

Lower Columbia River Basin

The lower Columbia River extends from Bonneville Dam downstream 145 miles to the river's mouth. This entire reach is subject to tidal influence. The lower Columbia Basin includes all the Lower Columbia River and its Washington tributaries and also extends into Oregon. The two largest tributaries in Washington, the Cowlitz and Lewis rivers, rise in the Cascade Range and flow west-southwesterly to the Columbia River. Small tributaries drain the Willapa Hills in the western part of the basin. The relatively flat Columbia River flood plain contrasts sharply with the rugged interior, which is heavily forested. In Washington, the basin area covers about 4,700 square miles which lies entirely in the Corps' Portland District. The basin has a well-defined, dry summer season and a rainy winter season. Temperatures are moderate due to the Cascade Range and Willapa Hills. Strong east winds along the Columbia River occasionally bring more extreme temperatures to the area between Bonneville Dam and Vancouver, Wash. From west to east, annual precipitation decreases along the leeward slope of the Willapa Hills from 90 inches or more at the crest to about 40 inches in the lower river valleys, then increases to 100 inches and more along the windward slope of the Cascades. Most of the basin's population in Washington is concentrated along the Columbia River in Camas-Washougal, Vancouver and Longview-Kelso. The Portland-Vancouver metropolitan area, in both Washington and Oregon, is the second largest population center in the Pacific Northwest. Flood control and navigation projects in the lower Columbia River Basin are described in this chapter. The Corps has constructed many levees and revetments to provide flood protection. Storage dams far upstream in both the Columbia River Basin and Oregon's Willamette River Basin substantially lessen flooding along the lower Columbia River. Largest floods have come during the spring, following the snowmelt in the Rocky Mountains. Floods almost as large have occurred in the winter, following heavy rainfall and rapid snowmelt in the Cascade Range and in the headwaters of the Snake River. Levees along the lower Columbia River in Washington prevented \$165.5 million in flood damages during fiscal year 1996. The lower Columbia River is extensively used for navigation. The navigation channel is maintained to a 40-foot depth to accommodate ocean-going freighters, and is maintained from the Vancouver-Portland area to the sea. A 55-foot entrance channel at the river's mouth was completed in 1984. Upstream from Vancouver, a 17-foot channel is maintained to Bonneville Dam. Pleasure boats, barge tows, log rafts, and occasional smaller ocean-going vessels ply that part of the river. In addition to the deep channel and turning basin at Vancouver, there are many smaller harbor projects along the river.

Lower Columbia River Basin Levees and Improvements to Existing Projects

Authorized Flood Control (Portland District) Under the Flood Control Act of 1936,

flood control projects in 12 diking or drainage districts along the lower Columbia River in Washington were constructed or rehabilitated with federal funds. Total cost was about \$1,450,000. New levees were constructed in previously unprotected areas, and existing levees were raised and widened, with revetments placed for added protection. Additional pumping capacity, major drainage canals and tide boxes to improve drainage were also provided. Costs and flood damages prevented follow:

Name	Year of Completion	Federal Cost	Damages Prevented (x 1000)#
Pacific County Diking Improvement District No. 1	1940	\$26,800	\$6,048
Wahkiakum County, Deep River Area	1941	69,700	413
Wahkiakum County, Upper Grays River Area	1941	61,300	1,676
Wahkiakum County, Skamokawa Creek Area	1943	178,900	4,041
Wahkiakum County, Diking District No. 4	1951	169,500	5,552
Wahkiakum County Consolidated Diking District No. 1	1940	258,800	46,239
Cowlitz County Consolidated Diking Improvement District No. 1 (Longview)	1941	163,291	1,586,623
Cowlitz County Consolidated Diking Improvement District No. 3 (Kelso)	1938	189,200	50,804
Cowlitz County Consolidated Diking Improvement District No. 2 (Woodland)	1939	333,900	48,099

* Through September 1996 ** Includes damages prevented by work authorized in the 1936 Act was completed and four Cowlitz County diking districts have merged into two consolidated districts. Districts No. 5 and No. 11 are now Consolidated Diking Improvement District No. 2, and Districts No. 2 and No. 13 are now consolidated Diking Improvement District No. 3. Cowlitz County Consolidated Diking Improvement District No. 2: Added protection was provided by raising and strengthening the levees and constructing new levees adjacent to the town of Woodland. Construction of the improvement was completed at a federal cost of \$1,654,800. Cowlitz County Consolidated Diking Improvement District No. 3: Improvements authorized in the 1950 Flood Control Act were completed at former District No. 2 in June 1965 at a cost of \$363,000. Following the May 18, 1980, eruption of Mount St. Helens, a program of advance measures was undertaken in this district under authority of Public Law 84-99. Under this program, the levee system was raised and extended and an existing pumping plant was reconstructed. Improvements at former District No. 13 were authorized in the 1950 Act and completed in June 1965 at a cost of \$65,300. Following the eruption of Mount St. Helens, advance measures were initiated under authority of Public Law 84-99 to raise the level of protection to the same standard established for Cowlitz County Diking Improvement District No. 2. These improvements were completed in November 1982. Cowlitz County Diking Improvement District No. 15: Improvements included raising and strengthening portions of the existing levee, installing toe drains, relocating the pumping station, removing the tide box and constructing an additional levee revetment for a portion of the reach along Fisher Island Channel. Construction started in January 1965 and was completed in November 1965 at a cost of \$304,800. Total flood damages prevented through 1996 by the project are \$12,506,000. Wahkiakum County Consolidated Diking District No. 1: Additional improvements included raising and strengthening the levees,

removing several abandoned tide boxes and extending an existing tide box, adding a gate well structure, constructing a new pumping station and relocating three existing pumping stations, raising the discharge lines of all pumping stations and filling borrow ditches along the landward levee toe. Construction was completed in 1979. In addition to the above five projects, work was authorized for other districts. Following the eruption of Mount St. Helens, advance measures were proposed in Cowlitz County Consolidated Diking Improvement District No. 1 under Public Law 84-99 authority. Improvements along the Cowlitz River include raising and reinforcing the existing levee, constructing a stop-log closure at Fishers Lane and revetting the embankment slope for erosion protection. Construction was completed in January 1981 at a cost of \$1,511,000. Cowlitz County Consolidated Diking Improvement District No. 1, Lewis River Area and Bachelor Island Area, have been deauthorized. Wahkaikum County Diking District No. 4 is now a wildlife refuge and has been placed in deferred status.

Lower Columbia River Basin Levees at New Locations

Authorized Flood Control Project (Portland District) Construction of new improvements at Washougal, Vancouver Lake and Kalama River (South Area) was authorized in the Flood Control Act of 1950. These improvements are described below, except for Kalama River (South Area) which had been deauthorized. Washougal Area: Flood control works, completed in October 1966, protect about 1,800 acres of land along the right bank of the Columbia River from frequent flooding. The project included levees and bank protective works, a drainage canal, a tide box and a pumping plant. Federal cost was \$1,803,000. Since the project began operating, \$49,690,000 in flood damages have been prevented.

Lower Columbia River Basin Bank Protection Works

Authorized Flood Control Project (Portland District) In addition to new levees discussed previously, the 1950 Flood Control Act authorized the construction of bank protection works. Improvements have been authorized at 96 locations in Washington and Oregon (28 in Washington) for various diking and drainage district levees and unprotected, highly developed areas. Estimated total federal cost of the project is \$25,600,000 (full funding). A total of 191,000 feet of bank protection have been completed at 84 locations through September 1996. The total federal construction cost through September 1996 was \$21,008,400. Flood damages in Oregon and Washington prevented through September 1996 are \$23,330,000.

Lower Cowlitz River Local Protection Projects

Flood Control (Portland District) Channel clearing and improvements and bank protection have been authorized at critical locations along the lower Cowlitz

River, subject to establishing economic justification for the work. The following bank protection has been provided: 2,000 feet at Holder and 2,400 feet at Kirkendoll in 1960, and 3,000 feet at Fulton in 1961. The cost of this work was \$182,000 and has prevented \$1,996,000 in flood damages. Following the eruption of Mount St. Helens, siltation drastically reduced the hydraulic capacity of the Cowlitz River from several miles upstream of its confluence with the Toutle River to its mouth at Longview and Kelso. Under Public Law 84-99 authority, measures were taken to reduce flood damage in the lower 25 miles of the Cowlitz River, including excavation of a 50,000-cubic-foot-per-second channel along the lower 21.5 miles of the Cowlitz and raising and extending federal levee systems in Kelso, Longview and Castle Rock. The private levee system in Lexington was substantially raised and extended. In 1980 and 1981, dredging removed about 80 million cubic yards (MCY) from the Cowlitz and Toutle rivers at a cost of almost \$142 million. The Supplemental Appropriations Act of 1983 authorized the Corps to provide 100-year flood protection to developed areas along the Cowlitz and Toutle rivers until a permanent solution could be implemented. Under this authority, eight MCY of sediment were removed from the Cowlitz during the fall and winter of 1983-84 at a cost of \$18 million. Along the Toutle River, debris retaining structures and sediment stabilization basins were built to reduce the movement of sediment down the Toutle to the Cowlitz and into the Columbia. This work was completed in 1981. Dredging to remove material from the sediment stabilization basins LT-1 and LT-3 in the lower Toutle River began in January 1983. This dredging, in combination with the emergency levee raising, provides 100-year flood protection for Longview, Kelso, Lexington and Castle Rock.

Castle Rock, Cowlitz River

Flood Control Project (Portland District) This project included raising and strengthening about 4,000 feet of levee downstream from the highway bridge at Castle Rock and protecting the riverbank with gravel fills and stone revetments. Improvements authorized by the 1941 Flood Control Act were constructed in 1956 at a cost of \$105,000. Following the Mount St. Helens eruption, advance measures were initiated under authority of Public Law 84-99. Improvements included raising and reinforcing the existing levee upstream of the Arkansas Valley Road Bridge. Construction was completed in December 1980, at a cost of \$784,000. A temporary levee, raised from one mile downstream of the bridge to one-half mile upstream, was completed in January 1983 at a cost of \$344,000.

Lexington, Cowlitz River

Flood Control Project (Portland District) In Lexington, a private levee was built along the Cowlitz River after the 1933 flood. The 1.3-mile-long levee is located between river miles 7.8 and 9.1 and has been maintained by Cowlitz County for many years. Following the eruption of Mount St. Helens, advance measures

were proposed under authority of Public Law 84-99 to raise and reinforce the existing levee, extend the levee to high ground, modify existing drainage pump stations and revet the riverward levee slope. Construction was completed in December 1980 at a cost of \$8,297,000. The existing levee was temporarily raised in January 1983 at a cost of \$492,800.

North Kelso, Cowlitz River

Flood Control Project (Portland District) Following the initial eruption of Mount St. Helens, advance measures under authority of Public Law 84-99 were proposed in North Kelso, from river mile 5.2 to 7.2, including building a new levee, and raising and reinforcing the railroad embankment. Construction was completed in January 1982 at a cost of \$3,069,000. The existing levee was temporarily raised in December 1982 at a cost of \$423,500. Levee improvements were completed in 1988 at river mile 7.5 and on 1,075 feet of existing levee from river mile 6.5 to 7.0.

South Kelso, Cowlitz River

Flood Control Project (Portland District) After the eruption of Mount St. Helens, advance measures under authority of Public Law 84-99 were proposed in South Kelso, from river mile 2 to 5.2, including building a new levee and revetment work. Construction was completed in January 1982 at a cost of \$1,625,000. The existing levee was temporarily raised in January 1983 at a cost of \$675,800. Levee improvements were completed in 1988 on 4,600 feet of existing levee from river mile 3.1 to 4.0.

Longview, Cowlitz and Columbia Rivers

Flood Control Project (Portland District) After the eruption of Mount St. Helens, advance measures under authority of Public Law 84-99 were proposed in Longview from river mile 4.6 to 5.4, including raising and reinforcing the existing levee and constructing stop log structures. Construction was completed in October 1981 at a cost of \$246,500. The existing levee was temporarily raised in January 1983 at a cost of \$318,000.

Cowlitz River

Completed Navigation Project (Portland District) The project is a navigation channel in the Cowlitz River from its confluence with the Columbia River to Toledo. The project was modified under Section 107, River and Harbor Act of 1960 to provide a channel 8 feet deep and 100 feet wide from the mouth to river mile 4.75. Changes resulting from the Mount St. Helens eruption caused temporary abandonment of the project until the river basin stabilized.

Spirit Lake, Mount St. Helens

(Portland District) The debris avalanche triggered by the Mount St. Helens eruption plugged the outlet to Spirit Lake. Failure of the debris plug would create a mudflow which the U.S. Geological Survey estimated would inundate Castle Rock to a depth of 60 feet, and Kelso and Longview to a depth of 30 to 40 feet, and result in \$2.5 billion in damage. Following a declaration of a state of emergency by the president on August 19, 1982, the Federal Emergency Management Agency asked the Corps of Engineers to develop an interim solution to the problem and follow with a long-term solution. A temporary pumping facility was constructed at the lake, and emergency pumping began Nov. 5, 1982, with the lake level at elevation 3,462. This was done to maintain the lake at a safe level below the effective dam height, which has been predicted to decrease due to erosion and subsidence of the debris blockage. Pumping was necessary until the permanent solution was constructed. Under authority of Public Law 84-99, construction of a permanent outlet tunnel was started in June 1984. This tunnel was completed in April 1985. In May 1985, drawdown of the lake to a safe operating elevation of 3,440 National Geodetic Vertical Datum (NGVD) began, and this elevation was reached in September 1985.

Sediment Retention Structure

(Portland District) In May 1982, President Reagan directed the Corps to prepare a comprehensive plan for long-term flood control and navigation maintenance. This study was completed in November 1983. A feasibility report and environmental impact statement were completed in December 1984. The preferred plan was a 182-foot-high debris retaining structure on the North Fork Toutle River, upstream from its confluence with the Green River. This plan was authorized by Congress in 1985. In October 1985, the Acting Assistant Secretary of the Army for Civil Works recommended construction of a single-stage sediment retention structure with a 125-foot spillway located at the Green River site. Construction began in December 1986 and was completed in early 1990. The cofferdam was completed in time to begin trapping sediment before the winter of 1987-88. The Sediment Retention Structure was designed to stop sediment, not store water. To do this, the SRS has a unique outlet works with 30 conduits in six rows of five each placed at various elevations so fish and water can pass. As the sediment level behind the structure raises, the lower conduits are closed with devices known as knife gates installed inside the pipes. As each tier of pipes is closed off, the pool behind the structure will be newly enlarged and sediment will gradually rise to the next tier. As of November 1994, three of the lower rows of pipes were closed. Water was flowing from the three upper rows of pipes at elevations 915 feet, 920 feet and 925 feet. SRS designers expect all the pipes will be closed by the year 2035, allowing the river to flow over the spillway, though the actual length of time depends on the weather and sediment movement. Over the 50-year life of the project, the lake is expected to fill with about 258 million cubic yards of sand, gravel and sediment.

Columbia River at the Mouth, Oregon and Washington

Authorized Navigation Project (Portland District) This project provides a stabilized entrance channel across the Columbia River bar. In the early days, mariners feared the bar because of its rapidly shifting sands. Many vessels have run aground on its treacherous shoals. Construction started in the 1880s. The project, last modified in 1984, provides for a one-half mile entrance channel ranging in depth from 48 feet deep in the southern portion to 55 feet in the northernmost 2,000-foot width. The channel across the bar is secured by two converging stone jetties, extending seaward from the Washington and Oregon shores. The project channel is five miles long, extending two miles seaward and three miles landward from the outer ends of the north and south jetties. The upstream end of the channel is stabilized by spur-jetty "A," extending south into the river from Cape Disappointment and by three nearby pile dikes. Total costs through September 1996 from federal funds were \$182,743,000. Of that, \$24,913,700 was for construction, \$7,322,900 for jetty restoration and \$150,507,200 for maintenance. In addition, \$475,000 and \$25,000 were contributed by Ports of Portland and Astoria, respectively, for construction. Fort Canby State Park, a recreation development associated with the Columbia River at the Mouth project, was developed jointly by the Washington State Parks Commission and the Corps of Engineers. The state provided picnicking, camping and boat launching facilities, while the Corps improved the road and parking lot for better access to the beach and north jetty, and provided minimum sanitary facilities.

Columbia and Lower Willamette Rivers Below Vancouver, Washington, and Portland, Oregon

Navigation Project (Portland District) The project was first authorized in 1877, and the channel has been deepened at intervals since then. Modified project authorization provides for a Columbia River channel 40 feet deep and 600 feet wide from near the river's mouth (river mile 3) to the mouth of Willamette River, Oregon, (river mile 101.5), 40 feet deep and 600 feet wide to the Burlington Northern railroad bridge at Vancouver (river mile 105.5) and 35 feet deep and 500 feet wide to the Interstate Bridge (river mile 106.5). A 40-foot-deep channel in Willamette River extends to Portland. One turning basin is provided at Longview, one at Kalama and two basins at Vancouver. The project also includes auxiliary channels from the Columbia River channel to three Oregon ports on the Lower Columbia River. Work on the authorized 40-foot-deep channel from Portland/Vancouver to the ocean was started by the federal government in 1964. For the four miles between the mouth of Willamette River and the Burlington Northern railroad bridge at Vancouver, the Columbia River channel was constructed to only a 500-foot width until a wider channel is needed. The 40-foot channel was completed in 1976. Federal cost of the project through September 1996 was \$28,349,300 for construction and \$353,813,500 for maintenance. In addition, \$666,000 was expended from contributed funds.

Columbia River Between Vancouver, Washington, and The Dalles, Oregon

Completed Navigation Project (Portland District) Project authorization provides for a channel 27 feet deep, 300 feet wide, and about 85 miles long between Vancouver and The Dalles, Oregon; a turning basin near Camas and Washougal; and a 10-foot barge channel to Bingen. Work along the Oregon side of the Columbia River also is authorized. From 1949 to 1957, the channel from Vancouver to The Dalles was used commercially only for barge transportation and log towing. It was maintained to a 15-foot depth. Beginning in 1957, the channel was deepened to the authorized 27-foot depth. The channel between Bonneville and The Dalles was completed in 1959. The channel between Vancouver and Bonneville was completed in 1960 (except for some dredging and removal of some submerged rock), and the downstream entrance to Bonneville Lock was improved in 1961. The channel is used only for barge towing and log rafting and is again maintained to a 15-foot depth. Other work under the project authorization was completed in the early 1960s. Barge channel dredging and bank protection work near Bingen was completed in 1963. A separate channel 15 feet deep and 300 feet wide under the fixed wide span on the Interstate Bridge between Vancouver and Portland provides passage for smaller craft, decreasing the number of times the vertical-lift drawspan over the main channel must be raised. The channel was completed in 1963. Project costs through September 1996 were \$5,989,500 for construction and \$13,611,200 for maintenance. Waterborne commerce in 1996 totaled 10,260,300 tons.

Columbia River at Baker Bay

Completed Navigation Project (Portland District) This project is a 10-foot-deep channel 150 feet wide from Ilwaco along Sand Island, then 200 feet wide to deep water in the Columbia. A channel is also authorized from near Chinook to Ilwaco, but is not maintained. In 1957, the Corps of Engineers constructed a 20-acre mooring basin with 10-foot and 12-foot depths east of the Port of Ilwaco dock, protected by breakwaters, and deepened the west channel to 10 feet. Project costs through September 1996 were \$941,252 for new work and \$4,637,300 for maintenance. A project to deepen the existing 10-foot channel to 16 feet under Section 107 authority was completed in August 1985.

Columbia River Between Chinook and the Head of Sand Island

Completed Navigation Project (Portland District) The town of Chinook is on the eastern end of Baker Bay, near the mouth of the Columbia. A \$40,000 project constructed in 1940 provided a channel 8 feet deep and 150 feet wide from Chinook to deep water in the Columbia. The Corps of Engineers maintains a breakwater that protects the town's fishing fleet harbor. The project was modified in 1954 to deepen the channel to 10 feet; dredge a turning basin 10 feet deep,

300 feet long and from 270 feet to 300 feet wide at the inner end of the channel; reconstruct the east 393 feet of breakwater, and extend the east end of the breakwater northerly to connect with the shore. Work was completed in 1958, except breakwater reconstruction, which was completed in September 1962. Total costs through September 1996 were \$135,000 for construction, \$7,603,900 for maintenance and \$85,000 for rehabilitation.

Deep River

Completed Navigation Project (Portland District) A navigation channel extends from the entrance of the Deep River in Grays Bay in the Columbia River estuary to the town of Deep River. The channel is 8 feet deep, 100 feet wide through the entrance bar and 60 feet wide in the river. The \$15,000 project was completed in 1928. Maintenance costs through September 1996 totaled \$32,768.

Grays River

Completed Navigation Project (Portland District) The Corps of Engineers is responsible for removing snags and other obstructions from the river channel and overhanging trees from the river banks for a distance of eight miles upstream from the mouth of the Grays River. The river empties into northern Grays Bay, in the estuary of the Columbia River. Initial work was completed in 1909 at a cost of \$2,500. The cost of maintenance through September 1996 was \$35,670.

Skamokawa Creek

Completed Navigation Project (Portland District) Skamokawa Creek enters the Columbia River at about river mile 33.5 via Skamokawa Slough (formerly Steamboat Slough), a side channel of the Columbia. A navigation channel 6.5 feet deep and 75 feet wide extends upstream from the mouth of the creek to the town of Skamokawa. The project was completed in 1920 at a federal cost of \$2,400. Maintenance costs through September 1996 totaled \$436,185.

Elochoman Slough

Completed Navigation Project (Portland District) A channel 10 feet deep and 100 feet wide, with a turning basin at the inner end, extends along the southerly end of the slough from the Columbia River to terminals near the mouth of the Elochoman River. The project was completed in 1939 for \$19,000. The project was modified under Section 107 of the 1960 River and Harbor Act to include a small-boat basin 6 feet deep, 520 feet wide and 560 feet long; an entrance channel 6 feet deep and 50 feet wide; and a breakwater 10 feet wide at the top. Costs through September 1996 were \$19,000 for construction and \$196,900 for maintenance.

Lewis River

Completed Navigation Project (Portland District) The Corps has dredged the following navigation channels in the Lewis River and its East Fork: a channel 6 feet deep and 50 feet wide, from the confluence of the Lewis and Columbia rivers upstream to the junction of the Lewis River and its East Fork; a channel 4 feet deep and 50 feet wide, from the mouth of the East Fork upstream to the town of La Center; and a channel 5 feet deep and 50 feet wide, in the Lewis River upstream from its junction with the East Fork to the town of Woodland. Project authorization also provides for channel clearing to Merwin Dam, 12.5 miles upstream from Woodland. The project was completed in 1927 for \$36,000; prior improvements costing \$22,000 had been made. The total cost of the project through September 1996 was \$743,700 including \$685,700 for maintenance.

Lake River

Completed Navigation Project (Portland District) A channel 6 feet deep, 100 feet wide, and 3 miles long extends from the Columbia River to the town of Ridgefield. This \$2,700 project was completed in 1931. Maintenance costs through September 1996 totaled \$58,127.

Columbia River, Vancouver Deep Draft Anchorage, Washington

Navigation Project (Portland District) The deep draft anchorage is located on the Oregon side of the existing federally authorized 40-foot Columbia River channel, near Vancouver, Wash., between river miles 102 and 103. It includes the anchorage area near Hayden Island designed by the U.S. Coast Guard. Safe anchoring in the Columbia River is dependent upon a combination of several factors: water and wind currents, tides, vessel size (overall length, draft, and cargo volume), and the level of congestion in the anchoring area. The procedure being used was for the Columbia River pilots to decide where to anchor a vessel. The vessel either dropped one or two bow anchors at the recommendation of the pilots. At the onset of anchoring, the vessel would be outside of the boundary of the 40-foot navigation channel. As wind conditions changed, the probability of a vessel tending to swing on its anchor increased. This then created a hazardous condition for vessels navigating the main channel as they attempted to maneuver around anchored vessels that were partially in the channel. Work was authorized under special continuing authority contained in Section 107 of the Rivers and Harbor Act of 1960, as amended, for navigation purposes. The project which was constructed, consists of two anchorage areas in the Columbia River by placement of two stern anchor buoys, one at each location. The downstream one is designated as a deep site for a loaded or fully laden vessel. A buoy was placed in the river 300 feet off the existing channel, which is designated for light laden vessels or empty vessels. The Ports of Portland and Vancouver signed Project Cooperation Agreements on Jan. 3, 1994. The cost of preparation of the plans and specifications and for the construction of the project was \$311,000, of which \$221,000 was federal and

\$90,000 was non-federal. The non-federal sponsors, Port of Portland and Port of Vancouver, provided \$49,500 and \$40,500, respectively. The contract for construction of the project was awarded in August 1994 and completed in September 1994.

Westport, Oregon -- Puget Island(Wahkiakum Ferry), Washington

Navigation Project (Portland District) The Wahkiakum Ferry route extends across the Columbia River at approximately River Mile 43, between Westport, Oregon and Puget Island, Washington. Shoaling occurs directly off shore of the ferry dock at Puget Island and cannot be circumnavigated, causing delays and unsafe operation conditions for the ferry, especially at low tide. The ferry has been restricted to half capacity during part of the year. The project consists of a channel extending 1,900 feet from the Wahkiakum Ferry ramp at Puget Island to the existing federally authorized Columbia River navigation channel. This newly dredged channel is 9 feet deep (Columbia River Datum), 200 feet wide and 900 feet long. The remaining length of the channel (1,000 feet) is naturally deep and extends to the Columbia River Navigation Channel. Operation and maintenance dredging is authorized for the full 1,900 feet. Work was authorized under special continuing authority contained in Section 107 of the Rivers and Harbor Act of 1960, as amended, for navigation purposes. The cost of preparation of the plans, specifications and the construction of the project was \$238,000, of which \$214,200 was federal and \$23,800 cash was non-federal. Wahkiakum County, Wash., the non-federal sponsor, executed a Project Cooperation Agreement with the Corps of Engineers in October 1993. The contract for the construction was awarded on Dec. 23, 1993, and completed on Feb. 18, 1994. Post-construction monitoring continued through May 1995.

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