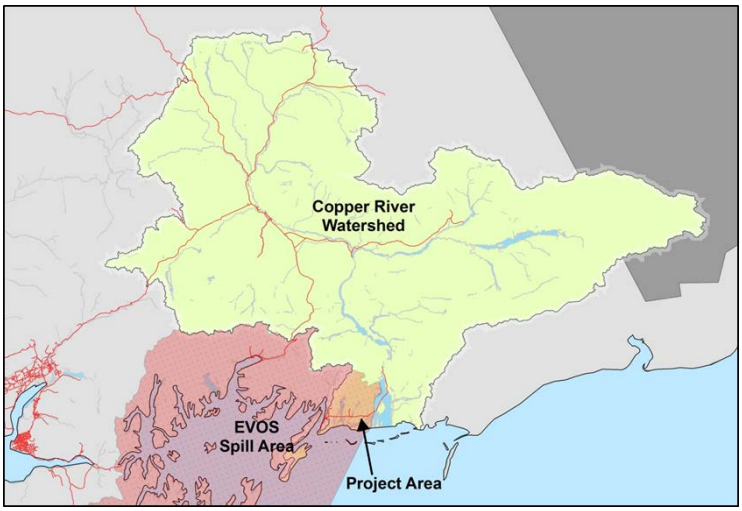
Copper River Watershed Enhancement Project

COPPER RIVER WATERSHED PROJECT

The Copper River watershed and its delta is a system of many complex, relict channels with base flows that continue to evolve and change over time due to glacial influences and post-earthquake uprise. Of particular ecological significance are the estuaries within the Copper River Delta that support the continued health of the overall ecosystem. The southwestern portion of the Copper River watershed, including the Copper River Delta, is identified as an *Exxon Valdez* Oil Spill (EVOS) affected geographic area and is a top priority for EVOS Trustee Council restoration, as it supports salmon and trout fisheries, numerous bird species, commercial fisheries, and important ecotourism for the region. Along the Copper River Highway, which acts as a dike on the delta, project proponents have identified the top 13 priority culverts for restoration under EVOS and one culvert which will be replaced by our project partner AKDOT within the project area. By removing or replacing these 13 culverts, we intend to restore hydrologic function and fish passage on the Copper River Delta. Once complete, this project will expand access to over 22 miles of spawning and rearing habitat for anadromous and resident fishes, while concurrently reducing the risk of infrastructure damage (i.e. highway washouts) during flood events.



PROJECT SUMMARY			
Barriers Replaced	11	Project Cost	$7,478,963
Barriers Removed	2		
Miles Habitat Re-opened	22	GA	9%
		TOTAL	**$8,152,070**

The current schedule devised by the project proponents identifies implementation beginning in 2020. However, necessary hydrology and design work would begin immediately in preparation for this work. The unique hydrologic regime of the Copper River Delta requires installation of flow gauges and analysis of the data to improve project design. Initial hydrology and design funding for preparation is estimated at $54,500 for hydrology and $193,750 for design. Investment in hydrology and design work by the April 2018 meeting will advance the projects and contribute to meaningful progress in this high priority ecosystem.

Supporters of the project include: ADOT, Eyak Corporation, Cordova District Fishermen United, ADF&G and the City of Cordova.

Copper River Watershed Enhancement Project

Photo: Copper River Delta

Photo Credit: www.shorezone.org

COPPER RIVER WATERSHED PROJECT

Project Background: The Copper River watershed and its delta is a system of many complex, relict channels with base flows that continue to evolve and change over time due to glacial influences and post-earthquake uprise. Of particular ecological significance are the estuaries within the Copper River Delta that support the continued health of the overall ecosystem.

The southwestern portion of the Copper River watershed, including the Copper River Delta, is identified as an Exxon Valdez Oil Spill (EVOS) affected geographic area (Figure 1) and is a top priority for EVOS Trustee Council (EVOSTC) restoration, as it supports salmon and trout fisheries, numerous bird species, commercial fisheries, and important ecotourism for the region. Within this EVOS affected area of the Copper River watershed lies State Highway 10, commonly referred to as the Copper River Highway. This two-lane dirt and asphalt road persists on the remnant rail bed of the former Copper River and Northwestern Railway. Due to improper culvert design during construction, this 50-mile stretch of road bisecting the Copper River Delta between Cordova and the Copper River now functions similarly to a dike at many of the 73 culverts originally intended to provide drainage. While the disturbance by some of the culverts is well known for the area, there are no plans by ADOT (Alaska Department of Transportation) or USFS (United States Forest Service) to preventively address the culverts due to prioritization of limited funds towards roads that see more traffic use in the region. As such, the presence of this roadbed has unintentionally disrupted the Delta's hydrology, led to reduced ecological function, and resulted in expensive road repairs following major high water events.

The injured resources and services in the southwestern portion of the Copper River watershed and nearby areas have received past EVOSTC habitat protection support in the form of conservation easements. This project will bolster these protection efforts of the EVOSTC by providing on-the-ground restoration actions. Specifically, this project will improve ecological function, while concurrently reducing the likelihood of infrastructure damage caused by high water events along the Copper River Highway. Both ecological impairment and infrastructure damage become increasingly costly to repair if left unchecked. The Alaska Department of Fish and Game (ADFG), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS), National Oceanic and Atmospheric Administration (NOAA), and the Copper River Watershed Project (CRWP) have formed a partnership to conduct these proposed on-the-ground restoration actions that will benefit the many ecological processes and species that inhabit the Copper River watershed., as well as the injured services in the community of Cordova.

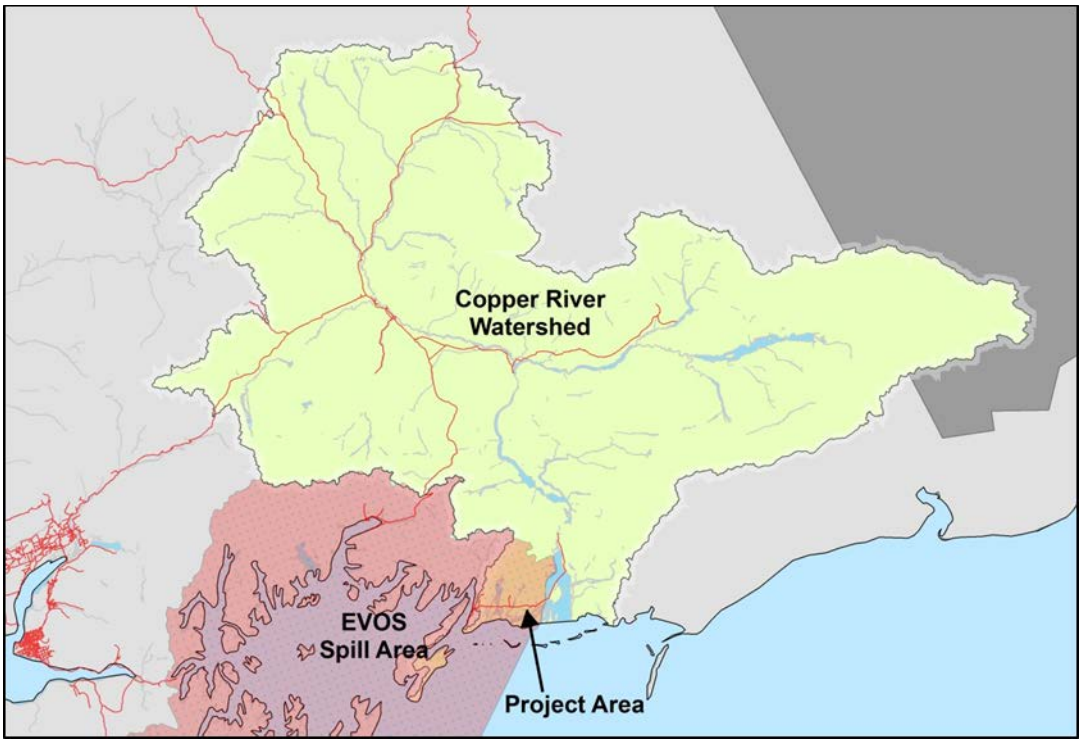


Figure 1. Geographic extent of the Copper River watershed in yellow. Pink shaded area in the southwestern corner of the watershed delineates the EVOS affected area within the proposed project area.

Project Narrative: Within the Copper River watershed are hundreds of road-stream crossings (culverts); roughly one culvert for every two miles of road. Many of these culverts have altered the natural hydrologic processes necessary to maintain the health of aquatic ecosystems. This project focuses on re-establishing proper hydrologic and ecological function, which includes restoring fish passage for improved access to spawning and rearing habitat for anadromous and resident fishes in the EVOS affected portions of the Copper River Delta. This will be achieved by replacing culverts prioritized for causing the greatest level of ecological harm with newer, larger culvert designs that utilize Aquatic Organism Passage (AOP) or Stream Simulation type techniques. Where possible, we propose removing culverts completely and either decommissioning the historic roadbed or building a ford.

Most Alaska Department of Transportation & Public Facilities (ADOT/PF) culverts now in place under State roads were installed decades ago following "hydraulic design" principles of meeting water flow capacity needs. We know now that a bare, narrow culvert can create a high-velocity or a low flow barrier for juvenile and adult fish at the different flow levels a stream experiences throughout the seasons. This partnership will implement "stream simulation" culvert designs to the greatest extent possible for restoring Copper River delta natural hydrology conditions. Stream simulation is a method of designing crossing structures (usually culverts), with the aim of creating within the structure a channel as similar as possible to the natural channel in both structure and function. The premise is that the simulated channel should present no more of an obstacle to aquatic organisms than the adjacent

natural channel.[1] By trying to match the channel width, depth, and slope of stream sections above and below a culvert being replaced, the "simulation creates the diverse water depths and velocities, hiding and resting areas, and moist-edge habitats that different species need for movement."[2] Given that ADOT/PF's mandate is road safety, rather than fish passage, and that the Copper River Highway is a low use road in the statewide competition for funds, these culverts fall in the challenging category of being low priority crossings on high value streams. Stream simulation crossings are wider than traditional crossings, and therefore less prone to blockage from woody debris or beaver dams.[3] This increased flow capacity also protects road infrastructure by reducing the likelihood of flood flows over-topping a road or eroding the road embankment.

To determine the top restoration priorities in the geographic area of consideration, assessment data was collected by State and Federal agency partners and the Copper River Watershed Project at all 73 culverts identified along the Copper River Highway and side roads (e.g. Cabin Lakes Road). These data were then analyzed to determine conservation priorities by using an innovative, multi-part scoring system to calculate a ranking of each assessed culvert and its relative priority for replacement with regard to its physical condition and assumed potential to deliver ecological benefits to anadromous fish if removed or replaced with AOP or Stream Simulation type design culverts. The culvert prioritization tool and criteria can be found online at: https://copperriver.org/programs/fish-habitat-restoration/culverts-are-the-culprits/. Using this initial ranking of the 73 assessed culverts, and in consideration of our current capacity, we have identified the top 13 priority culverts for restoration under EVOS and one culvert which will be replaced by our project partner ADOT (Figure 2) within the geographic area of consideration. By removing or replacing these 13 culverts with an AOP or Stream Simulation type design culvert, we intend to improve hydrologic function on the Copper River Delta and to restore fish passage at the proposed project sites. Once complete, this project will expand access to over 22 miles of spawning and rearing habitat for anadromous and resident fishes, while concurrently reducing the risk of infrastructure damage (i.e. highway washouts) during flood events. Following this proposed restoration effort, additional culverts may be brought forward to EVOS Trustees for restoration consideration. In addition, the ecological benefit for restoration conducted under this proposal will be enhanced by a culvert replacement undertaken by ADOT, which will yield an additional two miles of fish passage and cost over $590,000.

[1] USDA Forest Service, *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings*, August 2008.
[2] Ibid.
[3] Ibid.

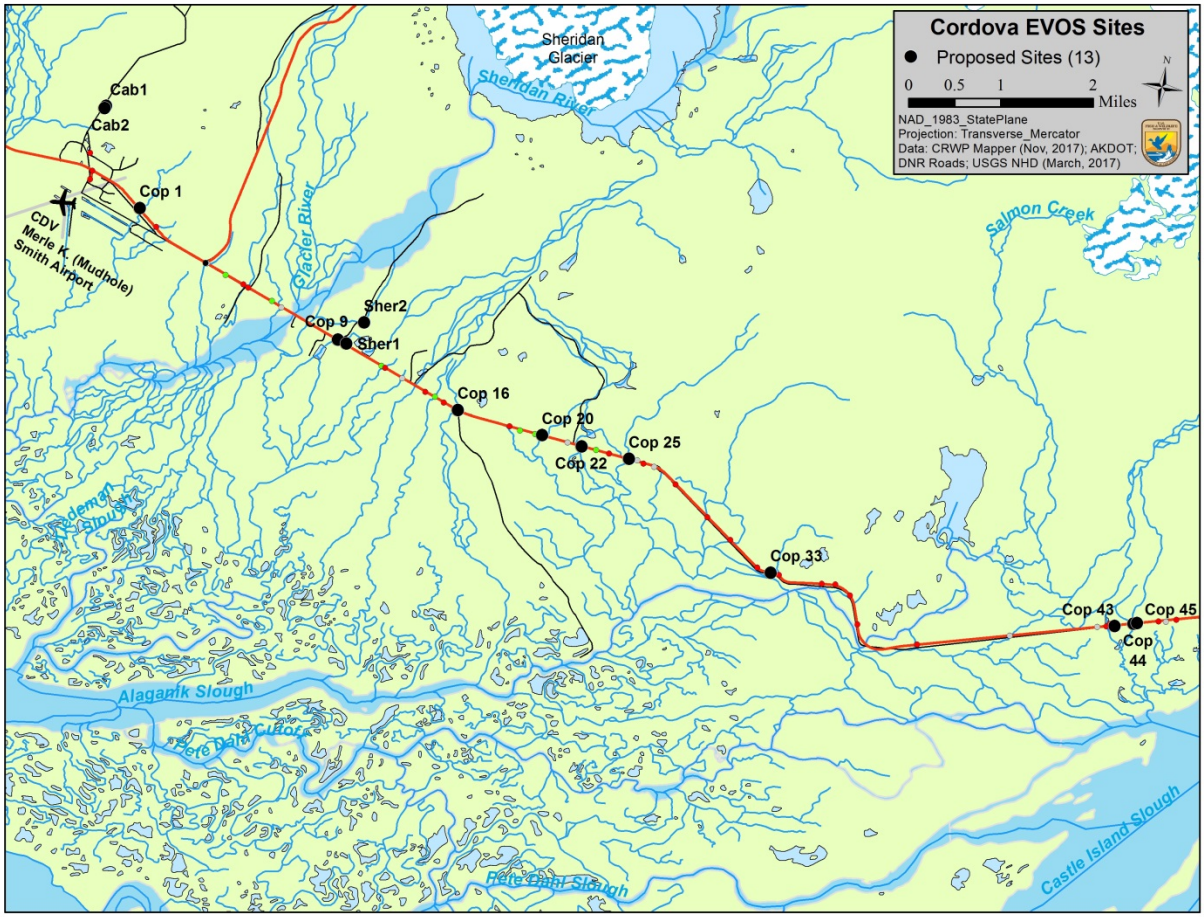


Figure 2. *The 13 priority culverts identified for replacement within the EVOS affected area during a 5-yr project period, given the current capacity to conduct this type of work in the Cordova area. Additionally the culvert to be addressed by project partner ADOT/PF, Cop16, is shown.*

Injured Resource Benefits: The on-the-ground habitat restoration actions described by this proposal will further benefit the resources aided by conservation easements previously established by EVOSTC to protect habitats within the Copper River watershed and nearby areas.

Species Benefits: Direct benefits to specific species will vary by location; however, project restoration efforts will improve the function of the Copper River ecosystem and benefit all of the associated aquatic and terrestrial habitats (Table 1). Undersized culverts impede fish passage, limiting access to critical habitat by both season and life stage. This lack of habitat accessibility can limit the number of fish that survive or successfully reproduce minimizing the amount of fish a habitat can support. Undersized culverts also interrupt ecological processes and reshape stream system form and function. Restoration actions that re-establish connectivity and improve access to critical habitat are considered a high priority.

Table 1: *The following table provides a description of the ecological benefits to Exxon Valdez Oil Spill (EVOS) affected species and services that are expected to occur at each project location as a direct result of this effort to improve ecological function and fish access to more than 22 miles of spawning and rearing habitat.*

CRWP ID	State of Alaska culvert ID	Ecological Benefits to EVOS Affected Species and Services	Benefit to EVOS Injured Resources and Services	Stream Miles
Cab 1 Cab 2	20101904 20101905	**Elsner River Tributaries:** A failing culvert on a tributary to Elsner creek is blocking upstream fish passage to 0.1 miles of habitat where a second culvert on an abandoned road is blocking access to an additional 0.2 miles of upstream habitat. Both culverts should be removed to achieve full ecological benefits.	Dolly Varden; Recreation and Tourism; Commercial Fishing	0.3
Cop 45 Cop 43 Cop 44	20100511 20100508 20100510	**Lower Copper River:** Culverts present in this cluster of projects affecting a complex of interconnected channels that feed into the lower copper river. In order to provide fish passage and correct drainage problems in this area, these culverts need to be replaced at the same time. Due to these undersized culverts, drainage in this area has been a recurring problem for fish and human use.	Recreation and Tourism; Commercial Fishing	2.4
Cop 22 Cop 25 Cop 20	20100488 20100491 20100486	**18-Mile System:** The three project sites in this system represent a watershed scale restoration. The first project sites is a barrier on the West Fork of Milepost 18 stream that impedes upstream access to 2.3 miles of high quality habitat. The site at the middle fork of Milepost 18 creek is considered a barrier to upstream fish passage into 5.6 miles of high quality habitat. The third site is on the east fork of Mile 18 Creek and blocks access to 2.5 miles of upstream habitat	Cutthroat Trout; Recreation and Tourism; Commercial Fishing	10.4
Sher 2 Cop 9 Sher 1 Cop 1	20101902 20100475 20101903 20100467	**Sheridan River Tributaries:** The primary site at the Sheridan Tributary is a severely undersized culvert. The upstream channel width is approximately 10 feet whereas the existing culvert is only 1.5 feet diameter. Downstream lies another undersized culvert that is 4 feet in diameter. The third culvert on a Sheridan Tributary is located on Goat Camp Road and can be replaced with a ford to minimize cost. The fourth culvert blocks access to 3.2 miles of ecologically productive tributary that drains a large wetland channel complex feeding into the Sheridan River.	Recreation and Tourism; Commercial Fishing	5.5
Cop 33	20100499	**Black Hole Creek:** This culvert is undersized and impeding access to 3.2 miles of known spawning and rearing habitat.	Cutthroat Trout; Dolly Varden; Recreation and Tourism; Commercial Fishing	3.2

Service Benefits: On the Copper River Highway (State Highway 10), undersized culverts present a public safety and maintenance concern for flooding. The Copper River Highway was breached by flood waters in 2006 and 2017 due to undersized culverts. By replacing these undersized culverts with larger designs, we will reduce the risks to public safety.

Recreation, Tourism and Subsistence: The Copper River Highway provides primary access from the City of Cordova to recreational opportunities, including US Forest Service trails and cabins, fishing, and hunting. Undersized culverts can endanger road stability, which leads to costly repairs and lengthy delays for use of the road. Recreational tourism on the delta is centered on fish, wildlife, and scenic vistas, which are supported by a healthy and functional watershed. Ecological restoration on the Copper River Delta benefits local residents and visitors by improving conditions for trout and salmon that are popular subsistence and recreational fisheries, as well as for migrating and nesting waterbirds.

Commercial Fishing: Commercial fishing is the foundation of the local economy, and restoration actions will directly benefit sockeye and coho salmon, commercially harvested species.

Description of Work: This project will address a total of 13 culverts identified as restoration priorities and an additional matching 1 culverts will be replaced by project partner ADOT. Of the 13 EVOS funded priority culverts identified, two of the culverts will be removed completely and the remaining eleven will be replaced with AOP or Stream Simulation type designed culverts using an approach that combines geomorphic and hydrologic data to allow for juvenile salmonid passage, sediment transport, and flood conveyance. The culverts will be constructed to withstand a 100 year flood event and with a design life of 50 years. Furthermore, the replaced culverts will reduce maintenance of the Copper River Highway and side roads; maintenance of the culverts will be conducted by the Alaska Department of Transportation & Public Facilities (ADOT/PF).

Culverts addressed in this project are located on either USFS managed roads or roads belonging to ADOT/PF. Both landowners are willing to collaborate with partners on this project, as is the neighbor to the USFS lands, Eyak Corporation.

Estimated Cost: The EVOSTC request for this work is $7,811,961 (Table 2). EVOSTC funds will be used to conduct restoration work at 13 existing culvert locations. Restoration work conducted by project partner ADOT/PF provides leverage funding for this project in the approximate amount of $590,000

Preliminary cost estimates for all 13 high priority culverts are complete. Costs include NEPA consultation: USFS has a Categorical Exclusion for this type of work on Forest Service lands and both USFWS and NOAA have programmatic consultations for culvert replacements. Following completion of this project, the top tier feasible projects listed for the EVOS affected area of the Copper River watershed will be complete.

The initial cost estimates were developed by USFWS fish passage engineer, Heather Hanson, P.E., based on historical cost data for construction of similar culverts in the project area. Ms. Hanson has been an

Alaska licensed civil engineer since 1999 and is trained in USFS stream simulation methods for aquatic organism passage at culverts. The USFWS made site visits and carried out initial surveys as needed to develop this cost estimate.

Project Management:

Pre-Construction: Prior to culvert construction, hydrologic data will be collected to aid in culvert design. Permitting actions will also occur in advance of construction.

Construction: The USFWS will serve as the primary fiscal agent; through cooperative agreements, USFWS will provide EVOSTC funds to CRWP and ADF&G for design and construction through a competitive bid process. ADOT/PF will be involved in design review for culverts present on their lands. Project partner CRWP has 20 years of experience in supporting regional partnerships, resulting in completed fish habitat restoration for the Copper River watershed. The CRWP has coordinated the removal of fish passage barriers at eight sites; constructed four best management practice structures to help filter stormwater run-off draining to aquatic and marine waters; and conducted nearly 200 stream habitat surveys and 82 culvert surveys to create and populate a database of fish passage barriers for a multi-agency information needs project. The CRWP's budget ranges from $450,000 - $700,000 annually, and has proven capacity to manage federal, state, and private grants, agreements, and contracts.

Project Inspection: Post-construction inspection for this restoration project will be closely tied to the projects implementation. Project inspection will occur in two phases. The first phase will be a physical inspection of the constructed culvert. The second phase, an assessment of culvert functionality for restoring fish passage conducted by USFS, will ensure that the restoration measures accomplished the project goals. Inspections will occur throughout the duration of the project construction and are expected to continue for one year post-construction. Further details regarding project inspection can be found in **Appendix 1. Project Inspection.**

Table 2: *Once completed this project will rehabilitate hydrologic functioning at 13 road-stream crossings in the EVOS affect portion of the Copper River Delta, thereby restoring fish passage and access to more than 22 miles of spawning and rearing habitat for multiple species of anadromous and resident fishes.*

PROJECT SUMMARY			
Barriers Replaced	11	Project cost	$7,478,963
Barriers Removed	2		
Miles Habitat Re-opened	22	GA	9%
		TOTAL	**$8,152,070**

Schedule:

April 2018: Proposal to EVOSTC

April 2018- 2020 Hydrology and Design

May 2020-2022: Phase 1 project Implementation

May 2022-2024: Phase 1 post project Inspection

May 2023-2025: Phase 2 Project Implementation

May 2025-2027: Phase 2 post project Inspection

Appendix 1: Project Inspection Plan

Appendix 2: Letters of Recommendation:

ADF&G habitat:

Eyak Corporation

Cordova District Fishermen United

ADOT/PF

Chugach National Forest, Cordova Ranger District

Appendix 1: Final Inspection Plan[1]

Introduction

Replacing culverts with "fish-friendly" designs developed with stream simulation techniques improves passage for aquatic and riparian organisms and increases conveyance of flood flows and debris, restoring ecological conditions and stream channel function, preventing road damage during floods, and reducing highway maintenance costs.

Although stream simulation techniques have been broadly applied throughout North America and the ecological benefits of fish-friendly culverts are well-documented, post-project inspection is valuable to: (1) ensure function, (2) allow for adaptive management, and (3) document use by anadromous fish.

The functionality of the new fish-friendly culvert can be assessed by measuring channel profile, channel stability, and bed material dimensions before and after installation. Stream simulation designs are developed with inherent uncertainty about site-specific hydrological and meteorological conditions. A detailed pre-project assessment can reduce uncertainty about flow regime, bed load, and other factors that can improve project design before implementation. Post-project inspection can further improve the project outcome by identify shortcomings that can be mitigated with simple interventions such as installing larger bed material inside a culvert, or adding additional grade control.

The proposed project sites are located on the Copper River Delta, a landform with dynamic and complex geomorphology shaped by marine, tectonic, and glacial activity. Hydrological and meteorological conditions within the project area can change rapidly and are relatively unique, even compared to other locations in Alaska. Post-implementation inspections provide an opportunity to learn how to tailor stream-simulation design for local conditions. This proposal aims to replace 14 culverts over 6 years. Final inspection of culvert installations will ensure that the proposed restoration meets the requirements of restoration under EVOS and will improve analysis and reporting of project accomplishments to EVOS Trustees.

Evaluating fish presence in the impacted catchments will provide resource managers with additional information that will improve management of these aquatic ecosystems, ensuring the benefits of this project to watershed health within the EVOS affected area are maintained. Observing upstream extent and life stages of anadromous fish above the fish-friendly culverts may also provide an indicator of project success in some systems. Documenting the presence of anadromous Coastal Cutthroat Trout, a species injured by EVOS and presently listed as "very likely recovered," will provide data that may be useful for assessing species recovery. These data will also be utilized to update the state of Alaska Anadromous Waters Catalog. Alaska

[1] Written by Luca Adelfio (Hydrologist, USDA Forest Service, Chugach National Forest) and peer-reviewed by project partners.

Department of Fish and Game estimates that only half of eligible waterbodies are presently listed in the Anadromous Waters Catalog. Documenting fish use will ensure the habitat value of project catchments is fully realized by land managers.

Methods

We propose an inspection plan that will: (1) validate the functionality of the fish-friendly culvert installations, (2) increase efficacy of future fish-friendly culvert designs, and (3) provide information about anadromous fish presence in the restored catchments.

To accomplish these goals, we will conduct post-construction investigations of channel profile and fish presence.

Post-construction investigation of channel profile

We will quantify changes in channel profile and function as compared to the pre-construction channel profile and the design specifications. This investigation will be conducted approximately 2 years after culvert replacement, allowing time for the channel profile to adapt to the hydraulics of the new culvert.

Our data collection and analysis methods will follow standard Forest Service procedures for channel profile measurement as described in the Region 10 Aquatic Habitat Management Handbook (USDA Forest Service 2001) and the National Inventory and Assessment Procedure (Clarkin and others 2005).

We will quantify channel characteristics within a study reach that will extend approximately the length of 20 bankfull widths upstream and downstream from the culvert. Our investigation will include: conducting a detailed plan survey around the culvert, measuring channel cross-sectional profiles, longitudinal profile, streambed particle size and elevation, and large wood. We will focus on metrics that most efficiently capture channel function such as median particle size within the culvert, residual pool depth downstream from the outlet, streambed elevation within and near the culvert, and channel and bankfull width.

We will use these data to assess changes in channel profile and function that correspond with the installation of the new culvert. For example, if the post-construction elevation of streambed measurement suggests bed material scour, our inspections may capture the change and a simple intervention may be applied to improve culvert function. These observations can also be used to validate if the culvert is conveying water and passing fish as intended and to inform future fish-friendly culvert designs.

Post-construction investigation of fish presence

Fish surveys will be conducted in all anadromous habitat reaches upstream from the new culvert within 2 years of installation. We will follow American Fisheries Society standards for fish capture and handling (Zale and others 2013). Capture methods will be appropriate for the habitat unit, and may include baited traps, nets, snorkeling, or electrofishing. Capture methods will be approved in advance by the Alaska Department of Fish and Game and will be conducted in a manner that minimizes stress and disturbance to fish. After capture, fish will be identified to species, measured, and released into the habitat feature where they were captured. At least two fish surveys will be conducted in each stream to capture differences in fish presence associated with life stage and season.

Data archiving and reporting

All stream channel profile data will be shared with project collaborators after each field season and will be available to the public upon request. All fish survey data will be reported to Alaska Department of Fish and Game and nominations will be submitted to update the state Anadromous Waters Catalog.

Annual reports will be written and shared with project collaborators and the EVOS TC. At the end of the inspection period, a peer-reviewed final report will be produced that describes our findings and makes recommendations for future fish-friendly culvert designs. The final report will be completed within 1 year after data collection is finished.

Timeline

An inspection timeline is presented in Table 1. We anticipate three culvert installations per year for six years, however, if implementation timelines change, the inspection schedule will be adjusted to ensure the post-construction investigations of channel profile are conducted 2 years after project implementation and the fish presence investigations is conducted within 2 years of implementation.

Table 1. Inspection Timeline.

Objective	**Target completion relative to project implementation**	**Schedule Phase 1 (by Fiscal Year)**	**Schedule Phase2 (by Fiscal Year)**
Project Implementation	-	FY 20-22	FY 23-25
Post-project channel profile survey	2 years after	FY 22-24	FY 25-27
Post-implementation anadromous fish surveys	2 years after	FY 22-24	FY 25-27
Annual Reports	-	FY 22-24	FY 25-27
Final Report	-	FY 25	FY 28

Budget

The average annual cost to inspect three culvert replacements is: **$33,300**. The annual cost break-down for the channel profile survey and the fish presence survey is:

Annual Channel Profile Survey Costs (for three sites per one year)

Description	Amount (USD)
Airfare (for 2 Anchorage-based Surveyors)	$1,000
Per Diem (For 2 Anchorage-based Surveyors)	$2,200
Survey supplies and materials	$150
Alaska Marine Highway vehicle transport	$450
Salary for field work (4 employees, 5 days)	$7,500
Salary for platting, data analysis, reporting	$12,000
Total:	**$23,300**

Annual Fish Presence & Life Stage Survey Costs (for three sites per one year)

Description	Amount (USD)
Equipment and supplies	$500
Salary for field work (3 employees, 8 days)	$7,500
Salary for data analysis and reporting	$2,000
Total:	**$10,000**

The proposed inspections will occur for three years per phase (anticipated FY 22-24 and FY 25-27) and the total cost will be **$199,800**.

References

Clarkin, K.; Connor, A.; Furniss, M.J. [and others]. 2005. National Inventory and Assessment Procedure- For Identifying Barriers to Aquatic Organism Passage at Road-Stream Crossings: National Technology and Development Program. 81 p.

USDA Forest Service. 2001. Aquatic Habitat Management Handbook. Juneau, Alaska: Alaska Region. 124 p.

Zale, A.V.; Parrish, D.L.; Sutton, T.M. 2013. Fisheries Techniques (3rd ed.). Bethesda, MD: American Fisheries Society. 1009 p.

Appendix 2: Letter of Recommendation

The Eyak Corporation
901 LeFevre Street
PO Box 340
Cordova, AK 99574
Email: abutler@eyakcorp.com
Toll Free: (800) 478-7161
Phone: (907) 424-7161
Fax: (907) 424-5161

March 6, 2018

Elise Hsieh
Executive Director
Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Suite 220
Anchorage, AK 99508-4650

Dear Ms. Hsieh,

On behalf of the Eyak Corporation, I am writing to express support for the proposed Copper River Watershed Enhancement Project that will replace thirteen culverts blocking fish passage and access to spawning habitat on the Copper River delta, including four situated on easements crossing Eyak Corp land. As the General Manager of Cordova Operations for the Eyak Corporation, one of my responsibilities is overseeing activities on Eyak Corporation Lands in the Prince William Sound region.

We support this effort to improve salmon spawning and rearing habitat on the Copper River delta, including the sites that could potentially impact Eyak Corporation land. Salmon have sustained Eyak Natives for generations and we want to ensure this invaluable resource is around for our grandchildren's children and more.

As a Cordovan, I am also interested in supporting healthy salmon habitat on the Copper River delta so that we can continue to harvest salmon. Our community and the Native people have rellied on healthy salmon for generations.

We look forward to the opportunity to work with the proposal partners on the permitting necessary to implement this fish passage improvement project. Please contact me at (907)424-7161 or abutler@eyakcorp.com with any questions regarding this letter of support.

Sincerely,

Angela Butler
General Manager of Cordova Operations

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Fish and Game

DIVISION OF HABITAT
Central Region Office

333 Raspberry Road
Anchorage, Alaska 99518-1565
Main: 907.267.2342
Fax: 907.267.2499

November 15, 2017

Elise Hsieh
Executive Director
Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Suite 220
Anchorage, AK 99508-4650

Dear Ms. Hsieh,

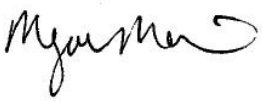
On behalf of the Alaska Department of Fish & Game (ADF&G), I am writing to express support for the proposed Copper River Watershed Enhancement Project that will replace thirteen culverts and improve or restore access for anadromous fish to spawning and rearing habitat in the Copper River delta. The ADF&G has statutory authority for protecting fish habitat in the State of Alaska. I am the Habitat Biologist responsible for permitting and project review in the eastern Prince William Sound area for the ADF&G Division of Habitat, and I visited all of the proposed replacement sites in June 2017.

The Copper River Highway acts as a dike, altering hydrology through the delta's wetlands. Many streams supporting anadromous fish cross the highway in culverts that are complete or partial barriers to upstream migration. The ADF&G supports work in this area to maintain or restore fish passage across the highway. Replacing these culverts will benefit coho salmon and other anadromous fish species, by improving or restoring access to spawning and rearing areas currently underutilized on the north side of the highway. Improving productivity in the Copper River delta area will benefit the area's subsistence, sport and commercial fisheries.

I have worked with the Copper River Watershed Project, the proposed project manager, on several fish habitat and water quality improvement projects in the Cordova area. The organization has successfully carried out numerous habitat improvement projects in the area with a high level of dedication and attention to detail. ADF&G biologists have worked successfully with the Copper River Watershed Project on several projects that required cooperation from multiple agencies and stakeholders.

We look forward to the opportunity to work with the proposal partners on design review and permitting necessary to implement these fish passage improvement projects. Please contact me at (907)267-2446 or megan.marie@alaska.gov with any questions regarding this letter of support.

Sincerely,



Megan Marie
Habitat Biologist IV

ecc:
Stormy Haught, Area Research Biologist, Cordova
Jay Baumer, Sport Fisheries Management Biologist, Prince William Sound
Jeremy Botz, Commercial Fisheries Management Biologist, Copper River

Cordova District Fishermen United
PO Box 939 | 509 First Street | Cordova, AK 99574
phone. (907) 424 3447 | fax. (907) 424 3430
web. www.cdfu.org

November 28, 2017

Elise Hsieh
Executive Director
Exxon Valdez Oil Spill Trustee Council
4230 University Drive, Suite 220
Anchorage, AK 99508-4650

Dear Ms. Hsieh,

On behalf of Cordova District Fishermen United (CDFU), I am writing to express support for the proposed Copper River Watershed Enhancement Project that will replace thirteen culverts blocking fish passage to spawning habitat on the Copper River delta. As an organization dedicated to perpetuating the health of our salmon fisheries, we represent commercial fishermen who depend on healthy salmon runs in the Copper River watershed to sustain our livelihoods.

We learned firsthand after the Exxon Valdez Oil Spill how impaired habitat affects the health of salmon populations and ultimately the health of the commercial fishing industry. We support this effort to improve salmon spawning and rearing habitat on the Copper River delta, in particular for coho salmon. Maintaining habitat connectivity increases available habitat for spawning and rearing, ultimately increasing the number of salmon available to support local fishermen, including commercial, sport and subsistence fishermen.

As local Cordovans, we are dedicated to supporting healthy salmon habitat on the Copper River Delta so that we can continue to harvest strong, sustainable salmon runs for generations to come. Thank you for your consideration of this important proposal. Please contact me at rachel@cdfu.org with any questions regarding this letter of support.

Sincerely,

Rachel Kallander
Executive Director
Cordova District Fishermen United

USDA United States Department of Agriculture
Forest Service
Cordova Ranger District
612 2nd Street
P.O. Box 280
Cordova, AK 99574

File Code: 2500
Date: March 6, 2018

Elise Hsieh
Executive Director
Exxon Valdez Oil Spill Trustee Council
430 University Drive; Suite 220
Anchorage, Alaska 99508-4650

Dear Elise Hsieh:

The proposed Copper River Watershed Enhancement Project will occur within watersheds managed by the Cordova Ranger District of the Chugach National Forest. Some of the culvert replacements will occur on roads that are maintained by the Forest Service. The proposed project meets the management objectives of the Chugach National Forest and mitigates impacts of the Exxon *Valdez* Oil Spill by improving conditions for injured species and the people that depend on these resources. In addition to improving aquatic ecosystem health, this project will improve access for tourism and subsistence, benefitting the local economy and quality of life.

I support this project and I hope the Trustee Council will fund this important work.

Sincerely,

ROBERT SKORKOWSKY
District Ranger

cc: Kristin Carpenter; Ron Britton

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Transportation and Public Facilities

NORTHERN REGION
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
TDD: 907-451-2363
Fax: 907-451-5126

March 14, 2018

Elise Hsieh

Executive Director

Exxon Valdez Oil Spill Trustee Council

4230 University Drive, Suite 220

Anchorage, AK 99508-4650

Dear Ms. Hsieh,

I am writing to express support for the proposed Copper River Watershed Enhancement Project that will replace 14 culverts blocking fish passage to spawning and rearing habitat on the Copper River delta. We are participating as a member of the project partnership because nine of these barrier culverts are on the Copper River Highway, a State road owned and maintained by the Alaska Department of Transportation & Public Facilities (ADOT &PF).

Compared to road needs across the State, the Copper River Highway ranks as a low priority because of its low traffic volume. This highway is also in relatively good shape, making it very unlikely that these culverts would be funded for replacement by ADOT&PF absent a road safety problem.

We do see the value in replacing hydraulically under-sized culverts with those that mimic more natural stream conditions to improve fish passage as the proposed replacements will also be capable of handling higher flow regimes and better protect infrastructure and the meandering of steams on the Copper River delta during large rain events.

With this benefit in mind, we will contribute to this restoration work by participating in the planning process and review designs for each crossing to ensure they align with ADOT&PF standards. Upon completion, we will be responsible for the continued maintenance of each site. Staff from several divisions of our agency have worked successfully since 2010 with these partners to replace other high priority culverts based on associated fish habitat on the delta and are prepared to continue this partnership for the proposed culverts on ADOT&PF roads.

We support this effort and look forward to working with all partners to ensure that this proposed project maintains safe roads for the community while improving fish passage on the Copper River delta.

Please contact me at 907-451-5389 or via email at jstutzke@alaska.gov with any questions regarding this letter of support.

Sincerely,

Jeff Stutzke, P.E.

AKDOT&PF

Northern Region Hydraulic Engineer

cc:

Dan Adamzcak, DOT&PF Maintenance and Operations