BIOLOGICAL EVALUATION

Produced for Washington State Parks Recreation Commission (WSPRC)
August 23, 2023

LAKE WENATCHEE STATE PARK

Public Access Improvements Project

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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
AC	Asphalt Cement
AMM	Avoidance and Minimization Measure
BE	Biological Evaluation
BiOP	Biological Opinion
CH	Critical Habitat
dB	Decibel (s)
dBA	A-Weighted Decibels
DBH	Diameter at Breast Height
dBrms	Decibel Root Mean Square
dbSEL	Decibel Sound Pressure Exposure Level
DNR	Department of Natural Resources
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FHWG	Fisheries Hydroacoustic Working Group
FMP	Fisheries Management Plan
HDPE	High Density Poly Ethylene
IPAC	Information for Planning and Consulting
lf	Linear Feet
M&N	Moffatt & Nichol
MSA	Magnuson–Stevens Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NLAA	Not Likely to Adversely Affect
NRF	Nesting Roosting Foraging
OHWM	Ordinary High Water Mark
PCE	Primary Constituent Element
Project	Lake Wenatchee State Park Public Access Improvements Project
sf	Square Feet
SOSEA	Spotted Owl Special Emphasis Area
SPCC	Spill Prevention, Control, and Countermeasure
UCR	Upper Columbia River
USDA	U.S Department of Agriculture

USFWS	U.S Fish and Wildlife Service
WAC	Washington State Administrative Code
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WSPRC	Washington State Parks and Recreation Commission

1. INTRODUCTION

The purpose of this Biological Evaluation (BE) is to address the effect of the proposed Lake Wenatchee State Park Public Access Improvements (herein referred to as the 'Project') on species listed as endangered or threatened under the Endangered Species Act (ESA), and/or their designated critical habitat (CH). The proposed Project would include the following public access improvements at Lake Wenatchee State Park:

- Installation of a second lane at the existing boat launch
- Installation of a boarding float adjacent to the existing boat launch
- Installation of a 600 ft long Americans with Disabilities (ADA)-compliant pedestrian pathway from the existing boat launch to day use restroom area
- Roadway repair and reconfiguration of approximately 1,200 linear feet (lf) of the existing State Park road to increase drive aisle width and allow for varying configurations of parking stripped stalls intended for overflow parking.

In addition, Washington State Parks and Recreation Commission (WSPRC) is proposing the long-term preservation of a portion of the Lake Wenatchee/Wenatchee River shoreline. The proposed Project has the potential to impact the following ESA-listed species that could occur in the area: Upper Columbia River (UCR) Evolutionarily Significant Unit (ESU) Chinook salmon (*Oncorhynchus tshawytcha*), UCR Distinct Population Segment (DPS) steelhead (*Onocorhynchus myskiss*), bull trout (*Salvelinus confluentus*), northern spotted owl (*Strix occidentalis caurina*) and gray wolf (*Canis lupus*).

This BE, prepared by Moffatt & Nichol (M&N) for Washington State Parks, addresses the proposed action in compliance with Section 7 of the ESA. Section 7 assures that, through consultation with the Services; both the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) Fisheries Service, also known as the National Marine Fisheries Service (NMFS), federal actions do not jeopardize the continued existence of any threatened, endangered or proposed species, or result in the destruction or adverse modification of CH.

Appendix A of this BE also includes an assessment of essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

1.1. SITE BACKGROUND

Lake Wenatchee State Park is located in Wenatchee, Washington in Chelan County (Figure 1). Park features include a boat ramp and floating boarding dock, 492-acre campground, amphitheater, food service, picnic tables, restrooms, and sno-park in the winter with groomed cross country trails. The park includes Lake

Wenatchee waterfront and access to the Wenatchee River. The boat launch is located in the Wenatchee River and provides access to both the Wenatchee River and Lake Wenatchee.

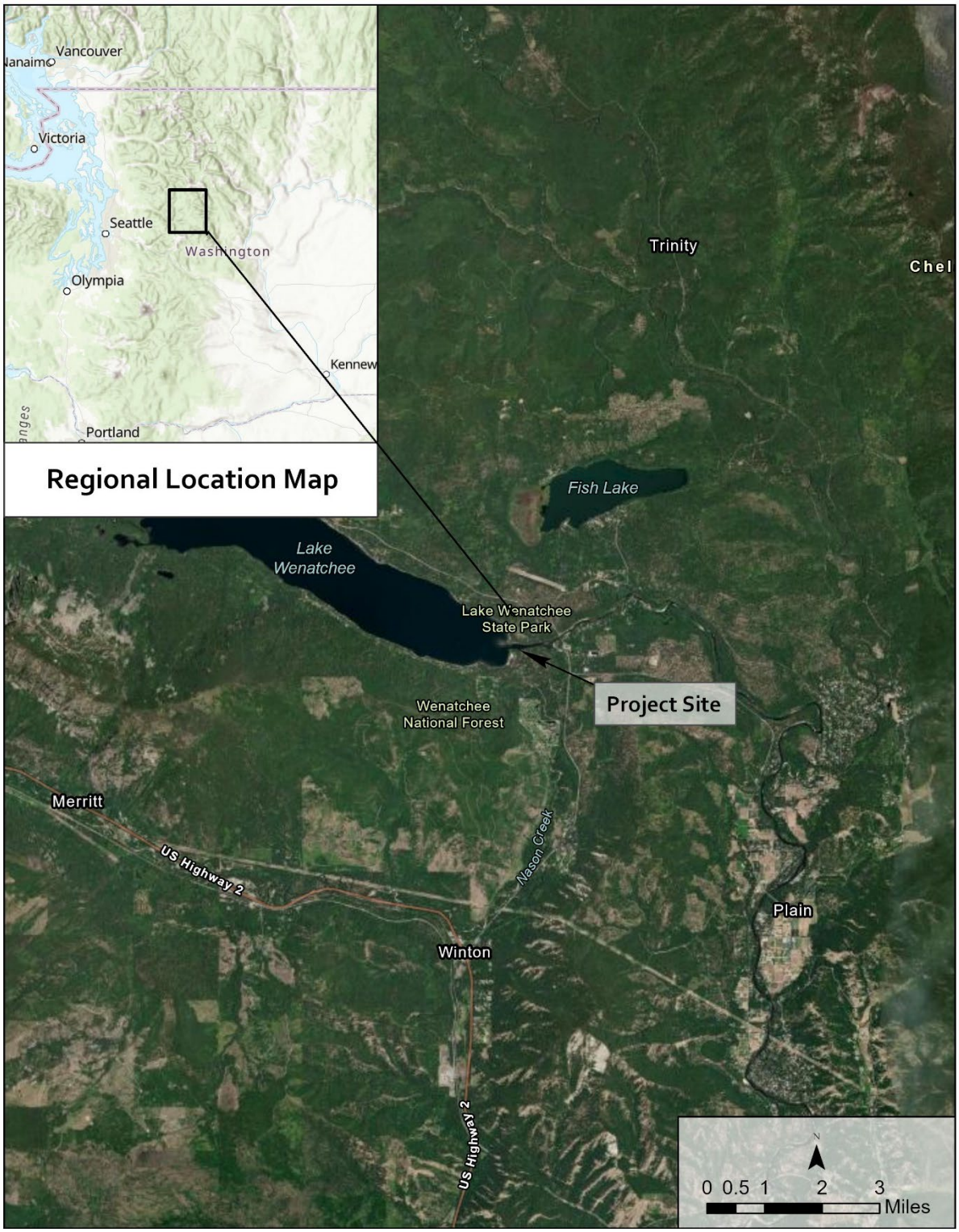

Figure 1. Project Location Map

1.2. SITE CHARACTERISTICS

M&N biologists visited Lake Wenatchee State Park on October 18, 2022 to document environmental site characteristics (M&N 2022). Findings are documented in the Lake Wenatchee State Park Shoreline Site Reconnaissance Memorandum and summarized here.

1.2.1. PROPOSED BOAT LAUNCH IMPROVEMENTS

The proposed boat launch improvements occur in Wenatchee River, but approximately 400 feet from the outlet to Lake Wenatchee The Project area consists of lacustrine characteristics due to the proximity to Lake Wenatchee. The shoreline area immediately east of the existing concrete boat launch is mainly unvegetated (Figure 2). Approximately 100 feet from the boat launch there is an increase in the density and diversity of shoreline vegetation (Figure 3). Substrate transitions from rocks and gravels along the waterward edge to finer sand and silt deposits within the vegetated areas (Figure 3). The shoreline is flat/ slightly sloping and abuts an upland vegetated bluff (Figure 3).

The shoreline to the west of the boat launch appears to be less disturbed, likely because it is less easily accessible to foot traffic (Figure 4). The substrate here consists mainly of sands with debris and sparse rocks (Figure 4). The shoreline is flat/slightly sloping and abuts an upland vegetated bluff (Figure 4). Approximately 75 feet from the boat launch there is a vegetated depression that consists of sedges, rushes, and willow (Figure 5). The substrate here is muddy/silty (Figure 5).

Subtidal substrate through the Project area consists of sand, gravels, and abundant debris as well as some subtidal vegetation (Figure 6).

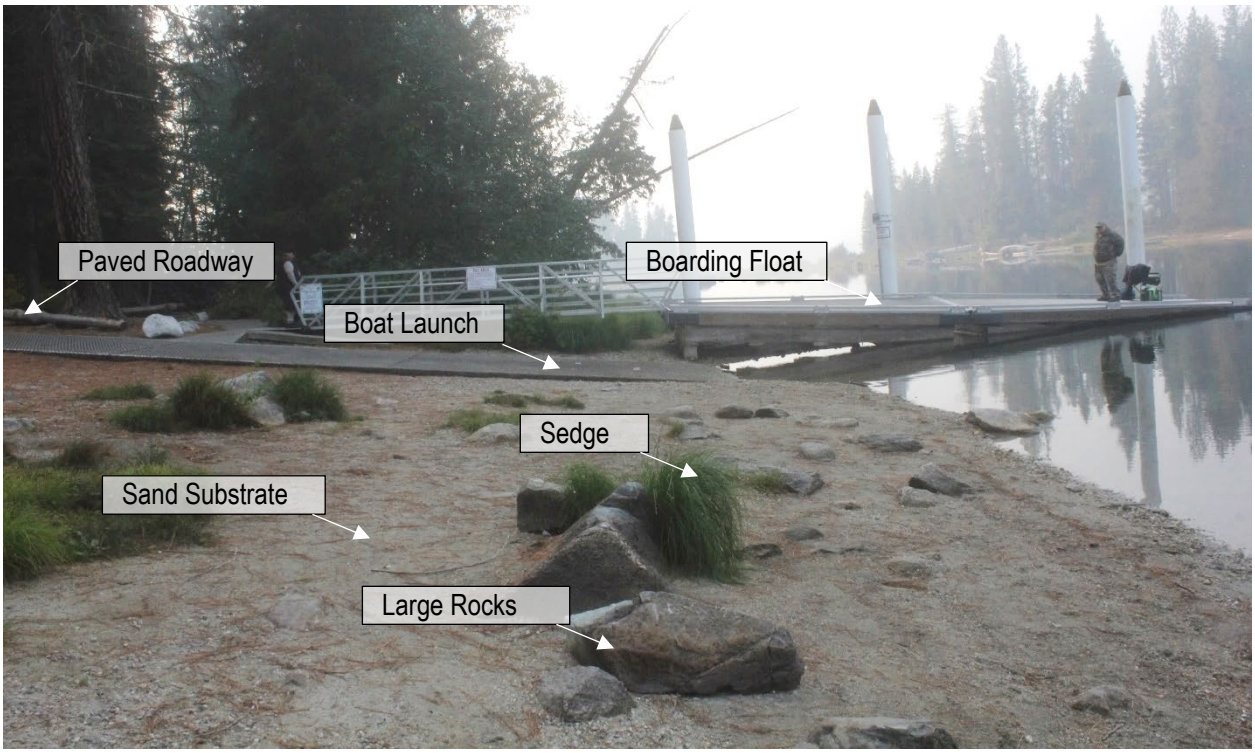

Figure 2. Shoreline to the East of the Boat Launch and Boarding Float - Looking West

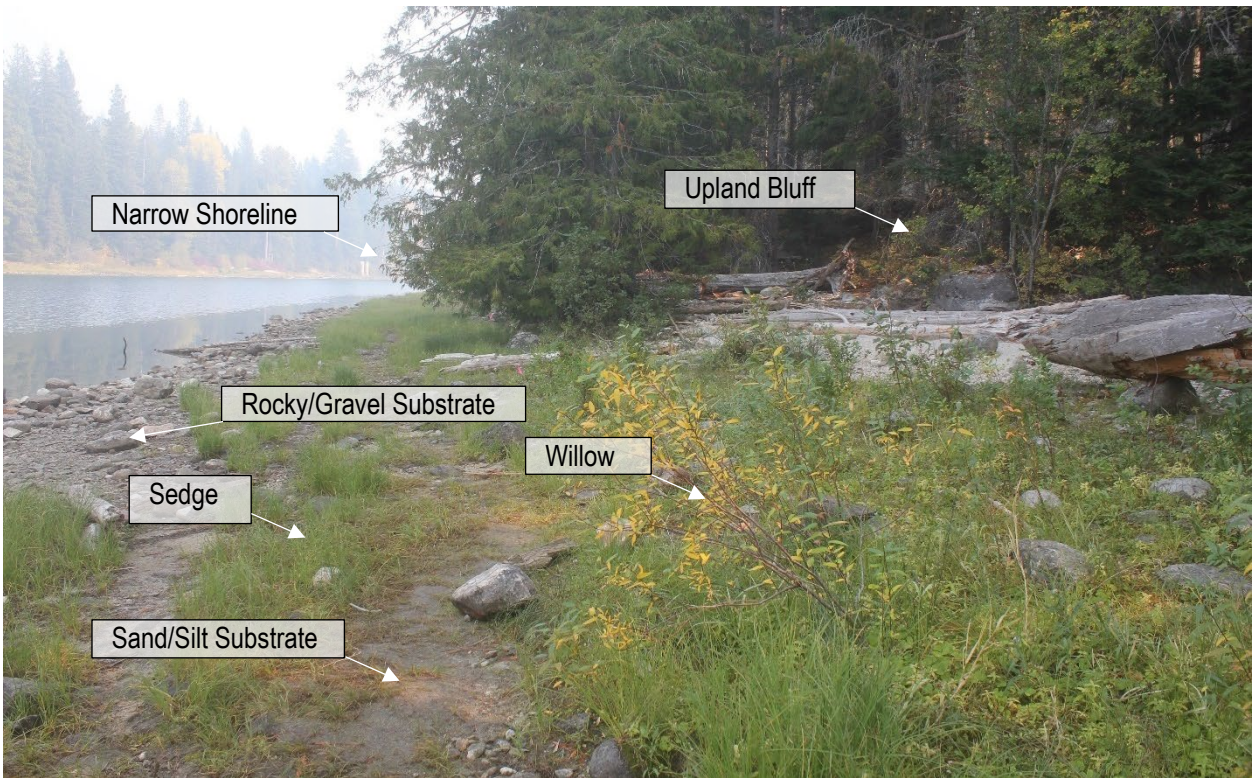

Figure 3. Vegetated Inlet - Eastern Shoreline Looking East

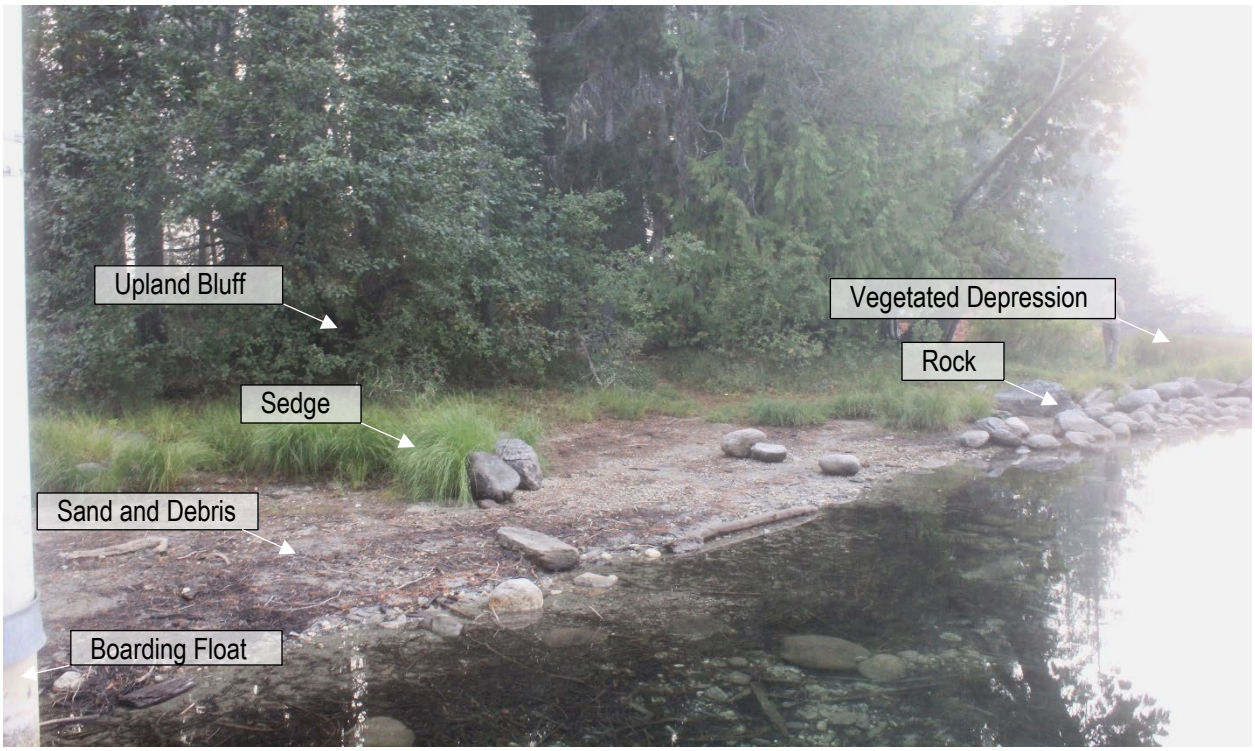

Figure 4. Western Shoreline - Standing on Boarding Float Looking West

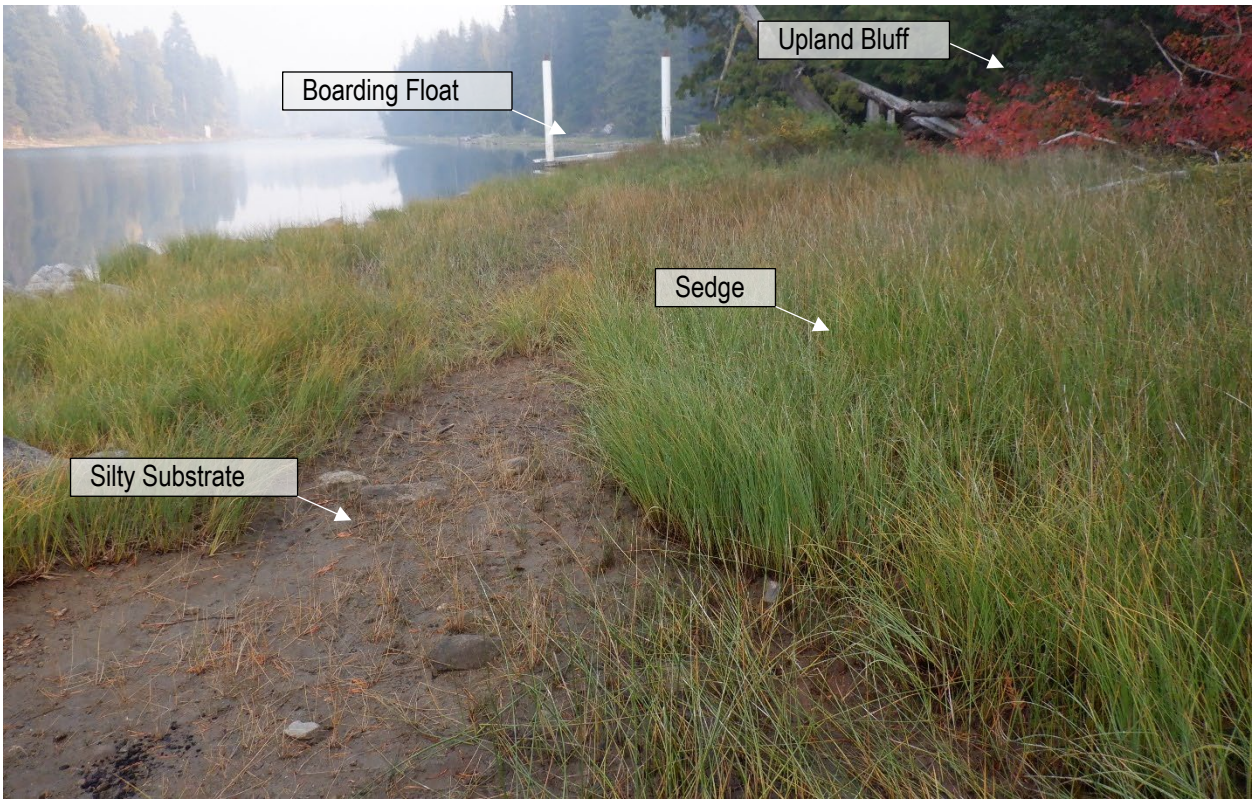

Figure 5. Vegetated Depression - Western Shoreline Looking East

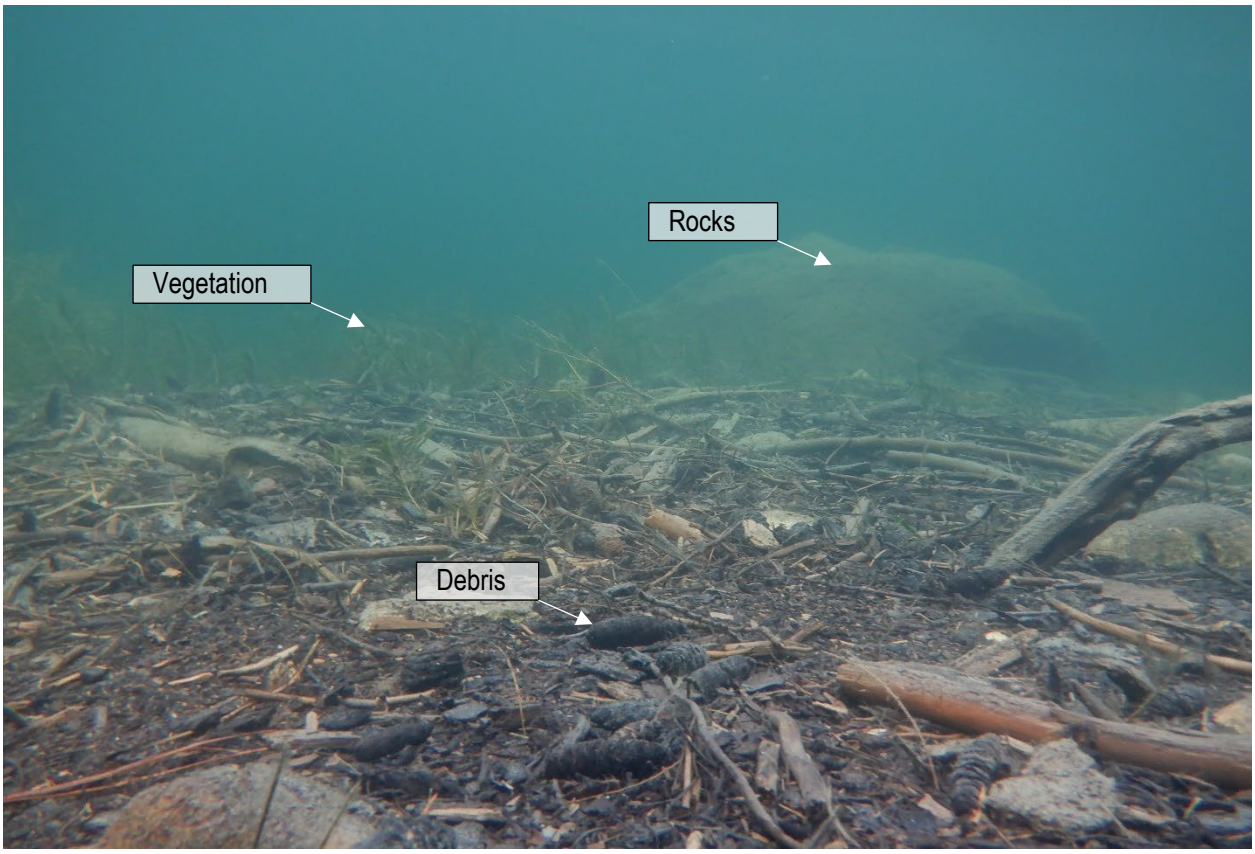

Figure 6. Subtidal Substrate - Shoreline East of Boat Launch

1.2.2. PROPSOED PEDESTRIAN PATHWAY

The location of the proposed pedestrian pathway is a forested area west of the boat launch and parking lot (Figure 7). The forested area includes disturbed picnic areas and dirt pathways (Figure 7). Many of the pathways consist of informal social trails caused by foot traffic (Figure 8), while others appear to be more defined (Figure 8).

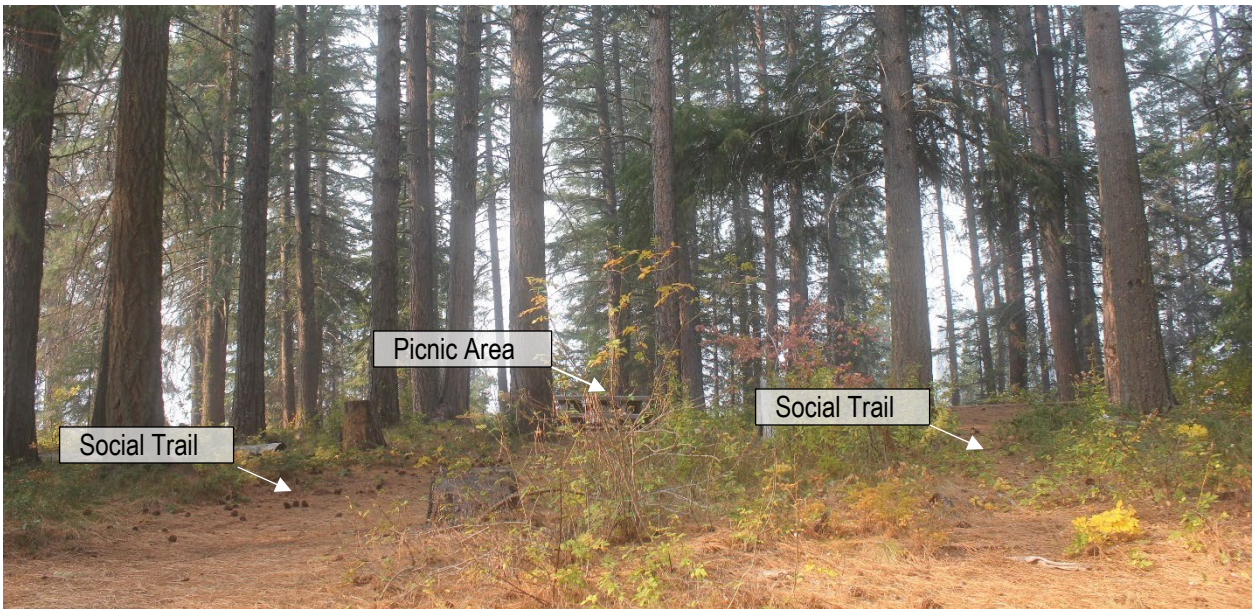

Figure 7. Proposed Pedestrian Pathway Area - Looking West from Parking Lot and Boat Launch

Figure 8. Defined Walking Path in Proposed Pedestrian Pathway Area

1.2.3. PROPOSED ROADWAY REPAIR AND RECONFIGURATION

The proposed paved area (about 51,000 square feet [sf]) along 1,200 linear feet (lf) of the existing State Park Road presently consists of asphalt roadway (about 3,500 sf), gravel roadway/shoulder (about 44,000 sf), and a small vegetated area (about 3,500 sf) (Figure 9). During the busy season, vehicles use the gravel shoulder areas to park. These areas are devoid of vegetation. Large rocks have been placed along the far shoulders to create barriers between the adjacent vegetated areas and parking areas (Figure 9).

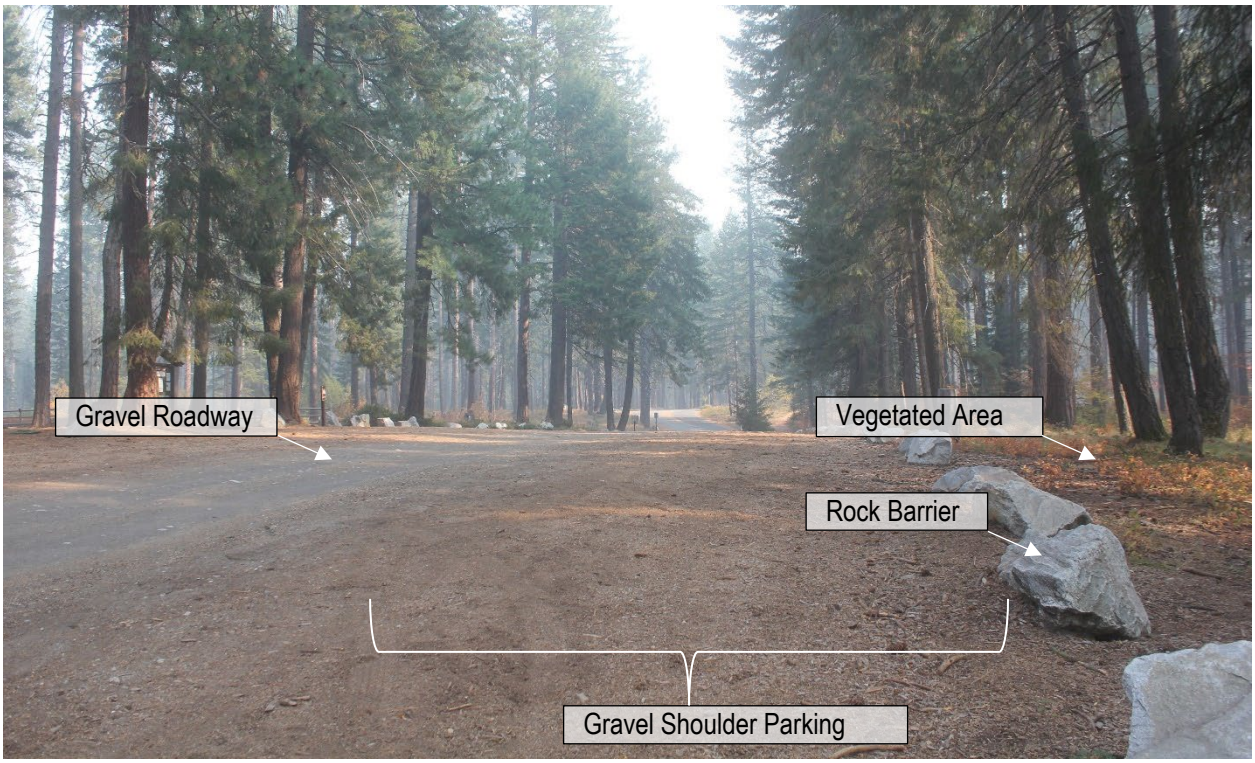

Figure 9. Proposed Roadway Paving Area

1.3. PROJECT BACKGROUND

Several activities are proposed at Lake Wenatchee State Park to improve public access, including:

- Installation of a second lane at the existing boat launch
- Installation of a boarding float adjacent to the existing boat launch
- Installation of a 600 ft long Americans with Disabilities (ADA)-compliant pedestrian pathway from the existing boat launch to day use restroom area
- Roadway repair and reconfiguration of approximately 1,200 linear feet (lf) of the existing State Park road to increase drive aisle width and allow for varying configurations of parking stripped stalls intended for overflow parking.

These improvements are described in detail below in Sections 1.3.1 through 1.3.4.

In-water construction activities would be limited to the in-water work window (anticipated to be July 15 through August 15). Major construction activities with the potential to result in substantial noise would not occur during the northern spotted owl *(Strix occidentalis caurina*) early nesting season (anticipated to be March 1 through July 15). Total construction time is anticipated to be up to about three (3) months, including mobilization and demobilization.

Construction equipment could include a truck mounted vibratory or impact pile driver, excavator, trucks to transport equipment, materials, and contractors), small crane, small work boat, concrete pump truck, and/or hand tools. Staging would occur at one or more of the existing upland paved areas. Equipment may be required to work from the existing shoreline during installation of the second lane at the existing boat launch and during installation of the boarding float. Equipment movement along the shoreline would be limited to the immediate vicinity of the activities. Materials would not be stockpiled on the shoreline. Materials will be stored at upland paved areas. Any excess of excavated material would be hauled off site.

1.3.1. INSTALL SECOND LANE AT EXISTING BOAT LAUNCH

Under existing conditions, the boat launch can become overcrowded during the summer fishing season. The installation of an additional lane would help with capacity issues. Additionally, a large scour hole at the base of the existing launch presents safety concerns. Vehicles occasionally slip off the waterward edge of the launch and become stuck in the scour hole. Repair of this scour hole is proposed along with scour protection to prevent future scour holes from forming.

The existing one lane boat launch is approximately 12 ft wide by 56 ft long (measured waterward of the Ordinary High Water Mark [OHWM]). The proposed second concrete lane would be 12 feet wide by 56 feet long and would add approximately 675 sf of impervious surface waterward of the OHWM (Table 1). Aggregate material would also be placed between the existing and new lane to allow the new lane to be independent of the existing lane (Table 1 and 2). The new ramp would be constructed using precast interlocking concrete planks for the bottom 11-foot- long section of the ramp. The upper section would be constructed using cast-in-place concrete. Both the precast and cast-in-place concrete would be installed on top of the compacted rock ballast. To install the second lane, an approximately 800 sf area would be excavated waterward of the OHWM. Crushed rock ballast would then be placed in the excavation and compacted. Excavation and fill quantities associated with the installation of the new lane are described in detail in Table 1 and 2. Installation of the new lane will not result in a net fill waterward of the OHWM.

In addition to the construction of the new lane, approximately 160 sf (12 cy) of aggregate material and concrete matt would be placed at the base of the existing lane and new lane to fill in a small scour hole and prevent additional scour (Table 1). Net fill for the scour hole repair and scour protection is approximately 8 cy.

To the extent feasible, construction would be completed in the dry during the in-water work window when the river flows are lower.

A 400 sf area shoreward of the OHWM would be paved to allow for truck maneuvering at the second lane (Table 2). One tree will be removed to construct the truck maneuvering area.

1.3.2. INSTALL BOARDING FLOAT

The installation of a second boarding float would help with capacity issues during peak seasons. An approximately 8-ft wide by 40-ft long (320 sf) boarding float would be installed above the second lane. The boarding float would connect to a new 15 ft long by 6 ft wide concrete abutment. The boarding float would consist of grated fiberglass decking and High Density Poly Ethylene (HDPE) floatation devices. The grated decking would have a minimum open area of 60%. An approximately 24-ft long by 4-ft wide (about 100 sf) grated gangway ramp would be installed to provide access from shore to the boarding float.

The boarding float would be held in place with up to approximately four, 14-inch steel pipe guide piles. The steel guide piles would likely be installed solely with a vibratory hammer, but an impact hammer could be required to embed the pile to the required depth. Vibratory installation could occur for up to 8 hours a day. If an impact hammer is required, up to 2000 blows could occur within a 24-hr period. It is anticipated that the four piles would be installed in one to two days.

Installation of the boarding float and grated gangway would result in an increase of approximately 420 sf of grated overwater cover. A portion of the new 15-ft long by 6-ft-wide cast-in-place concrete abutment would be installed waterward of the OHWM to provide shore access to the boarding float. The abutment would be cast in place and concrete would be pumped from shore. Construction of the concrete abutment would not disturb existing vegetation and would not result in a net fill waterward of the OHWM.

Table 1. Fill and Excavation Quantities Waterward of the OHWM

Activity	**Excavation**		**Fill**		**Net Fill**
	sf	**cy**	**sf**	**cy**	**cy**
Boat Launch					
Removal of existing base material and replacement with imported gravel	800	-41	800	29	-12
Pre-cast and cast-in-place concrete boat launch	0	0	675	12	12
Scour Hole Repair and Protection					
Excavation and placement of aggregate material and concrete matt	70	-5	160	12	8
Gangway					
Removal of existing base material and replacement with imported gravel	25	-1	25	0.5	-0.5
Cast in-place concrete abutment	0	0	25	0.5	0.5
Total					**8**

Table 2. Fill and Excavation Quantities Shoreward of the OHWM

Activity	Excavation		Fill		Net Fill
	sf	cy	sf	cy	cy
Boat Launch					
Removal of existing base material and replacement with imported gravel	300	-15	300	10	-5
Cast-in-place concrete boat launch	0	0	250	5	5
Gangway					
Removal of existing base material and replacement with imported gravel	80	-3	80	1.5	-1.5
Cast in-place concrete abutment	0	0	80	1.5	1.5
Paving					
Removal of existing base material and replacement with gravel base and asphalt	400	-12	400	12	0
Total					**0**

1.3.3. CONSTRUCT PEDESTIAN PATHWAY

The existing wooded area to the west of the boat launch and parking area consists of picnic benches scattered throughout the woods, but lacks a clearly defined route through the area and ADA accessibility. The proposed ADA compliant pathway would define a pathway through the area, reduce foot traffic on vegetation, and provide ADA accessibility to the area.

An approximately 4 ft wide by 600 ft long concrete pedestrian pathway is proposed. The pedestrian pathway would be ADA accessible and would provide access from the existing boat launch to the existing day use restroom area. A one ft wide gravel shoulder would be installed on each side of the concrete pathway. Construction of the pathway would require the removal of small shrubs and ground cover, and up to five trees with a diameter at breast height (dbh) of greater than 10-inches. The alignment has been designed to avoid impacts to existing vegetation, in particular large trees. The concrete pathway would result in up to approximately 2,300 sf of dirt/vegetation being converted to an impervious concrete pathway. Construction of the pathway shoulders would result in up to approximately 1,200 sf of dirt/vegetation being converted to impervious gravel.

To construction the pathway, excavation would take place to establish pavement area subgrade. Base material would then be placed and compacted, followed by concrete pavement. Concrete would be poured by a cement truck. Placement of concrete in some remote sections of pathway may require pumping. After the concrete has cured, formwork would be removed and gravel would be placed along the shoulders. Temporary localized impacts to vegetation outside of the permanent footprint is anticipated to be required to allow for excavation and pavement installation. Any temporarily disturbed areas would be restored to pre-project conditions.

1.3.4. ROADWAY REPAIR AND RECONFIGURATION

During the busy summer season cars park along the gravel shoulders of State Park road. The gravel shoulder parking areas lack organization, requires park staff to direct traffic, and can create safety issues. The paving and striping of the existing parking areas would improve efficiencies and safety.

Approximately 1,200 lf of the existing State Park Road would be reconfigured and paved (51,000 sf) to increase drive aisle width by approximately 3 feet and to allow for varying configurations of parking stalls intended for overflow parking. The majority of the proposed paving would occur over the existing asphalt roadway (about 3,500 sf) and gravel roadway/gravel shoulder areas (about 44,000 sf). Up to approximately 3,500 sf of the proposed paving would encroach into existing forested areas to allow for adequately sized drive aisle and parking areas. Paving of the 3,500 sf area would require the removal of small shrubs and ground cover and up to approximately 15 trees with DBH of greater than 10-inches. The largest tree proposed for removal has a DBH of 33 inches.

Paving of the existing asphalt roadway may involve full demolition and replacement of the existing roadway or repair of the existing roadway. Repair would involve grinding the existing roadway followed with a poured asphalt overlay. Replacement would require the demolition of the existing roadway using a milling machine and/or excavating equipment. The roadway would then be excavated to establish a pavement area subgrade and base material would be placed and compacted. This would be followed by asphalt cement (AC) paving. Paving of the existing gravel roadways and shoulder areas would require excavation of the existing gravel roadway followed by AC paving. Any excess excavated material and/or removed asphalt would be hauled off site and disposed of at an upland disposal site.

Temporary localized impacts to vegetation outside of the permanent footprint is anticipated to be required to allow for excavation and pavement installation. Any temporarily disturbed areas would be restored to pre-project conditions.

1.3.5. RIPARIAN PRESERVATION

WSPRC is proposing the enhancement and long-term preservation of a portion of the Lake Wenatchee/Wenatchee River shoreline. WSPRC is currently conducting an alternatives analysis to evaluate sites along the shoreline to determine an optimal location for preservation. The site is anticipated to be at least 2,240 sf of high-quality, forested shoreline buffer habitat.

1.4. ACTION AREA

The Action Area includes all areas that may be directly or indirectly affected by the Project and expands beyond the immediate location of the action. The calculated Action Area for the proposed Project is defined by construction-related noise (see Section 1.4.3) which is the activity with the greatest potential extent of impacts

above baseline. The Action Area also encompasses the total Project footprint (see Section 1.4.1) and impacts associated with potential and temporary decreases in water quality (see Section 1.4.2).

1.4.1. PROJECT FOOTPRINT

The proposed Project would include the following public access improvements:

- Installation of a second lane at the existing boat launch (shown in red on Figure 10)
- Installation of a boarding float adjacent to the existing boat launch (shown in red on Figure 10)
- Installation of a pedestrian pathway (shown in green on Figure 10)
- Roadway repair and reconfiguration (shown in blue on Figure 10)

The approximate locations of these activities are shown in Figure 10.

Figure 10. Approximate Locations of the Proposed Project Activities

1.4.2. WATER QUALITY

Any turbidity increases in the Wenatchee River above baseline would be anticipated to be minor, temporary, and relatively localized. Sediments at the site consist mainly of sand which would not be anticipated to produce

large scale turbidity plumes. Activities with the potential to result in minor increases in turbidity include construction activities that could result in in-water benthic disturbances this could include: construction of the second lane at the existing boat launch, scour hole repair and protection, and pile installation.

To the extent feasible, construction of the second lane, pile installation, and repair of the scour hole would occur in the dry during low river flows. Depending on the river flows during construction, construction may need to occur in water and minor water quality and turbidity impacts could occur from sediment disturbances. Avoidance and minimization measures (AMMs) would be implemented to protect water quality during construction activities such as compliance with Washington State Water Quality Standards (Washington State Administrative Code [WAC] 173-201A) and protective measures to prevent accidental discharges to waters during fueling, cleaning, and maintenance. With the proposed AMMs, potential decreases in water quality are anticipated to be minor and localized.

1.4.3. PROJECT-RELATED NOISE

Construction equipment including a pile driver, excavator, and trucks could result in in-air and in-water noise above baseline levels. The use of a pile driver is anticipated to be the loudest tool proposed for use and was therefore used to determine the extent of the construction-related noise. The calculated extent of construction related noise is based on the distance at which construction noise would take to attenuate to background noise levels. Noise area calculations were completed in accordance with the Washington Department of Transportation (WSDOT) 2020 Construction Noise Impact Assessment Guidelines (WSDOT 2020). Further discussion with respect to how the extent of construction-related noise was calculated is included in Sections 1.4.3.1 and 1.4.3.2.

1.4.3.1. In-air Noise

In-air background noise levels in rural areas typically range from 35 to 40 A-weighted decibels (dBA) (WSDOT 2020). Because the Project occurs in a relatively undeveloped area, but within a public park, a background noise level of 40 dBA has been conservatively assumed and used to calculate the total extent of Project related noise.

Steel guide pipe piles would likely be installed with a vibratory hammer, but an impact hammer could be required. In-air noise produced by the vibratory installation of 14-inch diameter steel pipe piles is not available. Therefore, available in-air noise levels for slightly larger steel piles were reviewed. The un-weighted noise level for the vibratory installation of 18-inch steel piles was measured at 88 dB at 50 feet from the source (Laughlin 2010).

In-air noise produced by the impact installation of 14-inch steel pipe piles is not available. Therefore, available in-air noise levels published for larger steel piles were reviewed. The un-weighted noise level produced during

the impact installation of 30-inch steel piles was 97 dB at 50 feet from the source (Soderberg and Laughlin 2016.)

Due to a lack of data for 14-inch steel pipe piles, 97 dB was used to determine a conservative in-air Action Area for the purpose of this BE. This is anticipated to be a conservative assumption given that it is based on the installation of much larger 30-inch piles. The Project site occurs within a forested park ("soft site") and therefore a 7.5 dB attenuation rate per doubling distance was used (WSDOT 2020) to determine the in-air Action Area. The resulting in-air Action Area extends approximately 1.8 miles from the source (Figure 11).

1.4.3.2. In-water Noise

To the extent feasible, pile driving would occur in the dry during low river flows. However, river flows are unpredictable and therefore in-water pile driving may need to occur. An in-water noise analysis has been completed for the potential occurrence of in-water pile driving.

In-water Project activities occur in the Wenatchee River. The Wenatchee River connects to Lake Wenatchee, approximately 400 ft from the in-water Project activities. Underwater background noise level in deep freshwater lakes is typically about 120 dB root mean square (rms) (WSDOT 2020). The underwater background noise level in fast moving, shallow (one foot deep or less) is typically about 140 dBrms. For the purpose of this noise analysis given the lacustrine characteristics at the Project site, 120 dBrms was used to represent the anticipated background noise level within the Project area. The calculated in-water Action Area for the proposed activities is the distance at which anticipated Project-related noise would attenuate to 120 dBrms.

Steel pipe guide piles would likely be installed with a vibratory hammer, but an impact hammer could be required. The vibratory installation of 14-inch steel pipe piles could produce in-water noise levels of up to 171 dBpeak and 154 dB Sound Exposure Level (SEL) (Caltrans 2020). Noise levels reported in dBrms for the vibratory installation of 14-inch steel pipe piles are not available. Therefore, dBrms noise levels for slightly larger steel pipe piles were reviewed. The vibratory installation of 18-inch steel pipe piles could produce noise levels of up to 158 dBrms at 10 meters from the source (Caltrans 2020). The impact installation of 14-inch steel pipe piles could produce in-water noise levels of up to 199 dBpeak and 169 dBSEL at 10 meters from the source and 180 dBrms at 22 meters from the source (Caltrans 2020). 180 dBrms at 22 meters from the source was used to determine the in-water Action Area. The resulting Action Area could extend up to 136 miles from the source, but would be confined substantially by adjacent land (Figure 11).

1.4.3.3. Proposed Action Area

The total Action Area includes the combined extent of the in-air and in-water Action Area. The calculated Action Area represents the greatest extent of potential impacts. Potential species occurrence as well as potential impacts from the proposed activities have been evaluated within the extent of the Action Area shown on Figure

11. This Action Area is anticipated to be substantially reduced through AMMs, which are described in Section 1.4.

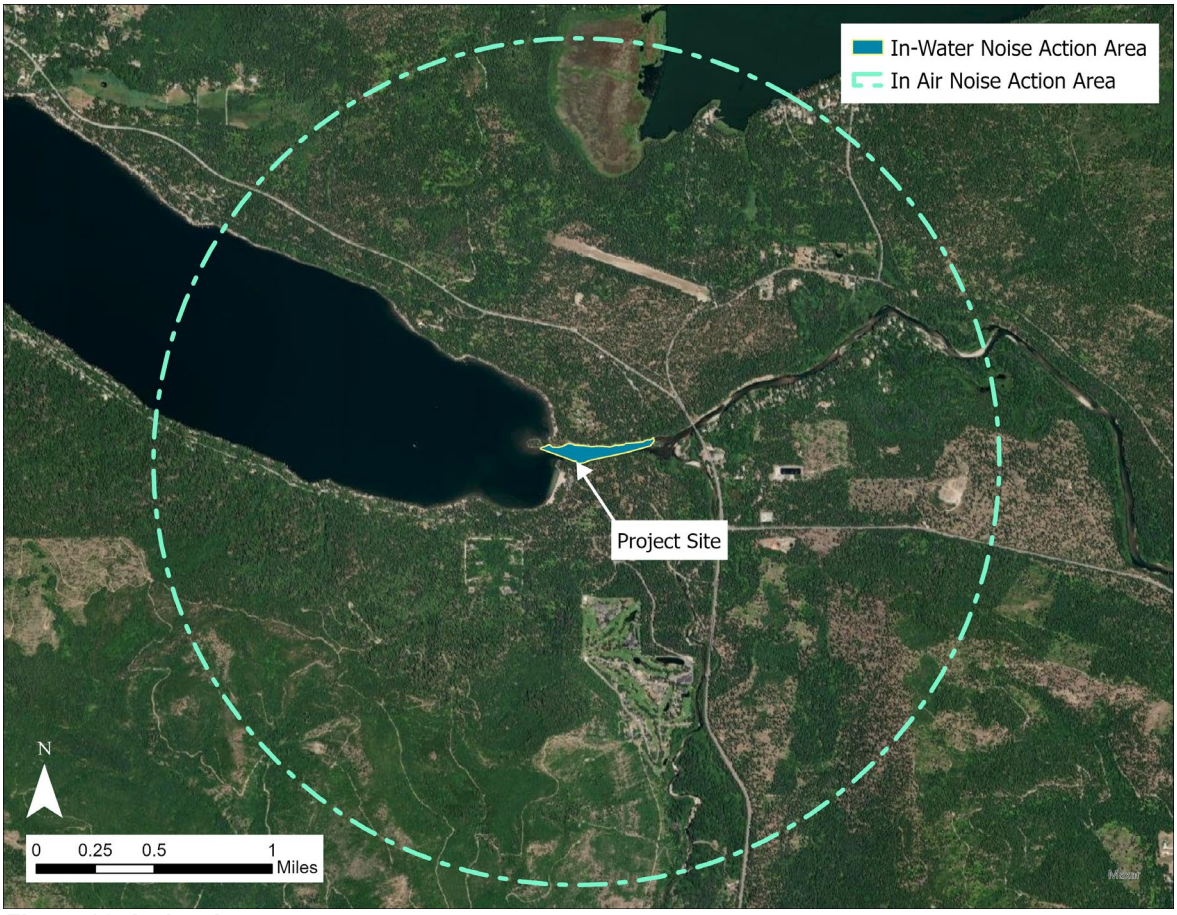

Figure 11. Action Area

1.5. AVOIDANCE AND MINIMIZATION MEASURES

The proposed Project has been designed to minimize impacts on the environment to the extent feasible. The pedestrian pathway and roadway reconfiguration have been designed to minimize impacts to the vegetation, in particular trees. Project phasing has been developed to avoid/minimize impacts to ESA-listed species including salmonids and northern spotted owls. The proposed boarding float would have a grated decking to minimize potential shading impacts.

The following avoidance and minimization measures (AMMs) are also proposed to reduce the risk of potential impacts.

1.5.1. GENERAL MEASURES

- The Project would obtain and comply with applicable permits/approvals.
- Equipment movement on the beach would be limited to the extent feasible.
- Materials would not be stockpiled on the beach.
- Construction materials shall not be stored on the shoreline. All construction materials would be stored upland paved areas.
- All removed construction debris would be collected, transported and disposed of at an appropriate upland facility.

1.5.2. PROJECT TIMING

- To the extent feasible, construction of the second lane, pile installation, and repair of the scour hole would occur in the dry during low river flows.
- The Project would avoid key migration periods for protected aquatic species. The in-water work window is anticipated to be July 15 through August 15 for any given year is anticipated. The final in-water work window would be defined in project permits and adhered to.
- Major construction activities that could result in substantial noise such as pile driving and the use of heavy equipment would not occur during the northern spotted owl early nesting season (March 1 through July 15).

1.5.3. NOISE (PILE DRIVING)

- To the extent feasible, pile driving would occur in the dry during low river flows.
- A vibratory hammer would be used to the maximum extent feasible. An impact hammer would only be used if required to set the piles to their design depth.

1.5.4. WATER QUALITY

- Project construction would be completed in compliance with Washington State Water Quality Standards (WAC 173-201A).
- No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction-related materials or wastes, oil, or petroleum products would be allowed to enter into or placed where it would be subject to erosion by rain, or river flows and enter into jurisdictional waters.
- Oil-absorbent materials would be present on site for use in the event of a spill or if any oil product is observed in the water.
- Protective measures would be used to prevent accidental discharges to waters during fueling, cleaning, and maintenance.
- The contractor would prepare a Spill, Prevention, Control, and Countermeasure (SPCC) plan and use it during all in-water and over water demolition operations. A copy of the plan will be maintained at the work site.
- Non-buoyant debris discharged into waters shall be recovered as soon as possible after discharge.
- A containment boom would be installed during in-water work to catch floating debris.

2. LISTED SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

The following ESA-listed species and/or CH could occur within the Action Area and may be affected by the proposed action: UCR Chinook salmon (*Oncorhynchus tshawytcha*), UCR DPS steelhead (*Onocorhynchus myskiss*), bull trout (*Salvelinus confluentus*), northern spotted owl (*Strix occidentalis caurina*) and gray wolf (*Canis lupus*) (Table 3, NMFS 2023 and USFWS 2023a).

Several species were identified as having the potential to occur in the Project vicinity according to USFWS Information for Planning and Consulting (IPAC) (USFWS 2023a), however upon further evaluation it was determined that these species would not be anticipated to occur in the Action Area and/or the Project does not have the potential to result in impacts to the species (Table 4). These species are briefly discussed in Section 2.3, but would not be discussed further in this BE given that the Project does not have the potential to result in impacts to these species.

Table 3. ESA Listed Species with Potential to Occur in the Action Area and be Impacted by Project

Species	Scientific Name	Agency	Federal Status	Critical Habitat
Chinook Salmon Upper Columbia River spring-run ESU	*Oncorhynchus tshawytcha*	NMFS	Endangered	Occurs in Action Area
Steelhead Upper Columbia River DPS	*Onocorhynchus myskiss*	NMFS	Threatened	Occurs in Action Area
Bull Trout	*Salvelinus confluentus*	USFWS	Threatened	Occurs in Action Area
Northern spotted owl	*Strix occidentalis caurina*	USFWS	Threatened	Occurs in Action Area
Gray Wolf	*Canis lupus*	USFWS	Endangered	None in Action Area

Table 4. Additional ESA-listed Species Evaluated

Species	Scientific Name	Federal Status	Determination
Canada Lynx	*Lynx canadensis*	Threatened	No Effect, See Section 2.3.1
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened	No Effect, See Section 2.3.2
Showy Stickweed	*Hackelia venusta*	Endangered	No Effect, See Section 2.3.3
Wenatchee Mountains Checkermallow	*Sidalcea oregana var. calva*	Endangered	No Effect, See Section 2.3.4

2.1. NMFS LISTED SPECIES

2.1.1. CHINOOK SALMON- UPPER COLUMBIA RIVER SPRING-RUN ESU

Upper Columbia River (UCR) spring-run chinook (*Oncorhynchus tshawytcha*) are listed as endangered under the ESA. The UCR spring-run Chinook ESU includes stream-type chinook salmon spawning in the Wenatchee, Entiat, and Methow Rivers, as well as hatchery populations from the Chiwawa, Methow, Twisp, Chewuch, and White Rivers, and Nason Creek; fish from the Leavenworth National Fish Hatchery are not included (U.S. Federal Register, 24 March 1999). Adult migration to the Columbia River begins around March and Chinook enter the Wenatchee River from May to August (Washington State Conservation Commission 2001). They would hold in these freshwater tributaries until spawning occurs in early August, lasting until mid-September. Fry emerge in spring, and juveniles would stay in freshwater systems for a year before migrating to saltwater. Juvenile migration to saltwater typically occurs in the spring. Adults would return to the freshwater after two to three years in the ocean.

2.1.1.1. Occurrence in the Action Area

UCR spring-run Chinook salmon could migrate and/or forage in the Action Area. Although the boat launch is located in the Upper Wenatchee River, it is at the outlet of Lake Wenatchee and the aquatic habitat exhibits lacustrine characteristics as opposed to riverine characteristics. Spawning does not occur in the Lake (Washington State Conservation Commission 2001) and is not anticipated to occur within the Action Area due

to the lack of riverine habitat characteristics. Spawning is likely limited to downstream locations along the Wenatchee River that exhibit more typical riverine characteristics. Compliance with the in-water work would limit exposure to migrating individuals.

2.1.1.2. Critical Habitat

Critical habitat for UCR spring-run Chinook salmon occurs in the Action Area. The primary constituent elements (PCEs) determined essential for to the conservation of Chinook salmon and the presence or absence of these PCEs are discussed below (NMFS 2005).

PCE 1: Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.

The Action Area may provide water quantity and quality and substrate conditions to support spawning, incubation, and larval development. However, spawning does not occur in Lake Wenatchee (Washington State Conservation Commission 2001) and is not anticipated to occur within the Action Area due to the lack of riverine habitat characteristics.

PCE 2: Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

The Action Area may provide suitable freshwater habitat necessary to support juvenile growth and mobility, or juvenile development.

PCE 3: Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

The Action Area may provide suitable freshwater migration habitat.

PCE 4: Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh-and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

The Action Area does not provide estuarine habitat. As mentioned previously, the Action Area consists of the Wenatchee River and outlet to Lake Wenatchee.

PCE 5: Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

The Action Area does not provide nearshore marine habitat. As mentioned previously, the Action Area consists of the Wenatchee River and outlet to Lake Wenatchee.

PCE 6: Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

The Action Area does not provide offshore marine habitat. As mentioned previously, the Action Area consists of the Wenatchee River and outlet to Lake Wenatchee.

2.1.2. STEELHEAD- UPPER COLMIA RIVER

UCR steelhead (*Onocorhynchus myskiss*) are listed as threatened under the ESA. The steelhead UCR ESU spawns in Columbia River tributary systems upstream from the Yakima River to the Canadian border, specifically the Wenatchee, Entiat, Methow, and Okanogan Rivers (U.S. Federal Register, 18 August 1997). The Wells Hatchery stock is also considered part of this ESU (U.S. Federal Register, 18 August 1997). Adult UCR steelhead return to the Columbia River in late summer to early fall (NMFS 2007). UCR steelhead typically pass Rock Island Dam between July and May of the following year and are thought to have overwintered in the Columbia River (WA State Conservation Commission 2001). Spawning occurs in late spring between March and June. Juveniles typically rear in freshwater for one to three years before moving to the ocean, but can rear in freshwater for up to seven years (NMFS 2007). Smolts typically leave the Wenatchee River in March to early June. Adults would return the freshwater systems after one or two years at sea. Wenatchee River

2.1.2.1. Occurrence in the Action Area

UCR steelhead could migrate and/or forage in the Action Area. Steelhead spawning occurs in tributaries (Washington State Conservation Commission 2001), and for the reasons discussed in additional detail in Section 2.1.1.1, is unlikely to occur in the Action Area which is consists by lacustrine habitat characteristics. Compliance with the in-water work would limit exposure to migrating individuals.

2.1.2.2. Critical Habitat

Critical habitat for UCR steelhead occurs in the Action Area. The PCEs determined essential for to the conservation of steelhead are the same as those discussed in Section 2.1.1.2. See Section 2.1.1.2 for a discussion on the presence or absence of these PCEs.

2.2. USFWS LISTED SPECIES

2.2.1. BULL TROUT

Bull trout (*Salvelinus confluentus*) in the Upper Columbia River are listed as threatened under the ESA. Bull trout are native to western North American waters. Their distribution is limited by water temperature, overwater cover, channel form and stability, suitable substrate for spawning and rearing, and migratory corridors. Local populations of bull trout within the Upper Columbia Recovery Unit that are nearest to the action area include migratory populations in the Wenatchee River subbasin and an undetermined number of resident populations (U.S. Federal Register, 29 November 2002). The Wenatchee subbasin supports adfluvial, fluvial, and stream-resident bull trout. Resident populations are non-migratory and spend their entire life in their natal stream (Washington State Conservation Commission 2001). Adfluvial bull trout mature in lakes and travel to tributary streams to spawn. Juveniles then reside in these streams for one to three years. Lake Wenatchee supports an adfluvial population that spawn in the Little Wenatchee and White River. Fluvial bull trout move from rivers to smaller tributaries to spawn. Fluvial spawning occurs in several rivers including the Wenatchee River (Washington State Conservation Commission 2001). All of the subpopulations of bull trout in the Wenatchee subbasin for which spawn timing is known spawn in September and October. Spawning migrations occur during the summer, but may start as early as April in some systems.

2.2.1.1. Occurrence in the Action Area

Bull trout may be present foraging within the Action Area year-round. Spawning occurs in streams and is therefore not anticipated to occur within the Action Area due to the lack of riverine habitat characteristics.

2.2.1.2. Critical Habitat

Critical habitat for bull trout occurs in the Action Area. The PCEs determined essential to the conservation of UCR Chinook salmon and the presence or absence of these PCEs are discussed below (NMFS 2005).

PCE 1: Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

The Action Area does not provide these habitat characteristics and would not impact these PCEs of bull trout CH.

PCE 2: Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent or seasonal barriers.

The Action Area may provide suitable migration habitat for bull trout.

PCE 3: An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

The Action Area may provide an abundant food base for bull trout.

PCE 4: Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structures.

The Action Area may provide complex river, stream, and lake aquatic environments with features to provide a variety of depths, gradients, velocities, and structures.

PCE 5: Water temperatures ranging from 2 to 15 ºCelcius (36 to 59 ºFahrenheit), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range would depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

The Action area may provide suitable water temperature conditions for bull trout.

PCE 6: In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-ofthe-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout would likely vary from system to system.

The Action area may occur in spawning and rearing areas and may provide substrate of sufficient amount, size, and composition for egg and embryo overwinter survival, fry emergence, and young of the year and juvenile survival.

PCE 7: A natural hydrograph, including peak, high, low, and base flows within historic and season ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.

The Action Area may provide a natural hydrograph.

PCE 8: Sufficient water quality and quantity such that normal reproduction, growth and survival are not inhibited.

The Action Area may provide sufficient water quality and quantity such that normal reproduction, growth and survival are not inhibited.

PCE #9: Sufficiently low levels of occurrence of nonnnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

The Action Area may provide sufficiently low levels of nonnative predatory interbreeding or competing species that, if present, are adequately temporally and spatially isolated from bull trout.

2.2.2. NORTHERN SPOTTED OWL

The northern spotted owl (*Strix occidentalis caurina*) is listed as threatened under the ESA. The northern spotted owl generally inhabits older growth coniferous forests that are typically characterized by large diameter trees, high canopy cover, complex canopy structure, large decaying trees and/or snags, and downed wood (Washington Department of Fish and Wildlife [WDFW] 2016). Northern spotted owls feed on small forest mammals such as flying squirrel, woodrat, and mice (USFWS 2023b). Spotted owls typically forage at night.

Spotted owl habitat consists of suitable habitat for nesting, roosting, and foraging, and dispersal habitat. In general nesting and roosting habitat consist of:

- Stands generally greater than five acres in size;
- Characterized by moderate to high canopy closure (60 to over 80 percent);
- Multilayered multispecies canopies;
- Large (20 to 30 inches DBH or greater) overstory trees;
- High diversity of different diameters of trees;
- High incidence of large live trees with various deformities (large cavities, broken tops, mistletoe infections, and other evidence of decadence); and,
- Large snags and large accumulations of fallen trees and other woody debris on the ground (77 FR 14092 [March 8, 2012]).

Spotted owls may use a wider array of forest types for foraging and dispersal, including more open and fragmented habitat, although less is known about the characteristics of foraging and dispersal habitat. Dispersal habitat currently be marginal or unsuitable for nesting or roosting, but provide protection from avian predators and some minimal foraging opportunities (WDFW 2016). Dispersal habitat must consist of conifer and mixed mature conifer-hardwood habitats, canopy cover greater than or equal to 40 percent, and trees with an average DBH of 11 inches or greater.

2.2.2.1. Occurrence in the Action Area

Lake Wenatchee State Park includes a combination of unsuitable habitat, suitable habitat, and dispersal habitat (Youkey and Ranne 2022) as exhibited on Figure 12. The proposed boat launch improvements and pedestrian pathway occur approximately 0.2 miles from suitable habitat (Figure 12). Portions of the paving associated with the proposed roadway repair and reconfiguration occur in areas that may overlap with suitable habitat (Figure 12). The majority of the proposed paving would occur over the existing asphalt roadway (about 3,500 sf) and over the existing gravel roadway/shoulder areas (about 44,000 sf). Up to approximately 3,500 sf of the proposed paving would encroach into existing forested areas mapped as suitable habitat.

The Project footprint is not located in a spotted owl special emphasis area (SOSEA) (Department of Natural Resources [DNR] 2021). The nearest SOSEA is located approximately 1.5 miles south of the Project site. The Project site is not located within a northern spotted owl high priority activity center (Youkey 2022), but is located with an activity center (Figure 12). Northern spotted owls have not been detected within the vicinity of the park since the 1990's (D. Youkey personal communications, April 11, 2023).

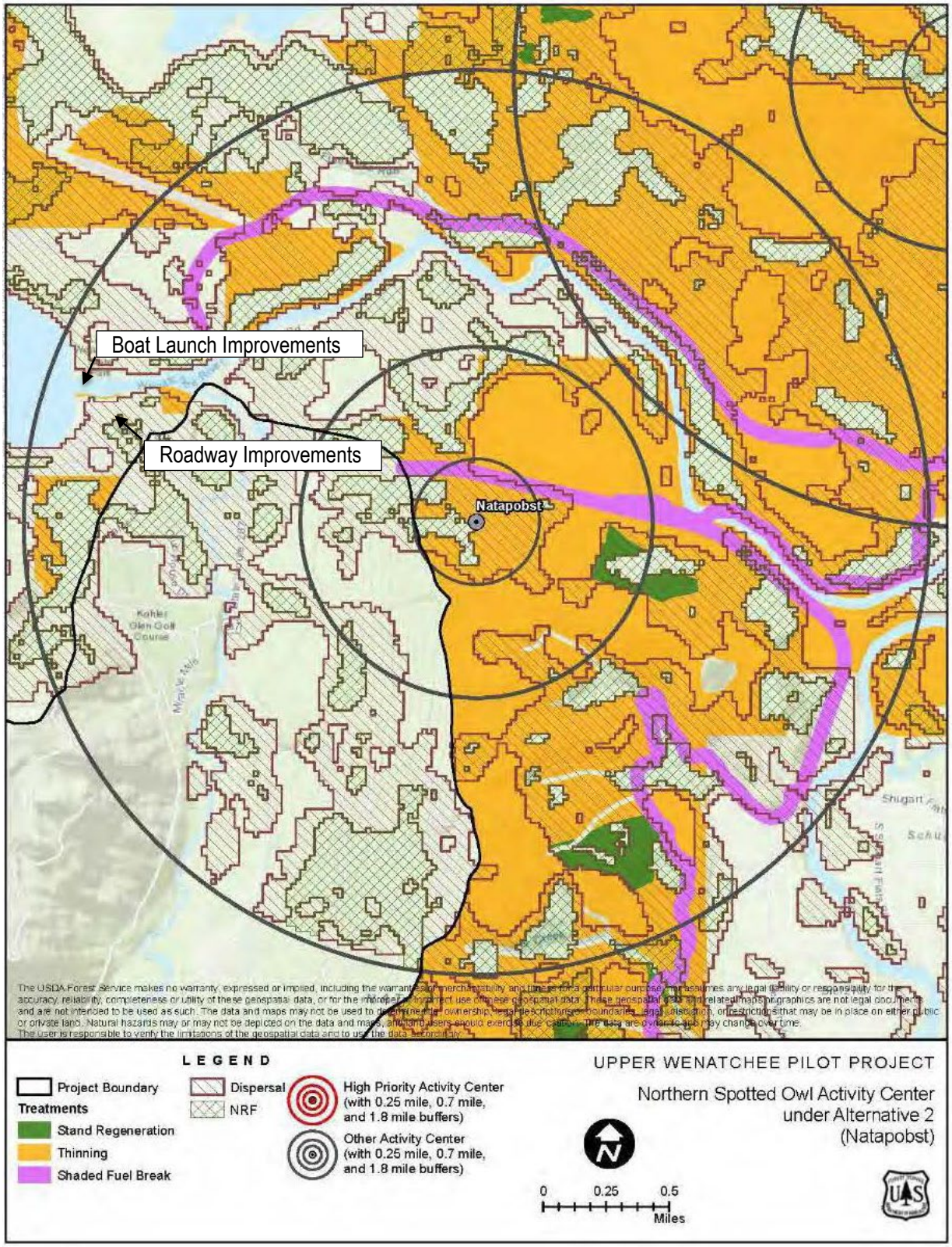

Figure 12. Project Relative to Northern Spotted Owl Habitat Near Lake Wenatchee State Park (Youkey 2022)

2.2.2.2. Critical Habitat

Critical habitat for northern spotted owls occurs in the Action Area. The nearest designated CH is approximately 0.2 miles to the east and south of the Project site (USFWS 2021). The PBFs (formerly called PCEs) determined essential to the conservation of northern spotted owl and the presence or absence of these PCEs are discussed below (UWSFWS 2021).

PBF 1: forest types that may be in early- mid-, or late-seral stages and that support the northern spotted owl across its geographical range.

The Action Area may contain forest types that are in early, mid, or late-seral stage and that support northern spotted owls.

PBF 2: nesting and roosting habitat.

Portions of the Action Area may provide nesting roosting and foraging habitat (Figure 12).

PBF 3: foraging habitat

Portions of the Action Area may provide foraging habitat (Figure 12).

PBF 4: dispersal habitat

Portions of the Action Area may provide dispersal habitat (Figure 12).

2.2.3. GRAY WOLF

Gray wolves (*Canis lupus*) in the western two-thirds of Washington state were federally de-listed in 2021 and then re-listed as endangered in February of 2022. There are anticipated to be 206 wolves and 33 packs in Washington State as of December 31, 2021 (WDFW 2022). Gray wolves can live in a variety of habitats, but are most commonly associated with flat forested areas, open spaces like river valleys and basins, and rolling hills (WDFW 2023a). They are typically found in areas away from humans such as remote, unpopulated areas with few roads and extensive public lands. Wolves typically mate in mid to late February and pups are born approximately two months later. Wolf prey typically includes elk, deer, moose, and smaller animals. Prey tend to be young, old, and debilitated animals (WDFW 2023a).

2.2.3.1. Occurrence in Action Area

The nearest known wolf pack to the Project site is the Shady Pass wolf pack approximately 5 miles northeast of the Project site (WDFW 2023b). Between the years of 2012 and 2020, there have been approximately five (5) publicly reported wolf observations consisting of tracks, other signs, and/or visual sightings within the vicinity of Fish Lake which is approximately 1.5 miles east of the Project site (WDFW 2023b). It is considered very unlikely

that a gray wolf would occur within the boundaries of Wenatchee State Park given the high level of human activity at the site.

2.2.3.2. Critical Habitat

Critical habitat for the gray wolf does not occur in the Action Area.

2.3. ESA-LISTED NOT ANTICIPTED TO BE IMPACTED BY PROJECT

The species discussed in Sections 2.3.1 through 2.3.4 below were identified as having the potential to occur in the Project vicinity according to USFWS IPAC (USFWS 2023a), however upon further evaluation it was determined that the Project would have ***No Effect*** on these species. No Effect determinations are briefly described below. These species would not be discussed further in this BE given that the Project does not have the potential to result in impacts to these species.

2.3.1. CANADA LYNX

Canada Lynx (*Lynx canadensis*) are listed as threatened under the ESA. Canada Lynx are found in high elevation areas (about 4,500 ft to about 7,000 ft in the northern cascades) and are typically associated with Engelmann spruce in the Lake Chelan area, a habitat that does not occur in the Action Area (USFWS 2017). The Project occurs at a lower elevation park, dominated by Douglas-fir, ponderosa pine, and grand fir forest.

2.3.1.1. Reason for No Effect Determination

High elevation spruce tree habitat for this species does not occur within the Action Area. Furthermore, lynx would not be anticipated to occur in high human activity areas like the Lake Wenatchee State Park area. Therefore, this species is not anticipated to occur within the Action Area and the Project would have ***No Effect*** on Canada Lynx.

2.3.2. YELLOW BILLED CUCKOO

Yellow-billed cuckoo (*Coccyzus americanus*) are listed as threatened under the ESA. Yellow-billed cuckoo are believed to be extirpated in Washington (85 Federal Register [FR] 11465). Habitat consists of dense cottonwood (*Populus trichocarpa*) willow (*Salix spp.*) riparian corridors, a habitat not found in the Project area.

2.3.2.1. Reason for No Effect Determination

This species is anticipated to be extirpated from Washington and suitable cottonwood willow riparian corridor habitat does not occur in the Action Area. Therefore, the species is not anticipated to occur in the Action Area and the Project would have ***No Effect*** on yellow billed cuckoo.

2.3.3. SHOWY STICKWEED

Showy stickweed (*Hackelia venusta*) is listed as endangered under the ESA. Showy stickweed is found in steeply sloping, highly unstable granitic sand and granite cliffs (USFWS 2007), a habitat not found within the Project footprint. There is one known population in Tumwater Canyon. Tumwater Canyon is approximately 15 miles south of the proposed Project activities.

2.3.3.1. Reason for No Effect Determination

Habitat does not exist for this species in the Project footprint where impacts could occur. Project activities occur at a flat/gradually sloping park and along riverine shoreline (M&N 2023). The Project footprint does not consist of the habitat requirements for this species including steeply sloping highly unstable granitic sand or granite cliffs. Furthermore, Project activities will occur approximately 15 miles from the one known population of showy stickweed. Based on the lack of habitat within the Project footprint and distance to the nearest known population, the Project would have ***No Effect*** on showy stickweed.

2.3.4. WENATCHEE MOUNTAINS CHECKERMALLOW

The Wenatchee Mountains checkermallow (*Sidalcea oregana var. calva*) is listed as endangered under the ESA. Wenatchee Mountains checkermallow are found along forest edges and in montane meadows with high water tables in the Wenatchee Mountains (DNR 2022a). There are ten known occurrences and one experimental outplanting of Wenatchee Mountains chekermallow, none of which occur in the Action Area (DNR 2022a and DNR 2022b).

2.3.4.1. Reason for No Effect Determination

There are no mapped occurrences of this species within the Action Area. Furthermore, the Project will not impact wetlands or moist meadows that could provide habitat for this species. Therefore, the Project would have ***No Effect*** on Wenatchee Mountains checkermallow.

3. EFFECTS OF THE ACTION

Potential direct and indirect impacts to the species identified in Sections 2.1 and 2.2, as having the potential to occur in the Action Area and be impacted by the Project, are discussed below.

3.1. DIRECT IMPACTS

Direct impacts are generally defined as impacts that physically contact the species and have the potential to cause physical damage. Direct impacts are caused by the activity and occur at the same time and place of the proposed activity. The Project has the potential to create the following direct impacts:

- Noise: Elevated noise levels have the potential to impact species by causing injury or behavioral changes. In-air and in-water noise disturbances are defined by the Action Area in Section 1.4.3. Potential noise impacts would be species specific and are further defined below in Section 3.3 of this BE.
- Water quality: General water quality/turbidity impacts could occur to species and/or the CH identified in Section 2 of this BE. Activities with the potential to result in increased turbidity include construction of the second lane at the existing boat launch, scour hole repair and scour protection, and pile installation. AMMs, such as avoidance of in-water work to the extent feasible, compliance with Washington State Water Quality Standards (WAC 173-201A), and protective measures to prevent accidental discharges to waters will be implemented to protect water quality (see Section 1.5 for a full list of proposed AMMs). Potential water quality impacts are generally anticipated to be minor and localized, but would be species specific and are further defined below in Section 3.3 of this BE.
- Habitat disturbance: The installation of the second lane at the existing boat launch, scour hole repair and protection, abutment installation, and pile installation could result in permanent impacts to in-water benthic habitat. Construction of the pedestrian pathway and roadway repair/reconfiguration could result in permanent impacts to upland habitat. Given the small size, location of the proposed activities at a public park, and proposed AMMs, such as avoiding impacts to vegetation to the extent feasible (see Section 1.5 for a full list of proposed AMMs), in-water and upland habitat impacts are anticipated to be minor. Impacts are species specific and discussed in additional detail in Section 3.3 of this BE.

3.2. INDIRECT IMPACTS

Indirect impacts are generally defined as ecosystem changes that could affect food web dynamics. Indirect impacts are caused by the activity and are later in time or farther removed in distance but are still reasonably foreseeable. The Project has the potential to cause the following indirect impacts.

- Prey species: Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Impacts to prey species are generally anticipated to be minor. Impacts are species specific and discussed in additional detail in Section 3.3 of this BE.
- Essential Fish Habitat (EFH): EFH has been identified for a variety of fish under the Pacific Coast Salmon Fisheries Management Plan (FMP). Impacts to EFH are unlikely due to the minor, short-term, localized nature of the Project. Please see Appendix A for further discussion on EFH.

3.3. SPECIES SPECIFIC IMPACTS

ESA-listed species that could occur in the Action Area include: UCR Chinook salmon, UCR steelhead, bull trout, northern spotted owl, and gray wolf. Effects to these species are discussed below.

3.3.1. NMFS LISTED SPECIES

3.3.1.1. Upper Columbia River Chinook Salmon and Upper Columbia River Steelhead

UCR Chinook salmon and steelhead may occur migrating and/or foraging in the Action Area during construction. Spawning does not occur in Lake Wenatchee (Washington State Conservation Commission 2001) and is not anticipated to occur within the Action Area due to the lack of riverine habitat characteristics. Direct and indirect adverse impacts to these salmonids could occur (direct impacts due to noise, water quality and/or benthic habitat impacts and indirect impacts to prey species), but are considered unlikely given the extent of the proposed in-water activities and proposed AMMs.

Noise

The main hearing organ in fish is the lateral line system, which is sensitive to particle motion. Pressure waves can cause changes in the swim bladder that may cause damage or reduced hearing sensitivity. The driving of four, 14-inch steel pipe piles has the greatest potential to result in substantial in-water noise. To the extent feasible, piles will be driven in the dry to minimize potential in-water noise impacts. However, in-water pile driving may be required depending on the river flows during construction. Piles will first be driven with a vibratory hammer, but an impact hammer could be required to embed the pile to the required depth. The analysis presented in this section assumes that vibratory pile driving could occur for 8 hours per day. A worst-case scenario analysis has been run in the case that impact pile driving is required. This worst-case scenario assumes that all piles would need to be driven in the water and that vibratory pile driving is not successful and results in an impact hammer being required to drive the full length of the pile (up to 2,000 blows per day).

Criteria for assessing potential noise effects to fish during continuous vibratory pile driving have not been established. Guidelines and thresholds have been established for assessing the noise effects of impact pile driving on fish (Fisheries Hydroacoustic Working Group [FHWG] 2008, Table 5). In-water noise produced when using an impact hammer has the potential to directly impact fish species by causing physical injury or altering behavior when thresholds/ guidelines are exceeded. Impact pile driving is only proposed if vibratory pile driving does not succeed in driving piles to the required depths. Avoidance of impact pile driving to the extent feasible would limit the potential for noise impact to salmonids. Furthermore, pile driving would occur during the in-water work window when salmonids are less likely to occur in the Action Area and pile driving would only occur for up to two days.

If impact pile driving occurs, the injury threshold could be exceeded within 185 meters (610 ft) of the proposed pile driving activities (Table 5). The behavioral threshold for fish which is not a regulatory standard could be exceeded within 2,200 meters (7,220 ft) of the potential impact pile driving activities (Table 5). Threshold/guideline exceedances would be confined by adjacent land masses. Potential noise impacts are

based on the greatest potential noise generation and greatest duration. Typical Project related noise impact would be anticipated to be less than the maximum used for this impact analysis. Furthermore, if piles are installed in-water, this would be at very shallow depths where noise would not be anticipated to propagate effectively (WSDOT 2020). Due to the short-term nature of the proposed activities (two days of pile driving), avoidance of in-water pile driving to the extent feasible, avoidance of impact driving the extent feasible, and compliance with the in-water work window, substantial noise impacts to salmonids are not anticipated.

Table 5. Noise Criteria Thresholds for Fish

	Onset of Physical Injury			**Behavioral Threshold**
	Peak dB	**Cumulative SEL dB**		
		Fish > 2 Grams	**Fish < 2 Grams**	
Threshold Value	***206 dB***	***187 dB***	***183 dB***	***150 dBrms***
14-inch steel pile (Vibratory Install) Threshold Distance	*Threshold Does not apply*			
14-inch steel pile (Impact Install) Threshold Distance	3 meters 10 feet	100 meters 329 feet	185 meters 610 feet	2,200 meters 7,200 feet

Source: FHWG 2008

Water Quality

Decreased water quality including increased turbidity has the potential to directly impact fish. There are several mechanisms by which suspended sediment affects fish species, including increased potential for gill tissue damage, physiological stress, direct mortality, and behavioral changes. The Project may create minor temporary increases in turbidity due to suspended sediments during in-water construction activities. Activities with the potential to result in increased turbidity include construction of the second lane at the existing boat launch, scour hole repair, and pile installation. Sediments at the site consist mainly of sand which would not be anticipated to produce large scale turbidity plumes. Any turbidity plumes created by the proposed in-water construction activities would be anticipated to dissipate quickly to background levels. To the extent feasible, construction of the second lane, pile installation, and repair of the scour hole and scour protection would occur in the dry during low river flows. This is anticipated to minimize potential turbidity impacts. AMMs (see Section 5) would be implemented to protect water quality during construction activities such as compliance with Washington State Water Quality Standards (WAC 173-201A), erosion control, and protective measures to prevent accidental discharges to waters during fueling, cleaning, and maintenance. Due to the limited extent of in-water activities and proposed AMMs, impacts to salmonids due to increased turbidity and/or decreased water quality are not anticipated. Furthermore, in-water work would comply with in-water work windows when salmonid presence is expected to be low.

The installation of the boarding float would result in approximately 320 sf of additional overwater coverage at the site. The boarding float would be grated to minimize shading impacts. Due to the small size of the boarding float and use of grated decking, water quality impacts due to increased shading are anticipated to be minor.

Benthic Disturbance

In-water benthic disturbances have the potential to result in impacts to benthic habitat that could be used by salmonids. The installation of the second lane at the existing boat launch, scour hole repair, and pile installation could result in permanent and temporary impacts to benthic habitat. The second lane would permanently impact approximately 675 sf of riverbed sediments. Additionally, a total of approximately of 225 aggregate material/ concrete matting would be placed waterward of the OHWM in between the two boat launch lanes and at the base of the lanes. Temporary disturbance of benthic habitat would also occur during construction of the second lane. It is anticipated that an approximately 800 sf area would be excavated to allow for installation of the second lane. Temporarily disturbed areas would be returned to baseline conditions post-construction.

All benthic habitat impacts would occur adjacent to an existing boat launch that would not be anticipated to provide optimal habitat for salmonids. Any salmonids that do occur in the Action Area would be anticipated to use adjacent habitat areas away from the public park, boat launch, and construction area. Given the small size and location of the proposed benthic habitat impacts at an existing boat launch, benthic habitat impacts are anticipated to be minor. Spawning is not anticipated to occur in the Project footprint and therefore, impacts to spawning habitat are not anticipated.

Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Salmonid prey that could be impacted by the Project includes crustaceans, invertebrates, and small fish. The Project would result in benthic habitat impacts that could cause minor disturbance of crustaceans and invertebrates. Temporarily disturbed marine benthic habitats typically recover quickly (Thrush and Dayton 2022). Sediments in the Project area would likely recolonize with mobile and shorter-lived benthic invertebrates (amphipods) relatively quickly, followed by the recovery of larger benthic macroinvertebrates (mollusks and larger polychaetas). Benthic communities may not recover on permanently disturbed sediments such as the boat launch, however this area is small and resulting prey species impacts are anticipated to be minor. All benthic habitat impacts would occur adjacent to an existing boat launch that would not be anticipated to provide optimal foraging habitat for salmonids. In-water noise and or decreases in water quality have the potential to result in impacts to small fish that could provide prey for salmonids. As discussed in additional detail above, noise impacts and/or water quality impacts are anticipated to be minor.

Substantial impacts to salmonids due to reduced prey species abundance are not anticipated given the nature of the repairs and proposed AMMs such as compliance with the in-water work window.

Determination

Due to a lack of identified direct and indirect impacts the Project may affect but is ***not likely to adversely affect (NLAA)*** UCR Chinook salmon and steelhead. Critical habitat for UCR Chinook salmon and steelhead occurs within the Action Area. The Project is ***NLAA*** UCR Chinook salmon and steelhead CH for the reasons given above.

3.3.2. USFWS LISTED SPECIES

3.3.2.1. Bull Trout

Bull trout could occur in the Action Area year-round foraging. Spawning occurs in streams and is therefore not anticipated to occur within the Action Area due to the lack of riverine habitat characteristics. Direct and indirect adverse impacts to bull trout could occur, but are considered unlikely given the extent of the proposed in-water activities and proposed minimization measures. Direct impacts to bull trout could occur due to noise, water quality and/or benthic habitat impacts. Indirect impacts could occur due to impacts to prey species.

Noise

Impulsive noise produced during impact pile driving has the potential to directly impact fish by causing physical injury or altering behavior when noise threshold levels are exceeded (FHWG 2008). As discussed in additional detail in Section 3.3.1.1, in-water activities with the potential to create substantial in-water noise includes the driving of four, 14-inch steel piles. To the extent feasible, piles would be driven in the dry to minimize potential in-water noise impacts. However, in-water pile driving may be required depending on the river flows during construction. Piles would first be driven with a vibratory hammer, but an impact hammer could be required to embed the pile to the required depth. Avoidance of impact pile driving to the extent feasible would limit the potential for noise impacts.

If impact pile driving occurs, the injury threshold could be exceeded within 185 meters (610 ft) of the proposed pile driving activities (Table 5). The behavioral threshold for fish which is not a regulatory standard could be exceeded within 2,200 meters (7,220 ft) of the potential impact pile driving activities (Table 5). Threshold/guideline exceedances would be confined by adjacent land masses. Potential noise impacts are based on the greatest potential noise generation. Typical Project related noise impact would be anticipated to be less than the maximum used for this impact analysis. Due to the short-term nature of the proposed activities (two days of pile driving), avoidance of in-water pile driving to the extent feasible, avoidance of impact driving the extent feasible, and compliance with the in-water work window, substantial noise impacts to bull trout are not anticipated.

Water Quality

Decreased water quality including increased turbidity has the potential to directly impact fish. As discussed in additional detail in Section 3.3.1.1, activities with the potential to result in increases turbidity include construction of the second lane at the existing boat launch, scour hole repair and protection, and pile installation. Sediments at the site consist mainly of sand which would not be anticipated to produce large scale turbidity plumes. To the extent feasible, construction would occur in the dry during low river flows. AMMs would be implemented to protect water quality. Impacts to bull trout due to increased turbidity and/or decreased water quality are not anticipated.

The installation of the boarding float would result in approximately 320 sf of additional overwater coverage at the site. The boarding float would be grated to minimize shading impacts. Due to the small size of the boarding float and use of grated decking, water quality impacts due to increased shading are anticipated to be minor.

Benthic Disturbance

In-water benthic disturbances have the potential to result in impacts to benthic habitat that could be used by bull trout. As discussed in additional detail in Section 3.3.1.1, the installation of the second lane at the existing boat launch, scour hole repair, and pile installation could result in permanent and temporary impacts to benthic habitat. Temporarily disturbed areas would be returned to baseline conditions post-construction. All benthic habitat impacts would occur adjacent to an existing boat launch which would not be anticipated to provide optimal habitat for bull trout. Given the small size and location of the proposed benthic habitat impacts at an existing boat launch, benthic habitat impacts are anticipated to be minor. Spawning is not anticipated to occur in the Project footprint and therefore, impacts to spawning habitat are not anticipated.

Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Bull trout prey that could be impacted by the Project include crustaceans, invertebrates, and small fish. As discussed in additional detail in Section 3.3.1.1, the Project would result in benthic habitat impacts that could cause minor disturbance of crustaceans and invertebrates. All benthic habitat impacts would occur adjacent to an existing boat launch that would not be anticipated to provide optimal foraging habitat for salmonids. In-water noise and or decreases in water quality have the potential to result in impacts to small fish that could provide prey for bull trout. Noise impacts and/or water quality impacts to prey species are anticipated to be minor.

Substantial impacts to bull trout due to reduced prey species abundance are not anticipated given the nature of the repairs and proposed AMMs such as compliance with the in-water work window.

Determination

Due to a lack of identified direct and indirect impacts the Project may affect but is ***NLAA*** bull trout. Bull trout CH occurs within the Action Area. The Project is ***NLAA*** bull trout CH identified within the Action Area for the reasons given above.

3.3.2.2. Northern Spotted Owl

Northern spotted owls could occur in the Action Area, but their occurrence is considered unlikely given available sighting data as (Youkey personal communication 2023) well as the location of the Project at a public park with high levels of human activity. Direct and indirect adverse impacts to northern spotted owls could occur, but are considered unlikely given the extent of the proposed activities and proposed minimization measures. Direct impacts could occur due to noise and habitat impacts. Indirect impacts could occur due to impacts to prey species.

Noise

Substantial noise has the potential to directly impact northern spotted owls by causing physical injury or altering behavior. Project activities with the potential to result in in-air noise above background levels includes pile driving and the use of construction equipment such as excavators, trucks, cranes, small work boats, concrete pump trucks, and power tools. The use of a pile driver is anticipated to be the loudest tool proposed for use as part of the Project. As discussed in additional detail in Section 1.4.3.1, pile driving has the potential to result in in-air noise levels of up to 97 dB at 50 ft from the source (Soderberg and Laughlin 2016).

WSDOT has developed guidance for assessing potential noise impacts to northern spotted owls. The guidance was developed for projects occurring in or adjacent to suitable nesting roosting and foraging (NRF) habitat (WSDOT 2021). This guidance is based on a USFWS Biological Opinion (BiOp) for WSDOT projects, but has been used as a basis for assessing the potential noise impacts from proposed Project (USFWS 2014). Effects are based on the proximity of the project to suitable habitat, the type of activity, and the timing of the activity in relation to the nesting season. As discussed in Section 2.2.2, the proposed roadway repair and reconfiguration occurs adjacent to and within areas mapped as suitable habitat. The boat launch improvements and proposed pedestrian pathway occurs approximately 0.2 miles from suitable habitat.

In accordance with the developed guidance, disturbance effects for all types of construction activities are considered discountable during the late nesting season (July 16 through September 30). During the early nesting season (March 1 through July 15), activities that that do not require heavy machinery are unlikely to result in disturbance effects. Certain activities such as pile driving could result in injury to northern spotted owls during the nesting season if suitable habitat occurs within close proximity to the proposed activities. In accordance to WSDOT guidance, injury and/or mortality during pile driving activities is not anticipated if pile

driving activities occur at least 15 ft from suitable habitat during the nesting season (March 1 through September 30).

Major construction activities of the Project that could result in substantial noise, such as pile driving and the use of heavy equipment, would not occur during the early nesting season. Major construction activities would either occur during the late nesting season or during the non-nesting season (October 1 through March 2). Therefore, disturbance effects are not anticipated. Pile driving would occur approximately 0.2 miles from the nearest known suitable habitat and therefore injury and/or mortality is not anticipated. With the proposed timing constraints, noise impacts to northern spotted owls are not anticipated.

Habitat Disturbance

Removal of vegetation has the potential to result in habitat impacts to northern spotted owls. WSDOT has developed guidance for assessing potential impacts to northern spotted owl habitat (WSDOT 2021). This guidance is based on a USFWS BiOp for WSDOT projects, but has been used as a basis for assessing the potential habitat impacts from proposed Project (USFWS 2014). In accordance to WSDOT provided guidance, projects on non-federal lands that impact more than 0.25 acre of NRF habitat, and/or more than 0.50 acres of dispersal habitat may warrant a not likely to adversely affect (NLTAA) determination if habitat functions are not reduced and the habitat portion of the determination is approved by USFWS during early coordination (USFWS 2014).

Vegetation removal has been avoided to the extent feasible, in particular the removal of large diameter trees. Approximately 3,500 sf (0.08 acres) of dispersal habitat would be permanently impacted by the construction of the pedestrian pathway. This would include the removal of five trees with diameters greater than 10-inches. In addition, approximately 400 sf (0.01 acres) of dispersal habitat would be permanently impacted by the construction of the truck maneuvering area at the boat launch. This would include the removal of one tree. Up to approximately 3,500 sf (0.08 acres) of the proposed roadway reconfiguration would require the removal of small shrubs, ground cover, and up to approximately 15 trees with diameters of greater than 10-inches. This may occur in areas that may provide NRF habitat. In total approximately 7,400 sf (0.17 acres) of vegetation including 21 trees could be permanently impacted by the proposed project. The loss of 21 trees from a rather densely forested area at an existing public park is not anticipated to adversely reduce the value of that habitat. The Project footprint is not located in a high priority owl circle, SOSEA area, or mapped CH. Therefore, minor vegetation removal activities such as those proposed are not anticipated to result in substantial impacts to northern spotted owls. In addition, WSPRC is proposing the preservation of at least approximately 2,240 sf of forested land within the park boundaries, which may benefit northern spotted owl habitat.

Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Northern spotted owl prey that could occur in the Action Area includes small forest mammals. Impacts to prey species are unlikely given the limited extent of the proposed activities. In addition, there are limited areas within the park that provide suitable foraging habitat. Dispersal habitat may provide some opportunities for spotted owls to find prey, however dispersal habitat would not be considered optimal foraging habitat. Furthermore, the Project occurs at a public park with year-round human activity and may therefore not provide optimal foraging habitat.

Substantial impacts to prey species and foraging opportunities are not anticipated given the nature of the repairs and location of the Project.

Determination

Due to a lack of identified direct and indirect impacts and proposed conservation measures the Project may affect but is ***NLAA*** northern spotted owls. Northern spotted owl CH occurs within the Action Area, therefore the Project is ***NLAA*** northern spotted owl CH.

3.3.2.3. Gray Wolf

Gray wolves could occur in the Action Area, but their occurrence is considered unlikely given the distance to the nearest known wolf pack and location of the Project at a public park. As discussed in additional detail in Section 2.2.3, there have been approximately five publicly reported unconfirmed wolf observations at Fish lake approximately 1.5 miles east of the Project within the last approximately 10 years. Direct and indirect adverse impacts to gray wolves could occur, but are considered unlikely given the extent of the proposed activities, unlikely occurrence of the species within the Project area, and proposed minimization measures. Direct impacts could occur due to noise. Habitat impacts and/or prey species impacts are not anticipated given that the Project footprint occurs at a public park that would not provide appropriate habitat or foraging areas for gray wolves.

Noise

Substantial noise has the potential to directly impact gray wolves by altering behavior. Project activities with the potential to result in in-air noise above background levels includes pile driving and the use of construction equipment such as excavators, trucks, cranes, small work boats, concrete pump trucks, and power tools. The use of a pile driver is anticipated to be the loudest tool proposed for use. As discussed in additional detail in Section 1.4.3.1, pile driving has the potential to result in in-air noise levels of up to 97 dB at 50 feet from the source (Soderberg and Laughlin, 2016). In-air noise would be anticipated to dissipate to background noise levels within 1.8 miles from the source. The nearest known wolf pack occurs 5 miles from the site and unconfirmed publicly recorded sightings within the Action Area are limited to fish lake approximately 1.5 miles

from the site. Given the distance to the nearest known wolf pack and publicly recorded sightings as well as the limited duration of pile driving activities (1 day), noise impacts to gray wolves are considered very unlikely.

Determination

Due to a lack of identified direct and indirect impacts and proposed conservation measures the Project may affect but is ***NLAA*** gray wolves. Gray wolf critical habitat does not occur in the Action Area, therefore the Project would have ***No Effect*** on gray wolf CH.

4. CONCLUSIONS

Direct and indirect adverse impacts could occur to protected species but are unlikely to occur given the extent of the proposed activities and proposed AMMs. Potential ESA effect determination and critical habitat (CH) effect determinations are summarized in Table 6.

Table 6. Effect Determinations

Species	Scientific Name	Status	Effects Determinations		Rationale
			Species	CH	
Chinook Salmon- Upper Columbia River	*Oncorhynchus tshawytcha*	Threatened	NLAA	NLAA	- Extent of the proposed in-water activities. - Compliance with the in-water work window
Steelhead- Upper Columbia River	*Onocorhynchus myskiss*	Threatened	NLAA	NLAA	- Extent of the proposed in-water activities. - Compliance with the in-water work window
Bull Trout	*Salvelinus confluentus*	Threatened	NLAA	NLAA	- Extent of the proposed in-water activities. - Compliance with the in-water work window.
Northern Spotted Owl	*Brachyramphus*	Threatened	NLAA	NLAA	- Location in public park and available sighting data - Major construction activities would not occur during the early nesting season (March 1 through July 15). Therefore, disturbance effects are not anticipated.
Gray Wolf	*Canis lupus*	Endangered	NLAA	No Effect	- Location of the Project at a public park with high levels of year-round human activity. - Distance to the nearest known wolf pack and publicly reported sightings - No in the Action Area.
Canada Lynx	*Lynx canadensis*	Threatened	No Effect	No Effect	- High elevation spruce tree habitat for this species does not occur within the Action Area.
Yellow billed Cuckoo	*Coccyzus americanus*	Threatened	No Effect	No Effect	- Anticipated to be extirpated from Washington. - Suitable cottonwood willow riparian corridor habitat does not occur in Action Area.
Showy Stickweed	*Hackelia venusta*	Endangered	No Effect	--	- Project footprint does not consist of the habitat requirements including steeply sloping unstable granitic sand or granite cliffs. - Project activities occur ~15 miles from one known population of showy stickweed
Wenatchee Mountains Checkermallow	*Sidalcea oregana var. calva*	Endangered	No Effect	No Effect	- No mapped occurrences in Action Area.

Species	Scientific Name	Status	Effects Determinations		Rationale
			Species	CH	
					- Project would not impact wetlands or moist meadows that could provide habitat for this species.

-- No designated CH

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Appendix A – Essential Fish Habitat (EFH) Assessment

A. DESCRIPTION OF THE PROPOSED ACTION (may refer to BA project description)

Please see Section 1 of the Biological Evaluation (BE).

B. ADDRESSES EFH FOR APPROPRIATE FISHERIES MANAGEMENT PLANS (FMP)

One FMP has been identified for the Action Area covering Pacific salmon. General impacts are anticipated to be similar to those described in the BE (minor, localized and short-term).

C. EFFECTS OF THE PROPOSED ACTION

i. Effects on EFH (groundfish, coastal pelagic, and salmon EFH should be discussed separately)

Salmon EFH: The Pacific Salmon FMP protects a variety of salmonid species. The main species managed by the council include Chinook and Coho salmon. Salmon could occur within the Action Area. Any potential impacts to salmonid EFH would be anticipated to be minimal and temporary. Please refer to Section 3.3.1 of the BE for additional discussion on any potential impacts to salmonid species.

ii. Effects on Managed Species (unless effects to an individual species are unique, it is not necessary to discuss adverse effects on a species-by species basis)

Due to the limited nature of the proposed in-water work (anticipated to occur from July 15 through August 15), and implementation of design and AMMs to reduce the risk of impacts to aquatic resources, the Project is not anticipated to have adverse impacts on managed species over the short or long term.

iii. Effects on Associated Species, Including Prey Species

Due to the limited nature of the proposed in-water work (anticipated to occur from July 15 through August 15), and implementation of design and AMMs to reduce the risk of impacts to aquatic resources, the Project is not anticipated to have adverse impacts on prey species over the short or long term. See Section 3.3.1 for additional discussion on impacts to prey species.

iv. Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the Action Area of the federal action, subject to consultation (50 CFR 402.02). These activities include land and shoreline development. Cumulative effects have not been identified.

D. PROPOSED CONSERVATION MEASURES

Proposed conservation measures are the same as those described in Section 1.5 of the BE.

E. CONCLUSIONS BY EFH (TAKING INTO ACCOUNT PROPOSED CONSERVATION MEASURES)

Due to the limited nature of the proposed in-water activities and the implementation of design and AMMs to reduce the risk of impacts to marine resources, impacts are considered unlikely. The Project **may adversely affect** Essential Fish Habitat for salmonids.