United States Department of the Interior
FISH AND WILDLIFE SERVICE
Idaho Fish and Wildlife Office
3232 W Nursery Road
Coeur d'Alene, Idaho 83815
https://www.fws.gov/office/idaho-fish-and-wildlife

Standing Analysis for U.S. Army Corps of Engineers Lake Pend Oreille Docks and Piers

Prepared by

Idaho Fish and Wildlife Office

KATHLEEN HENDRICKS
Digitally signed by KATHLEEN HENDRICKS
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for Lisa Ellis, State Supervisor

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Acronym List

Act	Endangered Species Act
CFR	Code of Federal Regulations
CHU	Critical Habitat Units
CM	Conservation Measures
dB	decibels
DKey	Determination Key
FMO	foraging, migration, and overwintering
FR	Federal Register
IDL	Idaho Department of Lands
IFWO	Idaho Fish and Wildlife Office
IPaC	Information for Planning and Consultation
LPO	Lake Pend Oreille
NMFS	National Marine Fisheries Service
NGVD	National Geodetic Vertical Datum (of 1929)
OHWM	Ordinary High-Water Mark (2,062.5 feet NGVD)
OLWM	Ordinary Low-Water Mark (2051.5 feet NGVD)
PBF	physical and biological factor
PO River	Pend Oreille River
RGP-27	Regional General Permit 27
RMS	root mean square
SA	Standing Analysis
SR	spawning and rearing
Service	U.S. Fish and Wildlife Service
SPL	sound pressure levels
USACE	United States Army Corps of Engineers
U.S.C.	United States Code

1 INTRODUCTION AND PURPOSE OF STANDING ANALYSIS

1.1 INTRODUCTION AND USE

This standing analysis (SA) supports the "Lake Pend Oreille Docks and Piers Determination Key" (DKey) delivered by the U.S. Fish and Wildlife Service (Service)'s Information for Planning and Consultation (IPaC) system. The Lake Pend Oreille Docks DKey streamlines the process of reviewing certain routine and predictable actions that are not likely to result in adverse effects (or take) to federally threatened bull trout (*Salvinus confluentus)* or its designated critical habitat in Lake Pend Oreille (LPO) or the Pend Oreille (PO) River, Idaho.

The routine nature of the review of structures and disturbances permitted by the U.S. Army Corps of Engineers (USACE) provides an opportunity for the Service to evaluate the effects of common activities on threatened and endangered species pursuant to section 7 of the Endangered Species Act of 1973, as amended (6 U.S.C. 1531 et seq.; [Act]). The availability of a DKey analyzing bull trout and its designated critical habitat in the covered area will streamline the Service's Idaho Fish and Wildlife Office's (IFWO) review of actions that are not likely to adversely affect these listed entities. The Docks and Piers DKey will provide the USACE a consistent response to their requests for concurrence or technical assistance. The USACE is the only allowable user of this document and the Docks and Piers DKey. The USACE's consultants, applicants, and/or proponents may not use this document and DKey on behalf of the USACE.

To use the Docks and Piers DKey and SA, the USACE will enter their action-specific location and information in the IPaC system (https://ipac.ecosphere.fws.gov/). The USACE will then potentially be presented with multiple DKeys and have the option to select and complete the Docks and Piers DKey. The DKey prompts the USACE user with a series of questions to determine if the proposed action qualifies for the Docks and Piers SA (see Activities, Exclusions, and Conservation Measures below). If the proposed action does not qualify for the SA, the user will be notified that they must consider effects to threatened and endangered species through the standard section 7 consultation process. If the user's proposed action qualifies for the Docks and Piers SA, they will be prompted to answer additional questions based on whether their action area intersects bull trout and/or its designated critical habitat.

Depending on how the USACE answers the questions and their corresponding determinations, USACE will receive an output letter from IPaC stating that their analysis appears to be consistent with this SA and whether any additional steps are needed to complete section 7 consultation with the Service.

1.2 DETERMINATION OF NEED FROM ACTION AGENCY

Urban and rural development pressure has significantly increased along the shore of LPO and the PO River in Bonner County, Idaho which also contains Schweitzer Ski Resort and a host of other outdoor recreation opportunities. The Bonner County population is estimated to have grown by approximately 26% between 2010 and 2022 (USAFacts 2024, accessed November 15, 2023). IFWO has noted a rising trend in section 7 consultation requests regarding the size and complexity of overwater structures compared to past developments.

LPO and the PO River are unique because the entire waterbody was designated as navigable under Section 10 of the Rivers and Harbors Act, which requires all structures, crossings, and disturbances to be permitted by the USACE. This is in addition to the broader permitting requirements under Section 404 of the Clean Water Act. Bull trout, a federally listed species, occur in the covered area. The covered area is also designated as bull trout critical habitat. As such, most if not all activities conducted below the ordinary high-water mark (OHWM) in LPO and the PO River require section 7 consultation under the Act.

Consequently, the USACE has received a Programmatic Biological Opinion for similar actions on LPO and the PO River in the past, specifically the Regional General Permit 27 (RGP-27) Programmatic. The RGP-27 was renewed on March 17, 2020. In 2022, the Service recognized the increased use of RGP-27 and recommended using a SA approach as a mechanism to analyze the ACOE's future dock and pier related-activities. A revised RGP-27 Programmatic Biological Opinion was signed on February 6, 2025.

The Service has developed this SA in conjunction with the USACE for actions in LPO and the PO River. The purpose of this SA is to complete consultation under the Act for limited activities (e.g., new dock construction and other activities described in section 3). The USACE is not required to use this SA; they may follow the standard consultation process on any action.

After reviewing the activities described in section 3 of this SA against the presence of species and critical habitat listed under the Act, the Service determined that the covered activities "may affect" the federally listed species and their designated critical habitats; therefore, the Service prepared this SA to evaluate the covered activities' potential effects on federally listed species and their designated critical habitat within the covered area using the best scientific and commercially available data.

1.3 FEDERAL NEXUS

The USACE has the authority to issue permits under Section 404 of the Clean Water Act for activities that may result in a discharge of dredge and/or fill material into Waters of the U.S. (33 U.S.C. 1344). Additionally, the USACE has the authority to issue permits under Section 10 of the Rivers and Harbors Act for installation of a structure into navigable Waters of the U.S. (33 U.S.C. 403). Given that the covered activity categories may result in a discharge of dredge and/or fill material below the OHWM of Waters of the U.S. and/or installation of a structure into navigable waters designated under Section 10 of the Rivers and Harbors Act, a USACE permit is the Federal nexus for section 7 consultation of the Endangered Species Act.

1.4 INDIVIDUAL CONSULTATION REINITIATION

The Service's requirements for reinitiation of consultation as outlined in 50 (Code of Federal Regulations) CFR 402.16 are applied to determinations reached through the DKey process. All output letters include reinitiation language as follows: "The Service recommends that you contact the appropriate Ecological Services field office or re-evaluate the action in IPaC if, after you complete the DKey Process: 1) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not considered in the analysis, 2) the action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the analysis, 3) a new species is listed or critical habitat is designated that may be affected by the proposed action. If any of the above conditions occurs, additional consultation with the Service should take place before site-specific action changes are final or resources committed."

1.5 Updates to the Standing Analysis

This SA will be annually reviewed and updated to ensure the analysis contains the best available information and continues to meet the needs of bull trout and its designated critical habitat. The review is designed to ensure the SA is being used as intended.

Activities reviewed under this SA must rely on the current SA version based on the date the Federal action agency requested consultation on the site-specific action. For reference, both this SA and all previous versions will be maintained by the IFWO.

2 Covered Area

The SA "covered area" is equivalent to "action area", the latter of which is defined in the regulations as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). An action includes activities or programs "directly or indirectly causing modifications to the land, water, or air" (50 CFR 402.02). In this case, the area where land, water, or air is likely to be affected includes the navigable waters of the United States in Lake Pend Oreille (LPO) and the Pend Oreille (PO) River in Bonner and Kootenai Counties, Idaho (Figure 1). The action area does not include exclusion areas, which are described in section 4.2. To qualify to use this SA, an action area must fall completely within the covered area.

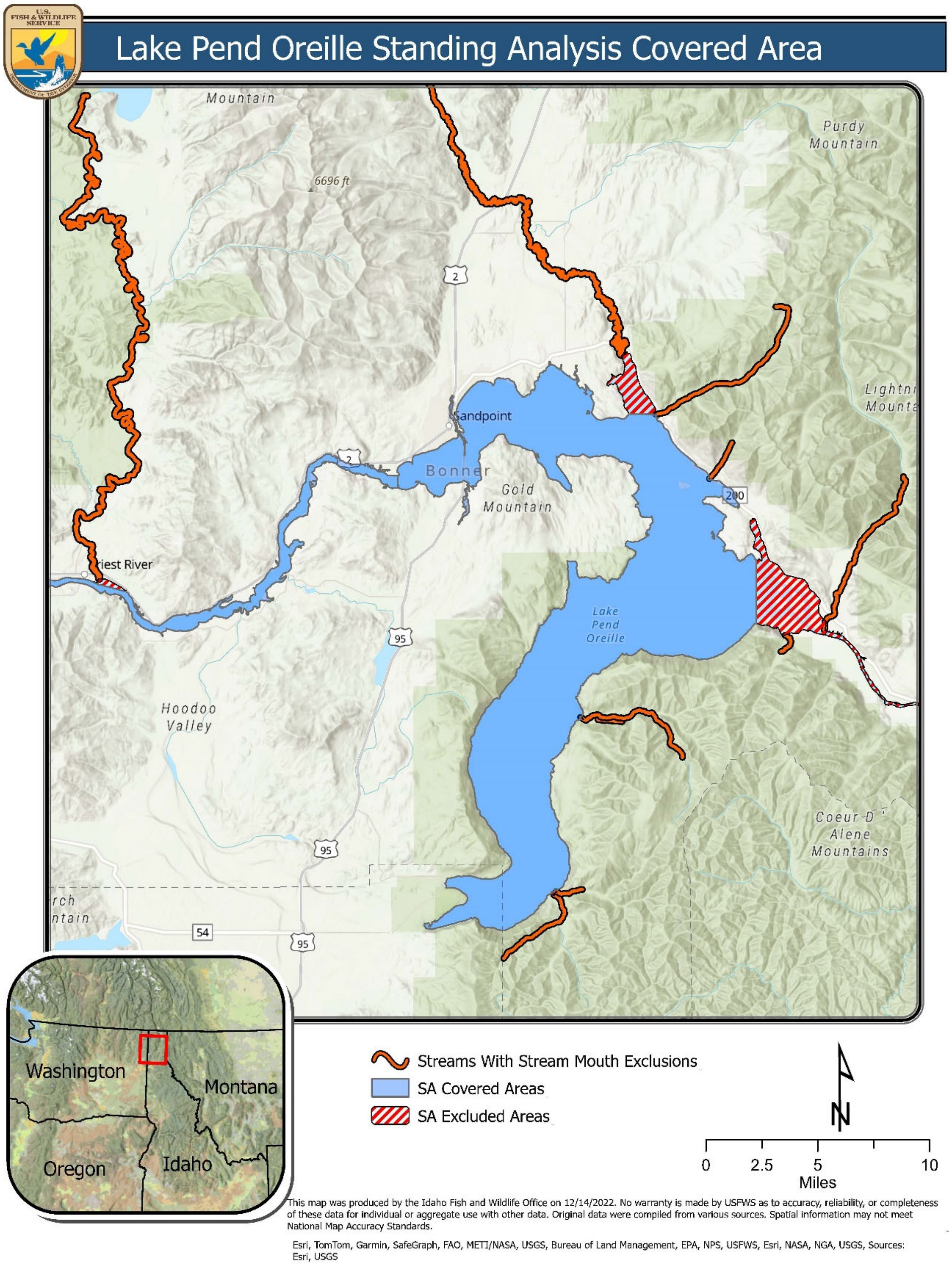

Figure 1: Map of the SA covered area and excluded areas.

3 ACTIVITIES DESCRIPTION

The actions described herein includes all activities addressed in this SA. The activities description, conservation measures, and covered area inform the SA and support specific activities that are appropriate for not likely to adversely affect determinations for site-specific actions under this analysis. The description of activities does not imply that they will always result in effects to bull trout or its critical habitat, nor is it meant to cover activities that fall outside of the prescribed bounds of the analysis, as described in section 4 below. The Service and USACE will collaborate through monthly technical team and annual review meetings to discuss actions, the technical merit of this document, and best available science.

3.1 ACTIVITIES

This SA is intended to cover specific activities requiring USACE permits within the covered area described above. Annual meetings will occur between the Service and the USACE to discuss the specific USACE-permitted activities within the scope of the SA, more information on meetings and reporting can be found in section 8.

3.1.1 Piers and Docks

Single and two-family piers and fixed height docks and piers that are consistent with the following list of design criteria and can be analyzed in this SA and qualify for use of the DKey. Commercial docks and piers are not included in the covered activities.

- Only one pier or fixed dock for each riparian property owner with at least twenty-five feet of waterfront ownership (IDL 2022, p. 5). The total surface decking area that is waterward of the OHWM may not exceed 700 square feet, including approach ramp and walkway for a single-family dock.
- Two family structures where: (1) the structure provides moorage that serves two adjacent waterfront owners; (2) the owners have a combined fifty feet of waterfront ownership; and (3) the structure, including all approach ramps, does not exceed 1,100 square feet (IDL 2022, pp. 5–6).
- No part of the dock waterward of the OHWM will be more than 10 feet in width excluding the slip (IDL 2022, p. 6).
- Docks and piers should be constructed in the dry during the annual winter drawdown (low pool). If the structure cannot be constructed completely in the dry, the furthest waterward end of a structure may be constructed in shallow nearshore waters.

- Installation of light penetrative decking (e.g., grating or clear translucent material) is required for docks constructed between 100 yards and ¼ mile on each side of the mouth of excluded streams (see Figure 1). Light penetrative decking is required for docks constructed near known Kokanee spawning areas in order to reduce potential impacts to Kokanee (prey base for bull trout). Grating or clear translucent material is required to cover the entire surface area of the piers and ramps. Grating material must have at least 60% open area, and clear translucent material must have greater than 90% light transmittance (as rated by the manufacturer).
- Where feasible, all docks, piers, or similar structures will be constructed to protrude as nearly as possible at right angles to the general shoreline (IDL 2022, p. 5).
- Docks will only be installed in developed areas and will not degrade baseline riparian function (e.g., will not decrease naturally occurring vegetation that contributes plant or invertebrate inputs to the littoral zones of the covered area).
- Only open-pile pier construction will be used.
- Pile driving will be accomplished using a vibratory hammer. No impact driving is considered in this analysis.
- Construction equipment will remain on dry land. No equipment will enter the water at any time. This does not preclude equipment from working from a floating barge.
- Piles will be made of steel and be a maximum of 10 inches in diameter.
- Piles will be directly driven into the waterbody substrate, set in excavated footings, or may be bolted to bedrock if conditions preclude the previously listed attachment methods.
- No more than 270 cubic feet (10-cubic yards) of material will be excavated for footings. Footings will be backfilled with one of the following: native material (material extracted within the site-specific action area), concrete, sand, gravel, grout, or epoxy. All excavation and filling of footings will be done in the dry during low pool.
- All excess excavated material will be disposed of at an upland location in a manner that precludes it from reentering areas where it may affect any listed species or their critical habitat.
- Pilings will be spaced as far apart as possible, minimizing the number of piles driven for each action.
- No other structures, such as: living quarters, toilets, fueling facilities, or hard-covered boat moorages, will be constructed or installed on any dock or pier.

- If replacing existing structures, pilings will be either removed completely, cut below the substrate elevation, or partially cut with a new piling secured to the existing pilings. Water jets may not be used to remove pilings.
- Depressions or trenches in areas waterward of OHWM created during construction will be immediately restored to the original conditions (e.g., elevation and substrate material type).

3.1.2 Marine Launching Rails

This SA analyzes actions with up to one marine launching rail per riparian property ownership, only launching rails that are consistent with the following list of design criteria can be analyzed in this SA and qualify for use of the DKey:

- Launch rails will be constructed in the dry. No equipment will enter the water at any time. This does not preclude equipment from working from a floating barge.
- Marine launching rail systems will: (1) be anchored to the surface of the bed of the waterway or on low profile concrete plank ties; (2) have poured concrete footings; or (3) have similar structures allowing for the rails to be elevated 18 to 24 inches above the bed of the waterway to allow for natural drifting material (IDL 2021, p. 38).
    - If the area is bedrock, the rails may be fastened by drilled anchor bolts.
    - If a boat launching ramp exists on the property, the marine launching rail system may be installed on the existing ramp surface.
- Marine launching rail systems will not extend more than 200 feet waterward of the OHWM.
- Depressions or trenches in areas waterward of OHWM created during construction will be immediately restored to the original conditions (e.g., elevation and substrate material type).

3.1.3 Mooring Piles

This SA analyzes actions that involve installing up to four mooring piles per riparian property ownership, only mooring that are consistent with the following list of design criteria and can be analyzed in this SA and qualify for use of the DKey:

- Pile driving will be accomplished by the following methods:
    - Using a vibratory hammer.
    - Pile driving equipment will remain on dry land. No equipment will enter the water at any time. Piles may be driven from machinery mounted to a floating barge.
    - No impact driving is considered in this analysis.

- Piles will be single, separate, and not constructed to form a dolphin (i.e., a group of piles tied together).
- Mooring piles will not be installed more than 55 feet waterward of the OHWM or to the length of the permitted dock (i.e., up to 100 feet waterward).
- Existing pilings will be either removed completely, cut below the substrate elevation, or partially cut with a new piling secured to the existing pilings. Water jets may not be used to remove pilings.
- Depressions or trenches in areas waterward of OHWM created during construction will be immediately restored to the original conditions (e.g., elevation and substrate material type).

3.1.4 Small Diameter Waterline Intakes

This SA analyzes actions with a maximum of one small diameter waterline intake per private riparian property ownership. Only water intakes that are consistent with the following list of design criteria and can be analyzed in this SA and qualify for use of the DKey:

- The diameter of the intake line shall not exceed 2 inches, though the intake manifold may be larger.
- To prevent unwanted entrainment and impingement of state or federally protected fish, waterline intakes shall be appropriately screened using the National Marine Fisheries Service's (NMFS) "Fish Screening Criteria for Anadromous Salmonids." For any technical questions regarding this criterion, applicants will contact the U.S. Fish and Wildlife Service's Idaho Fish and Wildlife Office Coeur d'Alene at (208) 918-2155 or their local Idaho Department of Fish and Game office.
- Waterlines will be for noncommercial use.
- Waterlines can be attached to an existing dock or pier, placed on the lake bottom and held down by concrete blocks or similar means, or trenched into the lake body in the dry during the lake drawdown period.
- A submersible pump can be either attached to a dock or pier or lying on the lake bottom.
- Water intakes will only occur below the OHWM of LPO and the PO River, and not in any of its tributaries.
- Waterlines will not extend more than 120 feet waterward of the OHWM (2,062.5 feet NGVD).

3.1.5 Watercraft Lift Stations

This SA analyzes actions with single-family and two-family watercraft lifts, only lift stations that are consistent with the following list of design criteria, and can be analyzed in this SA and qualify for use of the DKey:

- Watercraft lift stations with portable pneumatic or hydraulic lifts are considered in this analysis.
- Single-family docks with a single boat lift and two jet ski lifts or two boat lifts may be added without adding their footprint to the dock square footage (IDL 2022, p. 11).
- Two family docks with two boat lifts and four jet ski lifts or four boat lifts may be added without adding their footprint to the dock square footage (IDL 2022, p. 11).
- Lifts will only be used for non-commercial use.
- Watercraft lift stations will be located adjacent to existing docks or piers. They will not extend waterward of the existing float or pier (IDL 2021, p. 28).
- Only footings of lift stations will rest on the lake or riverbed to minimize impacts to benthic communities.
- Canopies shall be made of canvas or synthetic cloth and can be part of the boat-lift station or a framework attached to the floating dock or pier.

4 EXCLUSIONS

Actions that include certain activities, occur in certain geographic areas, or meet one or more conditions below, will not be covered by this SA. For actions that do not qualify due to one or more of these exclusions, the USACE must directly contact the IFWO-Coeur d'Alene Office to complete their consultation requirements.

4.1 EXCLUDED ACTIVITIES

If the action contains any of the following activities, the action falls outside the scope of activities covered by this SA and the DKey may not be used:

- Activities as described in section 3 that are intended for anyone other than an individual or adjacent individual landowners.
- Activities as described in section 3 that are intended for commercial use.
- Docks and piers constructed to skirt (constructed parallel to) the shoreline.
- Activities as described in section 3 that result in loss of naturally occurring riparian function (e.g., activities that decrease naturally occurring vegetation that contributes plant or invertebrate inputs to the littoral zones of the lake or riverbed).Construction of refueling facilities.

- Construction of docks or piers with structures, such as living quarters, toilets, fueling facilities, or hard-covered boat moorages.
- Docks or piers with a width greater than 10 feet.
- Jetties, groins, coves, breakwaters, break walls, retaining walls, culverts, bridges, or any structures not specifically named in section 3.
- Any activity that involves using fill to raise any part of LPO or the PO river from below the OHWM to above the OHWM.
- Riprapping or bank stabilization.
- Activities within exclusion areas listed in section 4.2 below.
- Maintenance of any existing structures not listed in section 3.
- Site dewatering.
- Fish handling or salvage.
- Water jetting for pile placement or removal.
- Impact pile driving.
- Any exposure of uncured concrete in water.
- Activities that do not comply with IDEQ conditions and IDL standards.
- Any digging or trenching in lakebed or riverbed that is done in-water.
- Installation of marine launching rails that is done in-water.

4.2 EXCLUDED GEOGRAPHIC AREAS

As outlined in the Covered Area section (2), this SA will apply where bull trout may be present or where bull trout critical habitat is designated. No tributaries to or outflows from LPO are included in the covered area other than the PO River. The following exclusions are in place to avoid blocking migration corridors that may affect small juvenile (0-5 years old) bull trout that out-migrate through downstream migration corridors.

The covered area does not include exclusion areas, which encompass the mouths, and 100-yards (300 feet) on either side of the mouths of the following streams or rivers where they meet LPO or the PO River at low pool:

- Granite Creek,
- Strong Creek,
- Johnson Creek,
- Priest River, and
- Trestle Creek.

Due to migration behavior and pathways largely being unknown for out-migrating bull trout, the following parts of LPO and the PO River below the OHWM (approximately 2,062.5 feet NGVD) have unique delta exclusions at their mouths that may be over 100 yards:

- Gold and North Gold Creeks have their own small delta (Figure 2).
- The Pack River has an exclusion for the Pack River Delta from Sunnyside East to Trestle Creek (Figure 3).
- Trestle Creek partially empties into the Pack River delta exclusion area (Figure 3).
- Priest River Delta from the unnamed intermittent stream to the west of the Anselmo Lane junction and U.S. Route 2 to approximately halfway across Township 56 North, Range 5W, section L5 (Figure 4).
- The Clark Fork River Delta east of the center line of section 19 in township 55 North, range 1 and extended south across the lake (i.e., extending the eastern border of the NE and SE quarters) (Figure 5).
- Johnson Creek as it empties into the Clark Fork River Delta exclusion area (Figure 5).
- Lightning Creek as it empties into the Clark Fork River Delta exclusion area (Figure 5).

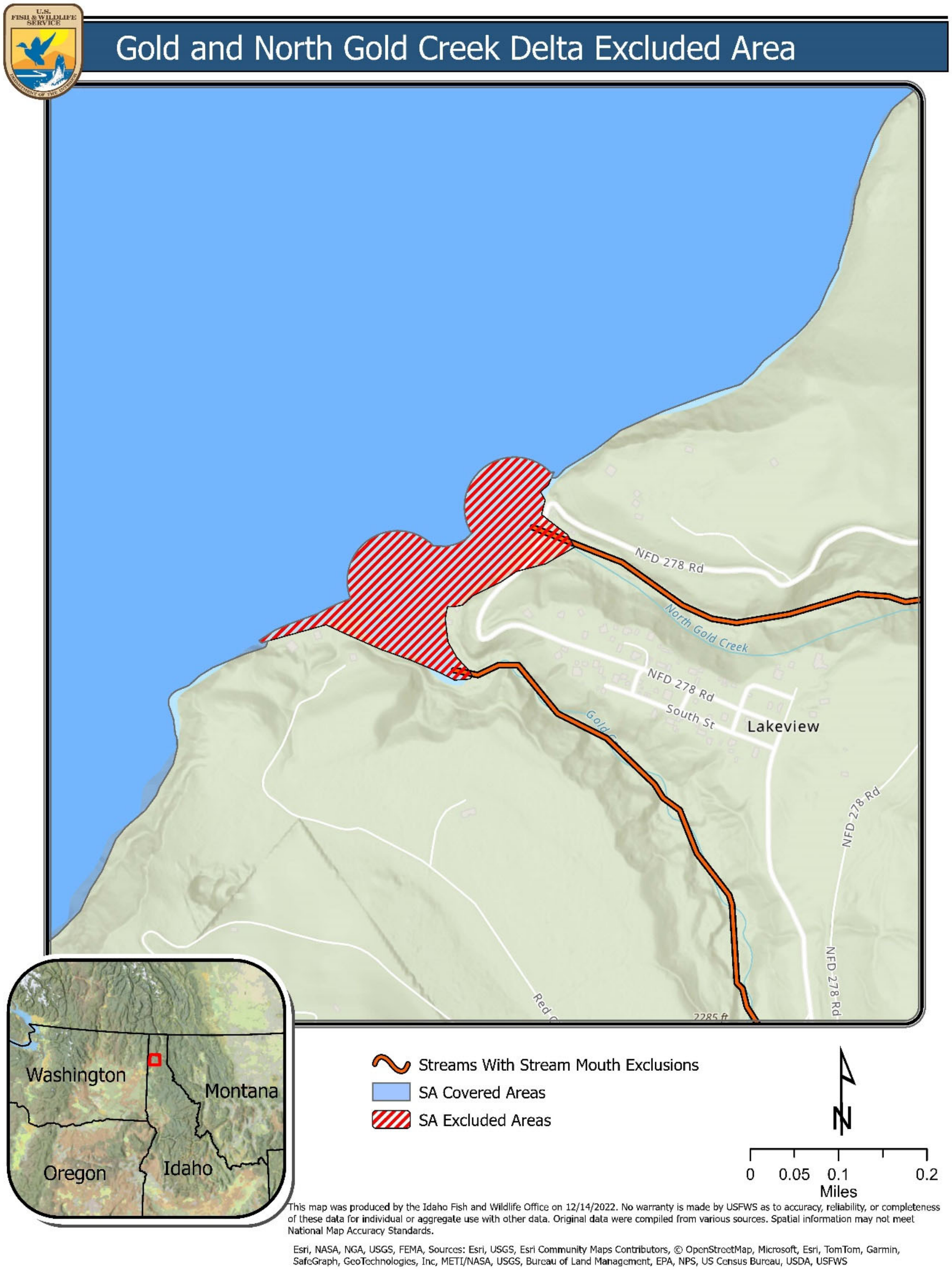

Figure 2: Gold and North Gold Creek excluded areas.

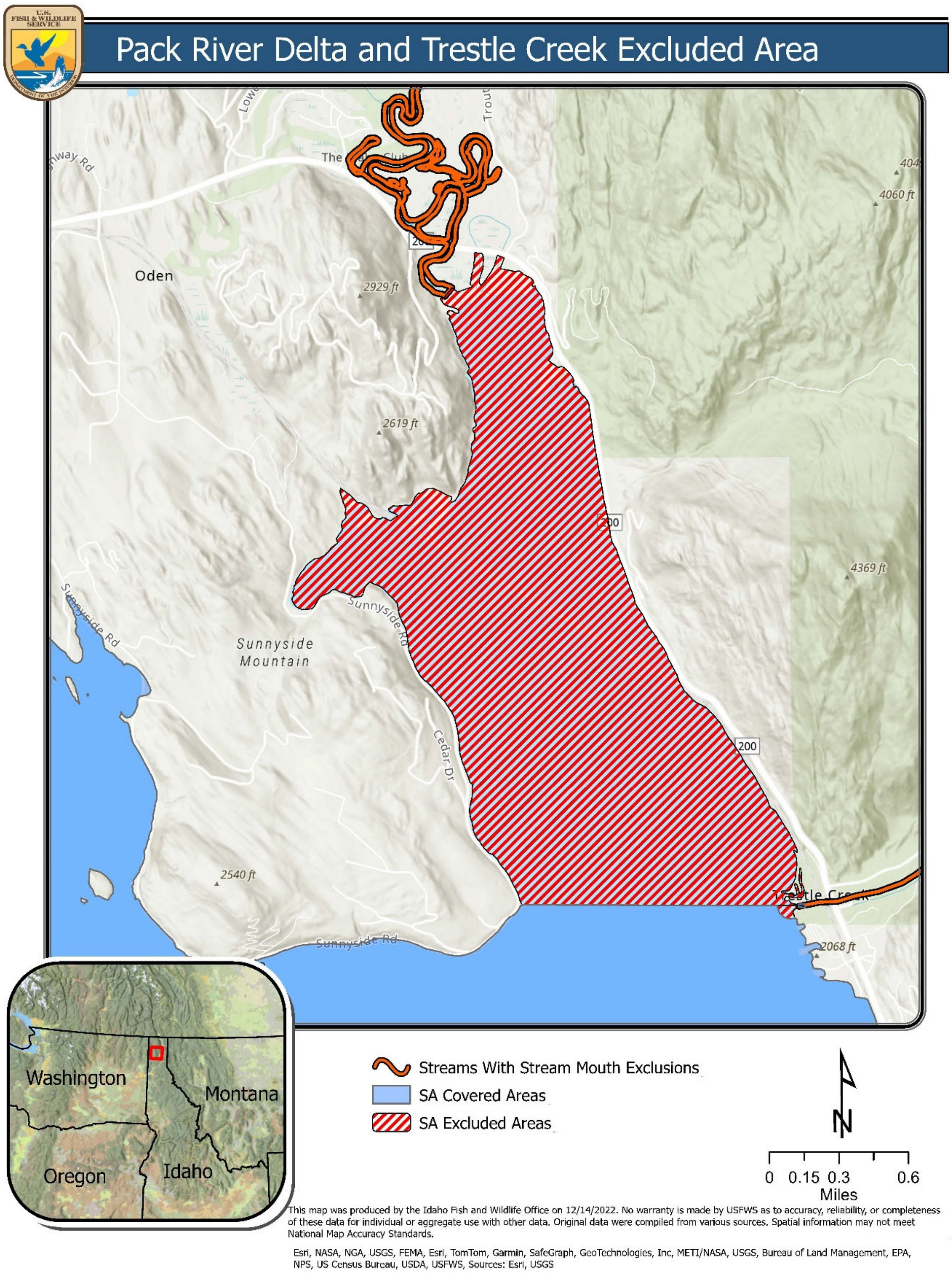

Figure 2: Pack River and Trestle Creek excluded area.

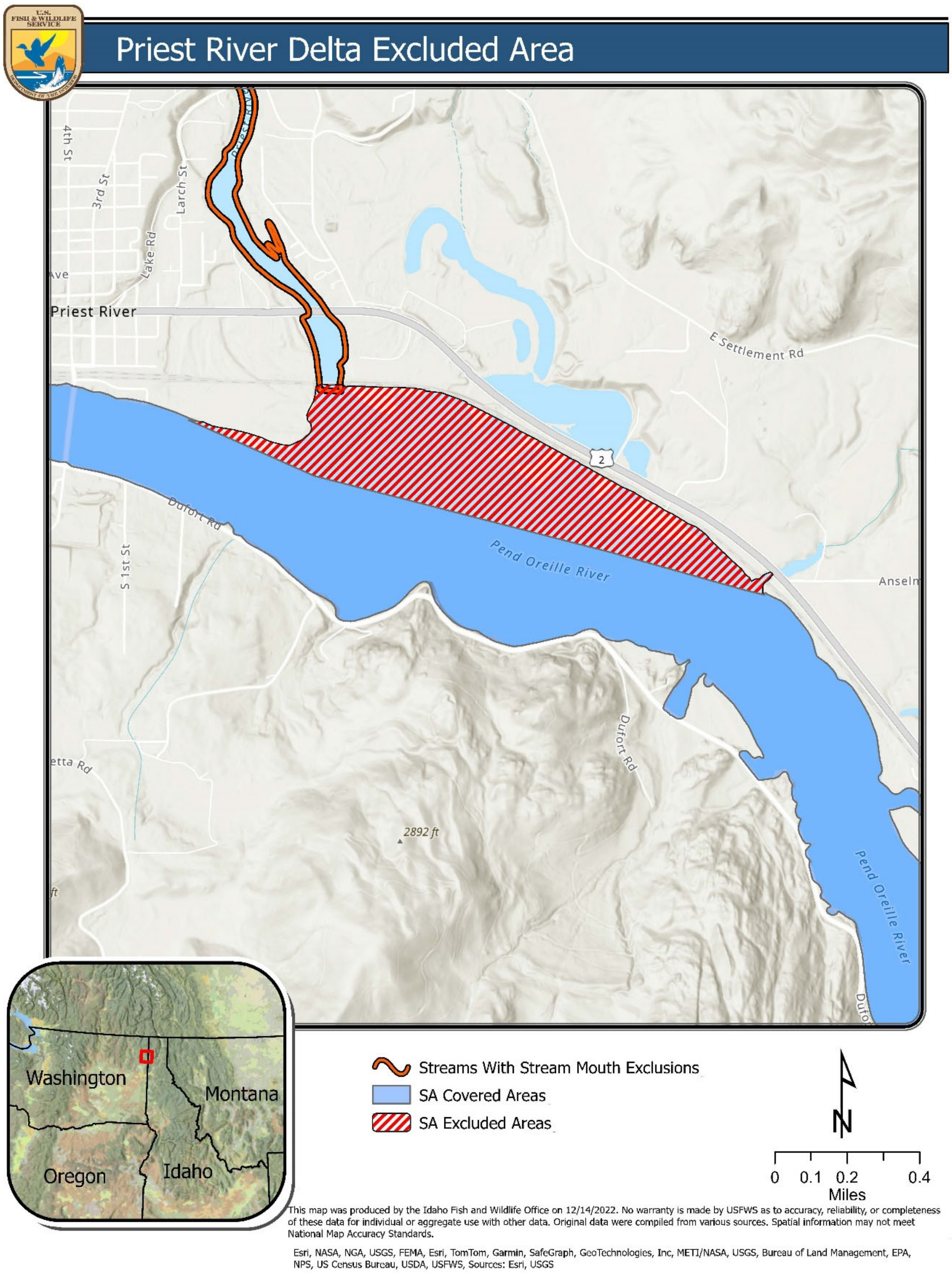

Figure 3: Priest River excluded area.

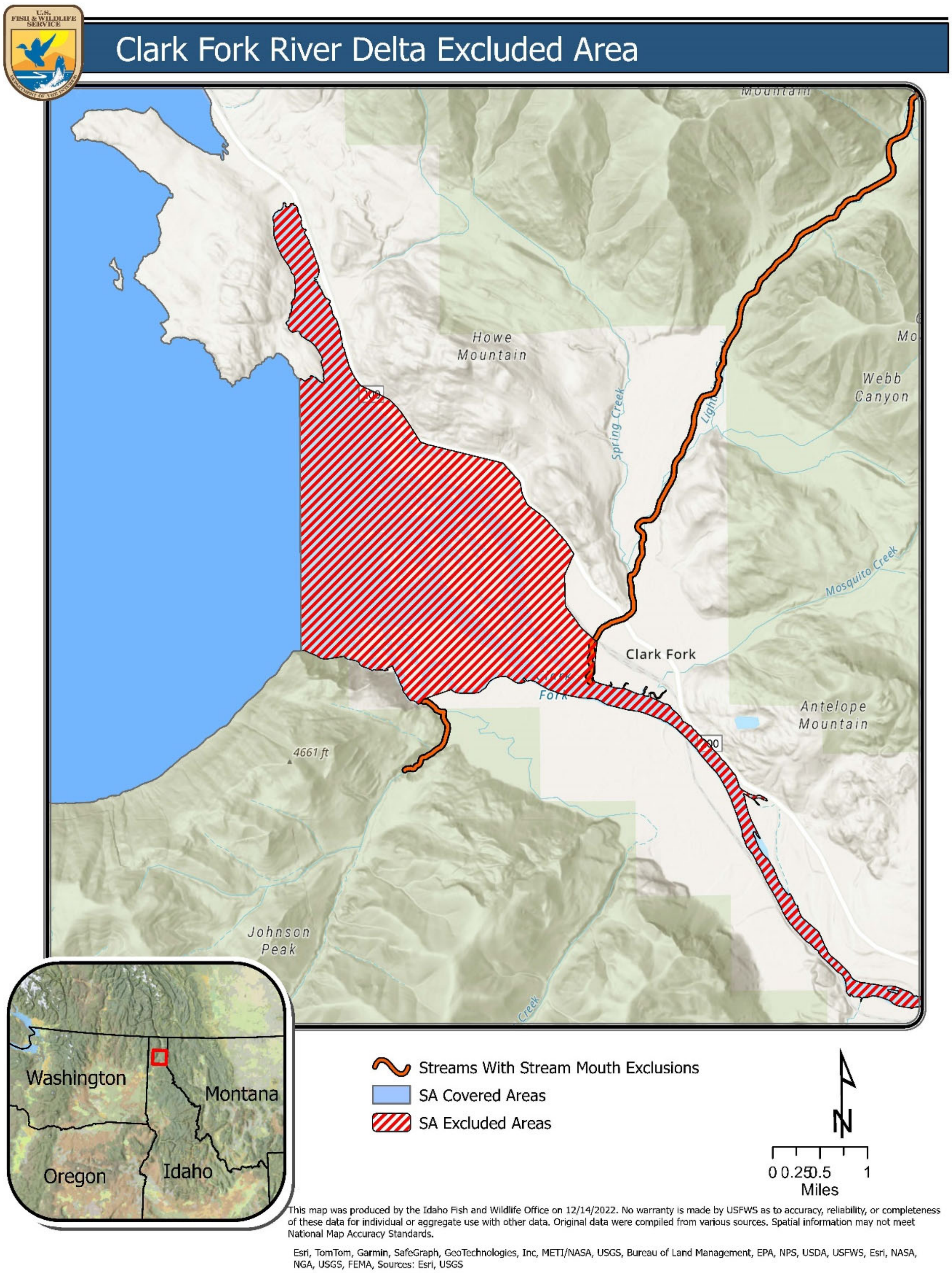

Figure 4: Clark Fork Delta excluded area.

5 Conservation Measures

This SA outlines conservation measures that avoid or minimize potential adverse effects on listed species or its designated critical habitat. Actions using this SA to support a USACE determination of "may affect, not likely to adversely affect" must implement all conservation measures required for each activity as defined in the DKey process. If any action does not adopt all the applicable conservation measures, it must be analyzed in a separate, stand-alone, or programmatic section 7 consultation.

To assist USACE in determining whether the proposed action meets the SA requirements (e.g., design requirements listed in section 3 and conservation measures listed in this section), the Service provides a DKey for use described in section 1.1. Any activities that may have more than an insignificant or discountable level of effects will not qualify under this SA and require separate individual section 7 consultation by the IFWO.

CM 1. Construction and in-water work will occur during the winter drawdown when LPO and the PO River are at low pool (approximately 2,051.5 feet NGVD). During low pool the exposed lake or riverbed is usually dry enough to allow work from mid-November to April 1st.

CM 2. Construction will take place during daylight hours to minimize noise and disturbance during times when bull trout are more active. No night construction is permitted.

CM 3. Pile driving will only occur using a vibratory pile driver in the dry. If the structure cannot be constructed completely in the dry, construction may occur in shallow nearshore waters using equipment mounted to a floating barge.

CM 4. In- and overwater structures such as piers, docks, and launches will not be lit at night except while actively launching and retrieving vessels. Red or green navigational lighting that is required by the USACE and Coast Guard are allowed under this SA.

CM 5. Installation of light penetrative decking (e.g., grating or clear translucent material) is required for docks constructed between 100 yards and ¼ mile on each side of the mouth of excluded streams (see Section 4.2). Light penetrative decking is also required for docks constructed near known Kokanee spawning areas to reduce potential impacts to Kokanee, a potential prey base for bull trout. Grating or clear translucent material is required to cover the entire surface area of the piers and ramps. Grating material must have at least 60% open area, and clear translucent material must have greater than 90% light transmittance (as rated by the manufacturer).

CM 6. Waterline intakes shall be appropriately screened using the National Marine Fisheries Service's "Fish Screening Criteria for Anadromous Salmonids" (NMFS 1997, entire).

For any technical questions regarding this criterion, applicants will contact the U.S. Fish and Wildlife Service's Idaho Fish and Wildlife Office Coeur d'Alene at (208) 918-2155 or their local Idaho Department of Fish and Game office.

CM 7. Water intakes used for irrigation operations will be applied at a rate and in a manner that allows for complete infiltration, and it will not result in runoff or stormwater discharge into the aquatic environment.

CM 8. Any imported material (e.g., ballast, armoring rock, and gravel) will be clean/washed and verified to be free of chemical contaminants, or invasive and nuisance plant and animal species prior to arrival at the work site.

CM 9. Upon completion of the covered activities, any destroyed terrestrial vegetation in upland areas will be replanted with native vegetation or vegetation like what existed in the area prior to work beginning to minimize soil erosion and stabilize areas disturbed during activities described in section 3.1. Invasive or nuisance species known by the state of Idaho may not be replanted even if they existed in the area prior to work beginning.

CM 10. Boundaries of clearing limits associated with site access and construction will be clearly marked to avoid or minimize disturbance of riparian vegetation, wetlands, and other sensitive sites. All construction impacts will be confined to the minimum area necessary to complete covered activities and ensure human safety.

CM 11. No new temporary or permanent roads or routes will be established to accomplish the site-specific actions, especially in the nearshore, riparian area, or below the OHWM. This measure should not be interpreted as prohibiting non-repetitive deliveries of equipment or supplies to work site.

CM 12. During all sediment-generating activities, site-appropriate sediment transport minimization measures such as sediment curtains, fiber wattles, hay bales, sediment fences, or mulch will be fully functional prior to commencing work and maintained during sediment-generating activities to minimize unintentional erosion/sediment introduction into aquatic resources. Non-biodegradable materials, such as chicken wire, hog fencing, or plastic netting will not be used for soil stabilization.

CM 13. Only sterile or certified "weed free" straw will be used for straw-based erosion control to prevent introduction of noxious weeds into the riparian or aquatic environment.

CM 14. Riparian disturbance will only occur on previously disturbed or altered shorelines (e.g., structure access will only be built over or on rock, dirt, or lawn). Avoiding removal of naturally occurring vegetation will ensure baseline riparian function is not degraded. Riparian function describes the littoral inputs and organisms of terrestrial origin.

CM 15. Heavy equipment (e.g., pile driving equipment, excavators, dump trucks or similar industrial equipment) will not enter the water or operate directly within waters. Equipment may work in the water as described in CM 3.

CM 16. Construction operations will cease under high flow conditions that may result in inundation of the site-specific action area (e.g., extreme weather events) except to preserve health and human safety or to conduct efforts to avoid or minimize injury to listed species or their habitat.

CM 17. All equipment used in areas that directly drain to aquatic resources will be cleaned of accumulated grease, oil, mud, invasive or nuisance aquatic or terrestrial species, etc. prior to initiating construction. Equipment will be inspected, and any leaks will be repaired prior to entrance within 150 feet of the site-specific action area.

CM 18. After arrival at the construction site, all equipment will be inspected daily for leaks, accumulations of grease, etc., and any identified contamination sources will be fixed before using the equipment for activities covered by the SA. If a leak is discovered while working, the equipment will be removed from the site for maintenance, may not return until the contamination source has been fixed/removed, and the equipment is cleaned.

CM 19. There will be no fueling, fuel storage, or maintenance of equipment within 150 feet of aquatic resources. Equipment used for work in a riparian corridor will be fueled and serviced in an established staging area. When not in use, equipment and vehicles will be stored in the staging area. Staging areas will be located a minimum of 150 feet from all aquatic resources (e.g., surface waters, wetlands, drainages).

CM 20. Concrete will be sufficiently cured prior to contact with water to prevent leaching. Uncured concrete will not contact aquatic resources. Wet concrete will be properly contained using plastic sheeting or a similar method until cured, with special care taken to contain bleed during the curing process. Concrete washout will not occur within 150 feet of the aquatic resources (e.g., lakes, rivers, streams, wetlands) or drain into surface waters, and it will be properly disposed of when dry.

CM 21. All man-made debris will be removed and disposed of at an appropriate upland disposal location adhering, to state and local laws. Unused or excess materials will be removed from below the OHWM and nearby riparian areas. Any floating debris generated during construction will be retrieved and disposed of at an appropriate facility.

CM 22. Any equipment operating over water is required to replace hydraulic fluid with vegetable or mineral oil, which is less toxic to fish and other aquatic organisms.

6 COVERED AREA SPECIES AND CRITICAL HABITAT

The following section includes a summary of relevant background information on the species and critical habitat(s) used to develop this SA (a complete description of the species can be found on ECOS at https://ecos.fws.gov/ecp/species/8212). This overview is included to inform the reader about the species prior to the analysis of the effects of the activities presented below.

6.1 STATUS OF BULL TROUT

This section presents information about the regulatory, biological, and ecological status of bull trout at a range wide scale that provides context for evaluating the significance of probable effects caused by the covered activities. This section provides information about the bull trout's life history, habitat preferences, geographic distribution, population trends, threats, and conservation needs. This includes a description of the effects of past human activities and natural events that have led to the current status of the bull trout. This information provides the background for analyses in later sections of this SA. The proposed and final listing rules contain a physical species description (63 FR 31647; 64 FR 58910). Additional information can be found at: https://ecos.fws.gov/ecp/species/8212.

The coterminous United States population of the bull trout was listed as threatened on November 1, 1999 (64 FR 58910). Bull trout occur in the Klamath River Basin of south-central Oregon; Jarbidge River in Nevada; Willamette River Basin in Oregon; Pacific Coast drainages of Washington, including Puget Sound; major rivers in Idaho, Oregon, Washington, and Montana, within the Columbia River Basin; and Saint Mary-Belly River east of the Continental Divide in northwestern Montana (64 FR 58910).

Bull trout are a fish species native to the Pacific Northwest, Alaska, and Canada. Bull trout spawn and rear in mountain streams that have clean, cold water and complex habitat. This species exhibits four different life history strategies that include: a resident form that does not migrate; and three migratory forms that consist of: fluvial bull trout that reside entirely in rivers, an adfluvial (or lacustrine) form that spawns in rivers and matures in lakes or reservoirs, and an uncommon amphidromous/anadromous form that migrates between the ocean and freshwater. Bull trout population structure depends on migratory behavior, which can be compromised by habitat alterations that impede or block movements between spawning areas and the areas used by adult fish.

Bull trout usually mature between four to seven years of age. An individual may spawn annually or every other year. Bull trout typically spawn between August and November but sometimes as late as December. During spawning, females deposit eggs in redds (egg nests) they create by digging into gravel with their tails. Females lay an average of 5,000 eggs that remain in the gravel for up to 210 days when bull trout fry emerge. Upon emergence, juvenile bull trout may rear one to four years in their natal (or birth) stream before migrating either to river, lake/river, or nearshore marine areas to mature. After emerging, bull trout feed primarily on aquatic and terrestrial insects. As bull trout grow, their diet expands to include fish. Bull trout are opportunistic feeders that continually adapt their diet to capitalize on types of prey that are frequently encountered or readily captured with minimal expenditure of energy.

Bull trout populations remain depressed across much of their range and there has been very little change in the general distribution of bull trout in the coterminous United States since their listing. The overall trend for the listed bull trout population as a whole is uncertain due to scarcity of data from many subpopulations (USFWS 2015c, p. 2). Out of six recovery units designated in the final Bull Trout Recovery Plan (USFWS 2015b, entire) only the Klamath River Unit appears to be significantly imperiled, by shrinking geographic extent and declining populations.

Threats to bull trout vary throughout its range, depending largely on the amount of human development and types of land uses in the locations where bull trout occur. Habitat alterations that reduce carrying capacity or fragment populations are two of the most widespread threats. Prominent causes of habitat degradation and fragmentation include the following: water withdrawals, passage barriers created by dams and road crossings, alteration of stream and floodplain characteristics by roads and other valley bottom developments, and effects of present and historical activities such as timber harvest, mining, and livestock grazing. In some areas, introduced nonnative species such as brook trout have displaced local populations of bull trout. The Final Recovery Plan (USFWS 2015b, p. iv) identified climate change as an additional threat to bull trout that has emerged since the listing. Bull trout are vulnerable to potential increases in water temperatures and changes in stream flow regimes that may occur from increased amounts of greenhouse gasses in the atmosphere.

The Lake Pend Oreille Core Area is the largest and most diverse complex core area in the Columbia Headwater Recovery Unit, covering 4.46 million acres, with 8,276 miles of mapped streams, 35 local populations and five major systemic barriers (USFWS 2015, p. D-31). Due to the complexity of the core area, it is described in three parts (LPO-A, -B, and -C) that are largely disconnected from each other by dams (USFWS 2015, p. D-2). LPO-B is the LPO basin proper and its tributaries, extending between Albeni Falls Dam on the PO River and Cabinet Gorge Dam on the Lower Clark Fork River.

Bull trout individuals within the covered area as described above occur fully within part B of the Lake Pend Oreille core area (LPO-B). Despite the competition with, and predation by, other piscivorous fish, an abundance of forage fish and active predator suppression efforts have created favorable conditions for bull trout in LPO-B where they can be found in the action area year-round. Bull trout likely use the action area while migrating to spawning habitat, and as foraging and overwintering habitat in LPO, the PO River, and the Lower Clark Fork River. Some bull trout are alternate year spawners and may reside in the foraging, migratory, and overwintering habitat for the entire year. Bull trout spawning and rearing areas (Gold Creek, North Gold Creek, Granite Creek, Trestle Creek, Lightning Creek, and Strong Creek) are excluded from the covered area for this SA (see Section 4). Additionally, parts of the covered area that are not SR habitat but are required for the migration of juvenile and sub-adult bull trout between SR habitat and LPO are migratory pathways and, therefore, may have juvenile or sub-adult bull trout in them at any time. These areas are excluded where there may be impacts greater than NLAA from activities covered under this SA.

6.2 STATUS OF BULL TROUT CRITICAL HABITAT

This section presents information about the regulatory, biological, and ecological status of bull trout critical habitat at a range-wide scale that provides context for evaluating the significance of probable effects caused by the covered activities. Critical habitat is defined as the specific geographic area(s) that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species, but that will be needed for its recovery.

The Service published a final critical habitat designation for the coterminous United States population of the bull trout on October 18, 2010 (75 FR 63898) which became effective on November 17, 2010. Bull trout critical habitat units (CHUs) were designated, and a justification document describes occupancy and the rationale why these habitat areas are essential for bull trout conservation. The document also describes why units were developed to support the CH designation (USFWS 2010, entire). The scope of the designation involved the species' coterminous range. Range-wide, the Service designated reservoirs/lakes and stream/shoreline miles as bull trout critical habitat. Designated bull trout critical habitat is of two primary use types: (1) spawning and rearing and (2) foraging, migration, and overwintering.

The bull trout critical habitat supports viable core area populations (75 FR 63898:63943). The core areas reflect the metapopulation structure of bull trout. They are the closest approximation of a biologically functioning unit for the purposes of recovery planning and risk analyses. Generally, CHUs encompass one or more core areas, and they may include areas that are important to the survival and recovery of bull trout. The primary function of the individual CHUs is to maintain and support core areas that: (1) contain bull trout populations with the demographic characteristics needed to ensure their persistence and contain the habitat needed to sustain those characteristics; (2) provide for persistence of strong local populations, in part, by providing habitat conditions that encourage movement of migratory fish; and (3) are large enough to incorporate genetic and phenotypic diversity, but small enough to ensure connectivity between populations that are distributed throughout the historical range of the species to preserve both genetic and phenotypic adaptations.

The condition of bull trout critical habitat varies across its range from poor to good. Although still relatively widely distributed across its historical range, the bull trout occurs in low numbers in many areas and populations are considered depressed or declining across much of its range (67 FR 71240, November 29, 2002). This population condition reflects the condition of bull trout critical habitat. The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices, impoundments, dams, water diversions, and introduction of nonnative species (63 FR 31647, June 10, 1998; 64 FR 17112, April 8, 1999).

7 EFFECTS OF ACTIVITIES INCLUDED IN THIS SA

This section analyzes the effects of the covered activities in this SA. For proposed site-specific actions relying on this SA, the effects of the action include all consequences to bull trout and its designated critical habitat that are caused by the proposed action, which includes the consequences of other activities and structures that are caused by the proposed action but that are not part of the proposed action. A consequence is caused by the proposed action if it will not occur but for the proposed action, and it is reasonably certain to occur. Effects of the action may occur later in time, and they may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). The area that encompasses all the above is considered the action area.

The site-specific action area must include all modifications to land, air, or water that are caused by the proposed action, including modifications caused by activities that themselves are caused by the proposed action, even if those other activities are not proposed by the Federal action agency and may be outside the authority or jurisdiction of that agency. If the activities satisfy the two-part test for causation, "but for" and "reasonably certain to occur", they should be considered as part of the action (50 CFR 402.02). To qualify for use of this SA, a site-specific action area must be wholly encompassed by the covered area for this SA as described above.

7.1 EFFECTS ON BULL TROUT

The construction and ongoing use of covered activities as described in section 3 may result in increased noise, increased turbidity, chemical contamination, increased predation of bull trout, and entrainment and impingement of individuals. In addition, creation of docks and piers may increase watercraft use of the site-specific action area, which may result in increased noise, turbidity, and potential chemical contamination.

7.1.1 Construction Noise

Vibratory pile installation and construction of structures (e.g., docks and piers, launching rails, piles, waterline intakes) have the potential to cause noise and vibrations that could result in bull trout displacement and behavioral changes. In-water noise thresholds for injury or death of fish are 206 decibels (dB) peak[1], 187 dB sound exposure limit (SEL)[2] for fish over two grams, and 183 dB SEL for fish under two grams (Interagency Fisheries Hydroacoustic Working Group 2008, entire). Behavioral effects may occur when in-water noise reaches or exceeds 150 dB root means squared (RMS) (National Marine Fisheries Service 2023, p. 5 to 7). These behavioral effects may represent an adverse effect to bull trout if they disrupt critical life stages (e.g., migration, spawning, or other uniquely sensitive times).

Pile Driving

Vibratory pile driving is not currently associated with injury or death to fish or other aquatic organisms. This may be attributable to slower pressure rise times (the time in milliseconds it

[1] All dB peak and dB RMS sound levels in this document use a reference pressure of 1 μPa.
[2] All dB SEL in this document use a reference pressure of 1 μPa^2 s.

takes the wave form to rise from 10 percent to 90 percent of its highest peak) associated with vibratory pile driving, and the fact that the energy produced is distributed over the duration of pile installation (Washington State Department of Transportation 2023, p. 7.38). The Service anticipates that vibratory pile driving may cause only minor behavioral effects to bull trout, and these behavioral effects are unlikely to result in measurable effects or a significant impairment of their normal behaviors. Pile driving will only occur during daylight hours, avoiding peak bull trout movements from dusk until dawn, making it less likely that bull trout will be migrating through the area (Downs et al. 2006, p. 195). There are no known uniquely important forage areas for bull trout in LPO. The Service anticipates that bull trout will respond to noise levels by temporarily moving into forage areas of similar quality nearby. Based on the use of a vibratory hammer (CM 3), exclusion of buffered areas around spawning and rearing areas and their migration pathways, limiting work to daylight hours (CM 2), limiting most of the work to construction in the dry (CM 1), and the low levels of noise generated from the covered activities, the potential impacts from noise and disturbance from pile driving are expected to result in insignificant effects to bull trout.

Construction Activities Near Water

Noise and disturbance from digging, filling, use of power and hand tools, and construction with heavy equipment (e.g., excavators, dump trucks or similar industrial equipment) from barge or land adjacent to water may disturb bull trout in the action area. However, because only a small amount of sound energy will be transmitted from air to water, airborne sound levels from heavy equipment and tools are not expected result in measurable impacts to bull trout. The Service anticipates the primary response of bull trout to noise and disturbance would be to temporarily relocate to nearby suitable habitat; therefore, effects are expected to be insignificant.

7.1.2 Watercraft Noise

The operation of watercraft generates noise, which can cause stress and change bull trout behavior resulting in the disruption of normal feeding or migration of the species. The covered activities are expected to increase the total number and use of watercraft in the covered area and increase the associated human noise from watercraft operation. Increased background noise has been shown to increase stress in fish (Mueller 1980, pp. 249–250; Scholik and Yan 2002a, pp. 207–208). Studies documenting fish responses to increased boating range from no response to increased cardiac output (Graham and Cooke 2008, pp. 1319–1321) to avoidance of the area (De Robertis and Handegard 2013, p. 34).

Per regulation, LPO and the PO River has no wake zones within 200 feet of the shoreline and near docks and piers, which limits speed and watercraft noise (Bonner County Ordinance 2023, sect. 3-105). Typical noise from powerboat engines operating between 2500 and 6000 RPMs (rotations per minute) is approximately 125-165 dB, with the noise levels increasing as engine RMPs increase (Barlett and Wilson 2002, pp. 5, 7–8). Noise from watercraft moving slow enough to avoid generating a wake near a dock or pier is expected to be substantially lower since the engine RPMs will be substantially lower. Noise from a watercraft operating outside of the no wake zone is likely to blend into the existing soundscape of the waterways in the covered area that already includes a multitude of watercraft operating on any given day. Further, most recreational watercraft use occurs during daylight hours due to higher temperatures, and the limited ability to identify in-water hazards after sunset. Bull trout are most active from dusk until dawn, separating them from most of the effects of daytime watercraft operation.

While the increased noise may cause increased stress, increased startle response, increased cardiac output, and area avoidance, the overall predicted noise levels are not expected to result in measurable adverse changes to fish growth, survival, or behavior. Based on no wake zone enforcement by the State of Idaho, the existing use of the covered area for recreation, and the existing levels of noise generated from watercraft use, the potential impacts to bull trout that may occur from watercraft noise are expected to be insignificant.

7.1.3 Construction Turbidity

The covered activities include construction of structures (e.g., docks and piers, launching rails, piles, waterline intakes) that occur in or near the water. Elevated turbidity may cause gill trauma, decreased growth and survival, and/or the displacement of bull trout (Muck 2010, entire).

Implementation of construction activities in the dry (i.e., disturbance in places with no water) is not likely to cause turbidity (i.e., soils suspended in water). However, soil disturbing activities near water may loosen soils which may then be transported into receiving waters by precipitation, wind, wave action, or be remobilized when water levels rise and inundate the site-specific action area in the spring. Multiple conservation measures requiring the use of silt fences or similar measures (CM 12) will greatly limit the amount of sediment that may reach aquatic resources.

Installing water intakes with submersible pumps is likely to generate turbidity when placing the intake lines and pumps on or in the lake or riverbed. This turbidity is expected to be extremely small and to settle back out relatively quickly. If bull trout are in the area, they would be expected to be able avoid the increased turbidity until the effects dissipate. Water used for irrigation from these intakes will not transport turbidity back into aquatic environments due to (CM 7).

The construction of activities described in section 3 will have most, if not the entire structure built in the dry. Vibratory pile driving in water is expected to mobilize lake or riverbed sediments. However, pile driving in water is expected to only be needed for very few piles and is expected to occur for a maximum of 90 seconds per pile, limiting the potential duration and volume of turbidity plumes from this activity.

All the above activities can mobilize sediments and temporarily increase local turbidity levels in the immediate vicinity (i.e., several feet) of construction activities. The turbidity will likely exceed natural background levels found in the lake or river for a very limited amount of time, and likely will not generate plumes with enough turbidity to cause adverse effects to bull trout. Further, it is unlikely that bull trout would be occupying extremely shallow nearshore waters during the day at an active construction site. However, if bull trout are the area, they would be expected to be able to avoid the increased turbidity until the effects dissipate.

Based on minimizing in-water work, the small amount of sediment expected to be generated from the covered activities, implementation of conservation measures (CMs 7-12, 15, 16) that decrease the magnitude and extent of turbidity generated from construction activities, the low likelihood of exposure, and the ability of bull trout to leave the site-specific action area if disturbed, the potential impacts to bull trout that may occur from increased turbidity are expected to be insignificant.

7.1.4 Watercraft Turbidity

Turbidity from watercraft operation may have the same effects to bull trout as those listed in Section 7.1.3 above. Increased watercraft use may increase propeller wash and watercraft wakes in the site-specific action area thereby increasing erosion and generating temporary turbidity. LPO and the PO River have no wake zones within 200 feet of the shoreline and near docks and piers, which limit propeller wash and should stop substantial wakes from being generated as watercraft use the nearshore (Bonner County Ordinance 2023, sec. 3-105).

Further, watercraft use mainly occurs during daylight hours. Bull trout are not known to frequently occupy the shallow nearshore waters of LPO during the day. Bull trout spend most of their time in deeper cooler waters of the lake and are most likely to forage in shallower waters from dusk to dawn, avoiding most watercraft activity.

Based on no wake zone enforcement by the State of Idaho, the physical proximity of structures to the shore, and the temporal separation between most watercraft activity and potential bull trout use of near-shore habitat, the potential impacts to bull trout that may occur from watercraft increasing turbidity are expected to be insignificant.

7.1.5 Construction Chemical Contamination

The introduction of chemicals into the aquatic environment may degrade water quality, causing harm to bull trout through physical contact, ingestion, absorption, or chemical reactions. Sources of chemical contamination identified in this SA are uncured concrete, treated wood, and leaks and spills from construction machinery.

Curing concrete can change the pH of water, which can cause a chemical reaction harmful to fish if exposed (D. McLeay & Associates LTD 1983, p. ii). To avoid injuring or killing bull trout, uncured concrete, wet concrete, concrete bleed (excess water being forced out of curing concrete), and washout will not contact aquatic resources due to (CM 20). Therefore, effects from concrete to bull trout are expected to be discountable.

Machinery used for construction in the covered area may introduce contaminants into waterways through leaks and spills of fluids such as fuel, hydraulic fluid, or coolant that may contain polycyclic aromatic hydrocarbons or ethylene glycol, all of which may have lethal or sublethal impacts to salmonids (Neff 1985, pp. 432–433, 437–449; Verep and Balta 2019, p. 41). Conservation measures will be in place to reduce the likelihood of a spill or leak from occurring such as: (1) cleaning equipment prior to arriving at the work site (CM 17), (2) daily equipment inspection and cleaning (CM 18), (3) fueling and maintaining of equipment away from water

(CM 19), (4) operating equipment in the dry (CM 15), and any equipment operating over water will be required to replace hydraulic fluid with vegetable or mineral oil, which is far less toxic to fish and other aquatic organisms (CM 22). The above vastly reduce the chances that a leak or spill will occur and enter aquatic resources at levels that could affect bull trout; therefore, effects to bull trout are expected to be *discountable.*

Watercrafts may discharge contaminants such as fuel, coolant, or lubricants into the waterway from leaks and spills that have the same effects to bull trout as those listed in construction machinery above. Unlike machinery used only during construction, watercrafts may release chemical contaminants into aquatic resources multiple times over the life of the structures. Increased boating activity is likely to increase chemical contamination caused by watercrafts. Due to the size of the action area, the Service anticipates minor leaks from watercrafts would diffuse into surrounding waters to concentrations that are unlikely to adversely affect bull trout; therefore, effects would likely be *insignificant.*

Similarly, hydraulic boat lifts are semi-permanent structures that can leak pollutants. The Corps states that, "any hydraulic boat or waterski lifts are required to replace hydraulic fluid with Environmentally Acceptable Lubricants, or to comply with any State water quality standards relative to hydraulic oil, whichever is more stringent" (USACE 2025, entire). There are no regulatory standards for Environmentally Acceptable Lubricants (EALs); however, these products are designed to be biodegradable, exhibit low toxicity to aquatic organisms, and have a low potential for bioaccumulation (Environmental Protection Agency 2011, p. 3). The Service expects leaks from boat and ski lifts to remain small in volume as the function of the equipment would be diminished and boat owners would need to repair any leaks in the hydraulic system of the lift to continue using it. This leaked hydraulic fluid would likely dissipate relatively quickly into the water column, and since it would be biodegradable and have low toxicity to aquatic life, the Service expects effects to bull trout would likely be insignificant.

The installation of structures may involve the use of treated wood, which could leach chemical preservatives into the surrounding waters. To minimize the risk of chemical contamination, creosote, pentachlorophenol, chromated copper arsenate, and comparably toxic compounds not approved for freshwater use cannot be used for any portion of the activities covered by the SA. All pressure-treated wood must be treated in a manner consistent with the pesticide's EPA-approved labeling and in accordance with standards established by the American Wood Protection Association (see *A Specification and Environmental Guide to Selecting, Installing and Managing Wood Preservation Systems in Aquatic and Wetland Environments ("Specification Guide") (Western Wood Preservers Institute, 2002). This document can be downloaded from the following URL: http://www.wwpinstitute.org/. More detailed information can be found in the American Wood Protection Association (AWPA) Book of Standards (www.awpa.com)*). According to IDEQ's Guidance for the Use of Wood Preservatives and Preserved Wood Products In or Around Aquatic Environments (Idaho Department of Water Quality 2008, entire), the following preservative chemicals are registered by the U.S. Environmental Protection Agency (EPA) and may be used to pressure-treat wood products that will be used in or around waters of the state: alkaline copper quaternary (ACQ), ammoniacal copper zinc arsenate (ACZA), copper azole (CA-B), chromated copper arsenate (CCA), creosote, copper naphthenate, and pentachlorophenol (Penta). However, as some of these are excluded, the remaining chemicals allowed for use under the SA include ACQ, ACZA, CA-B, and copper naphthenate, which all have the potential to leach chemicals, including arsenic, zinc, and copper into the water column either through direct contact with water or from precipitation events.

Of these chemicals, dissolved copper is of most concern to fish because it leaches from treated wood products at rates that can affect aquatic resources (National Oceanic and Atmospheric Administration 2009, p. 7). The quantity of dissolved copper released into the environment depends on the type of chemical used, the amount of chemical used to treat the wood, the quantity of treated wood installed, the amount of wood below and above the water, leaching rates, which BMPs are applied, and water chemistry. Leaching from treated wood is highest during the first few weeks after installation and then sharply decreases to low concentrations (National Oceanic and Atmospheric Administration 2009, p. 14; Western Wood Preservers Institute et al. 2006, p. 13). In addition to copper released from leaching, concentrations of dissolved copper adjacent to the proposed structures depend on flow/mixing conditions and water quality parameters, including temperature pH, and other variables (National Oceanic and Atmospheric Administration 2009, p. 14). The Service expects higher concentrations of dissolved copper in parts of the action area with lower flow rates, resulting in localized areas with elevated dissolved copper levels. The elevated concentration of copper would be limited in space, time, and duration because affected areas will be isolated to within the immediate vicinity of the treated wood, and the duration of impacts to water quality would primarily be limited to a few weeks post-installation of any treated wood.

Sub-lethal concentrations of dissolved copper have been shown to impair olfactory function in salmonids in freshwater (Tierney et al. 2010, p. 11), which may lead to a reduction in predator avoidance (McIntyre et al. 2012, p. 1468). However, research suggests that salmonids will actively avoid dissolved copper at levels at relatively low levels (under 10 µg/L) above background if their olfactory abilities are not yet impaired, with sensitivity in rainbow trout suggesting a threshold of avoidance as low as 1.2 µg/L (Hansen et al. 1999, pp. 315–317). Within most of the action area, the Service expects that bull trout would be able to detect sub-lethal concentrations of dissolved copper and avoid higher concentrations that could be harmful. However, between the Cabinet Gorge dam and the delta with LPO, IDEQ found the Lower Clark Fork River “not supporting” cold water aquatic life and salmonid spawning due to copper levels (Idaho Department of Environmental Quality 2022, accessed October 2, 2024). Due to elevated baseline copper levels, the avoidance response of bull trout to dissolved copper may not be elicited in the Lower Clark Fork River. However, mean monthly discharge rates for the Lower Clark Fork River on average ranged from 8,370 cubic feet per second (cfs) to 45,800 cfs between 2020 and 2023 (USGS 2024, accessed April 18, 2025). Given the higher flow rate in this area, the Service expects that the elevated copper leaching in the first few weeks of installation of treated wood would more rapidly be carried away from the immediate vicinity of the structure, reducing copper levels to sub-lethal concentrations.

The Service expects the effects to bull trout to be restricted to behavioral responses, mainly the avoidance of waters around structures made with treated wood in which elevated, sub-lethal levels of dissolved copper may be present. Bull trout exposure to elevated dissolved copper concentration is anticipated to be short-term due to avoidance behaviors and focused in the areas immediately adjacent to structures built with treated wood. Since the Service does not expect these exposures to measurably disrupt their normal behaviors, effects associated with minor impacts to water quality with the use of treated wood are considered *insignificant*.

Due to the frequency of monitoring, any spills that occur are expected to be small in volume, contained on land, barge, or in the immediate nearshore, and quickly responded to before they can impact the water bull trout are expected to inhabit. If high water conditions happen, construction will cease (CM 16), and all manmade debris will be removed from below the OHWM and riparian areas, eliminating the possibility of leaching metals or chemicals from water in these areas (CM 21). Based on conservation measures and the location in which spills may occur, the potential impacts to bull trout from chemical contamination associated with construction are expected to be discountable.

7.1.6 Watercraft Chemical Contamination

Watercraft may potentially discharge contaminants such as fuel, coolant, or lubricants into the waterway from leaks and spills that have the same effects to bull trout as those listed in section 7.1.5 above. Unlike the section above, watercraft can release chemical contaminants into aquatic resources multiple times over the life of the structures. Due to lake level controls and the shallow depth of water in the nearshore throughout the winter months, watercraft will only utilize the moorage structures from June through October, limiting the time in which leaks or spills can occur. Further, the annual lake drawdown will require watercraft to be removed from the docks and piers and stored during the off season, making it likely that leaks will be discovered before they become large.

The potential impacts to bull trout that may occur from watercraft chemical contamination are expected to be insignificant based on the expected small size and low potential for watercraft leaks, lake level controls, and seasonal moorage in nearshore areas.

7.1.7 Increased Predation

The covered area has a diverse array of fish species that have complex interactions with each other in terms of predator-prey dynamics. Within the action area, piscivorous fish species such as northern pikeminnow (*Ptychocheilus oregonensis*), brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), walleye (*Sander vitreus*), northern pike (*Esox lucius*), cutthroat trout (*Oncorhynchus clarkii lewisi*), lake trout (*Salvelinus namaycush*), brook trout (*Salvelinus fontinalis*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), and bull trout may prey on other bull trout. Due to their smaller size, juvenile and subadult bull trout are more susceptible to predation than adult bull trout. The installation of in- and overwater structures may change habitat in the nearshore area, which could impact fish assemblages and fish interactions, such as predator-prey dynamics.

Predatory-prey dynamics are multifactorial and to determine predation rates on bull trout, factors such as predator-prey aggregations, predator-prey interactions, predator efficiency, and prey vulnerability all play a significant role. In a literature review on anthropogenic contact points between fish, there was conflicting evidence on how docks and piers influence predator and prey aggregations, and no studies reviewed specifically addressed predator-prey interactions, predator efficiency, or prey vulnerability (Lehman et al. 2019, p. 9). Within the covered area, data on fish assemblages and piscivore diets provides information on predator and prey aggregations and some predator-prey dynamics, though the Service is unaware of any research regarding predator efficiency or prey vulnerability as they relate to the in- and overwater structures covered by this SA. In addition, while various studies have shown bull trout will use nearshore habitats within the action area, there are limited data regarding their interactions with installed structures such as docks and piers.

A study that investigated how developed sites (near overwater structures) and paired undeveloped littoral areas influenced fish assemblages and piscivore diet in LPO found that species diversity, evenness, and dominance did not statistically differ between developed and undeveloped sites in any season (spring, summer, fall) during either the day or night (Bellgraph et al. 2012, p.4.7-4.8). The most observed species during snorkel surveys were unidentified non-salmonids (~1532), unidentified centrarchids (~1251), and smallmouth bass (~800). Only 18 individuals, or 0.4 percent of fish, were positively identified as native species, being largescale sucker (*Catostomus macrocheilus*), longnose sucker (*C. catostomus*), and northern pikeminnow (*Ptychocheilus oregonensis*) (Bellgraph et al. 2012, p. 4.1). Gut analysis of piscivorous fish captured during electrofishing indicated that there was no statistical difference in predatory fish diets between developed and undeveloped sites, or between seasons, though significant differences were found amongst geographic sites (Bellgraph et al. 2012, p. 4.24).

Species richness was statistically greater at developed sites during the daylight in summer, though it did not differ between developed and undeveloped sites in any other season during the day or night (Bellgraph et al. 2012, p. 4.7). During summer daylight, snorkeling surveys found high relative abundances of smallmouth bass and unidentified centrarchids (most unidentified fish were young of year that could not be identified to species level; Bellgraph et al. 2012, p. 4.3). Altered hydrological regimes may contribute to the notable differences during the summer, as habitat alterations caused by structures, namely shading from overwater structures, would have the greatest effect at this time of year when water is highest. As water levels drop and the gap between docks and the water increases, more light will be able to penetrate the waters below the structures. This change will reduce the difference between those habitats and surrounding habitats, though pilings and anchors would still provide some level of added habitat complexity. Many of the structures covered by the SA would be unlikely to influence fish assemblages during the winter, as water withdrawals leave them in the dry.

Overall, the relative abundance of predatory fish (>100mm in length) was only greater at developed sites compared to undeveloped sites during the day in summer, primarily due to high numbers of smallmouth bass. There were no significant differences observed during any other diel period in any other season (Bellgraph et al. 2012, p. 4.5). It is unclear if this relative abundance indicates a diel behavioral site-preference or an actual increase in the number of predatory smallmouth bass within the action area. Given that unidentifiable, typically young-of-year, non-salmonids and centrarchids were the most frequently observed fishes, it's possible that smallmouth bass predatory aggregations under docks are attributable to an abundance of non-salmonid prey species aggregated there.

The aggregation of predatory fish near developed sites and overwater structures does not necessarily imply that there would be an increase in predation on bull trout specifically. A study on the impacts of ferry terminals on juvenile salmonids in Puget Sound found that potential salmon predators were more abundant at ferry terminals than along shorelines without overwater structures; however, there was no evidence that predators consumed more juvenile salmon near ferry terminals than at paired natural reference sites (Williams et al. 2003, pp. 19–24). The ecosystem interactions of fish, particularly in a large and diverse system like LPO, is complex, Habitat variables such as water temperature and substrate likely factor into fish species' habitat preferences. Additionally, factors like shading, water depth, and the presence of other fish species can contribute to increased competition or predation risk.

Many predatory fish species can target bull trout, especially smaller juveniles and subadults. However, the increased predation linked to habitat changes created by the structures covered by the SA is primarily due to the presence of smallmouth bass. These fish are more abundant in developed sites during the day in summer compared to undeveloped sites. However, aggregations of a single species do not necessarily result in the increased predation of another species within a complex food web, so predator-prey dynamics between smallmouth bass and bull trout should also be considered when assessing whether there would be an increase in predation compared to baseline conditions.

Smallmouth bass have been shown to prey on juvenile salmonids and are capable of consuming salmonids up to 56.6 percent of their size, though consumed salmonids typically averaged 25 percent of smallmouth bass length (Fritts and Pearsons 2006, entire). While there is the potential for a smallmouth bass to opportunistically forage on a juvenile bull trout that may pass under an overwater structure, it is unclear if this would constitute an increase in bull trout predation relative to the baseline predation rates or if this predation would be solely due to a predatory advantage gained due to shading from the dock. No bull trout were identified during snorkel surveys at either developed or undeveloped sites, though two were captured during nearshore electrofishing at an undeveloped site, with total lengths of 295 mm and 318 mm, both of which would be likely be too large to be preyed on by smallmouth bass which range from 212 to 415 mm (Bellgraph et al. 2012, p. 4.19; Paluch 2023, entire). Given the diverse array of predatory fish species within the action area, overall predation rates on juvenile and subadult bull trout are already significant and the mean apparent survival rate for juvenile and subadult bull trout within LPO is estimated at 0.18 and 0.59 respectively (Mucciarone et al. 2022, pp. 18–19). In addition, a study in Trestle Creek indicated that successful bull trout emigrants ranged from ages-1 to 5, with no age-0 fish returning, presumably because of the low survival rates observed in LPO (Downs et al. 2006, pp. 195–198).

There is limited information on how juvenile bull trout use the LPO basin, though studies have typically shown bull trout fry emigrate from SR streams in spring and fall (Downs et al. 2006, p. 198; Bouwens and Jakubowski 2017, pp. 30–32). Field and laboratory studies have shown juvenile bull trout are often associated with benthic habitats, often concealing themselves under large substrate during the day, and primarily emerging during the night, though they are still frequently found resting near or on top of the substrate (Thurow 1997, p. 4; Thurow et al. 2020, pp. 7–9). In this case, aggregations of smallmouth bass during the day would be less likely to result in juvenile bull trout predation due to the differences in temporal behavioral patterns, with smallmouth bass posing the greatest predation threat during the day while juvenile bull trout more likely to conceal themselves during that time.

If juvenile or subadult bull trout were found to aggregate under docks, there could be a greater chance of predation by smallmouth bass due to higher concentrations of both species within a smaller area. Within the action area, the Service anticipates that juvenile and subadult bull trout are likely to have the highest concentrations near the mouths of spawning and rearing streams. The narrow width of streams would create a bottleneck effect for migrating bull trout compared to the open expanse of water in LPO. Structures around these narrower migratory corridors may increase the relative abundance of bull trout in these areas, which may increase the potential risk of predation. However, conservation measures outlined in the proposed action limit the potential impacts that authorized structures could have in this area. There is a 100-yard radius buffer around the excluded streams where structures would not be covered by the SA (Section 4.2). Additionally, there is a further quarter-mile radius buffer that mandates the use of light-penetrative decking which would reduce shading from overwater structures and the subsequent effects (CM 5). While shading may not directly impact bull trout during migration, as they generally migrate during the night, these buffers may reduce the potential for some predatory fish, such as smallmouth bass, to aggregate within the localized areas where the highest concentrations of juvenile bull trout are most likely to be found.

Beyond the mouths of SR streams, there is limited evidence that associates juvenile and subadult bull trout with overwater structures in LPO, despite evidence of bull trout presence in shallower littoral areas. Bellgraph et al. (2012, p. 5.1) did not identify any bull trout in the stomach contents of smallmouth bass or other predators at either developed sites, though there were unidentifiable salmonids found in gut contents. A study by Vidergar (2000, p. 52) on predatory fish diets in LPO captured 337 smallmouth bass and did not identify any bull trout or unidentified salmonids within the stomach contents, and found smallmouth bass primarily consumed redside shiners, unidentifiable non-salmonids, larval fish, and pikeminnow. Within that study, kamloops, lake trout, and northern pikeminnow were found to prey on bull trout, though kokanee were the preferred prey species for pelagic predatory fish in LPO (Vidergar 2000, pp. 44–53). While smallmouth bass have the potential to prey on smaller bull trout, data specific to the LPO basin suggest bull trout are not a preferred or frequent prey species for smallmouth bass and, therefore, aggregations of smallmouth bass under docks are unlikely to increase predation on bull trout populations.

The risk of increased predation on bull trout due to the installation of in- and overwater structures is heavily influenced by the fish assemblages and subsequent predatory-prey interactions that constitute the baseline environmental conditions. These assemblages may change over time, but the Service does not anticipate significant changes to occur during the one-year period before the SA is reviewed, as state management actions, such as kokanee stocking and predator suppression programs are expected to continue during that period. Current data indicate that the primary risk for increased predation of bull trout would stem from statistically significant aggregations of smallmouth bass present at developed sites during the daylight in summer. However, studies examining gut contents have not revealed bull trout in the stomachs of smallmouth bass within LPO, suggesting that bull trout are not a common or frequent prey resource for smallmouth bass in this ecosystem. In addition, juvenile bull trout most susceptible to predation by smallmouth bass exhibit different temporal behavioral patterns, reducing potential points of contact between the two species. Given the weak predator-prey relationship between smallmouth bass and bull trout, it is unlikely that the aggregation of smallmouth bass under docks and piers would result in a localized increased rate of predation on bull trout relative to undeveloped sites. Furthermore, the total surface area likely to be shaded by in- and overwater structures covered by the SA is anticipated to be very small compared to the total surface area of the covered area. Therefore, changes to habitat are expected to be so minimal that they are unlikely to impact overall fish assemblages within the action area, and subsequently will have an insignificant effect on the rate of predation of bull trout.

7.1.8 Entrainment

The installation and use of small diameter (i.e., 2-inches or less) water lines and associated pumps are analyzed in this SA. These small waterlines may entrain bull trout by unintentionally siphoning them through water pipes. The use of NMFS fish screen criteria with openings currently set at 3/32nd of an inch (CM 6) will keep bull trout of all ages from being entrained into the pipes. Based on the use of fish screens, the chance of bull trout being entrained by water intakes is discountable.

7.1.9 Impingement

The installation and use of small diameter (i.e., 2-inches or less) water lines and associated pumps are covered under this SA. These small waterlines may impinge bull trout by creating velocities on fish screens that are greater than the fish can escape, holding them in place. Impingement can injure a fish, and prolonged contact with a screen surface or bar rack can result in mortality (NMFS 2022, p. 30). Adult bull trout and sub-adult bull trout are not likely susceptible to impingement onto the screens of 2-inch water intakes due to their body size and burst swimming ability. However, juvenile bull trout are much more susceptible to impingement due to their smaller body size.

The NMFS screening criteria (CM 6) will protect fingerling salmonids greater than 2.36-inches (60 mm), which is approximately 25% larger than an age-0 bull trout and roughly half the size of an age-1 bull trout. Age-1 and older bull trout are likely to exhibit a greater swimming capacity than smaller salmonid fingerlings, therefore the NMFS screen criteria serve as adequate protection for age-1 and greater bull trout.

Age-0 bull trout are extremely rare in LPO, only being documented potentially out-migrating Trestle Creek. They are also not known to survive to reproductive maturity in large numbers, if at all, in the lake (Downs et al. 2006, p. 199). Fish are cold blooded, and their metabolism increases exponentially with increasing ambient water temperatures. Eventually, warm water temperatures may result in death for bull trout due to increased metabolic demands and decreased feeding capacity (Selong et al. 2001, pp. 1032–1033). The summer shallow nearshore areas of the lake are not ideal habitat for bull trout due to the thermally stratified warm water temperature increasing metabolic demands that temperature puts on the species, reducing the likelihood that age-0 bull trout spend time in the nearshore. The buffer of 300 feet on each side of SR streams incorporated into (CM 6) is expected to provide enough protection from intakes until the age-0 bull trout leave the area; therefore, sub-2.36-inch (60 mm) bull trout are not expected to be present in parts of the lake where small diameter water lines will be installed.

Out-migrating juvenile bull trout in the PO River must migrate longer distances (down the Middle Fork East River, into and down the Priest River, then into the PO River) where they then migrate upstream against the current until they reach LPO. Bull trout that migrate up the PO River require a greater swimming speed to perform such a long migration against the river current than downstream outmigrants. Therefore fish found in the PO River are expected to be older than age-1, and as such will be protected by the screening criteria.

The chance of bull trout being impinged by water intakes is discountable in the PO River because Sub-2.36-inch (60 mm) bull trout are unlikely to be in the PO River, and conservation measure 6 provides protection to bull trout larger than 2.36 inch (60 mm), thus the chance of age-1 or greater bull trout being impinged by water intakes is discountable.

The chance of bull trout being impinged by water intakes is discountable in LPO because sub-2.36-inch (60 mm) bull trout are extremely rare in LPO, are unlikely to occupy shallow warm nearshore areas, and the implementation of a 300-foot exclusion buffer to each side of SR streams in the lake.

7.2 Effects on Bull Trout Critical Habitat

The final rule designating bull trout critical habitat (75 FR 63898 [October 18, 2010]) identifies nine Physical and Biological Features (PBFs) essential for the conservation of the species. The Service has examined the anticipated effects of the covered activities on the following PBFs:

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

PBF 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.

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

PBF 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 structure.

PBF 5. Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will 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.

PBF 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-of-the-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 will likely vary from system to system.

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

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

PBF 9. Sufficiently low levels of occurrence of nonnative 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 construction and use of activities as described in section 3 may result in stressors that may affect some of the bull trout critical habitat PBFs. Stressors to the critical habitat PBFs may include increased noise, increased turbidity, chemical contamination, reduced water volume, temperature alteration, increased shading, and loss of riparian habitat.

7.2.1 Noise

Noise from construction and watercraft operation may temporarily disrupt the ability of the critical habitat to function as an unimpeded migratory corridor through the same pathways described in sections 7.11 and 7.12, potentially impacting PBF 2 (Carlson et al. 2007, p. 2; Hastings and Popper 2005, pp. 34, 40; Sand and Karlsen 2000, p. 331). Construction will occur during the winter drawdown, which will avoid the adult bull trout spawning migration (i.e., occurring between the spring and fall) (CM 1). Most construction will also occur out of the water, severely reducing in water noise (CM 3).

Sub-adult bull trout may out-migrate year-round when flows allow, potentially exposing them to construction noise. Behavioral effects may occur when in-water noise reaches or exceeds 150 dB RMS and these effects may be adverse depending on the species, exposure, life history or location of the disturbance (National Marine Fisheries Service 2023, pp. 5–7). The largest impact from construction noise will be generated by vibratory pile driving, resulting in noise up to 150 dB RMS in waters within 70 feet of pile driving activities (Appendix B). When applied against the 300-foot buffer on the mouths of SR streams, the 70 feet of noise disturbance leaves 230 feet of habitat from the nearest stream banks without noise loud enough to elicit behavioral effects, and no change to noise on the far side of the stream. The narrowest part of the Pend Oreille River is over 700 feet wide at low pool. Applying the 70-foot behavioral impacts areas against the minimum width of 700 feet results in a minimum of 630 feet of migration corridor remaining without noise levels high enough to elicit behavioral changes.

Typical noise from powerboat operating with engine operating between 2500 and 6000 RPMs (rotations per minute) is approximately 125-165 dB, with the noise levels increasing as engine RMPs increase (Barlett and Wilson 2002, pp. 5, 7–8). Noise from watercraft moving slow enough to avoid generating a wake near a dock or pier is expected to be substantially lower since ethe engine RPMs will be substantially lower. Noise from a watercraft operating outside of the no wake zone is likely to blend into the existing soundscape of the waterways in the covered area that already includes a multitude of watercraft operating on any given day. Further, most recreational watercraft use occurs during daylight hours due to higher temperatures, and the limited ability to identify in water hazards after sunset. Bull trout are most active from dusk until dawn, separating them from most of the effects of daytime watercraft operation.

If bull trout are disturbed by the elevated noise, they are expected to swim around the disturbance or move in the opposite direction. Due to there being no known uniquely critical habitats for out migrating bull trout, migration around or away from an area of elevated noise is not expected to make a measurable difference in growth or survival. Further, construction will occur during daylight hours when bull trout are less active and less likely to be active and in shallow waters (CM 2).

Based on CMs (1-3), activity exclusion zones at the mouth of spawning and rearing streams, no wake zone enforcement by the State of Idaho, the existing use of the lake for recreation, the levels of noise generated from watercraft, and the availability of large swaths of undisrupted migration corridors in LPO and the PO River, the potential impacts to bull trout critical habitat that may occur from construction noise are expected to be insignificant.

7.2.2 Increased Turbidity

Increased suspended sediment from activities described in section 3 has the potential to affect PBFs 2 and 8. Increased sediment may result in water quality degradation that impedes the ability of critical habitat to function as a migratory corridor, potentially impacting PBF 2. Elevated turbidity may also decrease water quality by reducing sight distance and temporarily changing the ability of fish to feed or avoid predators; this change may alter the growth and survival of fish in turbidity impacted habitat, impacting PBF 8 (Bisson and Bilby 1982, p. 372; Sigler et al. 1984, p. 149). The amount of construction turbidity caused by the covered activities will be minor and further minimized with multiple conservation measures (i.e., CMs 7-12, 15, 16). The amount of watercraft turbidity will be minor due to local laws limiting wakes and propeller wash (see Watercraft Turbidity section 7.2.1). Based on the small amount of sediment expected to be generated from the covered activities, the implementation of conservation measures, and local no wake laws, the potential impacts to bull trout critical habitat that may occur from turbidity are expected to be insignificant.

7.2.3 Chemical Contamination

Chemical contamination resulting from an equipment leak or spills during construction activities or from increased watercraft activities may impact PBFs 2, 3, and 8 through the same pathways described above in sections 7.1.5 and 7.1.6. Chemical contamination can degrade water quality, impede migratory habitat, and lethally or sub-lethally affect bull trout and the aquatic prey base necessary for bull trout growth and survival (Carrasquero 2001, pp. 31, 41, 46; Logan et al. 2022, p. 1207).

Proposed conservation measures such as inspecting and cleaning equipment prior to work beginning (CM 17), daily inspections for leaks (CM 18), fueling and maintaining equipment away from water (CM 19), working at low pool to avoid in-water work (CM 1), and equipment not entering the water (CM 15), respectively and in combination, reduce the likelihood of a spill from happening and limit the potential spill size of a spill if one were to occur by detecting it early. Due to lake level controls and the shallow depth of water in the nearshore, watercraft will only utilize the structures for moorage from June through October, limiting the time in which leaks or spills can enter the aquatic environment. The annual lake drawdown will require watercraft to be removed from the docks and piers and stored during the off season, making it less likely that leaks will go unnoticed for more than one season.

The potential impacts to bull trout critical habitat that may occur from construction and watercraft chemical contamination are expected to be insignificant based on the small size and potential for watercraft leaks, conservation measures, lake level controls, and seasonal moorage in nearshore areas.

7.2.4 Reduced Water Volume

Covered activities may allow a maximum of one small diameter waterline intake per riparian property for non-commercial use, which may reduce water levels. These effects have the potential to impact PBFs 5 and 7 by reducing total water volume in LPO through withdrawals, which could lead to decreased flows and increase water temperatures, depending upon the amount of water withdrawn. This may reduce littoral productivity, affect the structure of plant and animal communities, and decrease the abundance of salmonid prey organisms (Carrasquero 2001, pp. 31, 41, 46).

The covered activities provide for installation and operation of water intake lines no greater than two inches in diameter. Based on past uses of the RGP-27 biological opinion, the service expects 10 or fewer intakes to be installed every three years. This estimate of use is likely an overestimate since there is a finite amount of waterfront property, much of which is already developed, and the SA only authorizing the installation of new intakes by landowners. Nevertheless, assuming 10 intakes are installed every three years, if this trend continues at a similar rate over the next 100 years, this SA would be expected to result in 333 additional water intakes to LPO and the PO River. The 2020 RGP-27 biological opinion identified that small diameter waterline intakes are likely to remove 92 gallons per minute for up to 6 hours a day (p. 39). Assuming each intake may withdraw up to 92 gallons per minute for 6 hours every day, 333 intakes would be expected to withdraw up to 11,028,960 gallons (33.85 acre-feet) of water daily from the lake and river.

Lake Pend Oreille is fed by multiple rivers and streams, with the Clark Fork River being its largest source of water. The Clark Fork River, controlled by the Cabinet Gorge Dam, averages approximately 10,000 cubic feet per second of flow daily throughout the year at the stream gauge below the Dam (USGS 2023, accessed November 17, 2023). This equates to an inflow of approximately 19,835-acre feet (6,463,263,085 gallons) of daily flow from the Clark Fork into the lake. The potential reduction of 33.85 acre-feet of water daily (e.g., 100 years of expected intake installation) represents a 0.17% reduction to the daily average inflow into the lake. This 0.17% reduction in the average daily inflow is an overestimation of effects since it estimates 100 years of intake installations and does not consider the additional inflow of all other water inputs that feed LPO.

Due to the extremely small percent of potential water removed from LPO compared to the total inflows, and the lake level being manually controlled, the effects to bull trout critical habitat from water withdrawal by water intakes are expected to be insignificant.

7.2.5 Temperature Alteration

The covered activities include construction of structures (e.g., docks and piers, launching rails, piles, waterline intakes) in and near the water. These activities have the potential to impact PBFs 3 and 5 through increased shading and the physical structures warming in the sun and transmitting the heat into the water. Increased shading may reduce littoral productivity though temperature alteration and affect plant and animal community dynamics (Carrasquero 2001, pp. 31, 41, 46). A study examining temperature alteration at docks and undeveloped sites in LPO found that the only season with a statistically significant temperature increase was fall with an increase of 0.9°F (0.5°C) increase in water temperatures near docks when the nearshore waters were in excess of 60.8°F (16°C) (Bellgraph et al. 2012, p. 4.14-4.15). It is unlikely that this small seasonal temperature increase (i.e., when the lake is cooling during the fall) would adversely impact the food base (PBF 3) at these locations since the nearshore prey species tend to be warmwater fish species that, by definition, have a higher thermal tolerance than bull trout (a cold water species), the increase in temperatures is small in magnitude, highly localized around the structure, and only occurs seasonally during a cooling trend.

Water temperature of desired ranges and thermal refugia (PBF 5) is unlikely to be impacted due to the change being small in magnitude, localized around the structure, only occurring seasonally during a cooling trend, and not impacting other thermal refugia around LPO. Based on the small magnitude of the change, the impact only occurring seasonally, the highly localized nature of the temperature alteration, and the large and varied thermal refugia in the covered area, the potential impacts to bull trout critical habitat that may occur from temperature alterations caused by covered activities in this SA are expected to be insignificant.

7.2.6 Increased Shading

The construction of in- and overwater structures can create shading in the littoral zone that may reduce the growth of aquatic plants and phytoplankton by decreasing the amount of light available for photosynthesis. Impacts to primary production can lead to changes at higher trophic levels such as invertebrates and fish (PBF 3), which in turn could impact bull trout.

Due to factors in the environmental baseline of the covered area, effects from shading would primarily be limited to higher water conditions. Altered hydrological regimes resulting from Albeni Falls Dam operations cause many shoreline structures to be exposed during the winter months. As a result, these structures are unlikely to have a significant impact on littoral productivity during this time of year. During the transition between high and lower water, receding water levels will increase the distance between overwater structures and the water column, allowing for more light to penetrate under overwater structures. The seasonal water changes associated with the altered hydrological regime will also impact what plants are able to grow and survive within the nearshore area that experiences seasonal flooding followed by seasonal dewatering. In addition, the climate in the action area limits the growing season for plants, as most plants will go dormant or die in response to freezing temperatures.

In a study on overwater structures within LPO, Bellgraph et al. (2012, p. 4.11-4.13) found that overwater structures reduced the proportion of light available at developed sites in all seasons, with the lowest mean photosynthetically active radiation occurring in the summer. Structures attenuated light at different rates, depending on the structure type, and docks, boat garages, and raised walkways attenuated more light than grated walkways and areas unshaded by overwater structures (Bellgraph et al. 2012, p. 4.12). While shading may result in reduced primary production immediately below an overwater structure, the impacts of reduced radiation did not lead to reduced overall macrophyte volume around developed sites which often had a higher macrophyte volume than undeveloped sites (Bellgraph et al. 2012, p. 4.14). Evidence for this is further supported in a study by Rosenberger et al. (2008, p. 1680) that measured higher productivity based on chlorophyll a and pheophytin a at developed sites in LPO compared to undeveloped sites, a result potentially attributable to higher nutrient inputs being more likely at developed sites.

Given that private property along the lakeshore tends to have lawns and sparse woody vegetation (USACE 2024, p. 57), nutrient inputs from lawn fertilizer, animal waste, or other sources at developed sites may counteract the reduction of primary productivity attributable to shading. While not every developed site is necessarily going to have higher nutrient inputs when compared to undeveloped sites, there was on average more productivity at developed sites in the action area, so shading created by overwater structures does not seem to have a significant impact on rates of primary production at developed sites when compared to other environmental factors such as nutrient availability. Since primary production is not measurably reduced, the Service does not anticipate there to be significant reductions in littoral productivity or that higher trophic levels would be subsequently impacted. In addition, the total amount of surface area impacted by overwater shading relative to the littoral surface area is expected to be a very small amount compared to the total surface area of the covered area. Given the minimal amount of shading expected and the limited impact of shading on site littoral productivity, the impacts to bull trout are likely to be insignificant.

7.2.7 Loss of Riparian Habitat

Dock, pier, or marine launching construction all have the potential to reduce riparian vegetation along LPO if shoreline plants are cleared for installation and ongoing access to the structures. This clearing of plants may potentially impact PBFs 3 and 5 (Carrasquero 2001, pp. 31, 41, 46; Logan et al. 2022, p. 1205). Riparian vegetation can provide shading that moderates nearshore water temperature during summer months. Due to the size, depth, and annual thermal stratification that occurs in LPO, the lake temperature seems to be driven by factors other than nearshore shading. Further, a study on the effects of dock shading on LPO found that there was no statistically significant cooling effect from the shade generated by the studied docks, supporting this conclusion (Bellgraph et al. 2012 pp. 4.14-4.15). Due to LPO being the main source of water for the PO river in the covered area, the lake temperature is likely a main driver of the PO River temperature.

In-water vegetation provides refuge for forage fish and bull trout. Plant roots provide bank stabilization. Riparian trees generate coarse woody debris. Habitat complexity and organic matter increases primary and secondary productivity in the aquatic food chains (Carrasquero 2001, pp. 31, 41, 46). This SA only analyzes private lands with previously disturbed shorelines prior to construction of the covered docks, piers, or other activities analyzed in this SA. Much of the private LPO shorelines have grasses, dirt, and rock at the waterline for aesthetic, recreational, and erosion control purposes. There is also significant riprapping of the nearshore to limit erosion caused by the lake water level alterations which often removes most, if not all, littoral inputs of vegetation and terrestrial invertebrates from those areas.

Actions that remove naturally occurring vegetation, reduce littoral inputs, and lead to a decrease in terrestrial organisms from riparian areas are not analyzed in this SA (CM 13). Therefore, the effect of riparian alteration to critical habitat function is expected to be discountable because riparian vegetation will not be removed.

8 Reporting and Monitoring Requirements

An annual meeting will occur between the Service and the USACE to discuss: (1) section 1.4, (2) the number of permits authorized by the USACE and covered under this SA, (3) whether there are effects greater than those evaluated in this SA, (4) the quantity and type of resources that have been impacted by the covered activities since the last annual meeting, (5) the effectiveness of conservation measures incorporated into site-specific actions to minimize impacts, and (6) any suggested updates to this SA. The SA also may be revisited and revised at any time should new information become available. The USACE should provide an annual report to inform the annual meeting.

The Service and the USACE will review all uses of the SA over the prior year, ensure the SA and D-Key are functioning as intended, and manage any issues that may arise. The USACE will discuss any compliance or enforcement issues associated with the SA (including compliance checks), explain how these issues were resolved, and make proposals for modifications to the covered activities and SA. Modifications may include, but are not limited to, changes to conservation measures, changes in approved work windows, changes in specific activity or structure parameters, and/or the addition of activities or structures.

9 SUMMARY AND CONCLUSION

The Service concludes that this analysis of the covered activities will support the USACEs' determination of "may affect, not likely to adversely affect" for bull trout and bull trout critical habitat based on: (1) the review of relevant best available scientific information pertaining to the species and critical habitat, (2) review of covered activities and associated conservation measures included in this document, and (3) the evaluation of anticipated effects analyzed in this SA.

This SA is based on the consultation provisions of section 7(a)(2) of the Act, regulations implementing the consultation provisions, and the information cited in this document. The SA will undergo review and revision, as needed, if any of the following conditions occur: (1) new information reveals the effects of the covered activities that may affect listed species or critical habitat in a manner, or to an extent, not considered in this SA; (2) the covered activities are subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this consultation; and, (3) a new species is listed or critical habitat is designated that may be affected by a covered activity.

This SA document will be provided through IPaC via a link within the DKey output letter or as an attachment to the Service's concurrence letter (per request) provided to USACE. If this Docks and Piers DKey is not available on IPaC for any reason, USACE may request a physical copy of the DKey to manually review site-specific actions with a digital or printed copy of the D-Key prior to the availability of an online DKey. The IFWO- Coeur d'Alene office will then work with the USACE to conduct and finish the manual review.

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