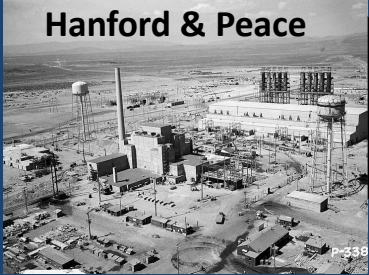


# Hanford & Peace



2024 Fall Conference

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**APWA**  
AMERICAN PUBLIC WORKS ASSOCIATION  
Washington State Chapter

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During World War II, Hanford played a key role in bringing the war to an end by producing plutonium for the atom bomb dropped over Nagasaki, Japan.

Our purpose in this presentation is not to rationalize the production of plutonium or use of the bomb, but to highlight the tremendous effort it took to construct the extensive infrastructure needed in only 30 months with an impressive safety record and an even more impressive level of secrecy.

Hanford workers built 554 buildings, 386 miles of road, 158 miles of railroad, sewer and water lines, miles of electric transmission lines and housing and other amenities for 51,000 workers.

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## Hanford and Peace

- Before Hanford
- Hanford Site Construction & Operations
- Everyday Life in Hanford
- Japanese Balloon Bombs
- Post War Plutonium Production
- Cleanup of the Superfund Site
- Hanford Reach Natural Area



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## Quirky sites along the way

ON A LONELY STRETCH OF ROAD NORTH of Prosser, Washington, at the "base" of a small incline, if you shift your car into neutral you will, as if by magic, begin rolling uphill.

Strange phenomenon causing gravity to "work backwards" on this hill has been blamed on the paranormal



## Gravity Hill – Prosser WA

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## Before Hanford



- For thousands of years, native peoples lived on the land along Columbia River in the Hanford area.

"We lived in harmony with the area, with the river, with all of the environment. All the natural foods and medicines were quite abundant here.

Yakama Tribe member Russell Jim

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## Before Hanford

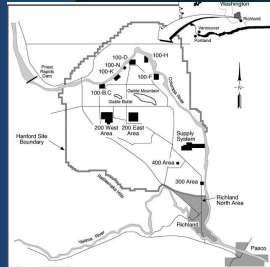
- In 1942 Colonel Franklin Matthias, the Officer-in-Charge at Hanford, granted the tribe daily visitation rights to the Hanford area:
  - "I'll arrange to take your people up to the White Bluffs Island every morning by truck and you can do your fishing and bring you back by night."
- The tribes were not compensated for the loss of their lands.



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## Before Hanford

- Hanford was selected for its
  - abundance of water for processes
  - rural isolation
  - long construction season.
- Proximity to the Grand Coulee and Bonneville Dams on the Columbia River were ideal for hydroelectric power.
- The government requisitioned about 580,000 acres (910 square miles), equivalent to about half of Rhode Island



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## Before Hanford

- In early 1943, there were some 2,300 people living in the towns of Hanford, White Bluffs and Richland and unincorporated agricultural lands along the Columbia River.
- Residents were given anywhere from twenty-eight days to ninety days' notice to vacate their homes.
- Because of secrecy, the government vaguely explained to residents that the land was needed for a new military wartime project.




Attached hereto is a copy of Public Proclamation No. 18, dated July 14, 1942, by Headquarters, Western Defense Command and Fourth Army, Presidio of San Francisco, California.

You, PAUL LUDWIG BRUGGEMANN, are hereby notified that your presence in Total Exclusion Area No. 3 violates the provisions of Public Proclamation No. 18 and you are hereby further notified and directed to leave Total Exclusion Area No. 3 by September 30, 1943.

By Order of the District Engineer: F. T. Matthias, Lt. Col., Corps of Engineers, Deputy District Engineer, Manhattan District.

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### Before Hanford



- Walt Grisham's family farm had two acres of grapes, four acres of apricots, seven acres of peaches, a small patch of asparagus, alfalfa hay, and pasture and row crops. They also had cows, chickens, and Duroc hogs.
- Describing their lifestyle, he said that "they didn't run to town for a quart of milk or a dozen eggs in those days. It was kind of a self-supporting, diversified situation, where you were pretty much on your own."
- Grisham was abroad in England serving in the U.S. Air Force at the time. He explained that his family along with others were "given a deadline and that was it. No assistance in how to get there or how to leave."

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### Hanford



- The town of Hanford was settled in 1907 and by 1925 the booming town enjoyed high agricultural demand and provided a hotel, bank, and elementary and high schools.
- Residents were given a thirty-day eviction notice on March 9, 1943.
- Most buildings were razed, except for the former Hanford High School which was used during World War II as the construction management office and later as a training site for what would be labeled SWAT teams.

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### Quirky sites along the Way



Known for its unique potato flour donuts and delicious homemade treats.



228 Williams Blvd  
Richland WA

### Richland Spudnut Shop

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## Hanford Site Construction & Operations

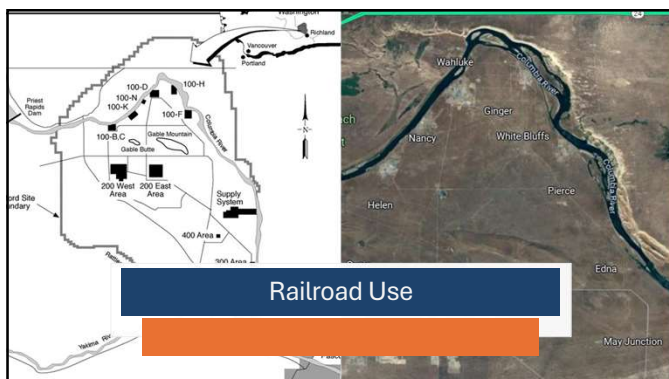
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### Railroads

- 1032 trains brought 40,500 loaded cars of equipment and materials from the outside to be transferred to the onsite railroad system.
- 27 locomotives were required for freight car movements on the site.
- There were 13 different rail lines on site, 158 miles in all, each named after a lady in the transportation office.



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## Roads, Water and Sewer

- 326 miles of roads
- 333 miles of waterlines
- 185 miles of sewer



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## Electric Power & Telephone

- 173,400 KVA primary transformers
- 1817 outside transformers installed
- 300 miles of distribution lines
- 11207 poles were set
- 153 miles of lead sheathed multiple circuit telephone cable was strung



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## Coal-Fired Steam Generation Plants

- Seven coal-fired steam generation plants
  - 22 boilers
  - Total output 1,692,000# of steam per hour
- 55 miles of insulated outside overhead steam lines
  - 4 inches to 20 inches
  - Wooden pipe supports
  - 1350 tons of insulating material



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## Concrete Made on Site

- Eight concrete plants
- 784,000 CY of concrete



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## Construction Equipment

- 10,700 pieces of construction equipment were used by contractors and subcontractors
  - Trucks, tractors, pumps, cranes, etc.
- In addition, there were 8,200 pieces of government owned equipment.
  - Maintained at central shops



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## Hanford Engineer Works Village\*

- Federally sponsored planned community to house workers and their families at the Hanford Nuclear Reservation.
- At the site of Richland, a small community of 250 people.
- Residents were forced to move.
- As part of the project, infrastructure for accommodation of 16,000 people was constructed.
- 65 stores and commercial facilities were constructed.
- In 1955, a federal law was passed giving Richland five years to make the transition from federal city to self-governing city.
- Richland became a first-class city in 1958.

\*aka Richland



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# Everyday Life in Hanford

- DuPont built:
  - Mess Halls
  - Churches
  - Banks
  - Grocery Stores
  - Schools
  - Houses
  - An Auditorium
  - Barracks and Huts
  - A Hotel
  - Houses
  - Hospitals
  - Administration Buildings



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# Everyday Life in Hanford

- 873 buses operating over 156 different routes were needed to transport construction workers to and from their worksites.
- 340,000,000 passenger miles were accumulated.

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# Everyday Life in Hanford


Morning and evening meals for 38,000 men in dormitories or barracks were in 8 mess halls.

Over 3 million box lunches were provided for construction workers.

Almost every night, movies or shows were provided in the auditorium.

Taverns and bars were provided. It's said they went through 12,000 kegs of beer a week.

A Typical Hanford Man's Day Begins At 5:30 A.M. He Rides Several Miles In A Project Bus From Hanford To A Plant Area Before Reporting For Work At 8:00 A.M.



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## Japanese Balloon Bombs

- The Japanese Ninth Army Technical Research Laboratory devised hydrogen balloons known as Fu-Go (wind-ship weapon)
- Using sandbags as ballast and an altimeter to control altitude, with bombs suspended from a ring, they took 30 to 60 hours to reach America's coast
- In March 1945 one of the balloons damaged power lines to the Hanford, Washington, nuclear facility which was producing plutonium for the bomb that later destroyed Nagasaki. Work was briefly interrupted.
- A Japanese "fire balloon" packed with explosives flew approximately 5,000 miles across the Pacific, landed on Gearheart Mountain, Oregon, and lay dormant until the victims inadvertently detonated it
- Six picnickers who died – five children and a pregnant woman – were the only people killed by enemy action on the American continent in the second world war.



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## Quirky sites along the way



JUTTING SKYWARD NEAR WASHINGTON'S WALLULA GAP, near Touchet WA, the pair of massive basalt columns known as the Twin Sisters are not only a picturesque natural wonder, but according to local legend, they were created by a jealous trickster god.

## Twin Sisters

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## Post War Plutonium Production

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## Expansion and Operations

- Post-WWII expansion to meet Cold War demands.
- Construction of new reactors and processing facilities.
- Introduction of the N reactor in 1963, cooled by water rather than air.
- Achieved peak production of plutonium in the 1960s.
- Continuous operations shaping regional economics and employment.



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## Technological Innovations

- Development of dual-purpose reactors for electricity and plutonium.
- Innovations in nuclear safety and reactor design.
- Enhanced chemical separation processes introduced in the REDOX and PUREX plants.
- Automation and remote handling systems to reduce human exposure to radiation.



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## Workforce and Community

- Rapid growth of the Hanford workforce, reaching tens of thousands.
- Significant contributions to local communities and infrastructure.
- Development of Richland and other nearby towns.
- Health and safety measures implemented for workers.



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## Cleanup of the Superfund Site

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### Initiation of Cleanup Efforts

- Recognition of environmental impacts leading to designation as a Superfund site in 1989.
- Launch of large-scale cleanup operations in the early 1990s.
- Challenges posed by millions of gallons of radioactive waste.
- Ongoing efforts to secure and treat underground storage tanks.



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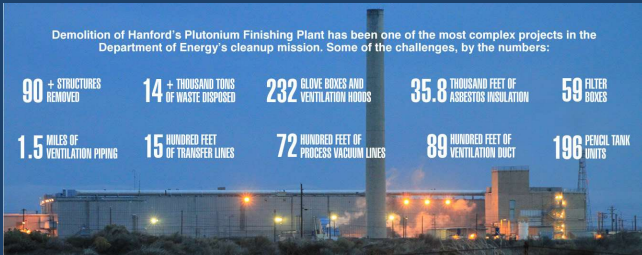
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Demolition of Hanford's Plutonium Finishing Plant has been one of the most complex projects in the Department of Energy's cleanup mission. Some of the challenges, by the numbers:

90 + STRUCTURES REMOVED	14 + THOUSAND TONS OF WASTE DISPOSED	232 GLOVE BOXES AND VENTILATION HOODS	35.8 THOUSAND FEET OF ASBESTOS INSULATION	59 FILTER BOXES
1.5 MILES OF VENTILATION PIPING	15 HUNDRED FEET OF TRANSFER LINES	72 HUNDRED FEET OF PROCESS VACUUM LINES	89 HUNDRED FEET OF VENTILATION DUCT	190 PENCIL TANK UNITS



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## Tech and Method Advances

- Development of vitrification plants to stabilize waste.
- Use of advanced robotics for site remediation.
- Groundwater treatment facilities and initiatives.
- Innovations in environmental monitoring and restoration techniques.



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## Challenges and Progress

- Issues with tank leaks and long-term waste containment.
- Political and financial hurdles impacting cleanup timelines.
- Progress in reducing site contamination levels.
- Community involvement and ongoing dialogue on safety and environmental impact.



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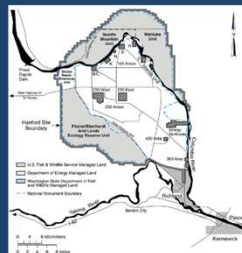
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## Hanford Reach Natural Area

- 195,000-acre Hanford Reach National Monument established in June 2000.
- Protects the last free-flowing stretch (51 miles) of the Columbia River.
- Preserves one of the largest undeveloped blocks of shrub-steppe grasslands left in Washington state.
- The last undeveloped damsite on the Columbia remained undeveloped because the dam's reservoir would have flooded the radioactive remains of the reactors on the river's banks.



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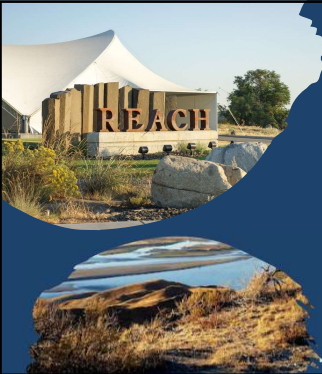
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## Hanford Reach Natural Area

- Valuable wildlife refuge.
- Includes numerous archaeological and historic sites, among them ceremonial, hunting, and burial grounds used by Native Americans for thousands of years.
- Administered by the Federal Fish and Wildlife Service (FWS).

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## Hanford Reach Natural Area

Activities

- Hiking
- Wildlife Viewing
- Fishing & Hunting
- Guided Tours of N Sites
- Kayaking & Boating



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Credits

**APWA**  
Washington State Chapter

- Hanford.gov
- WSU Libraries
- Wikipedia
- HistoryLink.org
- Oregon Encyclopedia
- Oregonian
- The Guardian
- Atomic Heritage Foundation
- Humanities Washington

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