



Port of Columbia

LYONS FERRY MARINA MASTER PLAN

April 12, 2018

PREPARED FOR
PORT OF COLUMBIA

PREPARED BY

Reid Middleton
AND JA BRENNAN

**Port of Columbia
Lyons Ferry Marina and RV Park Master Plan
April 12, 2018**

CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	2
BACKGROUND	4
EXISTING CONDITIONS – IN-WATER AND SHORELINE FACILITIES	6
BOAT RAMP AND LAUNCH FLOAT	6
MOORAGE DOCK SYSTEMS	8
SHORT TERM MOORAGE, FUEL, AND PUMPOUT SYSTEMS	15
BREAKWATER SYSTEM	17
OVERLOOK PLATFORM	ERROR! BOOKMARK NOT DEFINED.
BULKHEAD	21
EXISTING CONDITIONS – UPLAND FACILITIES.....	24
ROADWAYS, PARKING, AND TRAILER STORAGE AREAS	24
OFFICE AND STORE BUILDING AND SUPPORT BUILDINGS	25
RESTROOM BUILDINGS	26
RV AND TENT SITES	28
WALKWAYS, STAIRS, AND PATHWAYS	30
LANDSCAPE, FIRE PIT, CHILDREN’S PLAY, AND OFF-LEASH DOG PARK AREAS	30
EXISTING CONDITIONS – UTILITIES.....	33
WATER SYSTEM	33
SANITARY SEWER SYSTEM	34
STORMWATER, ELECTRICAL, AND OTHER UTILITY SYSTEMS	34
STAKEHOLDER PARTICIPATION	35
ALTERNATIVES ANALYSIS.....	36
PRELIMINARY IN-WATER ALTERNATIVES	36
PRELIMINARY UPLAND ALTERNATIVES	37
ALTERNATIVE A	38
ALTERNATIVE B	42
PHASING CONSIDERATIONS.....	45
POTENTIAL GRANT FUNDING SOURCES	47
AQUATIC LANDS ENHANCEMENT ACT (ALEA)	47
BOATING INFRASTRUCTURE GRANT (BIG).....	47
BOATING FACILITIES PROGRAM (BFP).....	47
REGULATORY REQUIREMENTS	48
CONCLUSION	49
APPENDICES.....	50
A – EXISTING UTILITY INFORMATION REPORTS	
B – STAKEHOLDER COMMENTS	
C – PRELIMINARY CONCEPT DRAWINGS	
D – OPINION OF PROBABLE COSTS	

FIGURES

FIGURE 1. VICINITY MAP.....	4
FIGURE 2. BOAT RAMP FACILITY	7
FIGURE 3. BOAT RAMP CONCRETE PANELS	8
FIGURE 4. A DOCK.....	9
FIGURE 5. B DOCK.....	10
FIGURE 6. C DOCK.....	11
FIGURE 7. GANGWAY TO AB LINEAR DOCK	12
FIGURE 8. AB LINEAR DOCK NEW SECTION	12
FIGURE 9. AB LINEAR DOCK OLDER SECTION.....	13
FIGURE 10. C LINEAR DOCK GANGWAY.....	14
FIGURE 11. C LINEAR DOCK	15
FIGURE 12. FUEL AND BOAT SEWAGE PUMPOUT FLOATS.....	16
FIGURE 13. FUEL AND BOAT SEWAGE PUMPOUT UNIT ENCLOSURES.....	17
FIGURE 14. GANGWAY TO EASTERN BREAKWATER	18
FIGURE 15. EASTERN BREAKWATER.....	19
FIGURE 16. BREAKWATER SECTION HINGE ASSEMBLY.....	20
FIGURE 17. OVERLOOK PLATFORM.....	21
FIGURE 18. BULKHEAD.....	22
FIGURE 19. BULKHEAD STEEL STRAP REPAIR.....	23
FIGURE 20. PAVED ROADWAYS	25
FIGURE 21. OFFICE BUILDING AND MAINTENANCE AREA	26
FIGURE 22. LOWER RESTROOM BUILDING	27
FIGURE 23. UPPER RESTROOM BUILDING	28
FIGURE 24. RV SITES.....	29
FIGURE 25. TENT SITES.....	30
FIGURE 26. FIRE PIT AND LANDSCAPE AREA	31
FIGURE 27. CHILDREN'S PLAY AREA.....	32
FIGURE 28. OFF-LEASH DOG AREA.....	32
FIGURE 29. ALTERNATIVE A.....	41
FIGURE 30. ALTERNATIVE B.....	44

EXECUTIVE SUMMARY

The Port of Columbia's (Port's) Lyons Ferry Marina and RV Park in southeast Washington provides valuable water access on the Snake River for residents, boaters, campers, and visitors. The facility supports a variety of uses, including a boat launch, moorage, public docks, a campground, and other recreational uses. To plan for the current and future stewardship of the facility, the Port has undertaken a master planning process. The purpose of the master plan is to document general existing conditions of the facility and identify potential improvements. The master plan considers both in-water elements and upland elements to determine a preferred plan, with phasing recommendations for future renovation and redevelopment. The planning period for this master plan is approximately twenty years.

Reid Middleton, along with our subconsultant, JA Brennan, performed the master plan study. The master plan considers a variety of factors, including existing conditions, environmental and ecological conditions, regulations, cultural resources, Corps standards, KOA requirements, operations and maintenance, and grant funding opportunities. Stakeholder input was obtained through a public open house; discussions with Port staff, concessionaires, and the Corps of Engineers; and solicitation of input from additional stakeholders. In-water and shoreline elements at the facility include two floating breakwaters, a single-lane boat ramp, moorage Docks A, B, and C, a fuel and boat sewage pumpout float facility, a bulkhead, a public overlook pier, and other amenities. The existing in-water and shoreline facilities are in a range of conditions. Key recommendations of the alternatives analysis include replacement of the existing single-lane boat ramp with a new two-lane boat ramp and center float, installation of a dedicated small hand-carried boat float facility, and expansion of the moorage float system. The proposed moorage expansion would occur from the existing C Dock and along the bulkhead near potential new cabins on the terraced hillside. It is also very important to plan for rehabilitation of the bulkhead, concrete breakwater floats, and float hardware to maintain the protective functions of these infrastructure elements.

Upland elements include increased opportunities and amenities for recreational use and revenue generation. These include a new entrance office building and gate, cabins, a laundry facility, and RV and tent sites. Additional new amenities include a splash pad or swim area, an amphitheater, and areas for mini golf and other activities. The alternatives also include refurbishing the existing store building. The expanded facilities will require additional roadway infrastructure and an expanded septic system. Based on previous studies, it appears that there will be sufficient water supply from the on-site wells to support development of additional cabins and facilities.

Two refined alternatives were developed from a range of initial concepts for the master plan. Alternative A is a more robust buildout with up to twenty-two new cabins and approximately fifty new slips, while Alternative B is a slightly more modest alternative with up to eleven new cabins and thirty new moorage slips. The total cost for all elements ranges from \$15 million for Alternative B to \$20 million for Alternative A. The individual elements of the plan can be implemented in phases over time as funding becomes available. Limited grant funding is available for some elements, such as the boat ramp and small boat float.

INTRODUCTION

The Port of Columbia's (Port) Lyons Ferry Marina and RV Park in southeast Washington provides valuable water access on the Snake River for residents, boaters, campers, and visitors. The Port leases the Lyons Ferry Marina facility from the US Army Corps of Engineers (Corps) and subleases the facility to a private concessionaire. The facility supports a variety of uses, including a boat launch, moorage, public docks, a campground, and other recreational uses. The site consists of moorage facilities for over seventy covered slips and thirty open slips, eighteen full hook-up RV sites, forty tent sites, and support facilities that include an office and store, restrooms, and other amenities.

The Lyons Ferry Marina facility was designed by the Corps in the 1970s. Since that time, boats, RVs, and demands for use on the facility have changed. In addition, environmental and cultural resource laws have changed, and funding has become competitive. The facility is operated as a Kampground of America (KOA), and KOA requirements have also changed over time.

To plan for the current and future stewardship of the facility, the Port has undertaken this master planning process. The purpose of the master plan is to document general existing conditions of the facility and identify potential improvements that could be implemented. The master plan considers both in-water elements, such as the trailerable boat launch ramp and moorage facilities, and upland elements, including the campground, restrooms, and other site features, to determine a preferred plan with phasing recommendations for future renovation and redevelopment. The planning period for this master plan is approximately twenty years.

The master plan considers a variety of factors, including existing infrastructure conditions, environmental and ecological conditions, regulations, cultural resources, Corps standards, KOA requirements, operations and maintenance, and grant funding opportunities. Stakeholder input was obtained through a public open house; discussions with Port staff, concessionaires, and the Corps of Engineers; and solicitation of input from additional stakeholders.

Reid Middleton, along with our subconsultant, JA Brennan, performed the master plan study to determine general conditions of the current facility and develop alternatives for both the in-water and upland elements. In-water elements include the breakwater, moorage docks, gangways, boat launch, bulkheads, and other in-water infrastructure. Upland elements include roadways, utilities, tent sites, RV sites, restrooms, the office and store building, landscaping, and other infrastructure. This master plan report summarizes the existing conditions, provides preliminary alternatives analysis, and refines the initial alternatives down to two proposed alternatives. The alternative plans were reviewed for general feasibility of permitting, funding, and implementation. A planning-level opinion of probable costs for the alternatives was prepared to provide information for pursuit of grants and funding for the selected alternative, and possible phasing sequences for implementing the proposed improvements are discussed.

The critical elements analyzed for this process include site environmental conditions, existing infrastructure conditions and remaining life cycle, operational requirements, long-term durability and maintenance requirements, code requirements, and regulatory requirements. Discussions with stakeholders, including staff, community members, concessionaires, and others, were

conducted to get general feedback on the alternatives and incorporate stakeholder goals and objectives into the alternatives.

This study provides a high-level planning stage analysis of the in-water and upland elements of the facility. The study does not include detailed engineering for the facility. Detailed survey and engineering analysis, including optimizing the configuration of the proposed elements and a full permitting process, will be required to implement the improvements as they are developed.

A range of preliminary alternatives were developed for facility expansion. Based on initial review and feedback from Port staff and the concessionaire, these alternatives were refined into two proposed alternatives. Each alternative can be implemented in phases. The following sections provide information on the master plan process, general site conditions, opportunities and constraints, alternatives, advantages and disadvantages, costs, phasing, and overall feasibility of the alternatives for the Lyons Ferry Marina and RV Park facility.

BACKGROUND

The Lyons Ferry Marina and RV Park is located at 102 Lyons Ferry Road, northwest of Starbuck, Washington. The facility is along the south bank of the Snake River, at River Mile 59.5, in southeast Washington. The site includes a small embayment along the left bank of the river and is bordered by the railroad to the east and State Highway 261 to the west. The terrain at the site is very steep, with limited vegetation except for landscaping areas within the facility.

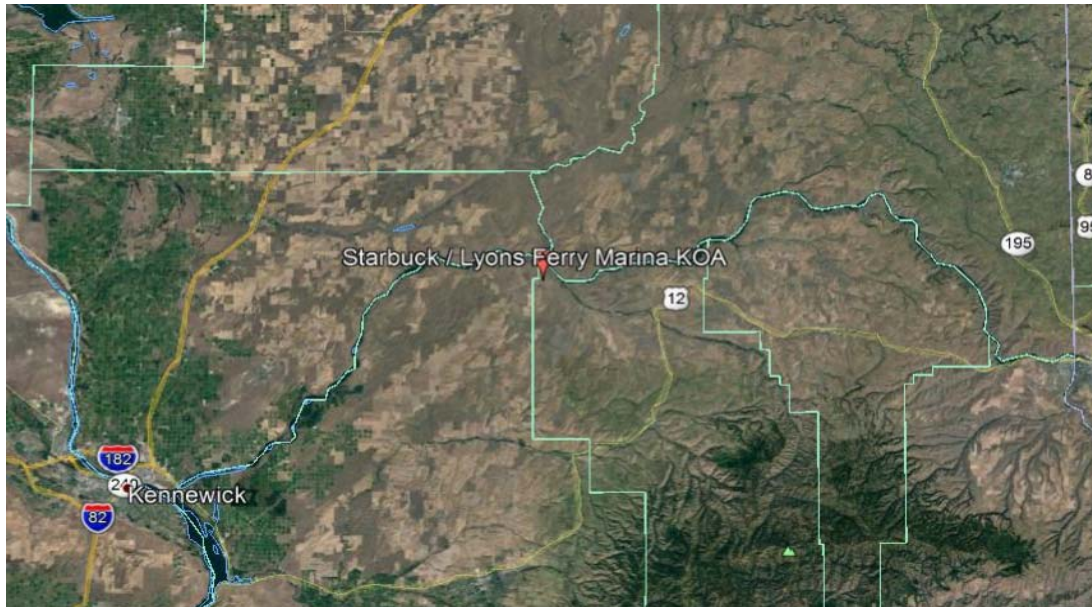


Figure 1. Vicinity Map.

The site is the historic location of a Snake River ferry crossing that began in 1860 and operated for over one hundred years. The ferry ran from the site across to the location of the current Lyons Ferry Park. The early ferry service transported trade and military supplies, such as horses, wagons, and livestock, while later ferry service transported automobiles. When fishing was good along the river, up to 250 cars a day would use the ferry service. In 1961, Monumental Dam construction began and plans for a bridge across the river were initiated. In the mid-sixties, a bridge across the Columbia River in Vantage was disassembled and reconstructed at its present location adjacent to the facility. In December of 1968, the bridge was opened and the ferry made its last run across the river.

The Corps designed a marina facility at the site in the 1970s. Surplus concrete floats were placed across the mouth of the small bay and anchored with chains and concrete anchors to form a breakwater. A gangway was installed to provide access to the west breakwater from the uplands. A creosote-treated heavy timber bulkhead was built along the shoreline to form a moorage basin. A variety of in-water facilities were constructed in the basin behind the breakwater, including

covered floating moorage facilities, a single-lane trailerable boat launch with a boarding float, a fuel float, and other in-water floats. The moorage facilities were later expanded by the construction of an additional larger covered moorage dock.

The east side of the site is a steep, over two hundred feet high, rock embankment that supports the railroad line and leads to the spectacular Joso Bridge, also known as the Lyons Ferry Railroad Bridge, across the Snake River. At its completion in 1912, this railroad bridge was the longest and tallest railway bridge in the world. The bridge consists of 240 tall pillars and a 3,290-foot span, providing dramatic views from the Lyons Ferry Marina and RV Park. In addition to the rail line area, the railroad owns the property along the base of the embankment and uses this area for storage of trailers, maintenance materials, and other support services for the Marina and RV Park.

The Port completed a master plan for Lyons Ferry Marina in 1976. At that time, existing facilities included the covered moorage at A Dock, the boat ramp and float, a linear moorage dock, and the marina office and store building. The plan provided for additional upland facilities starting in the mid-to-late-seventies, including roadways and parking areas, an RV and tent camp site, and support facilities, including restrooms and other amenities. The upland development was built by terracing into the steep slopes on site. The lower terrace along the marina basin consists primarily of parking, the main office and store building, a restroom facility, park areas, and other amenities. The first lower terrace consists of larger RV spaces and the caretaker's house, and the middle terrace consists of tent and RV spaces, a restroom, and park areas. The upper terrace includes a play area, overflow parking, and storage areas.

Utilities on the site include two wells with a potable water distribution system, a sanitary sewer collection and pump system, a septic drain field, and electrical service. A boat sewage pumpout system was installed in 2009. Fuel tanks and distribution lines for sales of marine fuels are located near the existing office and store. The site also includes an older, non-operating irrigation system.

The site structures and infrastructure systems are in varying condition. The Port has undertaken this master plan process to determine general condition of the aging infrastructure, plan for continued stewardship of the facility, and identify opportunities for improvement and expansion of recreational opportunities for Lyons Ferry Marina and RV Park.

EXISTING CONDITIONS – IN-WATER AND SHORELINE FACILITIES

This section describes the existing condition of the site's in-water facilities. A detailed condition assessment and inspection was not completed as part of this master plan. The existing condition discussion is based on available published information, such as dates of construction; a visual observation of the general condition of each element; and input from the Port staff and concessionaire. It is recommended that regular inspections be conducted to determine specific conditions of each asset to assist with long-term maintenance, repair, and stewardship of existing structures and infrastructure. All existing structures and infrastructure should be maintained and repaired as needed to provide safe and operable conditions until the asset is replaced. This existing condition section provides general estimated remaining life for the major structures and general major maintenance suggestions. Full discussion of major modifications and replacement alternatives, including recommendations for each asset, is provided in the alternatives and recommendation sections of the report.

Boat Ramp and Launch Float

The existing trailerable boat ramp facility is located in the central portion of the marina and consists of a single concrete launch lane and a single linear boarding float accessed from a concrete approach wedge. The turnaround area at the head of the ramp is relatively narrow and becomes an area of congestion, as access to the moorage floats and other water access activities occur around the top of the boat ramp. Bulkheads and gravel shore areas surrounding the ramp are used for launching hand-carried boats such as kayaks and paddle boards.

The boat ramp boarding float is approximately 6.5 feet wide and 60 feet long. The float consists of three, 20-foot-long sections connected by hinges. The float deck is steel grating. Flotation for the float consists of white flotation tubs for the outer 20-foot section and pipes for the middle 20-foot section. The nearshore float section spans to the approach wedge and does not have any flotation. The float is connected to the concrete approach wedge at the upland side and anchored with a single steel pile on the outer end of the float. The concrete ramp is approximately 11.5 feet wide. The length and slope of the ramp are unknown. The ramp consists of a cast-in-place concrete upper portion and precast concrete planks for the lower submerged portion of the ramp. The concrete planks are separated by gravel placed between the individual planks.

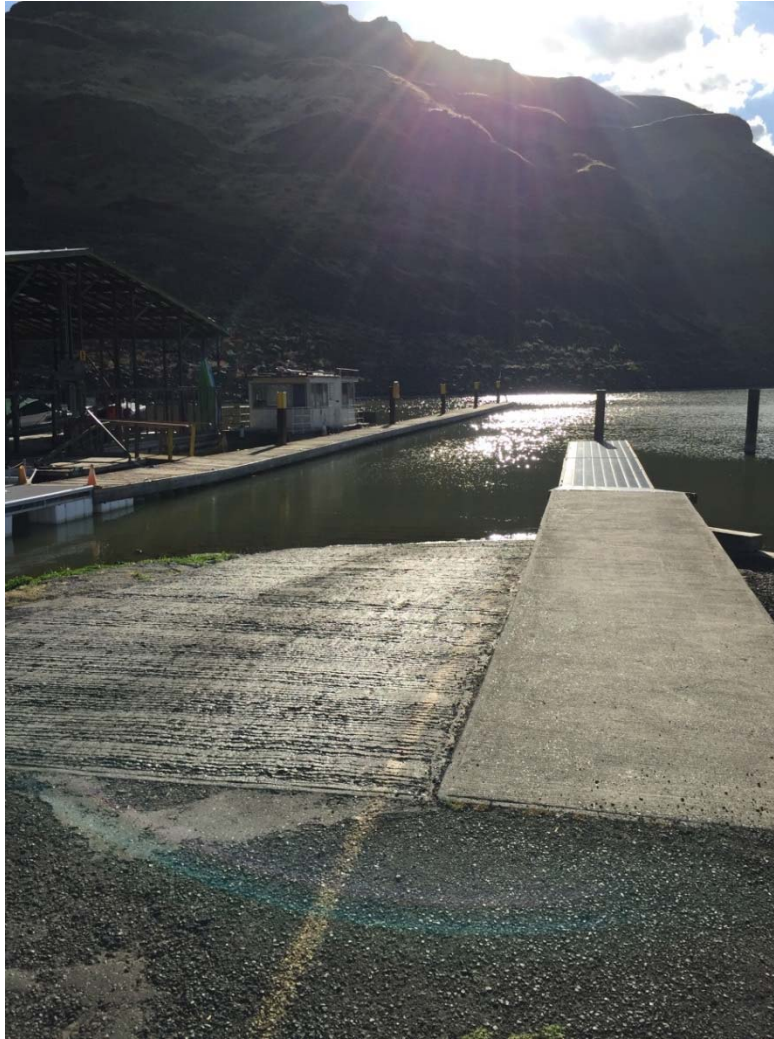


Figure 2. Boat Ramp Facility

Based on the 1976 master plan drawings, a boat ramp facility was in the existing location prior to 1976. The exact age of the current ramp facility is unknown. The concrete approach wedge and float are in generally fair condition. The concrete ramp is in poor condition. The individual concrete panels show signs of deterioration and damage, gravel materials have been eroded from between the panels, and some of the panels are shifting. It is estimated that the existing concrete ramp has a remaining life of two to five years, while the concrete approach wedge and float have a remaining life of five to fifteen years, depending on maintenance, rate of deterioration, and frequency of impact damage to the structures.

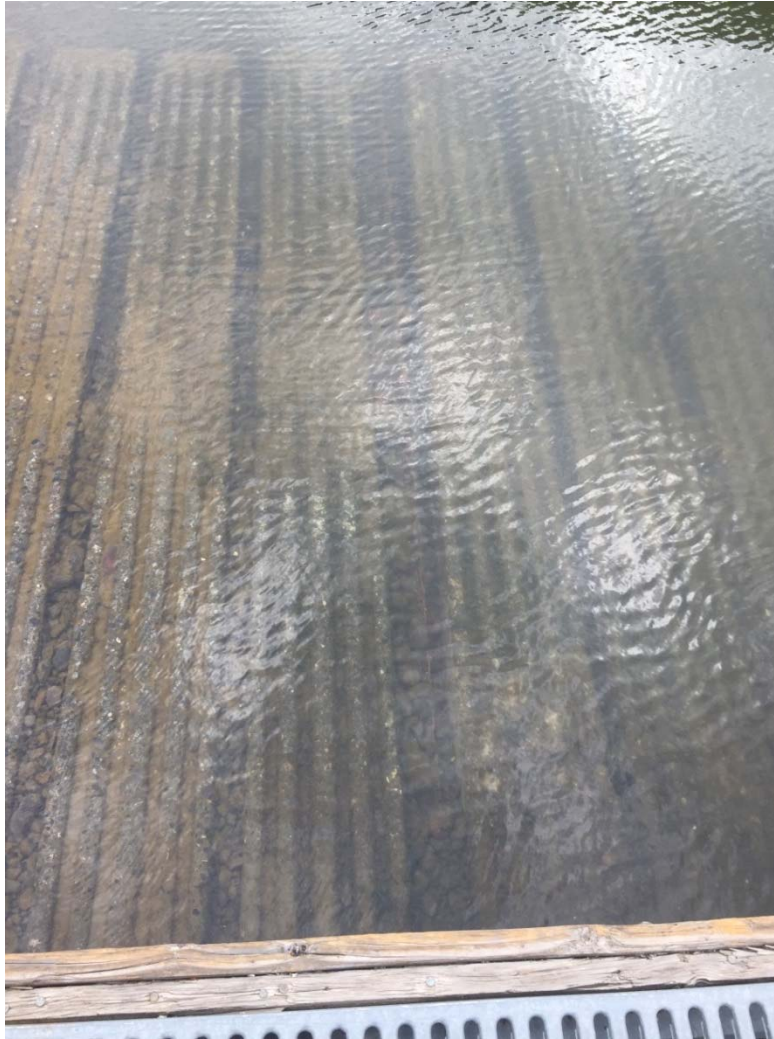


Figure 3. Boat Ramp Concrete Panels

Moorage Dock Systems

The existing moorage dock system consists of a mixture of covered slips and open linear moorage. There are three covered moorage systems, including A Dock, B Dock, and C Dock. A Dock and B Dock are to the south of the boat ramp and connected with a long linear moorage dock. C Dock is located on the north side of the boat ramp facility and is accessed by a linear moorage dock. The floating dock systems vary in age and construction material. The dock systems have electrical service and other appurtenances, including life rings, cleats, and security gates.

The oldest covered moorage system is A Dock, which was recently repaired in 2017. A Dock consists of a center walkway with 26-foot slips on each side. The covered moorage structure is fabricated with timber framing and solid sheet metal roofing. The original float system consisted of unencased flotation, timber framing, and timber decking. The floats were damaged from ice loads when the basin became frozen during a severe winter storm. The float system was repaired

in 2017, including new flotation tubs, repairs to some of the float timber framing, and replacement of some decking. No major repairs were made to the roof framing or roof structure. A Dock is in fair to good condition given the recent repairs. The components not repaired should be inspected regularly and repaired as needed to maintain the fair condition of the overall structure. The estimated life span of A Dock will primarily depend on the condition of the original elements not repaired and level of repairs completed. An approximate remaining life estimate is ten to twenty years, based on limited visual observation.



Figure 4. A Dock

The most recently constructed covered moorage system is B Dock. B Dock consists of a center walkway with 28-foot slips on the west side and 32-foot slips on the east side. The covered moorage structure is fabricated with timber framing and solid sheet metal roofing. The dock system is anchored with steel piling. The floats have a slightly higher freeboard and were not significantly damaged during the ice-over of the basin. B Dock is in good condition. B Dock should be inspected regularly and repaired as needed to maintain the good condition of the overall structure. The estimated life span of B Dock is fifteen to twenty years, based on limited visual observation.



Figure 5. B Dock

C Dock was constructed after A Dock and has had some repairs. C Dock consists of a center walkway with 30-foot slips on each side. The covered moorage structure is fabricated with timber framing and solid sheet metal roofing. The float system consists of a combination of unencased foam flotation and, where repaired, encased white flotation tubs, timber framing, and timber decking. Some of the timber decking and framing has been repaired and some are still the original materials. It appears that some of the repairs may have been completed in the late-2000s. C Dock is in poor to fair condition. C Dock should be inspected regularly and repaired as needed to maintain the condition of the overall structure until replaced. The estimated life span of C Dock is five to ten years, based on limited visual observation. With more major repairs, including replacement of remaining unencased flotation with encased flotation and replacement of deteriorated timbers, the life span of the systems may be increased.



Figure 6. C Dock

AB Linear Dock is a long linear moorage float that connects the shore to A and B Docks and extends beyond B Dock to provide additional open moorage. The gangway connecting the shore to the dock is somewhat older but in fair condition. The gangway does not meet current codes, such as railings and handrails, associated with Americans with Disabilities Act (ADA) requirements.

The construction of the AB Linear Dock float varies in age and materials. The first section of float, from the gangway and past A Dock, is a newer float system. This nearshore section of the dock is approximately 6.5 feet wide and 80 feet long. The float consists of white encased flotation tubs, aluminum framing, and grated plastic decking. The outer section of the float is an older float section constructed with timber framing and decking. This section of the float appears to have a combination of tires and white encased tubs for flotation. The float is anchored with steel H-shaped piling. The older section of AB Linear Dock is approximately 6.5 feet wide and 220 feet long. This section of float has a lower freeboard than the new section of float. The estimated life span of AB Linear Dock is twenty to twenty-five years for the newer section of float and five to ten years for the older section of float, based on limited visual observation.



Figure 7. Gangway to AB Linear Dock



Figure 8. AB Linear Dock New Section



Figure 9. AB Linear Dock Older Section

C Linear Dock is a long linear moorage float that connects a gangway from the shore to C Dock and extends beyond C Dock to provide additional open moorage. The gangway is somewhat older but in fair condition. The gangway does not meet current codes, such as railings and handrails, associated with ADA requirements.

The C Linear Dock float is constructed from various materials. The float used to be an L-shaped float, but the outer leg was removed in 2017 due to ice damage that broke off the piling and untethered the end of the walkway. The float consists of a combination of white encased flotation tubs and other flotation, possibly tires. The float has timber framing and timber decking. The float is anchored with steel H-shaped piling. The C Linear Dock is approximately 6.5 feet wide and 210 feet long. This section of float has a lower freeboard than the newer float systems in the marina. The estimated life span of C Linear Dock is five to fifteen years, based on limited visual observation.

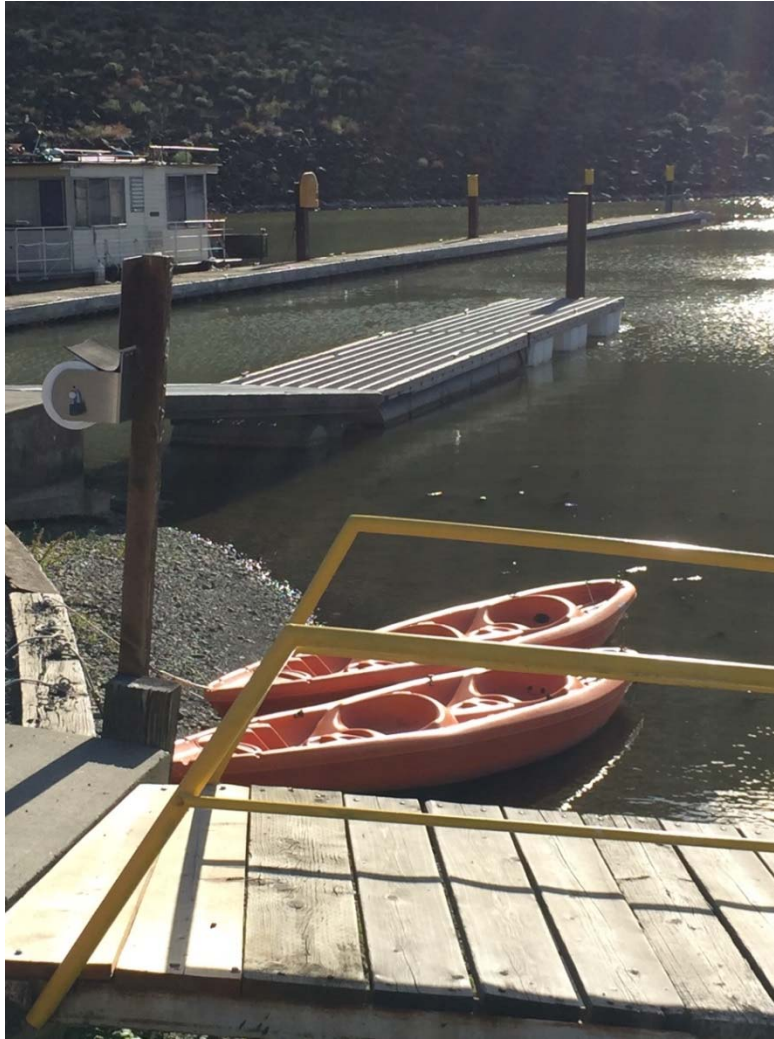


Figure 10. C Linear Dock Gangway



Figure 11. C Linear Dock

Short Term Moorage, Fuel, and Pumpout Systems

The existing fuel and boat sewage pumpout dock system consists of three floats, located adjacent to the bulkhead near the office and store building. The two newer floats and one older float are used by vessels for short-term moorage and to access the fuel system and boat sewage pumpout system. The northern newer float is approximately 8 feet wide by 40 feet long. The float is constructed from white flotation tubs, aluminum framing, and grated plastic decking. The older float is in the middle and is constructed from concrete pontoons, thru-rods, and timber walers. The older float is approximately 12 feet wide and 40 feet long. The concrete float is in poor to fair condition, with some rot in the timber walers and some spalling on the concrete surface. The other newer float, approximately 60 feet long and 4 feet wide, has a newer float system with white flotation tubs, aluminum framing, and grated plastic decking. A gangway from the shore lands on the south end of this float. The gangway is similar in construction and age to the other gangways. The estimated life span for the float systems is twenty to twenty-five years for the newer floats and eight to ten years for the older section of concrete float, based on limited visual observation.



Figure 12. Fuel and Boat Sewage Pumpout Floats

The fuel and boat sewage pumpout floats are accessed by a set of stairs mounted on the bulkhead that lead down to the older concrete float. The fuel system and boat sewage pumpout system are located on a concrete pad on shore, adjacent to the bulkhead. The internal components of the fuel and boat sewage equipment were not visually observed. The pumpout system includes a portable toilet dump station and boat sewage hold pumpout hose, pump, and discharge system. The pumpout system was installed in 2009 to replace an older system. The enclosures and pump accessories appear to be in generally fair to good condition. The marina also provides propane tank services. The propane tank is located near the gangway to A and B Dock. An estimated life span for the fuel system, boat sewage pumpout, and propane tank is not predicted, since it will depend on the specific condition of the pumps, controllers, and other components of the systems that were not included in the observation.



Figure 13. Fuel and Boat Sewage Pumpout Unit Enclosures

Breakwater System

The existing breakwater consists of two main floating docks, one on the east and one on the west, with an entrance channel between the two breakwaters. The docks are concrete pontoon float systems connected with thru-rods and walers. The western breakwater consists of three sections, each approximately 10 feet wide and 70 feet long, for a total length of approximately 215 linear feet. While the individual pontoons within the 70-foot sections are connected by timber walers and thru-rods, the larger 70-foot sections are connected end-to-end with a heavy-duty steel hinged assembly. The eastern breakwater consists of seven sections, each approximately 10 feet wide and 70 feet long, with a total length of approximately 500 feet. Based on discussions with users and the Port, the breakwater entrance configuration is acceptable and the breakwater as configured provides sufficient wave and wake attenuation within the moorage basin.

The dock system is anchored with chains and buried anchors. A pipe railing is located on the outer north side of the breakwater. Life rings are located along the length of the breakwater. The gangway to access the eastern breakwater is older and in poor to fair condition, with an estimated life of five to ten years.

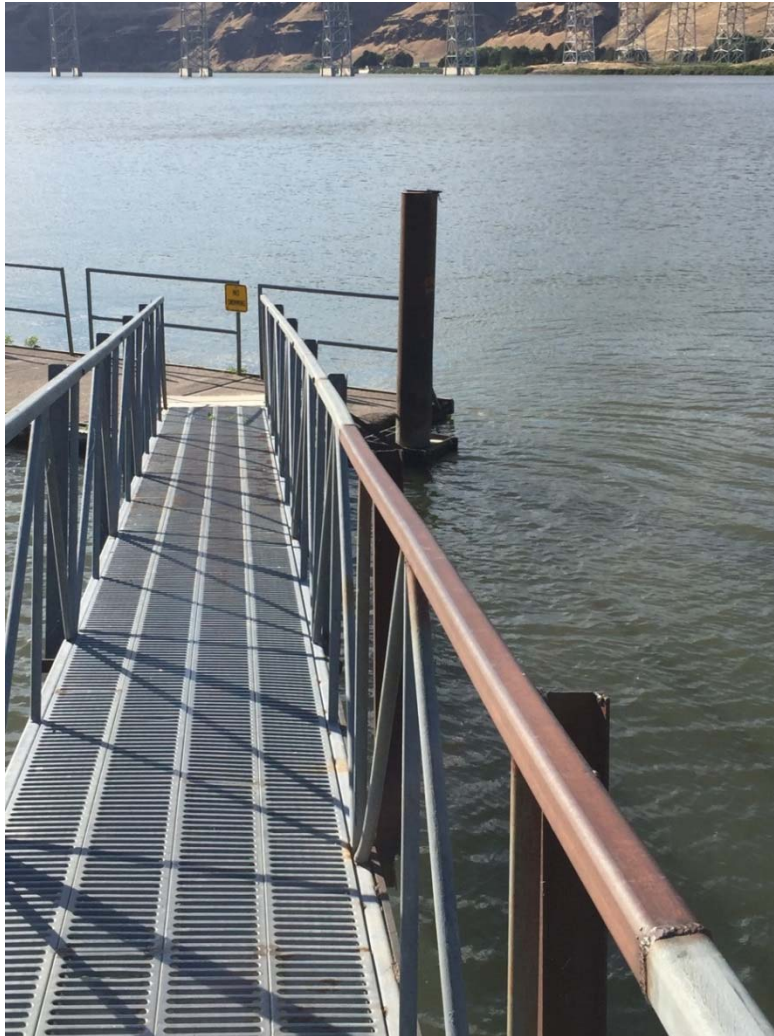


Figure 14. Gangway to Eastern Breakwater

A detailed condition assessment of the breakwater was not completed as part of the master plan process. Following the ice storm and again in 2017, the Port had a diver complete underwater inspections of the anchor system. Based on these inspections, the anchor system appeared to be in good condition.

The exact age of the concrete breakwater floats is unknown. The floats were salvaged from another location and installed at Lyons Ferry by the Corps in the 1970s, making them at least

forty-five years old. Based on limited visual observation of the eastern breakwater, the concrete deck of the pontoons is in generally fair condition, with minor spalling and cracking, some of which has been repaired. The walers are in poor to fair condition, with the outer timber walers showing evidence of plant growth and rot. The thru-rods were not observed. The steel hinge assemblies are aged and rusted but, based on limited visual observation, the assemblies (including bolts, nuts, shackles, and other components) appear relatively intact, with no major evidence of damage or deterioration. Given their age and rusted condition, the assemblies are in poor to fair condition.

The typical estimated life cycle for this type of float is fifty years, so the floats are nearing the end of their typical design life. However, facility owners have extended the life of this type of float through major repairs and component replacements, such as new walers and thru-rods, new hardware and connections, and concrete patching and repairs.

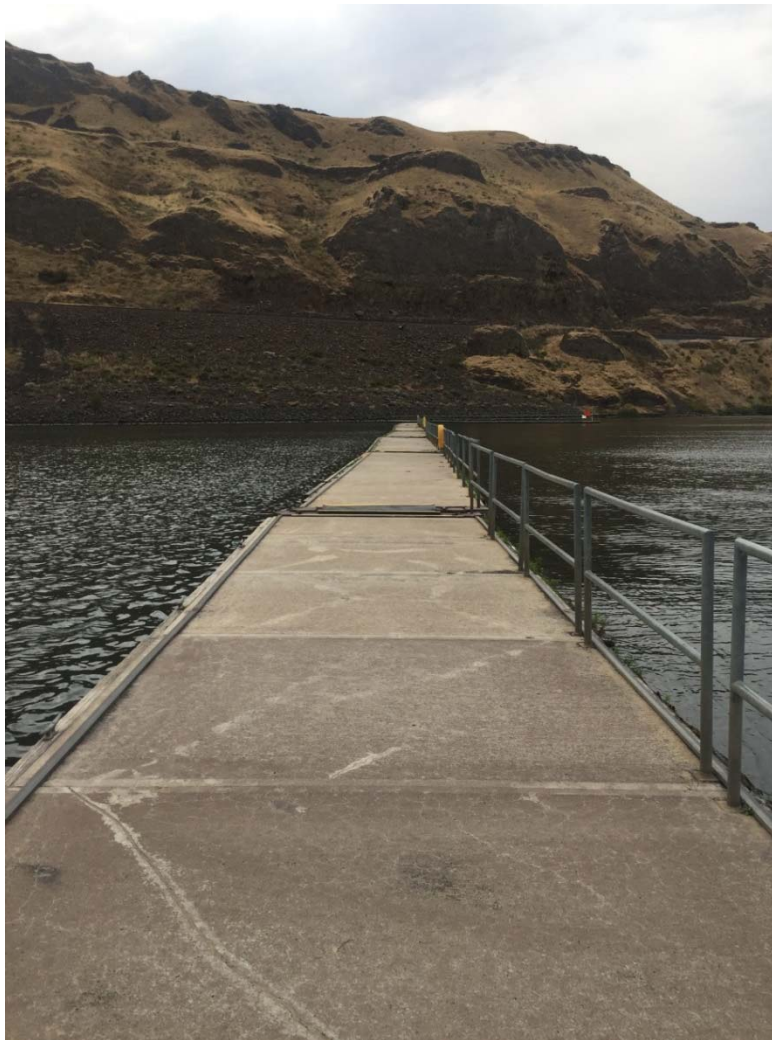


Figure 15. Eastern Breakwater



Figure 16. Breakwater Section Hinge Assembly

ADA Accessible Fishing Deck

An ADA accessible fishing platform is located on the shoreline adjacent to the gangway to the eastern breakwater, overlooking the Snake River and across to Lyons Ferry State Park. This platform was constructed in 2013 and is in good condition. The platform includes composite decking and painted steel pipe railing. The estimated remaining life span for this facility is twenty to thirty years.

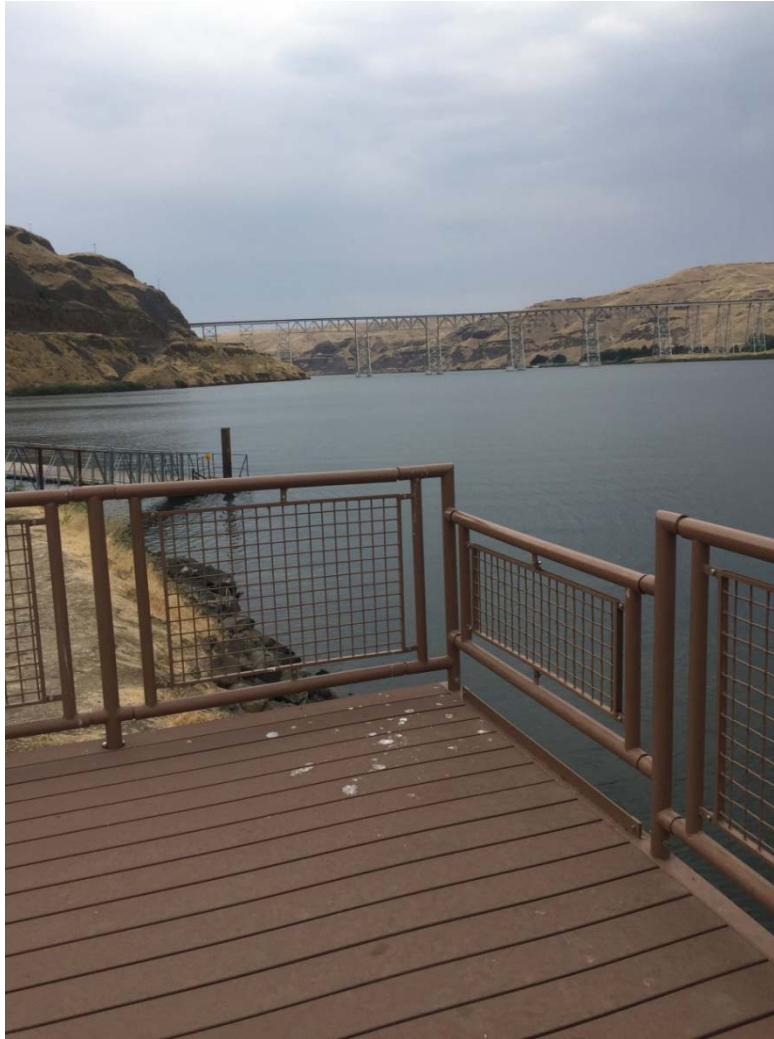


Figure 17. Handicapped Accessible Fishing Deck

Bulkhead

The perimeter of the marina basin consists of both rock slopes and bulkheads. The west side of the basin is the rock slope of the railroad embankment. There are also rock slopes at the point near the eastern breakwater gangway and fire pit and around the boat ramp. The east side of the basin is primarily timber bulkhead. The bulkhead is a crib-wall type structure, constructed from stacked creosote-treated timber railroad ties placed both parallel and perpendicular to the shoreline in a crisscross arrangement and backfilled with gravel. There is approximately 800 linear feet of bulkhead. The age of the bulkhead is not known, but the bulkhead likely predates the 1970s.

A detailed inspection of the bulkhead was not conducted. Based on visual observation, the bulkhead is in poor to fair condition. The lower sections of bulkhead, which are subject to wetting and drying and full immersion, appear to be softening and rotting due to water exposure and age. This process has caused compression in the lower sections of the bulkhead in certain

locations, resulting in the bulkhead rotating out toward the water as the landside earth pressure pushes on the bulkhead. Currently, this rotation is in a few locations, while other sections of the bulkhead appear to be relatively vertical and are not showing signs of deterioration. In a few places, steel strap repairs have been installed to support the top of the wall and prevent the outward rotation of the top portions of the bulkhead.

Given the timber crib-wall type of construction, there is some flexibility in the system and the crib wall will settle and move as the deterioration continues due to softening and rotting of the submerged timbers. This will likely result in portions of the bulkhead continuing to rotate outward and loss of gravel fill materials from the bulkhead structure, which may cause safety concerns for pedestrian use, with uneven surfaces and potholes along the top of the bulkhead. The overall estimated remaining life span for the bulkhead varies based on differing condition along the bulkhead, but is in the range of five to fifteen years. The bulkhead may last longer, but the extent of rotation and rate of gravel loss from between the timber cribs will accelerate as the timbers further decay.



Figure 18. Bulkhead



Figure 19. Bulkhead Steel Strap Repair

EXISTING CONDITIONS – UPLAND FACILITIES

The following describes the existing condition of the site's upland facilities. A detailed condition assessment and inspection was not completed as part of this master plan. The existing condition discussion is based on available published information, such as dates of construction; a visual observation of the general condition of each element; and input from the Port staff and concessionaire. It is recommended that regular inspections be conducted to determine specific conditions of each asset to assist with long-term maintenance, repair, and stewardship of existing structures and infrastructure. All existing structures and infrastructure should be maintained and repaired as needed to provide safe and operable conditions until the asset is replaced. This existing condition section provides general estimated remaining life for the major structures and general major maintenance suggestions. Full discussion of major modifications and replacement alternatives, including recommendations for each asset, is provided in the alternatives and recommendation sections of the report.

Roadways, Parking, and Trailer Storage Areas

Lyons Ferry Marina and RV Park is accessed from State Highway 261 and Lyons Ferry Road. The main access road into and through the site is a private drive off of Lyons Ferry Road. The private drive is a two-lane paved road that enters the site and routes traffic down to the lower portion of the facility. The paved service areas for the site include the large parking and turnaround area at the lower marina level and roadway and parking access to the RV sites. The locations of the office, store, boat launch, and marina cause high congestion in the lower parking and circulation area during the busy season. Camping reservations, boat ramp use, moorage slip access, small hand-carried boat rental and launching, and many other activities occur in the lower parking area, which sometimes creates conflict during peak periods.

The majority of the other roadways are gravel, including the roadway to access the tent sites, the service roads near the upper play area, and the roadway to the caretaker's house. The boat trailer storage and maintenance areas are also gravel. The existing paved roads, gravel roads, parking, and storage areas are in generally good condition.



Figure 20. Paved Roadways

Office and Store Building and Support Buildings

The facility includes several buildings. The main building, located in the lower area adjacent to the marina, serves as the office, registration area, store, maintenance area, and more. The prefabricated sheet metal building predates the 1976 master plan. The building is approximately 50 feet by 60 feet. While the building is older, it has been maintained with minor upgrades and is in fair condition. Various cosmetic improvements and repairs have been made to the building through the years. A landscaped area in front of the main building provides a space with tables and chairs for store and park customers to eat and gather. A partially-fenced maintenance yard, storage sheds, and the marina fuel tanks are located behind the main building. Up the hill, behind the main office, is the caretaker's house. The condition of the house was not reviewed as part of the scope for the master plan process. According to Port staff, a new sliding patio door, new carpet, and new interior paint were installed in 2017.



Figure 21. Office Building and Maintenance Area

Restroom Buildings

There are two main restroom facilities at the park. The newest restroom is located adjacent to the office in the lower area and provides separate restroom facilities for men and women. No showers or laundry facility is provided in this restroom. The restroom facility is in generally good condition



Figure 22. Lower Restroom Building

An older restroom facility, installed in the mid-seventies, is located adjacent to the tent camping sites in the middle terraced area and provides separate restroom facilities for men and women. This facility includes showers but does not include a laundry facility. The restroom facility is well maintained but, due to its age, is dated aesthetically, does not function efficiently, and does not meet ADA requirements. The restroom is in fair condition.



Figure 23. Upper Restroom Building

RV and Tent Sites

The RV and tent sites for the facility are located on terraced plateaus along the site. The terracing provides excellent view corridors out to the river. The first terrace, located just above the lower parking area, is for larger RVs. The area consists of car parking along the west side of the paved roadway and larger back-in RV sites along the east side of the paved road. The RV sites back up to the terraced hillside. The paved portion of each site is approximately 30 feet, with room for RVs up to 40 or 50 feet, depending on the space. There are a total of 19 RV sites, with 18 rentals and one utilized by a campground host. The RV sites include picnic tables, lawn, and trees. The trees are located along the back side of the sites, allowing for unobstructed views of the river. These sites have a full hookup, including electrical, water, and sanitary sewer.



Figure 24. RV Sites

The tent sites are located on the next terrace up from the RV sites. A gravel access road with a turnaround is used to access the tent sites. The upper restroom is located near the access road turnaround. Seventeen tent sites are located along the west side of the road, and eleven larger tent or small trailer sites are located on the east side of the road. The west tent sites include privacy screens, lawn, and picnic tables. The tent sites look out between the trees on the terraced hill toward the river. The larger tent and small trailer sites on the east side of the access road include picnic tables and some utility services and can accommodate smaller RVs up to approximately 30 feet. The tent sites are in good condition, including newer privacy screens, lawns, and picnic tables.



Figure 25. Tent Sites

Walkways, Stairs, and Pathways

There are a variety of walkways, stairs, and pathways in the facility. These include timber stairs and an asphalt pathway from the upper restroom to the RV terrace and concrete stairs from the RV terrace to the lower parking and marina area. A set of older timber stairs also connects the central portion of the tent sites to the central portion of the RV sites. Other pathways on site are generally gravel shoulders or pathways between the various amenities.

The lower parking and circulation area does not have formal sidewalks or crossings. Some pedestrians utilize the top of the crib wall bulkhead for a pathway, while others utilize portions of the paved parking and roadway area. There is an asphalt pathway from the office building area to the overlook platform and fire pit.

Landscape, Fire Pit, Children's Play, and Off-Leash Dog Park Areas

A variety of amenities are provided at the facility. Landscaped areas include the point and pathway to the ADA accessible fishing platform and lawn and trees along the bulkhead area, lower parking area, RV sites, and tent sites. Due to the natural arid nature of the site, only areas that are actively irrigated or watered can support lawn and landscaping. An irrigation system was installed as part of the work in the mid-seventies; however, the system is no longer functioning due to impacts to the piping network from maintenance and repair projects.

Other amenities include a fire pit on the point near the eastern breakwater gangway and overlook platform, a new children's play area on the upper terrace above the tent sites, an off-leash dog area adjacent to Lyons Ferry Road, and the trailer storage area. These facilities are in generally fair to good condition.



Figure 26. Fire Pit and Landscape Area



Figure 27. Children's Play Area



Figure 28. Off-Leash Dog Area

EXISTING CONDITIONS – UTILITIES

This section describes the site's general utility systems. An inspection of the site utilities was not included in the scope of the master plan and was not completed. The existing condition discussion is based on available published information, such as dates of construction; previous utility studies; and input from the Port staff and concessionaire. It is recommended that regular inspections be conducted to determine specific conditions of each asset to assist with long-term maintenance, repair, and stewardship of existing utility infrastructure. All existing utility infrastructure should be maintained and repaired as needed to provide safe and operable conditions until the infrastructure is replaced. Potential required utility modification and upgrades associated with alternatives are provided in the alternatives and recommendation sections of the report.

Water System

The existing water system consists of two water wells approved for domestic water use. The first well, commonly referred to as Well No. 1 (BHP090), was installed near the caretaker's house by the Port in 1973. Well No. 2 (BHP091) was installed in 1976 in the upper terrace near the children's play area. The Lyons Ferry Marina water system is a Class A, Transient Non-Community water system (Public Works Identification No. 49385F). The well system is not used to provide fire flow service.

The original Well No. 1 was approved as a potable water supply when it was installed and served the office building and existing facilities prior to the 1976 expansion project. Well No. 1 has a 100-gallon-per-minute (gpm) pump. Well No. 2 was installed in 1976 as part of the RV park expansion project to provide both potable and irrigation water service. Through the years, typically only one well was used at a time to supply water to the facility, and the Department of Health (DOH) had only one source listed as available for the facility. In 2013, a well source approval project report was completed to obtain approval from DOH for Well No. 2 as an approved potable water source, and now both wells are approved by DOH for domestic water use.

Well No. 2 has a storage capacity of 1,300 gallons, and at the time of the 2013 report had 33 active connections (29 connections from recreational services and 3 from commercial and business services). The pump house for Well No. 2 is equipped with a 175-gpm deep well turbine pump, a 2,000-gallon compression tank, and chlorination facilities for domestic water. According to 1976 master plan documents, the well was designed to have adequate capacity to supply the future development of a day-use area. As part of the 1976 project, a new 3-inch line was installed from the new pump house to the upper restroom. Irrigation lines were also connected to the new potable water supply from Well No. 2. Since 1976, a variety of operation scenarios have been utilized for the water system, including periods where one well was used for both irrigation and potable water, and periods when one well was used for irrigation and one well was used for potable water.

According to Port staff and the concessionaire, Well No. 2 has supplied adequate water for existing domestic and irrigation uses at the facility and there have been no experiences of lack of

water. A water connection system study was conducted in 2016 to determine the capacity of the well systems at Lyons Ferry and the ability to support facility expansion. The study focused on a proposed addition of three cabins and a laundry facility (see Appendix A). Greater detail about the well systems is provided in that report. The report determined that existing facilities represent 21 equivalent residential units (ERUs). A physical capacity analysis from that study determined that the combined well system has an estimated source water rights annual volume to support 39 ERUs and a capacity based on peak day use to support 219 ERUs.

Sanitary Sewer System

Primary sources of sewage waste include the lower and upper restrooms, caretaker's house, office building, boat sewage pumpout, and RV sites. Three main sanitary sewer pump stations are on site: one located behind the office building, one located at the north end of the RV terrace, and one located near the upper restroom. The stations pump effluent up to a drain field located in the uppermost portion of the property. The marina office building, boat sewage pumpout, and lower restroom discharge to the lower pump station. The caretaker's house and RV sites discharge to an RV septic tank connected to the middle pump station, and the upper restroom discharges to a septic tank, with effluent from the tank discharging to the upper pump station.

The lower pump station is the oldest of the stations and was installed prior to the 1970s. According to as-constructed drawings, the septic tank and effluent lift station adjacent to the upper restroom was installed in 1976. This effluent is pumped through a 3-inch force main pipe to the drain field located on the uppermost portion of the site near the entrance roadway. The drain field system consists of six drain tile 4-inch PVC pipes, 100 feet in length, with 14 feet of separation between drain tiles.

A Large On-Site Sewage System (LOSS) operation and maintenance manual was prepared for the system in 2016 (see Appendix A). The LOSS report provides a detailed description of the existing system and a map of the sanitary sewer discharge system. Based on the LOSS facilities report, the system at Lyons Ferry Marina has an approved design flow of 6,250 gallons per day (gpd).

Stormwater, Electrical, and other Utility Systems

A condition assessment of stormwater, electrical, lighting, telecommunication, and other utility services was not included in the scope of the master plan. In general, throughout the site stormwater drains as sheet flow across impervious surfaces and infiltrates the ground. Electrical services are provided to the RV sites, office and buildings, and moorage slips through overhead and buried power lines in the upland areas and wiring in conduits along the dock structures for the in-water facilities.

STAKEHOLDER PARTICIPATION

Stakeholder participation during the master plan process included discussion with Port staff, discussions with the previous and current concessionaires, discussion with the Corps of Engineers regarding overall planning for the area, and a public open house. Additional input was solicited and received on the Port's website and at Port commission meetings. Initial meetings provided input on goals and objectives for the project from a variety of perspectives, including park use and demand, economic development, operational needs, maintenance items, environmental and site considerations, and other inputs. Once preliminary draft concepts were developed, a public open house was held on site to receive additional input and feedback on potential elements to help develop the draft concepts into two refined alternatives. The two alternatives were discussed further at Port commission meetings.

The comments received at the public meeting are summarized in Appendix B. The comments covered a range of project elements, such as location of potential facilities, scale of expansion, in-water facilities and amenities, operational needs, upland facilities modifications, funding, environmental stewardship, safety and mix of uses, scale of the expansion, views from the park, operating requirements, and others. The potential for phasing various elements of the project were also discussed.

Some of the main comments regarding the expansion include:

- Provide expanded moorage and larger moorage slips.
- Improve the trailerable boat launch.
- Provide improved methods for hand-launch of kayaks and other small craft.
- Provide additional RV, tent, and cabin sites.
- Provide cabins at the point area, with moorage docks adjacent to the cabins.
- Provide improved upper restrooms and a laundry facility.
- Provide a way to get wet in a splash area or swim area, but not in the back corner of the marina.
- Provide pull-through larger RV sites.
- Develop upland amenities, such as a mini-golf course or other recreational activities.
- Provide an entrance facility to check people in to eliminate all vehicles having to drive down to the lower level for check-in.
- Provide a security gate or system at the entrance to control nighttime entry.

ALTERNATIVES ANALYSIS

A variety of alternatives were developed for the facility. The factors that informed this development include land ownership, site conditions, legal and code requirements, published guidelines for design of facilities (such as moorage, RV sites, and KOA standards), and stakeholder input. The area reviewed for the alternatives is the property owned by the Corps and leased to the Port. No development alternatives were proposed for the area along the base of the embankment owned by the railroad but currently used for trailer parking and maintenance activities.

For the purposes of early discussion and analysis, the in-water and upland draft concepts were developed separately (see Appendix C for early concepts). Following review of the draft concepts, public open house, and further discussion with the concessionaire and Port staff, the draft concepts were refined into two alternatives that include both in-water and upland improvements. The potential for phasing of the alternatives is discussed in a later section.

Preliminary In-water Alternatives

Primary considerations for the in-water elements include review of existing conditions and recommendations for major repairs, replacement, reconfiguration, and expansion of the following in-water elements:

- Breakwater
- Moorage Dock System
- Boat Launch
- Hand-carried watercraft area
- Swim area
- Bulkhead

Based on input from users and the Port, the existing breakwater configuration provides sufficient access to the moorage facility and sufficient attenuation of waves within the marina basin. The breakwater is over forty years old and is showing some deterioration due to age, including deteriorated walers and rusted connection assemblies. Based on a condition review by a separate dive firm, the anchor system and underwater portions of the float pontoons are in generally good condition. Given that the breakwater is performing adequately to support moorage operations at the facility, the alternatives do not include any reconfiguration of the breakwater facility. The alternatives do include recommendations for major repair and maintenance of the breakwater to extend its life cycle and preserve its valuable function of protecting the marina facility.

A range of concepts were developed for the moorage system. The existing dock system includes covered moorage slips between 26 to 30 feet in length and various linear moorage docks. Because B Dock is the newest structure, it has wider slips and a fairly high roof. The concepts for moorage reconfiguration and expansion therefore focused on A and C Docks and the linear moorage floats. Preliminary concepts included removing older portions of A Dock and expanding the C Dock area to increase covered and open moorage. One early concept positions a new C Dock to match the alignment of A and B Dock. This orientation provides better

moorage operations based on predominant wind directions in the basin. Other early concepts included options to increase the amount of moorage by extending the C dock linear walk to access a new covered moorage and open moorage facilities. Expansion of moorage floats along the existing bulkhead area was also reviewed to potentially increase linear feet of moorage at the marina. Some concepts included relocating B Dock and C Dock to different orientations and locations within the marina. In general, all early concepts included potential for expansion of the moorage system to address increased demand.

Based on the poor condition of the boat launch ramp, discussions with stakeholders identifying the boat ramp as an area of highest use and congestion, and the overall configuration of the lower area, all concepts included improvements to the trailerable boat launch facility. Cars and boat trailers, pedestrians, and moorage users have limited circulation space around the head of the boat ramp, creating user conflicts due to impacted boat launch operations. All proposed options in the preliminary analysis included expanding the single-lane ramp to a two-lane ramp. Concepts included constructing a center float with a boat ramp lane on each side, or utilizing the AB linear dock as a loading dock with a two-lane ramp between the AB linear dock and a boarding float on the north side of the ramp.

The location of the ramp was not changed, as a large turnaround area is needed for operations and an existing fill area is present at the head of the ramp. The early options included additional fill area to improve safety and operations around the head of the boat ramp facility.

Locations for potential small hand-carried water craft launching and operations as well as swim areas were explored in the preliminary concepts. Location options included the interior corner of the basin, near the central boat ramp, and near the eastern breakwater. All early concepts included repair or replacement of the existing bulkhead to address its deteriorating condition. Repair concepts ranged from placing of riprap at the toe of the existing structure, removing and regrading the shoreline with a new riprapped slope, or replacing with a new vertical bulkhead.

Preliminary Upland Alternatives

Primary considerations for the upland elements include review of existing conditions and recommendations for major reconfiguration and expansion of the following elements:

- RV and Tent Sites
- Cabins
- Restroom and Laundry Facilities
- Entrance Facility and Security Gate
- Recreational Amenities

All early concepts included expansion of the RV and tent sites. To meet increased demand identified by the concessionaire, updated KOA requirements, and other factors, a variety of concepts for new and updated sites were developed. These included four to five deluxe pull-through or back-in sites with full hookups for 55-foot or longer RVs and four to ten additional RV and tent sites. The new sites are located on new terraces above the existing tent terrace, with new looped roadways. Based on initial comments, the early concepts also included two new

deluxe cabins and a remodeled or new restroom and laundry facility on the existing tent level terrace. A refurbished office and store building, an automatic gate entry, and a relocated play area and amphitheater near the existing fire pit were also considered.

As part of the recreational and general site improvements, themed wayfinding and interpretive signage opportunities should be considered. The story of the local culture, history, and site context could be explored. Interpretive themes could relate to elements of the natural environment, such as fish rearing and spawning, wildlife habitat features, water quality issues, amphibian habitat, soils, and vegetation communities. Cultural themes could include historic Native American settlements and culture, the historical use of the site as the former ferry crossing, and other community events. Each alternative assumes landscape improvements that would integrate and complement the general site improvements to enhance the natural beauty of the setting. As appropriate, new lawn areas and ornamental tree and shrub plantings would be strategically developed in park and campground use areas to soften hardscape, create privacy in camp site areas, and provide shade.

Shoreline improvements at the water's edge would also require riparian planting to mitigate any new overwater structures, beach creation, or bulkhead improvements. Planting design at these shoreline areas should integrate into the site to provide beneficial habitat but also balance the human use of the site. Tree plantings should be located to maintain view corridors to the river, and shrub planting should be located to ensure no encroachment into walkways or use areas. Protective fencing or log barriers, as appropriate, will be used to limit foot traffic and minimize disturbance of newly planted shrubs.

Generally, the site appears free of invasive vegetation, although some common species, such as knapweed, persist. Opportunities to enhance and restore the native shrub steppe and grassland landscape areas on site should be explored as site development occurs.

The preliminary concepts were shown at a public meeting on site and reviewed by the concessionaires, Port, and other stakeholders. Based on input from the stakeholders, the preliminary concepts were refined into two final alternatives for the facility. The following paragraphs identify the elements, pros and cons, and opinion of probable costs for the two alternatives.

Alternative A

Alternative A is a full build-out option that greatly increases the recreational opportunities and amenities at the Lyons Ferry Marina facility. This alternative includes rehabilitation or refurbishment of the breakwater, bulkhead, and office building.

Alternative A maintains the existing A Dock and B Dock covered moorage and AB linear dock, and expands the C Dock area to include a new covered moorage D Dock. D Dock includes both 30-foot slips and the potential for larger 40- to 60-foot covered moorage slips. This alternative would provide approximately fifty new slips. The orientation of the C Dock and new D Dock moorage would be rotated to match the orientation of the existing A and B Docks. New linear docks are provided between the C and D Docks. Depending on the timing of this work and condition of C Dock at that time, the existing C Dock could be reoriented and reinstalled or

completely replaced under this alternative. This alternative responds to the goal and input from stakeholders for expanded moorage and larger moorage slips. This alternative also provides four new moorage floats near the bulkhead at the point area to support direct access to the new cabins proposed for that area.

Alternative A includes expansion of the boat ramp from a single-lane to a two-lane ramp with a center boarding float. There was strong input from stakeholders that an expanded and improved boat ramp was very important for the facility. The alternative includes slightly increasing the fill area around the top of the boat ramp to improve safety and circulation for pedestrians, moorage users, and trailerable boat ramp users. A small boat float is included adjacent to the C Dock linear float for launching small hand-carried boats rented from the office or brought by users.

This alternative provides a swim area near the eastern breakwater, with a float and swim line to separate swimmers from moorage operations. Based on stakeholder input, a swim area in the back corner of the marina would not be desirable due to water quality and access. This alternative also includes a potential splash pad located either near the point or near the office and lower restroom buildings.

The upland elements of Alternative A include constructing 17 to 22 new deluxe cabins, lengthening the existing RV sites, and increasing the number of tent and RV sites by creating new loop access roads and terraces. The cabins would be located near the existing tent sites as well as terraced into the hillside at the point. A new loop road would be created to access the cabins near the point. The cabins would need to stay outside of the setback requirements for SR 261. A restroom and laundry facility is also proposed for this area to support the cabins and an enhanced amphitheater in the point area.

The amphitheater space suggested for the northeast tip of the site compliments the natural bowl-shaped landform to create an event space for the campground. Located adjacent to a new small swim beach, this area could become an outdoor space hosting local musicians, movie nights, story time, and stargazing. The amphitheater is envisioned to offer improved seating, a small stage, and a fire pit, taking advantage of a beautiful spot out on the point to view the surrounding landscape.

The existing tent area and play area terraces would be expanded under this alternative to provide for additional RV and tent sites. This will involve regrading, landscaping, and improving access roads. The children's play area would be relocated to a lower terrace. The upper terrace, adjacent to the drain field location, would be developed as additional RV or tent sites or a recreational activity location, such as mini-golf. This upper area would also be the location of a new entry facility that includes a pull-out area, a registration office, and an entrance gate.

Upgraded utilities would require new electrical services and updated sanitary sewer systems, including piping, septic tanks, a pump, and drain field expansion. The alternative includes an expanded drain field in the upper portion of the property to support the increased ERUs of the cabins, restrooms, laundry, and RV sites. Based on the previous capacity analysis for domestic water supply, there is likely sufficient water capacity from the two existing wells to support the full development, but additional water rights may be needed. A detailed analysis will be required to determine specific utility requirements.

The full build-out costs for Alternative A would be approximately \$20.28 million. Detailed opinions of probable costs are included in Appendix D. These costs are in 2018 dollars and include a 20 percent planning-level contingency, 15 percent for engineering and planning, a 20 percent construction contingency, and 8.1 percent sales tax. The breakout for these items is as follows:

1. Moorage Dock	\$10,900,000
2. Breakwater Repairs	\$ 240,000
3. Boat Launch	\$ 910,000
4. Bulkhead Repair	\$ 470,000
5. Upland Point Area	\$ 4,780,000
6. Upland Terraced Area	\$ 2,980,000

There are a variety of opportunities for phasing these projects and improvements, depending on available funding and demand. Phasing opportunities are discussed in the following section.

Insert

Figure 29. Alternative A

Alternative B

Alternative B is a moderate build-out option that increases the recreational opportunities and amenities at the Lyons Ferry Marina facility. This alternative includes rehabilitation or refurbishment of the breakwater, bulkhead, and office building.

Alternative B maintains the existing A Dock and B Dock covered moorage and AB linear dock. The option expands the C Dock linear moorage to include a new covered moorage D Dock with 30-foot slips and the potential of future expansion for larger 50- to 60-foot covered or open moorage slips. This alternative provides a minimum of twenty new 30-foot slips, with the potential for up to fifty new slips of various sizes. The orientation of the C Dock would not change. New linear docks are provided between the C and D Docks. Depending on the timing of this work and the condition of C Dock at that time, the existing C Dock could be maintained or completely replaced under this alternative. This alternative responds to the goal and input from stakeholders for expanded moorage and larger moorage slips. This alternative also provides linear moorage floats near the bulkhead at the point area to support direct access to the new cabins proposed for that area.

Alternative B includes expansion of the boat ramp from a single-lane to a two-lane ramp with a center boarding float. There was strong input from stakeholders that an expanded and improved boat ramp was very important for the facility. The alternative includes a small increase in the fill area around the top of the boat ramp to improve safety and circulation for pedestrians, moorage users, and trailerable boat ramp users. A small boat float is included adjacent to the C Dock linear float for launching small hand-carried boats rented from the office or brought by users.

This alternative includes a swim area near the eastern breakwater, with a float and swim line to separate swimmers from moorage operations. Based on stakeholder input, a swim area in the back corner of the marina would not be desirable due to water quality and access. This alternative also includes a potential splash pad located either near the point or near the office and lower restroom buildings.

The upland elements of Alternative B include 11 new deluxe cabins, two near the existing tent sites and nine near the point. A new loop road would be created to access the cabins near the point. The cabins would need to stay outside the setback requirements for SR 261. This alternative preserves existing RV sites and tent sites. A new area for RV and tent sites would be installed by creating a new upper loop access road and terrace. The upper RV sites would be larger 55-foot pull-through deluxe sites. A new restroom and laundry facility would replace the existing upper restroom.

The amphitheater space suggested for the northeast tip of the site compliments the natural bowl-shaped landform to create an event space for the campground. Located adjacent to a new small swim beach, this area could become an outdoor space hosting local musicians, movie nights, story time, and stargazing. The amphitheater is envisioned to offer improved seating, a small stage, and a fire pit, taking advantage of a beautiful spot out on the point to view the surrounding landscape.

The children's play area would be relocated to a lower terrace. The upper terrace adjacent to the drain field location would be developed as additional RV or tent sites or a recreational activity location, such as mini-golf. This upper area would also be the location of a new entry facility that includes a pull-out, and registration office, and entrance gate.

Upgraded utilities would require new electrical services and updated sanitary sewer systems, including piping, septic tanks, a pump, and drain field expansion. The alternative includes an expanded drain field in the upper portion of the property to support the increased ERUs of the cabins, restrooms, laundry, and RV sites. Based on the previous capacity analysis for domestic water supply, there is likely sufficient water capacity from the two existing wells to support the full development, but additional water rights may be needed. A detailed analysis will be required to determine specific utility requirements.

The full build-out costs for Alternative B would be approximately \$15.16 million, including the future dock expansion. Detailed opinions of probable costs are included in Appendix D. These costs are in 2018 dollars and include a 20 percent planning-level contingency, 15 percent for engineering and planning, a 20 percent construction contingency, and 8.1 percent sales tax. The breakout for these items is as follows:

1. Initial Moorage Docks	\$ 4,500,000
2. Future Moorage Docks	\$ 3,140,000
3. Breakwater Repairs	\$ 240,000
4. Boat Launch	\$ 850,000
5. Bulkhead Repair	\$ 470,000
6. Upland Point Area	\$ 3,480,000
7. Upland Terraced Area	\$ 2,480,000

There are a variety of opportunities for phasing these projects and improvements, depending on available funding and demand. Phasing opportunities are discussed in the following section.

Insert

Figure 30. Alternative B

PHASING CONSIDERATIONS

Both alternatives can be implemented in phases. The final phasing will depend on available funding, grants, operational needs, and priorities of the Port and concessionaire, among other factors. For implementation of any of the proposed elements, a detailed survey, plan, and design process should be completed, along with the required regulatory and permitting processes.

Potential phasing scenarios for the in-water work include installation of the boat ramp as a first phase, followed by repair of the breakwater and bulkhead, followed by moorage expansion. It is recommended that the Port identify potential funding sources for repair of the breakwater and bulkhead, since these are critical to preserve operational conditions at the facility and both will require major repairs within the next five to ten years.

If the boat ramp is the first phase to be implemented, it would be most cost effective and straightforward from a permitting perspective to build the two new boat ramp lanes, install a new float and anchor piling, and expand the landside circulation area at the top of the ramp as one project. It is recommended that the permit application be submitted for the full project. It is also recommended, if the Port has available matching funds, that a grant proposal for the project include the full facility. However, if funding is not available to do all of the work at one time, the boat ramp project construction could be broken into phases. The existing ramp and float could be used and a second lane installed adjacent to the existing float as a first phase for the boat ramp project. Minor fill to improve the circulation at the top of the second ramp should also be included in the first phase. Later, as funds become available, the existing ramp and float could be replaced. The minor expansion of the landside circulation area between the existing ramp and AB Linear Dock could be done as part of the bulkhead improvements at a later date.

The bulkhead improvements could also be implemented in phases. Individual sections of the bulkhead could be repaired as funding is available. A five year or longer maintenance permit from the Corps of Engineers to do the work would allow the bulkhead repair and dock repair work to be spaced out over a longer period of time as funding allows. The expanded moorage docks could also be phased in as funding is available as shown on the alternatives.

There are many potential phasing options for the upland facilities, depending on available funding and demand. Amenity upgrades, such as a splash pad, mini-golf, and relocation of the play area, are modest improvements that could be done as an early phase. Modifications to the existing RV and tent sites and a new restroom and cabins near the tent area could be implemented as an early phase, as they require no major infrastructure upgrades. The point or upper terrace improvements have substantially higher costs and impacts and could be later phases to be implemented depending on funding.

The entrance gate facility could be phased in, with a simple controlled security gate and kiosk as a first phase and a more formal pull-out, registration office, and entry as a later phase. Cabins can be phased in, with the two in the current camping area installed first to take advantage of the existing infrastructure, followed by other cabins at the point once infrastructure is built in that area. Because specific funding has not been identified or allocated, it is recommended that grant-eligible projects (such as the boat ramp and small boat float) proceed first, and

revenue-generating projects (such as cabins and moorage facilities) have mid-level priority along with necessary repairs to maintain the breakwater and bulkhead.

POTENTIAL GRANT FUNDING SOURCES

The marina is for public access and use, which allows for several potential sources of grant funding for renovation and expansion. The majority of these grant programs are administered by the Washington Recreation and Conservation Office. The funding for the grant programs comes primarily from state funds, such as a portion of the gas tax from boater usage and aquatic land leases for Geoduck harvesting, as well as federal funding of boat and public waterfront access. The grant programs have various requirements, schedules, and deadlines, so timing of preparation and submittal for grant applications is important for potential project funding.

Aquatic Lands Enhancement Act (ALEA)

The ALEA provides funding to buy, protect, and restore aquatic lands habitat and to provide public access to the waterfront. Funding is provided by the Washington Department of Natural Resources. The program requires 50 percent matching funds, and the grant limit is \$500,000 for restoration, improvement, or development projects. These funds are often used for public access piers that get pedestrians out over the water and may be used for a swim float or small hand-carried boat launch facility.

Boating Infrastructure Grant (BIG)

The BIG program provides funding to develop and renovate boating facilities providing recreational guest moorage for motorized boats 26 feet and larger, and for boater education. Funding is provided by a portion of the Federal Aquatic Resources Trust Fund. The program requires 25 percent matching funds and has Tier 1 and Tier 2 funding categories. The Tier 1 grant is competed for at the state level and is limited to \$191,760 per project. The Tier 2 grant is competed for at the national level and is limited to \$1,440,645 per project. This grant could be used for additional larger transient moorage docks.

Boating Facilities Program (BFP)

The BFP provides funding to acquire, design, build, and renovate motorized guest moorage boating facilities. Funding is provided by a portion of the gasoline tax paid by boaters in Washington State and is for projects that provide guest moorage or launching facilities for recreational motorized boats. The program requires 25 percent matching funds, and the grant limit is \$1 million for all project types. This grant could be used for boat ramp and transient moorage improvements.

REGULATORY REQUIREMENTS

Replacement or expansion of existing in-water structures will require permits from federal, state, and local agencies. A proposed replacement/expansion project would be reviewed for a variety of considerations, including navigation, water quality, fish life and endangered species, and protection of tribal interests. Additional upland considerations could be raised at the local level, including access, parking, and utilities.

Design of the expanded marina will be required to demonstrate compliance with mitigation sequencing procedures. Generally, this involves showing that impacts (in this case, new overwater coverage) have been avoided to the maximum extent feasible. For unavoidable impacts, design should include use of all appropriate minimization measures. Finally, mitigation must be provided for all unavoidable impacts. Specific minimization techniques likely to be required include using grated decking to reduce shading impacts, using white flotation tubs and white coatings on new piling, using transparent roofing materials for new covered moorage, minimizing structures within the nearshore area, limiting the width of dock walkways, removing creosote-treated timbers, and appropriate use of treated wood materials.

Specific permits required for implementation of the selected alternative are outlined below.

Local Agency

- Shoreline Substantial Development Permit
- State Environmental Policy Act (SEPA) Review
- Building Permit

State

- Washington Department of Fish and Wildlife – Hydraulic Project Approval (HPA)
- Washington Department of Ecology – Water Quality Certification and Coastal Zone Management Consistency Determination

Federal

- U.S. Army Corps of Engineers – Individual Permit, which may include the following reviews:
 - Section 10 Rivers and Harbor Act
 - Section 404 Clean Water Act
 - Section 7 of the Endangered Species Act – review by U.S. Fish and Wildlife Service and National Marine Fisheries Service
 - Section 106 of the National Historic Preservation Act

Permit applications submitted for the selected alternative should include all proposed phases. The regulatory agencies will want to review all aspects of the project, including future phases, at the same time. Once submitted, review timelines could exceed one year, with the length of the federal permit review likely driving this timeline.

CONCLUSION

The Lyons Ferry Marina and RV Park is an important facility for providing access to the Snake River recreational area for boaters, fishermen, RVs, and campers. The existing facility is heavily used and there is a high demand for additional recreational services.

A Master Plan study was conducted to determine potential alternatives for providing increased recreational facilities and amenities. The master plan analysis included a general review of the existing conditions at the site, such as level and types of uses, general condition of structures and infrastructure, and site features. The analysis also identified operational and use goals for the facility from Port, concessionaire, and stakeholder input.

Initial concepts were developed for both in-water and upland facilities. An open house was held to gather public input and comments on the preliminary concepts. Both alternatives can be implemented in phases to accommodate priorities and funding availability. Both alternatives include refurbishment of the existing breakwater, bulkhead, and office building.

Alternative A is a full build-out that includes expanded moorage docks, an expanded boat launch, new cabins, RV and tent sites, and a variety of other recreational amenities. Alternative A has an estimated opinion of probable costs of \$22.24 million.

Alternative B is a more moderate build-out that includes expanded moorage docks, an expanded boat launch, new cabins, RV and tent sites, and a variety of other recreational amenities. Alternative B has an estimated opinion of probable costs of \$16.33 million.

Numerous grant programs are available that fund public facilities for guest recreational boating moorage, small boat access, and public pedestrian access to the water. Redevelopment of the marina will require meeting regulatory agency requirements, including local jurisdiction, state (Ecology, DNR, and WDFW), and federal (Corps of Engineers, USFW, and NOAA Fisheries) requirements. The selected elements should be designed to protect the natural environment and avoid or minimize impacts to the ecological systems on site. Measures to reduce impacts will likely include Best Management Practices during construction to protect water quality, endangered species, and habitats; utilization of grated decking to minimize overwater shading; and other measures that may be identified during the design and permitting process.

Both alternatives have elements that would greatly enhance the recreational opportunities at the Lyons Ferry Marina and RV Park for the next twenty-year period. The elements can be phased in over time based on priorities, funding, and other considerations. The full implementation of either alternative will improve access, safety, and recreational opportunities at the facility.

sah\24\2017\012\reports\lyons ferry marina rv park master plan.docx\smk

APPENDICES

APPENDIX A
EXISTING UTILITY INFORMATION REPORTS
(SEE SEPARATE PDF FILES)

APPENDIX B

STAKEHOLDER COMMENTS

APPENDIX C

PRELIMINARY CONCEPT DRAWINGS

APPENDIX D

OPINION OF PROBABLE COSTS