



Oregon Perspective on the Hanford Nuclear Cleanup

Ken Niles, Nuclear Safety Division Administrator

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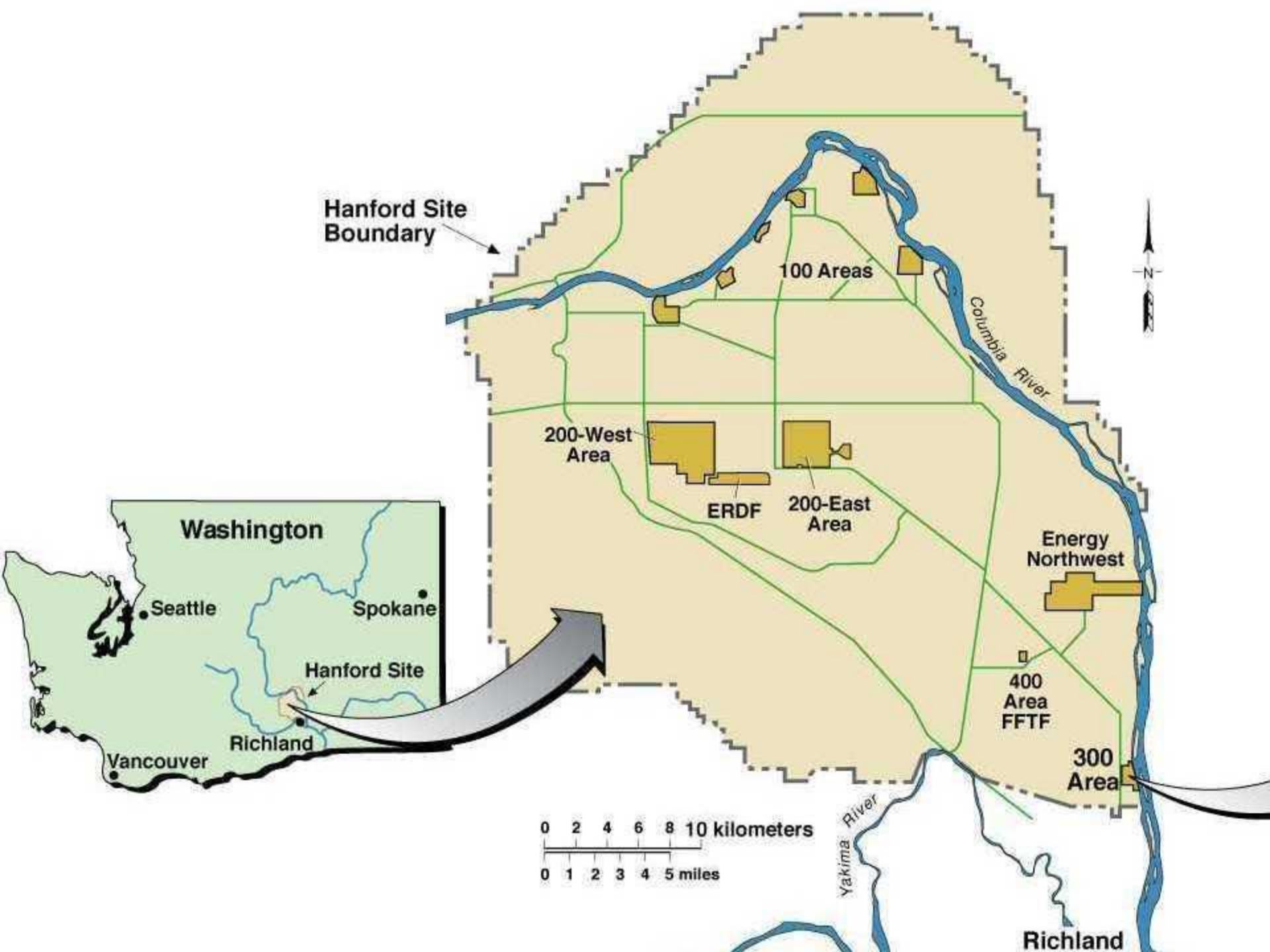
Hanford Site Boundary
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0 2 4 6 8 10 kilometers
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Yakima River
Richland


YAMAHA
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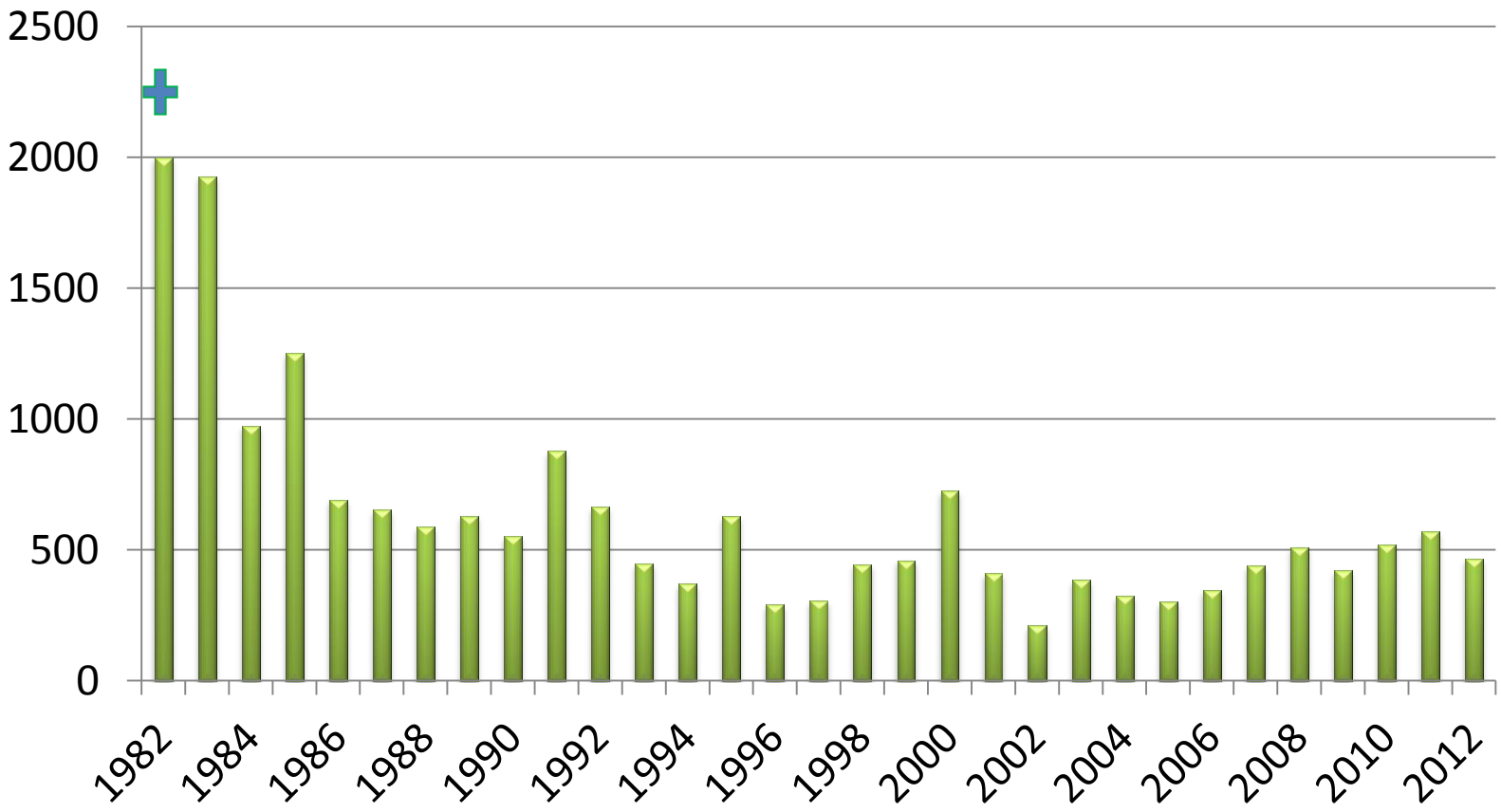
190
Reinke
Reinke
Reinke

Number of Shipments



1982-2012

Hanford 50-Mile Emergency Planning Zone

Trojan Independent Spent Fuel Storage Facility

Oregon’s role(s) at Hanford

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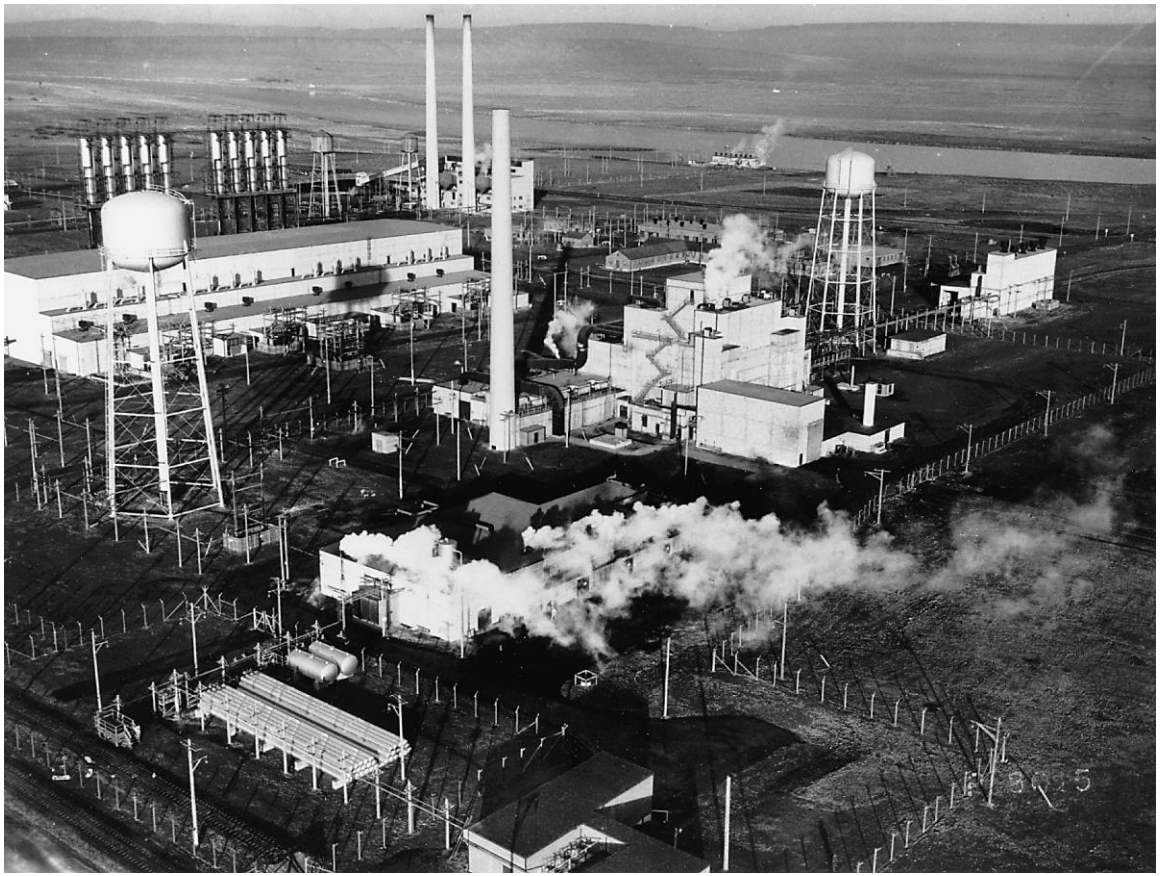
- Technical review and comment
- Policy recommendations
- Involve/engage the public
- Natural Resource Trustee
- Transportation safety
- Emergency preparedness
- Honest broker

Hanford: Basic facts



- World's first plutonium production facilities

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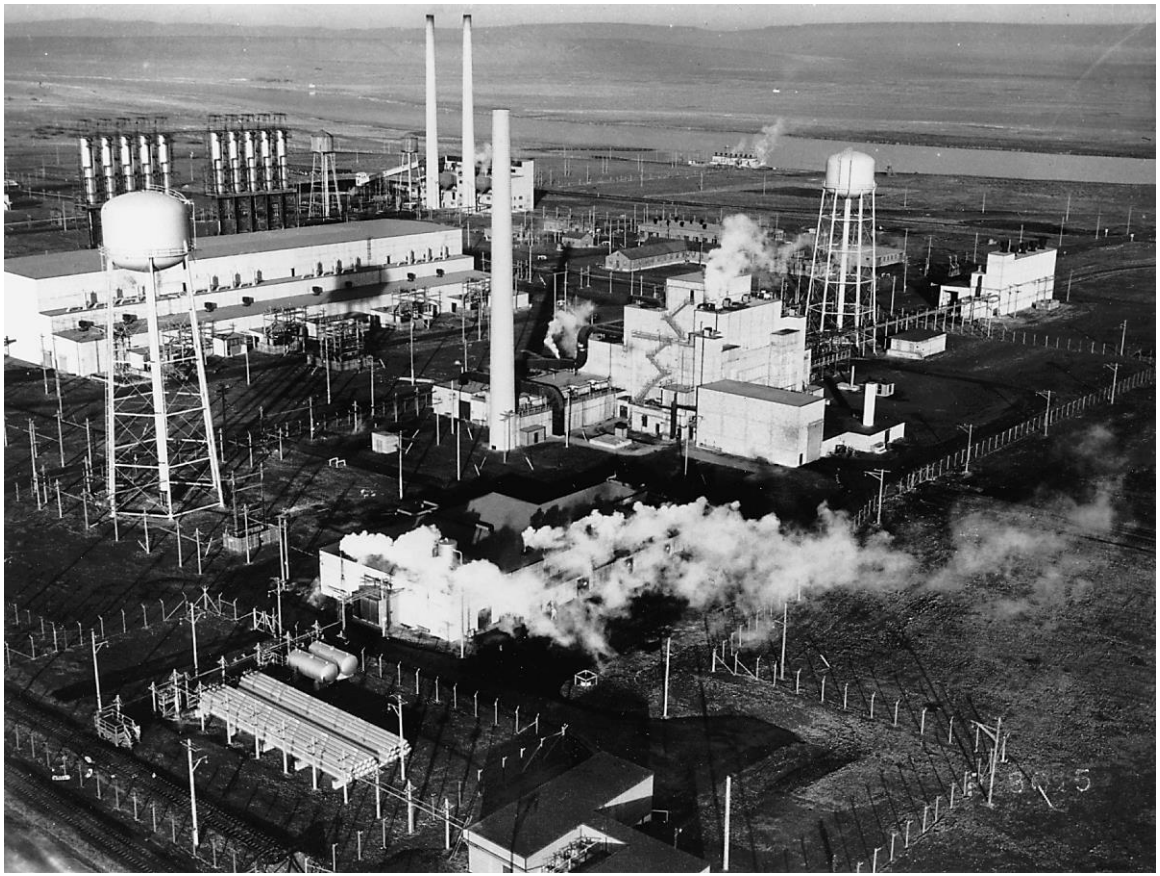

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  - Part of World War II Manhattan Project

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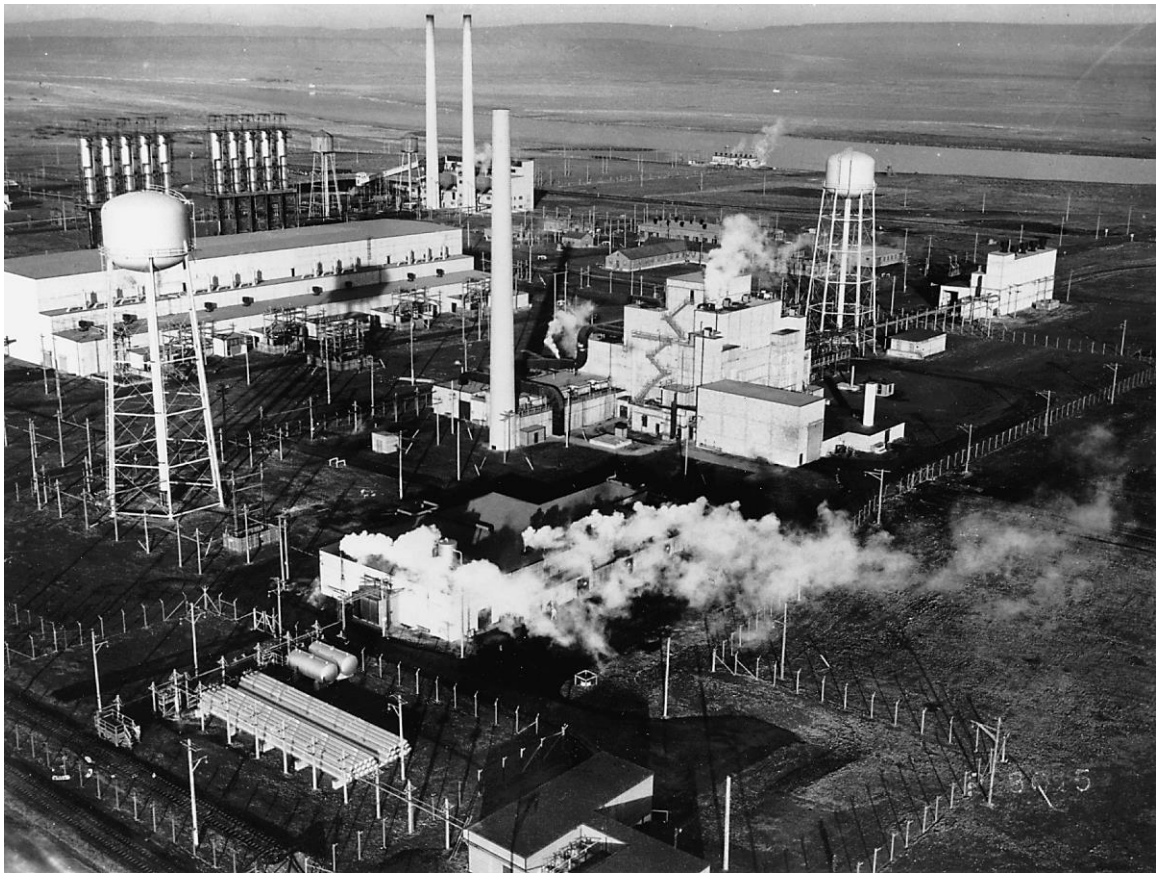

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  - Part of World War II Manhattan Project
- Hanford plutonium used in Nagasaki bomb

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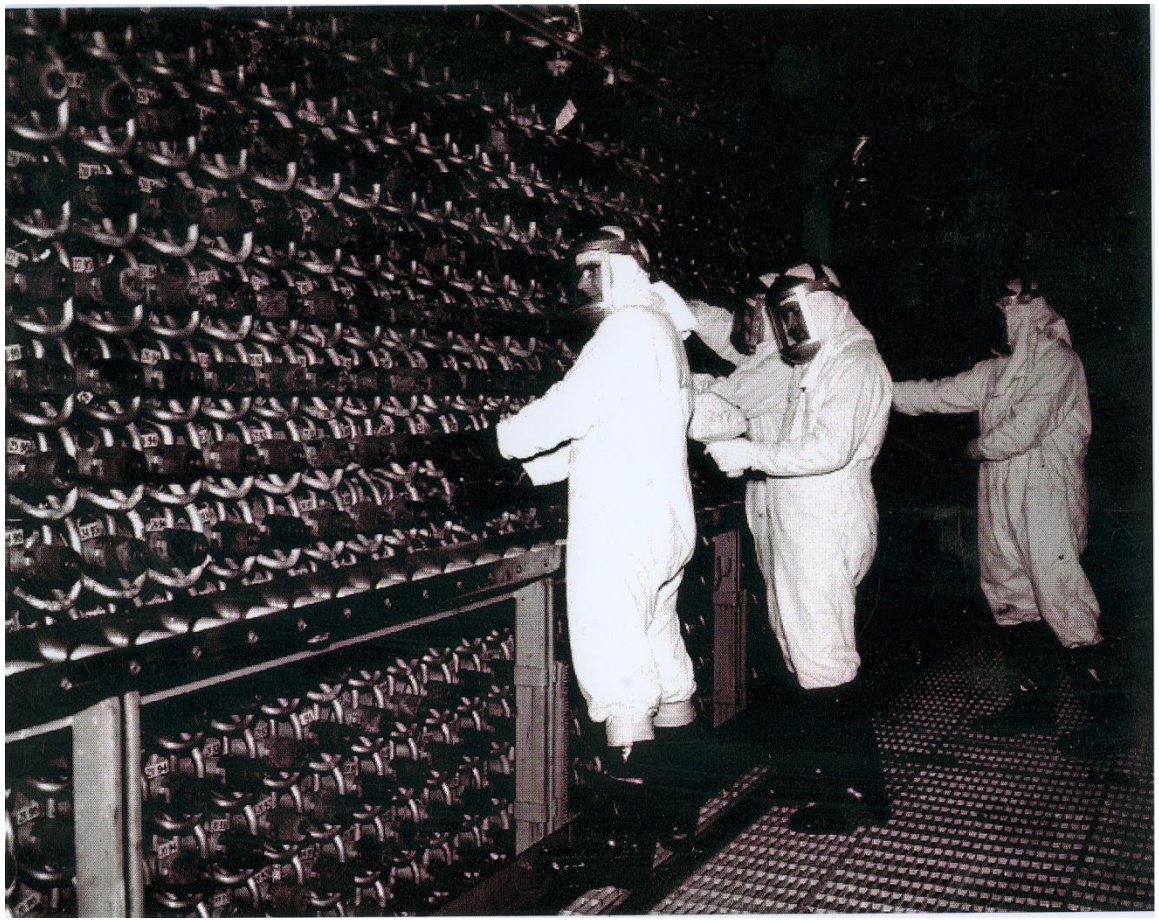

- Major expansions in the 1940s and 1950s

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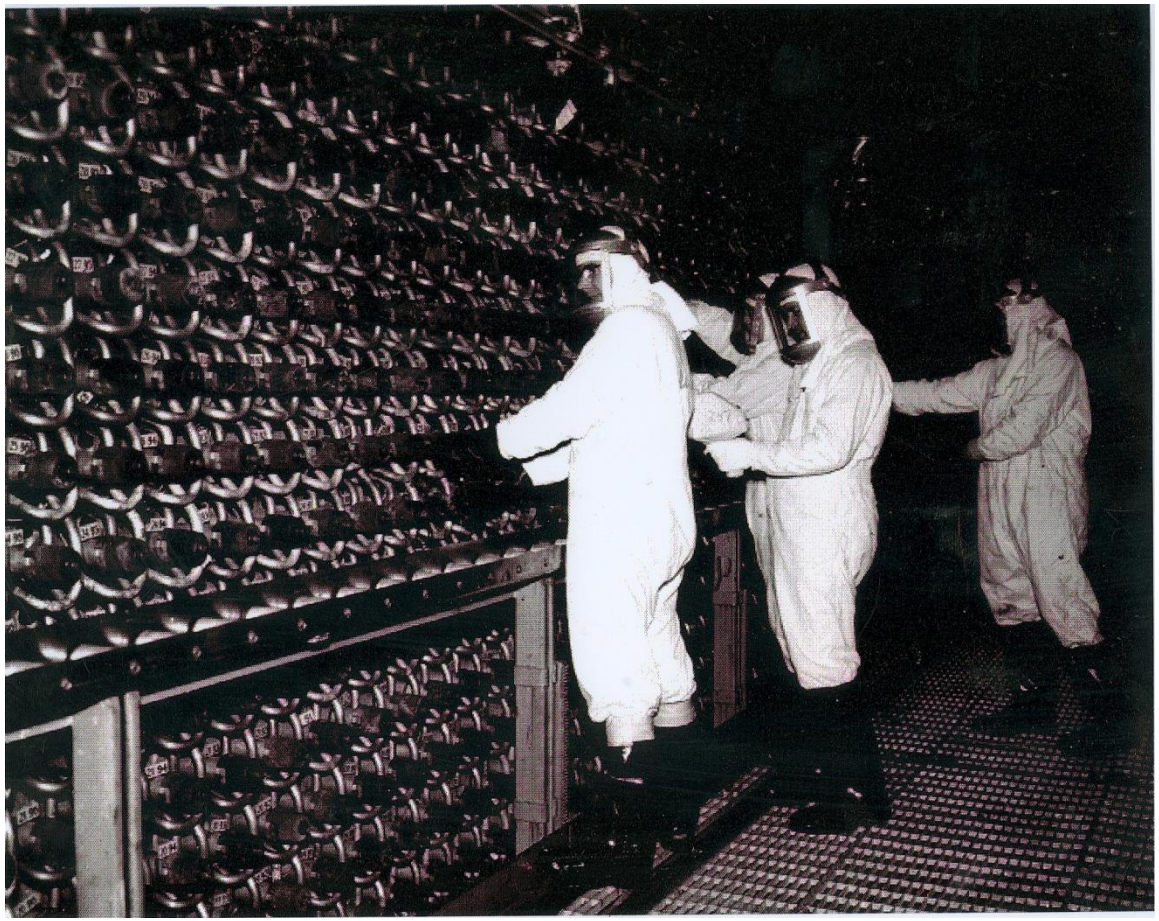

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- Produced plutonium from 1944 to 1988

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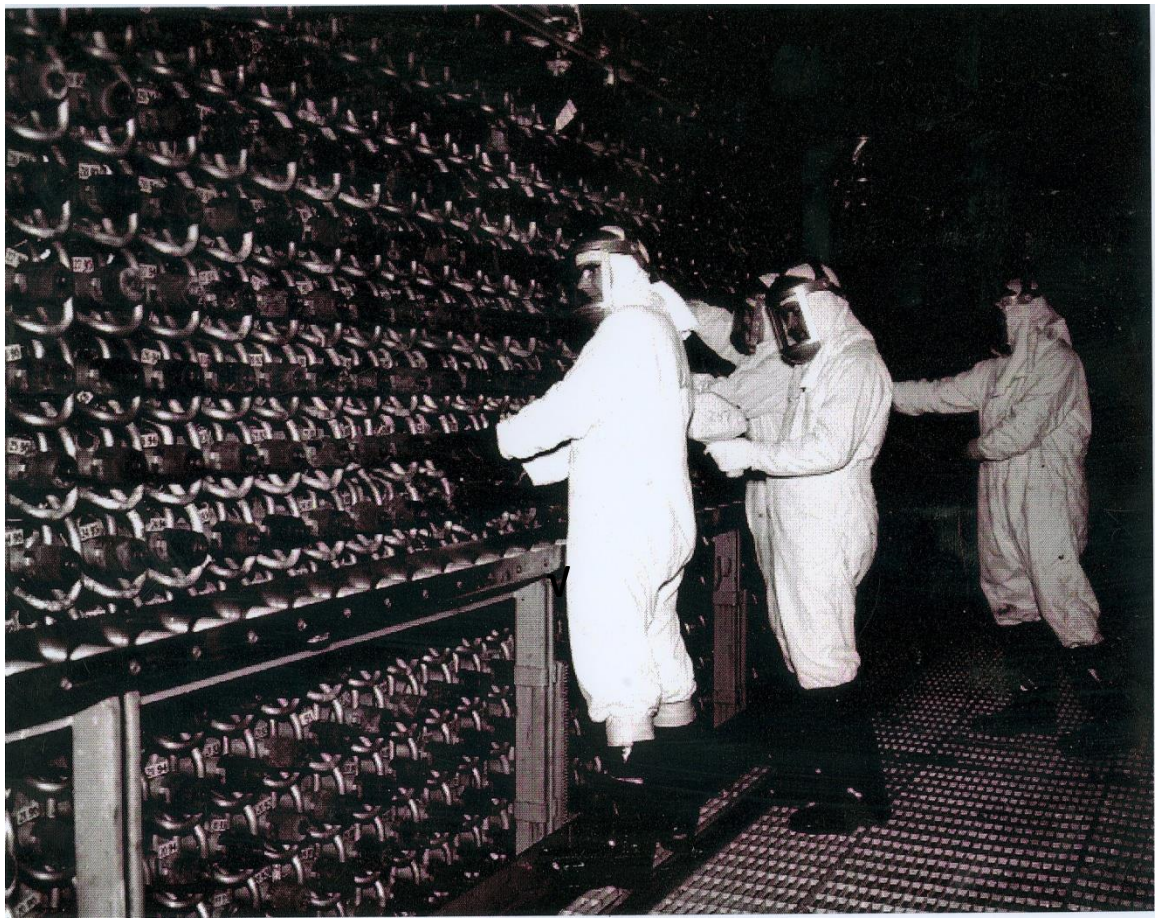

- Major expansions in the 1940s and 1950s
- Produced plutonium from 1944 to 1988
- Made about 74 tons of plutonium

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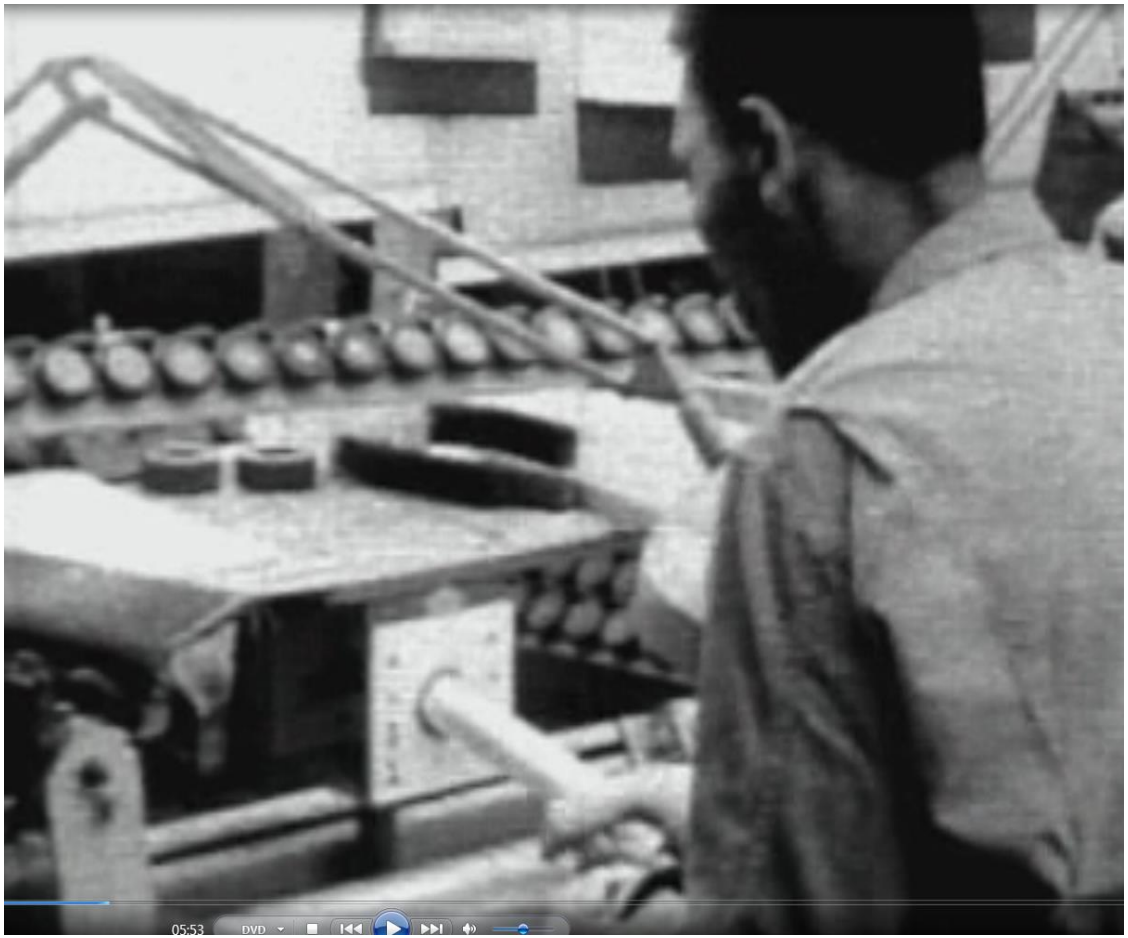
Process to Make Plutonium



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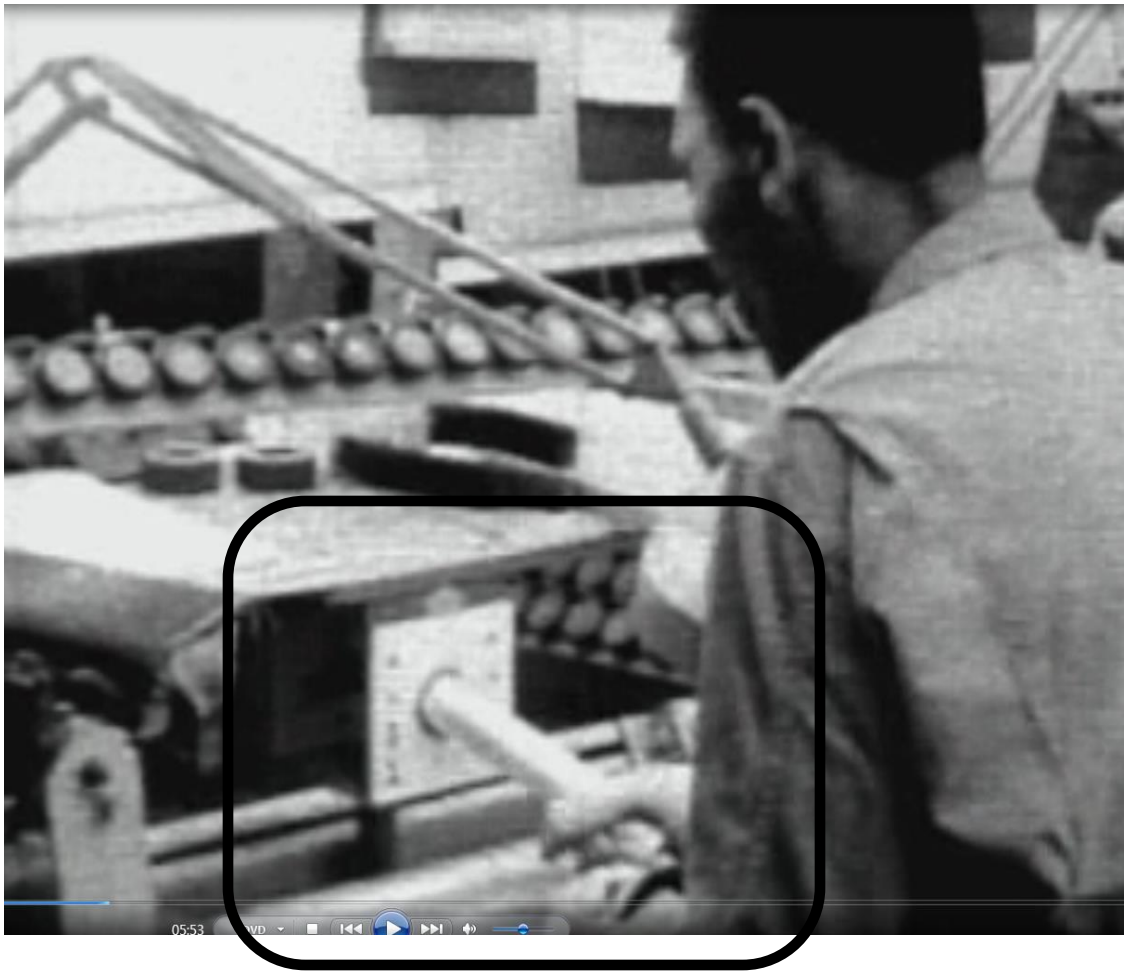

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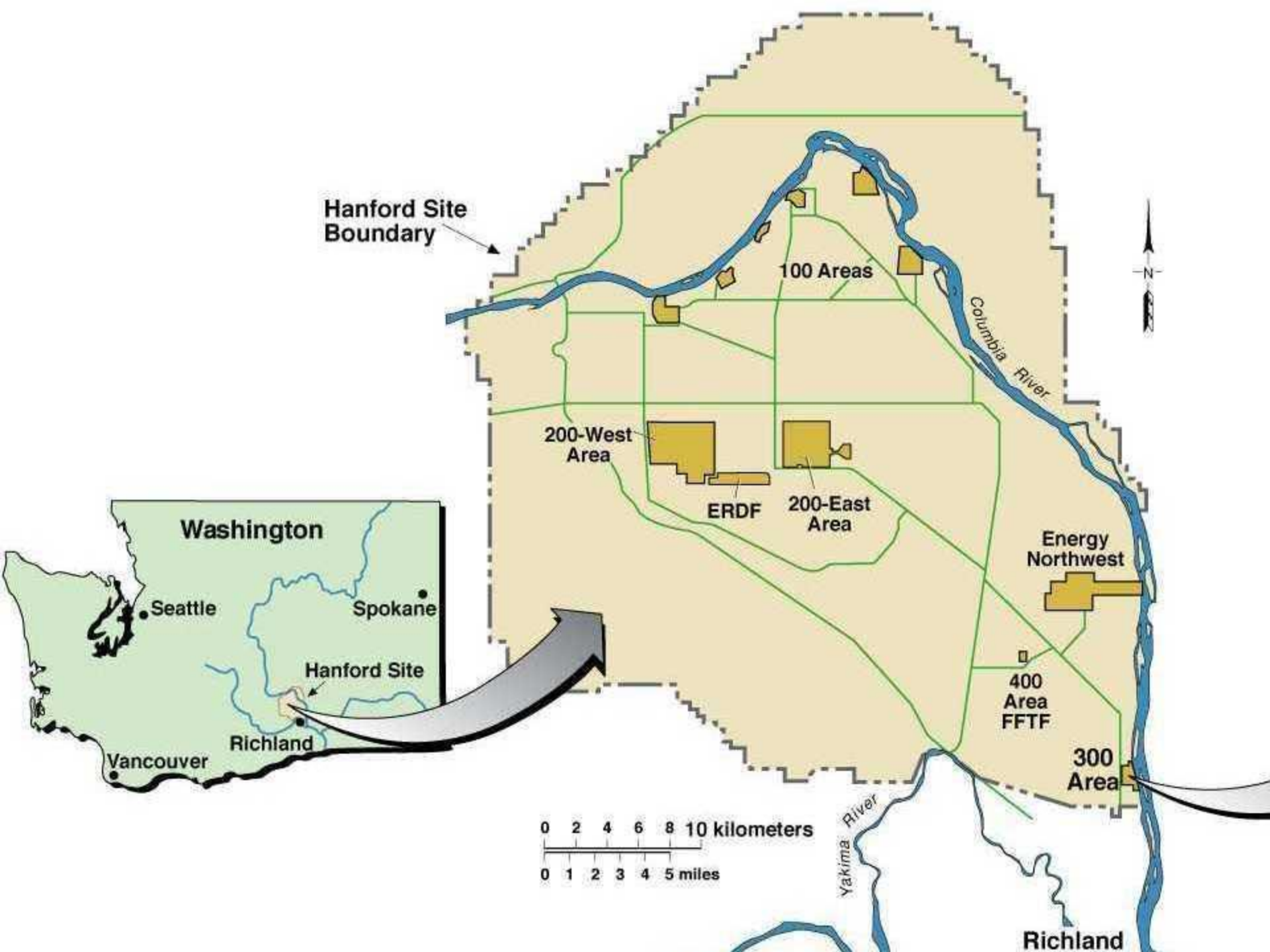
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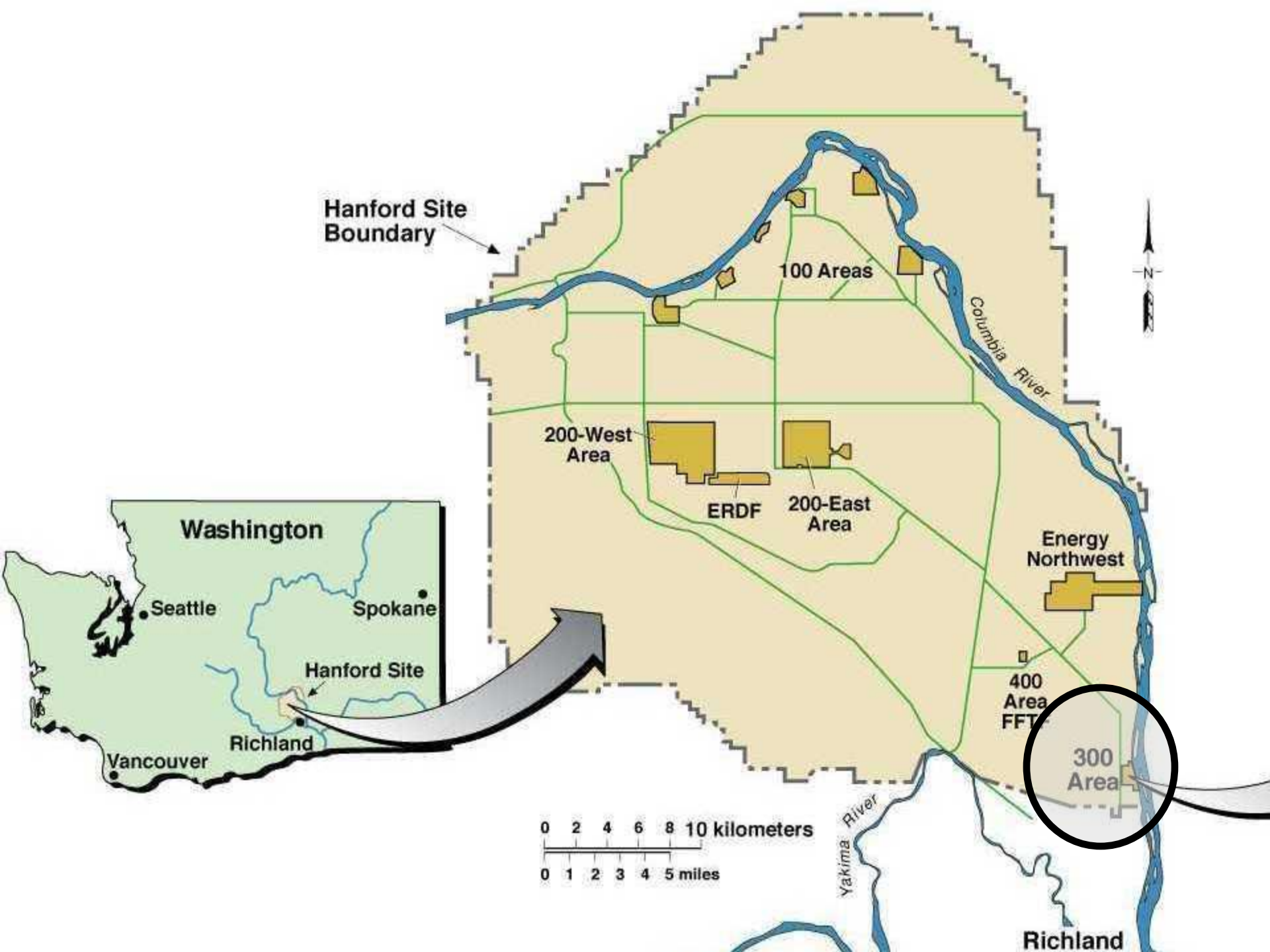
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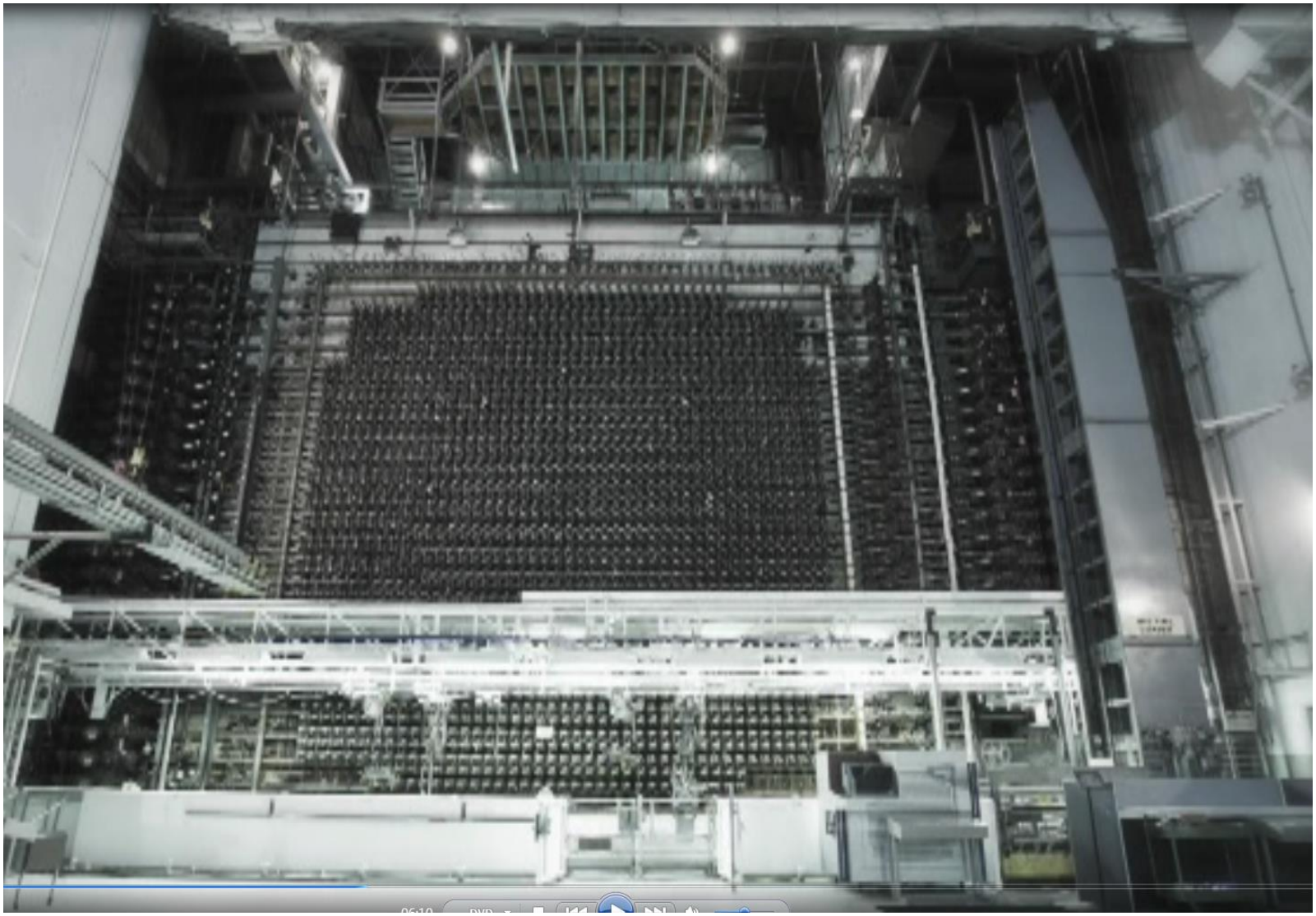

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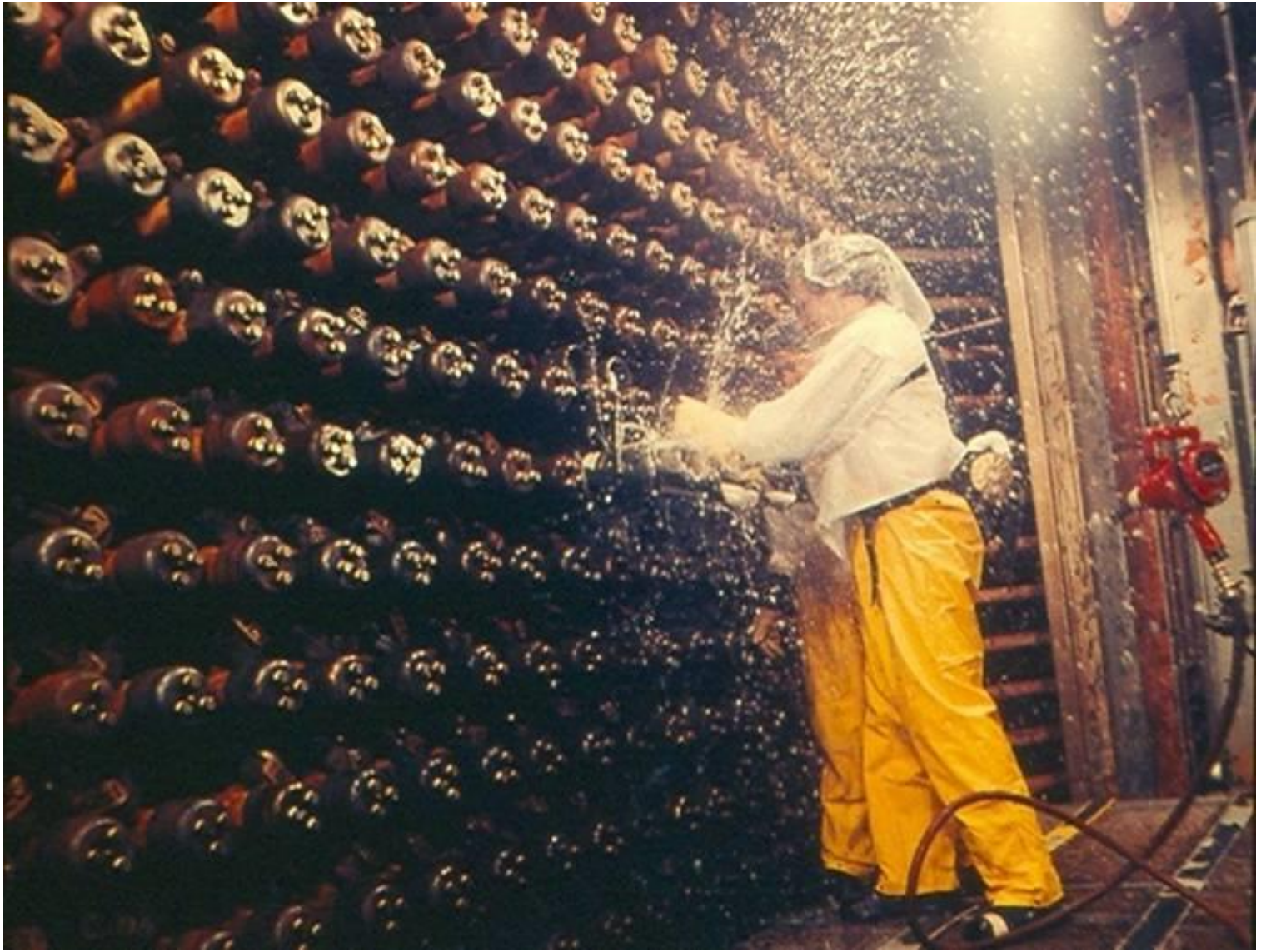

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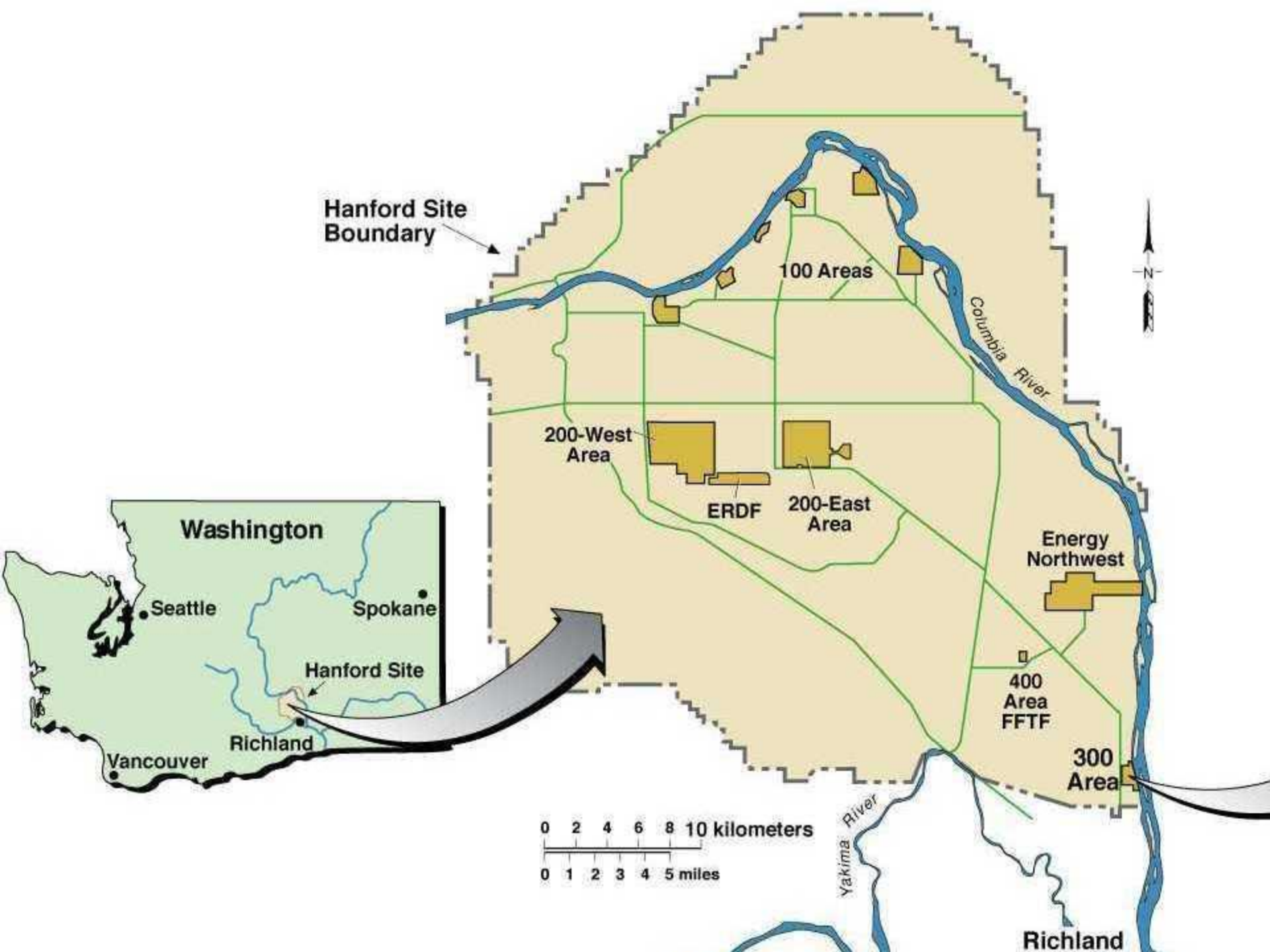
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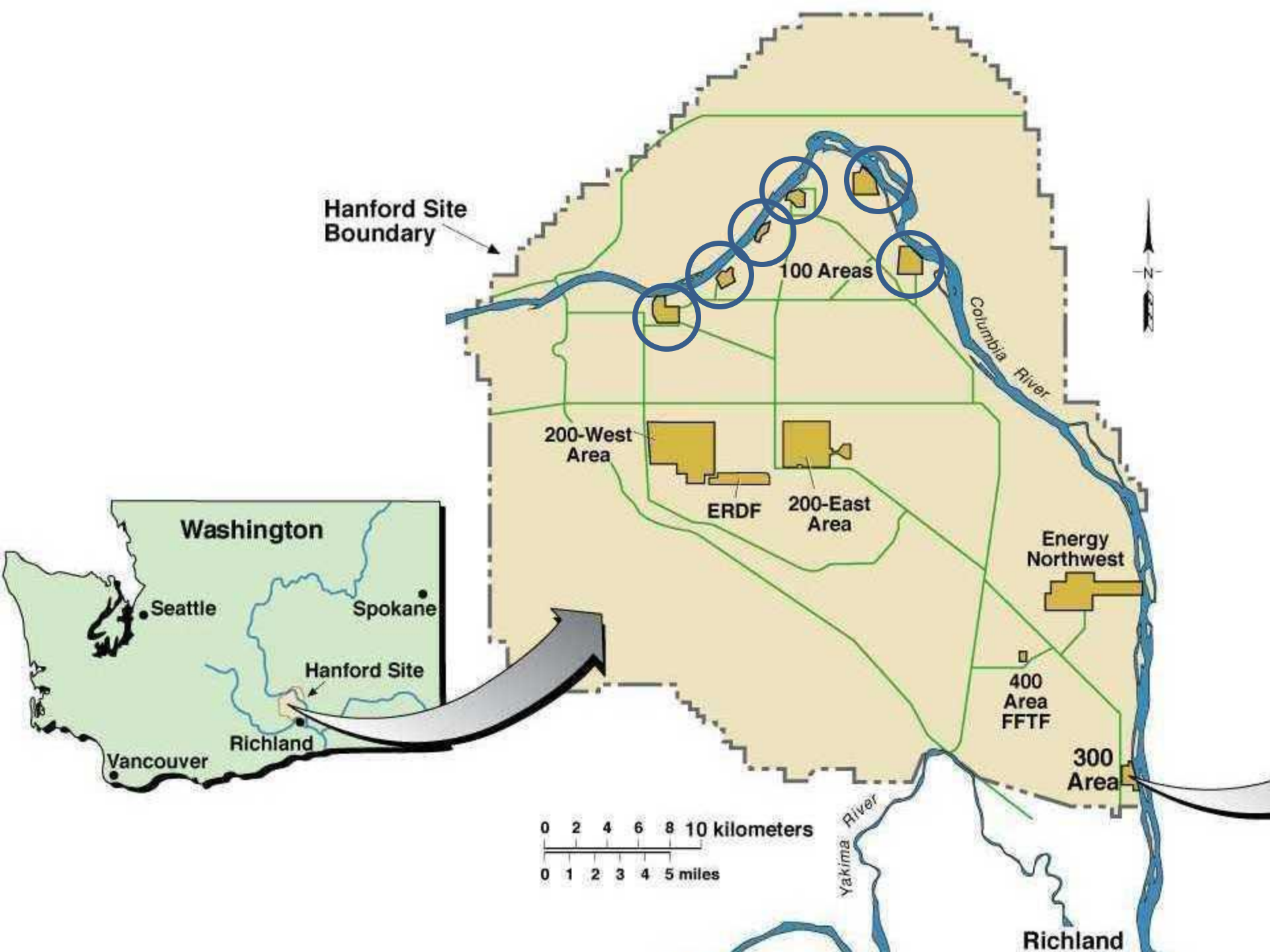
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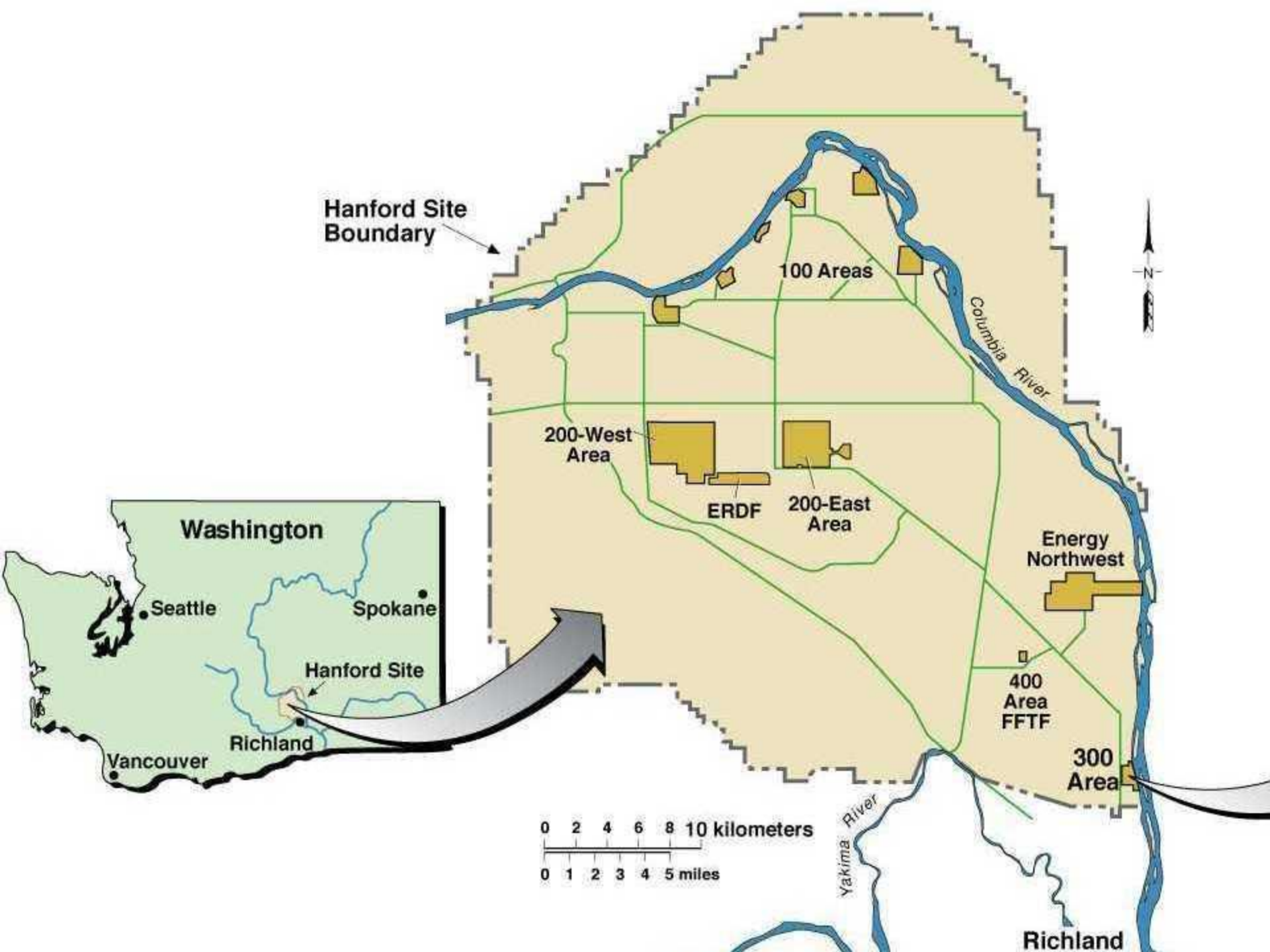
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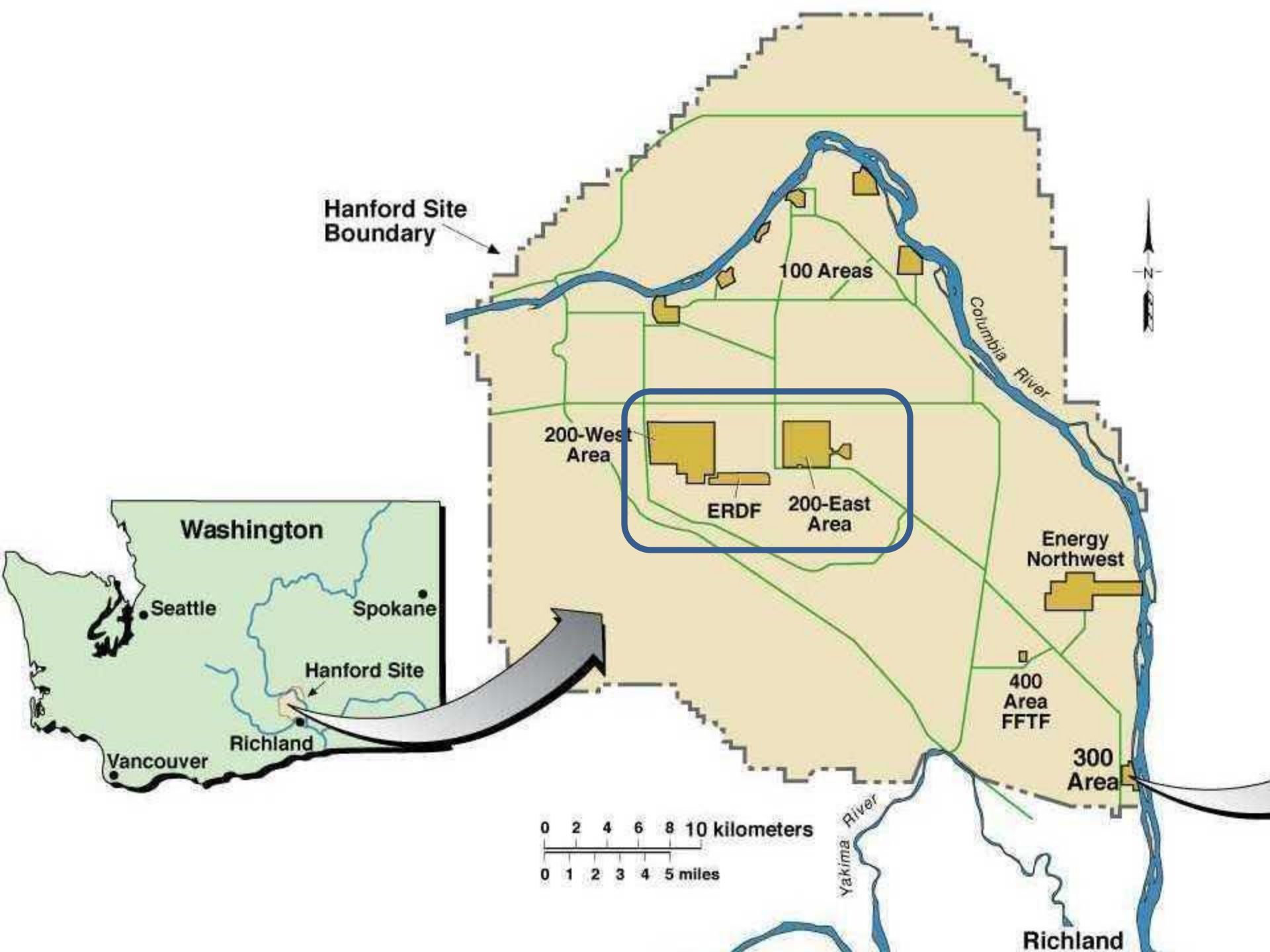
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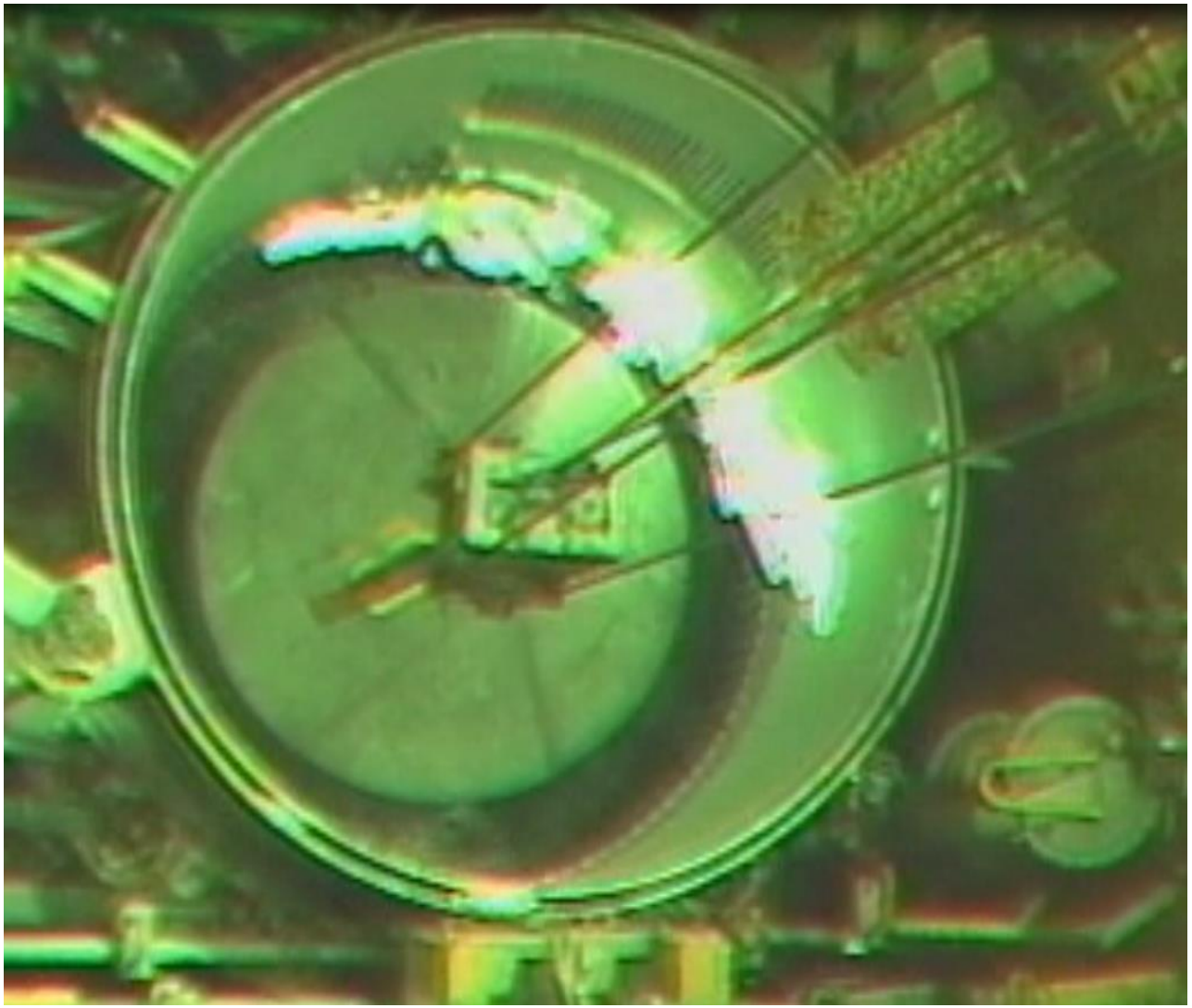

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Transition to Cleanup

- Plutonium production ended in 1988

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Transition to Cleanup

- Plutonium production ended in 1988
- DOE signed cleanup agreement May 15, 1989
- Goal to reach compliance with environmental laws

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Extent of the Problem

- Nearly 60 million gallons of high-level waste in 177 aging underground tanks

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- Nearly 60 million gallons of high-level waste in 177 aging underground tanks
- Serious and immediate safety issues with many tanks

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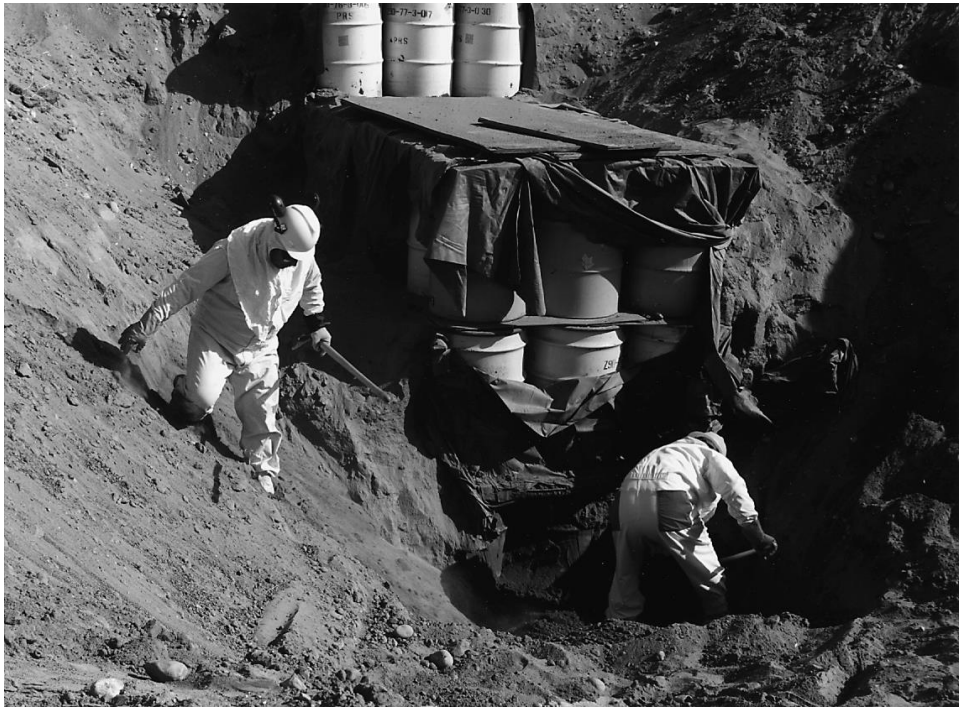

- Hundreds of burial grounds
- Hundreds of liquid waste disposal sites (and disposal ongoing)

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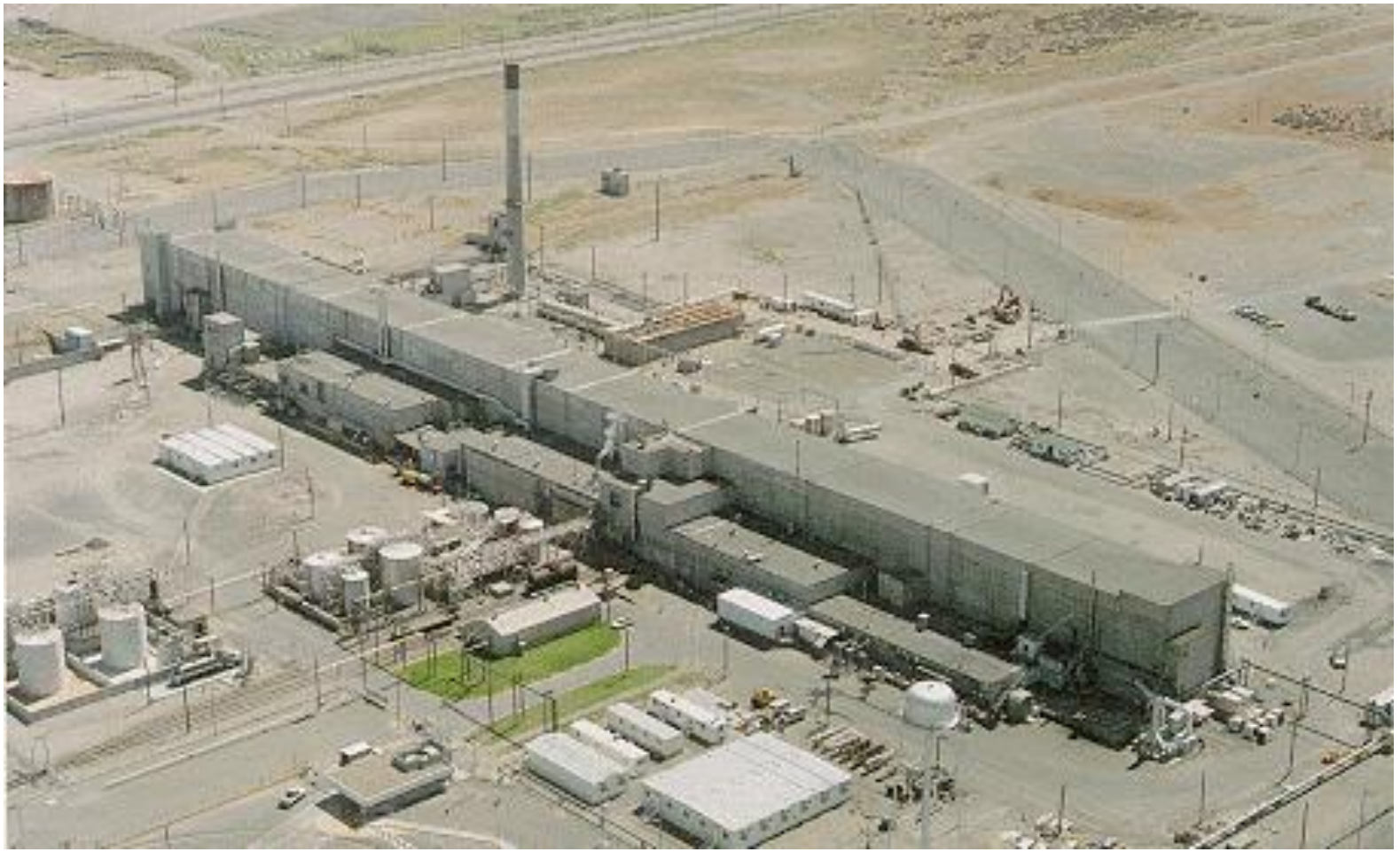

- 500 contaminated facilities, including 9 production reactors and 5 chemical processing canyons

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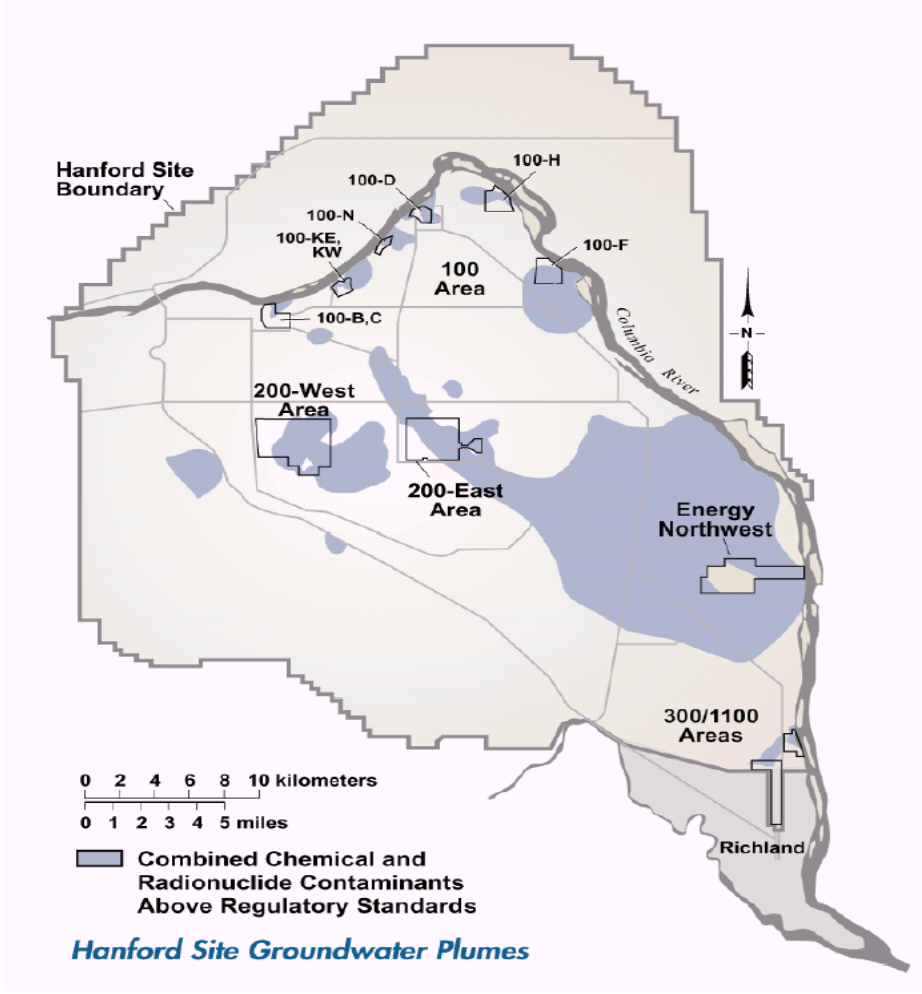

- 80 + square miles of groundwater contamination

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Extent of the Problem

- 2,100 tons of corroding spent nuclear fuel stored in water-filled basins – ¼ mile from Columbia River

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Extent of the Problem

- 18 tons of plutonium and plutonium-bearing materials

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Cleanup Progress

- Ended the dumping of radioactive contaminated liquid wastes to the soil (1997)

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Cleanup Progress

- Tank safety issues resolved (2001)

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Cleanup Progress

- Removed pumpable liquids from the single-shell tanks (2004)

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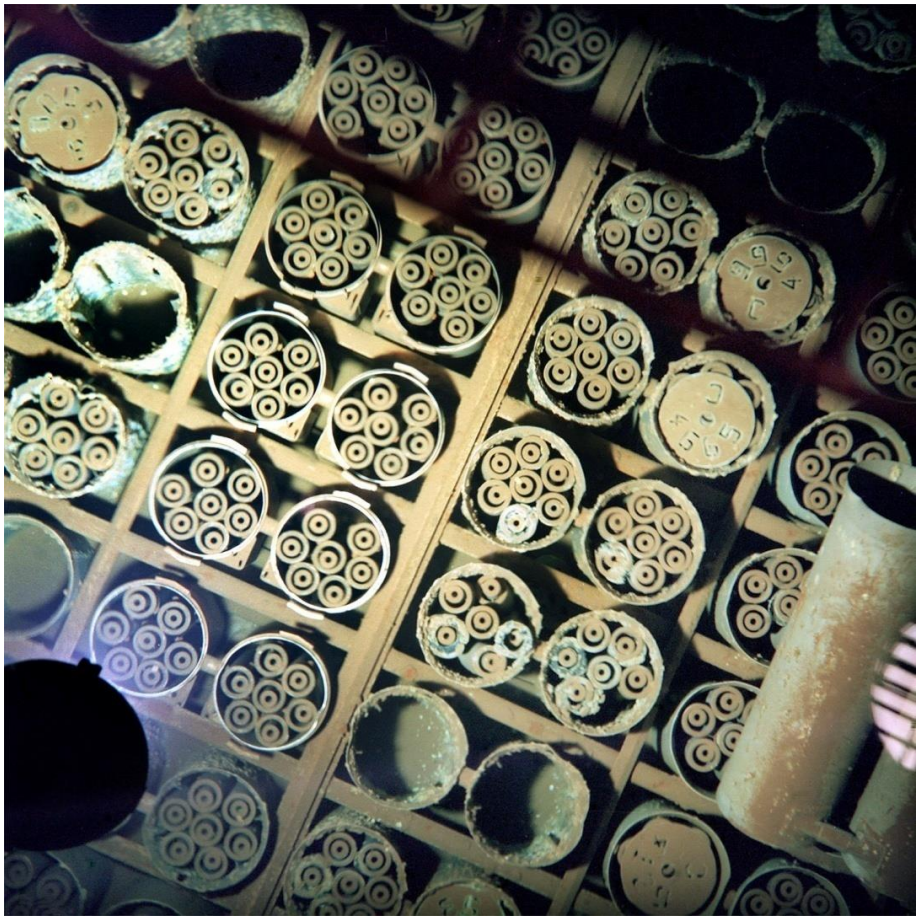
Cleanup Progress



- Repackaged, dried and moved Spent Fuel to interim dry storage – away from Columbia River (2004)

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Cleanup Progress

- Plutonium stabilized (2004) and shipped off-site (2009)

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Cleanup Progress

- Construction/operation of a massive engineered disposal facility and completion of various treatment facilities

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Cleanup Progress

- Six of nine reactors “cocooned” for long-term monitoring and to allow radiation to decay

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Cleanup Progress

- Dozens of contaminated buildings demolished

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Cleanup Progress

- Millions of tons of contaminated soil dug up from near the Columbia River

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Cleanup Progress

- Millions of tons of contaminated soil dug up from near the Columbia River
- Dozens of burial grounds cleaned-up

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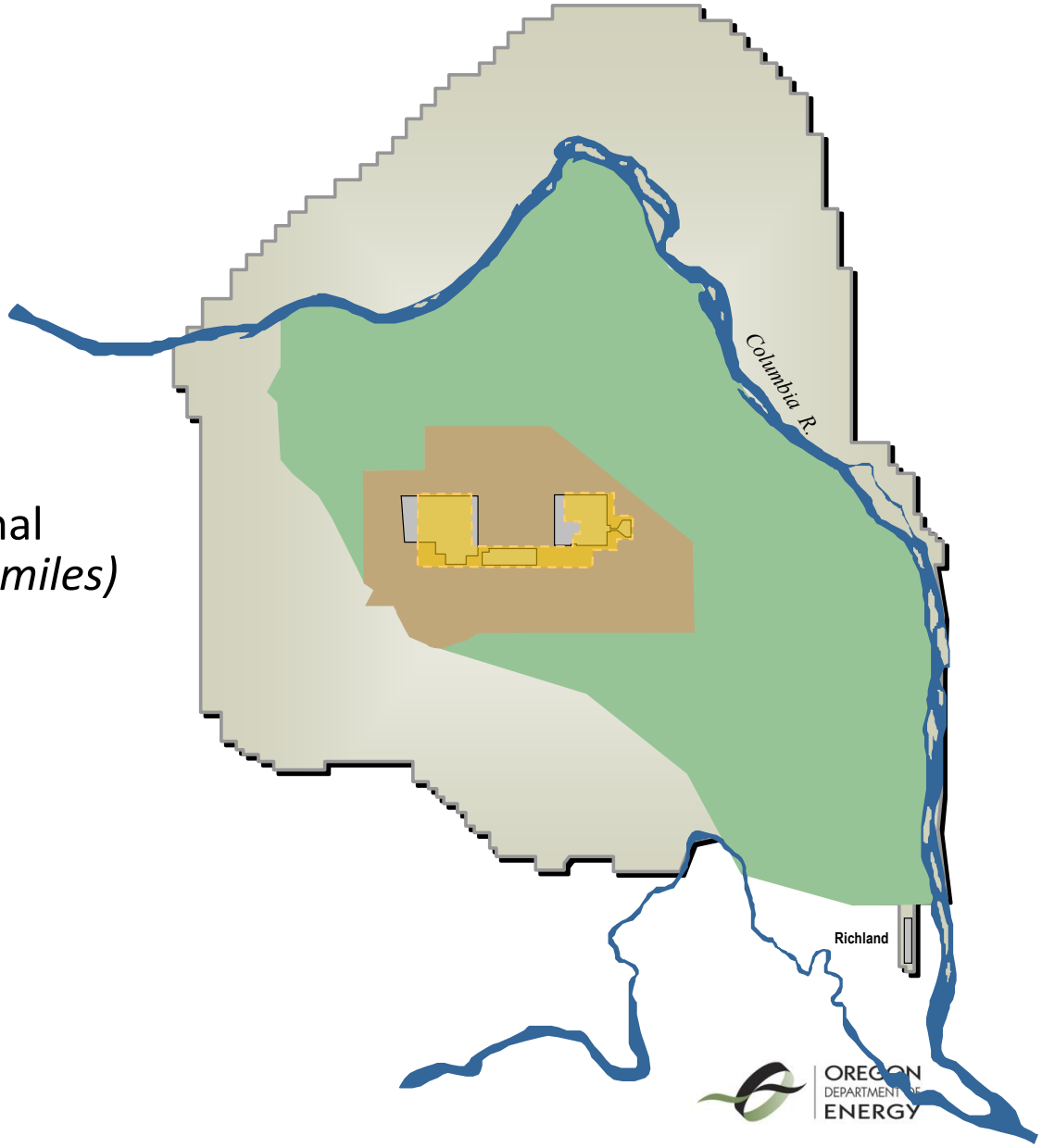
Shrinking the Footprint of Active Site Cleanup

- River Corridor *(~210 sq. miles)*
- Central Plateau, Outer Zone *(~65 sq. miles)*
- Central Plateau, Inner Zone *(~10 sq. miles)*
- Hanford Reach National Monument *(~300 sq. miles)* (including Arid Lands Ecology Reserve)



Remaining Challenges

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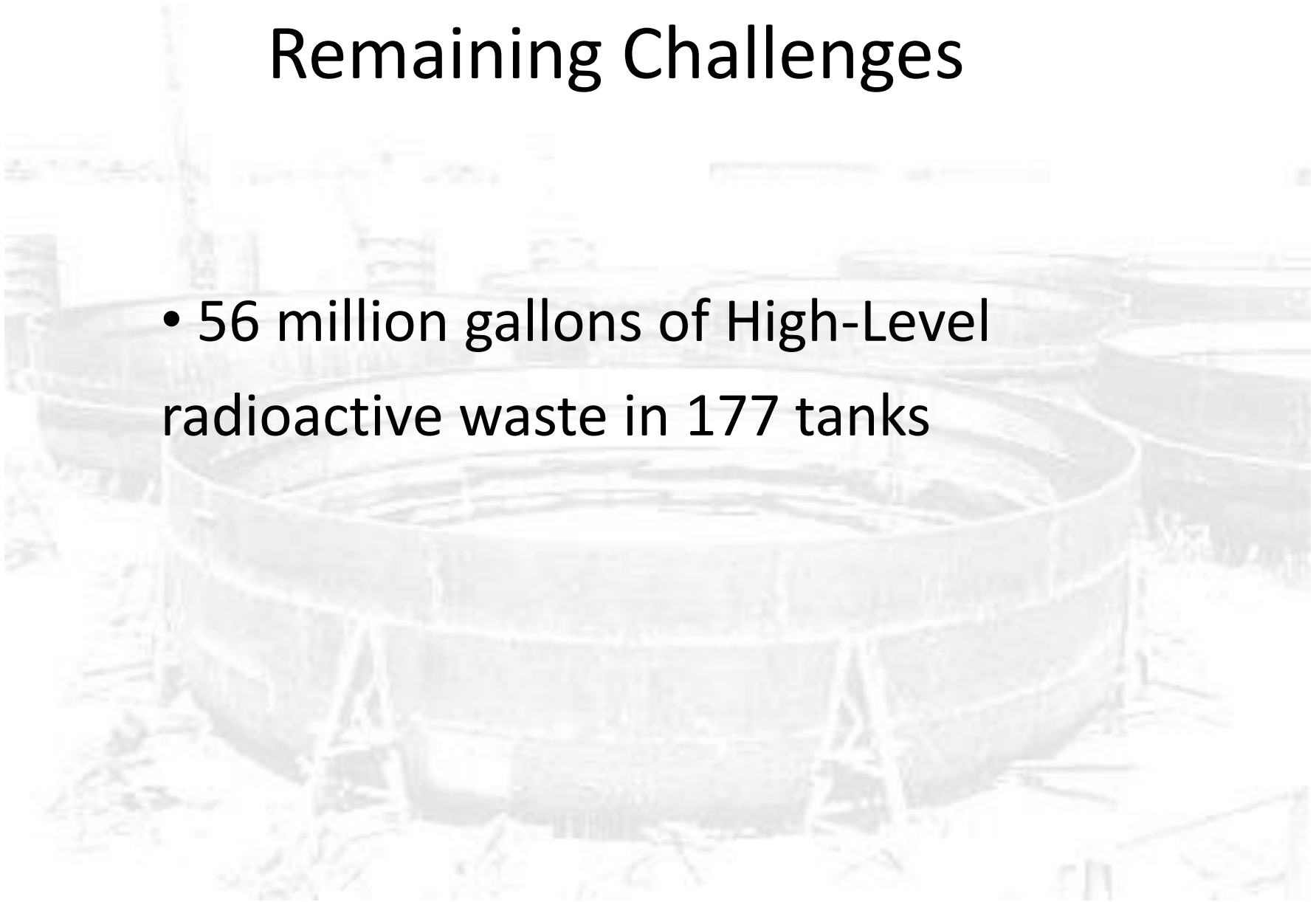
Remaining Challenges

- 56 million gallons of High-Level radioactive waste in 177 tanks



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OREGON DEPARTMENT OF ENERGY

Remaining Challenges

- 56 million gallons of High-Level radioactive waste in 177 tanks
  - tanks are aging
  - 67 have leaked (or is it 70?)
  - leaked tank waste has reached groundwater

Remaining Challenges

- Oldest tank has held waste since 1944 (69 years)
- Newest tank has held waste since 1986 (27 years)

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Remaining Challenges

- DOE's intent to use vitrification and some other technology to immobilize Hanford's tank wastes

Remaining Challenges

- DOE's intent to use vitrification and some other technology to immobilize Hanford's tank wastes
- No treatment facilities of this type currently exist at Hanford

July 2002

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December 2003

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February 2005

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May 2010

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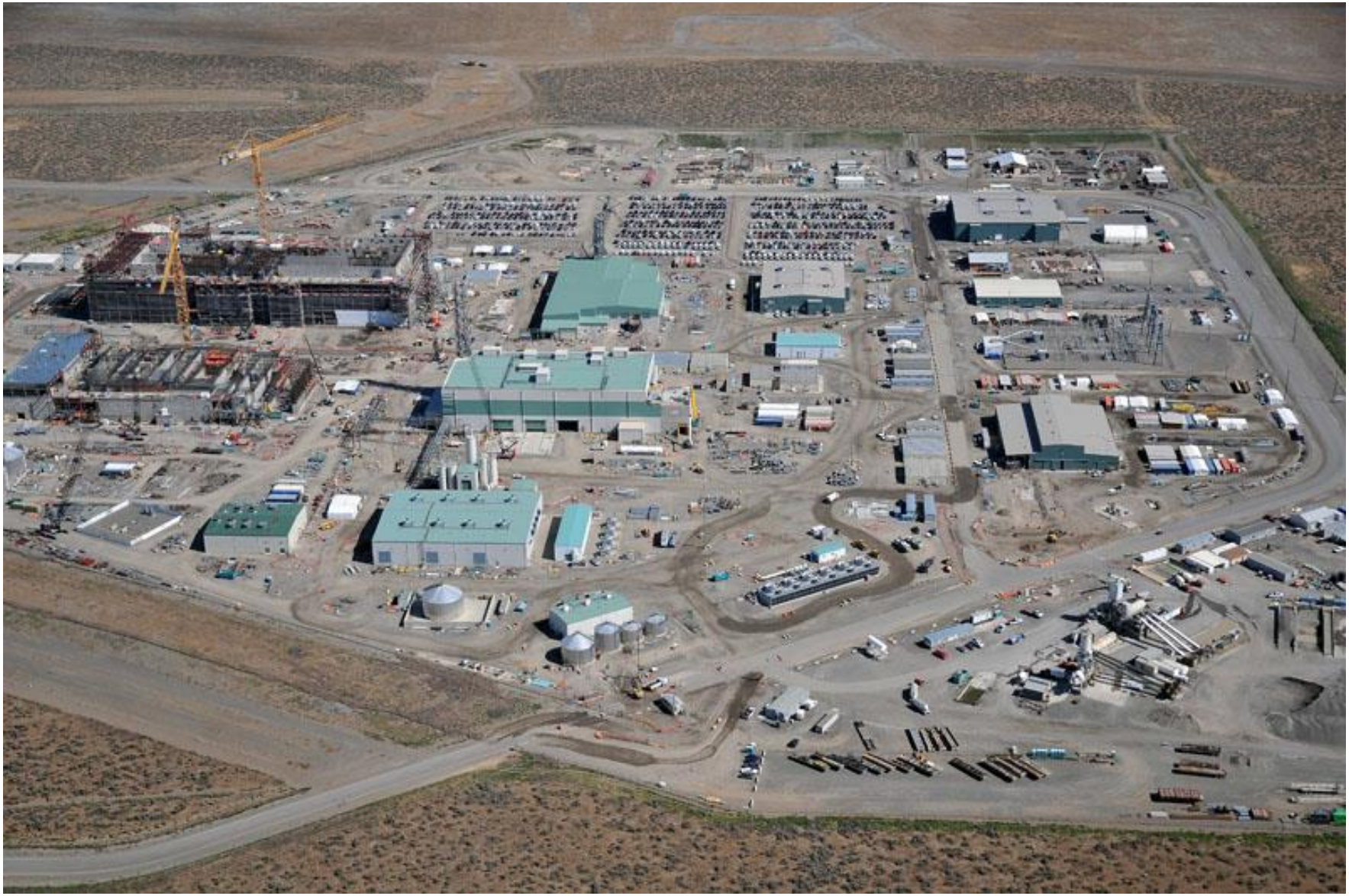

July 2011

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Hanford Waste Treatment Plant

- cost escalated to $12.2 billion

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- hot start now scheduled for
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Hanford Waste Treatment Plant

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- hot start now scheduled for Dec 2019 (delayed from 2011), fully operational in 2022
- treatment scheduled to take 25 years (complete by 2047)

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Remaining Challenges

- funding

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Remaining Challenges

- funding
- how much waste to leave in the soil

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Remaining Challenges

- funding
- how much waste to leave in the soil
- groundwater contamination

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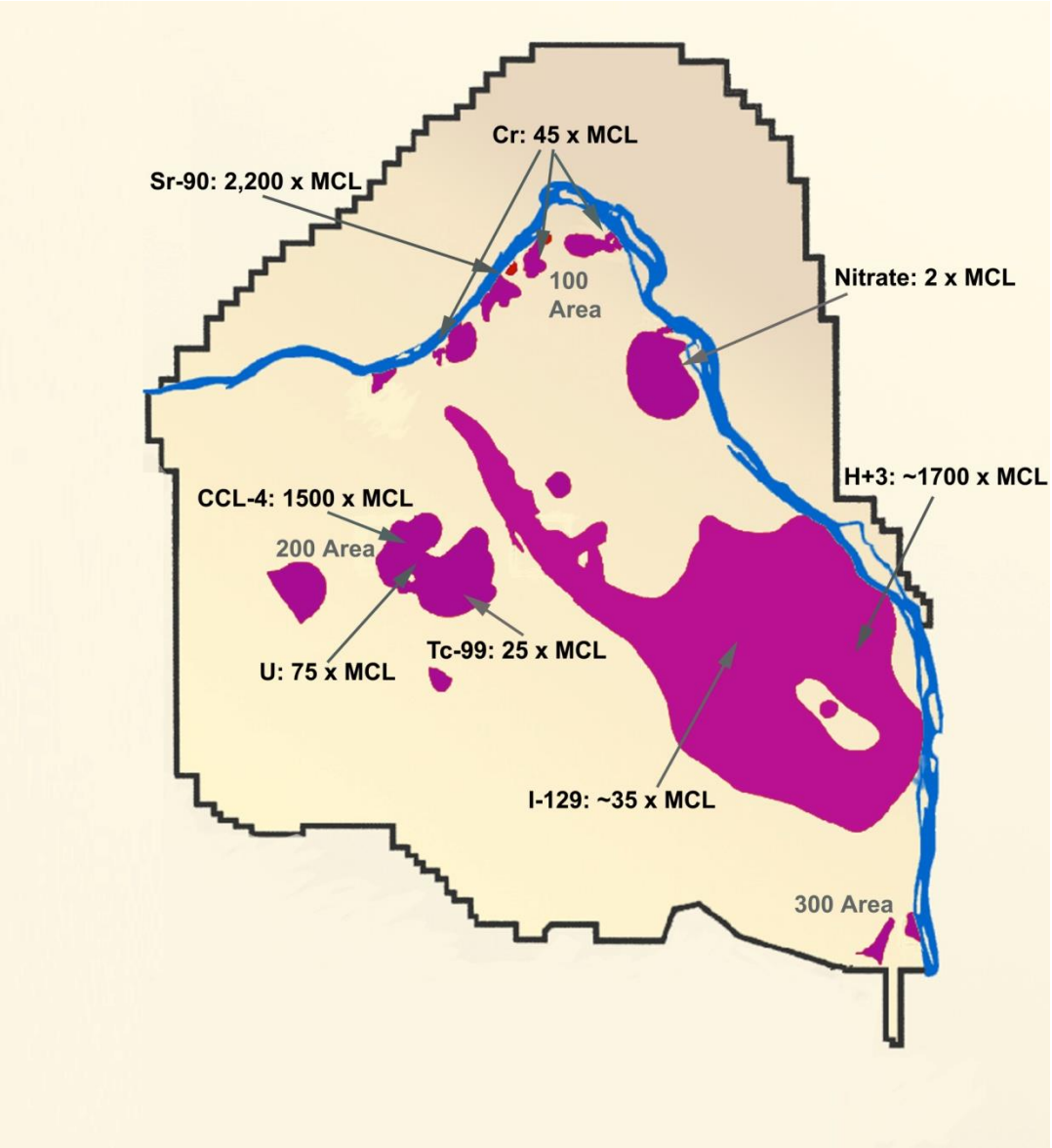
Hanford Groundwater Contamination



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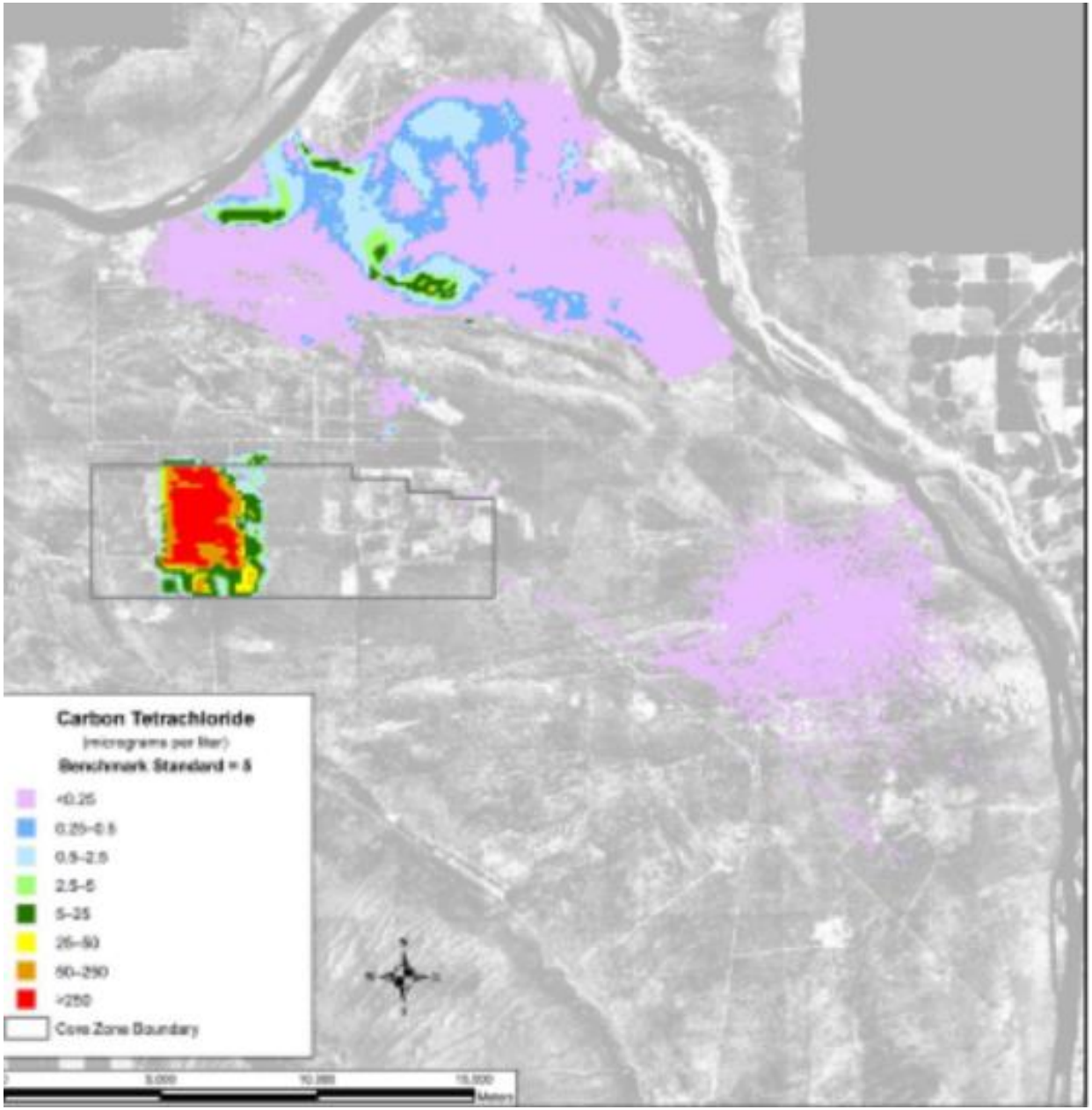

Carbon Tet – 2010

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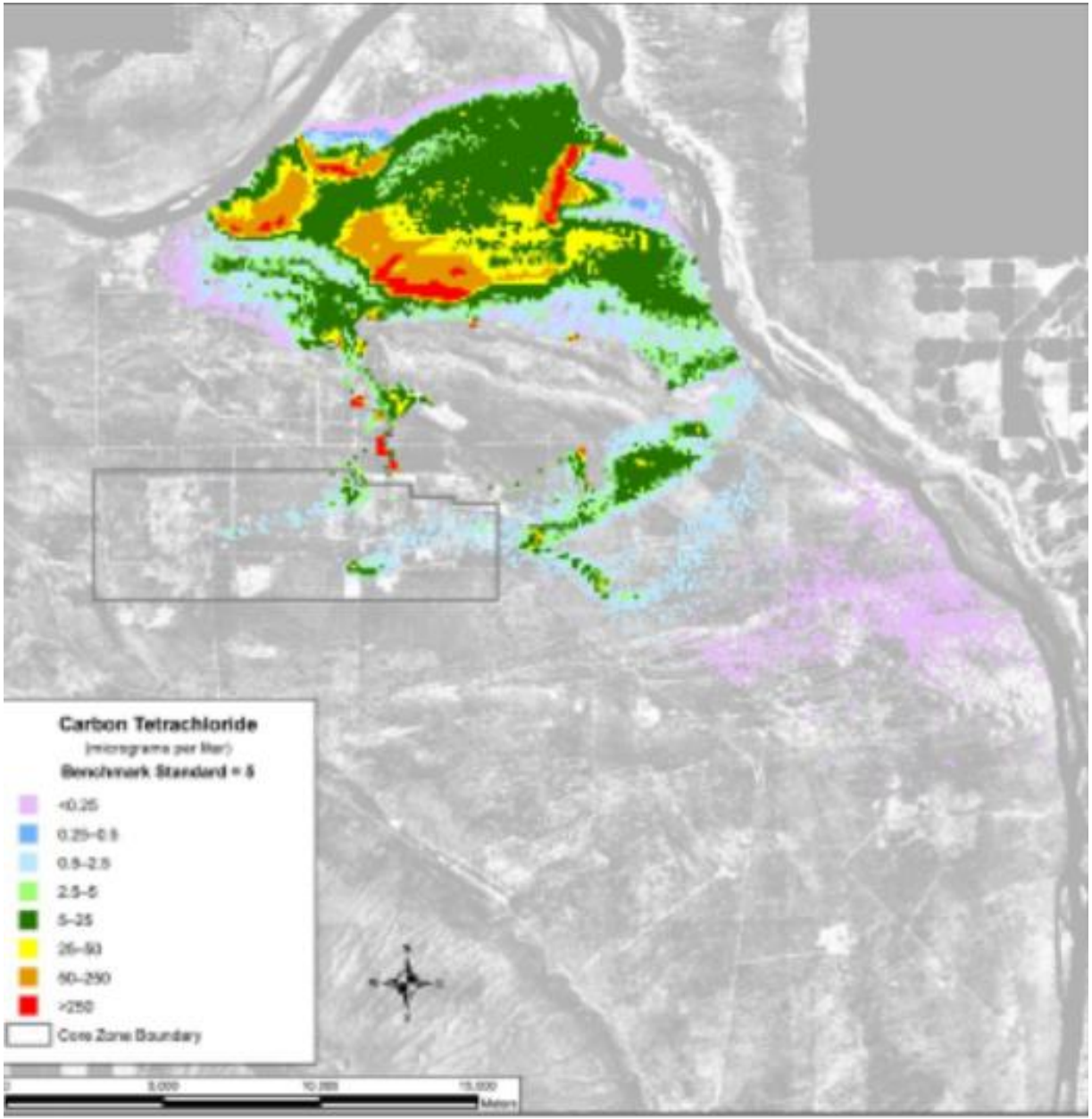

Carbon Tet – 2135

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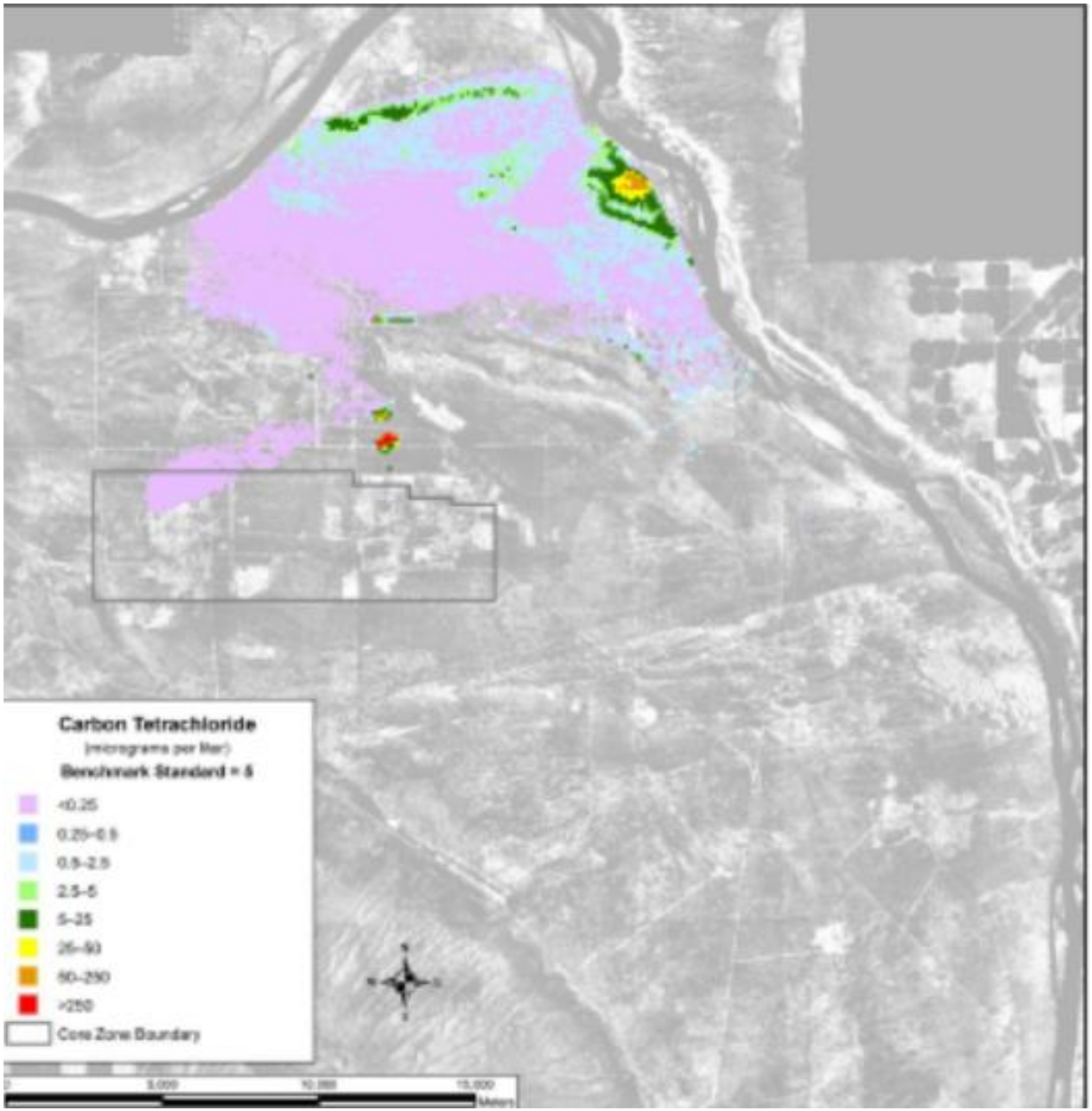

Carbon Tet – 3890

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What are your questions?

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