FINDING OF NO SIGNIFICANT IMPACT

For the Fivemile Creek Hydroelectric Project
Chitina, Alaska

This draft Finding of No Significant Impact (FONSI) and the accompanying Environmental Assessment (EA) for the Fivemile Creek Hydroelectric Project are submitted pursuant to 45 Code of Federal Regulations Part 900 – Denali Commission (DC or Commission) National Environmental Policy Act (NEPA) Implementing Procedures.

The DC, in cooperation with the Alaska Energy Authority (AEA), has determined that the project, for which the Proposed Action alternative has been selected, would have no significant impact on the human or natural environment, individually or cumulatively, under normal conditions. The selected course of action is described as the Proposed Action in the accompanying EA, which prepared in compliance with the NEPA. The EA considers the effects of federal projects, projects that are federally funded, and/or projects that require a federal permit, on the quality of the human and natural environment. The selected course of action is hereafter referred to as the Selected Alternative.

The Selected Alternative meets the stated purpose and need of the project while minimizing impacts on the human and natural environment. This draft FONSI incorporates by reference the analyses contained in the attached EA. Final DC action would be taken after public comments received on the EA and draft FONSI are reviewed and considered.

After the Commission issues the final FONSI, AEA with support from HDR Engineering, Inc. (the design engineer), intends to issue a construction contract and administer construction. Once constructed, Chitina Electric, Inc. would own and operate the project.

Public Involvement

The Draft FONSI and EA was published on October 4, 2025 and was available for public comment for 15 calendar days. No comments were received.

Approved by:

JOHN WHITTINGTON Digitally signed by JOHN WHITTINGTON
Date: 2025.10.22 10:53:58 -08'00'

John Whittington, General Counsel

Date

Environmental Assessment

Fivemile Creek Hydroelectric Project

Alaska Energy Authority
813 W. Northern Lights Blvd
Anchorage, Alaska 99503

Prepared by:
HDR Engineering, Inc.
582 East 36th Avenue, Suite 500
Anchorage, Alaska 99503

Prepared for:
Denali Commission
501 L Street, Suite 410
Anchorage, Alaska 99501

September 26, 2025

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List of Acronyms

ABR	Alaska Biological Research, Inc.
ADF&G	Alaska Department of Fish and Game
AEA	Alaska Energy Authority
AHRS	Alaska Heritage Resources Survey
ANCSA	Alaska Native Claims Settlement Act of 1971
APA	Alaska Power Administration
APE	Area of Potential Effect
AWC	Anadromous Waters Catalog
BCC	Bird of Conservation Concern
BMP	best management practice
BP	years Before Present
CEI	Chitina Electric, Inc.
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMP	corrugated metal pipe
CNC	Chitina Native Corporation
CRW	CRW Engineering Group, LLC
CWA	Clean Water Act
DC	Denali Commission
DEC	Alaska Department of Environmental Conservation
DNR	Alaska Department of Natural Resources
DOE	U.S. Department of Energy
DOT&PF	Alaska Department of Transportation and Public Facilities
DPS	Distinct Population Segment
EA	environmental assessment
EFH	essential fish habitat
ESA	Endangered Species Act
GMU	Game Management Unit
HDPE	high-density polyethylene
HDR	HDR Engineering, Inc.
IPaC	Information for Planning and Consultation
kVA	kilovolt-ampere
kV	kilovolt
kW	kilowatt
LiDAR	Light Detection and Ranging
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MBTA	Migratory Bird Treaty Act
MP	milepost
N	North
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966

NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
NWP	Nationwide Permit
OHA	Office of History and Archaeology
Polarconsult	Polarconsult Alaska, Inc.
project	Fivemile Creek Hydroelectric Project
RM	river mile
ROW	right-of-way
RS	Revised Statute
SHPO	Alaska State Historic Preservation Office(r)
SWPPP	Stormwater Pollution Prevention Plan
TWUA	temporary water use authorization
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
W	West
WOTUS	Waters of the U.S.

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1.0 Introduction

The Alaska Energy Authority (AEA), acting on behalf of Chitina Electric, Inc. (CEI), is proposing a small-scale hydroelectric project on Fivemile Creek to supply renewable energy to the community of Chitina, Alaska. Chitina is located on the western bank of the Copper River at mile 34 of the Edgerton Highway, approximately 70 miles southeast of Glennallen and 120 miles northeast of Valdez. Fivemile Creek flows northeast into the Copper River immediately north of the airport, which is located approximately 5 miles north of Chitina (**Figure 1**).

The State of Alaska, through the AEA, and the Denali Commission (DC) are proposing to provide funds to design, permit, and construct the Fivemile Creek Hydroelectric Project (Project). AEA is proposing to use U.S. Department of Energy (DOE) funding to support the construction of the project; as another federal agency, DOE is also responsible for complying with the National Environmental Policy Act of 1969 (NEPA) (42 U.S. Code 4321 et seq.) and would complete their own NEPA review. Once constructed, the local utility, CEI, would own and operate the project. On behalf of the DC, HDR Engineering, Inc. (HDR), has prepared this environmental assessment (EA) consistent with NEPA guidelines (pursuant to 45 Code of Federal Regulation [CFR] Part 900 – Denali Commission NEPA Implementing Procedures), and other applicable laws, regulations and procedures.

2.0 Background

Chitina currently relies on diesel-electric generators to meet 100 percent of the community's energy needs. CEI operates and maintains the community power generation and distribution systems. The power plant, which was constructed in 2008 in cooperation with the AEA, is located on Chitina Airport Access Road. The plant consists of a pre-engineered modular structure with three diesel generator sets with a combined capacity of 301 kilowatts (including two 117kilowatt [kW] gen-sets and a single 67 kW gen-set). Fuel is supplied via a 12,000-gallon double wall aboveground storage tank adjacent to the plant (CRW 2012).

The diesel power plant generates at 480 volts alternating current (AC), which is stepped up to 12.47 kilovolts (kV) using a single, 150 kilovolt-ampere (kVA), 3-phase, pad-mount transformer adjacent to the plant. The power plant is connected to the community's existing overhead electrical distribution system via a 4-mile-long, 3-phase, 12.47 kV, overhead transmission line. Chitina's electrical distribution system is a stand-alone system, not interconnected to the regional (Copper Valley Electric) grid system (CRW 2012). CEI receives fuel via truck haul from several regional venders, including Glennallen-based Fisher Fuels and Crowley. The diesel power plant is equipped with a heat recovery system, which provides heat to the power plant fuel tank and the neighboring clinic via buried, insulated, circulating glycol pipelines (CRW 2012).

3.0 Purpose and Need for Action

Both the AEA and DC are aligned in their mission of reducing the cost of energy in Alaska. The agencies are pursuing funding for construction of a small-scale hydroelectric project on Fivemile Creek. The main purpose for undertaking this project is to supply renewable energy to the community of Chitina, Alaska. Chitina is electrically isolated and relies on diesel-electric generators to meet 100 percent of the community's energy needs. The agencies are responding to the need to reduce diesel fuel use and bring renewable energy to Chitina by constructing a hydroelectric facility on Fivemile Creek, which would reduce diesel fuel consumption and greenhouse gas emissions, improve air quality and lower energy costs for the community over the long term.

DC would carry the responsibility of assessing environmental impacts/effects and would determine the outcome of the project proposal. The DC would decide whether and under what conditions to approve CEI's proposal to construct the project.

4.0 Alternative Development Summary

4.1. Project History

This EA incorporates by reference the *Regional Hydroelectric Investigation, Chitina, Alaska*[1] (Polarconsult 2008), with this section presenting a summary of the project's history.

Development of a hydroelectric project to serve the community of Chitina has been studied since the 1980s, which demonstrates that the need has long been recognized. In 1981, the DOE, Alaska Power Administration (APA) published a study that evaluated the feasibility for potential hydroelectric site development on Liberty, Fivemile, Fox, and O'Brien Creeks (APA 1981). APA investigators concluded that the presence of a State Recreation Site at Liberty Falls would inhibit efficient development on Liberty Creek and that the Fox Creek canyon was too steeply incised to effectively construct a project there, identifying site development on O'Brien and Fivemile Creeks as potentially more feasible (APA 1981). At that time, development at Fivemile Creek involved constructing a 4-mile-long transmission line, which would increase project costs. However, neither project was constructed.

In 1986, due primarily to the rising cost of fuel, CEI began constructing a hydroelectric project that used water from Town Lake, located south of Chitina. In 1997, however, restrictions placed on lake draw-down levels severely limited output, and that project was abandoned.

In 2004, the AEA undertook efforts to evaluate various options for a hydroelectric project on O'Brien Creek. After collecting additional site data, including Light Detection and Ranging (LiDAR) data, Polarconsult Alaska Inc. (Polarconsult) completed a conceptual design report outlining a preferred intake site and options for site access, powerhouse location, and

[1] The *Regional Hydroelectric Investigation* final report (Polarconsult 2008) provides a detailed review of previous studies and the site evaluation process.

transmission (Polarconsult 2005). Severe landslides in 2005 eliminated one of those options and forced further reassessment of the others. As summarized by Polarconsult (2008), a 2006 study confirmed that repairing the abandoned facility on Town Lake for operation would not be economically feasible. In 2007, a comprehensive review of project alternatives was undertaken. Significant changes in site conditions at O'Brien Creek, due to severe floods in 2006, were identified. Slope stability concerns near the O'Brien Creek intake site, along with confirmation of permafrost along the penstock route, prompted AEA and CEI to reconsider the feasibility of siting a project on Fivemile Creek. That same year, CEI began constructing a new diesel power plant adjacent to Fivemile Creek (at its current-day location) and a 4-mile-long transmission line to Chitina. This improved the economic viability of a hydroelectric project on Fivemile Creek given that it would no longer require construction of a 4-mile-long transmission line (Polarconsult 2008).

The *Regional Hydroelectric Investigation* (Polarconsult 2008) ultimately determined Fivemile Creek to be the most feasible candidate due to its proximity to the community power plant for electrical tie-in, existing road access, better soil conditions, lower estimated costs, and better fit for Chitina's electrical demand. Therefore, AEA and CEI undertook further efforts to develop a hydroelectric project on Fivemile Creek.

4.2. Design Concepts Considered (2008–2021)

AEA has since evaluated the feasibility of several design options for hydroelectric development on Fivemile Creek. These have included various permutations of intake location, diversion structure size, powerhouse location and turbine type, penstock length, and transmission line routing and type. A summary of the design concept is provided below, incorporating by reference the following documents: *Conceptual Design Study Report, Fivemile Creek Hydroelectric Project* (CRW 2012); *65% Design, Fivemile Creek Hydroelectric Project* (CRW 2014); *Five Mile Creek Hydro Powerhouse Site Selection Analysis Memo* (Polarconsult 2020a); *Five Mile Creek Hydroproject Sizing Analysis Memo* (Polarconsult 2020b); and initial design concepts developed by HDR (2021a).

In 2008, Polarconsult developed a conceptual design for a project on Fivemile Creek that sited the intake structure at an elevation of 1,570 feet and the powerhouse on the northern side of Fivemile Creek at an elevation of about 530 feet. At that time, the project was envisioned to have a design output of 300 kW and a minimum winter output of 110 kW. Investigators assumed, based on visual observations, that Fivemile Creek would not support fish, and therefore the tailrace would not need to drain back into Fivemile Creek (Polarconsult 2008). However, biologists confirmed fish presence in lower Fivemile Creek in 2011.

In 2012, CRW Engineering Group, LLC (CRW) developed a conceptual project design that included siting the intake approximately 200 feet upstream from the Polarconsult (2008) design, a powerhouse adjacent to the existing diesel power plant, and a tailrace that would return water to Fivemile Creek immediately downstream of its highway culvert (CRW 2012). In 2014, this design concept, referred to as **CRW 2014**, was developed into a 65% design plan set (CRW 2014); however, the project was not constructed.

In 2019, CEI retained Polarconsult to advance design and permitting for a hydroelectric project on Fivemile Creek. Polarconsult developed four alternative options in 2020, which differed primarily in powerhouse and tailrace location, to consider and compare against the CRW 2014 design. **Alternative A** sited the powerhouse and tailrace upstream of the Edgerton Highway (lowest head option). Under **Alternative B**, the powerhouse would be on the northern side of lower Fivemile Creek and return flows to the creek 0.17 mile downstream of the highway culvert (at river mile [RM] 0.35). Alternative B would require a new access road off the Edgerton Highway or a bridge across Fivemile Creek from Airport Access Road. **Alternative C** sited the powerhouse on the southern side of the creek, along the Airport Access Road, and would also return flow to RM 0.35 (highest head option). **Alternative D** sited the powerhouse on the southern side of lower Fivemile Creek but would return flows immediately downstream of the highway culvert. Based on an evaluation of technical and economic criteria, Polarconsult recommended moving forward with Alternative C, rather than CRW's 65% design (Polarconsult 2020a).

In 2021, AEA contracted HDR to assist with final design of the Fivemile Creek Hydroelectric Project. In late winter/early spring (prior to conducting a site visit), HDR's initial design concept sited the intake structure at the Polarconsult (2020a) site and a powerhouse and tailrace on the northern side of lower Fivemile Creek, approximately 0.33 mile upstream from its mouth. To access and construct the powerhouse, this initial design concept would require construction of a new access road east from the Edgerton Highway.

In late May 2021, after enough snow had melted in the Chitina area, HDR engineers visited the site to evaluate the intake locations proposed by Polarconsult (2020a) and CRW (2014), powerhouse locations, the penstock route, and the condition of the existing Fivemile Creek Trail roadway. HDR determined that Polarconsult's (2020a) intake structure location appeared feasible, but steep adjacent terrain severely limited the space needed for equipment and would require a large amount of earthwork and rock blasting as compared to the intake site proposed by CRW (2014). HDR confirmed that widening of a natural bench to construct the penstock and access route, which runs along a previously cleared area, would involve far less blasting and earthwork. HDR also determined that the existing Fivemile Creek Trail within the project area is a single lane gravel access road (rather than a 'trail') that is wider and in better condition than anticipated (HDR 2021a).

After realizing the challenges with the Polarconsult (2020a) intake access route and powerhouse access below the Edgerton Highway, HDR began looking for an alternative that would be more economically feasible with the grant funds available at the time this EA is being prepared. HDR put forth a refined concept that would use the upper intake location and penstock route identified by CRW (2014), locate the powerhouse along the western (uphill) side of the existing Fivemile Creek Trail west of the Edgerton Highway, and provide a tailrace that would discharge directly into the inlet end of an existing 10-foot-diameter corrugated metal pipe (CMP) culvert under the highway and ultimately back to Fivemile Creek via a tributary stream. A site-specific hydrologic and hydraulic analysis determined the existing highway culvert should pass the 100-year storm event with the proposed additional 6 cubic feet per second (cfs)

(HDR 2021b). HDR coordinated with the Alaska Department of Transportation and Public Facilities (DOT&PF) and has since refined the **2021 design concept**, which is analyzed as the "Proposed Action" in this EA.

5.0 Alternatives Analyzed in this EA

5.1. No Action

NEPA implementing regulations require EAs to consider a "No Action" alternative. No Action is interpreted as a continuation of the present course of action and serves as a baseline comparison to the Proposed Action to evaluate the extent of potential impacts.

Under the No Action alternative, construction of a hydroelectric project on Fivemile Creek would not occur. The community of Chitina would continue using diesel generation to meet 100 percent of its energy needs. CEI would continue to receive fuel via truck haul from several regional venders, including Glennallen-based Fisher Fuels and Crowley, as needed.

5.2. Proposed Action

The project proposes to provide renewable energy to Chitina to reduce diesel consumption and greenhouse gas emissions by constructing a small, high-head, run-of-the-river hydroelectric facility on Fivemile Creek. The Proposed Action (project) would include construction, operation, and maintenance of a gravel access route; two temporary construction staging areas; diversion structure; penstock; powerhouse; and short overhead power line (**Figure 2**).

Components of the Proposed Action include:

1. An 8-foot-high concrete **diversion structure** located at approximately RM 2.26 of Fivemile Creek. The diversion structure would create a small impoundment (maximum impoundment depth of 8 feet) that would provide freeze protection and necessary submergence for the intake.
2. A concrete **intake structure** and sluiceway on the northwestern abutment of the diversion structure. The diverted flow would first enter the sluiceway and then be drawn through a trashrack and into the penstock to reach the powerhouse.
3. An approximately 1.48-mile-long buried **penstock** to convey water from the intake structure to the powerhouse. The 14-inch nominal outside diameter penstock includes:
    - Approximately 1.22 miles of high-density polyethylene (HDPE) pipe (upper, lower-pressure segment), and
    - Approximately 0.26 mile of steel pipe (lower, higher-pressure segment).
4. A **powerhouse**, approximately 24 by 24 feet wide, to contain a Pelton turbine and 3-phase generator with a rated capacity of 250 kW, constructed on an approximate 50- by 100-foot gravel pad/work area.
5. A **tailrace** to discharge water to the inlet of an existing Edgerton Highway culvert and into a tributary stream, which would ultimately return water to Fivemile Creek approximately 0.26 mile upstream from its mouth on the Copper River.

6. A 0.58-mile-long, 12.5-kV, overhead **transmission line** to connect the powerhouse site to the community's existing distribution system.
7. An unpaved **access road**, extending west from the Edgerton Highway to the diversion/intake structure (for construction and maintenance), which would include:
    - Constructing approximately 0.63 mile of new gravel road.
        - Includes installing culverts to convey hillslope drainage.
    - Providing minimal improvements along 1.03 miles of an existing gravel road/Fivemile Creek Trail.
    - Constructing two temporary construction staging areas along the access road. The first would be located approximately 0.32 miles up the existing trail from the Edgerton Highway. The area would be approximately 150 feet by 100 feet wide (0.34 acre). The second staging area would be located approximately 350 feet east of the proposed intake structure and would be approximately 150 feet by 70 feet wide (0.26 acre).

The following subsections describe the anticipated construction sequence and operational phase in more detail and identify mitigation measures that have been incorporated into project design and are intended to avoid or minimize adverse effects.

5.2.1. Construction

AEA in coordination with CEI, anticipates that construction would take up to 2 years to complete. The proposed schedule anticipates clearing vegetation in 2025 and constructing the new access road segment, staging areas, diversion and intake structure, penstock, powerhouse, and transmission line the following year. **Figures 3** through **7** present plan views of the proposed vegetation clearing limits, cut-and-fill limits, and project features.

5.2.1.1. VEGETATION CLEARING

The project area consists primarily of forested habitat. Prior to construction, the contractor would need to clear vegetation within and on either side of the project's anticipated cut-and-fill limits. The design assumes that vegetation clearing may be necessary up to 10 feet beyond the cut-and-fill limits and the penstock route's centerline. The U.S Fish and Wildlife Service (USFWS) recommends that vegetation clearing, grubbing, and other site preparation and construction be avoided from May 1 through July 15 to protect nesting birds, as migratory birds are protected by the Migratory Bird Treaty Act[2] (MBTA) (USFWS 2009). Additionally, the nesting period for eagles in Alaska is from March 1 through August 31 (USFWS 2022). Therefore, the project would avoid vegetation clearing from May 1 through August 31, as recommended, unless an eagle nest survey is conducted prior to clearing.

[2] The MBTA prohibits the intentional or unintentional "take" of migratory birds, their nests, feathers, or eggs without a permit issued by the USFWS. The USFWS defines "take" as "pursue, shoot, shoot at, wound, kill, capture, trap, collect, molest, or disturb" (USFWS 2009).

5.2.1.2. GRAVEL ACCESS

AEA and CEI anticipate that the chosen contractor would use and, where needed, make safety improvements to an existing gravel road/Fivemile Creek Trail[3]. The contractor would also construct a new gravel road segment that extends from the existing road to the proposed diversion/intake site on Fivemile Creek. This access route would facilitate project construction and maintenance throughout project operations.

The new access road would be routed through uplands and would incorporate 1.5:1 (horizontal:vertical) side slopes to minimize the embankment footprint. Hilfiker retaining walls (or equivalent) would be used to stabilize portions of the new road where its centerline grade is greater than 8 feet above the existing grade. The road would have a drivable surface width of approximately 14 feet but would transition to a 20-foot-wide (minimum) drivable surface where Hilfiker walls are employed.

The contractor would use typical methods during construction involving placing fill and, in some cases, blasting existing rock and/or removing existing material to reach the proposed design grade. Cuts would be required due to the presence of numerous steep slopes along the proposed route. Where cuts are required, the contractor would grub and dispose overlying vegetation at an adjacent upland location. Where cuts are not required, such as in soft ground with deep unsuitable material, a floating road construction method would be used, if such conditions are encountered. This method retains and makes use of the existing intact vegetative mat, rather than excavating down to more solid ground material. The contractor would determine the actual construction means and methods most appropriate for each site, subject to approval by AEA and DC, and resource agency permit requirements, where necessary.

The penstock would be buried within the cut-and-fill limits of the new access road and adjacent to the existing road for most of its length. To accommodate the buried penstock, design includes a 20-foot-wide roadway surface, including 6 feet for the penstock and 14 feet for vehicles. Additionally, turnouts (50 feet wide, minimum) would be constructed a maximum of 2,500 feet apart in uplands. Specific turnout locations would be determined in the field, as needed for construction. The project does not anticipate the need to replace culverts along the existing road.

5.2.1.3. DIVERSION AND INTAKE STRUCTURE

Prior to constructing the diversion and intake structure, the contractor would need to temporarily divert stream flow and dewater the work site. Given the natural constraints of the work area (steep, confined canyon), the contractor may use a phased diversion approach to facilitate construction.

Under a phased scenario, the contractor would likely excavate a diversion channel along the southern bank of Fivemile Creek and construct a temporary coffer dam extending from the

[3] This trail is an Alaska Native Claims Settlement Act (ANCSA) 17(b) route. Public access along this trail may be subject to temporary closures during project construction and infrequent maintenance events for public safety reasons but will otherwise not be restricted by the project.

northern bank to the diversion channel and downstream of the work area. This would allow construction of the concrete intake structure, sluiceway, and a portion of the diversion structure.

The next phase would involve constructing a cofferdam from the southern bank, extending downstream of the work area, and removing the first cofferdam. The second temporary cofferdam would divert the streamflow through the sluiceway to allow completion of the diversion structure on the southern side. The temporary cofferdams may consist of native material, an impervious liner, and larger-diameter armor rocks. Additionally, pumps would likely be used to dewater the work areas throughout the in-channel construction period. Blasting, where necessary, would be performed in a controlled manner. Construction of the diversion and intake structure would likely require that Fivemile Creek be diverted for up to 4 months: 2 months for each diversion phase. The contractor, once selected, would determine the actual construction means and methods most appropriate for each site, subject to approval by AEA, and DC, and resource agency permit requirements, where necessary.

5.2.1.4. PENSTOCK

The buried penstock would be routed from the intake structure to the powerhouse site. The upper approximately two-thirds of the penstock, where pressure would be lower, would consist of HDPE pipe. The lower one-third of the penstock, where pressure would be higher, would transition to steel pipe to the powerhouse site. During construction, the contractor would either excavate a trench within which to place the penstock or place the penstock on the existing ground surface and cover with fill material. Native vegetation and topsoil removed would be stockpiled, separated, and used for site revegetation.

The penstock would be routed primarily through uplands, and would be contained within the new road segment's cut-and-fill limits or adjacent to the existing gravel road for most of its length. Near its midpoint, however, the penstock route would deviate from the road and intersect a mapped wetland. Excavated material temporarily sidecast into wetlands would be underlain by geotextile or similar material to allow for removal of the temporary material to the maximum extent possible. When backfilling, topsoil (upper 2 to 8 inches) would be placed as the uppermost layer to provide a seed bed for native species. Minimal vegetation clearing in areas where the penstock would be routed adjacent to the road would occur in 2025.

The proposed penstock route would intersect an intermittent stream that flows into a ditch along the western side of the existing road before being routed through a culvert. The culvert would be located approximately 300 feet southwest of the powerhouse site. This roadside stream channel/ditch was identified as having intermittent flow (HDR 2021c). If site conditions do not allow the penstock route to be shifted to avoid impacting this stream, the contractor would excavate a channel and reroute approximately 90 feet of the stream channel west of the fill embankment.

5.2.1.5. POWERHOUSE AND TAILRACE

The contractor would construct a gravel pad for the powerhouse just west of the Edgerton Highway, immediately adjacent to the access route and outside the DOT&PF right-of-way

(ROW). The gravel pad would contain the 24- by 24-foot powerhouse structure, and would be used as a storage and maintenance yard.

The tailrace would discharge flows from the powerhouse into the inlet end of an existing 10-foot diameter CMP culvert under the Edgerton Highway, which directs flow into a tributary of Fivemile Creek. Based on a desktop analysis, flow within this tributary channel is presumed to be intermittent (HDR 2021c). Downstream of the highway culvert, the stream channel continues for approximately 0.45 mile before it joins Fivemile Creek near RM 0.26.

The tailrace pipe would be routed north from the powerhouse, northeast underneath the access road, and down the existing cut slope of the Edgerton Highway and directly into the existing CMP culvert inlet, which is located just north of milepost (MP) 28. A site-specific hydrologic and hydraulic analysis determined the highway culvert should pass the 100-year storm event with the proposed additional 6 cfs (HDR 2021b). The hydrologic and hydraulic analysis recommended that design engineers consider the impact of the additional flow on the culvert icing potential and consider armoring the channel to decrease downstream scour potential (HDR 2021b). Therefore, project design includes placing additional riprap downstream of the culvert to decrease scour potential, as also recommended by the DOT&PF (**Figure 3**). The contractor would use construction methods similar to those described above.

5.2.2. Operations

The project would operate entirely in run-of-the-river mode, generating electrical energy from available streamflow. Water up to the desired turbine flow would be diverted from upper Fivemile Creek and transported within a penstock to the powerhouse. From the powerhouse, the tailrace would discharge this water to the inlet of an existing Edgerton Highway culvert and into a tributary stream, which would ultimately return water to lower Fivemile Creek. The tributary stream joins Fivemile Creek at a point approximately 0.26 mile upstream from the Copper River and approximately 2 miles downstream of the intake structure (**Figure 2**).

Turbine flow would range from a minimum of approximately 0.5 cfs to a maximum of approximately 5.6 cfs, depending on the electrical load of the system and water availability. Inflows more than approximately 5.6 cfs would flow over the spillway and immediately downstream into Fivemile Creek, whereas water diverted for electrical generation would be returned to lower Fivemile Creek. When flow is less than the turbine's minimum requirements (approximately 0.5 cfs), water would not be diverted from Fivemile Creek. In the event of a shutdown, water would begin to spill over the diversion structure and flow immediately downstream into the Fivemile Creek bypass reach.

The plant would be operated automatically and controlled remotely. The project's controls would be integrated with the community's existing diesel powerhouse controls. While the project would maximize water use to the greatest extent possible to reduce diesel consumption, the project would be operated to divert only as much water as necessary to meet, but not exceed, demand. During times of adequate streamflow, the diesel plant would function primarily as a backup system. Diesel consumption would be eliminated or substantially reduced when streamflow meets some or all demand. For every 10,000 gallons of diesel fuel that is not consumed for

electrical generation as a result of hydroelectric operations, the project would reduce carbon dioxide emissions by approximately 223,800 pounds. During times of low flow, the diesel plant would be the primary system.

Local operators would make routine trips to the powerhouse (estimated to be daily) and diversion structure (estimated to be weekly) to inspect the facilities. Additionally, the project's Supervisory Control and Data Acquisition system would include level, pressure, and temperature sensing; gate and valve position monitoring; and generation monitoring. In the event of an alarm, an operator would be notified immediately. Further, cameras would be installed on the intake and at the powerhouse to enable remote monitoring of operations and general conditions.

An electric boiler would be installed in the existing diesel module and connected to the existing hydronic heat recovery system, currently used to heat the clinic building, and the aboveground storage tank used to store diesel fuel for the diesel plant. The boiler would provide a dual purpose: provide frequency control during operation of the hydroelectric turbine and allow for continued use of the existing heat recovery system infrastructure (CRW 2012). During part of the year, excess water flow would be available to produce electricity above and beyond the community's electric demand. During these times, the excess energy would be available for beneficial use (CRW 2012).

While the project includes no reservoir or water storage, a small (0.2-acre surface area), unregulated impoundment would be created behind the diversion structure that would expand the existing riparian zone and deepen stream habitat upstream. The maximum estimated inundation depth is approximately 8 feet at the diversion structure and decreases with distance upstream. Design includes a sluice gate that would be opened periodically to allow accumulated sediments to flush downstream. The sluice gate would be opened as needed, typically during high-flow events.

5.2.3. Mitigation

Avoidance and minimization measures have been incorporated into the project design and operational plan. The mitigation measures below can also be found in the Environmental Consequences sections for applicable resource categories.

5.2.3.1. AVOIDANCE

Topography, design standards, and land-management limit where the access route can be constructed. The project area comprises relatively steep terrain in forested upland habitat, intermixed with forested wetlands. The access route is designed with relatively steep side slopes (i.e., 1.5:1 [horizontal:vertical]), which allows the project to minimize the overall footprint.

The intake structure design includes a mechanism to avoid prohibiting downstream gravel and woody debris recruitment. Best management practices (BMPs) and other measures would be used to minimize the potential for adverse impacts when full avoidance is not practicable.

5.2.3.2. MINIMIZATION

Project Design

- Road design and construction would maintain natural drainage by using appropriate ditching, culverts, storm drain systems, and other measures to prevent ponding or drying as well as control excavation and sidecast material.
- Roadway design would include 1.5:1 side slopes to minimize the overall footprint and associated impacts on waters of the U.S. (WOTUS).
- Design would include the use of retaining walls to stabilize the road in areas where centerline grade exceeds 8 feet above existing grade.
- Roads would be held to the minimum feasible width and total length consistent with the intended purpose.
- The diversion structure would be designed to allow flushing of sediment and large wood downstream on an as-needed basis.
- The project would divert no more than 5.6 cfs of streamflow from Fivemile Creek.
- All diverted streamflow would be returned to Fivemile Creek near RM 0.26 to avoid dewatering downstream habitat currently accessible to fish.
- Overhead power lines would be designed and built to provide avian safety, following design standards and recommendations in Avian Power Line Interaction Committee (2006).

BMPs and other commitments

- Vegetation clearing would be avoided from May 1 through July 15 to protect nesting birds, as migratory birds protected by the MBTA, as recommended by the USFWS (2009). Additionally, the nesting period for eagles in Alaska is from March 1 through August 31 (USFWS 2022). Therefore, the project would avoid vegetation clearing from May 1 through August 31, as recommended, unless an eagle nest survey is conducted prior to clearing.
- Prior to the start of construction activities in WOTUS, permitted disturbance boundaries would be clearly identified with highly visible markers (e.g., construction flagging, fencing, silt barriers). Such identification would be maintained until construction is complete and soils have been stabilized.
- To prevent erosion, disturbed areas within or adjacent to WOTUS would be stabilized soon after construction. Revegetation would begin as soon as site conditions allow and in the same growing season.
- Temporarily disturbed areas, including slopes, would be re-contoured to match existing contours and stabilized within 7 days of construction completion in the project area.
- Plants native to the project area would be used for any revegetation or restoration work to avoid the introduction of invasive species.
- Native vegetation and topsoil removed would be stockpiled, separated, and used for site revegetation. Excavated material temporarily sidecast into wetlands would be underlain by geotextile or similar material to allow for removal of the temporary material to the maximum extent possible. When backfilling, topsoil (upper 2 to 8 inches) would be placed as the uppermost layer to provide a seed bed for native species.

- In-water work in habitats accessible to fish would be timed to minimize potential adverse impacts during critical life stages by adhering to work windows identified by the Alaska Department of Fish and Game (ADF&G).
- The contractor would obtain (and adhere to) stipulations of temporary water use authorization(s) from the Alaska Department of Natural Resources (DNR).
- The project would comply with the Alaska Pollutant Discharge Elimination System Construction General Permit. The contractor would be required to prepare a project-specific Erosion and Sediment Control Plan and a Stormwater Pollution Prevention Plan (SWPPP) for agency approval prior to construction.
    - The contractor would minimize erosion and sedimentation of all waterways by implementing control measures as areas are disturbed by construction.
    - The contractor would install sandbags, silt fences, or straw bales as necessary to protect Fivemile Creek and its tributary stream from sediment due to construction per the SWPPP. The contractor would install perimeter fences or sandbag dikes at construction sites to prevent runoff from directly discharging into nearby streams.
    - The contractor would install silt fencing along the toe of newly constructed fill slopes where runoff from the slopes would discharge into any stream.
    - The contractor would construct collection basins to receive and treat runoff from construction areas, and to process wastewater and water from excavations before releasing to minimize impact of discharge on receiving waters.
    - The contractor would store all fuels, oils, solvents, and hazardous materials in engineer-approved storage locations at staging areas. Approved areas would be excavated and lined with an impermeable liner to create a depression with a volume large enough to contain the total volume of fuels, oils, solvents, and hazards being stored. The contractor would keep cleanup/containment kits at each storage site.

5.2.3.3. COMPENSATORY MITIGATION

The purpose of the project is to serve the public interest by bringing renewable energy to Chitina by constructing a hydroelectric facility on Fivemile Creek, which would reduce diesel fuel consumption and improve air quality in the community. CEI has committed to employing several design measures to avoid impacts and minimize unavoidable impacts, and is not proposing compensatory mitigation for unavoidable impacts on WOTUS.

6.0 Affected Environment and Environmental Consequences

This section describes the physical, social, and environmental resources present near the project area that have the potential to be affected and discloses the potential impacts to those resources that may result from the No Action and Proposed Action alternatives.

This EA analyzes the following resource topics: land ownership, cultural resources, hydrology and water quality, wetlands and other WOTUS, fish, essential fish habitat (EFH), wildlife, threatened and endangered species. **Section 7.1** describes the selection process for resource

topics that were analyzed in this EA. Cumulative impacts are also discussed. The subsections that follow provide an overview of the existing conditions for each resource topic as well as a summary of potential impacts from the No Action and Proposed Action alternatives. Mitigation measures are also discussed, as applicable, for each resource.

6.1. Land Ownership

6.1.1. Affected Environment

The project is located within Sections 23 to 27 of Township 3 South and Range 5 East of the Copper River Meridian on lands owned by the Chitina Village[4], Chitina Native Corporation (CNC)[5], and Ahtna Incorporated[6] **(Figure 2**). The proposed project also intersects the Edgerton Highway on DOT&PF ROW, managed by DNR. Spatial coordinates (i.e., latitude, longitude in North American Datum of 1983, State Plane Zone 3) for the primary project component are:

- Intake structure (approximate center): North (N) 61.578, West (W) 144.482
- New access road (approximate midpoint): N61.58, W144.475
- Penstock (approximate midpoint): N61.582, W144.459
- Staging area (approximate center): N61.583, W144.451
- Powerhouse and tailrace (approximate center): N61.587, W144.449

The project is located just west of and adjacent to the Copper River, which provides critical spawning habitat for wild salmon and an important subsistence and personal use fishery for Alaskans. Large numbers of Alaskans flock to the Copper River in summer to participate in the subsistence and/or personal use fishery. The portion of the Copper River that is adjacent to the project area is located within the Copper River Glennallen Subdistrict's Subsistence Salmon Fishery[7] (2014). The Chitina Subdistrict Personal Use Fishery begins south of the Chitina-McCarthy Bridge, which is south of the project.[8]

The project area is located within the Nelchina-Upper Susitna Game Management Unit (GMU) 13, and more specifically, within the Tonsina Controlled Use Area of GMU 13D. The Tonsina Controlled Use area is closed to using motorized vehicles or pack animals for hunting, including the transportation of hunters, hunting gear, and/or parts of game, from July 26 through 30.

[4] The Native Village of Chitina is a Federally Recognized Tribe that exercises its sovereign authority to conduct the day-to-day business for tribal members to promote social, economic, and cultural well-being.
[5] CNC was first incorporated in the State of Alaska on September 11, 1973. CNC is a wholly owned Native corporation in the Ahtna region, with 260 shareholders who live statewide and in the Lower 48 states.
[6] Ahtna, Inc. is one of 13 Alaska Native Regional Corporations established by U.S. Congress under terms of ANCSA of 1971. Based in Glennallen, Ahtna, Inc. is owned by more than 2,000 shareholders, most of Ahtna Athabascan descent. Many Ahtna shareholders still reside within the Ahtna region, the traditional homeland of the Ahtna.
[7] The Copper River Glennallen Subdistrict Subsistence Salmon Fishery is restricted to the waters of the Glennallen Subdistrict, which consists of all waters of the mainstem Copper River from the mouth of the Slana River downstream to the downstream edge of the Chitina-McCarthy Bridge (ADF&G 2014).
[8] The Chitina Subdistrict Personal Use Fishery is restricted solely to the waters of the mainstem Copper River between the downstream edge of the Chitina-McCarthy Bridge and ADF&G regulatory markers located on an east-west line crossing the Copper River approximately 200 yards upstream of Haley Creek (in Wood Canyon).

The existing gravel road/Fivemile Creek Trail[9], which is an Alaska Native Claims Settlement Act (ANCSA) 17(b) route, is currently accessible to the public; therefore, it may be used recreationally or for seasonal hunting or subsistence access. According to local knowledge, the Fivemile Creek Trail is sometimes used for recreational four-wheeling and snow machining; however, very few people use the existing Fivemile Creek Trail for hunting, in part because hunting in this area is limited to "walk-in" only. Sheep hunters may occasionally use the Fivemile Creek Trail to gain access to the mountains well beyond the project area[10]. Some people may use the Fivemile Creek Trail to access berry picking areas.

The project area does not intersect national or state park lands or designated recreation or refuge lands. The DNR classifies the adjacent Copper River as recreational lands. Wrangel Saint Elias National Park is located on the opposite (eastern) side of the Copper River. The Chitina-McCarthy Bridge crosses the Copper River at the Chitina townsite, and leads east into the Wrangell St. Elias National Park and Preserve as well as the road to McCarthy and Kennicott Mine. The Liberty Falls State Recreation Site, which is a small park located off the Edgerton Highway at MP 23.5, is located a few miles north of Fivemile Creek.

6.1.2. Environmental Consequences

6.1.2.1. NO ACTION

Under the No Action alternative, the agencies would not approve the construction of the Fivemile Creek hydroelectric project. The No Action alternative would not affect land ownership status, subsistence, nor recreation activities within the project area, national or state park lands, or designated recreation or refuge lands.

6.1.2.2. PROPOSED ACTION

The Proposed Action would not affect land ownership status, nor would it affect national or state park lands nor designated recreation or refuge lands.

The existing Fivemile Creek Trail is currently accessible to the public and would remain accessible to the public throughout project operations. During construction and infrequent maintenance events, however, public access along this road may be subject to temporary closures to maintain public safety but would otherwise not be restricted by the project.

The new access road from the existing Fivemile Creek Trail to the intake site would not be accessible to the public. Access would be restricted by a locked gate just west of the new access road's intersection with the existing Fivemile Creek Trail/road.

[9] This trail is an ANCSA 17(b) route; public access along this trail may be subject to temporary closures during construction and infrequent maintenance events for public safety reasons but will otherwise not be restricted by the project.
[10] Based on personal communication with a local Chitina resident on May 13, 2022.

6.2. Cultural Resources

6.2.1. Affected Environment

Cultural resources is a broad term that commonly refers to physical material items or places associated with past human activities. Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, and its implementing regulations found in 36 CFR 800, requires federal agencies to consider the effects of their actions on historic properties (36 CFR 800.1(a)). Historic properties are any prehistoric or historic district, site, building, structure, object, or traditional cultural property included in or eligible for inclusion in the National Register of Historic Places (NRHP; 36 CFR 800.16(l)(1)). Because the proposed project requires federal permitting and uses federal funds, it qualifies as a federal undertaking subject to compliance with Section 106 of the NHPA.

Background research was conducted to identify previously recorded cultural resources and previous cultural resource investigations within a 0.5-mile study area surrounding the proposed project footprint and components. Research included a search of database resources, including the Alaska Heritage Resources Survey (AHRS) database maintained by the DNR, Office of History and Archaeology (OHA); its curated literature; and the DNR Revised Statute (RS) 2477 database.

Four AHRS sites are within the 0.5-mile study area (**Table 1**). Two of the AHRS sites are pre-/proto-contact village or seasonal camp sites associated with the Ahtna Dene, who still live in the Copper River Basin (VAL-00014 and VAL-00489). One of these sites (VAL-00014) was visited by the Allen Expedition of 1885. No determination of NRHP eligibility has been conducted for either site. The two other AHRS sites are historic and current alignments of the Edgerton Highway; both have been determined as not eligible for listing in the NRHP and should not need further consideration under the Section 106 process.

Table 1. AHRS sites within approximately 0.5 mile of the study area.

AHRS Number	AHRS Name	Description	NRHP Evaluation	Year
VAL-00014	Naxt'In ke're	A village near Chitina once visited by Allen in 1887, which contained two house pits and five graves.	Not evaluated	N/A
VAL-00489	VAL-00489	Two semi-subterranean houses with fire-cracked rock and bone fragments. Charcoal from Feature 1 yielded a radiocarbon date of BP 2,920 +/-90.	Not evaluated	N/A
VAL-00505	Old Road to Chitina	A 30-mile road constructed in 1911 to connect Chitina to the Valdez-Eagle Trail.	Not eligible	2007
VAL-00594	Edgerton Highway (Segment A2)	Edgerton Highway MP 8 to 33, originally constructed between 1911 and 1915 to connect Chitina with the Richardson Highway.	Not eligible	2019

Notes: BP = years Before Present; N/A = not applicable

Two previously unevaluated resources, a potential RS2477 trail and historic airfield, are within the 0.5-mile study area. The potential RS2477 trail (the existing Fivemile Creek Trail along Fivemile Creek), which directly intersects with project components and is located within the project's area of potential effects (APE, see description of proposed APE in **Section 6.1.2.2**), was assessed for its age, significance, and integrity.

Cultural resources professionals reviewed documentation related to the Fivemile Creek Trail segment located within the APE, including historic maps, aerial imagery, and primary source documents, and determined that the road was over 50 years of age. The resource was evaluated for NRHP eligibility and determined to lack sufficient integrity for listing in the NRHP under Criterion A and lack significance for listing under Criteria B-D. As the resource was recommended not eligible for listing under any of the NRHP Criteria, the resource should not need further consideration under the Section 106 process (see **Attachment A**).

The Alaska Road Commission built the Chitina Airfield in 1938 in a location "5 miles north of Chitina" (NPS n.d.:2). This description appears to correspond to the location of the current Chitina Airport. The airfield was greatly expanded to the north and south between 1950 and 1957. No AHRS number has been assigned to either the Chitina Airfield or Chitina Airport. As the proposed project footprint does not extend into the boundaries of the existing Chitina Airport, and the project would not affect the airfield, the resource does not need further consideration under the Section 106 process.

6.2.2. Environmental Consequences

6.2.2.1. NO ACTION

The No Action alternative would not affect properties listed, or eligible for inclusion, in the NRHP nor the cultural or historic environment.

6.2.2.2. PROPOSED ACTION

Under 36 CFR 800.16(d), the APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historical properties, if any such properties exist." At the time of this EA being prepared, no APE has been formally defined for this project by the DC. Based on the project team's knowledge of the project area and professional judgement, the APE is recommended to be defined as shown in **Figure 8.** This recommended APE consists of a 300-foot corridor around the project footprint and components (150-foot buffer on either side) and is up to 610 feet wide where the new access road intersects with the existing Fivemile Creek Trail roadway.

The APE is considered low potential for containing undocumented historic properties due to its location away from river terraces, bluffs, or elevated areas and within lowlands. Project activities requiring ground disturbance will occur in areas previously disturbed such as the road ROW and trail corridor.

Although two pre-/proto-contact Ahtna sites exist within the 0.5-mile study area, the closest (VAL-00489) is outside the recommended APE and on the opposite side of the Edgerton Highway from the beginning of the Proposed Action footprint, which then extends to the west, away from the Copper River. The existing Fivemile Creek Trail and proposed project components would not occur on the same relic ridge system as VAL-00489, which overlooks the Copper River, nor does most of the project footprint deviate from the Fivemile Creek Trail. The project footprint does not extend into the boundaries of the existing Chitina Airport and would therefore not adversely affect the airfield.

AEA recommends that sufficient information is available to assess potential effects to historic properties and the project would not have an adverse effect on historic properties. On June 23, 2022, AEA, on behalf of the DC and through the USACE, initiated consultation with the Alaska State Historic Preservation Office (SHPO) and other consulting parties under Section 106 of the NHPA regarding the project's effects on cultural resources. SHPO responded July 20, 2022, requesting additional information regarding the Fivemile Creek Trail. HDR, on behalf of AEA, provided a revised Cultural Resources Assessment to USACE on January 9, 2025. USACE submitted a letter with the revised Cultural Resources Assessment to SHPO on February 27, 2025, which included the proposed APE shown in **Figure 8** and a not eligible recommendation for the Fivemile Creek Trail. SHPO provided a letter of concurrence on April 4, 2025 (see **Attachment A** [SHPO response letter from July 20, 2022; USACE letter submitted to SHPO February 27, 2025; and SHPO letter of concurrence April 4, 2025]).

It is recommended that there is a low probability of encountering unknown intact resources during construction. However, if cultural, archaeological, or historic resources are discovered during construction, work that has the potential to affect these resources would cease until AEA consults, in coordination with the DC, with SHPO to determine the appropriate action. The project will implement an *Inadvertent Discovery Plan* in the event previously undocumented cultural resources or human remains are discovered during Project activities. The *Inadvertent Discovery Plan* should follow the guidelines established by the OHA (OHA 2022).

In the event that human remains are encountered during construction, AEA and DC would ensure that activities near these remains cease, and that these remains are protected and treated respectfully. The contractor in coordination with AEA and DC would then follow the OHA's Protocols Pertaining to the Discovery of Human Remains in Alaska (http://dnr.alaska.gov/parks/oha/ahrs/humanremainshandout.pdf).

6.3. Hydrology and Water Quality

6.3.1. Affected Environment

Fivemile Creek is a minor creek fed by a series of alpine lakes in its upper reaches on the northern periphery of the Chugach Mountains. Bedrock, boulders, and large cobbles dominate its substrate (CRW 2012). As its name implies, Fivemile Creek flows west to east for approximately 5 miles from its headwaters to its confluence with the Copper River, immediately north of the airport. For most of its length, Fivemile Creek has a high-gradient, narrow, confined channel with little to no floodplain development as it flows through steep hillslopes and narrow canyon walls. Fivemile Creek is conveyed underneath the Edgerton Highway through an existing 10-foot-diameter culvert located approximately 0.52 mile upstream from its mouth. Downstream of the highway, its channel slopes more gradually within a narrow floodplain that abuts the Chitina Airport to the southeast. Aside from one mapped wetland, the project area appears to be mostly well drained.

Fivemile Creek has a catchment area of approximately 15.38 square miles (Polarconsult 2020c). This creek receives input from several small, intermittent stream channels

within its basin. Six small intermittent channels that flow north into Fivemile Creek upstream of the highway and two channels that flow southeast into lower Fivemile Creek were recently mapped (**Figure 2**). Based on LiDAR-generated topographical contours, Fivemile Creek has an average slope of approximately 10 percent, which equates to a 10-foot drop for every 100 feet of horizontal stream length (CRW 2012). Fivemile Creek is prone to seasonal flooding, especially during spring break-up and prolonged precipitation events (CRW 2012). Mean annual precipitation across the basin ranges from 15 to 40 inches and mean minimum January temperature varies across the basin from minus 4 to minus 8 degrees Fahrenheit (Polarconsult 2020c).

Two gaging stations established on Fivemile Creek in 2008 resulted in a very limited hydrologic dataset. The upper weir, located near the proposed intake site at RM 2.27, was fitted with a datalogger and collected data on 357 days. CEI's manual readings on the lower weir, which was located at the highway culvert outlet near RM 0.52, yielded only 16 days of data (Polarconsult 2020c). Polarconsult developed a hydrograph for Fivemile Creek based on the average daily flows recorded at the upper gaging station from September 2009 through August 2010 (Polarconsult 2020c). These data were not sufficient to provide quantitative estimates of expected variability from year to year nor project performance (Polarconsult 2020c).

In 2011, biologists from Alaska Biological Research, Inc. (ABR) collected ambient water quality parameters (temperature, specific conductance, pH, dissolved oxygen, total dissolved solids, and turbidity [as Nephelometric Turbidity Unit, or NTU]) with a YSI Professional Plus water quality meter from two locations on Fivemile Creek. At that time, Fivemile Creek was recorded as a cold (45 degrees Fahrenheit), clearwater stream with circumneutral pH (ranging from 7.99 to 8.08) and high dissolved oxygen (more than 102 percent). The high dissolved oxygen is a result of turbulent mixing along the stream length. Specific conductance (100.0 to 103.0 microsiemens per centimeter) and turbidity (1.09 to 1.29 NTU) were low at the time of sampling. The survey report noted that all measurements were found to be typical of Southcentral Alaska streams that are fed by alpine lake systems and have little or no anthropogenic influences within the watershed (ABR 2011).

In 2014, CEI submitted a water rights application to use up to 6 cfs of water in Fivemile Creek for a hydroelectric project (LAS 29948). On behalf of CEI, Polarconsult provided additional information to the DNR in 2019, at which time DNR requested that the application be amended for the water amount needed once design had been finalized. In 2022, HDR provided design drawings to the DNR for the Proposed Action alternative. However, CEI, as project owner and operator, would coordinate directly with DNR regarding the acquisition of water rights for this project should the Proposed Action alternative be selected.

According to the DNR's Water Rights Map, the DOT&PF has a subsurface water right issued from the DNR (ADL 55802) for a 208-foot-deep well at the nearby Chitina Maintenance Station (DNR 2022). The DNR also issued a temporary water use authorization (TWUA; TWUA A2019-71) to the DOT&PF that allows their contractors to seasonally withdraw water from five sources (with conditions) for construction and dust suppression along DOT&PF-maintained roads.

Permitted sources include Fivemile Creek, Third Lake, an unnamed creek at MP 20 of the Edgerton Highway, Town Lake, and a pond at MP 1 of the Old Edgerton Highway.

6.3.2. Environmental Consequences

6.3.2.1. NO ACTION

The No Action alternative would have no effect on hydrology, water quantity, nor water quality within the project area.

6.3.2.2. PROPOSED ACTION

During operations, the Proposed Action alternative would affect the hydrology in Fivemile Creek. The project would operate entirely in run-of-the-river mode, generating electrical energy from available streamflow. Water up to the desired turbine flow would be diverted from upper Fivemile Creek and transported within a penstock to the powerhouse. From the powerhouse, the tailrace would discharge this water to the inlet of an existing Edgerton Highway culvert and into a tributary stream, which would ultimately return water to lower Fivemile Creek. The tributary stream joins Fivemile Creek at a point approximately 0.26 mile upstream from the Copper River and approximately 2 miles downstream of the intake structure (**Figure 3**).

During construction, turbid water would be pumped into vegetated areas or constructed settling ponds to reduce turbidity entering the stream. Once constructed, the diversion structure would create an approximate 0.2-acre unregulated impounded area upstream of the diversion structure. When the project is operational and flows diverted into the penstock, the project would decrease flows throughout the 2-mile-long bypass reach of Fivemile Creek and increase flows throughout the 0.45 mile of tributary stream that would ultimately discharge flows back into lower Fivemile Creek. Downstream from this point, the project would not affect flows in Fivemile Creek, as all flow would be returned via the tributary. During turbine operations, the project may result in temporary changes to water quality parameters, such as a decrease in dissolved oxygen and an increase in water temperatures, throughout the bypass reach, depending on flows and weather conditions. The project may result in increased dissolved oxygen levels in the tributary stream when the turbine is operational due to increased flows in that reach. As discussed in **Section 5.2**, results of a hydrology and hydraulics analysis confirmed that the 10-foot-diameter CMP culvert that would receive flows diverted from Fivemile Creek should pass the 100-year storm event with the proposed additional 6 cfs (HDR 2021b). Project design would include placing additional riprap downstream of the culvert to decrease scour potential, as recommended by the DOT&PF.

Project operations are not anticipated to affect the subsurface water right held by the DOT&PF (ADL 55802) nor DOT&PF's TWUA (A2019-71). DOT&PF's TWUA A2019-71 contains conditions to follow in consideration of the CEI's requested water appropriation for Fivemile Creek (LAS 29948).

During project construction, flows in Fivemile Creek would be temporarily diverted using a phased approach as described in **Section 5.2.1**. The contractor would implement BMPs and

other measures to minimize construction-related impacts on water quality during construction, as outlined in **Section 5.2.3**.

Mitigation Measures

The contractor would obtain (and adhere to) stipulations of temporary water use authorization(s) from DNR. The project would comply with the Alaska Pollutant Discharge Elimination System Construction General Permit. The contractor would be required to prepare a project-specific Erosion and Sediment Control Plan and a Stormwater Pollution Prevention Plan (SWPPP) for agency approval prior to construction. In addition, the contractor would adhere to the following requirements:

- Minimize erosion and sedimentation of all waterways by implementing control measures as areas are disturbed by construction.
- Install sandbags, silt fences, or straw bales as necessary to protect Fivemile Creek and its tributary stream from sediment due to construction per the SWPPP.
- Install perimeter fences or sandbag dikes at construction sites to prevent runoff from directly discharging into nearby streams.
- Install silt fencing along the toe of newly constructed fill slopes where runoff from the slopes would discharge into any stream.
- Construct collection basins to receive and treat runoff from construction areas, and to process wastewater and water from excavations before releasing to minimize impact of discharge on receiving waters.
- Store all fuels, oils, solvents, and hazardous materials in engineer-approved storage locations at staging areas. Approved areas would be excavated and lined with an impermeable liner to create a depression with a volume large enough to contain the total volume of fuels, oils, solvents, and hazards being stored. The contractor would keep cleanup/containment kits at each storage site

6.4. Wetlands and Other Waters of the U.S.

6.4.1. Affected Environment

A desktop wetland and waterbody mapping memorandum was prepared to identify locations within the project footprint and vicinity that may be subject to Section 404 of the Clean Water Act (CWA) or Section 10 of the Rivers and Harbors Act of 1899 (HDR 2021c). Wetlands and other WOTUS were coded within the 296-acre mapping area using the National Wetlands Inventory classification mapping codes based on the USFWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

The wetlands study area consists primarily of broadleaf, coniferous, and mixed forest types (HDR 2021c). Vegetation is generally dominated by white spruce (*Picea glauca*), paper birch (*Betula papyfera*), willow (*Salix*), alder (*Alnus*), and black cottonwood (*Populus trichoarpa*) (CRW 2012). Within the project mapping limits, 5.4 acres of forested wetlands, 5.3 acres of perennial stream and associated gravel bars (Fivemile Creek), approximately 286 acres of uplands, mapped 6,275 linear feet of intermittent streams were identified/mapped. The project-

specific wetland and waterbody mapping memorandum, which is included as **Attachment B**, preliminarily assumes that the mapped wetlands and streams are subject to U.S. Army Corps of Engineers (USACE) authorization under Section 404 of the CWA (HDR 2021c).

6.4.2. Environmental Consequences

6.4.2.1. NO ACTION

The No Action alternative would not affect wetlands nor streams within the project area.

6.4.2.2. PROPOSED ACTION

Project components were sited to avoid WOTUS where feasible. The new access road segment would be routed through uplands, and proposed upgrades to the existing road/Fivemile Creek Trail would not intersect nor otherwise affect WOTUS. Staging areas and turnouts would also be sited in uplands and would avoid WOTUS.

The Proposed Action would result in temporary effects to WOTUS by placing fill for the penstock and intake/diversion structure as well as adjacent mechanized land clearing, placing riprap for scour protection near the tailrace outlet, and diverting flow from Fivemile Creek during construction and turbine operations. Additionally, penstock construction may require rerouting approximately 90 linear feet of an intermittent stream channel along an existing road.

Table 2 identifies acreages for the project footprint (i.e., cut/fill footprint) and mechanized land clearing limits, and estimates the acreage of WOTUS within which regulated activities would be necessary during construction and operations.

Table 2. Summary of anticipated acres of discharges (includes mechanized land clearing) in WOTUS for the construction and operation of the Fivemile Creek Hydroelectric Project.

Proposed Action	Total Footprint (Acres)	Acres in WOTUS	Regulated Activity
Construct project (cut/fill footprint for access and hydroelectric facilities)	5.87	0.44[a]	Discharge of Fill
Vegetation clearing beyond cut/fill footprint	4.51	0.37	Mechanized Land Clearing Beyond Discharge of Fill

[a] Includes fill associated with temporary coffer dams and construction of an intake/diversion structure in Fivemile Creek, scour protection (riprap) in an intermittent tributary stream near the tailrace outlet (upstream and downstream of highway culvert), and potential rerouting of approximately 90 linear feet of an intermittent stream channel to accommodate a buried penstock along the existing roadway.

Once constructed, the diversion structure would create an approximate 0.2-acre unregulated impounded area upstream of the diversion structure, which would result in a slight increase to WOTUS in that area. When the project is operational and flows are diverted into the penstock, the project would result in a decrease in WOTUS throughout the 2-mile-long bypass reach of Fivemile Creek and an increase in WOTUS throughout the 0.45 mile of tributary stream that would ultimately discharge flows back into lower Fivemile Creek.

AEA and DC understand that placing fill in WOTUS requires prior authorization from the USACE and have submitted a preconstruction notice for a Nationwide Permit (NWP) #17 (Hydropower Projects). The agencies presume that compliance with Section 401 of the CWA would be met

upon receipt of NWP authorization; therefore, the agencies provided the Alaska Department of Environmental Conservation (DEC) with a copy of the NWP transmittal. The Proposed Action alternative would be constructed in conformance with a Section 404 permit and Executive Order 11990, Protection of Wetlands. The project would not intersect nor otherwise affect waters subject to Section 10 of the Rivers and Harbors Act.

Mitigation Measures

Prior to the start of construction activities in WOTUS, permitted disturbance boundaries would be clearly identified with highly visible markers (e.g., construction flagging, fencing, silt barriers). Such identification would be maintained until construction is complete and soils have been stabilized. Excavated material temporarily sidecast into wetlands would be underlain by geotextile or similar material to facilitate the removal of temporary material to the maximum extent possible.

To prevent erosion and avoid permanent effects, disturbed areas within or adjacent to WOTUS would be stabilized soon after construction. Revegetation would begin as soon as site conditions allow and in the same growing season. Temporarily disturbed areas, including slopes, would be re-contoured to match existing contours and stabilized within 7 days of construction completion in the project area.

In areas where backfilling is anticipated, native material or debris free topsoil (upper 2 to 8 inches) would be placed as the uppermost layer to provide a seed bed for native species. Plants native to the project area would be used for any revegetation or restoration work to avoid the introduction of invasive species.

6.5. Fish

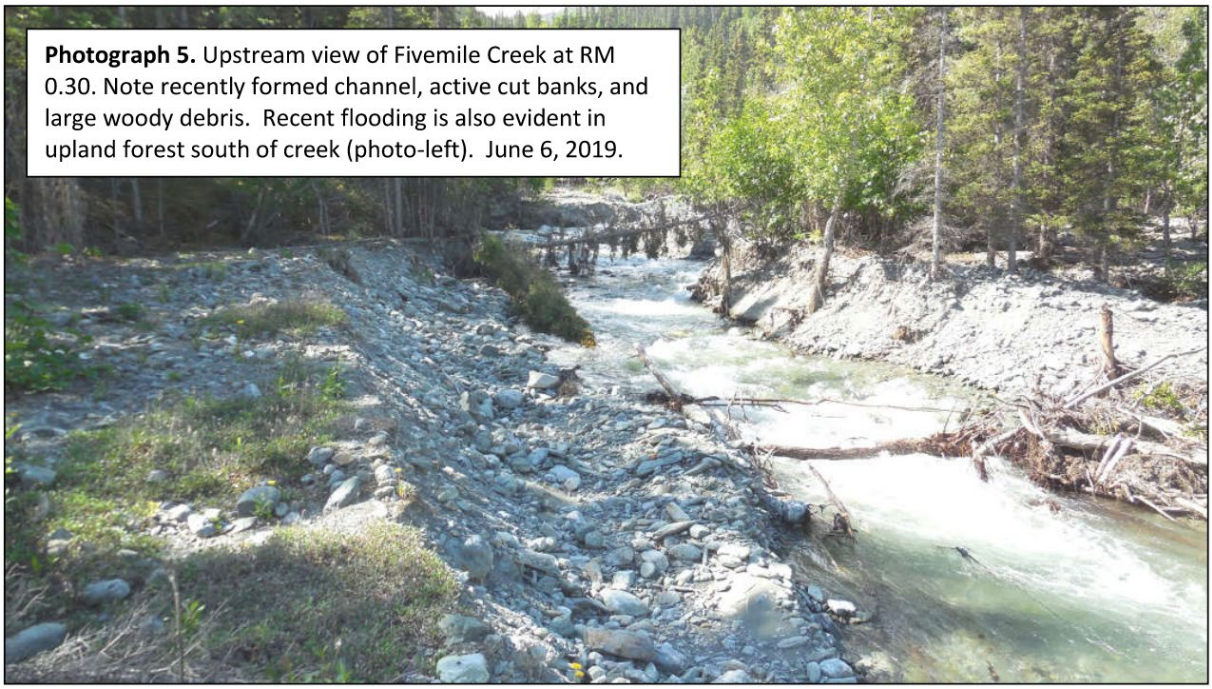
6.5.1. Affected Environment

Neither the ADF&G-maintained Anadromous Waters Catalog nor Alaska Freshwater Fish Inventory database identify fish presence data for Fivemile Creek or its tributary stream (Giefer and Blossom 2020; ADF&G 2021).

In 2011, fisheries biologists set 11 minnow traps throughout Fivemile Creek: five traps downstream of the culvert and six traps upstream. A single Dolly Varden (*Salvelinus malma*) was captured from one of the lowest three traps set near the airport. No fish were captured from the two traps set immediately below the culvert, the three traps immediately above the culvert, nor the three traps set farther upstream.

ABR (2011) confirms that the Edgerton Highway culvert appears to be a barrier to upstream fish passage due to its height and water velocity, and that lower Fivemile Creek (downstream of the culvert) is accessible to both resident and anadromous fish from the Copper River. ABR suggests that habitat in lower Fivemile Creek appears marginal for rearing due primarily to high flows (**Inset 1**) but could potentially support some small degree of salmon spawning and rearing during lower flows (ABR 2011). A subsequent site visit reports that with its somewhat lower

gradient and less coarse substrate, habitat within the lowest 0.29 mile of Fivemile Creek, while of marginal quality, appears “relatively better” than habitat upstream (Polarconsult 2020d).



Inset 1. Lower Fivemile Creek (photo credit: Polarconsult 2020d).

6.5.2. Environmental Consequences

6.5.2.1. NO ACTION

Under the No Action alternative, AEA would not construct a hydroelectric project on Fivemile Creek. The No Action alternative would have no effect on fish nor fish habitat within the project area.

6.5.2.2. PROPOSED ACTION

The Proposed Action would alter habitat that is currently accessible to fish in lower Fivemile Creek throughout project operations. As summarized in **Section 5.2**, up to 5.6 cfs would be diverted from upper Fivemile Creek, conveyed to the powerhouse via the penstock, and returned to lower Fivemile Creek near RM 0.26 via a tributary stream that flows southeast of the highway. During operations, flows within the 2-mile-long bypass reach, which includes approximately 0.26 mile of lower Fivemile Creek that is currently accessible to fish, would be reduced as compared to natural conditions. Flows downstream of this point in Fivemile Creek would not be affected by project operations.

The mouth of the tributary stream is located at Fivemile Creek approximately 0.26 mile upstream from the Copper River (**Inset 2**). The extent to which fish may be able to currently access and potentially use habitat within the tributary stream is not known. Based on a desktop analysis, this channel was presumed to have intermittent flow. Near the Edgerton Highway culvert, engineers confirmed flow in this channel during a late May 2021 site visit and estimated

wetted width as approximately 2 feet (**Inset 3**). The channel was frozen during a November 2021 site visit (**Inset 4**). During project operations, flow throughout the 0.45-mile-long segment that would receive tailrace water would increase as compared to current conditions.

Inset 2. Downstream view of lower Fivemile Creek with mouth of tributary stream visible on left (far) bank, near Fivemile Creek RM 0.26; photo recorded on June 6, 2019 (photo credit: Polarconsult 2020d).

Inset 3. Looking downstream from highway culvert into tributary stream, May 2021.

Inset 4. Looking downstream from highway culvert into tributary stream, November 2021.

Since project operations would affect habitat currently accessible to fish in lower Fivemile Creek and habitat that may be accessible to fish within the tributary stream (though not confirmed), the project would be required to receive authorization from the ADF&G prior to constructing the Proposed Action. In March 2022, AEA in conjunction with DC submitted a permit application to

the ADF&G seeking authorization to construct and operate the project. ADF&G issued a fish habitat permit FH22-III-0118 for the project on June 1, 2022. On August 29, 2025, ADF&G reviewed the project changes and determined that an amendment to the fish habitat permit is not needed.

Mitigation Measures

The project would divert no more than 5.6 cfs of streamflow from Fivemile Creek. All diverted streamflow would be returned to Fivemile Creek near RM 0.26 to avoid dewatering downstream habitat currently accessible to fish.

6.6. Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) defines essential fish habitat (EFH) as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Magnuson-Stevens Act notes that:

> *…for the purpose of interpreting the definition of EFH, 'waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities, 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and 'spawning, breeding, feeding, or growth to maturity' covers a species full life cycle.*

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996, directs federal agencies to consult with the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NMFS) when any of their activities may adversely[11] effect on EFH.

6.6.1. Affected Environment

The Anadromous Waters Catalog (AWC) identifies freshwater habitats important for Pacific salmon, and such habitats are considered EFH for the species identified[12] (Giefer and Blossom 2020; NPFMC 2018). The Copper River (AWC 212-20-10080) is the nearest habitat documented to support Pacific salmon (Giefer and Blossom 2020). The Copper River supports spawning populations of coho (*Oncorhynchus kisutch*), Chinook (*O. tshawytscha*), pink (*O. gorbuscha*), sockeye (*O. nerka*), and chum (*O. keta*) salmon and is EFH for all these species (Giefer and Blossom 2020). The AWC does not identify Fivemile Creek as supporting Pacific salmon. Fish sampling conducted in 2011 did not identify Pacific salmon presence in Fivemile Creek (ABR 2011).

[11] An adverse effect refers to any impact which reduces quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).
[12] Per NMFS, freshwater Pacific salmon EFH: "freshwater areas used by egg, larvae, and returning adult salmon."

6.6.2. Environmental Consequences

6.6.2.1. NO ACTION

The No Action alternative would not affect EFH.

6.6.2.2. PROPOSED ACTION

The Proposed Action would not affect EFH nor Pacific salmon. While lower Fivemile Creek is accessible to fish, the AWC does not identify Fivemile Creek as supporting Pacific salmon and is therefore not considered EFH. While the Proposed Action would not affect EFH, AEA and DC included NMFS on the fish habitat permit application and NWP transmittal and provided NMFS with a copy of ABR's (2011) fish sampling report for Fivemile Creek.

6.7. Wildlife

6.7.1. Affected Environment

The project area consists primarily of broadleaf, coniferous, and mixed forest types (HDR 2021c). Vegetation is generally dominated by white spruce, paper birch, black cottonwood, willow, and alder shrubs (CRW 2012). Of the 296 acres mapped within the study area, most was identified as forested or shrub-covered upland habitat (96.4 percent), with the remaining split between forested wetland habitat (1.8 percent) and stream habitat (1.8 percent) (HDR 2021c).

Large mammals that could be expected to occur within or move through the project area include black bear (*Ursus americanus*), brown bear (*U. horribilis*), moose (*Alces alces*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), lynx (*Lynx Canadensis*), wolverine (*Gulo gulo*), and wolf (*Canis lupis*). Smaller mammals that could potentially use or move through habitat within the project area include porcupine (*Erethizon dorsatum*), snowshoe hare (*Lepus americanus*), American martin (*Martes americana*), ermine (*Mustela erminea*), little brown bat (*Myotis lucifugus*), and multiple vole and shrew species.

Resident and migratory bird species likely nest within the project area to some extent. In Southcentral Alaska, the USFWS identifies May 1 through July 15 as the likely nesting window for most bird species in forested and shrub or open habitats. The USFWS also indicates that owl species, which are common breeders in forested areas of Alaska, may begin to nest two or more months earlier than other forest birds (USFWS 2009).

HDR recently queried the USFWS's Information for Planning and Consultation (IPaC) program to determine if protected species managed under the USFWS have the potential to occur near the project area. The USFWS identified one bird species of particular concern that may occur within the project area, the rusty blackbird (*Euphagus carolinus*). The rusty blackbird is a Bird of Conservation Concern (BCC) throughout its range in the continental United States and Alaska due to its population decline. The rusty blackbird breeds in northern boreal forests and muskegs of Canada and Alaska; nests are typically located within dense cover and often near water. Incubation lasts approximately 2 weeks, and young leave the nest approximately 11 to 14 days

after hatching. The USFWS identifies the rusty blackbird breeding season from May 10 to July 20 (USFWS 2021).

The USFWS also identified the bald eagle (*Haliaeetus leucocephalus*) as potentially occurring within the project area (2021). Though not identified as a BCC, the bald eagle is afforded protection under the Bald and Golden Eagle Protection Act of 1940. Bald eagles typically nest in large trees near water, and often use and rebuild the same nest each year. In Alaska, bald eagles typically begin building (or rebuilding) nests in April and lay eggs by late April, which hatch approximately 35 days later. The time between egg-laying and fledgling (young leaving the nest) is approximately four months (USFWS 2022).

6.7.2. Environmental Consequences

6.7.2.1. NO ACTION

The No Action alternative would not affect wildlife nor wildlife habitat within the project area.

6.7.2.2. PROPOSED ACTION

The Proposed Action would affect a relatively small amount of wildlife habitat. The project footprint is approximately 5.87 acres, including 0.44 acre sited in wetland habitat. Under the Proposed Action, up to 4.51 acres of land beyond the cut-and-fill footprint would be cleared. This loss of habitat would not be expected to affect species' populations. Clearing would be avoided from May 1 through July 15 to protect nesting birds, as recommended by the USFWS (2009). The proposed schedule anticipates that clearing would occur during late winter/early spring 2025 or late summer/early fall 2025; therefore, impacts to breeding birds, including the rusty blackbird and bald eagle, would be avoided. Operations are not anticipated to affect these species.

Mitigation Measures

Overhead power lines would be designed and built to provide avian safety, following design standards and recommendations in Avian Power Line Interaction Committee (2006). Vegetation clearing would be avoided from May 1 through July 15 to protect nesting birds, as migratory birds protected by the MBTA, as recommended by the USFWS (2009).

6.8. Threatened and Endangered Species

6.8.1. Affected Environment

The USFWS and NMFS administer and enforce the Endangered Species Act (ESA) of 1973 (16 U.S. Code 1531 et seq.), as amended (50 CFR 402). **Table 3** identifies species that occur in Alaska, and whether they are listed as federally threatened, endangered, or candidates for listing and therefore afforded protection under the ESA. In addition to the species listed in **Table 3**, NMFS identifies 15 fish species that spawn on the west coast of the Lower 48 states but may occur in Alaskan waters during the marine phases of their lives (NMFS 2022).

Table 3. Species protected under the ESA and listed as threatened, endangered, proposed, or candidates for listing that occur in Alaska (2022).

Common Name	Scientific Name	ESA Status	Agency
Eskimo curlew	*Numenius borealis*	Endangered	USFWS
Short-tailed albatross	*Phoebastria albatrus*	Endangered	USFWS
Spectacled eider	*Somateria fischeri*	Threatened	USFWS
Steller's eider (Alaska breeders)	*Polysticta stelleri*	Threatened	USFWS
Northern sea otter, Southwest Distinct Population Segment (DPS)	*Enhydra lutris kenyoni*	Threatened	USFWS
Polar bear	*Ursus maritimus*	Threatened	USFWS
Wood bison	*Bison bison athabascae*	Threatened	USFWS
Aleutian shield fern	*Polystichum aleuticum*	Endangered	USFWS
Blue whale	*Balaenoptera musculus*	Endangered	NMFS
North Pacific right whale	*Eubalaena japonica*	Endangered	NMFS
Fin whale	*Balaenoptera physalus*	Endangered	NMFS
Sei whale	*Balaenoptera borealis*	Endangered	NMFS
Sperm whale	*Physeter macrocephalus*	Endangered	NMFS
Bowhead whale	*Balaena mysticetus*	Endangered	NMFS
Beluga whale, Cook Inlet DPS	*Delphinapterus leucas*	Endangered	NMFS
Humpback whale, Mexican DPS	*Megaptera novaeangliae*	Threatened	NMFS
Humpback whale, Western North Pacific DPS	*Megaptera novaeangliae*	Endangered	NMFS
Steller sea lion, Western DPS	*Eumetopias jubatus*	Endangered	NMFS
Arctic ringed seal	*Phoca hispida hispida*	Threatened	NMFS
Bearded seal, Beringia DPS	*Erignathus barbatus nauticus*	Threatened	NMFS
Loggerhead sea turtle	*Caretta caretta*	Threatened	NMFS
Green sea turtle	*Chelonia mydas*	Threatened	NMFS
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	NMFS
Olive Ridley sea turtle	*Lepidochelys olivacea*	Threatened	NMFS

Note: NMFS identifies 15 fish species that spawn on the west coast of the Lower 48 states, but may occur in Alaskan waters during the marine phases of their lives.

The USFWS's IPaC program and NMFS's Alaska ESA and Critical Habitat Web Mapper application was queried to confirm species distribution and the potential for species occurrence within the project area. The IPaC-generated report does not identify the potential presence of any USFWS-managed ESA-listed species within or near the project area; based on life history and habitat use, no species would be anticipated (**Attachment C**). The NMFS's Alaska ESA and Critical Habitat Web Mapper confirmed that no threatened, endangered, proposed, nor candidate species or designated habitat managed by the NMFS and protected under the federal ESA occur within the project area (NMFS 2022).

6.8.2. Environmental Consequences

6.8.2.1. NO ACTION

No threatened, endangered, proposed, nor candidate species or designated habitat protected under the federal ESA occur within the project area (USFWS 2022; NMFS 2022). Therefore, the DC has determined that implementing the No Action alternative would have no effect on ESA-listed, proposed, or candidate species or designated critical habitat.

6.8.2.2. PROPOSED ACTION

No threatened, endangered, proposed, nor candidate species or designated habitat protected under the federal ESA occur within the project area (USFWS 2022; NMFS 2022). Therefore, the

DC has determined that implementing the Proposed Action alternative would have no effect on ESA-listed, proposed, or candidate species or designated critical habitat.

6.9. Cumulative Impacts

Cumulative effects are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from several individually minor impacts, which may be collectively substantial over time.

Past development has impacted the natural and human environment, particularly for the original people of this region. Native Athabascan people occupied this region for thousands of years prior to the arrival of non-Natives, which occurred in the 1800s to 1900s. Prior to the 1900s, a large Ahtna Village was located near the present-day townsite of Chitina. Over time, the Native population was decimated by the influx of people, disease, and conflict associated with development (Ahtna 2022). In 1900, the Ahtna directed non-Native prospectors to the Kennecott area, where they staked claim to high-grade copper deposits. In 1907, construction of the Copper River & Northwestern Railway began. By 1908, the town of Chitina was established as a railroad stop and supply depot for the Kennecott Mines in McCarthy. Mining started in 1901, and the first train filled with copper left Kennecott 1911 (Gilbert et al. 2001NPA X).

By 1911, the 7-mile-long wagon road (Old Edgerton Loop Road), constructed from the Richardson Highway to Kenny Lake the year prior, was extended to Chitina (Old Edgerton Highway). Many people left the area when the Kennecott Mines closed in 1938. In 1940, the railway from McCarthy to Chitina was made into a tram road. By 1962, construction of the road from Chitina to McCarthy began, and the Edgerton Highway received multiple upgrades. During that time, the Alaska Road Commission constructed the first Alaskan steel arch bridge at Liberty Falls, and the two-lane Edgerton Cutoff was completed. By 1971, the Copper River Bridge was completed in 1980, the Wrangell-Saint Elias National Park was created with access from the McCarthy Road, resulting in more traffic on the Edgerton Highway.

Development near the project has been relatively limited. The Chitina Airfield was constructed in 1938 and expanded in the 1950s. Literature confirms that the 1962 upgrade of the Edgerton Highway eased access to area mining claims in the 1960s, including the Opal and Mark Up Lode Claim Groups located near the headwaters of Fivemile Creek, which were accessed by the Fivemile Creek Trail roadway developed between 1965 and 1970 (Chitina Recording District 1965, 1968; Erickson 1970; NPS 2021). In 2006, CEI constructed a new diesel power plant adjacent to Fivemile Creek (at its current-day location) and a 4-mile-long transmission line to Chitina.

Construction of the Edgerton Highway, the existing Fivemile Creek Trail, and the airport has modified natural hydrologic conditions within the Fivemile Creek watershed. However, impacts to hydrology and water quality from past development is limited. The extent to which resident fish may have used habitat farther upstream in Fivemile Creek is not known. However, given its habitat conditions, it is not likely that Fivemile Creek supported large populations of fish prior to

road construction. The lack of resident fish presence upstream from the highway culvert suggests habitat in upper Fivemile Creek may be unsuitable to support resident fish year-round.

Development of a hydroelectric project to serve the community of Chitina has been studied since the 1980s, which demonstrates that the need has long been recognized. Chitina is electrically isolated and relies on diesel-electric generators to meet 100 percent of the community's energy needs. If developed, the project would reduce diesel fuel consumption for electricity generation and improve air quality in the community. For every 10,000 gallons of diesel fuel that is not consumed for electrical generation as a result of hydroelectric operations, the Proposed Action would reduce carbon dioxide emissions by approximately 223,800 pounds.

If developed, the Project would affect the hydrology in Fivemile Creek and alter habitat that is currently accessible to fish in lower Fivemile Creek throughout project operations. When the project is operational and flows are diverted into the penstock, the project would result in a decrease in WOTUS throughout the 2-mile-long bypass reach of Fivemile Creek and an increase in WOTUS throughout the 0.45 mile of tributary stream that would ultimately discharge flows back into lower Fivemile Creek. Construction would unavoidably impact WOTUS by placing fill for the penstock and intake/diversion structure and adjacent mechanized land clearing, placing riprap for scour protection near the tailrace outlet, and diverting flow from Fivemile Creek during construction and turbine operations. Additionally, penstock construction may require rerouting approximately 90 linear feet of an intermittent stream channel along an existing road. Once constructed, the diversion structure would create an approximate 0.2-acre unregulated impounded area upstream of the diversion structure, which would result in a slight increase to WOTUS in that area.

When considered as an individual action, the project is not anticipated to result in substantial impacts on the natural and human environments. Additionally, when considered with past and reasonably foreseeable future actions, the Proposed Action is not anticipated to result in substantial cumulative effects on the natural and human environments.

7.0 NEPA Process and Coordination

7.1. EA Development

This EA was developed in compliance with NEPA, which requires federal agencies to undertake an assessment of their proposed actions prior to making decisions. The DC is an independent federal agency designed to provide critical utilities, infrastructure, and economic support throughout Alaska in collaboration with federal, state, local, tribal, and private partners. AEA would use funds distributed by the DC and DOE to construct the Proposed Action, if selected. AEA contracted HDR to assist with NEPA compliance.

As the lead federal agency, the DC determined that an EA would be an appropriate class of action to assess the project's effects on the quality of the human and natural environments. Prior to development of this EA, resource topics to be addressed were identified based on which topics identified in DC's current Categorical Exclusion Checklist (June 12, 2018) were applicable

to this project, CEQ's NEPA guidelines, DC's NEPA implanting procedures, and agency scoping. Based on these considerations, the DC, in collaboration with AEA and HDR, selected nine primary resource categories to analyze in this EA (see **Section 6.0**) and determined that 16 topics identified in DC's Categorical Exclusion Checklist did not warrant analysis in this EA (see **Attachment D**). No additional topics were identified during scoping.

7.2. EA Distribution

DC approval is required before an EA is made available to the public and the notice of availability is published. DC published a public notice on their website indicating that the EA and Draft Finding of No Significant Impact (FONSI) are available to review for 15 calendar days. The DC will provide hard copies on request to affected Alaska Native/American Indian tribal organizations and/or local government.

A copy of the EA is available for public review at the following location:

- DC webpage: https://denali.gov/

Final DC action will be taken after public comments received on the EA and draft FONSI are reviewed and considered.

7.3. Scoping: Tribal, Agency, and Public Involvement

Scoping refers to the process of soliciting input from tribal entities, the public, and agencies during the environmental review and design process. Project lands are owned by the Native Village of Chitina[13], the CNC[14], and Ahtna, Inc.[15]. The community of Chitina and CEI, the local utility owned by the CNC, has been involved in each step of project development (CRW 2012).

AEA and its consultants (e.g., CRW, Polarconsult, and/or HDR) have conducted multiple site visits in Chitina and have participated in several meetings with the CNC and CEI during the last 15 years of project development. Throughout this time, AEA and its team have maintained contact with various state and federal agencies, gaining valuable input throughout the process. CRW (2012) provides a summary of consultations conducted by CRW. Key consultations conducted by Polarconsult after 2019 are summarized in their June 23, 2020, consultation record document (2020e).

In May 2021, AEA distributed project scoping letters to the ADF&G, USACE, DEC, DOT&PF, and CEI (see **Attachment E**). No substantive comments were received. Since that time, AEA coordinated with the DOT&PF and updated the project design to include riprap placement for scour protection at an existing highway culvert downstream of the tailrace discharge. AEA has since submitted a utility permit application to the DOT&PF, a fish habitat permit application to the ADF&G, and a preconstruction notice to the USACE. AEA provided the USACE with a

[13] The Native Village of Chitina is a Federally Recognized Tribe that exercises its sovereign authority to conduct the day-to-day business for tribal members to promote social, economic, and cultural well-being.
[14] CNC was first incorporated in the State of Alaska on September 11, 1973. CNC is a wholly owned Native corporation in the Ahtna region, with 260 shareholders who live statewide and in the Lower 48 states.
[15] Ahtna, Inc. was established as an Alaska Native Regional Corporation under terms of ANCSA of 1971.

breakdown of proposed quantities of fill by type on May 31, 2022, and a letter to support consultation with SHPO under Section 106 in on June 6, 2022. ADF&G issued fish habitat permit FH22-III-0118 for this project on June 1, 2022.

On June 23, 2022, AEA, on behalf of the DC and through the USACE, initiated consultation with the Alaska State Historic Preservation Office (SHPO) and other consulting parties under Section 106 of the NHPA regarding the project's effects on cultural resources. In March 2025, USACE initiated General Permit Agency Coordination with the following entities: Native Village of Chitina, Chitina Native Corporation, Native Village of Tazlina, Native Village of Kluti Kaah, Ahtna, Inc., Chickaloon Native Village, SHPO, Alaska Department of Environmental Conservation (ADEC), ADF&G, and the Alaska Department of Natural Resources (DNR) dam safety engineer. USACE issued a Department of the Army permit for this project to AEA on May 16, 2025. SHPO provided a letter of concurrence on April 4, 2025.

The public and agencies will have an additional opportunity to review the project and provide comment when the Commission issues a public notice of availability that the EA and draft FONSI are accessible on the DC website. The DC would provide input received during the public review period to the AEA. The DC would issue a final FONSI on the DC website after comments received on the EA and draft FONSI are reviewed and considered.

7.4. List of Applicable Laws, Regulations, and Permits

If the No Action alternative is selected, additional permits would not be necessary.

If the Proposed Action alternative is selected, the following authorizations would likely be required:

- USACE – Section 404 of the CWA *(AEA's responsibility)*
- U.S. Environmental Protection Agency and DEC – Section 401 of the CWA and Alaska Water Quality Standards, Certificate of Reasonable Assurance *(AEA's responsibility)*
- ADF&G Division of Habitat – Fish Habitat Permit per Alaska Statute 16.05.871 *(AEA's responsibility)*
- DOT&PF Utility Permit *(AEA's responsibility)*
- Construction General Permit *(Construction contractor's responsibility)*
- DNR – Water Rights *(CEI's responsibility)*
- DNR - Temporary water use authorization(s) *(Construction contractor's responsibility)*

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Figures

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Attachment A
National Historic Preservation Act
Section 106 Consultation

Attachment B
Wetland and Waterbody Mapping Memorandum (HDR 2021c)

Attachment C
Records Regarding Potential Occurrence of Species Protected Under the Endangered Species Act

Attachment D
Review of Resource Topics to include in the Environmental Assessment

Attachment E
Scoping Letters