

# FINAL Environmental Assessment

## North Burnt Fork Creek Culvert Removal and Restoration

Lee Metcalf National Wildlife Refuge, Montana



*Prepared by Lee Metcalf National Wildlife Refuge, 2023*

Table of Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>5</b>
<b>2</b>	<b>Purpose and Need for Action.....</b>	<b>6</b>
2.1	Refuge Background .....	6
2.2	Purpose and Need for Taking Action .....	7
2.3	Decision to be Made by the Responsible Official .....	8
2.4	Public Review.....	9
<b>3</b>	<b>Alternatives .....</b>	<b>9</b>
<b>3.1</b>	<b>Alternative A (No Action) .....</b>	<b>9</b>
<b>3.2</b>	<b>Alternative B (Proposed Action) .....</b>	<b>9</b>
3.3	Alternatives Considered but not selected as part of the Action .....	13
<b>4</b>	<b>Affected Environment and Environmental Consequences.....</b>	<b>14</b>
4.1	Air Quality.....	14
4.1.1	Existing Conditions.....	14
<b>4.1.2</b>	<b>Effects of Alternative A (No Action) on Air Quality .....</b>	<b>14</b>
<b>4.1.3</b>	<b>Effects of Alternative B (Proposed Action) on Air Quality .....</b>	<b>15</b>
4.2	Wetlands .....	15
4.2.1	Existing Conditions.....	15
4.2.1	Effects of Alternative A (No Action) on Wetlands .....	16
4.2.2	Effects of Alternative B (Proposed Alternative) on Wetlands.....	16
4.3	Stream Channels and Fisheries.....	16
4.3.1	Existing Conditions.....	16
<b>4.3.2</b>	<b>Effects of Alternative A (No Action) on Stream Channels and Fisheries .....</b>	<b>18</b>
<b>4.3.3</b>	<b>Effects of Alternative B (Proposed Action) on Stream Channels and Fisheries ...</b>	<b>18</b>
4.4	Waterfowl.....	19
4.4.1	Existing Conditions.....	19
<b>4.4.2</b>	<b>Effects of Alternative A (No Action) on Waterfowl .....</b>	<b>19</b>
<b>4.4.3</b>	<b>Effects of Alternative B (Proposed Action) on Waterfowl .....</b>	<b>19</b>
4.5	Species of Concern, Threatened and Endangered Species and Critical Habitat .....	20
4.5.1	Existing Conditions.....	20
<b>4.5.2</b>	<b>Effects of Alternative A (No Action) on TES and Critical Habitat .....</b>	<b>21</b>
<b>4.5.3</b>	<b>Effects of Alternative B (Proposed Action) on TES and Critical Habitat .....</b>	<b>21</b>

4.6	Cultural and Historic Resources .....	21
4.6.1	Existing Conditions.....	21
<b>4.6.2</b>	<b>Effects of Alternative A on Cultural and Historic Resources .....</b>	<b>21</b>
<b>4.6.3</b>	<b>Effects of Alternative B (Proposed Action) on Cultural and Historic Resources ..</b>	<b>21</b>
4.7	Wildlife – Dependent Recreation .....	22
4.7.1	Existing Conditions.....	22
<b>4.7.2</b>	<b>Effects of Alternative A (No Action) on Recreation .....</b>	<b>22</b>
<b>4.7.3</b>	<b>Effects of Alternative B (Proposed Action) on Recreation .....</b>	<b>23</b>
4.8	Noxious, Invasive and Nonnative Plants and Animals .....	23
4.8.1	Existing Conditions.....	23
<b>4.8.2</b>	<b>Effects of Alternative A (No Action) on Invasive and Nonnative Plants and Animals</b>	<b>24</b>
<b>4.8.3</b>	<b>Effects of Alternative B (Proposed Action) on Invasive and Nonnative Plants and Animals</b>	<b>24</b>
4.9	Summary of Analysis .....	24
<b>4.9.1</b>	<b>Alternative A: No Action .....</b>	<b>24</b>
<b>4.9.2</b>	<b>Alternative B: Proposed Action .....</b>	<b>24</b>
4.10	Monitoring.....	26
<b>5</b>	<b>Consultation and Coordination.....</b>	<b>26</b>
<b>5.1</b>	<b>List of Preparers* .....</b>	<b>26</b>
5.2	Pertinent Laws, Executive Orders, and Regulations .....	26
<b>6</b>	<b>References .....</b>	<b>28</b>

## 1 Executive Summary

This final Environmental Assessment (EA) presents a proposal to improve fish passage and riparian habitat on North Burnt Fork Creek as it passes through Lee Metcalf National Wildlife Refuge (Refuge). The Refuge is managed by U.S. Fish and Wildlife Service (USFWS) and is located in the Bitterroot valley near Stevensville, Montana. The proposed action was described and reviewed in the draft version of this EA in November 2022, as well as part of the 2012, Refuge Comprehensive Conservation Plan Goals for the Bitterroot River Floodplain and North Burnt Fork Creek (USFWS, 2012, pgs. 78-82). A 30-day public comment period was open between January 2, 2023, and February 3, 2023, and an open house was held on January 18, 2023. A description and engineering design of the project have been posted in the Wildlife Viewing Area kiosk since early January 2023.

The Refuge is primarily managed for waterfowl habitat and has constructed a series of impoundments to create shallow wetlands. One such impoundment was built on North Burnt Fork Creek, 0.2 miles from its confluence with the Bitterroot River. The structure, a set of two vertical pipes leading into two culverts, effectively impounds water but also created a full passage barrier to fish migrating between the Bitterroot River and North Burnt Fork Creek. Many fish species in the Bitterroot, including Federally listed threatened bull trout and Montana Species of Special Concern, Westslope Cutthroat trout, migrate into tributaries like North Burnt Fork Creek to spawn. The structure has encouraged sediment to precipitate out, which, over time, has made this area less beneficial for waterfowl. Additionally, reed canarygrass, a highly aggressive non-native, has established throughout the riparian area, outcompeting the native riparian tree and shrub community, and simplifying habitat for migratory songbirds and other riparian-dependent species.

The Refuge, in partnership with Trout Unlimited and Montana Fish, Wildlife and Parks, is proposing a project to eliminate the fish passage barrier which would open up approximately 2.5 miles of stream habitat and improve riparian habitat through plantings. Importantly, the project area, located within the Wildlife Viewing Area (WVA) of the Refuge, is highly visited by the public who use its American with Disabilities Act of 1990 (ADA)-accessible trail system for walking, wildlife viewing and environmental education and interpretation. This project would ensure that access to the WVA trail system is maintained and improved, though access may be limited during construction.

This final Environmental Assessment presents two alternatives that were considered for this project, along with an assessment of impacts to natural and recreational resources. Alternatives considered include:

1. Alternative A: No Action
2. Alternative B: Proposed Action, including removal of the water control structure, construction of a pedestrian bridged culvert, revegetation and natural evacuation of impounded sediment.

Details on each alternative and its impacts can be found in this report. Impacts are also summarized in **Table 4-2**. Based on the project need, impact assessment and public input, Alternative B was selected as the proposal for a final decision.

## **2 Purpose and Need for Action**

### **2.1 Refuge Background**

Lee Metcalf National Wildlife Refuge was established on February 4, 1964, for the protection of migratory bird species. It is a 2,800-acre Refuge managed by the U.S. Fish and Wildlife Service, located in the Bitterroot River Valley of southwest Montana (**Figure 2-1**). The Refuge encompasses a portion of the Bitterroot River and North Burnt Fork Creek and is located between the scenic Bitterroot and Sapphire Mountains. The Refuge provides a diverse mosaic of western mountain valley habitats including gallery and riverfront forest, wet meadow, wetlands, and grassland benches.

The Refuge also provides opportunities for the public to enjoy compatible wildlife-dependent recreation, including hunting, fishing, wildlife observation, photography, environmental education, and interpretation. It is a very popular community and tourist destination with more than 143,000 visitors annually (USFWS, 2012).



**Figure 2-1.** Project vicinity map showing the Bitterroot valley and the project area, just north of Stevensville on Lee Metcalf National Wildlife Refuge, along North Burnt Fork Creek. Map by River Design Group

## 2.2 Purpose and Need for Taking Action

The primary purpose of this project is to restore aquatic organism passage between North Burnt Fork Creek and the Bitterroot River as well as the natural topography and water flow patterns of the floodplain as described in the 2012, Refuge Comprehensive Conservation Plan (Goals for the Bitterroot River Floodplain and North Burnt Fork Creek, pgs. 78-82). This project will restore aquatic passage from the Bitterroot River to approximately 2.5 miles of North Burnt Fork Creek. It will also reduce levees within the Bitterroot floodplain on the Refuge.

Many fish species in the Bitterroot rely on access to tributaries like North Burnt Fork Creek to spawn and rear their young, yet man-made structures such as undersized culverts and unscreened irrigation diversions often prevent fish from accessing large tracts of suitable habitat. On the Refuge, a levee across North Burnt Fork Creek has limited fish passage for over 50 years. A pair of 48 “culverts and stoplog risers were installed at some point after the levee to divert water from North Burnt Fork Creek and to impound the area upstream and create additional

waterfowl habitat. However, due to sedimentation precipitating out, the quality of the waterfowl habitat has declined over the years. The culverts entrap whole trees, logs, and debris, often requiring the Refuge staff to clean them with the use of a chain saw, and at times, a backhoe.

A secondary goal of this project is to improve riparian habitat along North Burnt Fork Creek. This area was historically dominated by cottonwood (*Populus tricocarpa*), with a mixed shrub understory, providing excellent, varied habitat for migratory songbirds, fish, furbearers, and the many other species that inhabit the Bitterroot floodplain ecosystem. Within the project area, native trees and shrubs have been suppressed by the highly aggressive, non-native reed canarygrass (*Phalaris arundinacea*) which prevents germination and new growth of natives. It also reduces floodplain and instream habitat quality, providing simplified structure, cover and bank stability. This project will remove portions of the reed canary sod and replace this monoculture with areas planted with native shrubs and riparian tree species.

Importantly, the project area, located within the WVA, is highly visited by the public who use its ADA-accessible trail system for walking, wildlife viewing and education. This project will ensure that access to the WVA trail system is maintained by replacing the paved path over the culverts with a bridged culvert, though access may be limited during construction.

Partners in this project, including the Refuge, Trout Unlimited, Montana Fish Wildlife & Parks and US Fish and Wildlife Service (USFWS) Division of Ecological Services, have developed an alternative to meet these project goals, with the engineering support of River Design Group. This final EA presents an action which fully restores connectivity for all aquatic organisms between the Bitterroot River and North Burnt Fork Creek, improves riparian habitat, and maintains ADA-accessible visitor access to the WVA trail system. It also briefly describes other alternative components that were considered and summarizes why they are not included in the proposed action.

The project presented in this EA includes the removal of a water control structure consisting of two culverts and stoplog risers in North Burnt Fork Creek; associated streambank restoration; construction of a pedestrian and vehicle bridged culvert to maintain visitor access; and riparian revegetation. These proposed actions are intended to improve habitat connectivity throughout North Burnt Fork Creek while improving the overall ecological integrity of natural systems within the project area. A map of the Analysis Area can be found in Appendix A: Figure 2-2.

### **2.3 Decision to be Made by the Responsible Official**

The decision to be made by the responsible official will be to authorize the restoration and improvements in the WVA as proposed, vary the design to meet the purpose and need, or to defer any action at this time. Authorization of this project includes that designs meet all USFWS standards and applicable laws, and that necessary permits and approvals are obtained from the U.S. Army Corps of Engineers, Montana Department of Environmental Quality, and Montana Department of Fish, Wildlife and Parks.

## **2.4 Public Review**

On January 5, 2023, a 30-day public comment period was opened to receive input from interested individuals. Seven written comments were received and are addressed in this final EA and summarized in **Appendix B**. In addition to the public comment period, an open house was hosted by Trout Unlimited, Montana Fish, Wildlife and Parks, and the Refuge on January 18, 2023. Three members of the public attended the open house. Plan designs of the proposed action were also posted in the Refuge's WVA kiosk in early January to inform the public of the project's goals and actions.

## **3 Alternatives**

This section provides a description of the alternatives considered.

### **3.1 Alternative A (No Action)**

Under the No Action Alternative, no floodplain, stream channel, or riparian restoration activities would occur, existing water control structures would remain in place, hindering passage for aquatic organisms in North Burnt Fork Creek. No revegetation would occur as a result of this project and reed canarygrass would continue to dominate North Burnt Fork Creek's floodplain on the Refuge. Flows in North Burnt Fork Creek would continue to be bifurcated, with the majority of flow passing through the culverts and stoplog structures. The WVA would remain open for wildlife observation, photography, and education.

### **3.2 Alternative B (Proposed Action)**

Alternative B, the Proposed Action, will restore aquatic organism passage through the Refuge by removing a water control structure consisting of two, 48-inch-wide culverts with attached 72-inch wide stoplog risers. The adjacent streambank and floodplain will be restored to native riparian species, and an ADA-accessible pedestrian bridge will be installed to maintain visitor access on existing WVA trails. This action will reconnect 2.5 miles of stream habitat to the Bitterroot River for the first time in 50+ years. While visitor access may be limited short-term during construction, the Refuge will open trails as quickly as it is safe to do so.

Details on each action and efforts to mitigate disturbance are presented below:

#### **1. Barrier Removal & Channel Restoration**

Removal of the water control structure is the primary objective of this proposal. A heavy equipment operator will be contracted to remove the existing structure, reconstruct the adjacent banks and floodplain and prepare the site for the bridged culvert installation.

During construction, several measures will be in place to ensure that in-stream impacts from construction are minimal and temporary. In-stream work will only occur from July 15-October 15, a window of time that bull trout and other salmonids are least sensitive to in-stream



disturbance. Additionally, temporary cofferdams and pumps will be constructed at the culvert/stoplog location to provide localized dewatering during removal and bridged culvert placement. Suspended sediment, stormwater and erosion control structures (e.g., silt fence and silt curtain) will also be in place to limit sediment impacts to the immediate construction area.

The water control structure has trapped sediment upstream for years and this has often been exacerbated by erosion upstream and sediment and debris from The Supply Ditch that is purged into North Burnt Fork Creek. Alternative B proposed that the majority of this sediment (720 cubic yards) is passively evacuated from the North Burnt Fork channel during subsequent high flow events. The only sediment that will be mechanically removed will be in the immediate vicinity of the water control structure, as needed, to remove that structure and set the new bridged culvert. In subsequent years, if a gravel bar downstream of the culverts mobilizes, an additional 520 cubic yards of sediment could also evacuate over time, with a total maximum volume 1240 cubic yards evacuated. Passive evacuation of sediment is preferable to mechanical removal because it allows work to occur without complete channel dewatering and does not require equipment to enter the creek, reducing disturbance. The volume of sediment estimated to enter the Bitterroot River from this project is minimal in the context of the natural sediment flux in the Bitterroot River each spring. For context, the 1,500-foot Bitterroot River bank eroding within the WVA was estimated to contribute 6,000 cubic yards of sediment *each year* between 2014 and 2017. Under this action, sediment evacuation will also occur naturally in the spring when aquatic organisms are adapted to large sediment inputs.

Where North Burnt Fork Creek meets the water control structure, a smaller, ditched channel diverts a portion of water northwards. The channel is dry each summer. Under this action, this northward channel will be maintained for high flow events, but recontoured from its current, linear ditch form into a series of wetland swales. A map of the plan overview, including locations of the barrier removal and revegetation, can be found in Appendix A: Figure 3-1. The Refuge will file change applications associated with the water rights on North Burnt Fork Creek to place them for use as instream flow or consider other ways to utilize the rights to provide beneficial use to the Refuge or North Burnt Fork Creek.

## **2. Bridged Culvert Construction**

Originally proposed as a spanned pedestrian bridge over North Burnt Fork Creek in the draft EA, the proposed action will further minimize disturbance by placing a bridged culvert over North Burnt Fork Creek. The reason for selecting a bridged culvert over a spanned bridge is that it is cost effective and will also allow heavy equipment to pass over the creek, eliminating the need for, and disturbance of, creating the upstream low-water crossing.

The structure, a “bridged culvert” will be an aluminum bottomless arch, 32’9” width at its base, and fully accommodating the designed stream bankfull width of 28-feet. A natural stream channel will be constructed under the bridged culvert using native material. This meets recommendations for passage of all aquatic organisms. The bridged culvert will include an ADA-

accessible paved path over the site of the current water control structure to maintain visitor access to the south end of the WVA. Two feet of compacted gravel will cover the bridged culvert prior to replacing the paved trail. The finished bridged culvert will accommodate any heavy piece of equipment needed to enter the WVA as well as emergency and maintenance vehicles. The trail improvements on top of the bridged culvert will be ADA-compliant. Appendix A: Figure 3-2 provides details on this structure.

### **3. Streambank Treatments**

Stream bank restoration will be necessary along approximately 400-linear feet in the area impacted by the water control structure removal. Banks will be rebuilt in their natural alignment using a vegetated wood matrix consisting of small-diameter wood, brush, willow cuttings and native backfill. This approach will not only provide stability for new banks but will also add instream complexity and overhead cover for aquatic and riparian-dependent organisms. An illustration of the proposed streambank treatment can be found in Appendix A: Figure 3-3. A typical stream cross-section near the bridged culvert site, after restoration, can be found in Appendix A: Figure 3-4.

### **4. Low-Water Stream Crossing Construction & Partial Levee Removal**

After careful evaluation and more articulate attention by the team's design engineers, it was determined that a bridged culvert that will accommodate heavy equipment and emergency and maintenance vehicles, while opening fish passage, was more cost effective and environmentally sensitive than a free-spanning bridge. Thus, with the placement of the bridged culvert, the need for the low water crossing is no longer necessary. Eliminating the low water crossing also precludes the need to haul approximately 813 cubic yards of material off site from sloping the creek's levees. Thus, the proposed action does not include a low-water crossing or levee removal 2,300 feet upstream of the existing water control structure.

### **5. Revegetation**

To increase native cover and reduce reed canarygrass, a combination of reed canarygrass sod removal, solarization, planting, fencing and willow trenches will be used. In total, this effort will plant, fence, and weed mat 300+ trees and shrubs and plant 3,000+ willow cuttings along the banks and floodplain of ½ mile of North Burnt Fork Creek. Appendix A: Figure 3-5 presents a map detailing the revegetation treatments.

The 3-acre area directly adjacent to the water control structure removal is referred to as the "intensive planting areas" where reed canarygrass sod will be removed mechanically. This will both reduce the root mass and ability of reed canarygrass to resprout and will also serve to lower the floodplain elevation when the streambed elevation will drop 1-2 feet from sediment evacuation. Following sod removal, 1) native trees and shrubs will be planted 2) weed fabric

around individual plants will be installed and secured and 3) fencing will be placed around planting areas to prevent browse from ungulates and beaver.

Throughout the entire ½ mile (7.5 acre) project area, including the “dispersed planting area,” willow cuttings will be planted in pre-dug trenches and trees planted where site conditions allow.

Reed canarygrass is a highly aggressive grass, pervasive in Montana. While less intensive approaches are sometimes used to combat it, they rarely are successful long-term. The selected approach is not intended to fully eradicate reed canarygrass from the property; given its aggressive root system and ability to recolonize, this is not a reasonable expectation. Instead, it will establish a native tree and shrub component alongside reed canarygrass, providing shade, bank stability and cover. Over time, mature cottonwoods are known to shade out reed canarygrass, further limiting its impact on habitat.

#### **6. Viewing structure relocation**

If necessary, the viewing structure that currently sits along the walking trail and just above the water control structure will be disassembled and reassembled in, or adjacent to, its current location. The structure will only be disassembled if it is determined by the on-site engineer that it is threatened by the construction activity.



**Figure 3-6.** The water control structure (foreground) and Viewing structure (background) along the paved trail in the Refuge WVA.

### 3.3 Alternatives Considered but not selected as part of the Action

During the development of this project, partners considered a wide range of alternatives beyond the proposed action presented in this final EA. Below is a brief summary of several alternatives evaluated, yet not included in the proposed action and the justification for excluding them.

- **North Channel as Main Burnt Fork Creek Channel:** This alternative would have removed the passage barrier and directed North Burnt Fork Creek northward, through the existing seasonal channel, instead of westward. The benefit of this alternative is that it would add several miles of habitat to North Burnt Fork Creek in a reach that is gaining ground water, beneficial for aquatic species. However, this alternative would have required major channel construction to increase channel capacity. It would also have caused a substantial increase in the amount of water headed towards Whitetail Golf Course in the spring, where annual flooding is already a problem. Finally, this alternative would have also required substantial bank hardening to maintain this channel, which would naturally erode towards the alignment proposed in the proposed action.
- **Mechanical Removal of Sediment:** This alternative is identical to the proposed action with the key exception that during the barrier removal activity, sediment that has accumulated upstream of the standpipe structure would have been removed mechanically (with an excavator) rather than naturally evacuated during spring floods. This alternative was not selected for several reasons. First, the volume of sediment in question is quite small relative to the natural annual flux of sediment in the Bitterroot River, so the natural evacuation of sediment in the proposed action is not expected to have a notable impact on the Bitterroot River or the organisms therein. Mechanical removal of sediment above the water control structure would have required equipment to work in the stream across a large area (800 linear feet), which would have required temporarily dewatering of a section of the stream or excessive turbidity during a time that aquatic species are not accustomed to high sediment loads. Additionally, the cost and logistics of hauling material off-site is substantial.
- **No bridge:** The Bitterroot River is actively eroding into the WVA and towards the project area. A channel migration study estimates that the river will overtake the project area in 12-45 years. Given this risk, partners considered removing the water control structure but not installing a pedestrian bridge nor a bridged culvert, given the high investment in at-risk infrastructure. All recreation structures would have instead been relocated and a new trail area improved to provide ADA-accessible visitor access. This proposal was not selected given the high visitor use and the wide range of channel migration projection timelines. As erosion occurs, the Refuge will assess the need for alternative trail access and infrastructure removal.

While the WVA is primarily a pedestrian trail, it is occasionally used by vehicles or heavy equipment for trail or structure maintenance and for access in the event of an emergency. For this reason, a vehicular bridge rated to carry heavy equipment was considered. This alternative was removed due to the high cost of this bridge. Instead,

under the proposed action, a bridged culvert will be installed, at least 2 feet of compacted gravel added and the surface re-paved to provide access to pedestrians, vehicles, and equipment.

## **4 Affected Environment and Environmental Consequences**

This section describes the area in which the proposed action will occur and focuses on those resources and the associated environmental consequences that are anticipated through implementation of the proposed action. This section does not provide a detailed description of the environment at large but supplies the needed information for the reader to understand the discussion in this section pertaining to the anticipated changes in the affected environment resulting from implementation of the proposed action.

### **4.1 Air Quality**

#### **4.1.1 Existing Conditions**

Air quality problems in Montana are usually related to urban areas and narrow mountain river valleys that are prone to temperature inversions. These temperature inversions cause chemical and particulate matter to become trapped in the air. (Particulate matter is tiny liquid or solid particles in the air that can be breathed in through the lungs, with the smaller particulates being more detrimental than larger particles.) These air pollutants have the greatest adverse effect on Montana's air quality.

Air quality in the Bitterroot Valley and Ravalli County is classified as either "attainment" or "unclassifiable-expected attainment" with respect to the National and Montana Ambient Air Quality Standards for all regulated air pollutants. The primary pollutant of concern in the Bitterroot Valley is particulate matter less than 2.5 microns in size (PM<sub>2.5</sub>). Ambient PM<sub>2.5</sub> levels have been measured at several locations in the Bitterroot Valley over the past several years and continue to be measured in the community of Hamilton, approximately 20 miles south of the refuge. Smoke from wood burning appliances (primarily residential heaters and woodstoves), forestry and agricultural prescribed burning practices, and forest fires occasionally result in elevated PM<sub>2.5</sub> levels in the Bitterroot Valley. The Montana Department of Environmental Quality conducts an open burning smoke management program to mitigate impacts from forestry and agricultural burning. Nevertheless, Missoula experienced 16 days of Stage I Air Alerts in 2003. The Montana Department of Environmental Quality evaluates monitored concentrations of PM<sub>2.5</sub> during the winter months to address elevated PM<sub>2.5</sub> levels primarily resulting from wood burning appliance emissions during periods of poor atmospheric dispersion (Hoby Rash, Monitoring Section Supervisor, Ambient Air Monitoring, Montana Department of Environmental Quality; email; September 27, 2010).

#### **4.1.2 Effects of Alternative A (No Action) on Air Quality**

No effect. Under the No Action alternative, existing air quality would remain unchanged, and no effects would result in the project area or Airshed.

### **4.1.3 Effects of Alternative B (Proposed Action) on Air Quality**

No significant impact. With the proposed action, construction activities may increase airborne dust, but levels are not anticipated to exceed air quality standards. An increase in pollutant emissions is expected as a result of heavy equipment activity. The construction-related emissions will be temporary and localized with levels not anticipated to exceed air quality standards. Work will be performed during established work hours in order to minimize any direct and indirect effects on neighboring properties. In addition, appropriate Best Management Practices (BMPs) will be applied to mitigate any potential impacts to air quality. Available technologies, including the use of watering, mulching, and/or applying surfactants to existing native/gravel roads will also be used where appropriate to minimize dust emissions. In general, these impacts will be localized and temporary.

## **4.2 Wetlands**

### **4.2.1 Existing Conditions**

Indicators of wetland hydrology, soils and vegetation were recorded as part of investigating site conditions to support restoration design and permitting. Existing wetlands at the Refuge project site include both emergent, scrub-shrub and Riverine Ditch wetland classifications. Wetlands occur on the floodplain of North Burnt Fork Creek and are bounded by a hillslope to the east which leads to uplands and the main parking area at the Refuge, and a slight terrace to the west which is occupied by a black cottonwood (*Populus trichocarpa*) gallery. A narrow emergent wetland also brackets a ditched side channel at the north of the project area.

Emergent wetlands on the floodplain of North Burnt Fork Creek are dominated by reed canarygrass, an aggressive non-native, as well as broadleaf cattail (*Typha latifolia*) and common beaked sedge (*Carex utriculata*). Where the groundwater table is at or within a few inches of the soil surface during a majority of the growing season, broadleaf cattail and common beaked sedge are present in higher percent cover than reed canarygrass, and this condition exists in a patchy distribution throughout the project area floodplain of North Burnt Fork Creek. Non-dominant components of emergent wetland communities include water smartweed (*Polygonum amphibium*) and yellow flag iris (*Iris pseudacorus*); stinging nettle (*Urtica dioica*) and Canada thistle (*Cirsium arvense*) are also present in few locations especially at the upstream portion of the project area. The wetland on the floodplain of the ditched side channel to the north consists almost exclusively of reed canarygrass, although few small pockets of broadleaf cattail are also present in this location.

Scrub-shrub wetlands at the Refuge restoration project area include a dominant cover of sandbar willow (*Salix exigua*) with similar understory composition as emergent wetlands. Scrub-shrub wetlands occur in a few main patches throughout the floodplain of North Burnt Fork Creek and are more abundant at the south of the project area.  
effect.

#### **4.2.1 Effects of Alternative A (No Action) on Wetlands**

No effect. Under the No Action alternative, wetland hydrology would not be restored, and existing vegetation communities would continue to occur as mapped in 2022. Reed canary grass would continue to suppress germination and establishment of native trees and shrubs.

#### **4.2.2 Effects of Alternative B (Proposed Alternative) on Wetlands**

No significant impact. The proposed action will create a net gain of 0.08 acres of wetland area. Up to 0.78 **acres** of emergent wetland will be temporarily impacted by excavation of the reed canarygrass sod mat for revegetation with native trees, shrubs, sedges and rushes. In addition, 0.11 acres of Riverine Ditch will be removed. However, the proposed action will result in the creation of 0.97 acres of wetland (emergent and scrub shrub) as all temporary wetland impact areas will be retained and new wetlands created. These wetlands will have a greater diversity of native plants which will be maintained by natural spring flood regimes rather than artificial impoundments. Sandbar willow in the scrub-shrub wetland which will be excavated along with the reed canarygrass sod mat will be salvaged to the greatest extent possible and replanted following the removal of reed canarygrass. Additional plantings of sandbar willow and cottonwood will supplement the shrub salvage and transplant effort, if necessary, to ensure that scrub-shrub wetland area will not decrease as a result of implementation of the action. Appendix A: Figure 4-1 presents a map of the wetland areas, prepared as part of a formal wetland delineation.

### **4.3 Stream Channels and Fisheries**

#### **4.3.1 Existing Conditions**

A map and photos of current stream conditions can be found in Appendix A: Figure 4-1. The Refuge is located in the Bitterroot River floodplain, with the Bitterroot River running through or alongside Refuge lands for approximately 5 miles. The river flows south to north and has areas of inherently unstable channel configurations until its confluence with the Clark Fork River near Missoula. The floodplain at the Refuge is characterized by multiple abandoned channels, backwater flooding, and entrances of two tributaries from the east, North Burnt Fork Creek and Three Mile Creek.

The project area is focused on North Burnt Fork Creek, 0.3 miles before its confluence with the Bitterroot River. North Burnt Fork Creek is one of the largest drainages on the Bitterroot's east side, flowing 26+ miles westward out of the Sapphire mountains through Forest Service land, private land and eventually, in its lower 0.8 miles, through the Refuge. The water control structures at river mile 0.3, that will be removed was once used to back up water in North Burnt Fork Creek to create waterfowl habitat.

North Burnt Fork Creek within the Refuge is a heavily altered stream. The majority of its path in the Refuge flows through an abandoned Bitterroot River meander bend, also called Francois Slough. At the water control structure, a secondary, manmade channel, flows northward an

additional 1-mile before entering the Bitterroot River. This secondary channel carries North Burnt Fork water during spring and early summer but goes dry on the Refuge each summer and fall without diverting water northward at the control structures. It is supplemented year-round by substantial groundwater inflows along its path, so despite often being dry on the Refuge for a portion of the year, its outflow to the river flows year-round. Additionally, the Bitterroot River is actively migrating in an easterly direction, through the WVA. While this erosion is natural, it is likely accelerated by channel straightening and rip-rap banks upstream which both increase shear stress on Refuge banks downstream. A channel migration analysis prepared by River Design Group calculated a migration rate of 10.5-39.6 feet/year between 2006 and 2017 (River Design Group, 2020). It is expected that the River will eventually erode into its former channel, Francois Slough, which is currently the path of North Burnt Fork Creek and within the proposed project area. Based on previous erosion rates, this is anticipated to occur in 12-45 years.

Native fish species in the Bitterroot and North Burnt Fork Creek near the project site include Westslope Cutthroat trout (*Oncorhynchus clarkii lewisi*), mountain whitefish (*Prosopium williamsoni*), longnose sucker (*Catostomus catostomus*), largescale sucker (*Catostomus macrocheilus*), Columbia slimy sculpin (*Cottus cognatus*), Northern pike minnow (*Ptychocheilus oregonensis*) longnose dace (*Rhinichthys cataractae*) and Redside shiner (*Richardsonius balteatus*). Non-native brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) also inhabit the area and are dominant in comparison to native trout species. Non-native northern pike (*Esox Lucius*) and largemouth bass (*Micropterus salmoides*) also occur in the Bitterroot River in localized habitats suitable for them.

Bull trout (*Salvelinus confluentus*) is federally listed as threatened and historically traveled between the Bitterroot River and North Burnt Fork Creek to spawn in the upper Burnt Fork watershed. Bull trout are rarely found in the vicinity of the project area today and have not been documented on the Refuge, though there is still a relatively strong population off the Refuge in the upper reaches of North Burnt Fork Creek in the Sapphire Mountains. Reduced flows, increased water temperatures, sedimentation, and barriers like the water control structures on the Refuge all likely contributed to the decline of this species in lower North Burnt Fork Creek and the adjacent reach of the Bitterroot River. On September 30, 2010, the Service designated 18,795 miles of streams and 488,252 acres of lakes and reservoirs in Idaho, Oregon, Washington, Montana, and Nevada as critical habitat for bull trout. The Bitterroot River and North Burnt Fork Creek are both located within this designated area. This designation and the status of the bull trout emphasize the need for coordination with other efforts to restore this critical habitat including special consideration in management of Refuge resources.

Connectivity between mainstem rivers and tributaries is critical from a fisheries perspective, and a major focus of agency and conservation non-profit work. While each fish species has specific habitat requirements, unobstructed movement between waterbodies allows fish to seek cold or warm water refugia, food resources, and appropriate spawning habitat. It also allows movement during major flood events or fires. For migratory trout species, this



movement is an essential component of their life history, using rivers for migration and overwintering, and tributaries for spawning and rearing.

Fish passage barriers, like the water control structures on the Refuge, undersized culverts or impassible or unscreened irrigation diversions, can substantially limit fishes' access to suitable habitat which in turn limits the population. In the Bitterroot River near Stevensville, MT and near this project site, Montana FWP sampling shows a long-term average of 419 trout >7" per mile. This is less than half the population density of a site 40 miles upstream where human impacts are less pronounced (Hannon bridge sampling site: 973 trout/mile). These reduced numbers are linked to many factors, but limited access to spawning and rearing tributary habitat is substantial. In their current state, the water control structures in the WVA are a full passage barrier to fish year-round. The secondary, north channel likely provides passage at moderate flows, but is impassible much of the year due to lack of water in the reach within the WVA.

#### **4.3.2 Effects of Alternative A (No Action) on Stream Channels and Fisheries**

No effect. Under the No Action alternative, no active restoration would occur, and North Burnt Fork Creek would continue to exist in a degraded state, with a substantial barrier preventing year-round fish passage between the Bitterroot River and North Burnt Fork Creek, as well as simplified aquatic and riparian habitat conditions and floodplain disconnection.

#### **4.3.3 Effects of Alternative B (Proposed Action) on Stream Channels and Fisheries**

No significant impact. Under the proposed action, the removal of the water control structure will reconnect 2.5 miles of North Burnt Fork Creek to the Bitterroot River for all aquatic life. It will also improve 0.5 miles of riparian and instream habitat by establishing cottonwood and native shrubs that can compete with non-native reed canarygrass. Additionally, the Refuge plans to submit change applications for the water rights associated with the Francois Slough structure to be transferred into an instream flow or consider other ways to utilize the rights to provide water beneficial to the Refuge or Burnt Fork Creek.

The west-flowing channel through the current water control structures will remain the primary North Burnt Fork Creek channel. The north-flowing channel will be activated at high-flows as a secondary channel. The North channel currently receives water from North Burnt Fork Creek at moderate-high flows and is often dry in summer and fall unless additional water is diverted. The proposed action will likely reduce flows in the Spring flood events and have no impact at low flows.

Construction activities, specifically the removal of the water control structure and stream bank reconstruction, may produce a temporary increase in turbidity and fine sediment. Impacts will be minimized by working at low-flows (July 15-October 15 fish window). Stormwater, turbidity and erosion control structures (e.g., silt fence and silt curtain) will also be in place to limit sediment impacts from the immediate construction area.

Sediment that has accumulated upstream of the water control structure (total maximum volume 1240 cubic yards) will evacuate naturally over time during spring flood events. Passive evacuation of sediment is preferable to mechanical removal because it allows work to occur without complete channel dewatering and does not require equipment to enter the creek outside of the immediate structure removal and bridged culvert installation, reducing disturbance. The volume of sediment estimated to enter the Bitterroot River from this action is minimal in the context of the natural sediment flux in the Bitterroot River each spring. For context, the 1,500-foot Bitterroot River bank eroding within the WVA was estimated to contribute 6,000 cubic yards of sediment *each year* between 2014 and 2017. Under this action, sediment evacuation will also occur naturally in spring when aquatic organisms are adapted to large sediment inputs.

#### **4.4 Waterfowl**

##### **4.4.1 Existing Conditions**

The water control structure that will be removed was previously used to impound water and increase waterfowl habitat, as well as divert water north. Because of sedimentation, the area impounded by the water control structure has, over time, decreased in value for waterfowl and waterbirds. The sediment has also encouraged emergent vegetation (cattail) to take over much of the open water. The impounded area does provide limited habitat for mallard (*Anas platyrhynchos*), American green-winged teal (*Anas crecca carolinensis*), hooded merganser (*Mergus cucullatus*), wood duck (*Aix sponsa*), and other waterfowl and one to two great blue herons (*Ardea herodias*) are often observed feeding from the elevated sediment accumulation. Marsh wrens (*Cistothorus palustris*), Sora (*Porzana carolina*) and Virginia rails (*Rallus limicola*), and red-winged (*Agelaius phoeniceus*) and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) use the cattails in the spring.

##### **4.4.2 Effects of Alternative A (No Action) on Waterfowl**

No effect. Under Alternative A, no habitat restoration actions would occur, and therefore no effects on waterfowl would result. Habitat for waterfowl would not improve. In a normal precipitation year, approximately 6 acres of open water would be available in the impounded creek wetland.

##### **4.4.3 Effects of Alternative B (Proposed Action) on Waterfowl**

No significant impact. The proposed action will remove the two 48-inch culverts and 72-inch wide stop log risers that can be managed to impound water in North Burnt Fork Creek for waterfowl and waterbird habitat. Though the structure still impounds water, it has provided limited benefits recently due to sedimentation. The removal of the water-control structure will transition the impounded wetland area to a more active riparian zone with higher consistent velocities and lotic stream-bed structure. This will represent a loss of waterfowl habitat for dabbling waterfowl yet, potentially, an increase in habitat for cavity nesting waterfowl over time. Construction will not begin until after July 15<sup>th</sup>, minimizing impacts to nesting waterfowl using the WVA.

## 4.5 Species of Concern, Threatened and Endangered Species and Critical Habitat

### 4.5.1 Existing Conditions

The following is a comprehensive list of federally endangered, threatened, proposed, and candidate species as well as designated or proposed Critical Habitats that occur within the action area. Notably, the action area is within designated Critical Habitat for bull trout, a Threatened species. Selective removal of barriers to bull trout migration, such as the water control structures on North Burnt Fork Creek, is an overarching goal for bull trout recovery (USFWS, 2015 , pg. D-44) to help “conserve and enhance Bitterroot River migratory populations” (USFWS, 2015, pg. D-126).

<i>Species</i>	<i>Status</i>	<i>Relevance</i>	<i>Critical Habitat</i>
Canada Lynx ( <i>Lynx canadensis</i> )	Threatened	No suitable habitat	None designated
Grizzly Bear ( <i>Ursus arctos horribilis</i> )	Threatened	Recovery Area	Proposed
Wolverine ( <i>Gulo gulo luscus</i> )	Proposed	No suitable habitat	None designated
Bull Trout ( <i>Salvelinus confluentus</i> )	Threatened	Historically migrated from Bitterroot River up North Burnt Fork Creek to spawn	North Burnt Fork Creek and the Bitterroot River.
Bull Trout Critical Habitat	Designated	Recovery Area	Burnt Fork Creek and the Bitterroot River
Yellow-billed Cuckoo ( <i>Coccyzus americanus</i> )	Threatened	Suitable habitat; spp. never documented	Outside of designated critical habitat
Monarch Butterfly ( <i>Danaus plexippus</i> )	Candidate	Found on Refuge no habitat in project area	None designated

**Table 4-1.** Threatened and Endangered species and critical habitats found within the project area

#### **4.5.2 Effects of Alternative A (No Action) on TES and Critical Habitat**

No effect. Under Alternative A, no habitat restoration actions would occur, and therefore no effects on TES or critical habitat would result. Habitat and connectivity for native bull trout and Westslope cutthroat trout would continue to be impaired.

#### **4.5.3 Effects of Alternative B (Proposed Action) on TES and Critical Habitat**

No significant impact. An Intra-Service Section-7 Biological Evaluation reviewed impacts to TES and critical habitat, based on the proposed action (**Appendix C**). Implementation of the proposed action will have No Effect on Canada Lynx, Wolverine and Yellow-billed Cuckoo. The proposed action May Affect but is Not Likely to Adversely Affect Grizzly bear, Bull Trout, Bull Trout Critical Habitat and the Monarch Butterfly. The proposed action will not Adversely Affect or Jeopardize any species

With the proposed action, approximately 2.5 miles of stream habitat will be reconnected and ½ mile of riparian habitat improved in bull trout critical habitat, providing suitable habitat conditions for all life history stages, and restoring fluvial connectivity between the Bitterroot River and North Burnt Fork Creek. Temporary impacts to water quality (increased turbidity) may occur during construction, but impacts will be minimized by working within the fish window (July 15-September 1), using coffer dams and pumps to keep streamflow away from active construction areas, and silt fences to capture sediment.

### **4.6 Cultural and Historic Resources**

#### **4.6.1 Existing Conditions**

An assessment and field survey of cultural and historic resources was completed in September 2022, by a U.S. Fish and Wildlife Service Archeologist to comply with Section 106 of the National Historic Preservation Act. Section 106 requires Federal agencies to assess the impact of an action on historic properties.

#### **4.6.2 Effects of Alternative A on Cultural and Historic Resources**

No effect

#### **4.6.3 Effects of Alternative B (Proposed Action) on Cultural and Historic Resources**

No impacts to historic properties are anticipated as part of this proposed action. The Service initially determined that the proposed action is of a type that has the potential to cause effects to historic properties. However, after investigation from Service staff, which included intensive field survey, no cultural or historic resources were identified in the action area.

If previously unidentified cultural resources are discovered during the action activities, work in the area will stop until an eligibility determination for the National Register and Historic

Property status can be made. If at any time historic properties are identified within the action area, adverse effects to them will be avoided, minimized, or mitigated through the Section 106 process within 36 CFR 800 *et seq.* **Appendix D** presents a statement of no impacts by the USFWS staff who conducted the field survey.

#### 4.7 Wildlife – Dependent Recreation

##### 4.7.1 Existing Conditions

The WVA of the Refuge is open to a number of wildlife-dependent recreational opportunities including fishing, wildlife observation, wildlife photography, environmental education and interpretation. It is popular with the public for walking and hiking. The WVA hosts a paved ADA-accessible loop trail as well as several smaller, unpaved trails. Erosion along the Bitterroot River bank in the WVA has washed out a large portion of the Cottonwood trail, which was formerly paved, following the path shown in **Figure 4-2**. An unpaved social trail has been created by regular foot traffic along the bank, looping back to the Metcalf Trail.

Visitor facilities include a kiosk with maps, bathrooms, an education shelter, and a viewing structure overlooking North Burnt Fork Creek. The roofed viewing structure is located along the Metcalf Trail, adjacent to the existing water control structures. This structure is most often used by visitors seeking shade and is sometime used for fishing in North Burnt Fork Creek.



**Figure 4-2.** Map of and photograph of Wildlife Viewing area trail system, including the viewing structure in photograph’s background.

##### 4.7.2 Effects of Alternative A (No Action) on Recreation

No effect. Wildlife-Dependent Recreational opportunities in the WVA would remain as they have in the recent past under the No Action Alternative. There would be no minor or temporary impacts from the no-action alternative to existing wildlife-dependent recreational opportunities.

Enhancements would occur as funding opportunities become available without consideration of the proposed action.

#### **4.7.3 Effects of Alternative B (Proposed Action) on Recreation**

No significant impact. Implementation of the proposed action is expected to benefit habitat for native plants and animals, including passerines, fisheries, and cold-water aquatic organisms within the project area. As a result, access to wildlife-dependent recreational activities associated with native riparian habitat will be enhanced over time. These activities include fishing, wildlife observation, wildlife photography, environmental education, and interpretation.

During construction, access to the trails on the south side of the WVA may be limited while the water control structures are removed, and the bridged culvert is installed. Additional closures for public safety may occur while heavy equipment is operating near trails. The Refuge will post signage alerting the public of closures.

With the proposed action, the current viewing structure may need to be disassembled and then reassembled after placement of the bridged culvert. The project engineer will determine if this is necessary once the bridged culvert is at the action site.

### **4.8 Noxious, Invasive and Nonnative Plants and Animals**

#### **4.8.1 Existing Conditions**

Invasive species documented on the Refuge include:

- **Plants**

Many non-native plant species are present on the Refuge and within the project area. Reed canarygrass is not considered noxious yet is known to be an aggressive competitor to native vegetation, especially in riparian areas and is dominant in the riparian area along North Burnt Fork Creek in the project area.

Dominant noxious and invasive plants on the Refuge include: yellowflag iris (*Iris pseudacorus*), Houndstongue (*Cynoglossum officinale*), spotted knapweed (*Centaurea biebersteinii*), hoary alyssum (*Berteroa incana*), St. John's wort (*Hypericum perforatum*), oxeye daisy (*Leucanthemum vulgare*), common tansy (*Tanacetum vulgare*), cheat grass (*Bromus tectorum*), musk thistle (*Carduus nutans*), bull thistle (*Cirsium vulgare*), and Canada thistle (*Cirsium arvense*).

- **Animals**

Although a number of non-native animals have been documented on the Refuge including Eurasian dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), ring-necked pheasant (*Phasianus colchicus*), largemouth bass (*Micropterus salmoides*), and others, the pervasive animal listed as invasive on the Refuge is the American bullfrog (*Lithobates catesbeianus*).

#### **4.8.2 Effects of Alternative A (No Action) on Invasive and Nonnative Plants and Animals**

No effect. Invasive and nonnative plants and animals within the project area would remain unaffected by the project under the No Action Alternative. It is anticipated that noxious weeds would continue to be managed by the Refuge and reed canarygrass would continue to proliferate throughout the WVA.

#### **4.8.3 Effects of Alternative B (Proposed Action) on Invasive and Nonnative Plants and Animals**

No significant impact. The spread of noxious weeds and reed canarygrass will be controlled during construction to the greatest extent practicable. Equipment will be required to be washed and free of weed seeds and propagules and inspected to ensure it is compliant before starting work. Disturbed areas will be seeded with a native grass seed mix, including a fast-germinating sterile grass to provide immediate cover and reduce bare ground.

A primary goal of the proposed action is to establish a tree and shrub community within the North Burnt Fork Creek riparian area, currently dominated by reed canarygrass. This alternative will not eradicate reed canarygrass yet will suppress it within planting areas using sod removal and weed fabric, allowing native tree and shrub containerized plants to establish. Mature trees are known to shade out reed canarygrass, reducing its impact on habitat.

Native and non-native fish species are located above and below the water control structure and both may benefit from its removal and the reconnection of habitat. Transitioning the impounded wetland environment back to an active stream and riparian habitat may manage against invasive bull frog and favor native amphibians.

### **4.9 Summary of Analysis**

#### **4.9.1 Alternative A: No Action**

Under the No Action alternative, the WVA would continue to be managed as it has been in the recent past. Fish passage would not be restored, and riparian habitat would not be improved with this action.

#### **4.9.2 Alternative B: Proposed Action**

Implementing the proposed alternative will result in temporary and localized impacts to air quality and fisheries (turbidity from construction). It will fully satisfy the purpose and need for this project, reconnecting 2.5 miles of habitat for aquatic organisms and improving riparian habitat for all riparian-dependent species. Visitor access and recreation opportunities may be limited during construction, yet will be improved in the long-term through improved habitat and wildlife viewing opportunities, as well as improved interpretive signage.

Lee Metcalf National Wildlife Refuge North Burnt Fork Creek Restoration Environmental Assessment

<b>Resource</b>	<b>Alternative A No Action</b>	<b>Alternative B Proposed Action</b>
Air Quality	No effect on air quality.	Construction activity will result in minor, short term, and localized increases in particulate matter and emissions or dust. Temporary and minor impact with no significant impact.
Wetlands	Continued conversion of riparian habitats to cattail dominated wetlands and then to drier vegetation types characterized by monotypic stands of reed canarygrass.	No significant impact. Restoration of riparian habitat on North Burnt Fork Creek. Transition of sediment impacted wetland to active channel and active riparian zone.
Stream channel and fisheries	Continued habitat degradation and likely increase in non-native fish over time. The existing fish passage barrier would persist and continue to fragment aquatic habitat in the WPA.	Approximately 2.5 miles of North Burnt Fork Creek will be reconnected for aquatic passage. Natural hydrologic processes and sediment regimes will be restored. Turbidity from construction will be minimal and temporary. No significant impact.
Waterfowl	No effect on waterfowl.	Loss of water control structure will reduce available open water at the site. Construction will occur in the summer, limiting impacts to nesting waterfowl.
Species of Concern, Threatened and Endangered Species & Critical Habitat	Continued habitat degradation for T&E species and WCT, a Montana Species of Special Concern.	Approximately 2.5 miles of aquatic habitat will be reconnected in bull trout critical habitat. 0.5 miles of riparian habitat will be improved.
Cultural and Historic Resources	No adverse effect.	No significant impact.
Wildlife-Dependent Recreation	No effect on wildlife-dependent recreation	Enhancement of riparian associated observation, photography, and interpretive opportunities. Access may be limited temporarily during construction.
Invasive and nonnative plants and animals	Continued invasion and spread of noxious weeds and reed canarygrass over time. Continued management to abate noxious weed species in the WVA.	Approximately 0.5 miles of improved riparian habitat through the establishment of cottonwood and native shrubs. Over time this planting should reduce proliferation of reed canarygrass and noxious weeds. Barrier removal will provide access to spawning habitat for native and non-native fish species alike.

**Table 4-2.** Summary table of the effects of each alternative on resources.



## 4.10 Monitoring

Monitoring will be conducted to ensure that project goals are met, in accordance with the proposed action. Monitoring will include, but not be limited to:

- **Photopoints:** Photopoints will be used to document the transition from backwater habitat to riverine habitat, through the removal of the water control impoundment structure. Photopoints may also provide qualitative support to data collected on revegetation.
- **Plant Survival:** A count of plant survival and mortality will occur 1-year post-construction. If <75% survival is observed, replacement plantings or similar mitigation will be considered.
- **Observed avian use (observation):** Observation of new avian species will be recorded at the Refuge headquarters, as reported. Participation from the general public or organized bird groups is welcomed.
- **Fisheries:** Montana FWP will continue semi-annual electrofish sampling in the Bitterroot River near Stevensville, and, less frequently, within the Refuge itself. While these data are not intended to demonstrate the direct impact of the proposed action, they offer insight into general trends in North Burnt Fork Creek and the Bitterroot River.

## 5 Consultation and Coordination

### 5.1 List of Preparers\*

The following personnel were consulted during the development of this EA:

Tom Reed	Refuge Manager, Lee Metcalf National Wildlife Refuge (USFWS)
Christine Brissette	Project Manager, Trout Unlimited (TU)
Jason Lindstrom	Fisheries Biologist, Montana Fish, Wildlife and Parks
Salvatore Caporale	Archeologist (Cultural & Historic Resources) (USFWS)
Selita Ammont	Restoration Ecologist (Wetland Delineation), River Design Group

### 5.2 Pertinent Laws, Executive Orders, and Regulations

*National Environmental Policy Act of 1969, as amended:* The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

*Endangered Species Act of 1973, as amended:* Provides for the conservation of the ecosystem upon which endangered species and threatened species depend and provides a program for the conservation of such endangered species and threatened species.

*Fish and Wildlife Act of 1956:* Under this act, the Secretary of the Interior is authorized to take such steps required for the development, management, conservation and protection of fish and

wildlife resources including but not limited to research, development of existing facilities, and acquisition by purchase or exchange of land and water.

*National Wildlife Refuge Administrative Act of 1966, as amended:* Defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of an area provided such use is compatible with the major purpose for which the refuge was established.

*Archaeological Resource Protection Act of 1970:* Protects irreplaceable archaeological resources on Federal lands which are 100 years or older.

*National Historic Preservation Act:* Authorizes the National Register of Historic Places, establishes the Advisory Council on Historic Preservation, and grants power to the Council to review Federal undertakings that affect historic properties.

*Title 50 of the Code of Federal Regulations:* Implements numerous laws and executive orders concerning wildlife, including administration of National Wildlife Refuges.

*Montana Stream Protection Act (SPA 124 Permit):* Any agency or subdivision of federal, state, county, or city government proposing a project that may affect the bed and banks of any stream in Montana. The purpose of the law is to protect and preserve fish and wildlife resources. The law is administered by the Montana Department of Fish, Wildlife and Parks.

*Federal Clean Water Act (404 Permit):* Any person, agency, or entity, either public or private, proposing a project that will result in the discharge or placement of dredged or fill material into waters of the United States. "Waters of the United States" include lakes, rivers, streams, wetlands, and other aquatic sites. The purpose of the law is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The U.S. Army Corps of Engineers has regulatory review and enforcement functions under the law.

*Short-term Water Quality Standard for Turbidity (318 Authorization):* Any person, agency, or entity, both public and private, initiating construction activity that will cause short term or temporary violations of state surface water quality standards for turbidity. The purpose of the law is to provide a short-term water quality turbidity standard for construction activities, to protect water quality, and to minimize sedimentation. The law is administered by the Montana Department of Environmental Quality.

*County Floodplain Development Permit:* Any development including, but not limited to, placement of fill, roads, bridges, culverts, transmission lines, irrigation facilities, storage of equipment or materials, and excavation; new construction/development, placement, or replacement of manufactured homes; and new construction, additions, or substantial improvements to residential and commercial buildings within a designated Special Flood Hazard Area.

## 6 References

Montana Field Guide. Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. Retrieved from <https://FieldGuide.mt.gov>

Weeds of the West, 2009. The Western Society of Weed Science, 10<sup>th</sup> Edition. 626 pp.

USFWS - U.S. Fish & Wildlife Service (2012) Comprehensive Conservation Plan, Lee Metcalf National Wildlife Refuge, Montana. Lee Metcalf National Wildlife Refuge, USFWS Region 6, Lakewood, CO.

USFWS - U.S. Fish & Wildlife Service (2015) Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*). Montana Ecological Services Office, Kalispell Suboffice, Kalispell, Montana. Northern Idaho Field Office and Eastern Washington Field Office, Spokane, Washington.

# Appendix A: Maps and Figures



IMAGERY: MAY 2020

**1 EXISTING CONDITIONS**  
 CONTOURS = 5'  
 1" = 200'

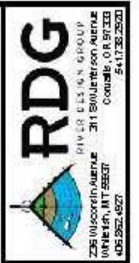
**EXISTING CONDITIONS**

NORTH BURNT FORK CREEK ORIGINATES IN THE SAPPHIRE MOUNTAINS ON THE EAST SIDE OF THE BITTERROOT VALLEY AND IS A TRIBUTARY TO THE BITTERROOT RIVER. FROM THE CONFLUENCE WITH SOUTH BURNT FORK CREEK TO THE MOUTH OF THE BITTERROOT RIVER, NORTH BURNT FORK CREEK IS LISTED AS IMPAIRED FOR TOTAL NITROGEN, TOTAL PHOSPHORUS, AND SEDIMENT (MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY, 2014). ADDITIONALLY, A SUBSTANTIAL FISH PASSAGE BARRIER EXISTS, IMPEDING FISH PASSAGE BETWEEN THE BITTERROOT RIVER AND NORTH BURNT FORK CREEK. HISTORICALLY A MAJOR SPawning TRIBUTARY IN THE LOWER BITTERROOT RIVER, THE BARRIER IS A RELIC CHECK DAM STRUCTURE THAT BIFURCATES NORTH BURNT FORK CREEK. MOST OF THE STREAMFLOW PASSES OVER THE CHECK DAM STRUCTURE WITH LIMITED SEASONAL FLOWS ALSO DIRECTED NORTHWARD THROUGH A NARROW, INTERMITTENT CHANNEL. THE CHECK DAM STRUCTURE HAS CAUSED UPSTREAM AGGRADATION OF SEDIMENTS, PRIMARILY SAND AND SMALL GRAVEL. SEDIMENT DEPOSITION HAS ALTERED CHANNEL GEOMETRY, IMPAIRED HABITAT CONDITIONS, AND IN PART FACILITATED THE CONVERSION OF HISTORICAL SHRUB AND FORESTED RIPARIAN COMMUNITY TYPES TO GRASS MONOCULTURES THAT OUTCOMPETE NATIVE VEGETATION. BARRIER REMOVAL WILL RE-ESTABLISH FISH PASSAGE AND RESTORE FLUVIAL CONNECTIVITY AND ECOSYSTEM FUNCTIONS TO 3.5 MILES OF STREAM CHANNEL.

AN EXISTING LEVEE SYSTEM EXISTS IN THE PROJECT AREA. THE LEVEE SYSTEM PROVIDES FLOOD PROTECTION FOR THE REFUGE, AND PORTIONS FORM THE BASE OF AN ADA-COMPLIANT WALKING TRAIL. THE LEVEES AND TRAIL SYSTEMS HAVE BEEN COMPROMISED BY ACCELERATED RIVER BANK MIGRATION AND EROSION FROM THE BITTERROOT RIVER. REMOVAL OF PORTIONS OF THE LEVEE SYSTEM TO REACTIVATE FORESTED FLOODPLAIN SURFACES AND SIDE CHANNEL HABITATS WAS IDENTIFIED AS A REFUGE GOAL IN THE COP. LEVEE REMOVAL WILL INCREASE FLOODPLAIN CONNECTIVITY AND RESTORE NATURAL RIVERINE PROCESSES INCLUDING THE TRANSPORT AND DISTRIBUTION OF FLOW, NUTRIENTS, AND SEDIMENTS ACROSS FLOODPLAIN SURFACES AS WELL AS PROMOTE NATURAL REGENERATION OF FLOODPLAIN VEGETATION. THESE BENEFITS WILL BE CONSIDERED AGAINST THE VALUABLE USER ACCESS CURRENTLY PROVIDED BY THE LEVEE SYSTEM.

BURNT FORK CREEK CHARACTERISTICS	
DRAINAGE AREA	91 SQUARE MILES
MEAN ANNUAL PRECIPITATION	30 INCHES
STREAM GRADIENT	0.02%
STREAMBED DSZ	COARSE SAND
STREAM TYPE	CS/BS
25-YEAR DISCHARGE (4% EXCEEDANCE)	1,000 CFS*

\*DERIVED FROM USGS WESTERN REGIONAL REGRESSION CURVES.

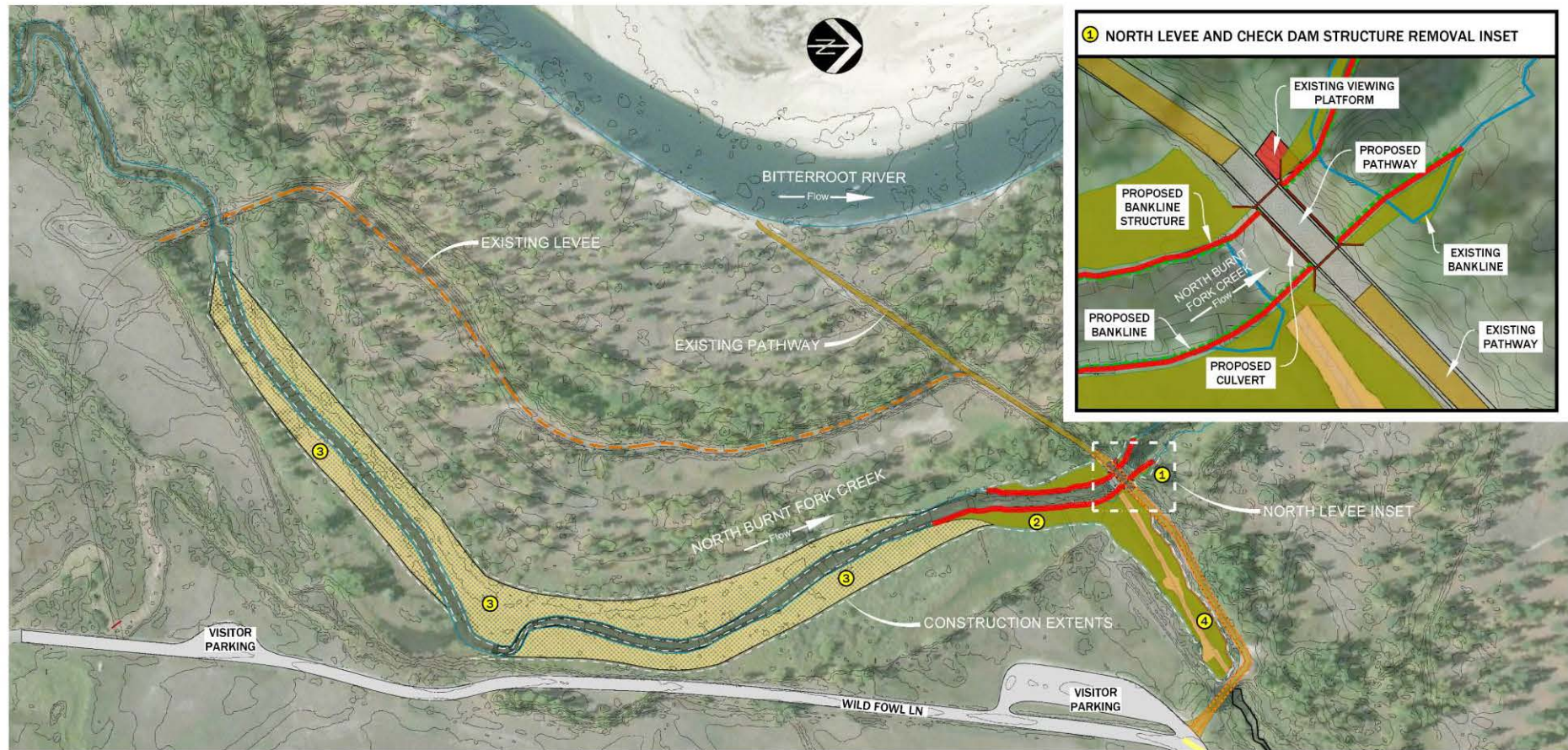


**EXISTING CONDITIONS**  
 NORTH BURNT FORK CREEK  
 FISH PASSAGE RESTORATION PROJECT  
 NEAR STEVENSVILLE, MT

CHK	DESCRIPTION	DATE	BY
JM	50% DESIGN	3/30/22	TH
	PRELIMINARY		
	NOT FOR CONSTRUCTION		
PROJECT NUMBER RDG-21-155			
DRAWING NUMBER <b>2.0</b>			
Drawing 2 of 16			

Figure 2-2. Map of the Analysis area within Lee Metcalf National Wildlife Refuge. Figure created by River Design Group

# NORTH BURNT FORK CREEK FISH PASSAGE RESTORATION PROJECT LEE METCALF NATIONAL WILDLIFE REFUGE



### PROPOSED ACTIONS

- |   |   |
|---|---|
| <p><b>1</b> NORTH LEVEE AND CHECK DAM STRUCTURE REMOVAL</p> <ul style="list-style-type: none"> <li>• CHECK DAM STRUCTURE DECOMMISSION AND REMOVAL</li> <li>• DISASSEMBLE AND REASSEMBLE MEMORIAL VIEWING STRUCTURE</li> <li>• INSTALL CULVERT, PATH, AND GUARDRAIL</li> <li>• CONSTRUCT CHANNEL BANK STRUCTURES AND FLOODPLAIN</li> </ul> <p><b>2</b> REED CANARY GRASS REMOVAL AND REVEGETATION</p> <ul style="list-style-type: none"> <li>• MECHANICALLY REMOVE REED CANARY GRASS ALONG BANKS OF CHANNEL AND WITHIN FLOODPLAIN</li> <li>• TREAT EXPOSED SURFACE WITH FLOODPLAIN ROUGHNESS AND BROADCAST SEED</li> <li>• INSTALL WILLOW CUTTINGS AND BLACK COTTONWOOD CONTAINERIZED PLANTS</li> <li>• INSTALL INDIVIDUAL BROWSE PROTECTORS OR FENCING UNITS AROUND CONTAINERIZED PLANTS</li> </ul> | <p><b>3</b> DISPERSED WILLOW AND COTTONWOOD PLANTING</p> <ul style="list-style-type: none"> <li>• INSTALL WILLOW CUTTINGS IN DISPERSED LOCATIONS ON THE FLOODPLAIN</li> <li>• UTILIZE NATIVE WILLOW CUTTING STOCK HARVESTED FROM APPROPRIATE LOCATIONS IN THE GREATER PROJECT AREA VICINITY</li> <li>• PLANT BLACK COTTONWOOD TREES IN SUITABLE HABITAT AND INSTALL INDIVIDUAL BROWSE PROTECTORS</li> </ul> <p><b>4</b> NORTH OVERFLOW CHANNEL</p> <ul style="list-style-type: none"> <li>• CREATE FLOODPLAIN SURFACE TO CONVEY NORTH BURNT FORK CREEK HIGH FLOW EVENTS IN PLACE OF EXISTING DITCH.</li> <li>• CONVERT TO EMERGENT WETLAND WITH NATIVE SEDGE AND RUSH PLANT INSTALLATIONS.</li> </ul> |
|---|---|

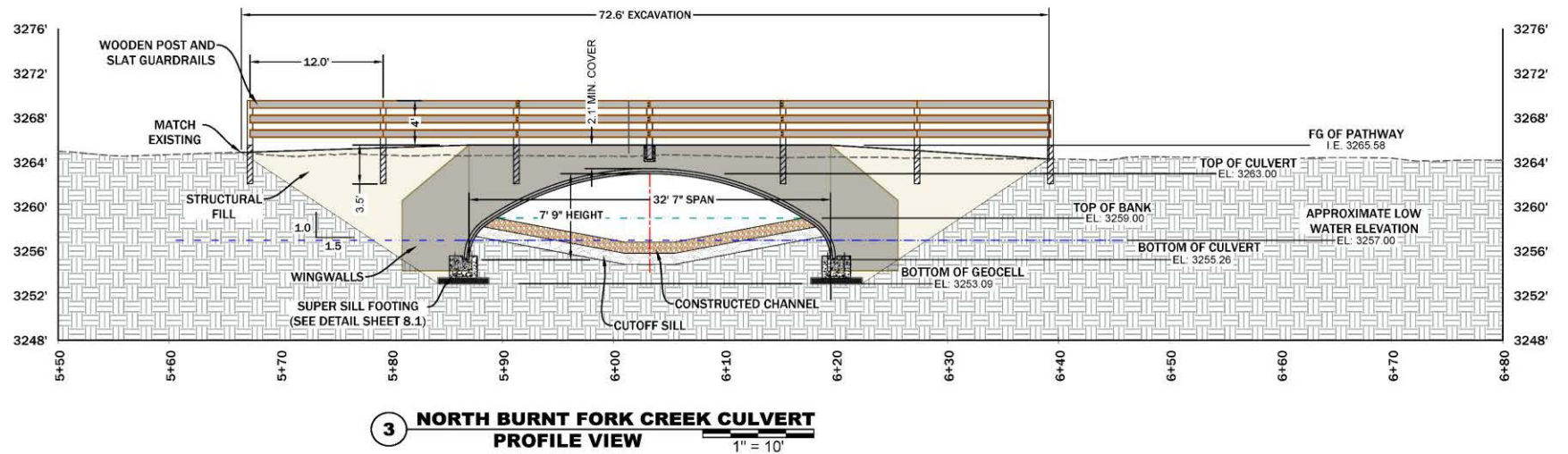
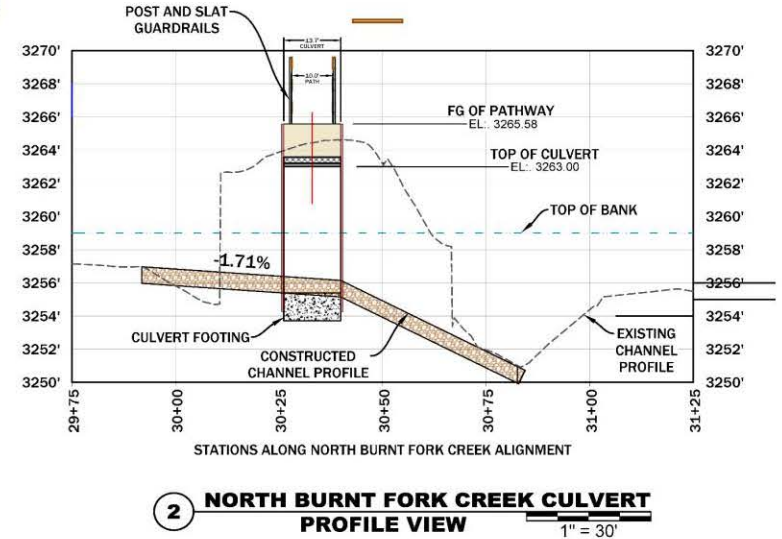
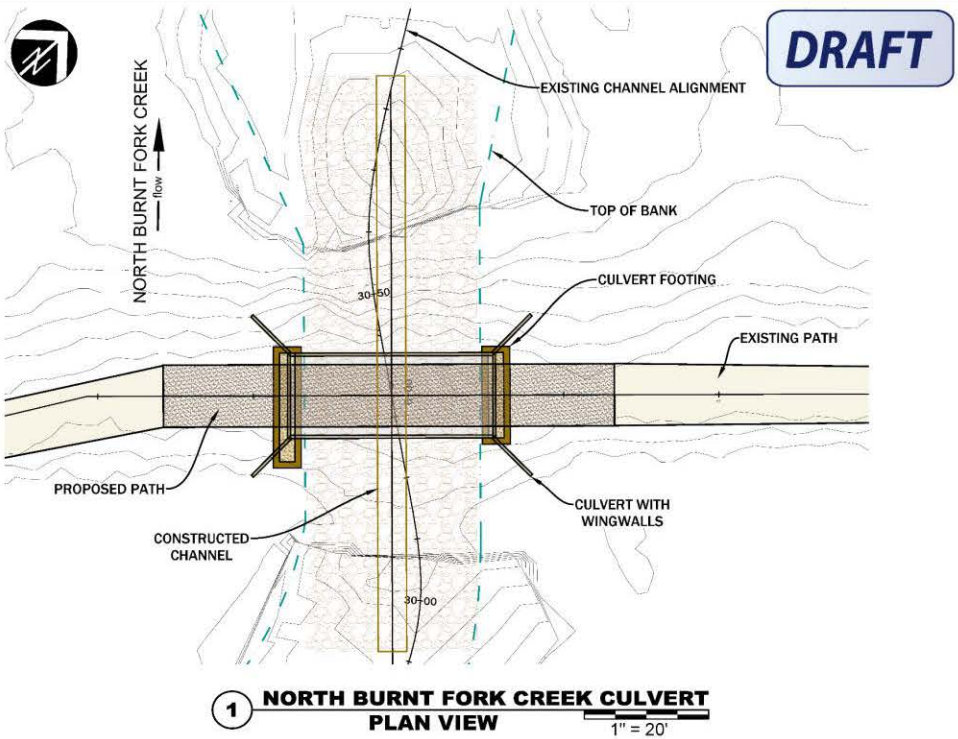
### LEGEND

REED CANARY GRASS REMOVAL AND REVEGETATION AREA	NORTH OVERFLOW CHANNEL
DISPERSED WILLOW PLANTING AREA	TEMPORARY ACCESS ROAD



M:\Projects\2021\FDCS-21-159\_Lee Metcalf NWRF\CAD\21-159\_Lee Metcalf Planset - 3\_21.dwg

**Figure 3- 1.** Alternative B Concept Plansheet. Figure created by River Design Group



**CULVERT DETAILS**  
NORTH BURNT FORK CREEK FISH PASSAGE RESTORATION  
NEAR STEVENSVILLE, MONTANA

BY	DESCRIPTION	CHK
TH	50% DESIGN	JIM
LS	100% DESIGN	JIM
LS	100% DESIGN	JIM

**DRAFT**

PROJECT NUMBER  
RDG-21-159  
DRAWING NUMBER  
**8.0**  
Drawing 17 of 18

Figure 3- 2. Culvert-crossing detail. Figure created by River Design Group

**GENERAL NOTES**

1. CONSTRUCTION OF THE VEGETATED WOOD MATRIX WILL OCCUR AFTER THE INFRASTRUCTURE IS REMOVED AND THE DESIGN BANKLINE SUBGRADE ELEVATION IS ESTABLISHED.
2. IF VEGETATED WOOD MATRIX STRUCTURES ARE INSTALLED PRIOR TO OCTOBER 1, LEAVE BACK TRENCH UNFILLED AND COMPLETE STRUCTURE WHEN DORMANT WILLOWS ARE AVAILABLE.
3. IT IS CONTRACTOR'S RESPONSIBILITY TO CUT WOOD INTO APPROPRIATE SIZE LENGTHS TO FIT STRUCTURE DIMENSIONS.
4. ANY CHANGES TO THE CONSTRUCTION SEQUENCE MUST BE APPROVED BY CONSTRUCTION MANAGER.
5. CONTRACTOR SHALL MARK AND CONSTRUCTION ENGINEER SHALL APPROVE THE GENERAL LOCATION FOR EACH VEGETATED WOOD MATRIX STRUCTURE PRIOR TO CONSTRUCTION.

**NOTES ON VEGETATED WOOD MATRIX INSTALLATION**

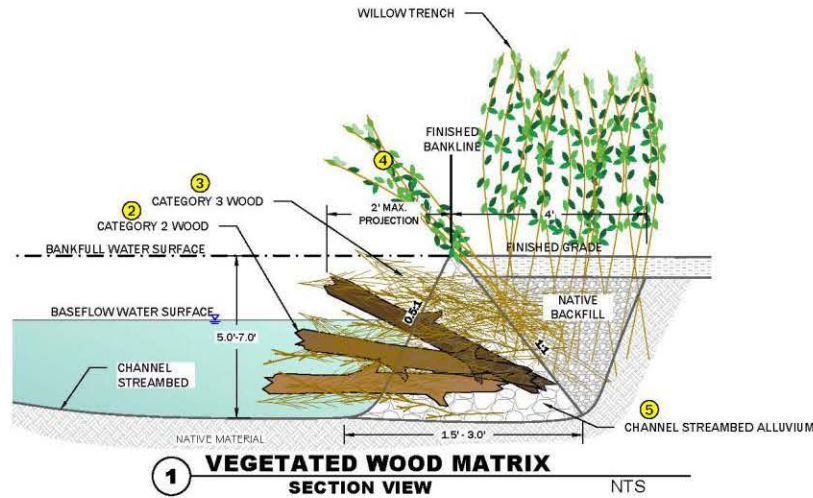
1. EXCAVATE TO THE EXCAVATION LIMITS AS SHOWN. EXCAVATED MATERIAL SHALL BE STOCKPILED ON THE FLOODPLAIN OUTSIDE OF THE IMMEDIATE WORK AREA.
2. PREPARE THE BENCH OF THE STRUCTURE BY PLACING CHANNEL STREAMBED ALLUVIUM FROM THE BASE OF THE EXCAVATION DEPTH, BOTTOM OF EXCAVATION TO WITHIN 1.0 FT. OF FINISHED GRADE.
3. CATEGORY 2 AND CATEGORY 3 WOOD, AND CHANNEL STREAMBED ALLUVIUM SHALL BE PLACED IN ALTERNATING LAYERS AND BUCKET COMPACTED UP TO THE TOP OF BANK ELEVATION AS SHOWN BELOW IN THE INSTALLATION SEQUENCE. PLACE SIX (6) FT TO EIGHT (8) FT. DORMANT WILLOW CUTTINGS AT A DENSITY OF 5 PER LINEAR FT ALONG THE TOP OF BANK LINE ELEVATION. WILLOW CUTTINGS SHALL SLOPE AT AN APPROXIMATE 1:1 SLOPE AS SHOWN IN SECTION VIEW. THE CUT ENDS SHALL BE PLACED AT THE BASE OF THE SLOPES WITH THE UN-CUT ENDS EXTENDING BEYOND THE EDGE OF THE TRENCH SO NO GREATER THAN ONE-THIRD OF THE TOTAL CUTTING LENGTH IS EXPOSED BEYOND THE TOP OF BANK EDGE. WILLOW CUTTINGS SHOULD INTERCEPT THE DESIGN TOP OF BANK LINE AS SHOWN IN STEP 5 OF THE INSTALLATION SEQUENCE.
4. THE UPSTREAM AND DOWNSTREAM ENDS OF THE STRUCTURE SHALL TRANSITION SMOOTHLY INTO ADJACENT STREAMBANK STRUCTURES TO MINIMIZE EROSION, FLANKING, AND BANK FAILURE. STRUCTURE ENDS MAY BE STABILIZED WITH ADDITIONAL CATEGORY 1 ROCK AS APPROVED BY ENGINEER.
5. AFTER INSTALLATION OF THE VEGETATED WOOD MATRIX, BACKFILL THE STRUCTURE WITH STOCKPILED MATERIAL TO FINISHED GRADE, AND BUCKET COMPACT. INSTALL WILLOW TRENCHES AT A RATE OF 2 PER LINEAR FOOT (OR 20 PER TRENCH) AS SHOWN. NO AREAS BEHIND THE FINISHED BANKLINE ARE TO BE LEFT BELOW FINISHED GRADE.

**STREAMBANK FILL GRADATION**

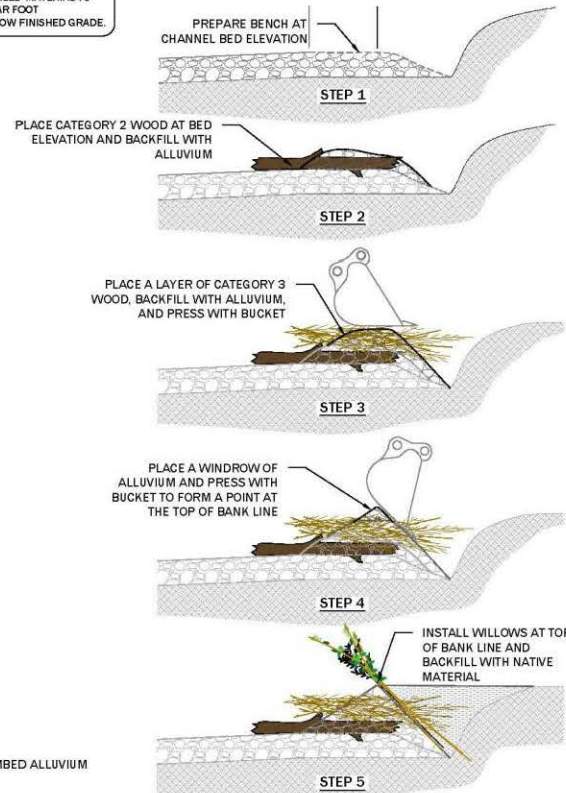
SIZE (INCHES)	PERCENT PASSING	REPRESENTATIVE SIZE CLASS
6	95	D100
5	90-95	D95
4	85-90	D84
3	65 - 85	D65
2	50 - 65	D50
1	30 - 50	D35
0.5	10 - 30	D15
FINES	0-10	

**MATERIAL SCHEDULE (PER LINEAR FOOT)**

ITEM	DIA.	TYPE 1	QUANTITY	
			TYPE 2	TYPE 3
② CATEGORY 2 WOOD	3" - 6"	0.25	2	-
③ CATEGORY 3 WOOD	< 3"	2	5	0.5
④ WILLOW CUTTINGS	0.25" - 1"	5	5	3
⑤ STREAMBANK ALLUVIUM	6" MINUS	0.2 CY	0.6 CY	-



**1 VEGETATED WOOD MATRIX SECTION VIEW** NTS



**2 RECOMMENDED VEGETATED WOOD MATRIX INSTALLATION SEQUENCE SECTION VIEW** 1" = 5'



**VEGETATED WOOD MATRIX DETAIL**  
 NORTH BURNT FORK CREEK  
 FISH PASSAGE RESTORATION PROJECT  
 NEAR STEVENSVILLE, MT

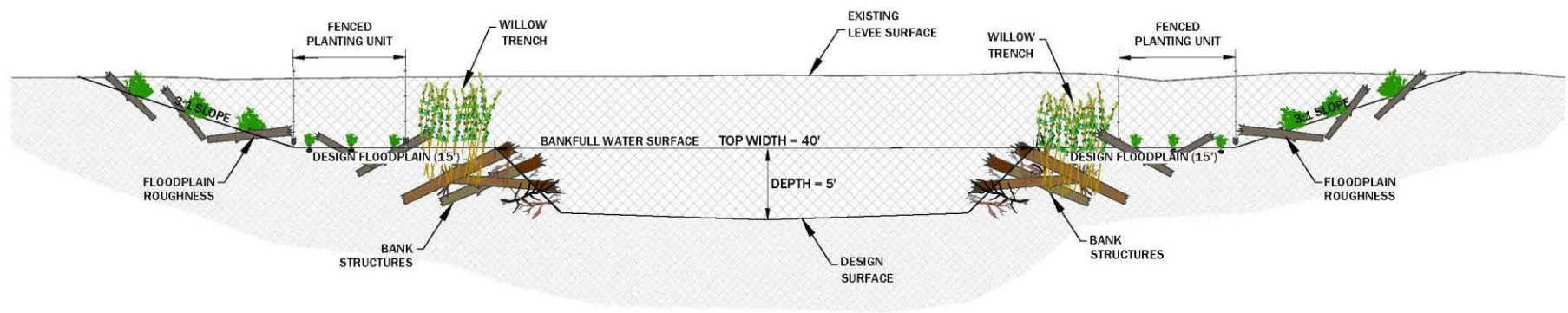
NO.	DATE	BY	DESCRIPTION	CHK
0	3/30/22	TH	50% DESIGN	JMI
			<b>PRELIMINARY</b>	
			<b>NOT FOR CONSTRUCTION</b>	

PROJECT NUMBER  
RDG-21-159  
 DRAWING NUMBER  
**7.0**  
 Drawing 13 of 16

Figure 3-3. Vegetated wood matrix bank treatment. Figure created by River Design Group



**CROSS SECTION DETAIL**  
NORTH BURNT FORK CREEK  
FISH PASSAGE RESTORATION PROJECT  
NEAR STEVENSVILLE, MT



**1 CROSS SECTION DETAIL AT STA 40+10**  
NTS

NO.	DATE	BY	DESCRIPTION	CHK
0	3/20/22	TH	50% DESIGN	JM
<b>PRELIMINARY</b>				
<b>NOT FOR CONSTRUCTION</b>				
PROJECT NUMBER RDG-21-159				
DRAWING NUMBER <b>6.0</b>				
Drawing 11 of 16				

**Figure 3-4.** Typical cross section detail near the water control structure removal. Figure created by River Design Group



**Figure 3-5.** Revegetation Detail. Figure created by Trout Unlimited



## Lee Metcalf National Wildlife Refuge

North Burnt Fork Creek  
Fish Passage Restoration Project

### Wetland Impacts

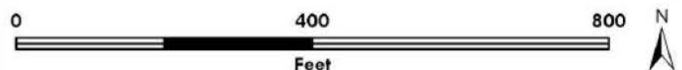
- Project Grading:  
**0.08 acres Temporary Wetland Impact**  
Levee and check dam structure removal, retention as emergent wetland
- Reed Canarygrass Removal:  
**0.70 acres Temporary Wetland Impact**  
Excavation of reed canarygrass sod mat, revegetation with native wetland species including emergent vegetation, willow shrubs, and cottonwood trees
- North Overflow Channel Regrading:  
**0.11 acres Permanent Riverine Impact**  
Permanent conversion from riverine classification to emergent wetland, revegetation with native sedges and rushes
- Project Grading Extent

#### Acres Within Wetland Impact Areas and Project Grading Extents

Classification	Existing Area (Acres)	Proposed Area (Acres)	Change to Area (Acres)
Emergent Wetland	0.78	0.57	-0.21
Scrub-Shrub Wetland	0.00	0.40	+0.40
Riverine Ditch (Waters of the U.S.)	0.11	0.00	-0.11
<b>Total</b>	<b>0.89</b>	<b>0.97</b>	<b>+0.08</b>

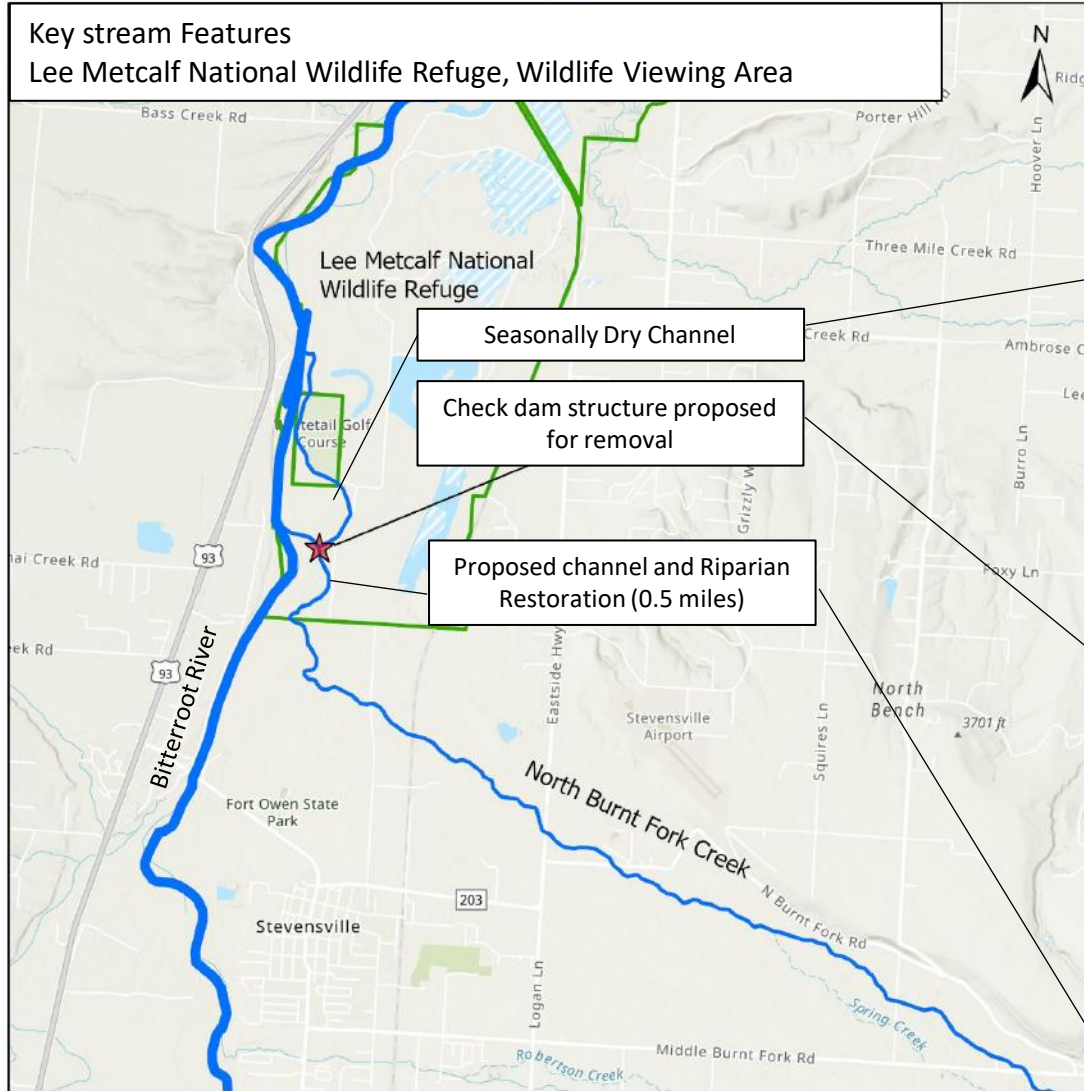


**Dispersed Willow and Cottonwood Planting**  
No excavation or fill activity;  
willow cuttings and cottonwood trees planted in dispersed pattern throughout floodplain



2022.12.01. River Design Group, Inc.

Figure 4-1. Wetland impacts of the Proposed Action. Figure by River Design Group.



The northern channel of North Burnt Fork Creek, downstream of the channel split, which dewateres most summers.



Relic check dam, altering natural flow and sediment regimes and preventing fish migration.



Sediment accumulated above the check dam structure in North Burnt Fork Creek. Reed canary grass reduces stream shading and bank stability and prevents natural recruitment of native vegetation.

**Figure 4-2.** Map of key stream features including North Burnt Fork Creek and its split at the water control structure creating a western (primary) and northern (secondary, seasonal) channel.

## **Appendix B. Public Involvement**

### **Open House**

An open house was held at Lee Metcalf Refuge on January 18, 2023. Christine Brissette, Trout Unlimited, Jason Lindstrom, Montana Fish, Wildlife, and Parks, and Tom Reed, U.S. Fish and Wildlife Service presented an overview of the action. Three members of the public attended including the President of the Bitterroot Audubon Chapter. All public attendees are supportive of the action.

### **Posting of Action**

The proposed design plans as well as a copy of the press release were posted in the Wildlife Viewing Area kiosk the week of January 10, 2023.

### **Written Comments**

Seven written e-mail comments were received. Following is a summary of the comment and the Service's response or action.

Comment: "...we strongly support this important project. The net impact is to open up 2.3 miles of trout habitat that has been closed for more than 50 years."

Response: Thank you.

Comment: "I am strongly in favor of the proposed project to done at Lee Metcalf. There are many benefits to this project and (sic) will be a positive step in the right direction for both native fish, migrating birds and all other inhabitants of the refuge system."

Response: Thank you, we agree.

Comment: "Visitor days during the planned construction period will be numerous, especially during weekend/evenings. Recommend review of visitor study results or any other count of visitor traffic so appropriate consideration for visitors during construction period will be made."

Response: We realize that visitors will need to use alternate trails during the culvert removal and bridged culvert placement yet the construction period is determined by the in-channel fish work window that minimizes any impact to fisheries and aquatic organisms.

Comment: Concern about the new bridge or bridged culvert passing flood flows from the sheet flow of the Bitterroot River and North Burnt Fork Creek. Recalls experiencing flooding WVA and parking area in 2022.

Response: The WVA and parking area flood during the peak of spring runoff (mid-May-June) in most years. Removal of the two water control structures will alleviate some of this near annual flooding.

Comment: Recommendation of creating and trail loop associated with the low-water crossing and access road.

Response: Due to the refinement of the project by the project's engineer, the bridged culvert instead of a free-spanning bridge will now carry the weight of equipment and vehicles and the low water crossing and access road will no longer be necessary.

Comment: "I fully support the Refuge purposes to remove a culvert and restore riparian habitat along North Burnt Fork Creek to improve fish passage, while maintaining visitor access, through the Refuge. Along with the planting of native riparian."

Response: Thank you.

Comment: "We support the primary purpose of this project, which is to restore aquatic organism passage between North Burnt Fork Creek and the Bitterroot River as well as the natural topography and water flow patterns of the floodplain as described in the 2012, Refuge Comprehensive Conservation Plan Goals for the Bitterroot River Floodplain and North Burnt Fork Creek (USFWS 2012, pgs. 78-82). But even more important to our members is a secondary goal, which is to improve riparian habitat along North Burnt Fork Creek."

Response: Thank you for reviewing the 2012 Comprehensive Conservation Plan and seeing how this project moves the Refuge in the direction of it's long-range plan.

Comment: "According to the Draft EA, the project would result in some loss of waterfowl habitat but improve and increase high-quality, multi-storied riparian habitat. Such a habitat will be beneficial to songbirds. Other parts of the Refuge offer plentiful wetlands, so we believe the loss of wetlands in the project area will be more than offset by improvement of riparian habitat for many birds species."

Response: We look forward to working with members of Audubon to ensure the success of the riparian plantings and recording the avian response.

Comment: "At a public meeting on the project on January 18, 2023, we raised the issue of post-project monitoring....Bitterroot Audubon would like to be involved in this monitoring, whether passively through eBird submissions or more actively should the opportunity arise."

Response: We agree that post implementation monitoring should be incorporated into the action. Please see section 4.10 of the final EA for specifics on monitoring and opportunities to participate. Thank you.

Comment: “Bitterroot Audubon members are excited to participate in ways other than monitoring, such as through volunteer days and education and outreach events. We see this project as a way to contribute to the health of a place about which we care deeply.”

Response: We will contact you when the riparian planting is planned and look forward to coordinating in outreach and educational opportunities.

Comment: If removing the culvert will help improve waterfowl habitat then I am for it.

Response: Removing the two 48” culverts and replacing them with a bridged culvert will not increase habitat for dabbling waterfowl. Reestablishing a riparian corridor with robust cottonwood will, over decades, increase cavity nesting opportunities for cavity nesting waterfowl such as hooded merganser, bufflehead, common and Barrow’s goldeneye, and wooduck.

Comment: There is not sufficient water in the ponds; there is significant cattail encroachment; crops used to be planted around the refuge that provided food for birds and provided better hunting.

Response: Although not related to the action to be taken, the 23 managed wetland impoundments have remained the same size or have been slightly increased in impoundment area through excavation over the years. We agree that cattail encroachment is a significant issue. Refuge policy precludes growing food crops for wildlife.

Comment: “...I am in favor of removing the culvert and restoring the riparian habitat along North Burnt Fork Creek. Anything (that) we can do to remove these barriers and improve the fisheries here is vitally important to everyone...”

Response: We agree.

Comment: “I would also like more nature trails along unused older roadways to access more of the refuge.”

Response: Although not related to the action to be taken, the Refuge is open to all six wildlife-dependent recreational opportunities encouraged by Congress. The Refuge tries to separate uses to achieve compatibility with the Refuge’s primary purpose of managing habitat for migratory birds.

# Appendix C -

## *Intra-Service Section – 7 Biological Evaluation*

Originating Person: Tom Reed

Date Submitted: August 17, 2022

Telephone Number: 406 777-5552, 205

I. **Service Program and Geographical Area or Station Name:** Lee Metcalf National Wildlife Refuge (Ravalli County)

II. **Flexible Funding Program (e.g. Joint Venture, etc.) if applicable:** Not applicable

III. **Location:** Ravalli County, MT, T9N, R20W, E1/2 S15.

IV. **Species / Critical Habitat:** List federally endangered, threatened, proposed, and candidate species or designated or proposed critical habitat that may occur within the action area.

<i>Species</i>	<i>Status</i>	<i>Relevance</i>	<i>Critical Habitat</i>
Canada Lynx ( <i>Lynx canadensis</i> )	Threatened	no suitable habitat	none designated
Grizzly Bear ( <i>Ursus arctos horribilis</i> )	Threatened	Recovery Area	proposed
Wolverine ( <i>Gulo gulo luscus</i> )	Proposed	no suitable habitat	none designated
Bull Trout ( <i>Salvelinus confluentus</i> )	Threatened	Historically migrated from Bitterroot River up North Burnt Fork Creek to spawn	North Burnt Fork Creek and the Bitterroot River
Bull Trout Critical Habitat	Designated	Recovery Area	Burnt Fork Creek and the Bitterroot River
Yellow-billed Cuckoo ( <i>Coccyzus americanus</i> )	Threatened	Suitable habitat; spp. never documented	outside of designated critical habitat
Monarch Butterfly ( <i>Danaus plexippus</i> )	Candidate	found on Refuge no habitat in project area	none designated



## V. Project Description:

As described in the Comprehensive Conservation Plan (CCP) for the Lee Metcalf National Wildlife Refuge (USFWS 2012) and the Intra-Service Section-7 Biological Evaluation for implementing this CCP (Attachment A), the Refuge's goals include restoring in-stream habitat in North Burnt Fork Creek. This Intra-Service Section-7 Biological Evaluation provides the site-specific information on how this restoration would occur.

The restoration site is near the confluence of North Burnt Fork Creek and the Bitterroot River in the Refuge's Wildlife Viewing Area (T9N, R20W, NW ¼ E ½ S15; map, attachment B). North Burnt Fork Creek has been dammed and diverted in this area of the Refuge for the purpose of creating waterfowl habitat.

This restoration proposal would remove this stop-log culvert dam and restore connectivity of North Burnt Fork Creek with the Bitterroot River. As described in the April 4, 2022, memorandum and 1-D modelling Results from River Design Group (Attachments B and C), this relic dam bifurcates the flow and impedes fish passage between North Burnt Fork Creek and the Bitterroot River. The proposed culvert removal would provide fish passage where it currently does not exist.

The proposed Creek restoration would remove two, 48" culverts with attached 72" stoplog risers and replace them with a pedestrian bridge. The stoplog riser structures have trapped sediment upstream of the culverts for years and this has often been exacerbated by the Supply Ditch annually purging sediment and debris from the Ditch each spring into North Burnt Fork Creek. It is anticipated that removal of the culverts and risers would result in an increase in the velocity of North Burnt Fork Creek for a very short distance at the site of removal and then decrease velocity just downstream of the removal site. Removal of the culverts would result in an estimated 720 yards of sediment passively evacuating from the North Burnt Fork channel during subsequent high flow events. If a gravel bar downstream of the culverts mobilizes, an additional 520 cubic yards of sediment could also evacuate over time. Passive evacuation of sediment is preferable to mechanical removal because it allows work to occur without complete channel dewatering and does not require equipment to enter the creek. The volume of sediment estimated to enter the Bitterroot River (maximum of 1240 cubic yards) is minimal in the context of the natural sediment flux in the Bitterroot River each spring. Several measures are in place to ensure that in-stream impacts from construction are minimal and temporary. In-stream work will only occur during the July 15-September 15 fish window. Additionally, cofferdams will be constructed at the culvert/stoplog location to provide localized dewatering during removal and bridge construction. Stormwater and erosion control structures (e.g. silt fence and silt curtain) will also be in place to limit sediment impacts to the immediate construction area.

The proposal would also remove a portion of a levee approximately 2,300 feet upstream that restricts overbank flow of Burnt Fork Creek and the Bitterroot River. The levee, which at one time supported a bridge across North Burnt Fork Creek, would be gradually sloped in order to create a low-water crossing to facilitate equipment access to this portion of the Refuge when the pedestrian bridge replaces the existing levee over the culverts.

Restoration of the banks of Burnt Fork Creek upstream and downstream of the culvert removal area would include extensive native riparian shrub and tree planting and reed canary grass (*Phalaris arundinacea*) exclusions (Attachment C).

## VI. Determination of Effects

**(A) Description of Effects.** Describe the action(s) that may affect the species and critical habitats listed in item IV. Your rationale for the Section 7 determinations made below (B) should be fully described here.

### *Canada Lynx*

There is no suitable habitat for Canada Lynx on or near the Refuge nor has a Canada Lynx ever been sighted on the Refuge. The proposed project would occur on the floodplain of North Burnt Fork Creek which is not suitable habitat for Canada Lynx.

### *Grizzly Bear*

Grizzly bears were extirpated from the Bitterroot Valley prior to their listing as threatened in 1975. The Bitterroot Valley, which encompasses the Refuge, as well as the Bitterroot and Sapphire Mountains that enclose the Valley are included in the Bitterroot Ecosystem, one of the six landscape Grizzly Bear Recovery areas. Grizzly bears are known to periodically move through the Bitterroot and Sapphire mountains and, in October of 2018, a two year old male grizzly bear was trapped by the Montana Department of Fish, Wildlife, and Parks on the Whitetail golf course, a private inholding in the Refuge. There are no known home-ranges of grizzly bear in the Bitterroot Valley. Because of the urban and agricultural development on the Bitterroot Valley floor, grizzly bears travelling through this area would likely be dispersing and nomadic in nature.

Because the proposed project area is within the Wildlife Viewing Area, a portion of the Refuge that receives intense public visitation throughout the year, it is highly unlikely that a grizzly bear would establish a home-range that included this habitat. It is possible however, that a dispersing grizzly bear would use the habitat adjacent to the WVA transitionally as it moved across the Bitterroot Valley.

### *Wolverine*

Wolverines are solitary and avoid roaded or open areas and areas of development. They are opportunistic feeders and rely on a variety of carrion, small mammals, birds, eggs, and fruits. Wolverines are primarily limited to alpine tundra and boreal and mountain forests and depend on deep, persistent, and reliable spring snow cover. They also prefer habitats with abundant snags and downed logs, high topographic complexity and low to no human activity. This type of habitat is found at the higher elevations of the Bitterroot and Sapphire Mountain ranges and wolverines do inhabit these ranges.

Wolverines have not been documented on the Bitterroot Valley floor nor on the Refuge. It is highly unlikely that a wolverine would use the Refuge, yet remotely possible that a dispersing individual would travel through the Refuge. Because the proposed project is within the intensely visited Wildlife Viewing Area, it is highly unlikely that the proposed project would affect wolverine.

### *Bull Trout and Bull Trout Critical Habitat*

On September 30, 201, the Service designated 18,795 miles of streams and 488,252 acres of lakes and reservoirs in Idaho, Oregon, Washington, Montana, and Nevada as critical habitat for bull trout. The Bitterroot River and Burnt Fork Creek are both located within this designation. Bull trout are primarily restricted to the upper reaches of North Burnt Fork Creek, approximately 11 miles upstream of the Refuge and mainly on U.S. Forest Service (Forest) land, because of dammed and diverted waterflows, sedimentation, and increased water temperatures in the creek. North Burnt Fork Creek is also co-mingled with Supply Ditch water, upstream of the Refuge, where at times, the entire creek flow is captured by the Ditch. This junction of co-mingling creates an impassable fish barrier. Upstream of the Supply Ditch and downstream of the Forest, creek realignment to facilitate irrigation has decreased the suitability of habitat by making multiple shallow, narrow, and ditch-like channels of the creek.

The proposed project would help re-connect the lower portion of North Burnt Fork Creek to its historical channel alignment and eliminate one fish barrier. The proposal would restore riverine habitat to a portion of the creek that has been impounded and managed as wetland habitat for many years.

*Yellow-billed Cuckoo*

The Refuge is within the range of the yellow-billed cuckoo and supports habitat that could be used by Yellow-billed Cuckoos. Despite tens of thousands of avid birders visiting the Refuge annually, the species has never been documented on the Refuge. The proposed riparian restoration associated with the project would, over decades, increase the suitability of the Wildlife Viewing Area habitat for yellow-billed cuckoo.

*Monarch Butterfly*

Adult monarch butterflies require nectar rich flowers for feeding and milk weed (*Asclepias* spp. and *Funastrum* spp.) for egg-laying. Monarch butterfly larvae are obligate feeders of milk weed plants. In 2019, an inventory of the Refuge's showy milkweed (*Asclepias speciosa*) was conducted weekly from June through September to determine Monarch butterfly presence. The Refuge's seven dominate patches of showy milkweed were monitored, none of which occur within the Wildlife Viewing Area of the Refuge. One monarch larvae was documented on the Refuge, approximately 1.5 miles north of the Wildlife Viewing Area. The proposed project would not affect the Refuge's showy milkweed stands nor nectar-rich native wildflowers.

**(B) Determination.** Determine the anticipated effects of the proposed project on species and critical habitats listed in item IV. Check all applicable boxes and list the species (or attach a list) associated with each determination.

	Determination
<p><i>No Effect:</i> This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially ) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. No concurrence from ESFO required.</p>	
<p>Canada Lynx, Wolverine, Yellow-billed Cuckoo</p>	<p><u>  X  </u></p>
<p><i>May Affect but Not Likely to Adversely Affect:</i> This determination is appropriate when the proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals or listed species and/or designated critical habitat. Concurrence from ESFO required.</p>	
<p>Grizzly Bear, Bull Trout, Bull Trout Designated Critical Habitat, Monarch Butterfly</p>	<p><u>  X  </u></p>
<p><i>May Affect and Likely to Adversely Affect:</i> This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species and/or designated critical habitat. Formal consultation with ESFO required.</p>	
<p><i>May affect but Not Likely to Jeopardize candidate or proposed species/critical habitat:</i> This determination is appropriate when the proposed project may affect, but is not expected to jeopardize the</p>	

continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. Concurrence from ESFO optional.

*Likely to Jeopardize candidate or proposed species/critical habitat:* This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. Conferencing with ESFO required.

Signature  Date 8/17/22  
Tom Reed, Refuge Manager

Reviewing Ecological Services Office Evaluation (check all that apply)

A. Concurrence  Nonconcurrency

Explanation for nonconcurrency:

B. Formal consultation required

List species or critical habitat unit

C. Conference required

List species or critical habitat unit

Signature  Date 08/30/2022

Ben Conard, Deputy Office Supervisor, Montana ES Office

## Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Canada Lynx <i>Lynx canadensis</i> Population: Wherever Found in Contiguous U.S. There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/3652">https://ecos.fws.gov/ecp/species/3652</a>	Threatened
Grizzly Bear <i>Ursus arctos horribilis</i> Population: U.S.A., conterminous (lower 48) States, except where listed as an experimental population There is <b>proposed</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/7642">https://ecos.fws.gov/ecp/species/7642</a>	Threatened
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5123">https://ecos.fws.gov/ecp/species/5123</a>	Proposed Threatened

## Birds

NAME	STATUS
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>	Threatened

## Fishes

NAME	STATUS
<b>Bull Trout <i>Salvelinus confluentus</i></b> Population: U.S.A., conterminous, lower 48 states There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8212">https://ecos.fws.gov/ecp/species/8212</a>	<b>Threatened</b>

## Insects

NAME	STATUS
<b>Monarch Butterfly <i>Danaus plexippus</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	<b>Candidate</b>

## Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
<b>Bull Trout <i>Salvelinus confluentus</i></b> <a href="https://ecos.fws.gov/ecp/species/8212#crithab">https://ecos.fws.gov/ecp/species/8212#crithab</a>	<b>Final</b>

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# Appendix D

## *Intra-Service Section 7 Biological Evaluation*

Originating Person: Tom Reed

Date Submitted: July 12, 2012

Telephone Number: 406 / 777 5552

- I. **Service Program and Geographic Area or Station Name:** Lee Metcalf National Wildlife Refuge (Ravalli County)
- II. **Flexible Funding Program (e.g. Joint Venture, etc.) if applicable:** Not applicable
- III. **Location:** Location of the project including county, State and TSR (township, section and range): See attached map (page 2) in accompanying "Comprehensive Conservation Plan—Lee Metcalf National Wildlife Refuge."
- IV. **Species/Critical Habitat:** List federally endangered, threatened, proposed, and candidate species or designated or proposed critical habitat that may occur within the action area.

<i>Species</i>	<i>Status</i>	<i>Relevance</i>	<i>Critical Habitat</i>
Bull trout	Threatened	Historically used refuge waters to access spawning area	North Burnt Fork Creek and Bitterroot River
Yellow-billed cuckoo	Candidate	Suitable habitat present; never documented	None
Wolverine	Candidate	No suitable habitat present	None
Whitebark pine	Candidate	No suitable habitat present	None

- V. **Project Description:** Describe proposed project or action or, if referencing other documents, prepare an executive summary (attach additional pages as needed):

The proposed action is to implement ongoing actions and to execute several proposed projects over the next 15 years that support the goals, objectives, and strategies of the "Lee Metcalf National Wildlife Refuge Comprehensive Conservation Plan" (CCP) while fulfilling the goals of the National Wildlife Refuge System.

The CCP proposes to conserve natural resources by restoring, protecting, and enhancing native grasslands and riverfront and gallery forest and associated stream habitat; improving the health and productivity of the wetland impoundments; and more effectively controlling invasive species across the refuge. The CCP also proposes to develop and implement restoration actions to improve existing habitat conditions and address threats to native fish where practicable. Management operations of the refuge would likely change as new actions are implemented during the 15-year term of this CCP. A description of ongoing actions and current management operations can be found in chapter 4 of the draft CCP or alternative A of the environmental assessment (EA).

One of the new proposals is to restore in-stream habitat in North Burnt Fork Creek, which is designated as critical bull trout habitat. On September 30, 2010, the U.S. Fish and Wildlife Service (Service) designated 18,795 miles of streams and 488,252 acres of lakes and reservoirs in Idaho, Oregon, Washington, Montana, and Nevada as critical habitat for this wide-ranging native fish. The Bitterroot River and North Burnt Fork Creek are both located within this designated area. Today, the bull trout



is primarily restricted to the upper reaches of North Burnt Fork (Creek) on U.S. Forest Service land because of dammed and diverted waterflows, sedimentation, and increased water temperatures in the creek (Stringer 2009). Over time, this creek has been altered due to irrigation diversions, development, encroachment and realignment of the stream channel, increased sedimentation, and comingling of irrigation water and North Burnt Fork Creek. On the refuge portion of this creek, the Service constructed three structures by 1970 with an objective to create more pond-like habitat for waterfowl and warm-water fish (providing more fishing opportunities in the public use area).

This final CCP is proposing to remove obstructions and reestablish the North Burnt Fork Creek entrance into the Bitterroot River where it is sustainable and conducive for native salmonids. As part of this project, the Service would strategically remove water control structures, if appropriate, and other obstructions in the tributary and floodplain channels to allow fish and other aquatic animals to use this stream corridor. Removal of water control structures along the creek would deepen and narrow the streambed, allowing unimpeded flow to the Bitterroot River. This connection would encourage riparian ecological processes to continue to function. Flooding and drainage capabilities would more closely emulate natural hydrological regimes that sustained native plant communities. However, augmented irrigation water diverted into North Burnt Fork Creek upstream of the refuge greatly affects the hydrology of this creek on the refuge. These actions would restore only a small portion of this historic migration route for bull trout, but the Service would continue to work with other partners to expand these efforts to address river and stream connectivity off the refuge.

The CCP also proposes to evaluate and potentially reestablish a channel to the Bitterroot River that mimics the historical channel pattern of Three Mile Creek. Three Mile Creek is another mountain and terrace-derived tributary to the Bitterroot River. Much like North Burnt Fork Creek, this stream channel has been altered both off and on the refuge by the installation of culverts, bridge crossings, irrigation diversions, and artificial channels. This creek contributes high sediment and nutrient loads to the Bitterroot River compared to other tributaries in the Bitterroot watershed (McDowell and Rokosch 2005) and also receives augmented irrigation water off refuge. In 1984, three sediment catch pools were built on the refuge just south of Pond 11 to prevent sediment from entering and filling this impoundment. The sediment catch pools were filled to capacity in only 1 year. In 1989, as a solution to the sedimentation, the Service built Otter Pond. The refuge portion of Three Mile Creek was channeled into a bypass directly to the river. Water from Otter Pond was then siphoned under Three Mile Creek to feed Ponds 11–13. Currently, the river's mainstem is just west of this confluence, and the sediment from Three Mile Creek has created a willow-filled island within what is now considered part of North Island Slough. Restoring Three Mile Creek to its historical channel will encourage riparian ecological processes to become reestablished. Additionally, overbank flooding capabilities will improve and more closely emulate natural hydrological regimes that sustained native plant communities. The objective of the restoration proposal is to create habitat conditions supporting native cold-water species (cooler water temperature, riffles, deep pools, natural sinuosity) and the restoration of riparian habitat including gallery and riverfront forest. This may require the removal of impoundments, level ditching, spoil, and islands that obstruct the migration of this stream.

Both of these stream restoration projects would require additional engineering and hydrological expertise in order to select a restoration path that is beneficial and sustainable. Once each design is completed, a stepdown intra-Service consultation would be conducted on each proposal.

In addition to these stream restoration projects, the CCP proposes to begin removing other obstructions (levees, dams, ditching) that impede the movement of flood water across this floodplain refuge. This will restore the capability of the Bitterroot River to overflow its banks and back water up into tributaries and into other floodplain channels. Backwater flooding provides foraging habitat for pre-spawning native fish and rearing habitat for larval and juvenile fishes. Annual backwater flooding recharges water regimes in depressions and shallow floodplain wetlands that serve as productive breeding habitat for amphibians, reptiles, waterbirds, and certain mammals. Subsequent drying of floodplains concentrates aquatic prey for fledgling waterbirds. To begin reconnecting this floodplain habitat with the Bitterroot River, the Service proposes to remove levees, roads, and ditches that prohibit overbank and backwater flooding of the Bitterroot River and disrupt natural sheet flow into the central floodplain of the refuge. Many of these structures have already been eroded by the movement of the river. Once these structures

are removed, additional efforts may require assistance from engineers and hydrologists to determine which structures are continuing to impede flooding processes.

## VI. Determination of Effects:

**(A) Description of Effects:** Describe the action(s) that may affect the species and critical habitats listed in item IV. Your rationale for the Section 7 determinations made below (B) should be fully described here.

Ongoing actions and current management operations of the refuge are not likely to adversely affect the current baseline conditions for bull trout or diminish the existing functions of the primary constituent elements that support bull trout critical habitat. Bull trout are all but absent from this stretch of the Bitterroot River and the lower reaches of North Burnt Fork Creek. A resident local population of bull trout exists in the headwaters of North Burnt Fork Creek several miles above the refuge. Both the Bitterroot River and North Burnt Fork Creek are designated critical habitat. Because of the unlikelihood of a bull trout being in the area, effects on the species from current refuge operations are indiscernible.

A concern of the Service is the likelihood that the past water management operations of the refuge may have to some degree contributed to the current degraded baseline habitat conditions in the lower reach of North Burnt Fork Creek. Given the long history of impacts on the North Burnt Fork Creek watershed—most of which have occurred (and continue to occur) upstream of the refuge—it is virtually impracticable to determine with precision the level of impact that past or current refuge operations may have or continue to have on bull trout and bull trout habitat in the area. Therefore, under the CCP, the refuge has identified several new proposed actions that, when implemented, would improve baseline habitat conditions for bull trout by addressing the habitat parameters most affected by refuge operations, mainly connectivity to the Bitterroot River and flow through water management.

The proposed actions would result in changes on the refuge that are anticipated to benefit bull trout and other native fish species. Effects on bull trout and its habitat will be assessed in subsequent intra-Service consultations. Each individual proposed action identified in the CCP would include site-specific designs, construction elements, maintenance and operational components, as well as monitoring features to ensure that the intended outcome of improving baseline conditions for bull trout is achieved.

The stream restoration proposals would reestablish a portion of the spawning migration route within the designated critical bull trout habitat. This will be a small step to returning this threatened species to its historic passageway. An example of a proposed action to improve baseline conditions for bull trout is the removal of obstructions that inhibit river migration and overbank flooding. This project would help create and sustain communities and basic ecological functions (scouring, deposition, movement of water, native fish, and animals between the river and the floodplain) that support life cycle events and the needs of native plant, native fish, and animal communities.

There are many off-refuge obstacles to returning bull trout to its historical spawning area. The refuge is currently exploring opportunities to partner with other watershed stakeholders with an interest in improving and enhancing watershed health in the Bitterroot River system. The CCP proposes to continue to work with other partners including the State of Montana, the U.S. Forest Service, and other valley-wide conservation partners to continue and expand this process of repatriation.

A number of projects proposed under various objectives and strategies, including those listed above, would need site-specific designs before they are implemented. Complete determination of effects from such projects on bull trout and bull trout critical habitat is not feasible prior to more detailed design. Table 1 lists all goals, objectives, and strategies of the CCP that may affect bull trout; the short-term and long-term effects, when known; and whether additional stepdown consultation will be needed. Once the CCP is approved and implemented, stepdown plans will be completed for various programs. The purpose of the stepdown management plans is to provide details to Service staff for carrying out specific actions and strategies authorized by the CCP. Stepdown management plans to be developed under the CCP that may affect bull trout include water management and habitat management plans, and these will be developed under informal consultation with Ecological Services, with formal consultation to follow, if so indicated.

**(B) Determination:** Determine the anticipated effects of the proposed project on species and critical habitats listed in item IV. Check all applicable boxes and list the species (or attach a list) associated with each determination.

Determination

**No Effect:** This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. **No concurrence from ESFO required.**  
(yellow-billed cuckoo, whitebark pine, wolverine)

X

**May Affect but Not Likely to Adversely Affect:** This determination is appropriate when the proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals of listed species and/or designated critical habitat. **Concurrence from ESFO required.**  
(bull trout, designated critical habitat)

X

The Service has determined the proposed CCP *may affect, but is not likely to adversely affect* the threatened bull trout or its designated critical habitat.

**May Affect and Likely to Adversely Affect:** This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species and/or designated critical habitat. **Formal consultation with ESFO required.**

**May affect but Not Likely to Jeopardize candidate or proposed species/critical habitat:** This determination is appropriate when the proposed project may affect, but is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. **Concurrence from ESFO optional.**

**Likely to Jeopardize candidate or proposed species/critical habitat:** This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. **Conferencing with ESFO required.**

Signature



Tom Reed, Manager  
Lee Metcalf National Wildlife Refuge  
Stevensville, Montana

Date

7/12/12

**Reviewing Ecological Services Office Evaluation (check all that apply):**

A.    Concurrence   X                      Nonconcurrence       

Explanation for nonconcurrence:

B.    Formal consultation required       

List species or critical habitat unit

C.    Conference required       

List species or critical habitat unit

Ecological Services  
U.S. Fish and Wildlife Service  
Helena, Montana

Signature

*R. Mark Wilson*

R. Mark Wilson, Ecological Services Supervisor  
Ecological Services  
Helena, Montana

Date

7-17-12

## Appendix D: Historic and Cultural Resources

### Cultural Resources

The projects cultural resource data collection and effort to identify historic properties were conducted by USFWS staff meeting the Secretary of Interior Professional Qualification Standards for Archaeology and Historic Preservation (36 CFR 61). Copies of collected project data are kept on file by USFWS cultural resource staff.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA) (54 USC 300101) and its enacting regulations 36 CFR 800, a federal agency is required to consider the affects its actions have on historic properties. NHPA defines a historic property as any prehistoric or historic district, site, building, structure, or object that is included or eligible to be included in the National Register of Historic Places (National Register). As a federal agency, the USFWS must identify historic properties potentially affected by an undertaking, assess potential impacts to them, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

USFWS determined the project's activities are of the type to have the potential to cause effects to historic properties. However, investigation by USFWS staff, which included intensive field survey, identified no cultural resources that met the criteria for inclusion in the National Register and historic property status.

If previously unidentified cultural resources are discovered during project activities, work in the area will stop until an eligibility determination for the NRHP can be made. If at any time historic properties are identified within the project, adverse effects to them will be avoided, minimized, or mitigated through the Section 106 process within 36 CFR 800 *et seq.*

### Area of Investigation

The geographic focus of the cultural resource investigation and historic property identification corresponds to the undertaking's area of potential effects (APE). The APE is the geographic area where the project could cause alterations to the character or use of present historic properties. Potential impacts can be direct, indirect, or cumulative. Possible impacts include, but are not limited to, ground disturbances and visual changes.

*Submitted by Salvatore Caporale, USFWS on January 4, 2023*