

## **Alaska Sustainable Salmon Fund Statement of Work**

**I. Project Title** – Ship Creek Fish Passage Project at the Ship Creek Crossing, PM&E Project No. 02-01

**II. Project Number:** 45466; **NOAA Category:** CD – EN / IN

**III. Project Manager/Principal Investigator**

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**IV. Project Period:** September 1, 2004 – June 30, 2006

**V. Project Description**

**A. Introduction** –The Municipality of Anchorage (Municipality) is proposing to enhance fish passage in Ship Creek by removing an existing embankment and restoring the channel to its natural morphology. See related AKSSF project 45507.

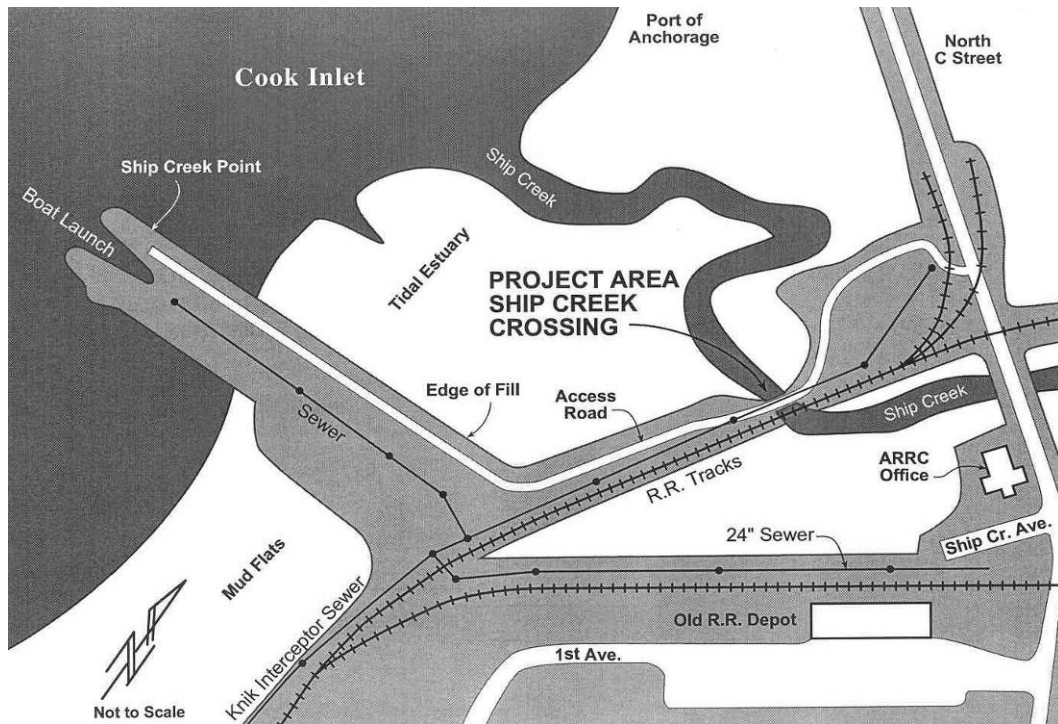


Figure 1: Ship Creek Crossing Map

At present, there is an imminent danger situation with the existing embankment supporting a road crossing of Ship Creek. In 1988, the Port of Anchorage constructed a paved road across the top of the embankment. This road provides the only access to Ship Creek Point and is well traveled in the summer by local sport fishermen, the boat storage users and launch area users. The road crossing is supported by three arch culverts which are corroding and collapsing. The existing Ship Creek crossing has been determined to have the following deficiencies (Ship Creek Culvert Removal Project – Environmental Assessment, HDR, 2002):

- The embankment crossing Ship Creek has substantially degraded, threatening the integrity of the road and further detracting from the ecosystem of Ship Creek.
- The existing three arch culverts are corroding and collapsing, affecting the hydraulic capacity of the culverts and limiting fish passage. Makeshift supports inside the culverts also complicate fish passage.
- Much of the original three-foot-thick layer of riprap has fallen from the face of the embankment on both the upstream and downstream sides of the crossing affecting the hydrology of the existing creek for fish passage.
- Water flow through the culverts is also restricted by debris blocking the inlets, which affects fish passage.

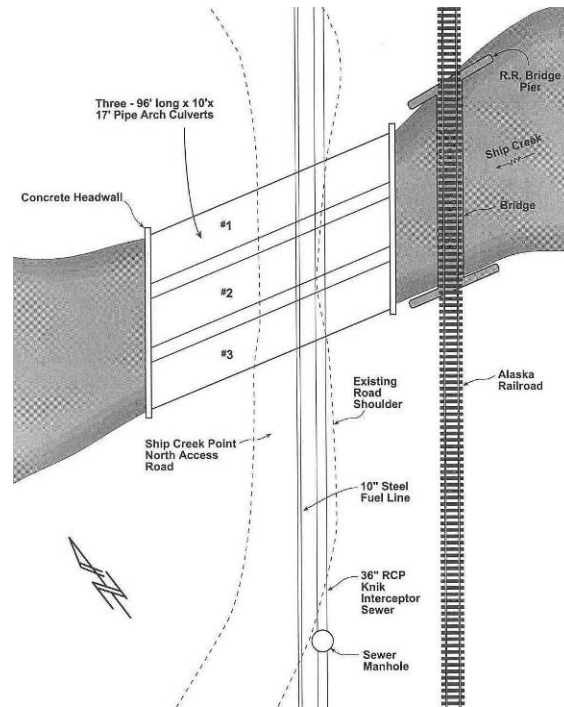


Figure 2: Plan view of the existing culverts in Ship Creek

Above the culverts and within the road embankment, there is a 10” steel gas line owned by Tesoro Petroleum Company. A replacement fuel line has been bored under Ship Creek downstream of the embankment. The existing fuel line has been abandoned within the existing embankment. Anchorage Water and Wastewater (AWWU) abandoned a 36” sewer line within the embankment during the Spring and Summer of 2002. A new sewer crossing was installed approximately 50 feet downstream of the abandoned facility.

In addition to water from Ship Creek flowing downstream through the culverts, tide waters circulating upstream and downstream from Cook Inlet flow through the culverts as well. The road surface is at an approximate elevation of 36 feet. High tides in this area often reach 33 feet. During high tides, the culverts and embankment act to dam up water flowing up and down the creek. This damming creates a temporary pond on the upstream side and limits tidal flow upstream from the existing crossing and likely inhibits fish passage by high water velocities through the culverts.

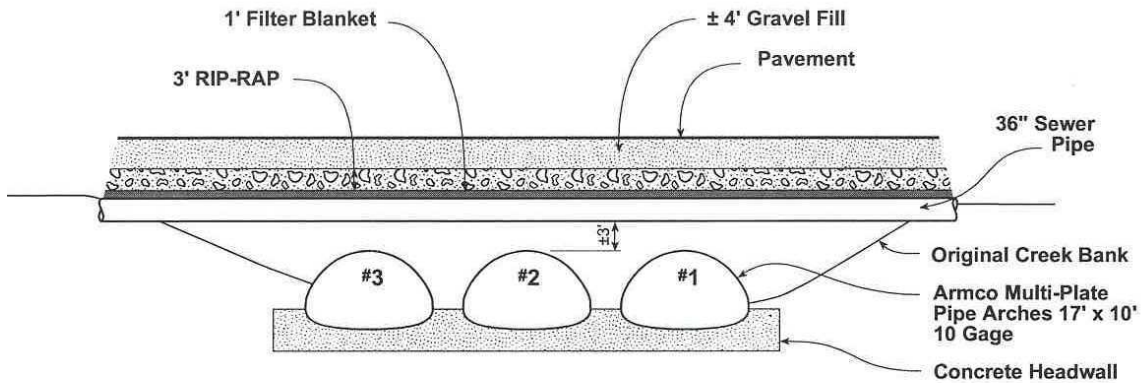


Figure 3: The cross section of the existing culverts and embankment.

Engineering evaluations have concluded that a collapse of the culverts is imminent unless the culverts are repaired or removed. At present, the flow capacity of the culverts has been significantly decreased due to restrictions from bent multi-plates, gravel and debris and makeshift supports inside the culverts, and riprap at culvert ends. The gravel and debris comes from the failure of the road above the culverts. The Municipality and Tesoro have worked together to successfully relocate the fuel line and sewer main prior to failure of the existing culverts. In addition to relocation of utilities, the Municipality is proposing channel restoration by removal of the obstructing embankment and culverts and replacement with a bridge. Removal of the embankment will restore natural stream bed and bank habitat that will benefit fish and wildlife. The bridge will provide uninhibited passage for fish, both upstream and downstream, as well as for aquatic and marine mammals and birds. It will also provide more natural hydrologic conditions and enhance the ecosystem in Ship Creek.



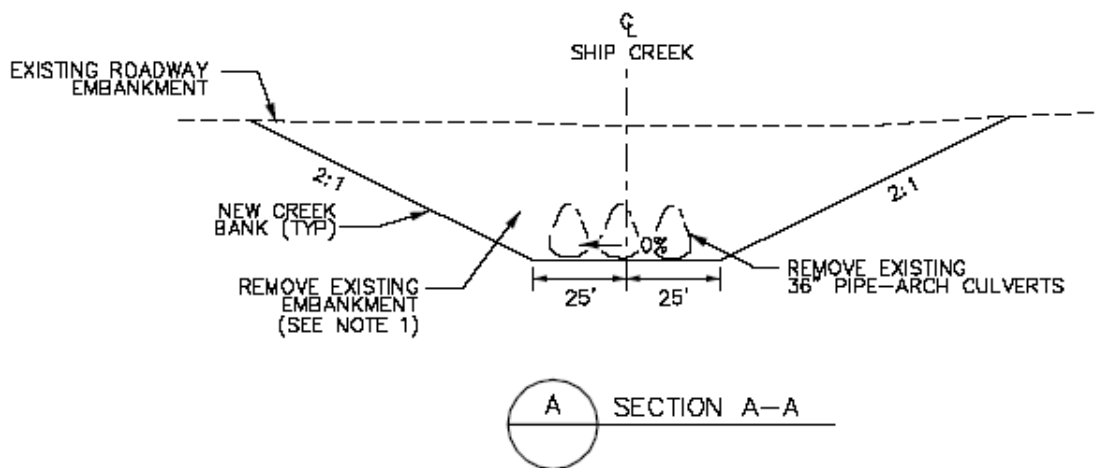
Photo 1: Downstream side of three existing culverts and embankment failure.



Photo 2: Roadside view looking east on the downstream side of the embankment

**B. Project Summary** – The Municipality is working to remove the existing obstructions for fish passage by designing improvements to the existing Ship Creek Crossing. The existing culverts and the road fill above the culverts are in the early stages of failure. The Municipality and their design consultant - HDR - are designing fish passage improvements entailing removal of the existing obstructing embankment and culverts and restoration of the Ship Creek channel. Future vehicle and pedestrian access across the creek will instead be provided by a bridge. The Municipality has worked closely with the environmental regulatory agencies through all stages of project planning and design to restore creek habitat and provide uninhibited fish passage.

The channel reconstruction will include removal of the existing embankment, abandoned sewer main and Tesoro fuel line, culverts and debris within the channel. The channel reconstruction will include a 50-foot-wide streambed with 2:1 side slopes to match the adjacent undisturbed channel banks. This channel reconstruction will allow passage for adult salmon returning upstream and will also provide smolt with an unobstructed intertidal channel in which they can acclimatize to the salinity of Cook Inlet.



The recommended bridge alternative is a two-span bridge, because the abutments will not encroach into the creek channel. This alternative is also favored by the environmental regulatory agencies.

Design was completed in August of 2004. While substantial progress has been made toward completing removal of the embankment (that is, relocation of the sewer and fuel lines and bridge design), this project has insufficient funding to remove the embankment and construct the bridge. Without the availability of this funding, the Municipality may have no other choice but to replace the existing culverts in-kind. The ADF&G monies will provide the needed funding to improve fish passage by building a bridge which will allow removal of the existing embankment and culverts and restoration of the channel to a natural hydrological and ecological system for the coho and chinook salmon which return to Ship Creek and support the very popular sport fishery.

**C. SSSF Goal-** To improve fish passage to Ship Creek by restoration of the channel to a natural hydrologic and ecological system for the coho and chinook salmon which return to Ship Creek.

## **VI. Objectives**

**A. Project objective** – Removing the existing channel obstruction, restoring the open channel habitat and improving fish passage in Ship Creek. This would include: removing the existing road embankment, the deteriorating culverts, the abandoned 10” fuel line and sewer line, and the existing embankment debris, and installing a bridge with pedestrian amenities.

**B. Justification** – Engineering evaluations have concluded that a collapse of the culverts and road embankment is imminent unless the culverts are repaired or removed. Fortunately, the first two phases of the project – relocation of the active AWWU 36” sewer line and Tesoro fuel line – have already occurred. The sewer main and fuel pipes are abandoned in place within the embankment.

**C. Project Impacts/Outcomes/Evaluation of Project Objectives** – Ship Creek Fish Passage Project is an important project because it will create more natural channel conditions in a critical and visible location, while eliminating a substantial obstruction to fish passage and a safety-compromising situation for fishermen and others. The project is timely because of the imminent failure potential. The desired outcomes at this specific location are to provide unimpeded fish passage, both upstream and downstream, by restoring the channel to a more natural state, which will benefit the coho and chinook salmon runs in the Ship Creek.

Upon completion of the fish passage improvements, the Municipality of Anchorage will work with other agencies and local groups to determine angler access needs and participate in future projects to address those needs in the Ship Creek Corridor.

If the project cannot achieve its funding goals, the Municipality may be required to replace the existing culverts. This alternative would not meet the goal of enhancing fish passage in the channel but would eliminate the safety concerns. This would not remove the concentration of flows through the culverts that occurs in the Creek due to the existing embankment.

**D. Methodology/Modeling** – The project methodology has been determined by the engineering consultant within the design study and design phases. No hydraulic or hydrologic modeling has been needed because the proposed bridge pier will not affect flow enough to potentially inhibit fish passage. The consultant has developed the requirements and operation plan in response to working with required agencies and permitting requirements.

## **VII. Results/Deliverable Products**

Removal of the existing embankment and culverts prior to failure and restoration of a natural channel reach that will provide uninhibited fish passage in lower Ship Creek. The proposed construction is scheduled to begin October 2004 with completion in June 2005

**VIII. Benefits to salmon/salmon fisheries/salmon fishers**

The removal of the existing embankment and culverts will remove an existing substantial impediment to upstream and downstream fish passage. If the proposed improvements are constructed, free fish passage will exist in the immediate channel for migration of adult salmon upstream and smolt acclimatization. Restoration of a natural channel will provide high-quality migration and acclimatization habitat. The new bridge will serve pedestrians and vehicle users that participate in the important sport fishery in this area. The fishery is extremely popular with municipal residents and visitors alike. Removing the embankment is critical to the success of the overall restoration of natural salmon migrations in Ship Creek by removal of the dams upstream of the embankment. (Design of removal of the dam immediately upstream is underway.) Removing the embankment as soon as possible will allow the natural creek gradient to begin to come to equilibrium while the dam removal design is underway. The changing angler access needs will be addressed in a future project. The Municipality will work with local agencies and local groups to determine access needs and participate in a project to provide angler access.

**IX. Project Duration/Milestones/Project Timelines**

Design Study	4/02 to 2/03
Pre-PS&E Design	12/02 to 08/03
PS&E Design	8/03 to 8/04
Construction	9/04 to 6/05

**X. Partners**

Municipality of Anchorage, National Oceanic and Atmospheric Administration, HDR Alaska, Inc. – MOA Design Consultant, Tesoro, AWWU, Construction Contractor (TBD). Project has support of ADF&G, Corps of Engineers, EPA, USFWS, National Marine Fisheries Service, Alaska Department of Natural Resources, Anchorage Waterways Council, Alaska Railroad, and Community Councils.

**XI. Budget**

	<b>FY 05</b>	<b>Total</b>
100 Personnel	\$155,250	\$155,250
200 Travel		
300 Contractual	\$1,584,750	\$1,584,750
400 Supplies		
500 Equipment		
<b>Total Direct Costs</b>	<b>\$1,740,000</b>	<b>\$1,740,000</b>

## **Budget Narrative**

Personnel: Municipality of Anchorage / Project Management  
Contract: Bridge and Channel Construction