

**Supplement Analysis**  
for the  
**Columbia River Basin Tributary Habitat Restoration**  
(DOE/EA-2126/SA-02)

**Alder Creek Floodplain Restoration**  
**BPA project number 2009-003-00**  
**BPA contract number 56662 REL 226**

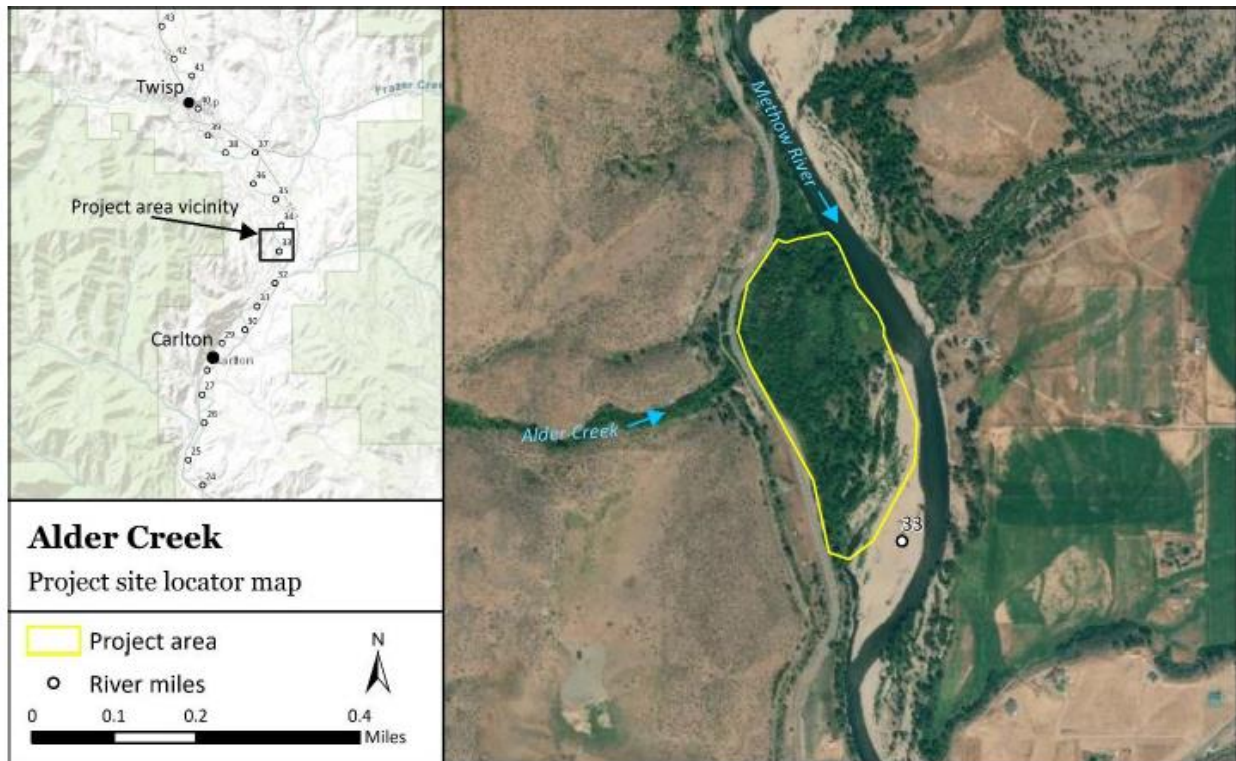
Bonneville Power Administration  
Department of Energy



**Introduction**

In December 2020, Bonneville Power Administration (Bonneville) and the Bureau of Reclamation completed the *Columbia River Basin Tributary Habitat Restoration Programmatic Environmental Assessment* (DOE/EA 2126) (Tributary Habitat EA). The Tributary Habitat EA analyzed the potential environmental impacts of implementing habitat restoration actions in the Columbia River Basin and its tributaries.

Consistent with the Tributary Habitat EA, this supplement analysis (SA) analyzes the proposed Alder Creek Floodplain Restoration Project (project) that would enhance in-stream and floodplain habitat conditions for Endangered Species Act (ESA)-listed endangered Upper Columbia spring Chinook salmon (*Oncorhynchus tshawytscha*), bull trout (*Salvelinus confluentus*), and threatened summer steelhead (*Oncorhynchus mykiss*) in the Twisp to Carlton Reach of the Methow River on land owned by the Washington Department of Fish and Wildlife (WDFW) in Okanogan County, Washington. This SA analyzes the site-specific impacts of the project to determine if the project is within the scope of the analysis considered in the Tributary Habitat EA. It also evaluates whether the proposed project presents significant new circumstances or information relevant to environmental concerns that were not addressed by the EA. The findings of this SA determine whether additional National Environmental Policy Act (NEPA) analysis is needed pursuant to 40 Code of Federal Regulations (CFR) § 1502.9(d).



### **Proposed Action**

The project area is characterized by riparian vegetation such as cottonwood (*Populus*) and water birch (*Betula occidentalis*). The upland area on the southeast side of the project area contains Ponderosa pine (*Pinus ponderosa*) and cottonwood. The southwest side of the project area is comprised of cottonwood forest with thick understory. An existing wetland complex is adjacent to this area.

Human alterations within the basin have included beaver trapping, gold and silver mining, and valley bottom development for homesteads, orchards, livestock farming, irrigation, and timber harvest. These alterations have reduced the quantity of wood in the watershed and riparian zone and ultimately reduced the supply of large wood available for recruitment into the Methow River. Levees and bank stabilization were used within the project area vicinity to protect roads and private lands within the valley bottom. These levees limit the extent of floodplain inundation compared to historical levels. Within the Twisp to Carlton reach, nearly a quarter of all streambank contains bank armoring, and several levees and roads disconnect the floodplain from the Methow River. The aforementioned impacts resulted in a simplified channel relative to historical conditions, with less large wood, lower levels of floodplain connectivity, reduced main channel and off-channel habitat complexity, and greater velocity.

Bonneville proposes to fund the Yakama Nation Fisheries to undertake the project, which would involve excavating approximately 12,300 cubic yards (CY) to create a side channel and 2,500 CY to create a swale, for a total of about 14,800 CY of excavation. Additionally, the project would involve placement of approximately 200 logs plus 28 trees anticipated to be salvaged during excavation. Equipment, logs, and other temporary construction materials would be staged within designated areas. Staging areas would be placed below the upland elevation when there is not a viable alternative. Due to site accessibility limitations, equipment would be staged within 150 feet of wetlands and waterways when not in use. The staging area would be located on an open reed canarygrass (*Phalaris arundinacea*) field near the

proposed side channel confluence with the Methow River. Spill kits would be onsite throughout all of the work areas. There would be no storage of fuels, flammable materials, or chemicals in the staging areas.

The project would improve habitat for ESA-listed steelhead, bull trout and Chinook salmon, as well as other fish and wildlife. The work would be carried out between May 3, 2021, and December 3, 2021, with the majority of the work implemented between July 1, 2021, and August 15, 2021. The project is consistent with the actions considered in the Tributary Habitat EA categories of actions, which represent well-established aquatic and terrestrial restoration techniques that have been applied throughout the Basin and have been demonstrated to be effective in the support and restoration of aquatic and upland species and habitats:

1. Reestablishing and Improving Fish Passage
2. Improving River, Stream, Floodplain, and Wetland Habitat
3. Invasive Plant Control and Vegetation Management
4. Piling Removal
5. Road and Trail Erosion Control, Maintenance, Decommissioning, and Construction
6. In-Channel Nutrient Enhancement
7. Irrigation, Water Delivery, and Water Use Action
8. Fish, Hydrologic, Wildlife, and Geomorphic Surveys
9. Riparian and Upland Habitat Improvements and Structures
10. Artificial Pond Development and Operation

The project would include the following elements, with the corresponding Tributary Habitat EA category of action noted next to each element.

**Side channel enhancement within a historical side channel alignment** (Tributary Habitat EA Category 2)

A 2,400-foot perennially-active side channel would be constructed within the swale of a historical side channel to increase quantity and quality of rearing habitat for juvenile steelhead and Chinook salmon. The side channel would also increase connectivity with an existing wetland complex. All trees and shrubs removed from the side channel construction area would be temporarily stored on the floodplain to be re-used as salvaged trees and slash during channel construction.

Prior to earthwork activities, erosion control devices would be installed throughout the project areas. Best Management Practices (BMPs) to be employed would include: temporary cofferdams, silt curtains, silt fences, and straw wattles. A temporary sandbag cofferdam or sheet pile driven into the ground with a vibratory pile driver would be installed at the downstream and upstream ends of the side channel work area to isolate the construction activities.

**Large wood installation in side channel alignment** (Tributary Habitat EA Category 2)

Riffle pools and log structures within the excavated side channel would be composed of logs installed horizontally into the bank with roots extending into the pool and slash placed loosely against the bank. The pool would be excavated into the bank. Trees and shrubs within clearing limits would be salvaged and used as logs and slash in habitat structures. One or two haul trucks would be used for transporting wood from the staging areas to installation sites and for installing all mainstem large wood structures.

Approximately 22 large wood structures would be placed in the side channel and at the Methow River inlet to provide complex off-channel habitat for the full range of flow conditions.

Mainstem large wood structures. Mainstem wood structures placed at either end of the excavated side channel, at the confluence with the Methow River to the north and Alder Creek to the south, would be composed of Douglas-fir (*Pseudotsuga menziesii*) rootwads and ballasted with native alluvium excavated from the upstream ends of the structures and Douglas-fir pilings driven vertically into the channel bed with a vibratory pile driver. The mainstem wood structures would each be composed of about 30 logs, 15-30 timber piles, and about five salvaged trees. Approximately 80 logs would be placed in jurisdictional wetlands under the Clean Water Act. Any excavation involved with placement of log structures for this project would either be temporary to bury the logs, or is included in the side channel excavation as outlined above. Logs would be pinned together when needed.

Side channel large wood structures. Side channel large wood structures would be composed entirely of Douglas-fir rootwads and slash materials generated from the excavation of the side channel and ballasted by burying the straightened ends of the logs into the bank with an excavator. No pilings would be required for the side channel wood structures. The side channel wood structures would use an estimated 130 logs with roots and 20 salvaged trees.

### **Revegetation of disturbed surfaces (Tributary Habitat EA Category 9)**

The excavated marshplain, wetland enhancement area, and upland disposal sites would all be reseeded with native grasses and replanted. Wetland plugs would be planted in the marshplain areas; scrub-shrub species would be planted in the wetland enhancement location; and trees would be planted in the uplands. At all of the swales, the side slopes, disturbed soils, and side cast disposal locations would be reseeded with native grasses and replanted with native riparian plants. The access paths would be replanted with native grass seed and riparian plant species. Trees removed during excavation would be salvaged and used to supplement constructed large wood habitat structures. Disturbance to large trees would be minimized to the maximum extent practicable. Native species would be planted in all disturbed areas to promote riparian function, increase food production, and improve habitat complexity for target species.

The project fulfills commitments under the 2020 National Marine Fisheries Service Columbia River System Biological Opinion. These actions would support conservation of Endangered Species Act-listed species considered in the 2020 Endangered Species Act consultation with the US Fish and Wildlife Service on the operation and maintenance of the Columbia River System.

### **Environmental Effects**

The typical environmental impacts associated with the Columbia River Basin Tributary Habitat EA are described in Chapter 3 of the Tributary Habitat EA, and are incorporated by reference and summarized in this document. Below is a description of the potential site-specific impacts of the Alder Creek Floodplain Restoration Project and an assessment of whether these impacts are consistent with those described in the Tributary Habitat EA.

#### **1. Fish and Aquatic Species**

The project would benefit ESA-listed endangered spring Chinook salmon and threatened summer steelhead by creating a perennially-active side channel to increase quantity and quality of rearing habitat for juveniles, as well as provide complex off-channel habitat for all fish species during all flow conditions. Bull trout would also benefit from the project, which would provide shelter and protection by increasing habitat complexity. The Methow River is designated Final Critical Habitat for bull trout, steelhead, and Chinook salmon. The project area is within the National Marine Fisheries Service's

(NMFS) Upper Columbia sub-domain, a subset of the Interior Columbia Recovery Domain for anadromous ESA-listed salmon and steelhead in the Northwest Region. Both the Methow River and Alder Creek are considered essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act because both provide habitat for Chinook salmon. Work area isolation would be used in areas with water; no direct effects to salmonids as a result of construction are anticipated. Fish salvage, which could cause a direct effect to fish, would be performed prior to establishing the temporary cofferdams for the side channel excavation.

Yakama Nation Fisheries would adhere to the conservation measures required under the ESA consultations with NMFS and the USFWS on Bonneville's Habitat Improvement Program (HIP) to minimize impacts to bull trout, Chinook salmon, and steelhead during project implementation (HIP Activity Categories 2a, 2d, and 2e). These measures include constructing side channels with a positive overall grade to prevent fish stranding, isolating side channel work from waters occupied by ESA-listed fish, designing large wood placements to mimic natural processes and functions, and using a licensed engineer to design large wood installation.

Impacts to fish and aquatic species are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.1 (Effects to Resources by Resource Type – Fish and Aquatic Species). The analysis concludes that reconnecting channels with floodplains would not only increase floodplain connectivity, but also provide periodic delivery of water, nutrients, and sediment to floodplains; provide flood attenuation and reduced stream energy; and increase stream length and riparian vegetation corridors. In addition, the placement of large wood and boulders as part of these actions would increase habitat structure and complexity, thereby creating or restoring shade zones, resting pools, spawning grounds, rearing habitat, and refugia, all of which are important components of aquatic species' habitats. Together, these results would produce more functional fish habitat. The long-term beneficial effects include restored riparian habitats, improved shade and cover for instream aquatic species; and increased food and nutrient inputs into stream courses. Improved shade would also help reduce stream temperatures and maintain those temperatures within desirable ranges for native aquatic species. Short-term adverse effects would be low. These effects include disturbance, injury, or inadvertent crushing as a result of with heavy equipment use. The mitigation measures noted above associated with the ESA consultations, would be implemented to limit the temporary negative impacts, which are consistent with those evaluated in the Tributary Habitat EA.

## **2. Water Resources**

Three categories of water quality are of concern for fish and wildlife habitats: toxic pollutants, temperature, and sedimentation. The project would change stream channels and the conditions of the bed, bank, and floodplain through which water may flow through the Alder Creek reach. Reconnecting channels with floodplains would not only increase floodplain connectivity, but also provide periodic delivery of water, nutrients, and sediment to floodplains. Construction activities would be the primary factor affecting water quality, with sedimentation, turbidity, and temperature being the primary variables of concern. Short-term inputs of sediment would result from instream structure placement, opening of side channels, stream reconstruction, and other activities that occur inside the bankfull channel. Proper design of channel capacity, form, gradient, and grade control structures, and the establishment of vegetation would limit the amount of erosion and turbidity created as the project's stream reach seeks equilibrium with the channel network. Another concern would be the potential fuel

and fluid leaks from heavy equipment, but the probability of such an event is low, and the extent of the problem would likely be small given the mitigation in place for these actions.

Impacts to water resources are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.2 (Effects to Resources by Resource Type – Water Resources). The analysis concludes that overall, tributary restoration actions would create short-term, localized, sediment inputs from the actions of heavy equipment in and along streams (though not in amounts greater than what occurs naturally during annual, natural, high flow events); and the removal of riparian vegetation could cause small increases in water temperature in the short term (but would be offset to a degree by shade from new instream structures and deepened streams and pools). These are short-term effects and would also be lessened by the application of mitigation measures such as phased rewatering, existing vegetation protection, minimizing areas to be impacted, and replanting. The long-term effects of these actions, however, would be a decreased potential for unnatural sediment inputs, an increased potential of the floodplain to effectively manage its sediment loads, and a reduction of stream temperatures from stream form, instream habitat structure, and increased riparian vegetative cover. When the short-term, temporary effects are considered in the context of the long-term benefits of the project, the overall effects on water quality would be low and would be consistent with those evaluated in the Tributary Habitat EA.

### 3. Vegetation

Vegetation composition in the project area is typical of northern Cascade riparian areas on the eastern slope. Woody trees are a mix of native evergreen and deciduous species including balsam poplar (*Populus balsamifera*), water birch, and red alder (*Alnus rubra*) at lower elevation areas and adjacent to the historical side channel. At slightly higher elevations, upland areas contain an overstory of cottonwood and Ponderosa pine. Red-osier dogwood (*Cornus sericea*), Nootka rose (*Rosa nutkana*), hawthorne (*Crataegus douglasii*), and immature stands of the component tree species comprise the majority of shrub-scrub cover in the project area. Herbaceous vegetation is overwhelmingly dominated by reed canarygrass. Horsetail (*Equisetum hyemale*), false Solomon's-seal (*Maianthemum racemosum*), and various sedges (*Carex spp.*) are also present at lower elevations. No ESA-listed plant species have been recorded in the project area.

The effect of construction activities on soils and vegetation could be severe in the short term by actions that require the use of heavy equipment such as backhoes, bulldozers, and loaders. During this time, plant communities would be impacted by heavy equipment turning soil and plants being uprooted, buried, torn apart, etc. The entire project area is about 35 acres; however, disturbance to plants would only occur when absolutely necessary either to reach a site or during excavation activities. The project has been designed to minimize impacts to native vegetation and the majority of impacts are located in open fields of reed canarygrass (~3 acres). Riparian and upland vegetative communities would be restored through seeding and planting native species in disturbed areas following project implementation. Trees removed during construction would be saved to be used during placement of large wood structures.

Additionally, the project would introduce flows into a side channel and floodplains that have not experienced consistent flowing water for many decades. In the absence of frequent watering, these channels have often converted to wet meadow or upland plant communities. When the flows are applied, the plants not suited to saturated soils for long periods of time would die out, and would be

replaced by plants that are so suited. Plant communities would thereby change to riparian or wetland communities.

Impacts to vegetation are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.3 (Effects to Resources by Resource Type – Vegetation). The analysis concludes that although the effects on vegetation from construction actions may be moderate in the short term, the long-term beneficial effects of increased riparian habitats and restored or improved vegetative conditions would be high, thus when the short- and long-term effects are considered together, the overall effects of this project would be moderate and would be consistent with those evaluated in the Tributary Habitat EA.

#### **4. Wetlands and Floodplains**

In the short term, construction would affect regulated waters in the project area. A very small portion of excavation would occur below the ordinary high water line of the Methow River (approximately 0.3 acres) from the side channel and swale excavation. It is expected that approximately 2,000 CY (0.31 acres) of jurisdictional wetlands would be impacted from excavating the side channel.

In the long term, the project could potentially increase the acreage of wetlands and improve floodplain conditions, and hydraulic modeling indicates that following construction, inundation at the 1.5-year flood level would increase from 5.4 to 11.9 acres. This is a metric that the Washington Department of Ecology has stated can be indicative of wetland conditions. Additionally, wetland quality would improve due to the restoration of natural flow patterns and the replacement of invasive species with native plants. With greater floodplain connectivity at the site, it is anticipated that wetland hydrology would improve which could expand the wetland area, re-establish native vegetative communities, and control the proliferation of invasive non-native plant species; specifically, reed canarygrass.

Impacts to wetlands and floodplains are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.4 (Effects to Resources by Resource Type – Wetlands and Floodplains). The analysis concludes that wetlands would be temporarily damaged or destroyed in the short term. However, wetlands would be permanently restored, expanded, or improved a few days or weeks later by that same action. Actions in Category 2 (River, stream, floodplain, and wetland restoration) would be among those most likely to initially damage then restore wetlands. Channel reconstruction is a restoration action, with the end result designed to improve the wetland condition and function in the project area. Though appreciable, the short-term effects would be temporary, with full or greater restoration being the end result. Other actions with no construction activity (e.g. planting) would have no or inconsequential short-term adverse effects, but would provide some long-term beneficial effect. The overall effects of this project would be low and consistent with those evaluated in the Tributary Habitat EA.

#### **5. Wildlife**

The project area has the potential to contain habitat for ESA-listed Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), and yellow-billed cuckoo (*Coccyzus americanus*) (USFWS Information for Planning and Consultation (IPaC), 2021). Canada lynx are unlikely to be present in the project area based on their preferred habitat, which is normally at much higher elevations (above 3,000 feet). Gray wolves are highly mobile and would be able to easily avoid the project area during implementation. Due to the low

number of gray wolves in the area (about 160 wolves have been recorded across the entire state of Washington), it is extremely unlikely that a den would be present within one mile of the project. Yellow-billed cuckoo are unlikely to be encountered due to their historically low numbers (the last confirmed breeding records of cuckoos in Washington were from the 1930s) and lack of preferred habitat (cottonwood and willow bottoms, usually along the Willamette and lower Columbia Rivers). Additionally, yellow-billed cuckoo is not closely associated with, or dependent on riparian or wetland habitats. For these reasons, it is anticipated that the project would have no effect on these species.

Wildlife may be disturbed by sound, movement, and shadows caused by human presence. Larger, more mobile species such as birds and small mammals may be temporarily displaced from their home territories. This would be sustainable for the short term if individuals could return to their former habitats once the human disturbance had passed. Other types of disturbance can affect wildlife apart from the restoration site. These include noise, turbidity, smells, etc., which can temporarily disrupt wildlife behavior and displace their habitats. Vegetation removal could cause temporary or permanent displacement as it may take three to ten growing seasons for desired habitat conditions to be restored. Riparian vegetation removal could also affect non-mobile species such as invertebrates and amphibians that could not escape for the duration of the activity, as there would be unavoidable disturbance and changes in habitat structure. Additional impacts to non-mobile species could include stress (disrupted feeding, breeding, hiding, etc.) and mortality from crushing by heavy equipment.

The adverse effects described above would be short-term (one to ten years); however, the resulting condition of the restoration action would be habitat conditions that would be restored over what had been there previously, with the intended vegetative conditions having a higher carrying capacity for both dependent and generalist wildlife than current conditions. Long-term benefits include increased plant species richness and diversity, increased habitat structural diversity, increased habitat heterogeneity, and increased extent of riparian habitat.

Impacts to wildlife are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.5 (Effects to Resources by Resource Type – Wildlife). The analysis concludes that the short-term effects on small wildlife species may be moderate to high for individuals that are harmed or killed by construction activities, but effects would be comparatively minor for larger animals that may only be displaced from habitats rendered unsuitable for occupancy for a period of time. The long-term effects on wildlife populations, however, would be beneficial from the increased habitat quality and carrying capacity resulting from the project. The overall effects of this project would be low and consistent with those evaluated in the Tributary Habitat EA.

## **6. Geology and Soils**

Impacts to soils would result from temporary construction activities, including vegetation clearing, grading, and compaction of soils by heavy equipment during construction. Clearing and grading would remove both vegetation and topsoil. Compaction from heavy equipment degrades soil structure, reducing pore space needed to retain moisture and promote gas exchange.

Short-term construction-related impacts would include a temporary increase in soil erosion or temporarily elevated suspended sediments in Alder Creek and the Methow River. These impacts would be mitigated by the use of erosion and sediment control devices.



Over the long term, soil impacts associated with restored sediment transport would be beneficial due to the restoration of the natural soil-forming process, sediment flushing, and floodplain function. Furthermore, the Alder Creek floodplain would stabilize due to the installation of native plantings.

Impacts geology and soils are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.6 (Effects to Resources by Resource Type – Geology and Soils). The analysis concludes that the effects of the proposed action on geology and soils would be moderate to high in the short-term, but with implementation of mitigation measures and the long-term benefits, the overall effects would be moderate. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

## **7. Transportation**

The project site would be reached via Twisp-Carlton Road, which runs along the western boundary of the project area parallel to Alder Creek. From there, off-road access to individual construction sites for channel excavation, swale creation, and large wood placement would be accessed using a series of temporary paths across which equipment would be driven. No actions are proposed that would alter, relocate, or decommission existing roads, or create new roads. The project would not modify the channel structure and hydraulic characteristics of Alder Creek or the Methow River in such a way that changed flow conditions would affect downstream road prisms, culverts, or bridges. These impacts were considered in Yakama Nation Fisheries' review and approval of the project by requiring design engineers to disclose their data, analysis, and modelling of the stream and the action at various flood levels to ensure downstream infrastructure would not be placed at increased risk.

Impacts to transportation are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.7 (Effects to Resources by Resource Type – Transportation). The analysis concludes that, although project actions may impact roads for a short period, and some roads may be removed from the system, the overall effect on transportation would be low. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

## **8. Land Use and Recreation**

The Alder Creek project area is located on the river right floodplain near Methow River mile 33 and is part of the Golden Doe Wildlife Area owned by WDFW. The area is regularly used for hunting waterfowl, fishing, and for public river access. This project would have no long-term impacts to any of these public use activities following construction. Yakama Nation Fisheries has Memorandum of Understanding (MOU) agreements in place with WDFW for the construction of this project and continued maintenance (as needed) for five years following construction.

Impacts to transportation are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.8 (Effects to Resources by Resource Type – Land Use and Recreation). The analysis concludes that land use practices underlying project sites would not be changed for most projects. Some small acreages along stream course areas may revert from agricultural uses back to the wetland and riparian conditions from which

they had historically been converted. The overall effects of this project on land uses and recreation are expected to be low to moderate and would be consistent with those evaluated in the Tributary Habitat EA.

## 9. Visual Resources

The project area is adjacent to Twisp-Carlton Road to the west and is visible to traffic. To the north and south are unoccupied lands. To the east are agricultural fields, with some residences within visual distance of the project area. During construction, equipment and bare soil may be near houses to the east of the project area. These landowners have been notified of the project implementation and do not have any concerns about visual disturbance. Furthermore, excavation of the side channel would increase hydrologic connectivity, resulting in an anticipated increase in the function of the wetland within the project site. The improved floodplain area would be seeded and planted with native woody riparian vegetation, resulting in a more natural-looking environment.

Impacts to transportation are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.9 (Effects to Resources by Resource Type – Visual Resources). The analysis concludes that the effects on scenic values from the proposed action would be low, but site-specific evaluations for each project would evaluate the landscape character and assess whether an action would appear compatible with existing features, or if it would contrast noticeably with the setting and appear out of place. The overall effects of this project on visual resources are expected to be low and would be consistent with those evaluated in the Tributary Habitat EA.

## 10. Air Quality, Noise, and Public Health and Safety

Air Quality. Construction equipment would emit some carbon monoxide, nitrogen oxide, unburned hydrocarbons, and particulates from tailpipe emissions and cause dust during ground disturbance and travel along unpaved access roads. These could affect air quality locally for short durations. Impacts from site-specific restoration actions would primarily occur from construction and would be temporary and localized in nature and would not have long-term impacts on air quality. Implementation of this project is not expected to generate long-term or short-term violations of state air quality standards.

Noise. Noise can be a concern when actions are located near sensitive receptor sites, such as schools or hospitals. The project, however, would be implemented on public lands far from schools or hospitals, and these sensitive receptor sites would not be an issue. The project would involve the use of heavy equipment for short periods. The ambient noise level for the project area is estimated to be between 45-50 dBA (A-weighted decibel scale). Construction activities would elevate that level to between 80-100 dBA at the construction site. Such noise would come from construction, transportation, and site rehabilitation activities and the associated equipment (noted in the project description). High noise levels would not be constant, and while construction actions may produce extended periods of excessive noise, these would be hundreds of feet from the nearest residence. Over the long term, people living, working, or recreating near restoration sites would likely experience a decrease in human-created noise coming from restoration sites and an increase in natural sounds associated with restored riparian habitats.

Public Health and Safety. Existing risks to public health and safety are those associated with the operation of agricultural machinery and equipment, livestock-related incidents, collapse of old structures, falling trees, drowning, and falls. Other considerations would be for any potential impact by the project on the public safety infrastructure in rural areas near project sites. The project would not hinder traffic flow or the resulting response time of emergency vehicles, as materials and equipment would be stored in the project area off of Twisp-Carlton Road. The short-term construction and restoration activities would not be expected to overburden the existing health and safety infrastructure near the project site. The potential health and safety risks to workers and the public during construction would not be greater than a standard construction project, and therefore the short-term effects of the action to health and safety would be low. Adequate signage and other routine safeguards for worker and public safety would be applied to minimize these effects.

Impacts to air quality, noise, and public health and safety are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.10 (Effects to Resources by Resource Type – Air Quality, Noise, and Public Health and Safety). The analysis concludes that the effects of noise from the proposed action on the human environment would be low and that the effects of the restoration program on air quality, public health, and safety would be low. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

## **11. Cultural Resources**

Bonneville initiated consultation for Section 106 of the National Historic Preservation Act (NHPA) on September 10, 2019, (Bonneville Cultural Resources Project Number WA 2019 181) seeking comment from the consulting parties on the area of potential effect (APE). The consultation letter was sent to the Washington Department of Archaeology and Historic Preservation (DAHP), WDFW, the Confederated Tribes and Bands of the Yakama Nation, and the Confederated Tribes of the Colville Reservation (CCT). Responses were received from the Washington DAHP on September 12, 2019, and the CCT on October 17, 2019. Both parties concurred with the APE. Following initial consultation, Archaeological Services, LLC (ASCC) completed a cultural resources survey of the APE. It was identified that a portion of the access road turns into a trail and the APE needed amending to ensure that the access route had been adequately surveyed. On January 10, 2020, the APE was amended to incorporate the additional access road work including a loop to allow large vehicles to turn around. All other activities for the project remained the same as the initial consultation. A Determination of Eligibility letter was submitted on February 23, 2021, to the Confederated Tribes and Bands of the Yakama Nation, the CCT, WDFW, WA DNR, and the Washington DAHP. In the letter, Bonneville determined that the implementation of the proposed undertaking would result in no historic properties affected. On February 23, 2021, the Washington DAHP concurred with Bonneville's determination, with the stipulation for an unanticipated discovery plan. Bonneville received concurrence for the "No Historic Properties Affected" determination from the Confederated Tribes of the Colville Reservation on February 28, 2021, with the understanding that an inadvertent discovery plan would be in place and any changes to the APE require reopening consultation. No further comments were received.

Impacts to transportation are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.11 (Effects to Resources by Resource Type – Cultural Resources). That is, the effect on cultural resources from the proposed action would be low because cultural resources would be avoided by project construction and

effects would be appropriately resolved through the Section 106 consultation process. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

## **12. Socioeconomics and Environmental Justice**

The project would result in small, temporary, beneficial impacts to socioeconomics by providing jobs for construction workers. It would not require individuals to leave the local area, or relocate within it. There would therefore be no effect on housing available for local populations. This project would not displace people or eliminate residential suitability from lands being restored or from lands near restoration project sites. Implementation of the project would likely create short-term beneficial economic effects for local businesses in smaller communities through purchases of food, fuel, lodging, and materials associated with construction and restoration actions. Long-term benefits could result from natural scenery. The project would not displace residents or degrade residential suitability; nor would it cause changes to the tax base.

Impacts to socioeconomics and environmental justice are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.13 (Effects to Resources by Resource Type – Socioeconomics and Environmental Justice). The analysis concludes that effects to the socioeconomics of the Basin as a whole with the implementation of the proposed action would be low due to the small scale and dispersed nature of the projects. Overall no permanent adverse effects to populations where environmental justice would be a consideration are expected. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

## **13. Climate Change**

Greenhouse gas emissions associated with the project (primarily carbon dioxide, methane, and nitrous oxide) would be localized and temporary. These short-term emissions would be generated by construction equipment, off-road vehicles, on-road vehicles (including worker commuting and material delivery), and dust from ground-disturbing activities. Given the short construction duration, low number of vehicles and equipment, and estimate of emissions well below EPA's reporting threshold of 25,000 metric tons of carbon dioxide equivalent per year during construction, the impact from greenhouse gas emissions would be low and therefore the potential for the project to accelerate climate change would be low. The restoration of functional riparian, wetland, and floodplain habitats would expand the amount of wetland soils in which atmospheric carbon would be sequestered. By increasing stored carbon through the increase of wetland soils, the project would help mitigate for the release of greenhouse gases. The project would also provide for an increase of long-term water table inputs through restoring floodplain function and increasing connectivity of streams and rivers to their floodplains. It would also increase riparian shading of streams and rivers. Both of these results from the project would help lower water temperatures, thereby ameliorating the effects of climate change on aquatic species.

Impacts to climate change are consistent with the Tributary Habitat EA analysis in Sections 3.2.2 (Effects Specific to Category 2 - Improving River, Stream, Floodplain, and Wetland Habitat), 3.2.9 (Effects Specific to Category 9 – Riparian and Upland Habitat Improvements and Structures) and 3.3.14 (Effects to Resources by Resource Type – Climate Change). The analysis concludes that the short-term effects of emissions from motorized equipment operations during construction or implementation of the proposed activities would be offset to some degree by the ameliorating effects of restored floodplain

function with increased water table inputs, increased carbon sequestration in expanded wetlands, and water temperature decreases from improved instream and riparian habitat conditions. The overall effects of the proposed action on climate change would be low. The overall effects of this project would be consistent with those evaluated in the Tributary Habitat EA.

### **Findings**

The types of actions and the potential impacts related to the proposed Alder Creek Floodplain Restoration Project were examined, reviewed, and consulted upon and are similar to those analyzed in the Columbia River Basin Tributary Habitat EA (DOE/EA-2126) and FONSI. There are no substantial changes in the proposed action and no significant new circumstances or information relevant to environmental concerns bearing on the proposed action or its impacts within the meaning of 10 CFR § 1021.314(c)(1) and 40 CFR §1502.9(d). Therefore, no further NEPA analysis or documentation is required.

/s/ Mandy Hope

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