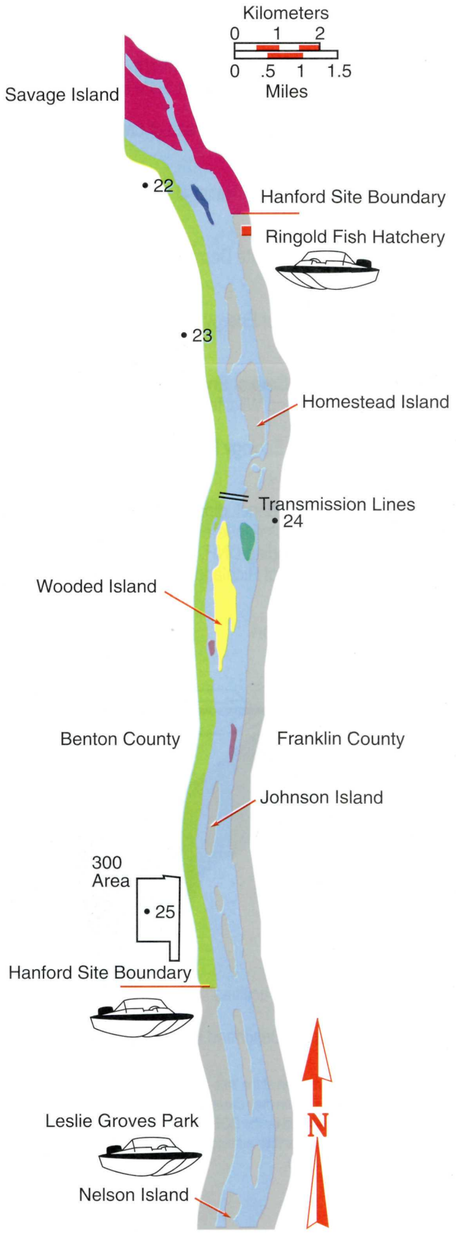
22. Sand dunes, Benton County side. One of the few actively shifting dune fields visible from the river, this area boasts a desert environment. Across the river lies the State of Washington Department of Wildlife Ringold Springs Fish Hatchery.

23. Washington Public Power Supply System, Benton County side. The Supply System reactor cooling water intakes, marked with buoys, withdraw water to cool the WNP-2 Reactor.

24. Cliff holes, Franklin County side. These holes are the result of blasting to construct the road that runs along the river. Landslides have blocked this road in several locations.

25. 300 Area, Benton County side. The southern-most operating area on the Hanford Site, the 300 Area contains old reactor fuel-fabrication facilities and various research and development laboratories.



Archaeological Resources Along the Hanford Reach

The archaeological, historical, and cultural resources that are present along the Hanford reach are protected under the National Historic Preservation Act of 1966, Archaeological Resources Protection Act of 1979, and American Indian Religious Freedom Act of 1978. Disturbing these resources, including removing artifacts, is illegal and punishable by law. The condition of cultural resources and the adequacy of the resource management and protection program at Hanford are monitored on a routine basis.

Access to Columbia River Shorelines Along the Hanford Reach

The land, including islands, through the Hanford Reach is owned by a number of government agencies and private parties. Ownership is indicated on the maps. The DOE ownership generally includes the shoreline to the water. Exceptions are Locke and Wooded islands, where DOE-ownership does not include the shorelines.

Access to the shoreline along the Hanford Reach is controlled by the land-owners. Users of this stretch of the river should become familiar with each landowner's shoreline access restrictions. The State of Washington has strict laws prohibiting trespass. While landowners are not required by law to post no trespassing signs, the DOE-owned land is posted "No Trespassing" along the river. Such postings are located at points above the typical high-water mark only to avoid being washed out during the spring run-off, not to indicate access policy.

Access to the shorelines of DOE-owned land from the city of Richland to the wooden tower powerline crossing near the old Hanford Townsite (river mile 362) is permitted up to the high-water mark. This high-water mark is typically considered to be that point where terrestrial (as opposed to aquatic) vegetation is established. Access to the Hanford Site shoreline upstream of the wooden tower powerline crossing is prohibited. This access restriction is posted at the powerline crossing on both shorelines, at the tip of the Hanford peninsula, and near Vernita Bridge at the upstream border of this restricted zone.

The land north of the river within the Hanford Site boundary has been managed by the U.S. Fish and Wildlife Service (northwest portion) and the State of Washington Department of Wildlife (northeast portion) since 1975. The U.S. Fish and Wildlife portion is used and posted as a wildlife refuge: public access is prohibited. The State of Washington Department of Wildlife portion is open to the public as a recreation area during daylight hours.

Biological Resources of the Hanford Reach

Wildlife has flourished in the absence of human activities along the river on the Hanford Site. The Site has served as a refuge for various plant and animal species that were threatened elsewhere in the region by agricultural and recreational activities. Various plant communities, birds, mammals, reptiles, amphibians, and invertebrates may be observed throughout the Reach.

Scattered trees along the Hanford Reach include elm, black locust, poplar, cottonwood, mulberry, and an occasional fruit tree, primarily apricot. The vegetation near the river consists of shrub-willows and various mixtures of rushes, grasses, and forbs. Sagebrush, bitterbrush, rabbitbrush, cheatgrass, and other grasses are the predominant plants on the Hanford Site.

Birds such as meadowlarks, blackbirds, magpies, sparrows, swallows, and mourning doves are present throughout the Hanford Reach. Ducks and geese are also very common. Birds of prey often observed include bald eagles, marsh hawks, osprey, and owls. Swainson's hawks, red-tailed hawks, prairie falcons, and American kestrel are known to nest along the river as well. Fish-eating birds such as gulls, herons, pelicans, and terns are also common. Upland game birds that reside along the river include pheasant, chukar, and quail.

A wide variety of mammals exist along the Hanford Reach. The most notable are the mule deer and coyotes. Some trees show browse lines where deer have fed. Furbearing animals present along the Reach include beaver, muskrat, mink, raccoon, skunk, and weasel.

The Hanford Reach is the spawning ground for the second largest naturally reproducing fall chinook salmon run in the continental United States. Steelhead trout also are an important sportfishing resource. Other sportfish include smallmouth bass, largemouth bass, mountain whitefish, white sturgeon, crappie, catfish, walleye, and yellow perch. Suckers and carp are also abundant, as are several small fishes such as sculpin and redside shiners.

Health and Safety Concerns Along the Hanford Reach

The public should be aware of certain health and safety issues when using the Hanford Reach. These include those associated with the river itself and those resulting directly from past or present operations at the Hanford Site.

River hazards include widely fluctuating water levels, swift currents, areas of extremely shallow water, and rocky shorelines. Boaters can be left stranded, as daily water levels can fluctuate as much as 5 vertical feet. Swift water through the Reach can render navigation and anchoring difficult and dangerous. Shallow water also creates hazardous boating conditions and can be compounded by the fluctuating water levels. Rocky shorelines often protrude, submerged, into the river, imposing additional boating hazards. Those venturing ashore, where access is allowed, should be careful of walking along rocky shorelines, as the rocks can become extremely slippery when wet and are often unstable.

Concerns related to the Hanford Site include abandoned facilities, elevated radiation exposure levels, and the presence of contaminants in some areas along the river. Obvious are the hazards associated with the various structures located on the river. These include water system intakes, some still in service, and old outfall structures. These tend to be points of interest; however, these structures are posted and are best observed from a distance.

Boat Launches Along the Hanford Reach

Public boat launches can be found at

- Vernita Bridge, Grant County side, Highway 24, unimproved
- White Bluffs, Franklin County side, enter through Wahluke Wildlife Refuge, improved
- Old Hanford ferry crossing ramp, Franklin County side, enter through Wahluke Wildlife Refuge, unimproved
- Ringold, Franklin County side, enter near Ringold Springs Fish Hatchery, unimproved
- Port of Benton, Benton County side, just north of the city of Richland, unimproved
- Leslie Groves Park, Benton County side, end of Snyder Road in Richland, improved.

Interesting Times to Travel the Hanford Reach

May and June—Wildflowers blooming
August and September—Steelhead trout fishing
September and October—Chinook salmon fishing
November—Salmon spawning
November through February—Birdwatching

Past operations have left some areas along the Reach with radiation exposure levels above background. Low concentrations of contaminants have been measured in riverbank springs, and the associated vegetation and sediment, along isolated areas of the shoreline. Areas of potential concern are marked and access restricted as appropriate. Potential exposures can be minimized by avoiding these areas. Postings that may be visible from the river include

CAUTION:
Hazardous Waste Investigation Area

CAUTION:
Radiological Controlled Area

CAUTION:
Underground Radioactive Material

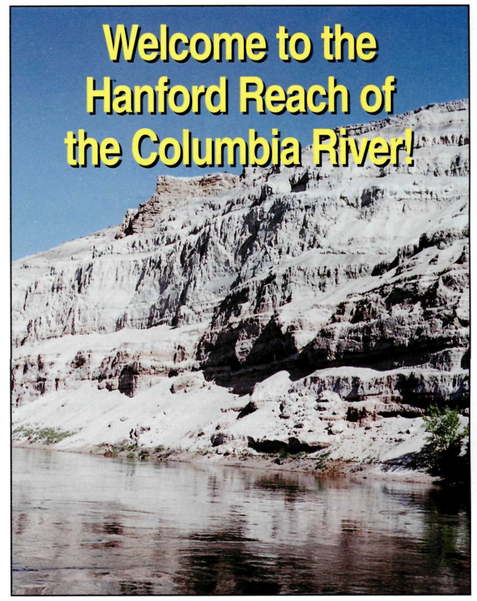
NO TRESPASSING:
Radiologically Controlled Area,
Surface Contamination Area

DANGER:
Cave-In Area.

As is the case for any surface water, untreated river water should not be used as drinking water. Similarly, the riverbank springs along the Hanford Reach, which are small and flow intermittently, should not be used as a source of drinking water. In addition to the potential for bacteriological contamination (a natural phenomena), springs along the Benton County shoreline may contain low levels of contaminants from past waste disposal practices at Hanford.

The Washington Public Power Supply System WNP-2 10-Mile Emergency Planning Zone encompasses the Columbia River from north Richland to just north of the wooden tower powerline crossing at the old Hanford Townsite. Should an emergency occur, boaters will be alerted by siren and/or emergency response personnel to evacuate the river.

Welcome to the Hanford Reach of the Columbia River!



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Sources of Additional Information

U.S. Department of Energy
Office of Communications
825 Jadwin Avenue
Richland, Washington 99352
(509) 376-7501

U.S. Fish and Wildlife Service
Columbia National Wildlife Refuge
P.O. Drawer F
735 E. Main
Othello, Washington 99344
(509) 488-2668

Washington State Department of Wildlife
1550 Alder St. NW
Ephrata, Washington 98823
(509) 754-4624

Surface Environmental Surveillance Project
Office of Hanford Environment
Pacific Northwest Laboratory
P.O. Box 999
Richland, Washington 99352
(509) 735-6883

Benton County Emergency Management Office
210 W. 6th Ave.
Kennewick, Washington 99336
(509) 586-1451

Franklin County Emergency Management Office
1016 N. 4th Ave.
Pasco, Washington 99301
(509) 545-3546

B Reactor Museum Association
P.O. Box 1531
Richland, Washington 99352
(509) 376-0030

Welcome to the Hanford Reach of the Columbia River!

The Columbia River is a resource unique to the great Northwest. More than any other single factor, the presence of the Columbia River has shaped the history and influenced the development of the Columbia Basin.

The Hanford Reach of the Columbia River extends from Priest Rapids Dam to near the city of Richland, Washington. This Reach is the last free-flowing stretch of the river in the United States above Bonneville Dam. The U.S. Department of Energy's (DOE) Hanford Site borders the river through much of the Reach.

This brochure reviews the many historical and unique resources along the Hanford Reach. The section on points of interest identifies various Hanford-related facilities and sights visible from the river. This brochure also explains the access policies and restrictions in effect on the DOE-owned land along the river.

The Hanford Reach

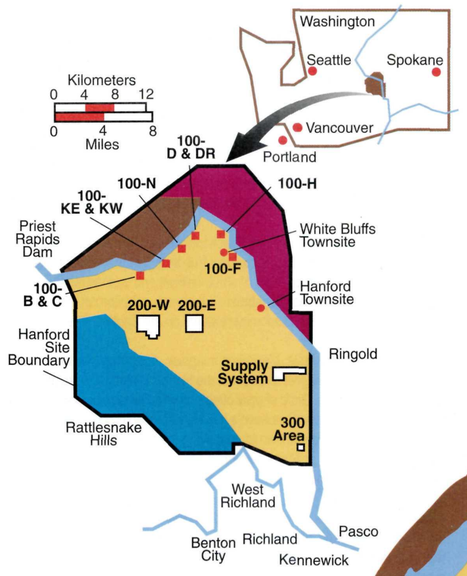
The State of Washington has designated the waters of the Hanford Reach as Class A (Excellent). Class A water is to be suitable for essentially all uses, including a source of drinking water, recreation, and wildlife habitat. The primary uses of the water within the Reach include the production of hydroelectric power and extensive irrigation of nearby farmlands. Most Hanford facilities and several nearby communities rely on the river as their source of drinking water. The river is also used as a source of water for various industrial purposes. In addition, the Columbia is used extensively for recreational activities such as fishing, hunting, boating, sailboarding, and swimming.

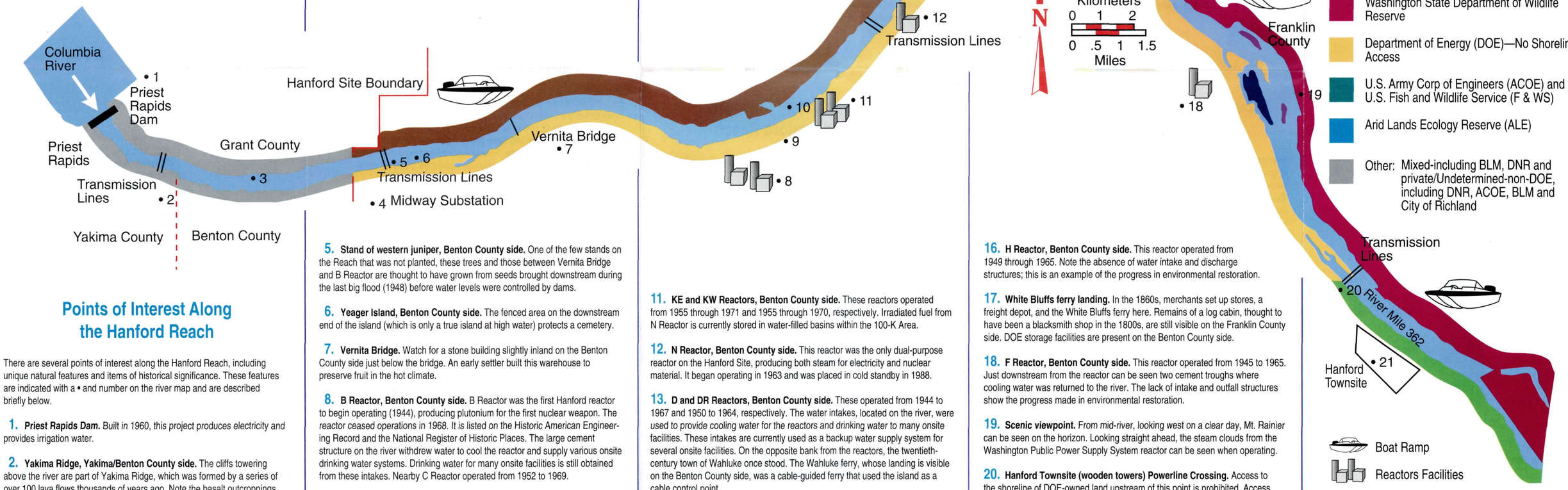
The Hanford Reach of the Columbia River was closed to the public in 1943, following the establishment of the Hanford Site. Strict controls were maintained to enforce safety and security-related access restrictions. The river itself was opened to public use from Richland upstream to the old Hanford Townsite (wooden tower powerline crossing at river mile 362) during the late 1960s. In 1978, all Reach waters were again opened for public use, although access to the shorelines remained restricted as described elsewhere in this brochure.

The Hanford Site

The Hanford Site, which occupies approximately 560 square miles, was originally established in 1943 to produce material for nuclear weapons. For over 40 years the mission at Hanford was one of national defense and waste management. The mission was expanded during later years to include research and development in areas such as energy, waste management technology, and environmental restoration. Recently, the production of nuclear materials for weapons was ended. The new Hanford mission includes waste management, research and development, technology development, and environmental restoration.

An important factor in the original selection of the Hanford Site was the presence of the Columbia River, which could provide the large volumes of water needed to cool nuclear reactors. Nine DOE-owned reactors have operated along the Hanford Reach. During the 1960s, DOE began to shut down the eight original plutonium production reactors; none have operated since 1971. N Reactor, which produced nuclear material and steam to generate electricity, operated from 1963 through 1988.





Points of Interest Along the Hanford Reach

There are several points of interest along the Hanford Reach, including unique natural features and items of historical significance. These features are indicated with a • and number on the river map and are described briefly below.

1. Priest Rapids Dam. Built in 1960, this project produces electricity and provides irrigation water.

2. Yakima Ridge, Yakima/Benton County side. The cliffs towering above the river are part of Yakima Ridge, which was formed by a series of over 100 lava flows thousands of years ago. Note the basalt outcroppings visible in the river along this side.

3. Major spawning grounds for fall chinook salmon and steelhead. Gravel beds for spawning exist in scattered locations from this point to Wooded Island (number 24).

4. Midway Substation, Benton County side. Named because the area was midway between Bonneville and Grand Coulee Dams, the town of Vernita once stood here. The last houses were removed in 1991.

5. Stand of western juniper, Benton County side. One of the few stands on the Reach that was not planted, these trees and those between Vernita Bridge and B Reactor are thought to have grown from seeds brought downstream during the last big flood (1948) before water levels were controlled by dams.

6. Yeager Island, Benton County side. The fenced area on the downstream end of the island (which is only a true island at high water) protects a cemetery.

7. Vernita Bridge. Watch for a stone building slightly inland on the Benton County side just below the bridge. An early settler built this warehouse to preserve fruit in the hot climate.

8. B Reactor, Benton County side. B Reactor was the first Hanford reactor to begin operating (1944), producing plutonium for the first nuclear weapon. The reactor ceased operations in 1968. It is listed on the Historic American Engineering Record and the National Register of Historic Places. The large cement structure on the river withdrew water to cool the reactor and supply various onsite drinking water systems. Drinking water for many onsite facilities is still obtained from these intakes. Nearby C Reactor operated from 1952 to 1969.

9. Allard Pumping Plant, Benton County side. Built in 1908, this station brought irrigation water to local farms before the establishment of the Hanford Site.

10. Coyote Rapids. Coyote Rapids is famous as the place where Smohalla, Prophet of the Wanapum people, held the first washat. This dance ceremony has become central to the Washane or Dreamer religion, which is now practiced in some form by members of the Colville, Nez Perce, Umatilla, Warm Springs, and Yakima tribes.

11. KE and KW Reactors, Benton County side. These reactors operated from 1955 through 1971 and 1955 through 1970, respectively. Irradiated fuel from N Reactor is currently stored in water-filled basins within the 100-K Area.

12. N Reactor, Benton County side. This reactor was the only dual-purpose reactor on the Hanford Site, producing both steam for electricity and nuclear material. It began operating in 1963 and was placed in cold standby in 1988.

13. D and DR Reactors, Benton County side. These operated from 1944 to 1967 and 1950 to 1964, respectively. The water intakes, located on the river, were used to provide cooling water for the reactors and drinking water to many onsite facilities. These intakes are currently used as a backup water supply system for several onsite facilities. On the opposite bank from the reactors, the twentieth-century town of Wahluke once stood. The Wahluke ferry, whose landing is visible on the Benton County side, was a cable-guided ferry that used the island as a cable control point.

14. White Bluffs, Grant County side. One of the most striking geologic features of the Hanford Reach is the White Bluffs, formed from lake and stream sediments. They contain the fossilized remains of many animals that lived or fed along the water, including rhinoceros, camel, deer, horse, mastodon, bear, coyote, and rodents. The fossil record extends back more than two million years.

15. Bird nests, Franklin County side. The small mud holes in the side of the bluffs were made by cliff swallows, which are most visible during the summer.

Environmental Surveillance at Hanford

As a result of Hanford operations, the Columbia River is one of the most extensively studied rivers in the world. Routine monitoring was begun in 1945, shortly after the start-up of the original production reactors. River water and sediments are collected from a number of locations along the Reach. Water from selected riverbank springs is also sampled. In addition, samples of various wildlife (for example, fish, clams, crayfish, and waterfowl) are routinely collected. Local farm products that are irrigated with river water downstream of Hanford such as alfalfa, wheat, apples, cherries, milk, grapes, and wine produced from locally grown grapes are also sampled routinely. Results of sampling activities are summarized annually in the Hanford Site Environmental Report.

16. H Reactor, Benton County side. This reactor operated from 1949 through 1965. Note the absence of water intake and discharge structures; this is an example of the progress in environmental restoration.

17. White Bluffs ferry landing. In the 1860s, merchants set up stores, a freight depot, and the White Bluffs ferry here. Remains of a log cabin, thought to have been a blacksmith shop in the 1800s, are still visible on the Franklin County side. DOE storage facilities are present on the Benton County side.

18. F Reactor, Benton County side. This reactor operated from 1945 to 1965. Just downstream from the reactor can be seen two cement troughs where cooling water was returned to the river. The lack of intake and outfall structures show the progress made in environmental restoration.

19. Scenic viewpoint. From mid-river, looking west on a clear day, Mt. Rainier can be seen on the horizon. Looking straight ahead, the steam clouds from the Washington Public Power Supply System reactor can be seen when operating.

20. Hanford Townsite (wooden towers) Powerline Crossing. Access to the shoreline of DOE-owned land upstream of this point is prohibited. Access downstream of the wooden towers is limited to the high-water mark (see Access to Columbia River Shorelines).

21. Old Hanford Townsite, Benton County side. The original town of Hanford was dismantled when the government established the Hanford Site in 1943. A construction camp of over 50,000 people once existed here to support the building of the reactors and other Hanford facilities. Visible from the river are the Hanford Pump House, which withdrew water from the river for irrigation, and the old Hanford High School.

In addition to the routine monitoring program, other Hanford organizations perform environmental surveillance to monitor the environmental impact from operations and for additional site characterization activities. The Washington Public Power Supply System, which operates a power reactor on the Hanford Site, also conducts routine environmental monitoring along the river. The State of Washington also operates an environmental monitoring program at Hanford, including sampling of the Columbia River and riverbank springs.

Evidence of the extensive monitoring programs is visible along the Hanford Reach. Routine sampling locations are typically marked with signs. Numerous survey stakes, posts, flags, and other markings indicate ongoing surveys or special research studies. Actual field activities such as well drilling, sampling, and surveys are often visible from the river as well.

Ownership/Administrative Jurisdiction of Hanford Reach Islands and Shorelines*

- Washington State Department of Natural Resources (DNR)
- Department of Energy (DOE)—Shoreline Access to "High Water"
- Uplands—Department of Energy (DOE) Shorelands—Washington State DNR
- U.S. Government—Bureau of Land Management (BLM)
- Saddle Mountain National Wildlife Refuge
- Washington State Department of Wildlife Reserve
- Department of Energy (DOE)—No Shoreline Access
- U.S. Army Corp of Engineers (ACOE) and U.S. Fish and Wildlife Service (F & WS)
- Arid Lands Ecology Reserve (ALE)
- Other: Mixed-including BLM, DNR and private/Undetermined-non-DOE, including DNR, ACOE, BLM and City of Richland

Boat Ramp

Reactors Facilities

• 1 Location Described in Tour

* Best available information at the time of brochure publication. Ownership/Administrative Jurisdiction may change. For policies specific to those islands not administrated by the DOE, individuals should contact the agencies responsible for their administration. Addresses are provided on the back of the brochure.