ENERGY NORTHWEST

Small Modular Reactor

Project Kickoff

Ken Langdon
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Ops, Licensing, Environ Manager

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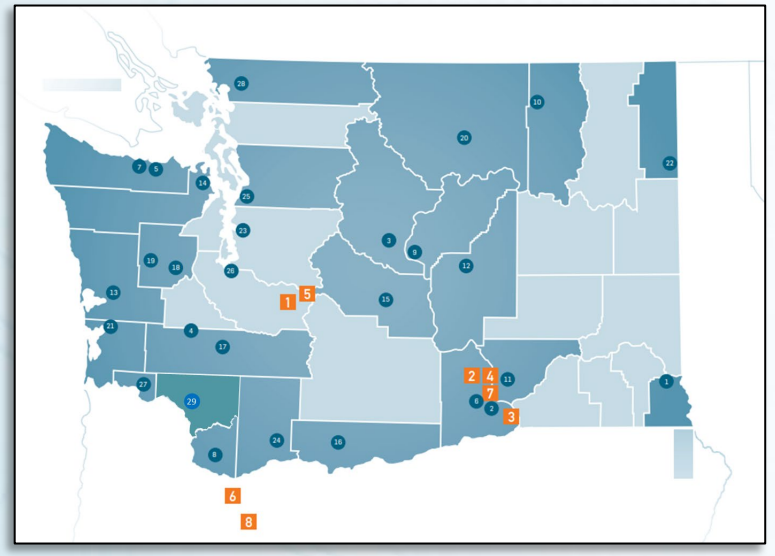
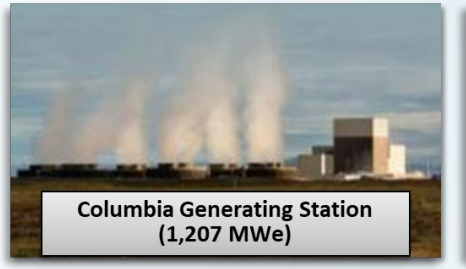
Operation Readiness Manager

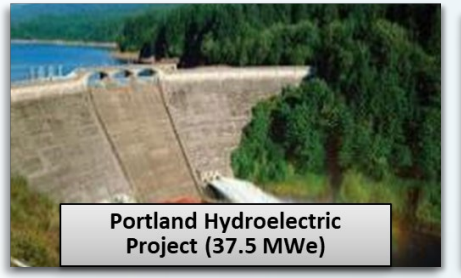
Don Gregoire
Licensing Manager

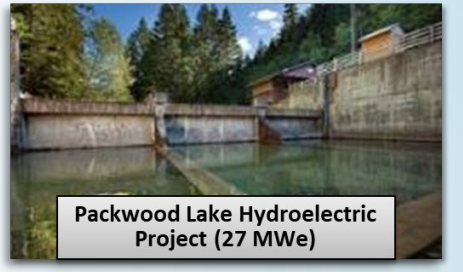
Introduction

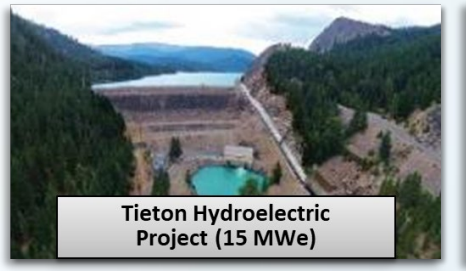


- Chartered in 1957 as a joint operating agency of the state of Washington
- Consortium of public utilities from across Washington state.
- Own and/or operate eight generation projects including Columbia Generating Station (Columbia)









Agenda

- Project Introduction
- Project Partnerships
- Licensing Complexities
- Regulatory Engagement
- Next Steps

Drivers and Enablers

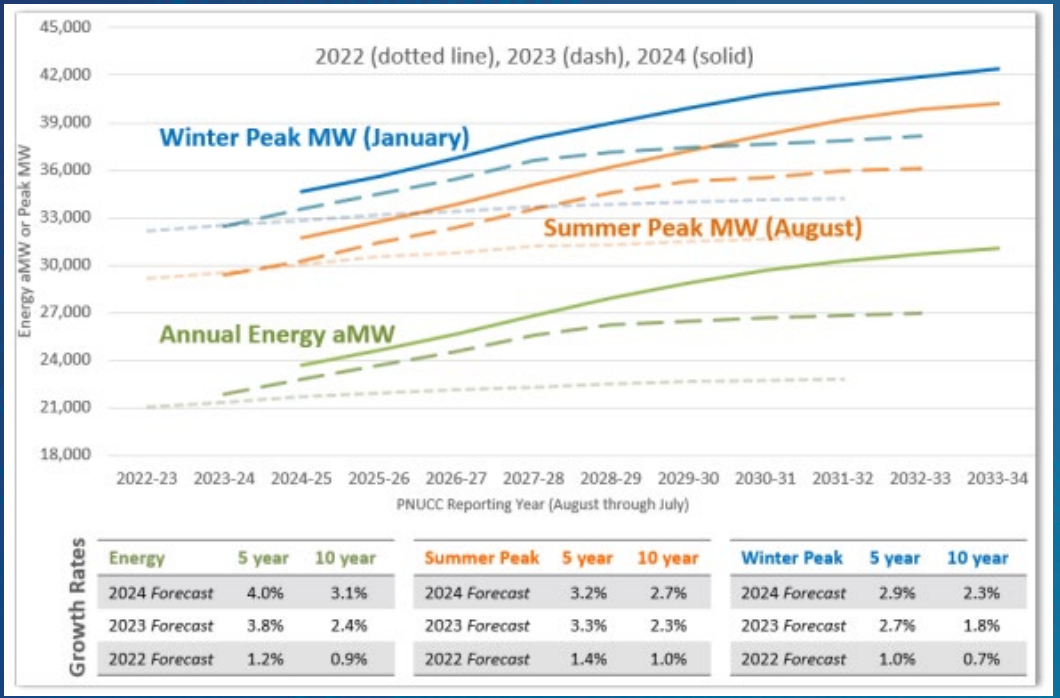
Energy Resource Challenges

- Regional reductions in carbon emission footprint
- Projected energy and resiliency demand
- Significant technology growth
- Potential removal of hydro units

Synchronization with Federal and State Initiatives

- Federal NEIMA and ADVANCE Acts
- Department of Energy (DOE) Cleanup to Clean Energy Initiative
- Washington Clean Energy Transformation Act
- Washington Climate Commitment Act

Energy Demand

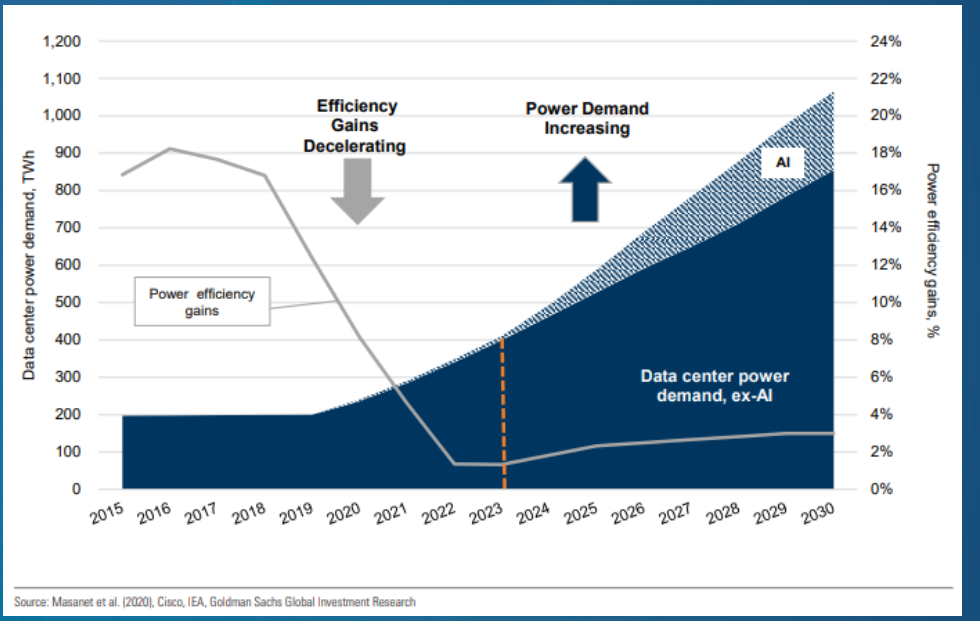


Growth Rates

Energy	5 year	10 year	Summer Peak	5 year	10 year	Winter Peak	5 year	10 year
2024 *Forecast*	4.0%	3.1%	2024 *Forecast*	3.2%	2.7%	2024 *Forecast*	2.9%	2.3%
2023 *Forecast*	3.8%	2.4%	2023 *Forecast*	3.3%	2.3%	2023 *Forecast*	2.7%	1.8%
2022 *Forecast*	1.2%	0.9%	2022 *Forecast*	1.4%	1.0%	2022 *Forecast*	1.0%	0.7%

Pathways to Commercial Liftoff

DOE is working to accelerate clean energy technologies from the lab to market to achieve net-zero emissions by 2050.



Source: Masanet et al. (2020), Cisco, IEA, Goldman Sachs Global Investment Research

ENVIRONMENT

Oregon's clean energy goals

MONTANA CLIMATE SOLUTIONS PLAN

Clean Energy Transformation Act

On May 7, 2019, Governor Jay Inslee signed into law the Clean Energy Transformation Act (CETA) (SB 5116, 2019), which commits Washington to an electricity supply free of greenhouse gas emissions by 2045. Clean electricity will allow Washington

We need clean firm electricity for a decarbonized energy system

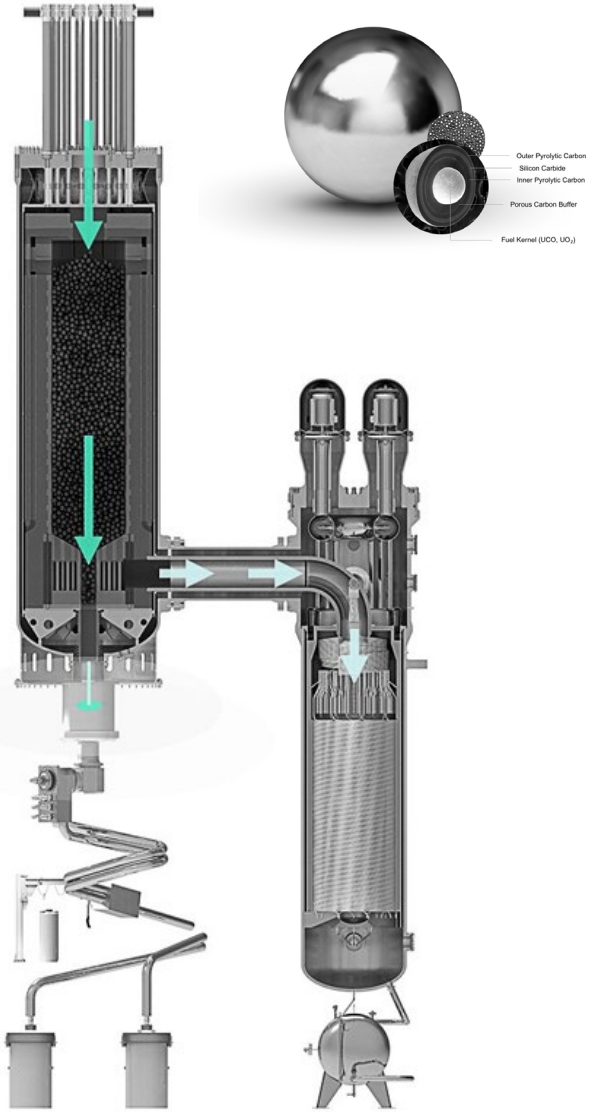
Proposed Technology

Xe-100 Small Modular Reactor (SMR)

- Pebble bed modular reactor
- High Temperature Gas Reactor (HTGR)
- Helium heat transport medium
- TRISO fuel
- Emergency Planning Zone at site boundary
- 200 MWt/80 MWe(net) per reactor
- Initial build 4 SMRs
- Application for 12 SMRs

energy

Xe-100



Site

Proposed Location

Hanford Reservation near Richland, WA

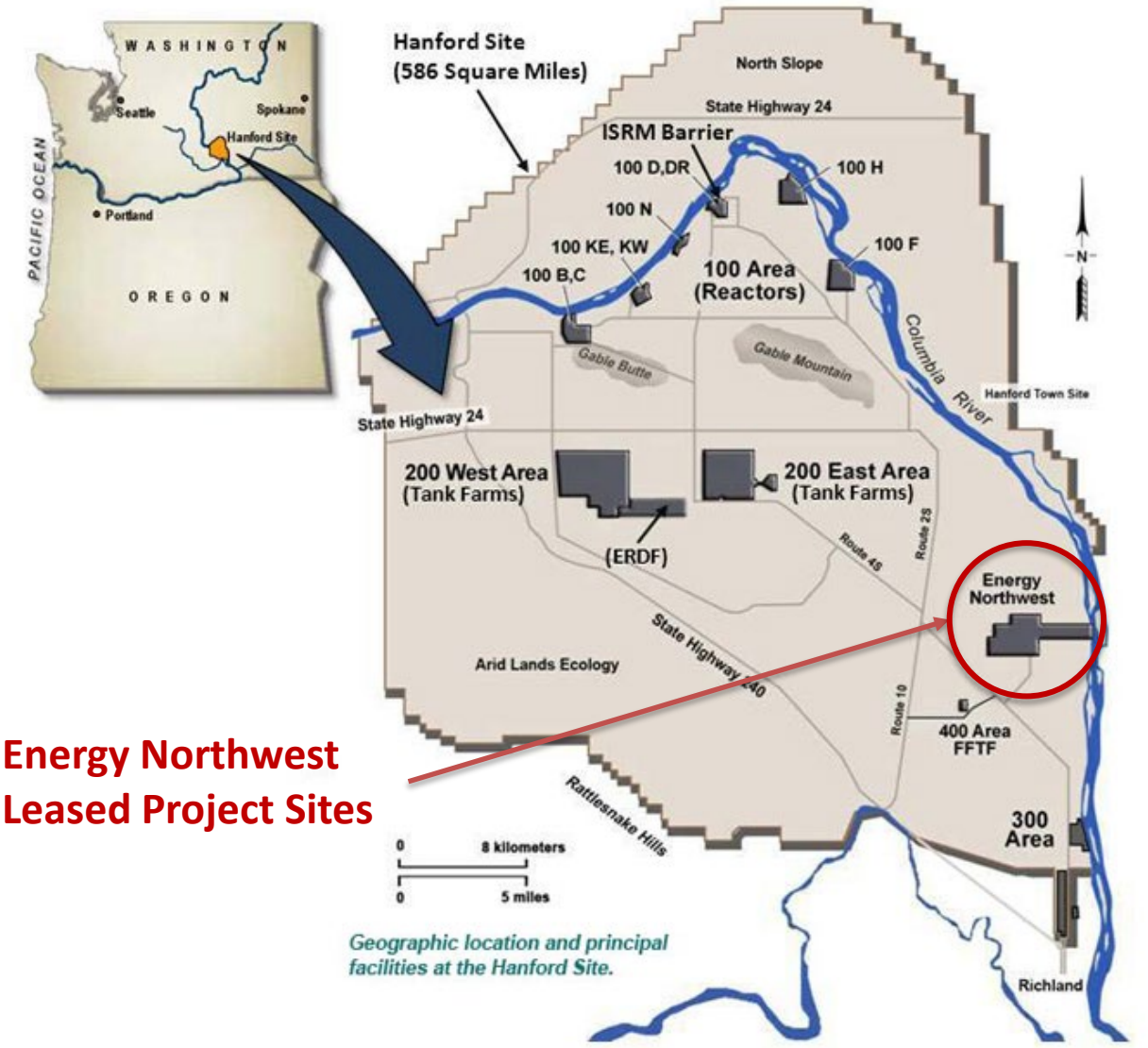
- Controlled by DOE's Richland Ops Office (DOE-RL)
- Extensively evaluated

Site of Former WNP-1/WNP-4 projects

- ~2 miles west of Columbia River
- > 3 miles to nearest residence
- Site leased by EN from DOE-RL
- Construction permits for WNP-1 and WNP-4 issued Dec 1975 and Feb 1978, respectively

Adjacent to Columbia Generating Station

- Operating license issued Apr 1984
- Operating license renewed May 2012



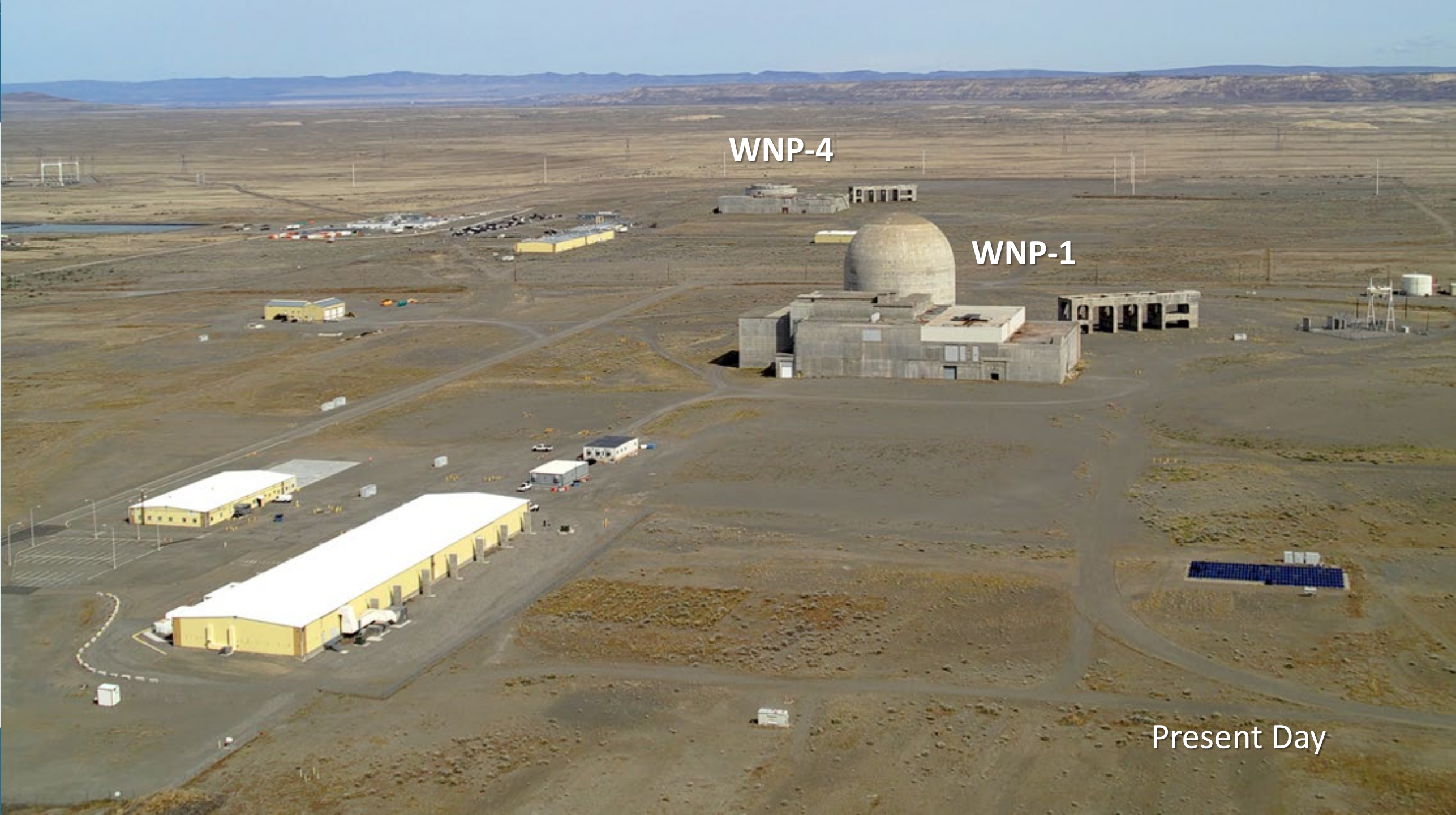
Energy Northwest Leased Project Sites

Geographic location and principal facilities at the Hanford Site.

WNP-4
WNP-1
Columbia
Geneva Junction

WNP-1
Columbia
1975

WNP-4
WNP-1
Early 1980s


WNP-4
WNP-1
Present Day

Present Day - Proposed Location

Project Licensing Approach

- **10 Part 50 Process**
  - Construction Permit
  - Operating License
  - Application content to be based on DANU-ISG-2022-01
- **Additional Requirements**
  - DOE Lease Amendment
  - Washington Site Certification Agreement (SCA)

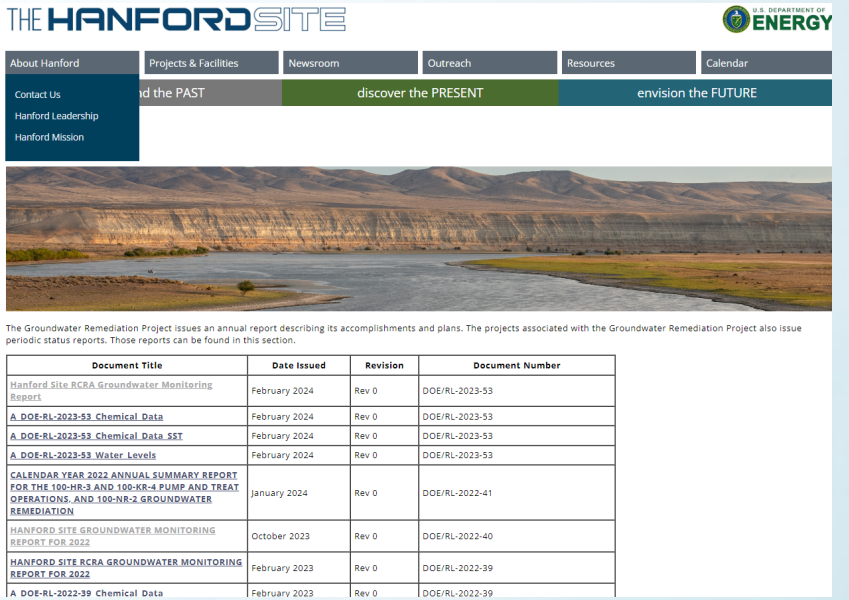
Closed Meeting Portion

Licensing

Site Licensing

Use of CGS, WNP-1, 4, & DOE Data/Reports

- CGS licensed since 1984, Renewed in 2012.
- Site characterization studies used for issuance of CGS' operating license were also used for issuance of WNP-1 and WNP-4 CPs (including seismic/flooding)
- Hanford geotech/hydrology well understood, characterized.
- Acceptability and scope of older site characterization information?
- Opportunity to facilitate ADVANCE Act Title V requirements, Sects 505 & 506



ADVANCE Act Sect 505 and 506 (emphasis added)

505, NUCLEAR LICENSING EFFICIENCY

(c) Construction Permits And Operating Licenses.—Section 185 of the Atomic Energy Act of 1954 (42 U.S.C. 2235) is amended by adding at the end the following:

> "c. Application Reviews For Production And Utilization Facilities Of An Existing Site.—In reviewing an application for…construction permit, operating license...for a…utilization facility located at the site of a production facility or utilization facility licensed by the Commission, **the Commission shall, to the extent practicable, use information that was part of the licensing basis of the licensed production facility or utilization facility**."

506, MODERNIZATION OF NUCLEAR REACTOR ENVIRONMENTAL REVIEWS

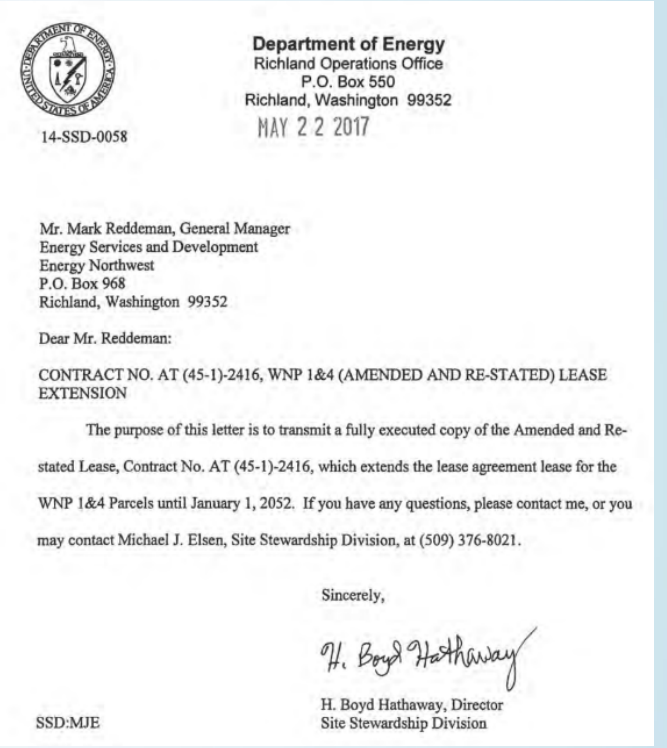
(b) Report.—In completing the report under subsection (a), **the Commission shall—**

> **(2) consider— (D) the extent to which the Commission may rely on prior studies or analyses** prepared by Federal, State, and local governmental permitting agencies to streamline environmental reviews of applications described in subsection (a) by the Commission;

Site Licensing

DOE-RL Lease Amendment Required

- One lease for the WNP-1 & WNP-4 site
- Existing lease does not support
  - nuclear plant construction on DOE land or
  - license life of new project beyond ~20 years
- Current expiration is Jun 30, 2032, with option to extend to Jan 1, 2052
- Lease amendment supporting new nuclear construction considered to be DOE major federal action requiring environmental review



Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

14-SSD-0058

MAY 2 2 2017

Mr. Mark Reddeman, General Manager
Energy Services and Development
Energy Northwest
P.O. Box 968
Richland, Washington 99352

Dear Mr. Reddeman:

CONTRACT NO. AT (45-1)-2416, WNP 1&4 (AMENDED AND RE-STATED) LEASE EXTENSION

The purpose of this letter is to transmit a fully executed copy of the Amended and Re-stated Lease, Contract No. AT (45-1)-2416, which extends the lease agreement lease for the WNP 1&4 Parcels until January 1, 2052. If you have any questions, please contact me, or you may contact Michael J. Elsen, Site Stewardship Division, at (509) 376-8021.

Sincerely,

H. Boyd Hathaway

H. Boyd Hathaway, Director
Site Stewardship Division

SSD:MJE

Site Licensing

Manhattan Project Legacy

- Superfund cleanup site
- 618-11 Burial ground source of groundwater Tritium near CGS and WNP-4
- DOE-RL may be remediating 618-11 site during project construction operation

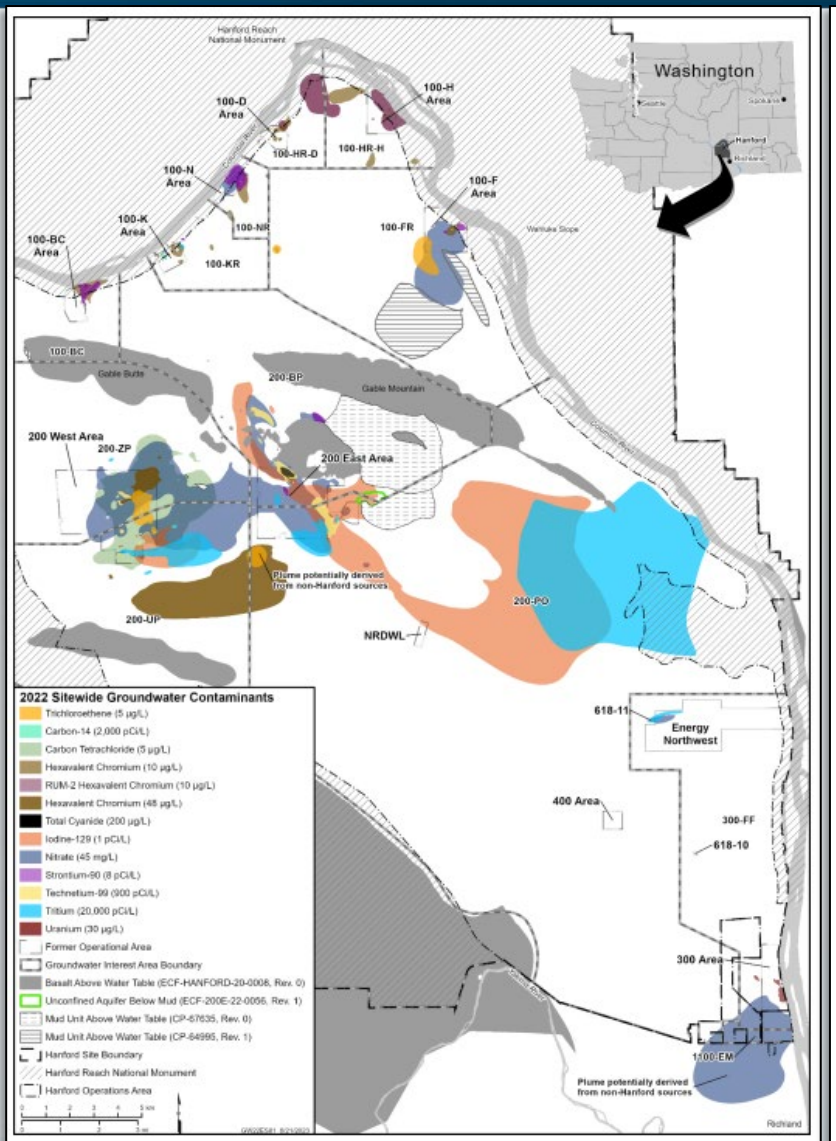


Figure ES-1. Regions of the Hanford Site and 2022 Groundwater Contaminant Plumes

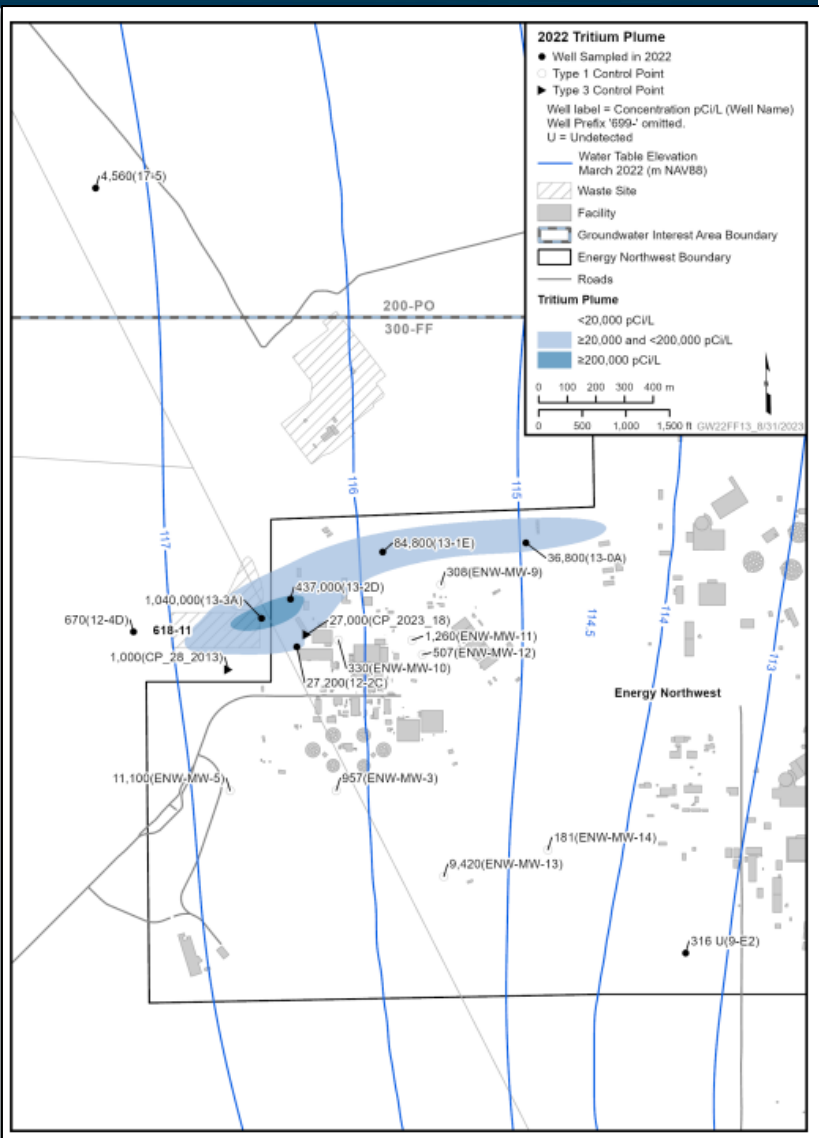
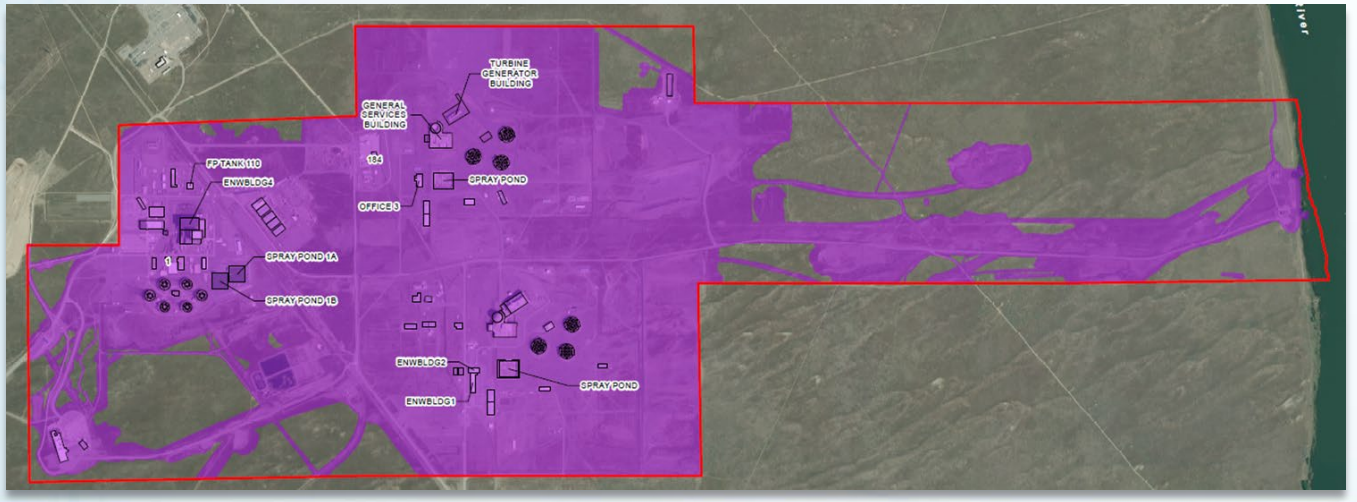
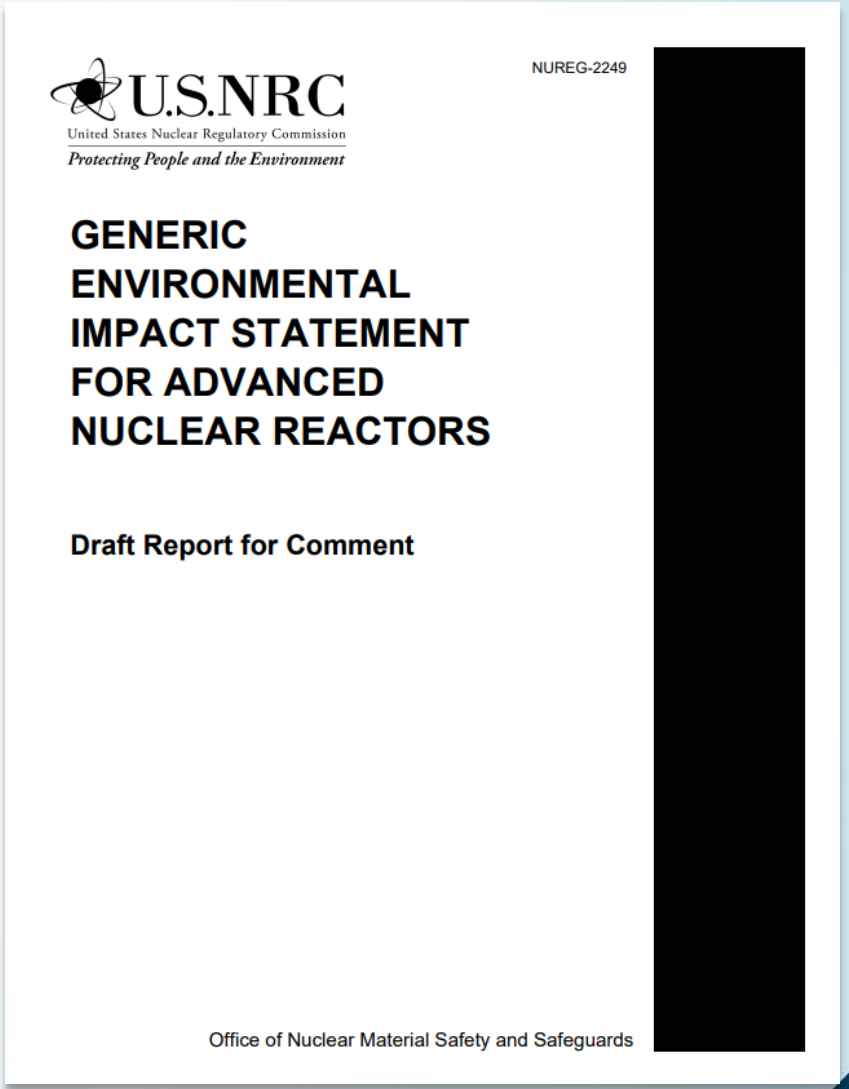


Figure 7-14. 300-FF Tritium Plume and Water Table Contours Near the 618-11 Burial Ground, 2022

Application of ANR GEIS

- Support Part 50 not just 53?
- GEIS Rulemaking Impact?
- Impact of deferred OLs
- Actual vs planned project disturbed land




U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-2249

GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR ADVANCED NUCLEAR REACTORS

Draft Report for Comment

Office of Nuclear Material Safety and Safeguards

Next Steps

- Project number
- NRC fees
- Communication expectations
- Pre-application readiness assessments
- Lessons learned that could be applied
- ADVANCE act