

MEMORANDUM

State of Alaska

Department of Transportation & Public Facilities Northern Region Materials

TO: Kerri Martin
Environmental Impact Analyst
Northern Region

DATE: June 5, 2020

TELEPHONE NO: 451-2233

FROM: Luke Boles, P.E.
Hydraulic Engineer
Northern Region

SUBJECT: Copper River Highway MP
21.5 Culvert Replacement
Project NFHWY00494
Location Hydraulic Study

Introduction

This Location Hydraulics Study (LHS) was prepared to assess the impacts from the proposed Copper River Highway MP 21.5 Culvert Replacement project. If a proposed action involves an encroachment, the impacts must be assessed in a location hydraulic study (LHS), as required under 23 CFR 650.111. An encroachment is any action (highway construction, reconstruction, rehabilitation, repair or improvement) within the limits of the base floodplain. The LHS is an assessment of floodplain hazards that usually does not require extensive engineering analysis. The LHS identifies and describes the floodplain context of the project and describes how the ADOT&PF will address risks and floodplain-related design objectives.

Project Description

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Alaska Division Office of the Federal Highway Administration (FHWA) & the Alaska Department of Fish and Game, is proposing to replace the existing 5 foot diameter culvert at Copper River Highway Mile 21.5. The purpose of the project is to improve fish passage through the Copper River Highway at this location. The proposed project work includes replacing the culvert, adding erosion control at the inlet and outlet, minor channel restoration and rebuilding/resurfacing the road embankment.

Floodplains

Federal Highway Administration (FHWA) regulations in 23 CFR 650 apply to encroachments in all base floodplains (1% annual chance flood hazard), not just those that are mapped and regulated by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP). Unmapped base floodplains are often called unregulated floodplains. The project is not located within a regulated floodplain. Estimates of the extents of the base floodplain are qualitative in the project area and quantitative floodplain mapping is impracticable due to lack of information to support detailed hydrologic and hydraulic modeling. The project does not include longitudinal encroachments.

Risks Associated with the Implementation of the Action

The risks associated with this project are low. In this context, “risk” means the consequences associated with the probability of flooding attributable to the encroachment. The project will result in minimal changes to the highway embankment and minor alterations to the adjacent channel. Construction work will be predominately within the existing highway embankment, and will match existing highway line and grade. Complete avoidance of the floodplain is not possible due to nature of the project (culvert replacement), therefore no practicable alternatives exist that would avoid or further minimize impacts to the floodplain.

Impacts on Natural and Beneficial Flood Plain Values

Natural and beneficial floodplain values include, but are not limited to: fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. This project should not significantly impact the natural and beneficial floodplain values. The design will minimize the footprint of the project to the extent practicable. Any riparian vegetation will be preserved or established and roadway drainage will be improved. The proposed project should preserve, and may even enhance, the natural and beneficial floodplain values.

Measures to Minimize Flood Plain Impacts Associated with the Action

Measures to minimize floodplain impacts will be incorporated into the design and construction of this project. They include the following:

- A new stream simulation fish passage culvert will have increased conveyance area compared to the existing culvert opening.
- Minimize the footprint of the project to the extent practicable.
- Erosion and sediment control measures will be implemented during construction.

The project will not involve significant encroachments and should not support incompatible floodplain development. Proposed work will not impact water conveyance and no adverse flood plain impacts are anticipated.

Support of Probable Incompatible Floodplain Development

“Support of base floodplain development” means to encourage, allow, serve, or otherwise facilitate additional base floodplain development. Direct support results from an encroachment, while indirect support results from the action out of the base floodplain.

This project is subject to any local, state, and federal floodplain regulations. The project is not located within NFIP regulated floodplains. Other non-DOT&PF projects within regulated jurisdictional boundaries are also subject to local floodplain ordinances. Hence, it is improbable that incompatible floodplain development would receive support from this project.

Consistency with Existing Watershed and Flood Plain Management Programs

The project will not involve significant encroachments and as discussed above, should not support incompatible flood plain development. Work will be within existing right-of-way and highway geometric constraints. No grade changes are proposed for this project. There will be no loss of flow conveyance to carry base flood and storage capacity will not be affected by proposed improvements in this project's final condition.

If you have questions I am available to discuss.

A handwritten signature in blue ink, appearing to read 'L. Boles', with a long horizontal flourish extending to the right.

Luke Boles, P.E.
Hydraulic Engineer
Northern Region