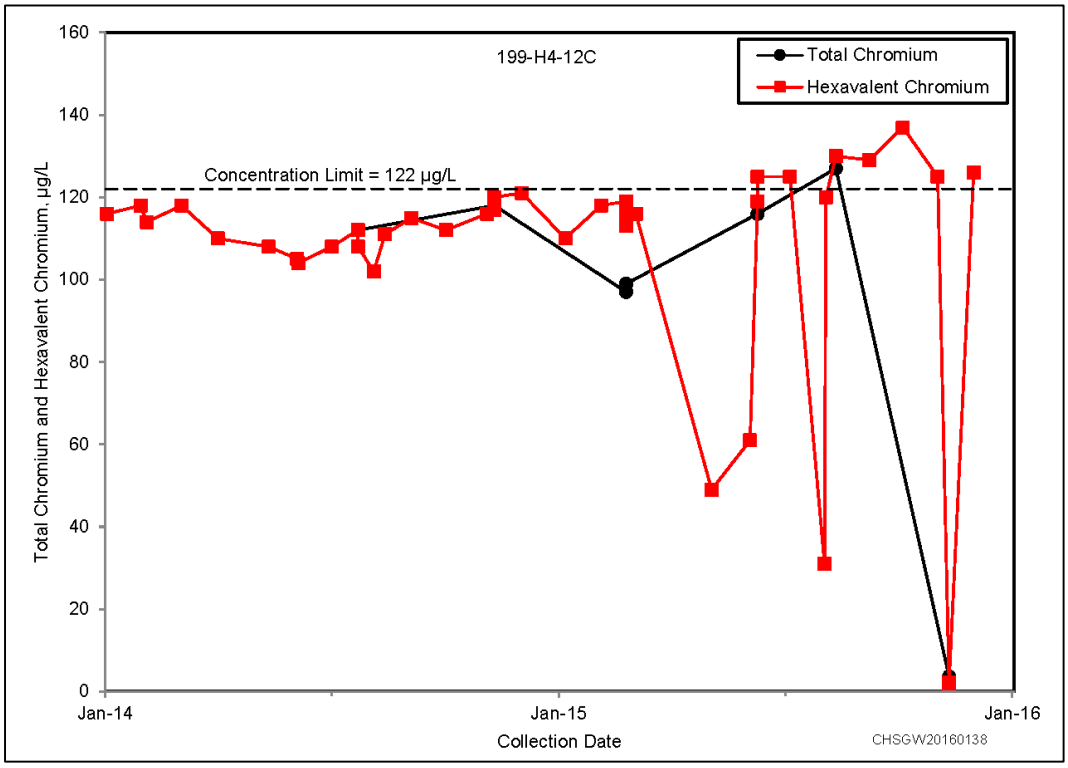

Figure 2. Chromium Results from Well 199-H4-12C (2014 through 2015)

Total chromium in well 199-H4-12C was the highest on August 12, 2015, at 127 µg/L (filtered sample), which is above the Permit limit of 122 µg/L for total chromium. The highest concentration of hexavalent chromium in well 199-H4-12C was 137 µg/L (unfiltered sample) on October 5, 2015. Low concentrations of hexavalent chromium were reported in August and November 2015. Similar to the hexavalent chromium results, total chromium results from November 2015 sampling were also low. After each of these occurrences, hexavalent chromium concentrations rebounded to slightly above their previous levels (Figure 2). The hexavalent chromium concentration results from these sampling events are shown in Table 3. Each of these occurrences is flagged for further review to determine whether data transcription errors occurred regarding the HX P&T system results.

Table 3. Hexavalent Chromium Results from Well 199-H4-12C in 2015

Date	Hexavalent Chromium (µg/L)
1/6/2015	110.00
2/4/2015	118.00
2/24/2015	119.00
2/24/2015	117.00
2/24/2015	114.00
2/24/2015	113.00
3/4/2015	116.00

Table 3. Hexavalent Chromium Results from Well 199-H4-12C in 2015

Date	Hexavalent Chromium (µg/L)
5/4/2015	49.00 F
6/4/2015	61.00 Y*
6/10/2015	125.00
6/10/2015	119.00
7/6/2015	125.00
8/3/2015	31.00 F
8/4/2015	120.00
8/12/2015	130.00 H
8/12/2015	130.00 H
9/8/2015	129.00
10/5/2015	137.00
11/2/2015	125.00
11/11/2015	1.90 B, F, H
11/11/2015	2.20 B, F, H
12/1/2015	126.00

Note: Shading indicates filtered samples; other results are from unfiltered samples.

*Although initially considered a suspect result, this qualifier may be revised based on the low total chromium and hexavalent chromium concentrations measured in November 2015.

B = analyte detected at less than contract required detection limit but greater than method detection limit

F = result suspect and under review

H = laboratory holding time exceeded before the sample was analyzed

Y = result suspect

Well 199-H4-12C is currently connected to the HX P&T system and operates as an extraction well. The flow rate during 2015 was typically at 114 L/min (30 gpm). The flow rate has subsequently been reduced to 38 L/min (10 gpm) to reduce stress on the confined aquifer and the potential for a connection forming between the two aquifers at this well.

2.3.2 Other Contaminants

Nitrate, fluoride, technetium-99, and uranium were each analyzed during the reporting period. Fluoride, technetium-99, and uranium are monitored as other 183-H Solar Evaporation Basins waste indicators, but monitoring levels set as the Hanford Facility RCRA Permit concentration limits are identified in Part VI, Chapter 3, Section 3.1.1.2, “WAC 173-303-645(5) Concentration Limits,” of the Permit. Concentrations of uranium, technetium-99, and fluoride remain low, with some variations over time. Table 2 presents the

analytical results for the RCRA constituents during the reporting period. Nitrate and fluoride concentrations in extraction well 199-H4-12C are slowly increasing but remain well below the Permit limits (Figure 3). As discussed in Section 2.3.1, the pumping rate at well 199-H4-12C has been decreased to reduce the potential for forming a connection between the aquifers. None of the analytical results for nitrate, fluoride, uranium, or technetium-99 exceeded the Permit limits (Table 2) during the reporting period.

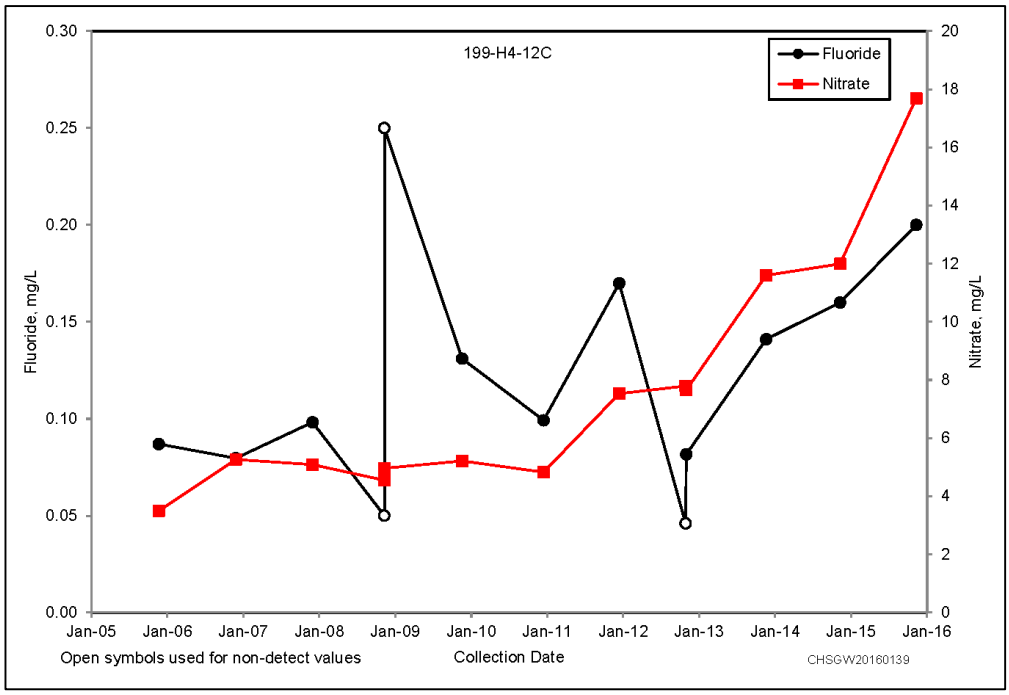

Figure 3. Nitrate and Fluoride Concentrations in Well 199-H4-12C

3 Conclusions

Samples from well 199-H4-12C, an extraction well screened in the semiconfined aquifer, exceeded the Hanford Facility RCRA Permit limit of 122 µg/L for hexavalent chromium during each month of the reporting period, with a maximum result of 137 µg/L measured in an unfiltered sample in October 2015.

Significant fluctuations in hexavalent chromium and total chromium concentrations were reported at extraction well 199-H4-12C in 2015 during May, June, August, and November, and the data are being reviewed for accuracy. The extraction flow rate at 199-H4-12C has been reduced to prevent forming a connection between the two aquifers as a result of these unusual results. Concentrations of nitrate and fluoride are slowly increasing at well 199-H4-12C.

Hexavalent and total chromium concentrations in the unconfined aquifer remained below Hanford Facility RCRA Permit limits. Concentrations of fluoride, nitrate, uranium, and technetium-99 remained well below the Permit concentration limits in each of the wells monitored at the 183-H Solar Evaporation Basins RCRA site.

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