



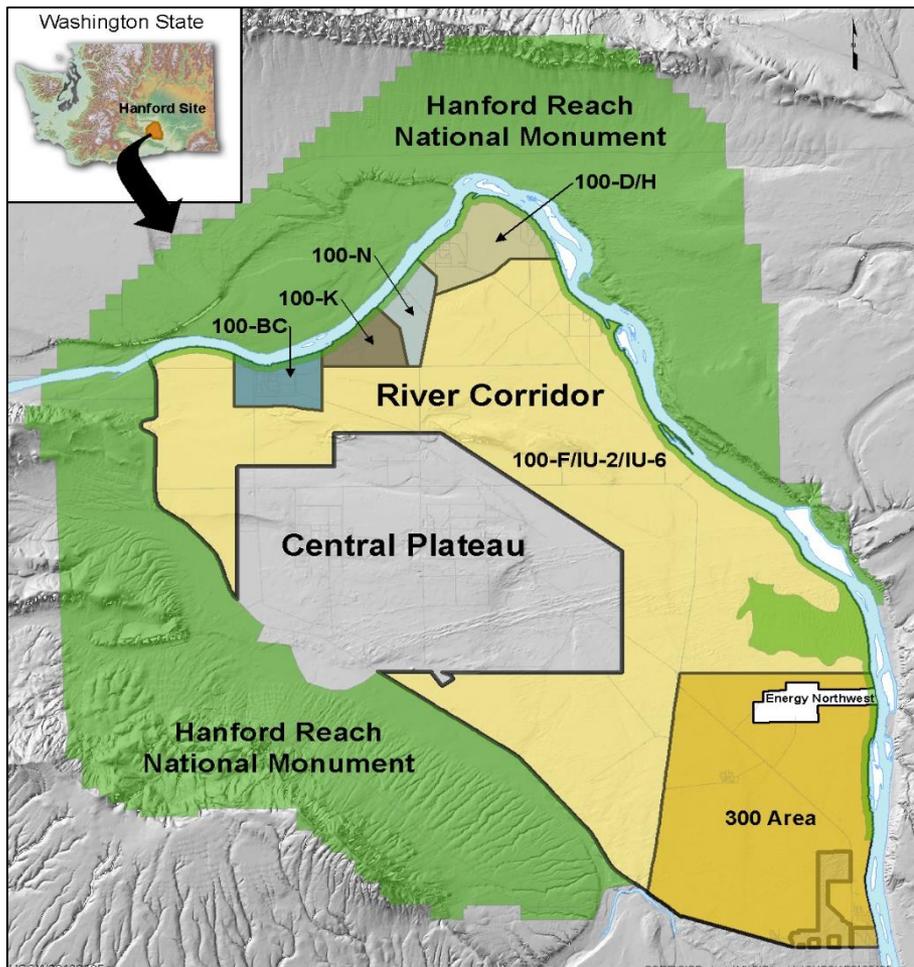
THE HANFORD SITE

100-BC Area Proposed Plan Overview

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U.S. Department of Energy

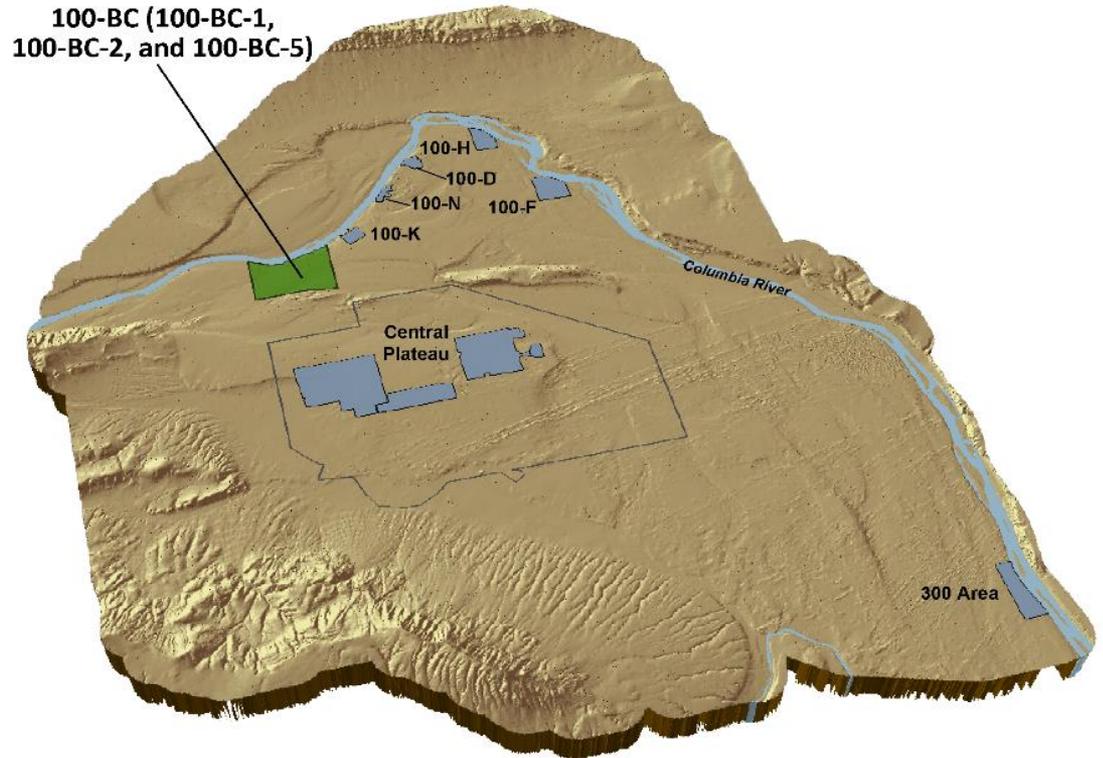
September 16, 2019

River Corridor CERCLA Records of Decision Overview



- 220 square miles
- 100 and 300 Areas on National Priorities List
- Six Geographical Areas
 - 300 Area
 - Record of Decision (ROD) completed November, 2013
 - 100-F, 100-IU-2, and 100-IU-6 Area
 - ROD completed September, 2014
 - 100-D/H Area
 - ROD completed July, 2018
 - 100-B/C Area
 - ROD planned 2020
 - 100-K Area
 - ROD scheduled 2021
 - 100-N Area
 - ROD scheduled 2021

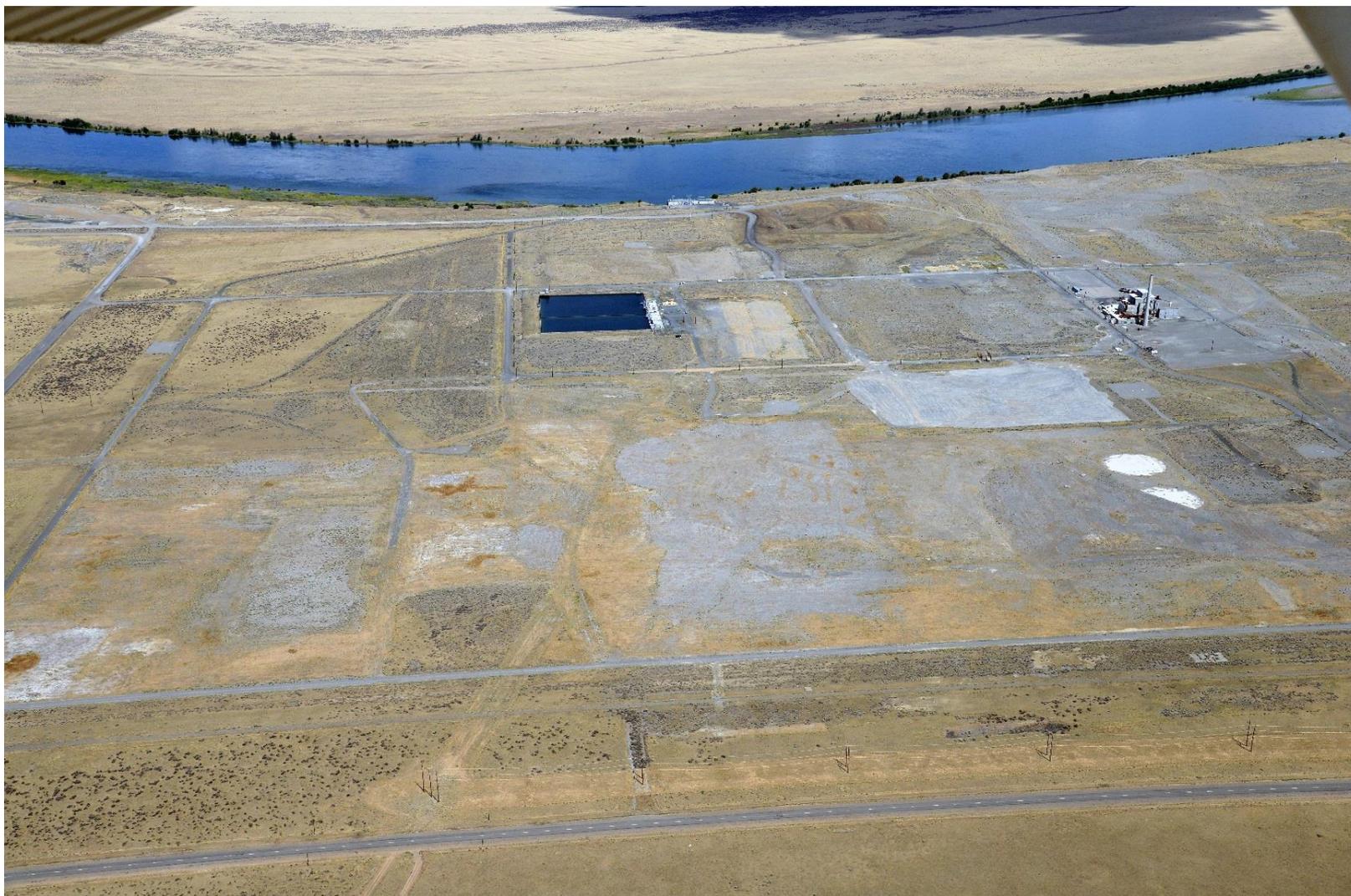
- About 4.5 square miles
- Includes deactivated B and C Reactors and support facilities operated from 1944 to 1969
- B Reactor preserved as part of Manhattan Project National Historical Park
- C Reactor in Interim Safe Storage
- Remaining active facilities include part of Hanford Site water supply system (river pumphouse, reservoir, and electrical substations)



THE HANFORD SITE | 100-B/C in 1953



THE HANFORD SITE | 100-B/C in 2015

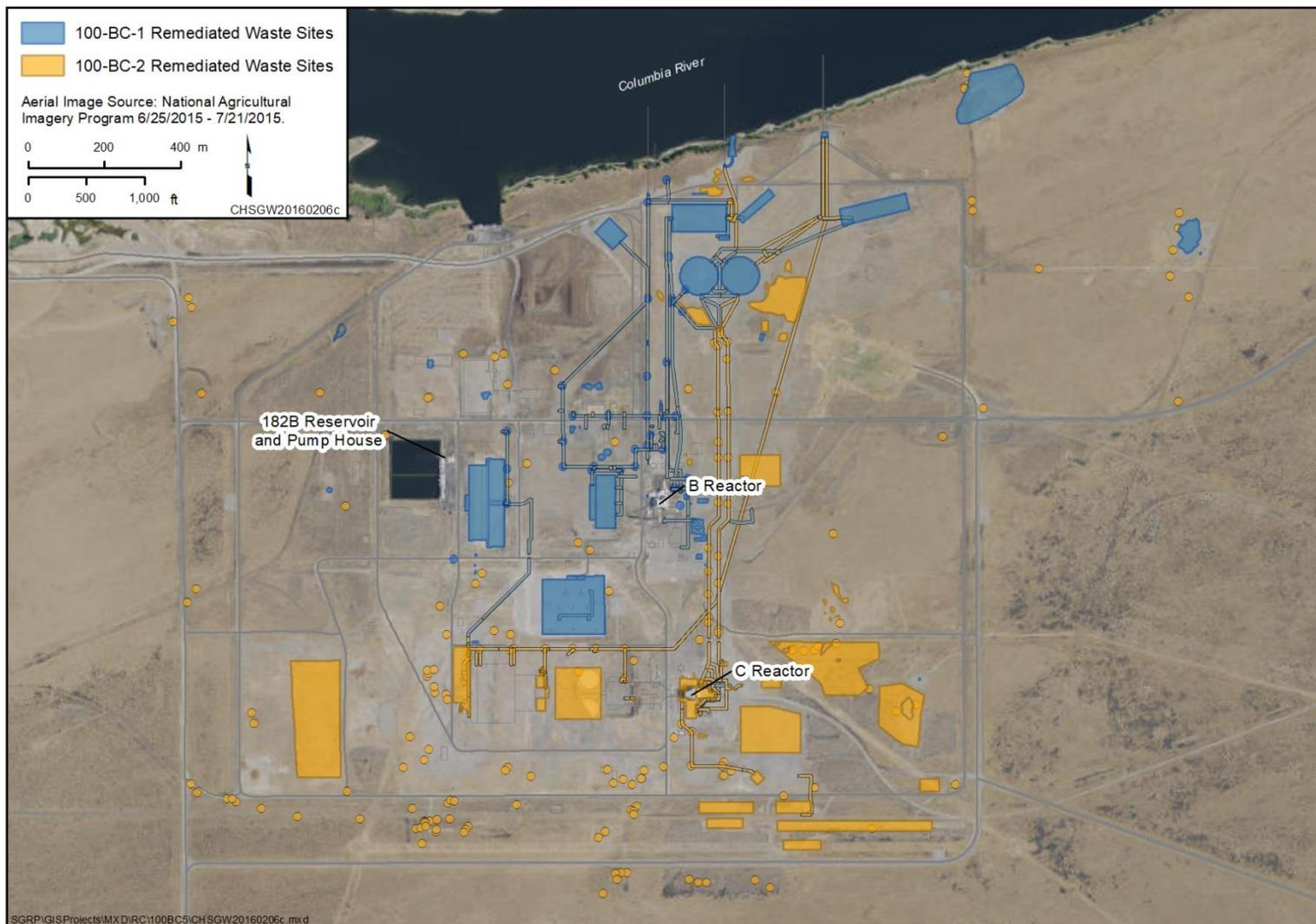


- Waste site remediation began in 1995
- 104 of 117 facilities used to support B and C Reactor operations were demolished and removed
- About 3 million tons of soil and debris excavated from 82 waste sites, treated (as necessary), and disposed of
- “Deep digs” reached up to 85 feet below ground surface (to groundwater level) to remove, treat and dispose of hexavalent chromium-contaminated soil

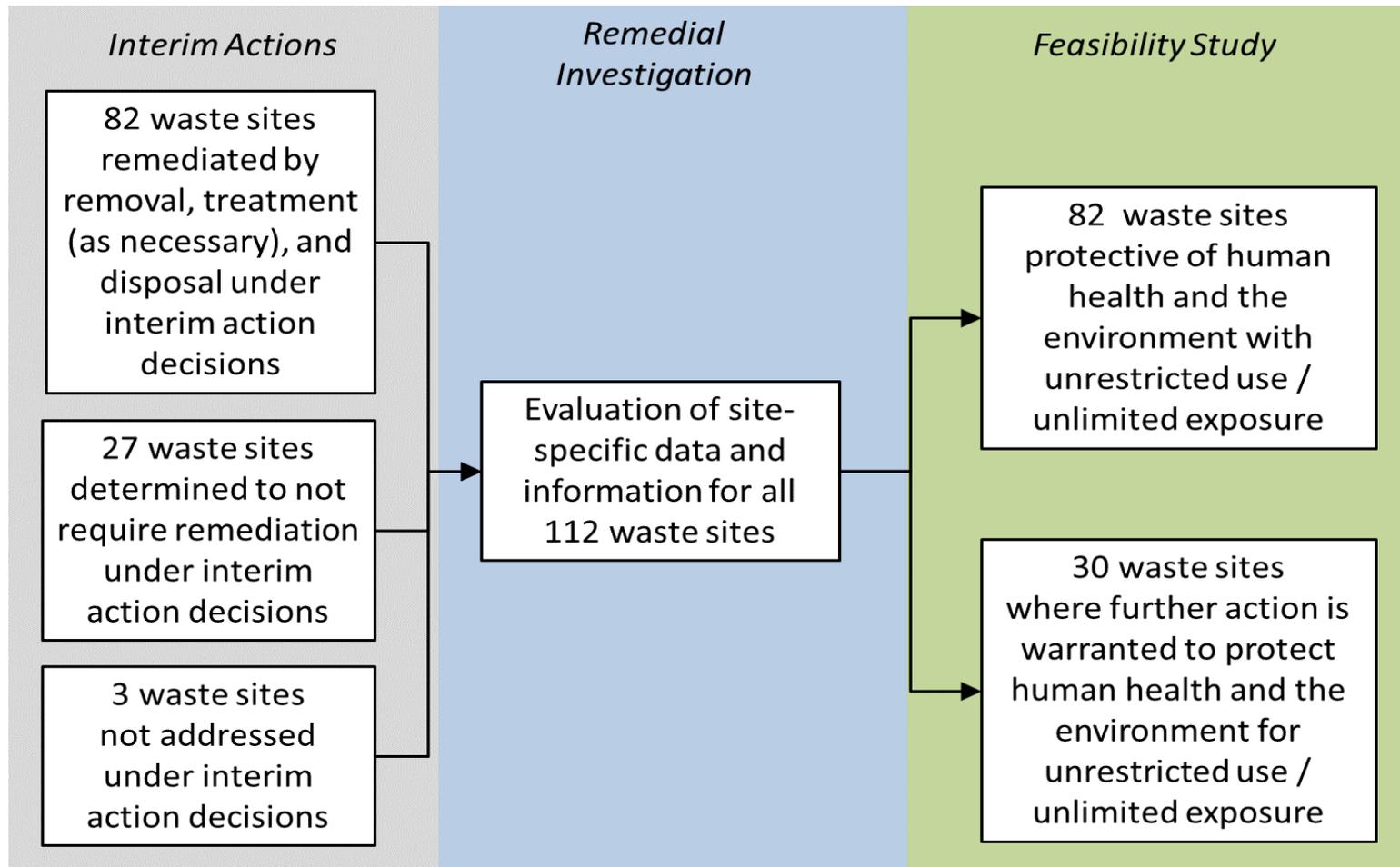


Excavation of the 100-C-7 and 100-C-7:1 Waste Sites

Remediated Waste Sites



Scope of the Proposed Plan: Waste Sites



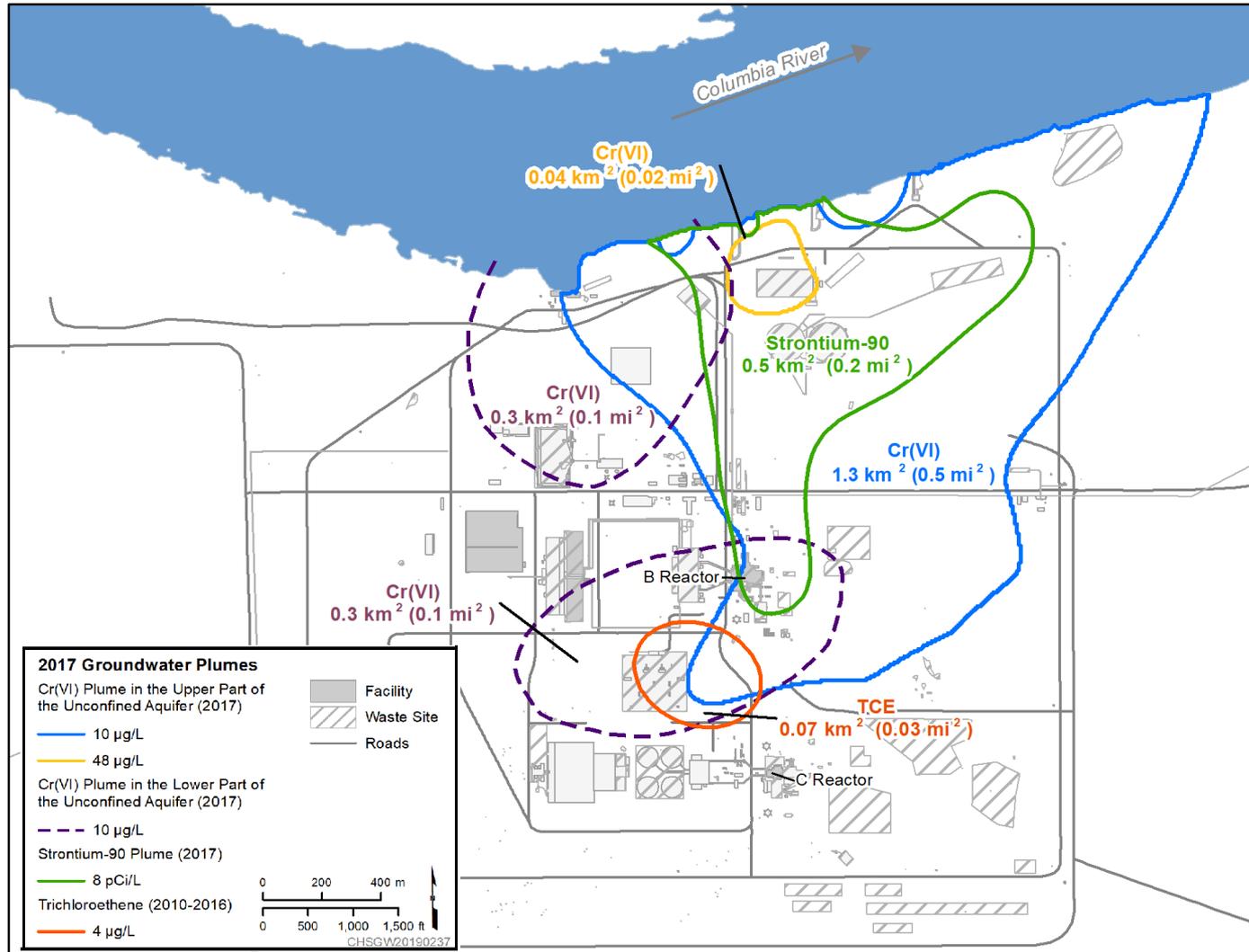
Scope of the Proposed Plan: Waste Sites

- Further action for 30 waste sites is warranted:
 - 7 sites have residual contamination that pose a shallow direct-contact risk for residential use and/or effect on groundwater or surface water quality
 - 23 sites that have residual radionuclide contamination in the deep zone (only) and do not have potential to effect groundwater or surface water
 - No sites have residual contaminant concentrations that pose a potential risk to ecological receptors

Scope of the Proposed Plan: Groundwater

- Groundwater actions were not prescribed by interim action ROD for 100-B/C
- Current contamination levels warrant remedial action consideration
- All groundwater contaminants exceeding standards are addressed by alternatives in the proposed plan
- Differences between the alternatives primarily affect how hexavalent chromium is addressed

Scope of the Proposed Plan: Groundwater



Summary of Alternatives Evaluated (Alternative 2 is Preferred)

<i>Alternative</i>	<i>Waste Sites</i>	<i>Groundwater</i>	<i>Cost</i>
1	No Action for all 112 waste sites and groundwater (required by the NCP)		-
2	ICs for 30 waste sites, RTD for 1 waste site, and No Action for 82 waste sites	MNA with ICs	\$23M
3	ICs for 29 waste sites, RTD for 5 waste sites, and No Action for 82 waste sites	P&T for Cr(VI) and MNA with ICs for strontium-90, tritium, TCE, and Cr(VI) located further inland and outside the influence of P&T operation	\$160M
4	ICs for 30 waste sites, RTD for 1 waste site, and No Action for 82 waste sites		\$270M
5	ICs for 29 waste sites, RTD for 5 waste sites, and No Action for 82 waste sites	Cr(VI) Source Treatment with P&T for Cr(VI) and MNA with ICs for strontium-90, tritium, TCE, and Cr(VI) located further inland and outside the influence of P&T operation	\$99M
6	ICs for 29 waste sites, RTD for 5 waste sites, and No Action for 82 waste sites		\$210M

Note: Some waste sites have more than one remedial action, so site subtotals for Alternatives 2 through 6 do not sum to 112.

Cr(VI) = hexavalent chromium

NCP = National Contingency Plan (40 CFR 300)

TCE = trichloroethene

IC = institutional control

P&T = pump and treat

MNA = monitored natural attenuation

RTD = remove, treat, and dispose

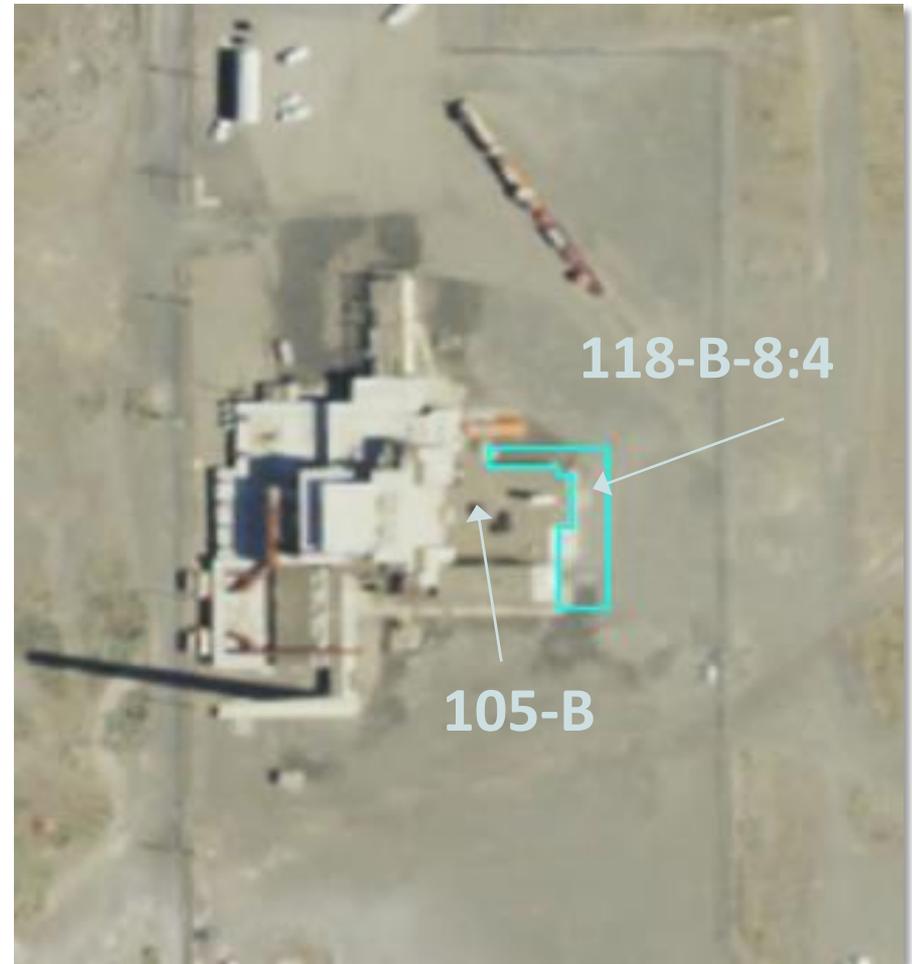
Alternative	Waste Sites	Groundwater				
		Cr(VI)	Cr(VI)	Strontium-90	Tritium	TCE
		10 µg/L (surface water)	48 µg/L (groundwater)	8 pCi/L (groundwater)	20,000 pCi/L (groundwater)	4 µg/L (groundwater)
2	5 to 187 yrs	60 yrs	15 yrs	70 yrs	N/A	25 yrs
3	5 to 187 yrs	15 yrs*	5 yrs	70 yrs	N/A	25 yrs
4	5 to 33 yrs	15 yrs*	5 yrs	70 yrs	N/A	25 yrs
5	5 to 187 yrs	15 yrs	5 yrs	70 yrs	N/A	25 yrs
6	5 to 33 yrs	15 yrs	5 yrs	70 yrs	N/A	25 yrs

*Pump and treat required for an additional 25 years to maintain compliance

Preferred Alternative: Alternative #2

- Removal, treatment and disposal of a remaining grouted segment of sodium dichromate transfer line
- Natural attenuation with institutional controls (restrict uncontrolled excavation/drilling, prevent residential use, and/or prohibit irrigation) for 30 waste sites
- No action for 82 waste sites
- Monitored natural attenuation with institutional controls for groundwater (restrict drinking water and other domestic uses)

- 118-B-8:4 site next to B Reactor
- Shallow radionuclide contamination 12.5-15 feet below ground surface
- 187 years of decay to be protective of a residential scenario
- Currently protective for recreational uses, including B Reactor tours (contamination is not accessible)
- Excavation/removal ability is limited by the waste site's proximity to the reactor building



Estimated Future Costs for the Preferred Alternative

Waste site remediation	\$2.2M
Waste site institutional controls	\$6.7M
New monitoring well installations	\$1.5M
Groundwater monitoring and institutional controls	\$12.5M
Total	\$23M

Consideration of Previous HAB Advice (#296)

- Advice was considered and the proposed plan has been redrafted to provide greater clarity in areas
 - Clearer explanation of elements common to all alternatives so that elements that differ can be more readily distinguished
 - Clearer explanation of the combination of waste site and groundwater components in the alternatives
 - Revised evaluation of several balancing criteria to be more objective
- Responses to comments received during the public comment period for the proposed plan will be included in the responsiveness summary in the ROD

- Oct. 7 to Nov. 6: Hold 30-day public comment period
- Send Comments to: 100BCAreaPP@rl.gov
- Questions?
 - Jennifer Colborn, Mission Support Alliance:
(509) 376-5840
 - Laura Buelow, EPA: (509) 376-5466

- Our focus is on completing remediation of the B / C Reactor Area
- DOE believes that the preferred alternative is protective and provides the best balance of tradeoffs in consideration of the CERCLA balancing criteria
- The 100-BC Proposed plan was redrafted in consideration of previous HAB advice
- Because strontium contamination in groundwater will require institutional controls for 70 years, we are not planning to build a pump and treat system for chromium, because it will disperse naturally within 60 years

