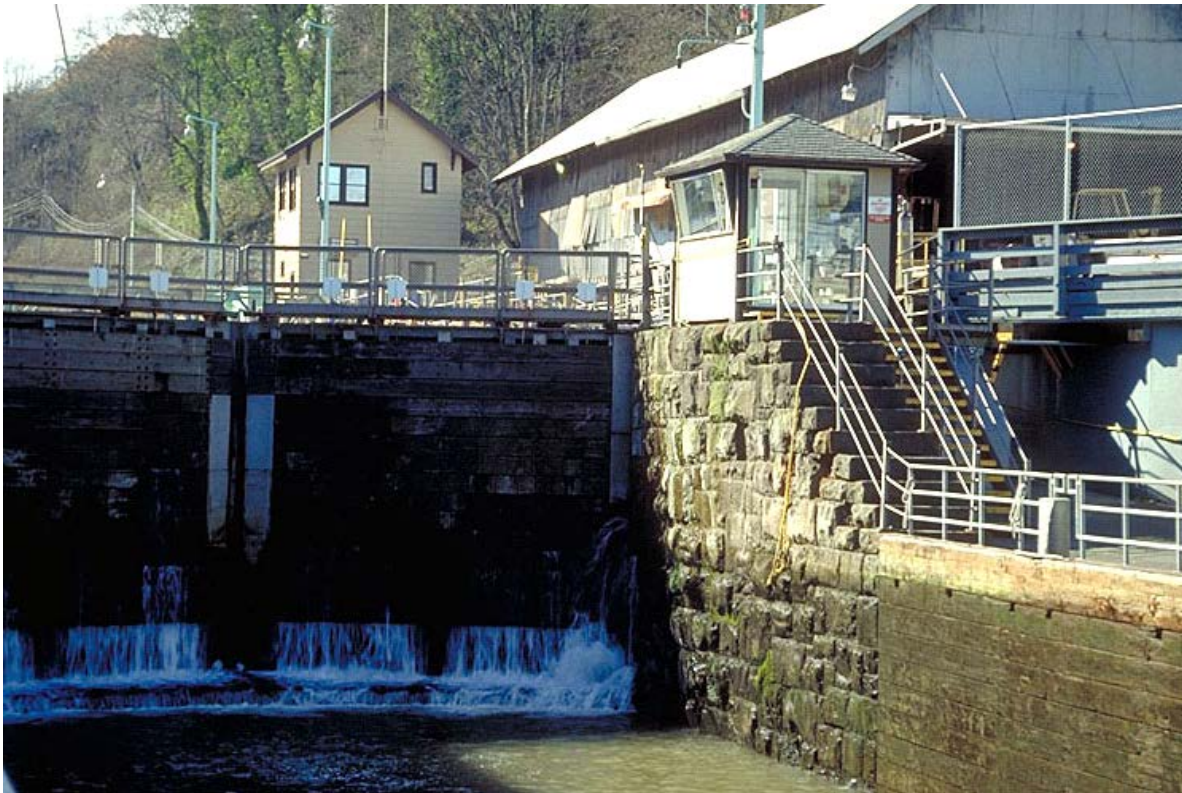




**US Army Corps  
of Engineers®**  
Portland District

**WILLAMETTE FALLS LOCKS  
WILLAMETTE RIVER  
OREGON  
SECTION 216 DISPOSITION STUDY  
WITH INTEGRATED ENVIRONMENTAL  
ASSESSMENT**



## EXECUTIVE SUMMARY

The Willamette Falls Locks Disposition Study is being conducted in order to determine whether sufficient federal interest exists to retain the project for its authorized purpose and, if not, to determine whether the project should be deauthorized, and if the associated real property and Government-owned improvements should undergo disposal. As part of the study effort, the analysis seeks to identify the necessary actions to prepare the facility for disposal and to develop a preliminary opinion regarding the marketability of the project, taking into account known stakeholder interests and local opportunities.

The Willamette Falls Locks (Locks), the oldest multi-lift bypass navigation lock in the nation, is a six chamber lock system with 41 feet elevation change between the first and last chambers. The Locks operate by gravity flow, draining water from one lock chamber into the next through a set of slide gates located in the bottom of each gate. The authorized purpose of the project is to provide navigation between the waterway upstream and downstream of Willamette Falls (Falls), one of the largest waterfalls based on water volume in the United States. It is located approximately 26.2 river miles upstream on the Willamette River from the confluence with the Columbia River. The locks are near the cities of West Linn and Oregon City, Oregon, about 20 miles upstream of Portland, Oregon. Owned and operated by the U.S. Army Corps of Engineers (Corps), the facility is managed for funding within the Corps' navigation business line, which is responsible for ensuring safe, reliable, efficient, and environmentally sustainable waterborne transportation for the movement of commercial goods. Nationally, this business line encompasses a network of Corps-maintained navigable channels, ports, waterways, and infrastructure, consisting of approximately 12,000 miles of inland and intra-coastal waterways with 220 Locks at 171 sites. Within the navigation program, prioritization for funding is based on commercial tonnage moved through the facility supporting national economic benefits.

The Locks were originally constructed by the Willamette Falls Canal and Lock Company with financial help from the State of Oregon between 1868 and 1872, with the Locks opening January 1, 1873. Various entities owned and operated the project before Congress authorized the Corps to purchase the existing canal and Locks for \$300,000, contingent on the State of Oregon appropriating the same amount, by the Rivers and Harbors Act of June 25, 1910, 36 Stat. 630, 664, Pub. L. No. 61-264. The Corps purchased the Locks from the Portland Railway Light and Power Company in order to improve navigation along the Willamette River. The Corps signed the deed in 1913 and formally took over operation and maintenance in 1915. The purchase and subsequent operation of the project helped transform the State of Oregon's industrial economy. The Locks were listed on the National Register of Historic Places in 1974. The Locks are significant for their association with early inland river navigation improvements and are a rare surviving example of early to mid-nineteenth century bypass canal and lock construction.

From 1921 to 1989, the average annual number of lockages (i.e. the use of the Locks to move water, debris, and vessels downstream) exceeded 5,000 per year; the facility operated 16 hours a day and the average annual commercial tonnage through the Locks was on the order of 1.4 million. Log rafts constituted approximately 90% of the commercial lockages throughout this period. Prior to 1956, the Locks were one of the smallest lock systems in the nation but exceeded commercial tonnage in comparison to some of the largest locks in the nation. Based on

data from Corps' Lock Performance Management System, there was more than a 90% drop in commerce through the Locks from 1989 (1.4 million tons of commerce) to 1996 (60,000 tons of commerce). The precipitous decline in commerce was largely due to the decline in log rafts through the Locks. The decline in frequency with which the project was used began, in part, as a result of the listing of the Northern Spotted Owl as threatened by the U.S. Fish and Wildlife Service (USFWS); and the National Marine Fisheries Service listing of the Upper Willamette River Chinook salmon as threatened which curtailed logging in the upper Willamette watershed.

The remaining commercial tonnage through the Locks consisted of finished paper products from the paper mill adjacent to the Locks. In 1997, the mill elected to truck their commercial goods rather than barge them through the Locks, resulting in a further decline. By 1999, less than a 1,000 tons of commercial goods were transported through the Locks.

The facility was placed in "Caretaker" status in 2006 due to the persistent decline in commerce moving through the Locks. Caretaker status denotes a limited preservation status, with minimal personnel employed to safeguard the facility (against fire, theft, and damage) and conduct minimal maintenance activities. Funding for Caretaker activities continues today and is expected to continue unless the facility is transferred.

In 2008, the Corps dam safety program evaluated the Locks under the Screening Portfolio Risk Assessments (SPRA) process, a first step in national dam safety risk management, establishing Dam Safety Action Classification (DSAC) 1 rating (Urgent and Compelling) for the Locks. Likelihood of failure was determined high due to the low level of seismic stability of the ashlar masonry and concrete structure in the facility in relation to the Maximum Design Earthquake (this was further defined in the 2011 Facility Evaluation Report (FER)). Life Loss was noted as not applicable in the SPRA; however, it was assumed to be of an increased likelihood during operation and that there was risk to occupants within the Locks during failure. Lost project benefits and repair costs were addressed in greater detail within the SPRA with a total economic consequence of \$5,898,000 (2017 dollars).

A Facility Evaluation Report (FER) completed in 2011 (2011 FER) revealed structural deficiencies resulting from corrosion in the miter gate gudgeon anchors, responsible for holding the gates in place during operation. The anchors are fracture critical members, susceptible to sudden failure which would cause the gate to collapse into the lock chamber endangering anyone within the lock. As a result of the 2011 FER, the Locks have been closed to all vessel operations since December 2011 due to life safety risks for vessels proceeding through the Locks.

The 2011 FER also revealed seismic deficiencies in the gate monoliths and lock walls indicating potential instability in the event of an earthquake. The near term repair and rehabilitation construction cost to address all known deficiencies (gates and lock walls) to the Locks has been estimated to be \$9,071,000 (2017 dollars). On December 1, 2011 the Dam Safety Officer for the Corps' Portland District recommended Gates 2, 3, and 4 be red-tagged for use which ensures gates are not able to be operated prior to the replacement of the gudgeon anchors. Subsequently, on December 5, 2011 the Corps, under its emergency operational authority, closed the Locks to vessel traffic due to life safety concerns related to the potentially unsafe physical conditions of the gudgeon anchors on Gates 2, 3, and 4. The Locks have since been in an interim-closure

status. Given the low national ranking and the continued decline in commercial tonnage through the Locks, future funding for required repairs to restore the facility to a safe operable condition has been deemed not economically justifiable.

The purpose under the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321–4347, of this Disposition Study is to deauthorize, modify as appropriate, and to dispose of the federal facility. The need for deauthorization and disposal is due to the absence of a federal interest in continued use of the facilities for their authorized purpose of navigation given the low to no commercial use of the facility since the late 1990s.

Two alternatives will not be investigated in this report: 1) rehabilitation of the facility; and 2) reuse of the facility for a different authorized purpose, such as an ecosystem restoration project. Rehabilitation is not considered an alternative within this study since prior reports have indicated there are insufficient benefits (commercial navigation) to justify the repair and rehabilitation of the facility. For reuse of the facility, no cost share sponsors have been identified to date to support modifying the facility for other cost shared authorized purposes; therefore, alternatives related to re-use of the facility and requiring cost shared sponsors are not carried forward for further consideration (such as for hydropower development or ecosystem restoration) and the alternatives do not meet the purpose and need for action.

This Disposition Study evaluates eight alternatives:

- **Future Without Project/No Action Alternative:** Maintain the current caretaker status. Minimal maintenance activities of the facility shall continue, repairs would be conducted on “as needed” basis and seismic retrofits implemented to the walls and monoliths to avoid potential failure of Gates 6 and 7 in the future. See Section 3.5 for further explanation on these assumptions and information on the FWOP.
- **Operational Lock:** Convey the facility to a future party after addressing known deficiencies sufficiently that the Locks could be operated by future owners.
- **Non-Operational Lock:** Convey the facility to a future party after minimally addressing known seismic and safety deficiencies. This alternative avoids impairing the capability of future owners to return the Locks to service then.
- **As-Is:** Convey the facility to a future party with no facility modifications made.
- **Fully Filled:** Convey the facility to a future party after filling all chambers with sediment to eliminate fall hazards as well as seismic and pool breach hazards. This alternative would fully impede future navigation.
- **Partially Filled:** Convey the facility to a future party after filling the upper chambers with sediment to maintain the upstream pool. This alternative includes the removal of remaining Lock operations equipment and would impede future navigation.
- **Concrete Bulkhead:** Convey the facility to a future party after constructing a concrete bulkhead between Gates 6 and 7 to maintain upstream pool. This alternative includes the removal of remaining Lock operations equipment and would impede future navigation.
- **Run-of-River:** Convey the facility to a future party after removing all miter gates to allow the river to flow from upstream of the Locks to pass freely through the Lock chambers. This alternative would impede future navigation.

Under each of these alternatives, it is also assumed Congress will not appropriate funds to repair the gudgeon anchors at Gates 2, 3, and 4, and that the facility shall remain closed to vessel traffic, as it has since December, 2011 due to public safety concerns resulting from the deterioration of the gudgeon anchor assemblies.

The District's Project Delivery Team (PDT) has established the following project constraint: there will be no adverse effect upon the Falls. That is, the project shall:

- Avoid adverse impacts to the aquatic species listed as Threatened or Endangered under the Endangered Species Act (ESA), 16 U.S.C. §§ 1531–1544, within the migration corridor near and around the Falls so that the associated functional fish ladders will continue to operate as intended.
- Avoid adverse impacts to benefits derived from upstream Corps fish passage and ecosystem restoration investments. To date over \$194 million has been spent for adult and juvenile fish passage and collection; and substantial additional investments are anticipated/planned to be invested in future for Reasonable and Prudent Alternative measures required by the 2008 Biological Opinion (BiOp).

The District's PDT also developed the following considerations for the alternatives evaluation:

- Render the facility sufficiently safe to market for disposal; and
- Minimize impacts to West Linn Paper Company (WLP Co) and Portland General Electric Operations

A number of stakeholders and interest groups (the Region) have expressed concern regarding the closure of the Locks. They have been instrumental in providing local political and financial support for a future reopening of the Locks, especially from 2002 when closure of the Locks was initially threatened until 2011 when the Locks were finally closed. Since early 2014, starting with the consultation under Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. §§ 100101, et seq.; 36 C.F.R. Part 800) for the closure of the Locks, local interests have formed a working group and worked closely with the Corps to express their desire to take on ownership of the facility so that the Locks can be repaired and reopened for recreation, cultural heritage, and other regional economic purposes.

Because the Region is very interested in owning and operating the facility, the Region is currently identifying the future transferee, governance model, and funding mechanism for the Locks through a State Legislative Task Force, under Oregon State Bill 256. The Region is continuing these efforts through the creation of a proposed State Willamette Falls Locks Commission. The Region is also working closely with the Corps, while the Federal Government investigates the current condition of the facility and assesses the suitability of conveying the facility. Congressional interest in the transfer of the facility is high.

After evaluation of the alternatives, Alternative 2: Transfer to Identified Transferee - a Non Operational Lock, was chosen as the Tentatively Selected Plan. Reasons for selection of Alternative 2 include:

- Least-cost alternative to implement and reduces overall Federal risks and future expenditures
- Most implementable
  - Does not preclude the locks from re-opening in the future
  - Matches local regional efforts to preserve cultural value of the locks
  - Consistent with the local regions efforts to redevelop area and re-open the locks
  - Minimizes potential impacts to PGE plant and power production
- Environmentally acceptable
  - Reduces potential impact to ESA species under a lock wall failure causing a change to flow/passage routes
  - Stabilizes pool to ensure future Corps investments are not impacted
  - Meets the purpose and need for the federal action (i.e. disposition approval)