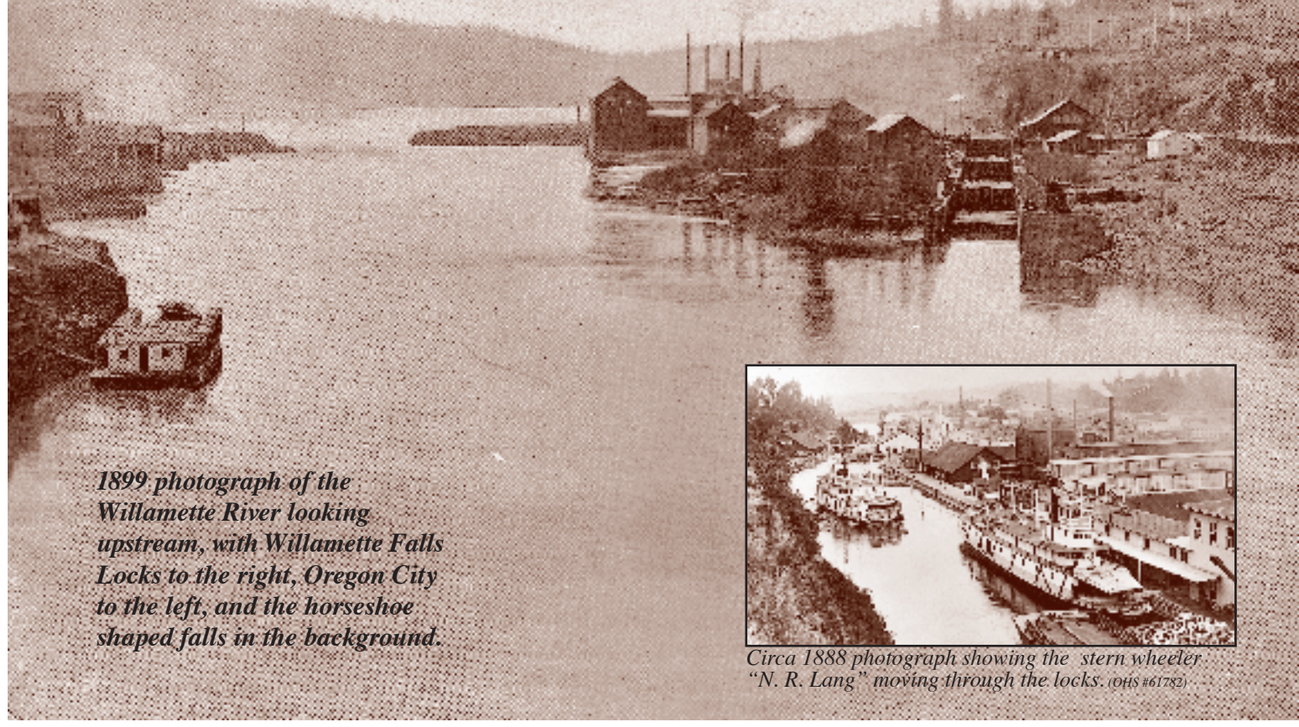


1899 photograph of the Willamette River looking upstream, with Willamette Falls Locks to the right, Oregon City to the left, and the horseshoe shaped falls in the background.

Circa 1888 photograph showing the stern wheeler "N. R. Lang" moving through the locks. (OHS #61782)

The History

The locks project was built by the Peoples Transportation Company in the early 1870s to move river traffic around the falls. The state of Oregon raised $200,000 in gold bonds to help pay for the project. The falls are created when the Willamette River at Oregon City spills about 40 feet over a rock basaltic horseshoe-shaped ridge.

The lock chambers are made from locally-quarried stones ranging in size from 5 feet to 15 feet high. The massive stone work reflects the construction methods used before concrete technology was developed; the lock walls have remained watertight for more than 122 years.

Willamette Falls Locks opened on New Year's Day in 1873. It was operated by a number of owners before the Corps purchased the locks in 1915 from Portland Railway Light and Power Company for $375,000. Following the purchase, the Corps began a series of renovations, which were completed in 1921.

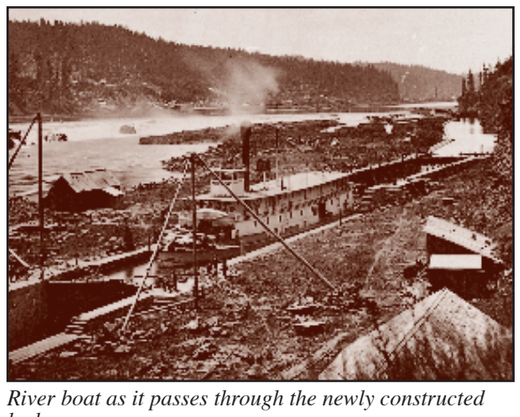
Since the 1920s, the Willamette Falls Locks have continued to move commerce, log rafts and, with the increased emphasis on recreation, small recreational craft.

The locks helped transform the development of Oregon's pioneer society into a young, productive state and profoundly improved river transportation in the Willamette Valley.

From 1940 to 1970, the locks passed an average of 1.5 million tons of commerce per year, mostly rafted logs. By the 1970s, this traffic had subsided, and today the project is used mainly by the paper mill's barges for pulp and paper and by small pleasure boats.

Locks during construction, circa 1874 (OHS #38297)

In 1974 the project was placed on the National Register of Historic Places, and in 1991, Willamette Falls Locks was designated as a State Historic Civil Engineering Landmark by the History and Heritage Committee of the American Society of Civil Engineers. The designation is for the locks' status as Oregon's first water resources development project.



River boat as it passes through the newly constructed locks. (OHS #608-A)

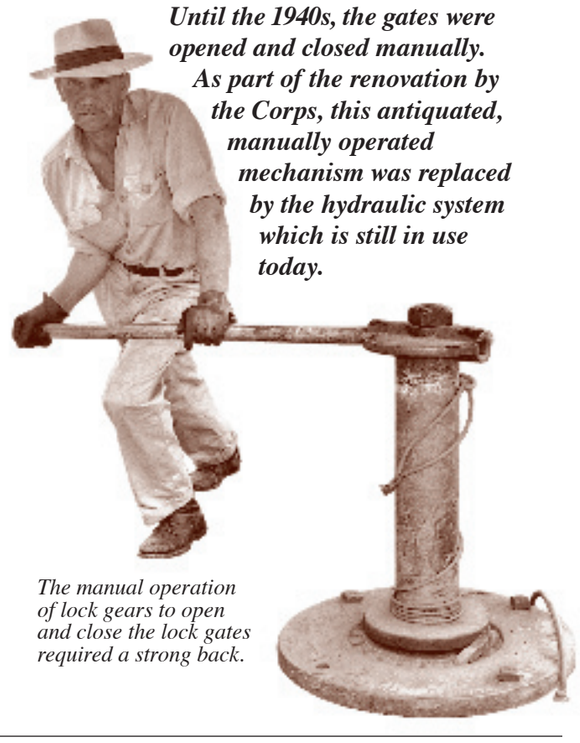
1916 Lock Renovation

Following the purchase of the locks by the Corps of Engineers, a major renovation was undertaken. The lock chambers were deepened from 3 feet to 6 feet as a response to the increased need for passage by deeper draft vessels.

1941 Lock Renovation

As part of the 1940s restoration, the original wooden lock gates were replaced with metal gates.

Until the 1940s, the gates were opened and closed manually. As part of the renovation by the Corps, this antiquated, manually operated mechanism was replaced by the hydraulic system which is still in use today.



The manual operation of lock gears to open and close the lock gates required a strong back.

Sternwheeler "Beaver" as it passes through the locks. (OHS #24792)

Public Information:
U.S. Army Corps of Engineers
Portland District
P.O. Box 2946
Portland, Oregon 97208-2946
Phone: (503) 808-4510
1996

US Army Corps of Engineers
Portland District

Willamette Falls Locks

View of Willamette River at Willamette Falls showing the locks and West Linn on the right and Oregon City on the left.

Visiting the Locks

You are welcome to visit the historic Willamette Falls Locks, located on the west bank of the Willamette River at West Linn, Oregon.

While there, you can watch vessels moving up and down the river through the rock-walled locks, spend some time in the project's historical information center, or lunch at the picnic tables on the grassy area near the locks project office. This is a prime spot for watching lock activity and a great resting area with a pleasant atmosphere for a picnic.

The paper mill has a wharf directly across from the project. Paper products, logs and materials used in paper manufacture account for more than two-thirds of the tonnage through the locks.To get to the locks, take Interstate 205, exit at West Linn (exit #8), turn south onto highway 43, and south again onto Mill Street (west side of the Oregon City Bridge). Parking is available in the parking lot by City Hall off of Mill Street. Follow the signs and the painted pedestrian walkway leading down to the locks.

Willamette Falls Locks is part of an industrial area, therefore children should be supervised at all times. Visitors with disabilities may have trouble maneuvering down the walkway. Assisted access to the project office from the parking lot is available by calling the Lockmaster at (503) 656-3381.

Historical Information Center

The Historical Information Center at the Willamette Falls Locks is open daily during normal lock operating hours. The center is in the original lock master's offices and includes exhibits describing life in the Willamette Valley before and after construction of the locks.

For More Information:

You can obtain more information about Willamette Falls Locks from either:

U.S. Army Corps of Engineers
Public Affairs Office
Portland District
P.O. Box 2946
Portland, OR 97208-2946

Willamette Falls Locks
U.S. Army Corps of Engineers
West Linn, OR 97068
(503) 656-3381

How You Can Lock Through

Willamette Falls Locks is in operation daily. For operating hours please call the lock operator at (503)656-3381. There is no charge for locking through.

When approaching the locks, boaters should call the lock operator on Channel 14 (radio call sign WUJ 363; 156.7 megahertz) or use the small boat alarm at the end of the lock chamber. An intercom is located at each end of the locks to contact the lock operator. Red and green lights control traffic, and the rules of the road apply. A vessel may enter the locks only when the green light is lit. Passage also may be scheduled before arrival by calling the Lock operator at (503) 656-3381.

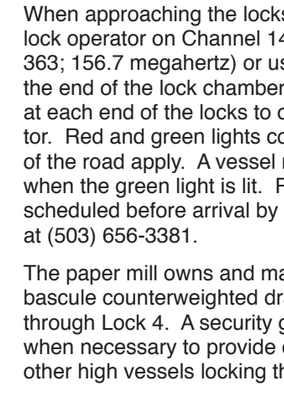
The paper mill owns and maintains a 15-ton load limit bascule counterweighted drawbridge located midway through Lock 4. A security guard raises the bridge when necessary to provide clearance for barges and other high vessels locking through.

Priority to pass through the locks is given in the following order:

1. Boats owned by the U.S. Government or employed for river and harbor improvement work
2. Passenger boats (commercial)
3. Freight and towboats
4. Log rafts
5. Small vessels, pleasure craft and jet skiis

Pleasure boats, skiffs, fishing boats and other small boats pass through the locks alone or in groups.

For more efficient use of the locks, traffic is moved in one direction until all lockages in that direction have been completed. Heavy commercial traffic makes it difficult for the locks to accommodate small boats except for evenings and weekends.

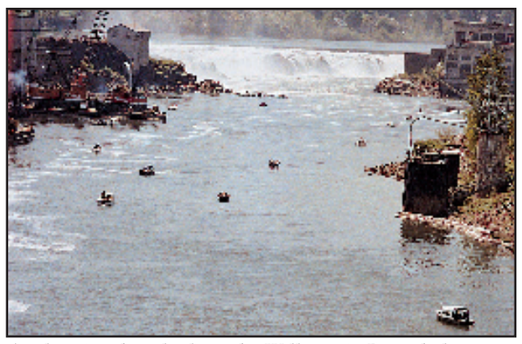


Locking Through Safely

There is turbulent water near the lock entrances. Small craft must not proceed toward the locks until signaled—wait for the green light. All boaters should wear life jackets at all times and remain seated.

- Enter the locks slowly.
- DO NOT EXCEED 5 MPH in the locks.
- Watch the lock operator for directions.
- The operator will hand you a safety line; grasp it firmly.
- DO NOT tie the safety line to your boat or tie knots in it. Instead, hold the line until the lockage is completed and the gates are fully open.
- Passengers disembarking on either end of the locks should wear shoes for safety.
- Boaters should use fenders to protect their boats.
- Personal flotation devices are recommended.

The Project



Anglers try their luck on the Willamette River below Willamette Falls. Salmon and bottom fish such as bass are the main catch.

View is of the downstream approach looking up into locks with the paper mill to the left.

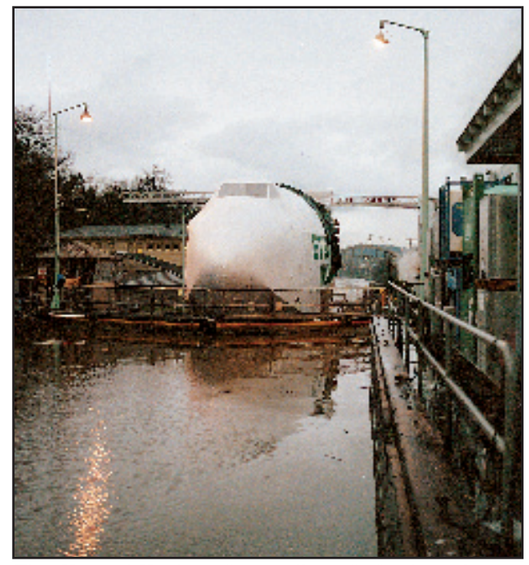
The lock control building located on the west side of lock.

Interior of lock control building with the lock operator at controls.

Willamette Falls Locks project office.

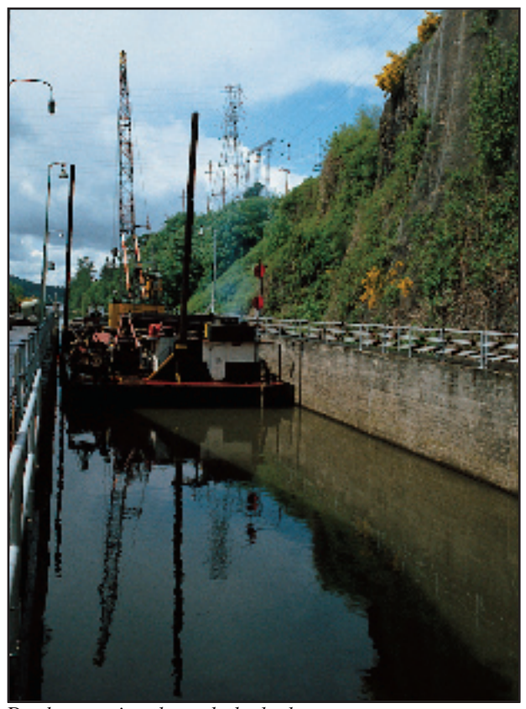
Spring blooming azaleas and flowering cherries on the project grounds.

Lock Traffic



The Howard Hughes "Spruce Goose" (fuselage shown) passed through the locks at Willamette Falls on its way upstream to a museum in McMinnville, Oregon.

Tug maneuvers log raft through the locks. Note the wood construction of the interior of the lock wall.



Dredge passing through the locks.

How they work

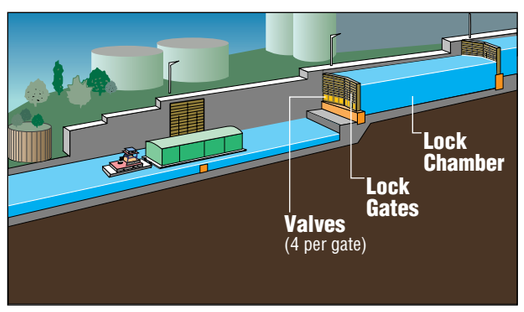
The Willamette Falls Locks project includes four lock chambers, a canal basin, and a guard lock. The guard lock acts as a flood control device by regulating the amount of water entering the lock chambers. The lock system resembles a fluid staircase between the upper and lower reaches of the Willamette River. Before the project was built, boats were portaged or towed between the upper and lower portions of the river.

Each lock is 40 feet wide and 210 feet long. Approach guides extend 150 feet downstream from the lower gate and more than 300 feet upstream from the upper gate directing vessels into the locks.

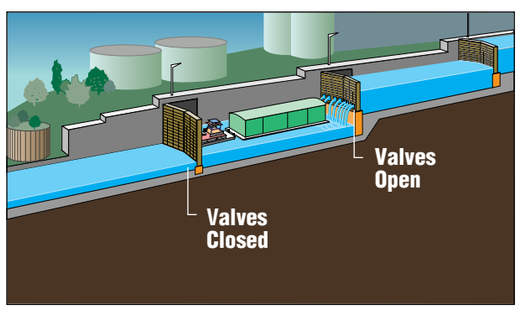
The more-than-a-century-old locks still function much as they did when they were built, but modern technology has made the job easier. Until the 1940s, the gates were opened and closed manually. In 1941 this system was replaced with a hydraulic operating system. Now, the gates are operated by hydraulic pumps controlled by switches in two control stations. The Corps carried out other improvements at that time as well. The wooden gates were replaced with metal ones and guard houses were built. Lock operators now use closed-circuit television monitors to observe vessels entering and exiting the chambers. Radio communication between the lock operator and vessel operator aids in a safe lockage.

The unique design of the locks uses gravity flow to drain 850,000 gallons of river water in several minutes into or out of the lock chamber, raising or lowering the water levels necessary for vessels to travel upstream or downstream through the locks. Average time for passage is about 45 minutes going upstream and 30 minutes downstream.

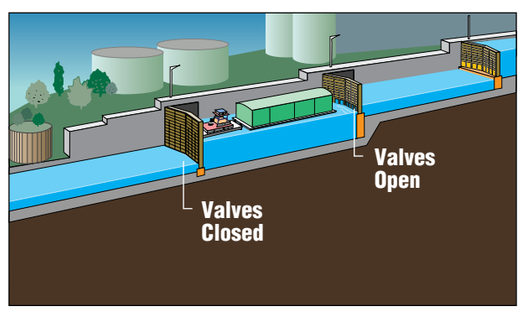
The multiple-lift type locks provide a total lift of 12.5m (41 feet) from the lower to upper river and a length of 64m (210 feet) inside each chamber. Vessels using the locks are limited to a maximum length of 53.3m (175 feet) to allow for the miter of the lock gates. Also, vessels using the locks are limited to a maximum width of 11.28m (37 feet) and a draft of 1.98m (6 feet).



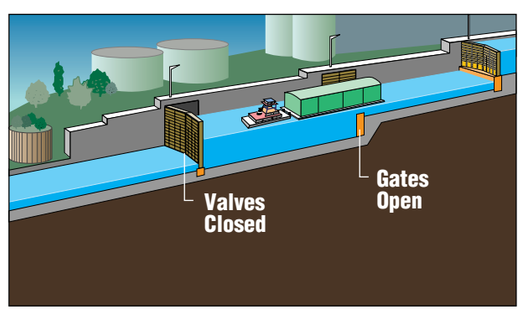
1. *The upstream bound tug pushes the barge past lock gate 1, entering lock chamber 1.*



2. *The two lock gates close behind the vessels. Valves in lock gate 1 close and those in lock gate 2 open to allow water to flow from chamber 2 into chamber 1, equalizing the water levels between the two chambers.*



3. *The water levels are equalized between the two lock chambers.*



4. *When the water levels between the two chambers are equal, lock gate 2 opens and the vessel proceeds into the chamber. The process repeats for the remaining three chambers and guard lock. The water level in the canal basin is kept at a constant level.*