

**Columbia River Basin Tributary Habitat Restoration
Finding of No Significant Impact
Bonneville Power Administration
DOE/EA-2126
December 2020**

SUMMARY

Bonneville Power Administration (Bonneville) announces its environmental findings for the Columbia River Basin Tributary Habitat Restoration Programmatic Environmental Assessment. Restoration of in-stream, riparian, floodplain, and upland habitats along Columbia River tributaries could be implemented by Bonneville to restore tributary habitat for fish and wildlife within the Columbia River Basin (excluding the Columbia River estuary) in the states of Oregon, Washington, Idaho, western Montana, and northern Nevada.

Bonneville, in cooperation with the Bureau of Reclamation¹, prepared an environmental assessment (EA) to analyze the potential impacts of ten categories of proposed restoration actions to support more efficient environmental review of future site-specific actions and projects. Based on the analysis in the EA, Bonneville determined that the Proposed Action would not significantly affect the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 *et seq.*). Therefore, the preparation of an environmental impact statement (EIS) is not required and Bonneville is issuing this Finding of No Significant Impact (FONSI) for the Proposed Action. The Proposed Action is not the type of action that normally requires preparation of an EIS and is not without precedent. The Bureau of Reclamation will prepare their own agency-specific FONSI and decision document for the action.

The comments received on the Draft EA and responses to the comments are included in the Final EA. The Final EA also identifies changes made to the Draft EA.

The attached Mitigation Action Plan exemplifies the types of mitigation measures that BPA could use as appropriate for site-specific restoration actions and projects as part of the Proposed Action. Mitigation measures specific to each funded action would be identified during site-specific assessments which would be conducted for those actions. The FONSI also includes a statement of findings on how the Proposed Action would impact wetlands and floodplains.

PUBLIC AVAILABILITY

This FONSI will be mailed to individuals who previously requested it; a notification of availability will be mailed to other potentially affected parties; and the EA and FONSI will be posted on Bonneville's project website <http://www.bpa.gov/goto/TribProgrammatic>.

¹ BPA and Reclamation are referred to as "Agencies" in this document.

PROPOSED ACTION

Under the Proposed Action, the agencies would use the EA to help evaluate the potential environmental impacts and support NEPA responsibilities for their decisions on proposed tributary habitat restoration actions and projects.

The programmatic EA evaluates the typical environmental effects and identifies mitigation measures for ten categories of habitat restoration actions that would continue to be proposed for restoration of tributary habitat in the Columbia Basin. Under the Proposed Action, the agencies could tier environmental analyses for site-specific projects to the EA.

The extent of site-specific project NEPA analyses would be commensurate with the size, scope and potential environmental impacts of the specific tributary restoration proposal. Site-specific NEPA analyses could be documented in a categorical exclusion, a supplement analysis², an EA, or an EIS, as appropriate for the specific proposal. All of these documents could incorporate by reference or tier to the analysis in the EA.

As part of the NEPA review, all project-specific proposals would also be reviewed to ensure compliance with all applicable laws and regulations—including, but not limited to the Endangered Species Act, National Historic Preservation Act, Clean Water Act, and the Migratory Bird Treaty Act.

In addition, public notification or involvement would be conducted, as appropriate, for projects with potential effects to landowners, local governments, tribes, or interest groups to inform these potential stakeholders of proposed actions, to help determine the suitable level of NEPA analysis to be conducted, and to identify issues to be addressed.

The mitigation measures listed in the Mitigation Action Plan and adopted in this FONSI would be implemented, as applicable, to help lessen potential impacts of site-specific actions and projects.

Under the Proposed Action, restoration actions would be implemented to restore aquatic, riparian, and upland habitats; restore or improve hydrologic connectivity between river flows and those restored habitats; and restore hydrologic and riverine processes (flow patterns, localized flood regimes, sediment accretion, erosion, and floodplain function). Specific actions to achieve this could include fish passage restoration; improvement and restoration of rivers, streams, floodplains, and wetlands; invasive plant control; piling removal; road and trail maintenance, decommissioning, construction, and relocation; in-channel nutrient enhancement; irrigation, water delivery, and water use actions; fish, hydrologic, wildlife, and geomorphologic surveys; riparian and upland habitat improvements and structures; and artificial pond development.

NO ACTION ALTERNATIVE

Under the No Action Alternative, the agencies would not make changes from the current approach of conducting environmental review of tributary habitat improvement actions and site-specific projects; and without the support of a programmatic EA. The agencies would not

² A Supplement Analysis is a NEPA document developed by an agency to determine if an existing NEPA document should be supplemented or to support a decision to prepare a new NEPA document (see 40 CFR 1502.9(d) and 10 CFR 1021.104(b)).

utilize analysis in this EA through incorporation by reference or tiering to help expedite site-specific project environmental review.

Currently, the agencies evaluate habitat improvement projects as they are advanced by different sponsors or proponents at different times. These projects are rarely packaged or timed in a manner that facilitates coordinated efforts to satisfy environmental review under NEPA. The agencies, therefore, often conduct individual environmental evaluations and NEPA documentation for similar projects with nearly identical environmental effects. The No Action Alternative would continue this practice.

SIGNIFICANCE OF POTENTIAL IMPACTS OF THE PROPOSED ACTION

The EA evaluated the potential environmental effects of typical actions and projects of the tributary habitat restoration program, as well as of the Proposed Action and the No Action Alternative. The EA analysis provides support as to whether the actions, projects, or alternatives could cause significant environmental effects (see Chapter 3 of the EA). To summarize potential impacts, four impact levels were used: high, moderate, low, and no impact. High impacts could be considered significant impacts, if not mitigated, while moderate and low impacts are not. In general, implementation of restoration actions and projects would have short-term adverse impacts associated with construction disturbances, but long-term beneficial effects to natural resources due to improvement of tributary habitat. The Proposed Action would have no significant impacts.

The following discussion provides a summary of the Proposed Action's potential impacts and the reasons these impacts would not be significant. Many of the effects discussed below would be minimized through the application of mitigation measures identified in the Mitigation Action Plan as well as other resource-protective designs and measures that may be identified during site-specific project review.

FISH AND AQUATIC SPECIES

Effects on fish and aquatic species would be low considering both short-term and long-term effects.

- Construction actions that dewater streams and require fish salvage could have high short-term adverse impacts on individual fish, as they would be electroshocked, netted, handled, and then released during fish-salvage efforts. Other aquatic species too small to be captured during salvage efforts may be disturbed, injured, or killed during dewatering. These potential impacts would be mitigated to low or moderate impacts by application of protective measures such as timing restrictions and handling protocols; and the dewatering and fish-salvage action is itself a mitigation to protect aquatic species from heavy equipment operations in streams. Though individual fish may be adversely impacted during a single construction season in a localized area, the resource condition resulting from the restoration action would benefit fish populations for the long term.
- The noise and vibrations from construction equipment, or the shock from blasting, could disturb, displace, injure, or kill fish. The use of construction equipment also creates the potential for drips or spills of petroleum-based fluids that are toxic to aquatic species, but would be minimized by the application of mitigation measures.

- Construction activities that reshape channels, beds, and banks would produce short-term plumes of sediment that, though minimized by the application of mitigation measures, would impact aquatic species and their habitat.
- The application of piscicides would kill vulnerable species of invertebrates, amphibians, and non-target fish species along with the invasive fish targeted for removal. This action would likely remove many of these species from the treated area, but only for a short time, as recovery has been shown to be rapid with no long term adverse effects to affected populations or the treated area.
- For the long term, fish habitat would be improved. Passage barriers would be removed; previously isolated fish populations would be reconnected; available habitat would be increased; nutrient enhancement would aid primary and secondary productivity in nutrient-starved streams; habitat structure and complexity would be increased in both amount and quality; and stream flow and temperature regimes would be restored to ranges and conditions beneficial to fish and other aquatic species.
- Improved riparian plant communities (a component of tributary channel restoration actions) would benefit aquatic species by increasing organic inputs into the stream in the form of woody debris for habitat and insects for food, and shade for temperature regulation.
- Riparian and upland habitat improvements such as road maintenance, decommissioning, and relocation; and culvert installations in small tributary streams would reduce unnatural fine sediment inputs into streams and rivers. Irrigation changes would provide more water for maintaining or restoring desirable flow regimes in rivers.

WATER RESOURCES

Effects on water resources would be low considering both short-term and long-term effects.

- Some actions (irrigation system changes and consolidation/reconstruction of irrigation diversions) would increase water quantity available for instream flows for the long term.
- Tributary restoration actions would create short-term, localized, sediment inputs from the actions of heavy equipment in and along streams, though these would be minimized by application of mitigation measures and they would generally not be in amounts greater than what occurs naturally during annual, natural, high flow events.
- The removal of riparian vegetation during construction activity could cause small, short-term increases in water temperature.
- For the long term, there 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 improvements in stream form, instream habitat structure, and increased riparian vegetative cover.

VEGETATION

Effects on vegetation would be moderate.

- Heavy equipment use during short-term construction activities would disturb soils and remove vegetative cover. A few actions (fewer than 20 per year) could impact up to a hundred acres but most actions (hundreds per year) would impact only about one acre or less.
- The creation of bare-soil sites in the short term results in the potential for colonization by invasive plants, but no bare soil sites would be left as such in these actions. Weed treatments and replanting of disturbed sites with native species are a part of all actions that modify vegetative conditions.
- The reintroduction of flows into side channels or floodplains that have not experienced consistent flowing water for many decades would produce changes in plant communities from upland plant associations to riparian or wetland communities adapted to seasonal flows.
- Use of herbicides, fire, or juniper removal actions would remove vegetation and modify plant communities in the short term (or over a series of years if invasive plants are well established and widespread), but for the long term would create site conditions more suitable for desired native plant communities.
- Over the long term, the effects to vegetation would be the restoration, improvement, or maintenance of native plant communities.

WETLANDS AND FLOODPLAINS

Effects on wetlands and floodplains would be low considering both short-term and long-term effects.

- Existing wetlands (in poor condition) would be temporarily damaged or destroyed in the process of reconstructing improved versions of them for the long term. The short-term impacts from heavy equipment operations would be high.
- Floodplains may be similarly impacted by construction activities where they would be reconnected to rivers or streams (constructed secondary channels, side channels, and alcoves), but the long-term result would be a hydrological connection between the floodplain and its water source which could elevate groundwater tables and restore or improve floodplain function for the long term.
- Modifications of floodplain connections and function have a risk of failure if uncommonly high flows immediately follow project completion, but structures that increase floodplain “roughness” and slow water velocities across floodplains would be applied where such risks are possible.
- Prescribed burning in wetlands or floodplains for invasive plant removal or management of vegetative conditions, would alter soil and vegetation conditions, but ultimately increase wetland plant abundance and diversity and improve wetland function.
- The long-term beneficial effects of improved stream/floodplain connection; restored floodplain function; and riparian habitat improvements would increase water storage capacity in the floodplain, augment late season stream flows, slow the movement of water during floods, and attenuate peak flood flows.

WILDLIFE

Effects on wildlife would be low, though the short-term effects vary depending on the types of wildlife being considered. Long-term effects are beneficial for most types of wildlife.

- Short-term construction activities would adversely impact wildlife through habitat loss for smaller wildlife species, and disturbance and displacement of larger wildlife. Sensitive site avoidance, design and timing criteria, and other mitigation measures however, would reduce these effects.
- Species with small home ranges that are closely-associated with riparian habitats would be impacted by short-term construction activities. Some small, individual animals may be injured or killed by heavy equipment operations. Some would lose all required habitat values during the construction period.
- Larger, or otherwise more mobile species (such as birds or deer) with larger home ranges would be stressed, and displaced during the construction period into other parts of their range. Timing restrictions would generally be applied to avoid disturbance of nesting sites.
- Wildlife displaced by short-term construction activities may be forced into neighboring territories where competition with occupants of those territories could prove fatal to one or both individuals. Longer construction periods and larger areas of disruption would increase this potential.
- Habitat alterations from completed actions may preclude use by species closely-associated with the riparian or floodplain habitats affected during the time it would take for vegetation to recover or grow (three to ten growing seasons). This time may exceed the lifespan of some species; thus, some individuals or breeding pairs may be lost.
- Habitat generalist species that can use a variety of habitats would be less vulnerable to such displacement but would face competitive pressures if displaced into surrounding habitats. Some habitat-generalist species may be affected only because some of their prey species may be dependent on the habitats affected.
- The long-term effects of these actions would produce habitats with an increased capacity for larger numbers and a greater diversity of wildlife than was there formerly, so while individuals may be adversely affected by the short-term actions, larger wildlife populations would benefit from the long-term results.
- No species listed as Threatened or Endangered under the Endangered Species Act (ESA) are closely associated with the riparian or wetland habitat types that would be impacted during restoration activities. They would be affected solely if restoration sites might be part of their larger home range area (e.g. a riparian area within a 2,000-acre spotted owl home range), and such interactions would be addressed at the site-specific project level.

GEOLOGY AND SOILS

Impacts to geology and soils would be moderate.

- Some projects would have a high degree of ground disturbance by displacing, compacting, and mixing soils by the use of heavy equipment for reshaping river banks, beds, side channels, and floodplains. Such impacts could impair soil productivity and function in the locations disturbed, but effects would be minimized by application of mitigation measures.

- Soils would be impacted by prescribed burns that could remove surface vegetation and organic material in the soils, thermally damage soil microorganisms, and alter nutrient content and availability for plant use. These effects would be minimized by application of properly prepared burn plans as required in the mitigation measures.
- Minor and temporary impacts on soils from herbicide applications are possible, but would be minimized by applying required mitigation measures in Appendix C of the EA.
- Project actions would create conditions that would improve soil quality and productivity for the long-term. Projects would restore proper function to floodplains which provide for seasonal sediment deposits during spring floods. These deposits increase water-holding capacity, supply nutrients, and deliver vegetative propagules and seeds for vegetation establishment which all contribute to restoring the soils' hydrological, biological, and nutrient-cycling function for the long term.

TRANSPORTATION

Impacts to transportation would be low.

- Roads may be closed for short periods while culverts are being replaced, bridges are constructed, or road surfaces are being maintained. Road users would be inconvenienced at these times.
- Some low-traffic-volume roads may be decommissioned and some may be relocated, and users would no longer be able to use them. The end result, however, would be a local transportation system requiring less maintenance. In addition, there would be improved travel conditions by having improved running surfaces, and by being out of areas more prone to flooding, erosion, or rutting.

LAND USE AND RECREATION

Impacts to land use and recreation would be low to moderate.

- Restoration actions would not require a change in land uses outside of the sites being restored. Specific practices, such as grazing timing and intensity, and irrigation water uses, may change at the restoration site (with the cooperation of a willing landowner), but surrounding land previously in agricultural production or grazing use would remain so after restoration actions.
- A few parcels may be converted from agricultural use to aquatic, riparian, or floodplain use on those areas designated with a conservation easement, but the land use (a conservation easement) would not change. This can also occur on private lands at the request of private landowner, but this would be uncommon.
- Actions on Federal- or state-managed lands would be consistent with the resource management plans guiding uses of those lands.
- Effects on recreation uses would be minimal since most actions are on private lands where public recreation is precluded, or on publicly-owned state or Federal land where recreational access would be maintained. In both situations, habitat would be improved for fish, wildlife, and aquatic conditions which all contribute to higher quality recreational experiences on the site or in nearby accessible areas.

- Some river restoration end results may benefit one type of recreation over another. Those that place logs or log structures in rivers may inconvenience recreational rafters and kayakers, although they would benefit those who fish. Informational signing for public safety would be applied as a mitigation measure in these situations.
- Restoration sites may attract recreationists and some projects may include accommodations for their use. If recreational use increases, there could be potential for conflict with neighboring landowners. Most actions, however, are on private lands with no accommodations that would attract public users.

VISUAL RESOURCES

Impacts to visual resources would be low.

- Construction activities would degrade the scenery in the short-term by removing vegetation, and operating heavy equipment inconsistent with the agricultural or rural character of the site. But long-term conditions would be consistent with the landscape and often improve visual quality by improving vegetative conditions.
- No structure or condition would be created in these actions that would be inconsistent with the rural agricultural or natural setting in which they are located. Most would be indistinguishable in the middle or background as seen from publicly traveled roadways.
- Prescribed burns would temporarily impact visual quality until the vegetation greens up (which would start within weeks or months). Properly designed and executed burn plans, as required in the mitigation measures, would not create long-lasting, visually dominant, burn evidence.

AIR QUALITY, NOISE, AND PUBLIC SAFETY

Impacts to air quality, noise, and public safety would be low.

- Heavy equipment would produce exhaust emissions and cause dust during construction and by travel along unpaved access roads, but would affect local air quality only for short periods. No long-term emissions would be produced by the proposed actions.
- Herbicide used for invasive species control could cause short-term air quality degradation if applied during high temperatures or inversions, but application according to label requirements and application of mitigation measures would minimize or prevent this effect.
- Heavy equipment use could increase (double) the ambient noise levels during short-term construction periods, but in nearly all cases these would be far enough away from homes or workplaces that the noise might be noticeable but not disruptive. For projects with potential for disruptive noise, minimization and mitigation measures such as timing or special muffler requirements would be applied. Completed actions would produce no disruptive noise.
- The short-term construction and restoration activities would not be expected to hinder emergency vehicle access or overburden the existing health and safety infrastructure; and site-specific road hazards would be mitigated using routine safeguards such as signage and flaggers.

CULTURAL RESOURCES

Impacts to cultural resources would be low.

- Each project would be reviewed by an appropriately qualified cultural resource specialist to facilitate compliance with Section 106 of the National Historic Preservation Act.
- Project actions with potential to adversely impact cultural resources would be identified and steps to taken to avoid, minimize, or mitigate such effects.
- Post-review discovery plans would direct work stoppage, protection measures, and other consultation and protective needs if cultural resource finds are made while the project is being implemented.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Impacts to socioeconomics and environmental justice would be low.

- The Proposed Action would have a low impact on local populations and economies. Permanent jobs would not be created, land uses would not be changed, and project activities would not require people to relocate homes or businesses.
- Some sub-watersheds with long-term restoration activities under this program have seen, and would likely continue to support, new equipment-operator businesses that specialize in construction work for stream restoration.
- Short-term economic benefits would be created by project actions in the form of purchases of supplies and materials, and by expenditures of the workers employed to implement the actions, but this economic benefit would be minimal.
- Local tourist-based economies would benefit in the long term from recreational opportunities improved by increased fish runs, improved natural scenery, and increased and seasonally extended in-stream flows.
- Potential impacts to lands downstream of flow-altering restoration actions would be considered in project planning so as to avoid adverse effects.
- The Proposed Action includes no activity that would result in displacements of environmental justice populations or land uses; nor would it generate human health or environmental effects that might disadvantage any population, including minority or low-income populations.
- Restoration projects have been and would continue to be proposed and implemented on or near Indian reservations or non-reservation communities that could meet the definition of an environmental justice population. These actions would often be sponsored by the tribes themselves on lands they control or on lands whose owners or managers are participating in the action with funding benefitting tribal governments and individuals.
- Some actions may have potential for short-term adverse natural resource impacts that could affect tribal members' use of those resources in the short term; but site-specific assessments would be required and these are intended to identify this potential, and avoid or mitigate such effects.

CLIMATE CHANGE

Impacts to climate change would be low.

- Impacts to climate change would come only from the short-term effects of emissions from motorized equipment operations during construction or implementation of the proposed activities.
- Carbon emissions would be offset to some degree by the increased carbon sequestration capability of expanded and improved wetlands.
- Temperature increase from climate change would be locally ameliorated by restored floodplain function with increased groundwater inputs, and water temperature decreases from improved instream and riparian habitat conditions.

DETERMINATION

Based on the information in the EA, as summarized here, Bonneville determines that the Proposed Action is not a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA (42 USC 4321 *et seq.*). Therefore, an EIS will not be prepared and Bonneville is issuing this FONSI for the Proposed Action.

Issued in Portland, Oregon

SCOTT G. ARMENTROUT
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Columbia River Basin Tributary Habitat Restoration Program

Mitigation Action Plan

MITIGATION ACTION PLAN

This Mitigation Action Plan is part of the Finding of No Significant Impact (FONSI) for the Columbia River Basin Tributary Habitat Restoration Program. The mitigation measures were identified through the EA analysis as typical measures that would help lessen potential environmental impacts of implementing restoration actions and projects. Most measures are focused on mitigating construction-type impacts, but also included are measures to be considered during project design and site-specific environmental review.

The applicable mitigation measures from the Mitigation Action Plan would be adopted through the site-specific environmental review process. Bonneville Power Administration, through its project sponsor/contractor, would be responsible for implementing the mitigation measures during various phases of tributary habitat restoration work. Relevant portions of this Mitigation Action Plan would be included in the site-specific construction contracts to ensure implementation.

The Mitigation Action Plan may be amended if revisions are needed due to new information or if there are any substantial project changes.

MITIGATION MEASURES

Minimization and mitigation measures have been identified to reduce potential impacts associated with the Proposed Action. Typical mitigation measures that would be applied to site-specific restoration proposals are provided below in Table 1.

Table 1 Mitigation Action Plan

Resource	Mitigation Measure
All	<ul style="list-style-type: none"> • The applicable design criteria and conservation measures from Appendices A-C in this EA, ESA and NHPA consultation, and from Federal permitting shall be followed for all project actions and when applying the mitigation measures below. • Actions on non-Federally-managed lands will be implemented in compliance with required permitting by the states and local jurisdictions for protection of water and air quality; disposal of solid and or hazardous wastes; and environmental review, where applicable (e.g. Washington State Environmental Policy Act reviews).
Water Resources	<ul style="list-style-type: none"> • The project sponsor would ensure that applicable permitting under Section 401 and 404 of the Clean Water Act is in place, and that designs are effective in meeting established total maximum daily loads (TMDLs) prior to ground-disturbing activities. • Use sediment barriers such as fences, weed-free straw matting/bales, or fiber wattles, as necessary, in all work areas to intercept any surface flow that might transport sediment to the water bodies. • Stage construction equipment in staging areas identified and approved in construction plans (over 150 feet from streams). • Operate construction equipment, to the extent feasible, from the top of the bank along adjacent uplands and in previously cleared areas. • Develop a Stormwater Pollution Prevention Plan to minimize stormwater runoff and erosion from construction areas; include directions for hazardous material handling and disposal. • Store construction fuel offsite and refuel equipment within temporary secondary containment in designed staging areas, no closer than 150 feet from water bodies. • Operate refueling areas using best management practices (BMPs) and equip these areas with appropriate spill containment systems constructed to contain 110% of the volume of fuel stored within the fuel tanks. • Use water trucks to apply water to the construction area as needed for dust control. • Wash all equipment that may work below the ordinary high water mark (OHWM) elevation before it is delivered to the job site. • Inspect equipment to remove vegetation and soil that may contain noxious weed seeds. • Inspect machinery daily to identify and resolve fuel or lubricant leaks. • Cover and stockpile excess excavated materials away from water bodies and flank with sediment fencing to minimize opportunity for fine sediment to be transported into water bodies. • Protect existing riparian/wetland vegetation, to the extent possible.
Fish and Aquatic Species	<ul style="list-style-type: none"> • Minimize the amount of stream and riparian area impacted during construction. • Conduct excavation for project features in the dry season (late summer or early fall) to the extent possible. • Operate machinery for below-OHWM construction from the top of the streambank along adjacent upland areas, to the extent possible. • Retrofit hydraulically-operated equipment that may work below the OHWM with hydraulic fluids non-toxic to aquatic organisms. • For actions requiring within-stream construction work, isolate work areas according to the conservation measures for “Work Area Isolation & Fish Salvage” from Appendix B of the EA, “<i>General Mitigation Measures Applicable to All Actions</i>”. The procedures outlined in the National Marine Fisheries Service’s (NMFS) “Guidelines for Electrofishing Waters Containing Salmonids Listed under the

Resource	Mitigation Measure
	<p>Endangered Species Act” (NMFS 2000) would also be followed. Conduct work below the OHWM during designated instream work windows.</p> <ul style="list-style-type: none"> • Conduct work below the OHWM during designated instream work windows (generally mid-July through August 31) as approved by the appropriate states’ fish and wildlife agency. • No instream or riparian construction activities would occur during nighttime hours and prior to 30 minutes after dawn or continue any later than 30 minutes before dusk. • Protect existing riparian/wetland vegetation, to the extent possible.
Vegetation	<ul style="list-style-type: none"> • Wash all construction equipment prior to entering into and leaving the site to prevent the spread of noxious weeds. • Pull noxious weeds by hand or treat with herbicide approved for application in wetlands. • Reseed and plant native herbaceous plants, shrubs, and trees appropriate to riparian or upland sites following construction. • Apply weed control measures following construction. • Consider local noxious weed species priorities and follow local noxious weed regulations in treatment of invasive species.
Wetlands and Floodplains	<ul style="list-style-type: none"> • Mark wetlands designated for protection as “avoidance areas” on construction drawings, and flag them on the ground as “no-work areas” prior to construction
Wildlife	<ul style="list-style-type: none"> • Seasonal restrictions and spatial buffers would be implemented around known raptor nests during construction to minimize impacts to nesting raptors. • Use wildlife-friendly fence design wherever wire fencing is proposed for livestock exclusion
Geology and Soils	<ul style="list-style-type: none"> • Use sediment barriers such as silt fences and curtains, weed-free straw matting/bales, or fiber wattles, in all work areas to minimize soil loss. • Use water trucks to apply water as needed to the construction area to minimize air-borne soil loss. • Reseed and plant disturbed areas with appropriate native species effective for erosion control following construction.
Transportation	<ul style="list-style-type: none"> • Ensure awareness of, and coordination with, county and state roads and highways agencies of construction actions along major roads and highways. • Place signs and use flaggers on highways and roads to alert motorists of construction work along these travel ways.
Visual Resources	<ul style="list-style-type: none"> • Retain, when possible, existing vegetation that visually screens construction activities. • Reseed and plant disturbed areas with appropriate native species.
Air, Noise, and Public Health and Safety	<ul style="list-style-type: none"> • Reduce the speeds of construction vehicles on access roads to minimize dust. • Prescribed burning will be conducted in compliance with states’ permit requirements and smoke management protocols. • Maintain and replace defective mufflers on all construction equipment. • Operate construction equipment only during daylight hours when actions are within 0.25 miles of residences. • Signage and other routine safeguards for worker and public safety would be applied when heavy equipment is operating on, nearby, or traveling along public highways and roadways. • Use state-licensed applicators to apply approved herbicides according to manufacturers’ labels. • Dispose of non-hazardous wastes in approved landfills. • Dispose of hazardous wastes according to applicable Federal and state laws.

Resource	Mitigation Measure
	<ul style="list-style-type: none"> Develop and follow the applicable state laws for dealing with hazardous substances inadvertently discovered during project activities.
Cultural Resources	<ul style="list-style-type: none"> Mark known cultural resource sites as “avoidance areas” on construction drawings and flag as “no-work areas” in the field prior to construction. When identified as needed as part of the National Historic Preservation Act Section 106 consultation process, have a cultural resources monitor present on-site during construction activities that would take place in close proximity to identified avoidance areas. Prepare a plan that addresses inadvertent discoveries and ensure project sponsor has a copy on site during implementation, and follows the protocol should a cultural resources be discovered during construction.
Socioeconomics	<ul style="list-style-type: none"> Use local labor and materials, to the extent practicable
Climate Change	<ul style="list-style-type: none"> Regularly inspect, maintain, and replace defective emission control devices on all construction equipment.