Draft Environmental Assessment

Water Supply Creek Hydroelectric Project

U.S. Department of Agriculture
Rural Utilities Service (RUS)

Prepared for:

Inside Passage Electric Cooperative

Prepared by:

HDR Engineering, Inc.

Draft Environmental Assessment
Water Supply Creek Hydroelectric Project

Prepared for

U.S. Department of Agriculture
Rural Utilities Service, Rural Development
1400 Independence Avenue, SW
Washington, DC 20250-0705

Applicant

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Acronyms

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
BMP	Best Management Practices
CFR	Code of Federal Regulations
cfs	cubic feet per second
cy	cubic yards
CWA	Clean Water Act
dBA	A-weighted decibels
DC	Denali Commission
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
fps	feet per second
HDPE	high density polyethylene
HDR	HDR Engineering, Inc.

H:V	horizontal:vertical
IPaC	Information for Planning and Consultation
IPEC	Inside Passage Electric Cooperative
kW	kilowatt
kV	kilovolt
lbs	pounds
LiDAR	light detection and ranging
MBTA	Migratory Bird Treaty Act
MWh	megawatt hour
NEPA	National Environmental Policy Act
NWI	National Wetland Inventory
NWP	Nationwide Permit
Project	Water Supply Creek Hydroelectric Project
RFFA	Reasonably Foreseeable Future Action
RUS	Rural Utilities Service
Sealaska	Sealaska Corporation
SGCN	Species of Greatest Conservation Need
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WOTUS	waters of the U.S.

1.0 Introduction

Inside Passage Electric Cooperative (IPEC), an electric cooperative corporation, is proposing to construct a small-scale, run-of-the-river hydroelectric project on Water Supply Creek located near Hoonah, Alaska. The Water Supply Creek Hydroelectric Project (Project) would supply approximately 1,500-megawatt hours (MWh) of reliable, lower-cost renewable energy to the town of Hoonah. Hoonah is located approximately 40 miles west from Juneau and is accessed only by air or water.

The proposed facility on Water Supply Creek would be located approximately 5.0 miles southeast of Hoonah in the Hoonah-Angoon Census Area within Sections 11, 14, and 15; Township 44 South, Range 61 East; Copper River Meridian in the United States (U.S.) Geological Survey Juneau A-5 Quadrangle, see Figure 1. The Project would be sited on land owned by Sealaska Corporation (Sealaska), an Alaska corporation organized as a Regional Corporation under the Alaska Native Claims Settlement Act, 43 U.S.C.1601, et seq. ("ANCSA"). A water diversion weir would be installed within Water Supply Creek that would divert water to a penstock. The penstock would convey water to a powerhouse containing the turbine. After the powerhouse, water would flow through a tailrace, an open waterway, and then back into Water Supply Creek upstream of the community of Hoonah's water supply intake. Access roads and road upgrades are proposed to provide access to the diversion weir and powerhouse.

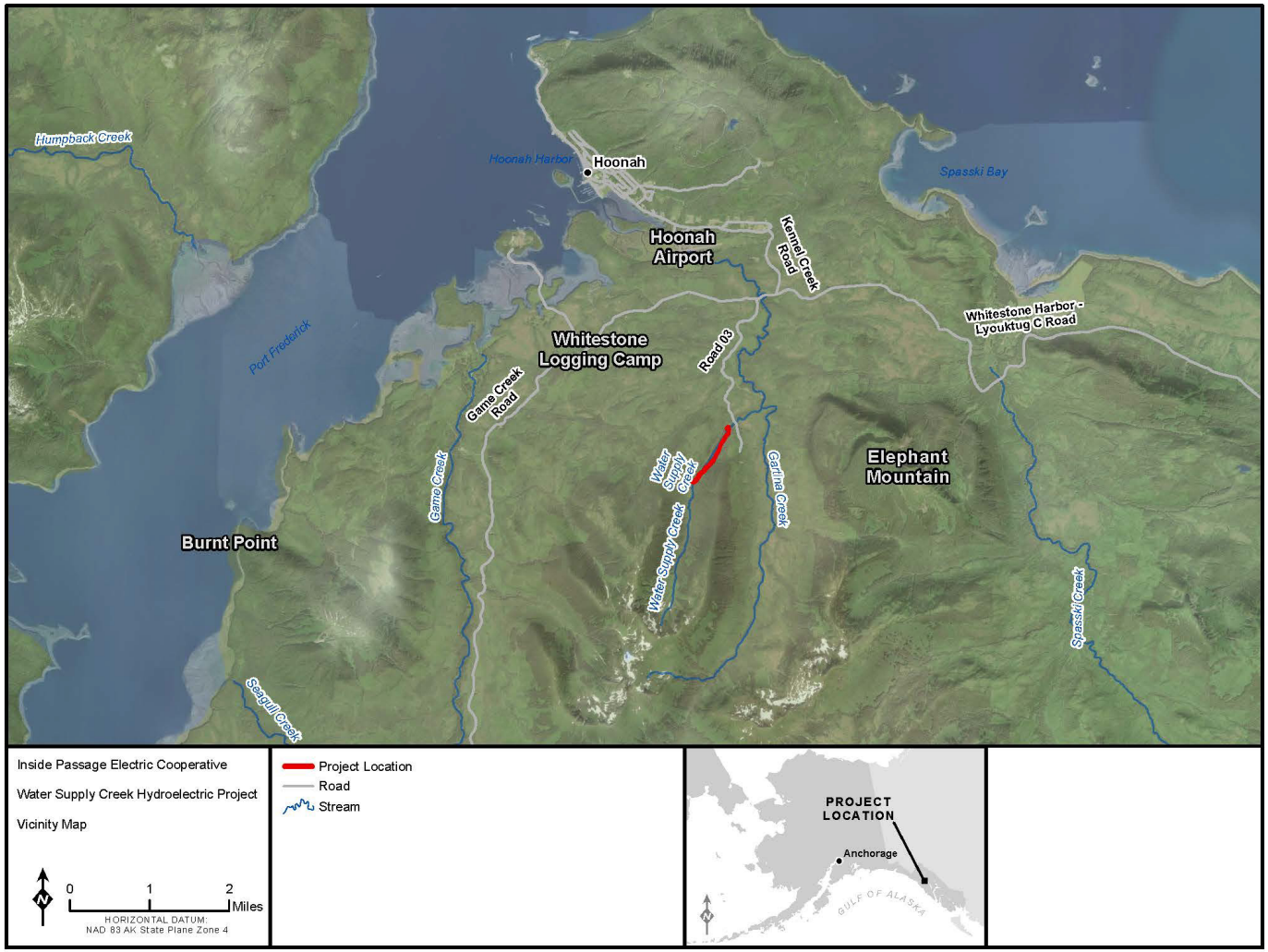

Figure 1 Project Vicinity

IPEC would receive funding for this Project through the U.S. Department of Agriculture's (USDA) Rural Utilities Service (RUS) program. USDA is the only Federal Agency involved in the Project. Once constructed, IPEC would own and operate the Project. HDR Engineering, Inc. (HDR) was contracted to prepare the Environmental Assessment (EA) on behalf of IPEC. This EA has been prepared to analyze potential impacts to the natural and human environments associated with the Proposed Action in accordance with National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] §§ 4321–4347). The document is consistent with Title 7 Agriculture Code of Federal Regulations (CFR), Part 1970 – RUS Environmental Policies and Procedures, Subpart C – NEPA EAs, §1970.101 through §1970.104, and other applicable laws and regulation. The EA proposes avoidance and minimization measures intended to avoid and/or minimize potential effects on human health and the environment.

1.1. Purpose and Need

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and RUS. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities; the agencies have a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants to accomplish program objectives. The USDA's RUS administers programs that provide financing for infrastructure improvements to rural communities. The RUS Electric Program provides loans and loan guarantees to finance the construction or improvement of electric distribution, transmission, and generation facilities in rural areas (USDA 2025). The Electric Program provides funding under the authority of the Rural Electrification Act of 1936 and pursuant to 7 CFR Chapter XVIII.

The purpose of this Project is to provide additional reliable, lower-cost renewable energy to Hoonah and to reduce use of fossil fuels and air emissions from diesel generators by constructing a financially viable and logistically feasible hydroelectric facility on Water Supply Creek.

Hoonah's residential electricity rates are some of the highest in the state of Alaska. Residents pay an average rate of 73.83 cents per kilowatt (kW) hour, which is approximately 198.77 percent (%) above the average Alaska rate of 24.71 cents (Find Energy 2024). Hoonah relies on diesel generators to meet most of its energy needs since the community is electrically isolated. The Project would reduce energy costs for Hoonah and its consumption of, and dependence on, diesel fuel, and in turn, would improve air quality in the community and surrounding area.

2.0 Description of Proposed Action and Alternatives

2.1. Proposed Action

The Proposed Action includes the construction and operation of a run-of-the river hydroelectric facility at Water Supply Creek. The hydroelectric facility would be supported with a stream diversion, penstock, powerhouse, tailrace, access roads, two bridges, and an overhead transmission line. The hydroelectric facility would be located entirely on land owned by Sealaska, which is an Alaska Regional Native Corporation located in Southeast Alaska. The City of Hoonah and the land owned by Sealaska is surrounded by the Tongass National Forest which is managed by the U.S. Forest Service. The proposed action would build an electric energy alternative to diesel and would help alleviate high energy costs on consumers.

The site location can be accessed by crossing Gartina Creek and traveling south on access road “03” for 1.9 mile to the existing Water Supply Creek crossing. An existing access road to the City of Hoonah’s existing water intake on Water Supply Creek is located immediately after the crossing. This existing road would be used, in part, to access the powerhouse construction area following construction of the two bridges. The existing access road would be used to travel along the southeast side of Water Supply Creek valley, which is approximately 0.2 mile south of the existing Water Supply Creek crossing. Construction of a new access road (New Upper Access Road) approximately 0.35 mile long would begin approximately 0.6 mile from the existing crossing. This new access road would lead to the proposed intake location on Water Supply Creek (Figure 2).

2.1.1. Project Construction and Facilities

Construction for the Proposed Action would occur over summer and fall 2025. Access to the site would be provided by upgrading an existing logging road and constructing two new permanent access roads, the powerhouse access road, and the intake access road (see Appendix A: Project Components). Upgrades would occur over 1.0 mile on the existing logging road and would include replacing a bridge (135.3943909, 58.06454621). The powerhouse access road would be approximately 32-feet long and would include the construction of a new bridge over Water Supply Creek (135.3949939, 58.060170). Road construction would require excavation and earth removal. Both bridges are sited over Water Supply Creek and would be 72-feet long and 27-feet wide. Bridges would be made of steel. The intake access road would be a 0.34-mile road and would provide access to the intake and diversion weir.

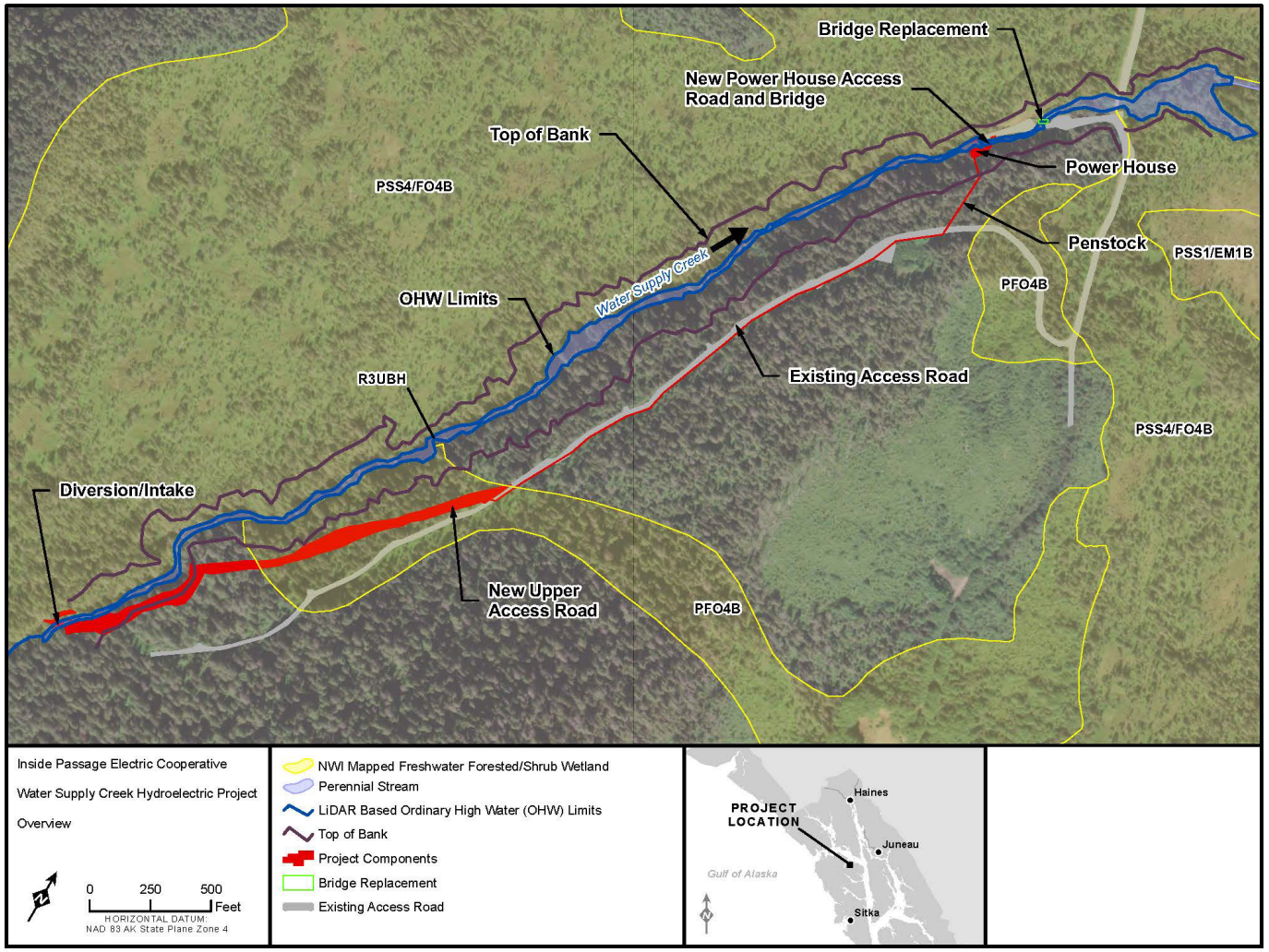

Figure 2 Proposed Action Overview

The upgraded logging road and new access roads would have a speed limit of 20 miles per hour. The roads would have a minimum 12-foot traveled way and would widen at curves. Turnouts would be provided every 2,000 feet or at strategic locations based on site-specific conditions. The maximum grade would be limited to 15 percent. Curves would have a minimum radius of 65 feet, and excavation slopes would be 3/4:1 in soil and rock conditions. Drainage ditches and culverts would be installed to carry runoff from the roads. Culverts would have a minimum diameter of 18 inches, and the minimum depth of cover over culverts would be 12 inches. Culverts would have slopes of at least two percent.

In-water work in Water Supply Creek would first be conducted by installing a diversion channel and coffer dam to divert water around the construction area. The dried creek bed would be excavated to allow for the construction of a sluiceway and an intake structure within the intake control building. The sluiceway is a channel for water to flow through which regulates the amount of flow to the intake. The bank of the Water Supply Creek would be excavated to allow for the siting of the intake control building. The sluiceway and a mesh screen outfitted to the intake would keep the intake free of obstructions such as leaf litter, branches, and other organic debris naturally found in waterways. The flow would then be diverted from the creek to the intake by removing the first coffer dam and installing a second. This addition of the second coffer dam would dry the area downstream of the intake and would allow for a diversion weir to be constructed. Once the diversion weir is constructed, the remaining coffer dam would be removed. In-water work may require crossing the streambed with tracked equipment.

The 10-foot-tall concrete and rock diversion weir (Figure 3; Appendix A: Project Components) would divert flow to the intake which would then be conveyed to the penstock. The diversion structure would raise the water level by 10 feet in the creek bed, creating pool habitat. The 4,700-foot-long penstock would convey water from the intake to the powerhouse. The first 4,300 feet of penstock is 24-inch-diameter, high-density polyethylene pipe. Excavation depth would vary based on the existing ground level. The remaining 400 feet of the penstock would be constructed with 20-inch-diameter steel pipe. The penstock would allow for a maximum flow of 12 to 14 cubic feet per second. High-density polyethylene (HDPE) portions of the penstock would be buried adjacent to the intake access road. The section of the penstock composed of steel would be above the ground. The pipes have been designed to withstand the 100-year flood event level (HDR 2021). A communications cable would be buried along with the penstock to provide Supervisory Control and Data Acquisition communications between the powerhouse and intake.

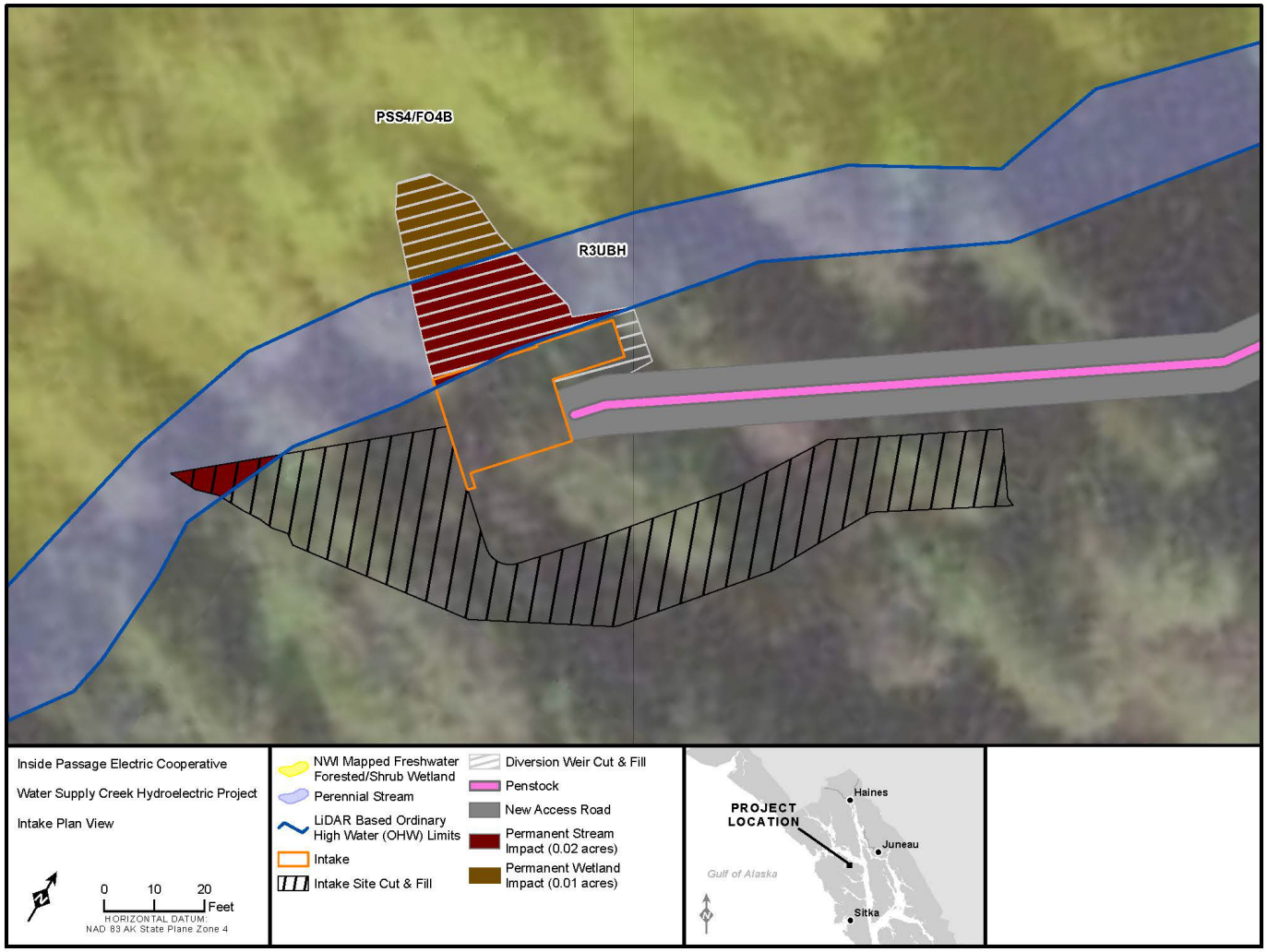

Figure 3 Proposed Action weir and intake location

The powerhouse would be a prefabricated 32 feet by 36 feet and 18-feet-high metal structure (Figure 4; Appendix A: Project Components). It would house a Pelton turbine, a generator, switchgear, and controls. Equipment supporting the powerhouse includes a monorail overhead crane, a cooling water system, building heating and ventilation systems, lighting, communications equipment, and drainage and oily water separator. The generator would be designed for a fully-automatic shutdown and a one-button startup. The powerhouse would be designed with a Supervisory Control and Data Acquisition system to allow for remote monitoring of the powerhouse. The generator used would be rated at 0.80 power factor, 480 volts AC, 60 hertz. The turbine would have a horizontal shaft. An open, 17-foot-long tailrace channel would convey water from the powerhouse structure back to Water Supply Creek. The outlet for the tailrace would be upstream of the community's water supply intake and would not affect flow conveyed to the city. The powerhouse would not allow for usable power storage.

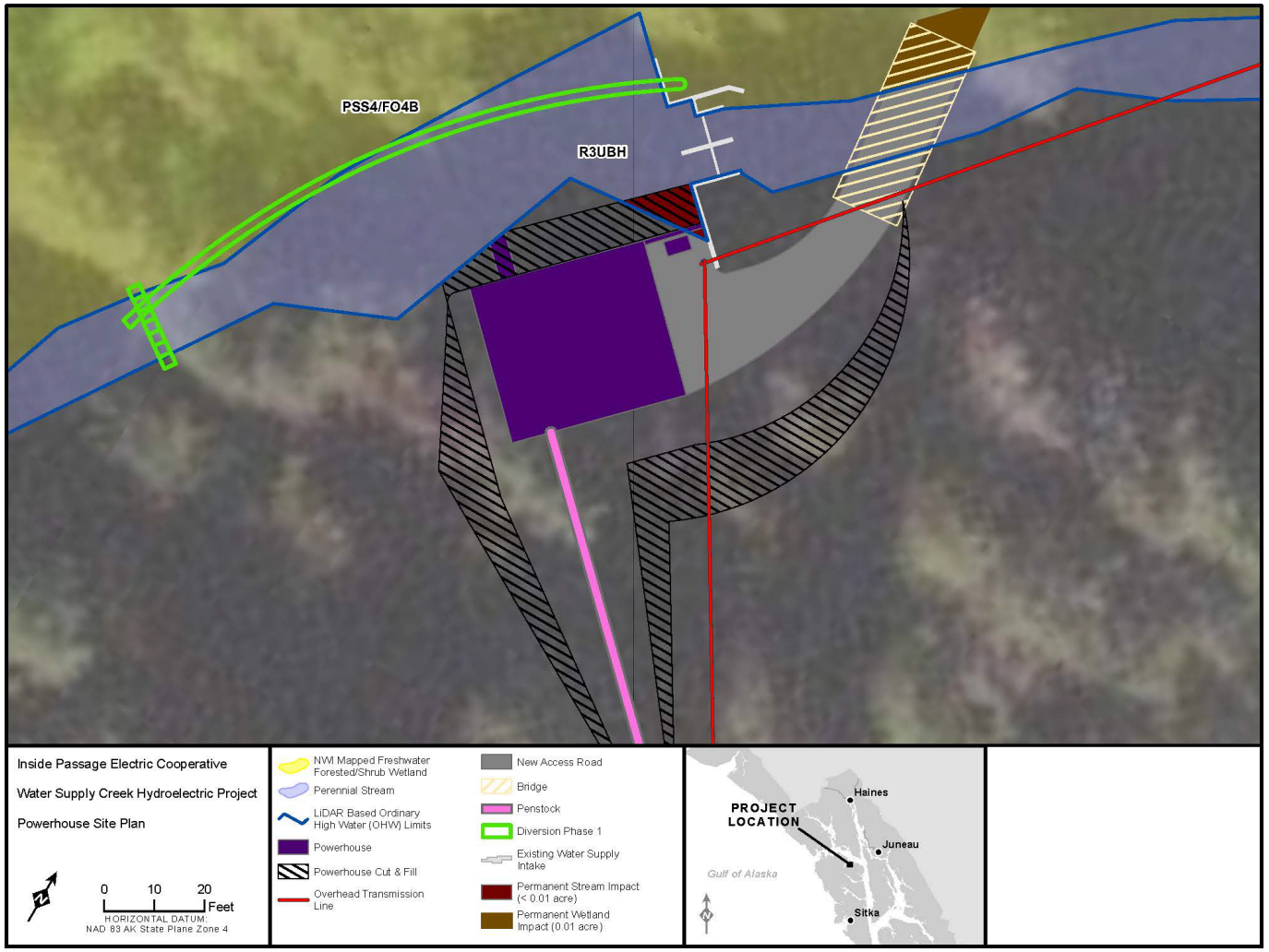

Figure 4 Powerhouse site plan

An overhead, single-phase transmission line would follow the penstock path between the intake and powerhouse. Poles would be sited for the new overhead transmission line. A three-phase overhead transmission line would span 3,400 feet from the powerhouse to a tie in with the Gartina Falls Hydroelectric Project. The three-phase transmission line would follow an existing road right-of-way. The three-phase transmission line would be rated to 12.5 kV, 60 hertz. A 480 volt to 12.5 kV transformer would be installed at the powerhouse. Transmission line stringing would require the use of pullers and tensioners.

Construction of the road, intake structure, penstock, powerhouse, and transmission line may require the use of excavators, dump trucks, loaders, and concrete trucks. The construction crew size is estimated to be four to six people.

All components of the Project would be located on land owned by Sealaska. IPEC has received an Alaska Department of Fish and Game (ADF&G) Fish Habitat Permit (Appendix B: ADF&G Fish Habitat Permit) for construction and operations of the Proposed Action; the ADF&G permit is valid for the life of the Project. The Project has also received a permit from the U.S Army Corps of Engineers (USACE) Nationwide Permit 17, Hydroelectric Projects (Appendix C: USACE Verification Letter and NWP Application). A Water Rights Permit will need to be granted to the Project prior to construction in accordance with the Alaska Wastewater Use Act (Alaska Statute 46.15).

2.1.2. Project Operations and Maintenance

The diversion intake and powerhouse would be designed to limit maintenance needs. It is expected that the site would be visited five to seven days per week by personnel. Daily visits would include equipment and intake inspections, debris removal, and equipment servicing. Site maintenance also includes shutting down the facilities prior to Water Supply Creek freezing in the winter and re-starting the infrastructure in the spring after Water Supply Creek has thawed. The transmission line right-of-way would be maintained on a three- to five- year rotation. Transmission line maintenance would include vegetation removal with chain saws, brush cutting equipment, a chipper, and an excavator.

2.2. No Action Alternative

Under the No Action Alternative, the Project would not be built, environmental resources in the Project area would not be affected, and the renewable energy that would be produced by the Project would not be developed.

Hoonah would remain on the existing hydroelectric and diesel power plants for their electrical needs. Existing hydroelectric facilities do not provide enough energy to replace diesel in Hoonah. The price of diesel fluctuates and is expected to remain high, keeping the area's electricity rates high. Diesel generation also exhausts particulate matter and gases such as CO_2 into the air, which are related to global warming. The high volume of diesel fuel needed for this small grid increases the likelihood of spills during transport and fueling operations as well as potential leaks from storage. The transport of hundreds of thousands of gallons of fuel each year relies on the burning of fossil fuels to transport fuel, which would continue under the No

Action Alternative. The high cost of electricity is a stress on residential customers, schools, and businesses, suppressing economic and population growth. The increasingly expensive electrical rates may drive people away from the community. Hoonah is isolated and would continue to struggle with increases in the cost of diesel fuel and limited power generation from the existing hydroelectric power plant.

2.3. Alternative Energy Generation Technologies Considered but Eliminated from Further Analysis

Other energy generation technologies considered were alternate hydroelectric water resource locations on the island; other hydroelectric sources (tidal energy); geothermal; solar; waste to energy conversion; woody biomass; energy efficiency utility upgrades and home heating improvements; transmission line interconnections between other southeast communities; and upgrades to, or replacement of, existing diesel generation power plant (Sealaska 2005; Hoonah Tribe 2016).

Most of the alternatives evaluated by the Hoonah community were considered as being neither feasible nor commercially viable due to the high cost of construction in this isolated, remote location.

3.0 Affected Environment and Environmental Consequences.

This section describes the current conditions of existing resources that may be affected by the Proposed Action and the No Action Alternative. Effects addressed in this chapter include those caused by the action at the same time and place (direct) as well as those caused by the action, but later in time or farther in distance (indirect). Effects are described as either adverse (detrimental to a resource) or beneficial (positive effect on a resource). Because effects can vary in duration, this chapter describes them as either short-term (during Project construction) or long-term (over the life span of the Project). The relative degree of effect on each resource is described as negligible (impacts are imperceptible and consequences are not measurably adverse or beneficial), minor (has a relatively low effect on, or creates only marginal change), moderate (causes a noticeable change), or major (causes substantial change). The terms "effect" and "impact" are used synonymously**.**

3.1. Resources not Considered for Analysis

Environmental resources that have no potential to be impacted by the Proposed Action and No Action Alternative were not carried forward for analysis within the EA. Resource areas that were eliminated from further consideration and the rationale for their elimination are presented below:

- Coastal Resources: As of July 2011, Alaska no longer participates in the Coastal Zone Management Act program. As such, no consistency determination is required (FRN published July 7, 2011, 76(130):3985), and the Coastal Zone Management Act is not discussed further in this document.
- Land Use (Important Farmland and Formally Classified Lands): The hydroelectric facility would be located entirely on land owned by the Sealaska, which is an Alaska Regional Native Corporation located in Southeast Alaska. No additional land would be acquired at the site of the existing facility. No prime farmlands, unique farmlands, or farmlands of statewide importance have been designated in Alaska (Appendix D: Prime and Other Important Farmland). The Project does not contain any formally classified lands such as wildlife refuges, wilderness, parks, recreation areas, or other publicly owned land that could be impacted by the Project. The City of Hoonah and the land owned by Sealaska is surrounded by the Tongass National Forest which is managed by the U.S. Forest Service. The nearest national park, Glacier Bay National Park, is located approximately 50 air miles northwest of Hoonah, and the nearest State Park, St. James Bay State Marine Park, is located in Juneau approximately 35 miles northwest of Juneau.
- Marine Mammals: The Marine Mammal Protection Act was established in 1972 to provide a national policy to prevent marine mammal stocks from declining beyond the point where they would be significant functioning elements of ecosystems. Marine

mammals are not considered in this analysis because the Project is not sited within marine waters and does not overlap with any marine mammal ranges.

- Transportation: The Project would not interfere with existing public transportation infrastructure and is not considered for further analysis.
- Essential Fish Habitat (EFH): EFH was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act. EFH are described as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (NOAA 2025a). No EFH exists in waters that overlap Project components. EFH is not considered further in this analysis.
- Endangered Species Act listed species: The Endangered Species Act of 1973 (ESA; 16 U.S. Code 1531 et seq) as amended (50 CFR 402) provides a framework for the protection of species listed as endangered or threatened and critical habitat concurrent with their listing. No ESA listed species have ranges or critical habitat that overlap the Project (Appendix F: Threatened and Endangered Species in the Project Area; USFWS 2025; NOAA 2025b). ESA listed species and critical habitat are not considered further in this analysis.

3.2. Cultural Resources and Historic Properties

3.2.1. Affected Environment

As a federally-funded project, the Proposed Action is subject to compliance with the National Historic Preservation Act of 1966, as amended, and its implementing regulations found in 36 CFR §800, which require federal agencies to consider the effects of their undertakings on historic properties.[1]

IPEC contracted HDR to conduct a cultural resources desktop survey and data gap analysis, *Cultural Resources Data Gap Analysis and Desktop Survey Water Supply Creek Hydroelectric Project* (HDR 2025), of an area of potential effects surrounding the Project Location to support compliance with federal regulations. HDR cultural resource specialists completed archival research and a review of the Alaska Heritage Resources Survey (AHRS) Database for known historic properties or cultural resources within two miles of the Project area. As a result of this analysis, two historic-era sites were found in the area of potential effects.

3.2.2. Environmental Consequences

3.2.2.1. PROPOSED ACTION

The *Cultural Resources Data Gap Analysis and Desktop Survey Water Supply Creek Hydroelectric Project* determined that there were two historic-era sites located along Gartina Creek approximately 0.75 mile from the Project.

[1] 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 (36 CFR §800.16(l)(1)).

Section 106 for this project was conducted in accordance with 36 CFR § 800.12 and no comments were received during the seven-day notification period. This project facilitates the production and generation of domestic energy resources and expands the integrity and reliability of the Nation's energy infrastructure to more adequately meet the Nation's needs and therefore responds to the National Energy Emergency formally declared by the President of the United States on January 20, 2025, Executive Order 14156, Declaring a National Energy Emergency. In accordance with this Executive Order, this project is an emergency undertaking which was submitted for expedited review consistent with 36 CFR § 800.12(b). On April 24, 2025 RUS notified the Advisory Council on Historic Preservation, the Alaska State Historic Preservation Officer, Hoonah Indian Association & Hoonah Delegate to the Central Council of Tlingit & Haida, Sealaska Corporation, Huna Totem Corporation, and the Skagway Village of the project (Appendix E: Notification of Emergency Undertaking). The notification stated that, based on the information available, including the magnitude and nature of the undertaking and the avoidance and/or minimization measures included, the project was not likely to affect historic properties. The above listed parties were provided an opportunity to comment within seven days of the notice per 36 CFR § 800.12(b)(2). No responses were received within the seven-day comment period and the Section 106 process was concluded on May 2, 2025.

3.2.2.2. NO ACTION ALTERNATIVE

The No Action Alternative would result in no impact on cultural resources or historic properties because there would be no ground disturbing or visual effects associated with this alternative.

3.3. Geological Resources

3.3.1. Affected Environment

The geology surrounding the proposed Project location is defined as a freshwater bay formation composed of volcanic, igneous, sedimentary, and metamorphic rock types. Volcanic flows are common in the area and are up to one hundred meters thick.

3.3.2. Environmental Consequences

3.3.2.1. PROPOSED ACTION

Earth moving activities for the siting of Project infrastructure would disturb the geologic structure beneath the footprint of Project components. The footprint of ground-disturbing activities is limited relative to the greater geological landscape. Given the small footprint of Project activities involving ground disturbance, the Proposed Action is anticipated to have direct, negligible, long-term, adverse impacts on geological resources.

3.3.2.2. NO ACTION ALTERNATIVE

The No Action Alternative would require no changes to the geological landscape and would result in no impact on geological resources.

3.4. Vegetation

3.4.1. Affected Environment

Land cover types overlapping proposed Project components include forest habitat and scrub-shrub habitat (MRLC 2025). Needle-leaf forests are the most common forest type found in Southeast Alaska, followed by broadleaf forests. Common scrub-shrub species include alder (*Alnus* spp.), salmonberry (*Rubus spectabilis*), dwarf birch (*Betula* spp.), willow (*Salix* spp.), and blueberry (*Vaccinium* spp.) (van Hees and Mead 2005).

3.4.2. Environmental Consequences

3.4.2.1. PROPOSED ACTION

Under the Proposed Action, vegetation removal may occur over approximately 21.5 acres. Vegetation removal can reduce soil infiltration capacity, increase stormwater discharge, impact erosion control, and eliminate wildlife habitat (U.S. EPA 2005; Valante et al 2012). However, given the size of the vegetation removal footprint and because it is surrounded by dense intact forest, the sounding landscape is anticipated to buffer potential impacts. Due to the relatively small footprint of vegetation removal, the Proposed Action is anticipated to have direct, minor, long-term, adverse impacts on vegetation.

3.4.2.2. NO ACTION ALTERNATIVE

The No Action Alternative is anticipated to have no impact on vegetation, as there would be no construction-related activities.

3.5. Biological Resources

3.5.1. Affected Environment

3.5.1.1. FISH RESOURCES

In August 2023, IPEC submitted a Fish Habitat Permit application to ADF&G for construction and operation of the proposed Project. ADF&G determined that Water Supply Creek supports resident Dolly Varden char (*Salvelinus malma*) in the bypass reach of the Project and for at least 1,700 feet upstream and 2,800 feet downstream to its confluence with Gartina Creek and into tidewater. A Fish Habitat Permit (FH23-I-0077) from AFG&G was issued on September 14, 2023, which is valid for the life of the Project (Appendix B: ADF&G Fish Habitat Permit).

3.5.1.2. TERRESTRIAL MAMMALS

ADF&G defines ‘species of greatest conservation need’ (SGCN) if the species population is small, declining, or under significant threat (at-risk species); species that are culturally, ecologically, or economically important; species that function as sentinel species (indicators of environmental change); and stewardship species (species with a high percentage of their North American or global populations in Alaska). Identification of SGCN focuses conservation efforts on these species with the goal of preventing species from becoming listed as threatened or endangered under the ESA. Hunted or trapped species are often excluded from SGCN

consideration (ADF&G 2015). Terrestrial mammals found on Chichagof Island are presented in Table 1 with their SGCN status.

Table 1 Terrestrial Mammals of Chichagof Island

Name	Latin Name	Status
Alexander Archipelago Wolf	*Canis lupus ligoni*	SGCN – Stewardship
American Marten	*Martes americana*	-
American Red Squirrel	*Tamiasciurus hudsonicus picatus*	SGCN – Stewardship
Black Bear	*Urus americanus*	-
Brown Bear	*Ursus arctos*	-
Dusky Shrew	*Sorex monticolus malitiosus*	SGCN – Stewardship
Ermine	*Mustela vison*	-
Keen's Mouse	*Peromyscus keeni sitkensis*	SGCN – Stewardship
Little Brown Bat	*Myotis lucifigus*	SGCN – Sentinel
Marten	*Martes americana*	-
Northern Flying Squirrel	*Glaucomys sabrinus*	SGCN – Stewardship
Sitka Black-tailed Deer	*Odocoileus hemionus sitkensis*	-

Source: Schoen and Dovichin 2007; ADF&G 2015
Notes: SGCN = Species of Greatest Conservation Need

3.5.1.3. BIRDS

Protections for migratory birds are established under the Migratory Bird Treaty Act of 1918 (MBTA) as amended (16 USC 703 et seq.). The MBTA prohibits migratory bird take, including their eggs, feathers, and nests. Take is defined as any attempt, intentional or unintentional, at hunting, pursuing, wounding, killing, possessing, or transporting. All native birds in Alaska except grouse and ptarmigan are protected under the MBTA. The Bald and Golden Eagle Protection Act of 1940 provides protections for bald and golden eagles from unintentional take. USFWS provides vegetation clearing avoidance windows to mitigate potential impacts on migratory birds. The avoidance windows for birds by habitat type are provided in Table 2. Land cover types overlapping Project components include forest habitat and shrub-scrub habitat (MRLC 2025).

Table 2 USFWS Recommended Times to Avoid Land Disturbance and Vegetation Clearing

Region	Forest or Woodland Habitat	Shrub or Open Habitat	Eagles
Southeast	April 15 – July 15	May 1 – July 15	March 1 – August 31

Source: USFWS 2017
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.

3.5.2. Environmental Consequences

3.5.2.1. PROPOSED ACTION

Fish

The Proposed Action would cause changes to the aquatic environment at Water Supply Creek. The diversion would reduce flow to the bypass reach of Water Supply Creek approximately 24 percent of the year. During this time, the bypass reach would still receive some streamflow from

tributaries and during flood events. Depending on the amount of flow reaching the bypass reach, fish movement may become restricted. Reduced flow may increase fish exposure and make them more susceptible to predation.

The bypass reach contains approximately 25 pools with residual depths of 1 to 4.5 feet. Given the low fish density, low solar gain due to aspect and canyon shade, and the absence of a large lake upstream which could increase water temperature in summer and freeze over in winter, dissolved oxygen is expected to remain sufficient for Dolly Varden in the bypass reach during low flow events (ADF&G 2023). The diversion at the intake would also change the habitat at the intake to a pool.

Run-of-river hydropower plants may result in increased water temperature, reduced dissolved oxygen, and increased nutrient contents, all of which have the potential to impact habitat suitability for fish. Sensitive fish species have shown a decrease in abundance, biomass, and activity because of run-of-river hydropower plants (Simonovic et al 2021). However, due to the continuous flow release from the Proposed Action, periodic natural high flows, supplemental tributary flow, pool habitat, and naturally cool water conditions, ADF&G has determined the diversion of water would provide sufficient water quantity and quality for resident fish in their Fish Habitat Permit for the Project (Appendix B: ADF&G Fish Habitat Permit: ADF&G 2023). As a result of changes to water quality parameters and habitat, the Proposed Action is anticipated to result in direct, negligible, long-term, adverse impacts on fish in Water Supply Creek.

Terrestrial Mammals

Vegetation clearing would occur over approximately 21.5 acres of forested and scrub-shrub habitat used by terrestrial mammals. Habitat loss would result in reduced foraging and shelter potential for terrestrial mammals. However, due to the limited amount of habitat converted during the construction process, vegetation removal is anticipated to have direct, negligible, long-term, adverse impacts on terrestrial mammals.

Project construction may result in noise impacts of 85 A-weighted decibels (dBA) and operations noise may reach 90 dBA (refer to Section 3.12 for details on noise-related impacts). Noise at 140- to 150-dBA may cause hearing damage to terrestrial mammals. Construction and operations noise is not anticipated to cause hearing damage to terrestrial mammals. Noise at 70 dBA may elicit avoidance or masking (Knight and Gutzwiller 1995). Terrestrial mammals affected by noise would likely avoid construction areas but are anticipated to return when construction is complete. Terrestrial mammals would likely avoid the powerhouse due to operations noise. In the long term, avoidance would likely be negated as terrestrial mammals become acclimated to the noise, but masking impacts would persist. Construction noise is anticipated to result in direct, minor, short-term, adverse impacts on terrestrial mammals. Operations noise would result in direct, minor, adverse impacts that are both short- and long-term.

Birds

Vegetation clearing would occur outside of the USFWS vegetation clearing avoidance windows for nesting birds. Vegetation clearing would occur in shrub and forest habitats and would be limited to areas for the siting of the road, powerhouse, bridges, and penstock. Due to the limited amount of vegetation proposed to be cleared, and because of mitigation measures put in place to protect nesting birds, vegetation clearing impacts on birds are anticipated to be direct, negligible, long-term, and adverse.

Construction and operations noise has the potential to cause adverse effects to birds. Potential impacts include threshold shifts and behavioral changes (Dooling and Popper 2016). It is unlikely that birds would remain in an area long enough to experience physical effects from noise. Construction noise has the potential to reach 85 dBA and operations have the potential to rise to 90 dBA. Noise levels may result in behavioral changes to birds such as avoidance or masking. Avoidance of construction activities would be limited to summer and fall 2025. Birds would likely return to these areas after construction is complete. Equipment noise from the powerhouse produced from equipment such as the turbine and generator may result in birds avoiding the powerhouse until they become acclimated to the noise. Masking impacts from operations would likely always be present. Noise produced from the construction of the Project is anticipated to result in direct, minor, short-term, adverse impacts on birds. Operations noise would result in direct, minor, adverse impacts that are short- and long-term.

If the quantity of water to the bypass reach were to decrease, it may restrict fish access to habitat and make them more exposed to predation from birds. This would result in a direct, negligible, long-term, beneficial impact on birds.

3.5.2.2. NO ACTION ALTERNATIVE

Under the No Action Alternative, the Project would not be constructed. Water Supply Creek and the surrounding habitat would remain in its current state. There would be no impact on biological resources.

3.6. Water Resources

3.6.1. Affected Environment

3.6.1.1. WATER QUANTITY

In 2017, IPEC submitted a water rights application to use up to 15 cubic feet per second (cfs) of water in Water Supply Creek for a hydroelectric project (LAS 32100). On behalf of IPEC, HDR provided information to the ADNR in 2017, at which time ADNR requested additional information. IPEC, as Project owner and operator, would coordinate directly with ADNR regarding the acquisition of water rights for the Project. In 2024, HDR provided design drawings to the ADNR for the Proposed Action.

According to the ADNR's Water Rights database, IPEC has an existing water right (LAS 28300) to use up to 110 cfs of water in Gartina Creek for the Gartina Creek Hydroelectric Project. Similarly, the City of Hoonah has a surface water right certificate (LAS 897) for a water supply intake at a nearby tributary of Gartina Creek (ADNR 2025).

3.6.1.2. WATER QUALITY

Water Supply Creek is located on northeastern Chichagof Island in the Alexander Archipelago. Climate is maritime, with major storm activity in late fall (October and November), snow accumulation at higher elevations in the winter, and cool rainy summers. Stream runoff from the island tends to be flashy, with little basin storage other than high elevation snowpack.

Water Supply Creek is a snowmelt and rain-fed drainage (Figure 5) that has a watershed area of 1.9 square miles upstream of the proposed tailrace. The creek is bounded by steep ridgelines ascending to 3,180 feet elevation. The approximately 4,600-feet bypass reach is confined by bedrock slopes and rises from 430 feet elevation at the proposed tailrace site (Figure 6) to 800 feet at the proposed intake site (Figure 7) for an average gradient of 12%, which results in a potential 370 feet of gross hydraulic head. Throughout the bypass reach, the gradient ranges from 3 to 30% with numerous cascades, chutes, and falls, characteristics of a high gradient contained channel type; the largest of which is a 20 feet vertical waterfall that constitutes one of several upstream fish migration barriers (ADF&G 2023).

Water Supply Creek is a tributary to Gartina Creek. The confluence of the two creeks is 830 feet upstream of Gartina Falls, a natural barrier to upstream anadromous fish migration and the site of the Gartina Creek hydroelectric facility (ADF&G 2023). The City of Hoonah operates a water intake behind a low-head dam for water supply 2,800 feet upstream of the confluence, which has been in place for decades (ADF&G 2023). The Hoonah Public Water System ID (PWSID): AK2130067 is classified as a Community Water System with surface water as the source (ADEC 2025a).

The proposed location of the tailrace would be immediately upstream of the city water supply intake impoundment. The proposed intake would be 4,600 ft upstream at the head of a newly constructed 10-foot-tall rock and concrete diversion weir (ADF&G 2023). The proposed hydroelectric operation has a design flow of 1.4–14 cubic feet per second (cfs). IPEC proposes a continuous instream flow release of up to one cfs to maintain fish habitat and supply water to the city water supply intake in the event of a shutdown, which could result in a flow interruption when streamflow is less than 14 cfs. The proposed bypass reach is a bedrock-confined channel characterized by cobble and boulder riffles, bedrock cascades, pools, and a 20-foot-hight waterfall (Figure 8).

Groundwater information is limited for Hoonah. Groundwater on Chichagof Island is nutrient rich due to its interaction with surficial bedrock. Forests on Chichagof Island exhibit high productivity due to this interaction (Schoen and Dovichin 2007).

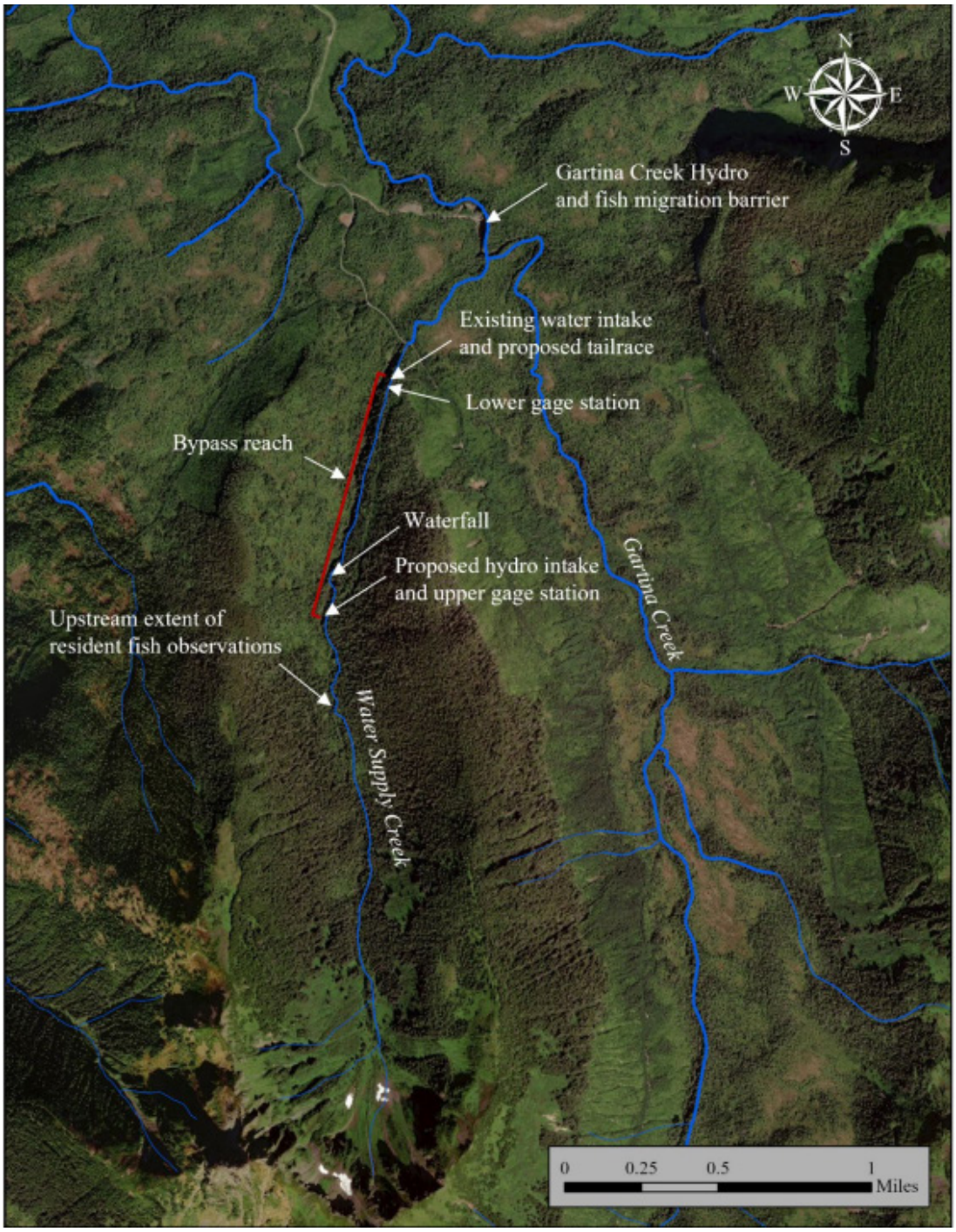

Figure 5 Water Supply Creek Hydrology and Drainage (ADF&G 2023)

Figure 6 City of Hoonah water supply intake and location of the proposed hydroelectric facility tailrace. Photo taken August 9, 2023 (ADF&G 2023).

Figure 7 Aerial image of the proposed hydroelectric facility intake site, taken 100 feet above ground level. Photo taken December 5, 2022 (ADF&G 2023).

Figure 8 Water Supply Creek 20 feet barrier falls. Photo taken August 9, 2023 (ADF&G 2023).

3.6.2. Environmental Consequences

3.6.2.1. PROPOSED ACTION

During operations, the Proposed Action would affect the hydrology in Water Supply 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 Water Supply Creek and transported within a penstock to the powerhouse. From the powerhouse, the tailrace would discharge and ultimately return the water to lower Water Supply Creek (Figure 4).

Once constructed, the diversion structure would create a small unregulated impounded area upstream of the diversion structure. During operation, the Proposed Action would decrease flows throughout the bypass reach of Water Supply Creek. Flow would remain unchanged downstream of the outlet and still be directed into Gartina Creek.

ADF&G determined that the proposed hydroelectric facility's design flow of 1.4 to 14 cfs, would divert base flow through the bypass reach about 74% of the time based on observations and streamflow estimates during the 16-month monitoring period (Appendix B: ADF&G Fish Habitat Permit; ADF&G 2023). Periodic high flow events would flood the bypass reach, and supplemental flow from tributaries would usually be flowing to maintain sufficient dissolved oxygen in the stream (ADF&G 2023). The bypass reach contains about 25 pools with residual depths of 1 to 4.5 feet.

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. The results of a hydrology and hydraulics analysis confirmed that the 24-inch and 20-inch-diameter steel pipe that would receive flows diverted from Water Supply Creek was designed to withstand the 100-year flood event with the proposed additional 14 cfs (HDR 2021).

During Proposed Action construction, flows in Water Supply Creek would be temporarily diverted using a phased approach. The contractor would implement Best Management Practices (BMPs) and other measures to minimize construction-related impacts on water quality for surface and groundwater during construction, as outlined in Section 5.1. Project operations are not anticipated to affect either IPEC's existing surface water right (LAS 28300) for Gartina Creek Hydroelectric Project or the City's existing water right (LAS 897) certificate for their water supply intake. Due to changes in dissolved oxygen, temperature, and flow, the Proposed Action is anticipated to result in direct, minor, long-term, adverse impacts on water resources.

3.6.2.2. NO ACTION ALTERNATIVE

Under the No Action Alternative, the Project would not be constructed and there would be no changes to water quantity or water quality in Water Supply Creek.

3.7. Floodplains

3.7.1. Affected Environment

Executive Order 11988, "Floodplain Management" issued in 1977, requires federal agencies to avoid activities that could negatively impact floodplains unless no viable alternatives exist. When developing within floodplains, actions must be designated or adapted to minimize harm to floodplain environments. Project components are sited in unmapped areas of the Federal Emergency Management Agency (FEMA) Flood Map Service Center (Flood Map 0200490027C; FEMA 2025).

3.7.2. Environmental Consequences

3.7.2.1. PROPOSED ACTION

FEMA floodplain maps are not available, and therefore, the extent to which Proposed Action Infrastructure is sited within floodplains cannot be directly analyzed. However, due to the proximity of Proposed Action Infrastructure to Water Supply Creek, it is likely that components of the Proposed Action would be sited within its floodplain. Additionally, water diversion to the intake may reduce the extent of the floodplain at the bypass reach.

Water displacement from Proposed Action infrastructure in the floodplain would be minimal due to the relatively small footprint of Proposed Action components. Bypass reach floodplain changes may result in limited changes to floodplain habitat throughout the bypass reach. It is not anticipated that the changes to floodplains under the Proposed Action Alternative would

affect the function of floodplain habitat. Under the No Action Alternative there would be direct, negligible, long-term, adverse changes to floodplains due to the siting of infrastructure in floodplains and changes to floodplain extent in the bypass reach.

3.7.2.2. NO ACTION ALTERNATIVE

The No Action Alternative would not change floodplain habitat or extent and would result in no impact on floodplains.

3.8. Wetlands

3.8.1. Affected Environment

The USACE has jurisdiction over waters of the U.S. (WOTUS) under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Section 404 of the CWA and Executive Order 11990 (Protection of Wetlands) requires avoiding and minimizing impacts on wetlands.

USACE jurisdiction over WOTUS includes wetlands. Wetlands are areas that are covered by water or have waterlogged soil for long periods during the growing season. Plants growing in wetlands are capable of living in saturated soil conditions for at least part of the growing season. Wetlands such as swamps and marshes are often obvious, but some wetlands are not easily recognized, often because they are dry during part of the year. WOTUS that would be intersected by the Proposed Action construction are listed in Table 3.

Table 3 WOTUS Intersected by Project Construction

WOTUS Intersected by Project	Latitude	Longitude
Water Supply Creek – Perennial Stream	58.05404°	-135.40639°
Water Supply Creek – Perennial Stream	58.06402°	-135.39500°
Palustrine Forested Wetland	58.05702°	-135.40143°
Palustrine Scrub-Shrub/Forested Wetland	58.05411°	-135.40651°

3.8.2. Environmental Consequences

3.8.2.1. PROPOSED ACTION

The Proposed Action would have temporary and permanent impacts on WOTUS. The Proposed Action would intersect the ordinary high-water line of Water Supply Creek, and would also intersect two wetland areas, all considered WOTUS. Table 4identifies the proposed activities in WOTUS and summarizes anticipated temporary and permanent impact acres. All activities

conducted within the channel of Water Supply Creek would occur roughly between June and September, during anticipated low-flow conditions.

Table 4 Wetland Impacts

Impact Type	Structure	Impact (Acres)	Fill Type
Temporary	Diversion Structure	0.06	Riprap or Native Fill
Temporary	Penstock	0.01	Riprap or Native Fill
Permanent	Access Road	1.02	Riprap and Gravel
Permanent	Diversion Weir	0.02	Riprap, concrete, and native fill
Permanent	Intake Structure	<0.01	Riprap, concrete, and native fill
Permanent	Powerhouse	<0.01	Riprap, concrete, and native fill
Permanent	Powerhouse Access Road and Bridges	<0.01	Riprap, concrete, and native fill
Total Permanent	-	1.06	-

The Project would result in the temporary loss of 0.07-acre of wetlands. There would be a permanent loss of 1.04 acres of wetlands and a 0.02-acre loss of streams.

IPEC applied for Nationwide Permit (NWP) 17 Hydroelectric Projects for the Proposed Action. IPEC received approval by the Department of the Army on February 23, 2024, which is valid until March 14, 2026 (Appendix C: USACE Verification Letter and NWP Application).

A Storm Water Prevention and Preparedness Plan (SWPPP) would be used for the Project to mitigate impacts on wetlands caused by runoff and erosion. Given the relatively small surface area of wetland and stream impacts relative to the surrounding environment, and in combination with BMPs, permanent and temporary impacts are small enough that they are not anticipated to change local wetland hydrology and habitat function. Because the Proposed Action would not result in noticeable changes to local wetland hydrology and habitat function, the Proposed Action is anticipated to have direct, negligible, adverse impacts on wetlands that are both short-term and long-term.

3.8.2.2. NO ACTION ALTERNATIVE

Under the No Action Alternative, no changes to existing wetlands would occur. The No Action alternative would result in no impact on wetlands.

3.9. Socioeconomics

3.9.1. Affected Environment

Hoonah is located in the Hoonah-Angoon Census area. The population is 894 people. The most common occupations in Hoonah are office and administrative support at 15 percent, 14 percent production occupations, 10 percent management occupations, and 6 percent transportation occupations. The largest industries are Agriculture, forestry, fishing, and hunting; manufacturing; retail; and public administration. The median household income is $81,406, and the median property value is $340,800 (DATAUSA 2025).

Hoonah was established as a first-class city in 1946 and started becoming more involved in U.S. infrastructure during that period. A fire destroyed several homes in the village which were replaced with war housing provisions. These homes helped reestablish the village and strengthened Hoonah's alignment with the U.S. government. Investments in the community helped them transition from a weakened fishing industry to a robust timber industry. The transition also led to an influx of non-tribal populations and bolstered tourism prospects (Hoonah Tribe 2016).

Declining oil revenues pushed the community to increase independence and self-reliance. Major investments were made in the power sector with increasing focus on alternative and renewable energy technologies such as hydroelectricity, geothermal, biomass, and waste to energy projects. Some trends identified to have a positive impact on the community included decreasing fuel prices, global and regional renewable energy momentum, technology improvements including efficiency, hydro power, communication, improved energy storage (batteries), increased tourism, and awareness and appreciation of culture (Hoonah Tribe 2016). Negative trends identified include high cost of living, high energy costs and consumption, declining school enrollment, decreased public safety, less affordable housing, and decreased capital projects due to growing federal deficit and loss State of Alaska funding (Hoonah Tribe 2016). As of 2023, Hoonah is no longer considered a distressed community.

3.9.2. Environmental Consequences

3.9.2.1. PROPOSED ACTION

Construction of the Project is not anticipated to have an adverse impact on socioeconomic resources. At the current diesel price in Hoonah, that results in fuel cost savings of about $400,000 per year. This displaced fuel cost would result in a net cost savings to IPEC's member-consumers. The Project would not relocate or dislocate any residents or interrupt access to any businesses. Construction is not proposed near the ferry terminal thus it is not likely to disrupt tourism or access to essential goods and services. Hoonah is not considered a distressed community; however, construction would have temporary beneficial impacts on the community because local jobs would likely be created. The Project stands to increase hydroelectricity generation for the community to 60% which would contribute to the Hoonah

Tribe's strategic goal of becoming a regional rural leader in renewable energy. Construction of the Proposed Action would provide the Hoonah residents with cheaper means of energy production to offset high diesel costs. Due to the potential for increased jobs and economic flow in Hoonah, the Proposed Action is anticipated to have direct, negligible, beneficial impacts that are both short- and long-term.

3.9.2.2. NO ACTION ALTERNATIVE

Under the No Action Alternative, Hoonah would continue to rely on diesel for a portion of their power generation. The high cost of diesel would continue to inflict high energy costs on the Hoonah community. Due to high energy costs, the No Action Alternative would have direct, moderate, long-term, adverse impacts on socioeconomics.

3.10. Air Quality (General Conformity)

3.10.1. Affected Environment

General Conformity ensures that the actions taken by federal agencies do not interfere with a State or Tribe's ability to attain and maintain the National Ambient Air Quality Standards (NAAQS) for air quality, as required under Clean Air Act (CAA) section 176(c).

The Hoonah community is electrically isolated from the rest of Alaska, with no import or export of energy from the transmission system. The daily average power demand on the system varies seasonally between 600 and 750 kW. The hourly demand varies diurnally from 100 kW to 200 kW. This load is presently met with four diesel generators (1000 kW, 1050 kW, 475 kW, and 475 kW) and the Gartina Falls Hydroelectric Plant. The average annual energy demand of the system is 5,800 MWh with 3,800 MWh from diesel generation (67%) and 1,900 MWh (33%) from existing hydro generation.

A search of the Alaska Department of Environmental Conservation (ADEC), Division of Air Quality permit database found one active major air quality permit in the community of Hoonah. IPEC has a Title V Operating permit (Permit # AQ0021TVP05) for the operation of four diesel-fired electric generators at the Hoonah Facility (ADEC 2025b). Hoonah is part of Alaska's Air Monitoring Network and uses Quant MODULAIRTM pods (Quant AQ 452) to collect air quality data (ADEC 2024). The sensors measure multiple parameters, including particulate matter, and gaseous and meteorological data using "low-cost" sensor technology. The data are useful for tracking real-time conditions and displaying trends. The EPA NAAQS for Particulate regulatory level is an annual average for three years of 9.0 micrograms per cubic meter and a 24-hour Particulate Matter ($PM_{2.5}$)[2] standard at the level of 35 micrograms per cubic meter. Based on the information from the ADEC Air Monitoring Network displayed in Figure 9, Hoonah has some of the highest $PM_{2.5}$ measurements in the region over a seven-month period, though $PM_{2.5}$ was below regulatory levels.

[2] The EPA defines $PM_{2.5}$ as fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller (2024).

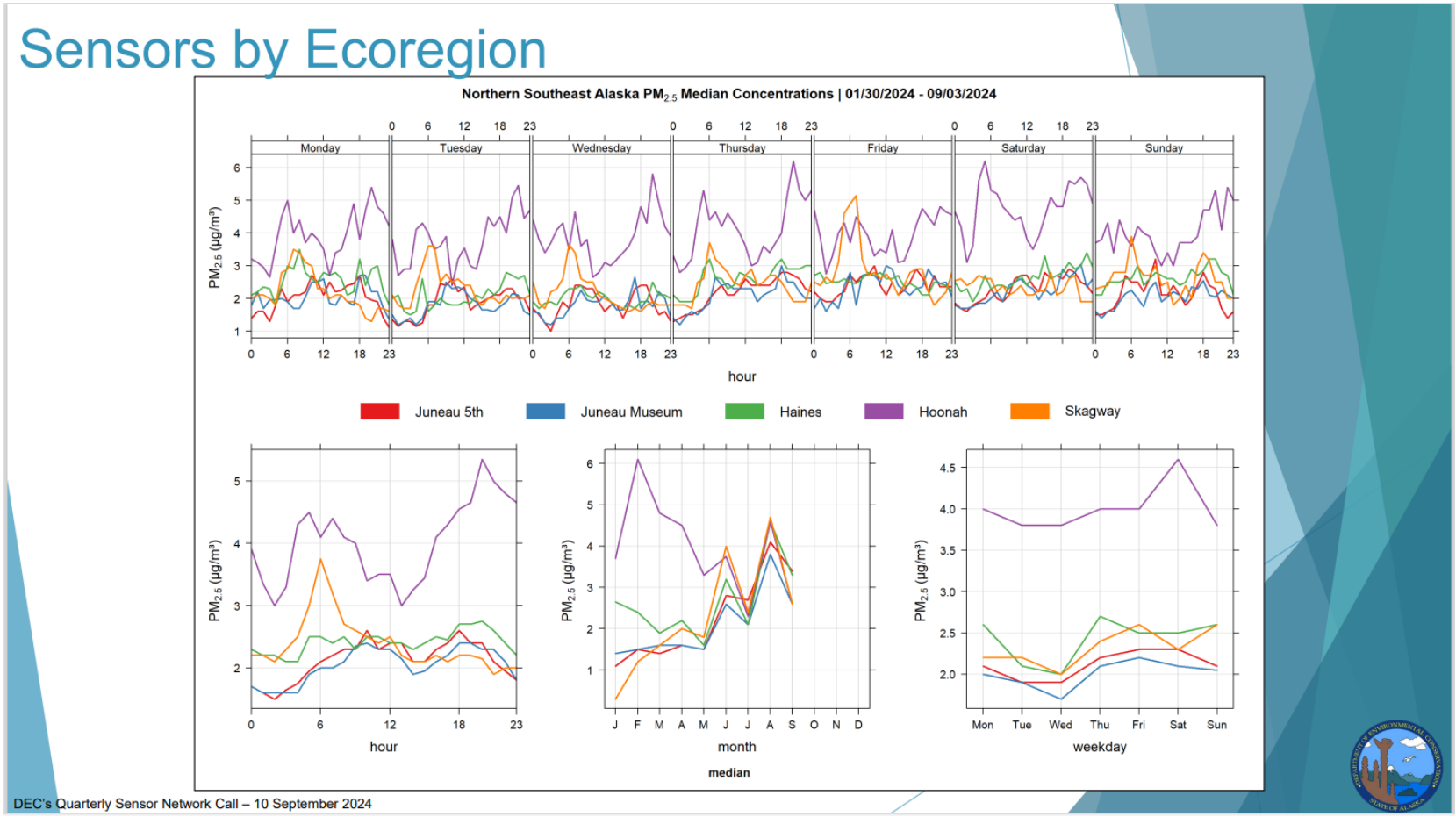

Figure 9 comparing $PM_{2.5}$ Concentrations for Hoonah and Nearby Communities Source: ADEC December 2024

3.10.2. Environmental Consequences

3.10.2.1. PROPOSED ACTION

Construction of the Project is expected to significantly reduce the need for diesel generation, which would directly result in a reduction in $PM_{2.5}$. The Project would increase hydro generation to approximately 3,400 MWh (60%) and would significantly reduce the community's reliance on diesel generation by 27%. Due to the reduction in diesel use, the Proposed Action would have indirect, negligible, long-term, beneficial impacts on Air Quality.

During construction, minimal impacts on air quality are anticipated from fugitive dust and increased emissions from construction equipment. Approximately 130 feet of new access road would be graded to connect to the powerhouse, and several vehicles would be required for construction of the Proposed Action. Appropriate BMPs and mitigation measures (Section 5.1) would be implemented during Project construction. Due to the potential for fugitive dust and an increase in emissions from vehicles, the Proposed Action would have direct, negligible, short-term, adverse impacts on air quality.

3.10.2.2. NO ACTION ALTERNATIVE

Hoonah would continue to rely on diesel power generation for a significant portion of their electrical needs under the No Action Alternative. Diesel generation would continue to contribute to air quality pollutants that have the potential to impact human health. Due to Hoonah's continued reliance on diesel, and the emissions power generation from diesel produces, the No Action Alternative is anticipated to have direct, moderate, long-term, adverse impacts on air quality.

3.11. Hazardous Materials

3.11.1. Affected Environment

ADEC has recorded 13 contaminated sites in the community of Hoonah. Six of the known sites are active, while cleanup is complete at seven. According to the ADEC Contaminated Sites Database, there are no known hazardous materials sites within 2.5-miles of any Proposed Action (ADEC 2025c).

3.11.2. Environmental Consequences

3.11.2.1. PROPOSED ACTION

Construction and operation of the Water Supply Creek Hydroelectric Project would not affect any known contaminated sites located in the community of Hoonah. A SWPPP would be prepared for the Project that would mitigate the potential for the runoff of hazardous materials from Project construction. Given the distance of the Project Location from ADEC hazardous materials sites and the mitigation measures put in place to limit hazardous material exposure to the environment, the Proposed Action is anticipated to have no impact on or from hazardous materials.

3.11.2.2. NO ACTION ALTERNATIVE

The No Action Alternative would not have any impact on or from hazardous materials.

3.12. Noise

3.12.1. Affected Environment

Background noise data is unavailable for the proposed Project location. A sound study at roadless areas found ambient noise at mature forests to be 35 dBA, 30 dBA in meadows, and 45 dBA near small streams (Dailey and Redman 1975). The Hoonah Airport is located approximately three miles north of where the Proposed Action would be sited. Sound collected beneath overflights in Southcentral Alaska recorded sound levels of 72- to 95-dBA (Blackwell and Greene 2003). Sound receptors within two miles of where the Project would be sited are limited to public roads.

3.12.2. Environmental Consequences

3.12.2.1. PROPOSED ACTION

Construction noise from the Proposed Action would be temporary and limited to summer 2025. Sound produced by construction equipment used for the Project is provided in Table 5. A noise level of 55 dBA is typical of an urban daytime setting. The penstock, turbine, and generator would likely produce the highest noise levels during hydropower operations. Based on other hydropower operations, noise is not anticipated to exceed 90 dBA (USDOI 2015).

Table 5 Sound Produced from Construction Equipment

Equipment	Sound Level Produced (LMAX at 50-feet, dBA)
Dozer	85
Chain Saw	84
Concrete Truck	81
Excavator	81
Skid Steer	80
Dump Truck	76
Puller and Tensioners	75
Pickup Truck	75

Source: FHWA 2006

Note: dBA = A-weighted decibels; LMAX = maximum sound level

Due to limited noise receptors in the area, the Proposed Action is anticipated to have both minor, short-term, adverse effects from construction and direct, minor, long-term, adverse effects from operations of the Proposed Action on sensitive noise receptors.

3.12.2.2. NO ACTION ALTERNATIVE

The No Action Alternative would result in no impact on noise because it would not change ambient noise conditions.

3.13. Aesthetics

3.13.1. Affected Environment

A viewshed analysis has not been completed for the proposed Project; however, the Project is not located in a visually sensitive area, such as a wilderness area, park, or scenic area. The current visual aesthetic at the Project Location consists of dense forest and areas of disturbance along the existing roads.

3.13.2. Environmental Consequences

3.13.2.1. PROPOSED ACTION

The Proposed Action would have a negligible, long-term adverse impact on aesthetic resources. Construction of the Project would create new structures; however, this area has a limited viewshed due to dense vegetation. Aesthetic impacts would primarily be associated with vegetation clearing for the overhead three-phase distribution line along the existing road system. The increase in vehicles and equipment in the area during construction would create a negligible, short-term, adverse impact on aesthetics.

3.13.2.2. NO ACTION ALTERNATIVE

The No Action Alternative is not anticipated to have any impact on visual resources.

4.0 Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor direct and indirect but collectively significant actions occurring over a period of time (40 CFR 1508.70). A cumulative effects assessment should consider how the direct and indirect environmental effects caused by a project (i.e., the incremental impact of the action) contribute to the aggregate effects of past, present, and reasonably foreseeable future actions, and whether that incremental contribution is significant or not.

The cumulative effects of past actions are accounted for in the description of the affected environment. There are no present actions that would have ongoing impacts that could result in cumulative impacts when combined with the proposed Project's impacts. Reasonably foreseeable future actions (RFFA) occurring near the Project are provided in Table 6.

Table 6 Reasonably Foreseeable Future Actions

Project	Status
Hoonah Harbor Way Pedestrian Improvements and Pitt Island Cemetery Walkway	Funded
Hoonah Marine Industrial Center Cargo Dock Project	Funded
Hoonah Airport Rehabilitation – Electrical Design Services	Proposed

4.1. Proposed Action

The extent of impacts on most resources under the Proposed Action would not affect resources impacted by RFFAs listed in Table 6, except for socioeconomics. The Proposed Action would make electricity used by RFFAs more affordable. However, the RFFAs are not anticipated to affect socioeconomics in a way that would result in cumulative impacts when combined with the Proposed Action.

4.2. No Action Alternative

Under the No Action Alternative, the Project would not be constructed, and there would be no Project impacts. However, the community of Hoonah would continue to rely on diesel generated power and would continue to experience the associated high energy costs and greenhouse gas emissions produced from diesel-generated power.

5.0 Mitigation and Permits

Permits necessary for the construction and operation of the Proposed Action are provided in Table 7.

Table 7 Proposed Action Permits and Consultations

Permit	Agency	Agency Approval Date	Appendix
Fish Habitat Permit	ADF&G	09/14/2023	Appendix B
NWP	USACE	02/23/2024	Appendix C
Water Rights Permit	ADNR	In Progress	-

5.1. Avoidance and Minimization Measures

IPEC has incorporated the following measures into the design and construction of the Project to avoid or reduce impacts on WOTUS and other resources:

- Siting of the Project facilities and new access roads on the southeast side of Water Supply Creek will maximize use of the existing access roads and reduce impacts on near continuous wetlands mapped on the northwest side of the creek.
- To the extent possible, access roads will be aligned to minimize cost and environmental impact. Access roads will have a minimum 12-foot traveled way and will be used for construction and maintenance, and the design speed limit will be no more than 20 miles per hour.
- Road grades will be limited to a maximum of 15%. Curves will have a minimum radius of 65 feet. Maximum excavation slopes will be 3/4H:1V (horizontal:vertical) in soil and 1H:4V in rock (subject to revision following results of geotechnical investigations). Excavated slopes will be benched where the vertical depth of excavation exceeds 20 feet. Bin walls, gabions, or reinforced concrete will be installed to reduce backslope cuts where appropriate. Maximum fill slopes will be 1 1/2H:1V.
- Drainage ditches and culverts will be installed to carry runoff from the roads and to prevent erosion. Drainage ditches will have a minimum depth of 18 inches and a minimum slope of 2%. Runoff velocities will be limited to three feet per second (fps) where no armor protection of the ditch is provided. Appropriate armor protection will be designed where velocities exceed three fps. Culverts will have a minimum diameter of 18 inches. The minimum depth cover over culverts will be 12 inches. Culverts will have slopes of at least 2%.
- Fill material placed for the Phase 1 and 2 Temporary Diversion Structures that allow for construction in-the-dry will be removed following completion of construction of the intake and powerhouse structures and the areas will be restored to pre-construction elevations where other permanent developments do not overlap.
- Staging areas and disposal of materials generated from excavations for the powerhouse and intake access roads will not occur in mapped WOTUS.

- All work performed below ordinary high water of Water Supply Creek will occur during predicted low-flow periods.
- Where feasible, topsoil from trenches excavated in wetlands for burial of the penstock will be stockpiled separately from underlying materials and will be placed as the top layer during backfill.
- Disturbed areas adjacent to excavated trenches in wetlands will be restored to preconstruction elevations and reseeded with an appropriate seed mix if needed.
- Fueling will not occur within or adjacent to stream beds or wetlands.
- Heavy machinery operating in the stream channels will be limited to the amount necessary to complete the work. The contractor will minimize the amount of instream work to the greatest extent possible.
- The contractor shall consult with, and obtain approval from, the Hoonah Water Department regarding the design of the dewatering plan and the timing of instream work at least 30 days prior to starting the work.
- The contractor will follow applicable BMPs for the work being performed in accordance with the Alaska Pollution Discharge Elimination System Construction General Permit. The contractor will be required to prepare a Project-specific Erosion and Sediment Control Plan and a SWPPP for IPEC approval prior to construction. The SWPPP will identify additional BMPs as needed.
- As part of the SWPPP, the contractor shall minimize erosion and sedimentation of all waterways by implementing control measures as areas are disturbed by construction.
- The contractor shall install sandbags, silt fences, or straw bales as necessary to protect Water Supply Creek and other streams from sediment due to construction per the SWPPP. The contractor shall install perimeter fences or sandbag dikes at construction sites to prevent runoff from being directly discharged into nearby streams.
- The contractor will be responsible for obtaining (and adhering to) stipulations of Temporary Water Use Authorization(s) from ADNR.

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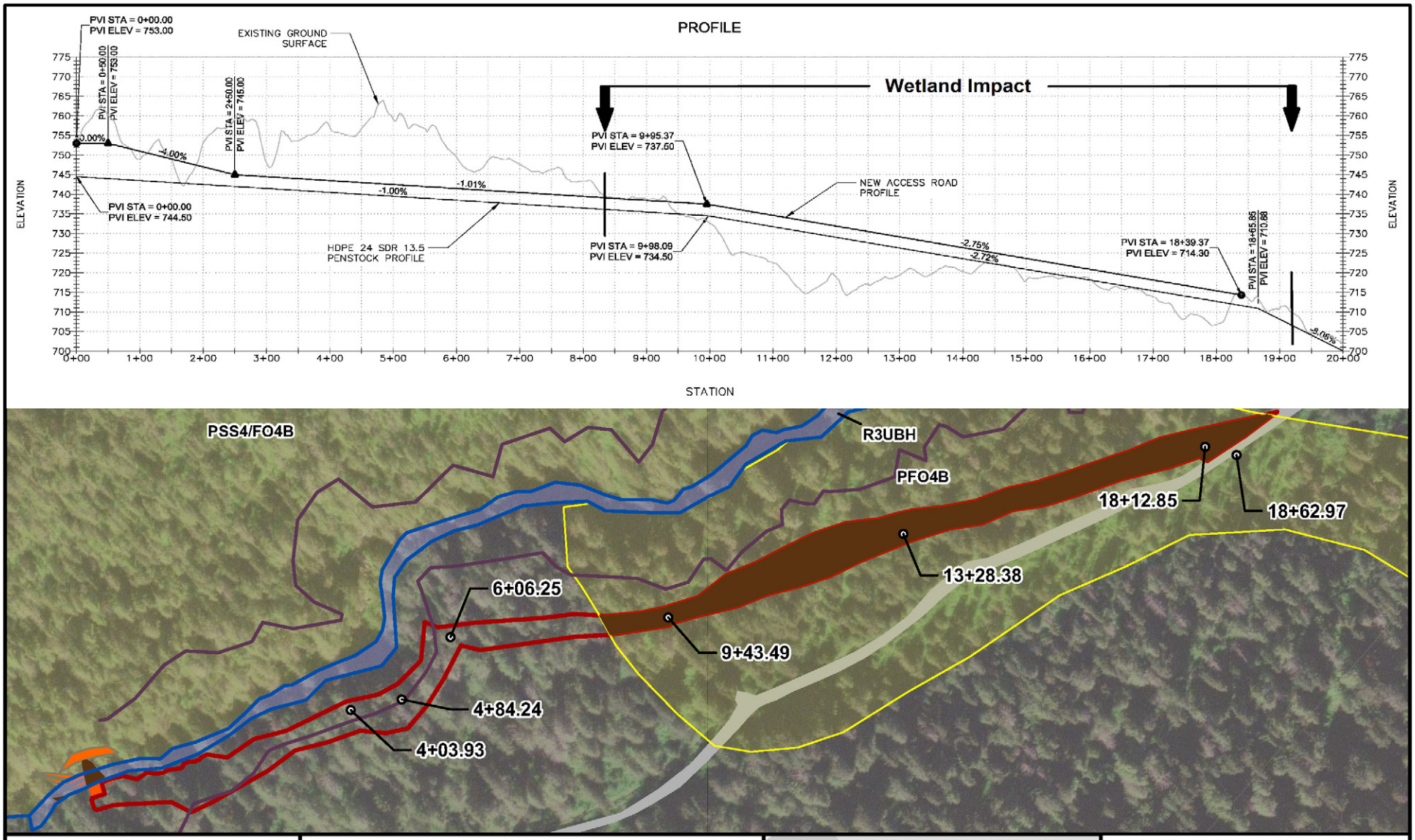
7.0 Appendices

7.1. Appendix A: Project Components



Inside Passage Electric Cooperative

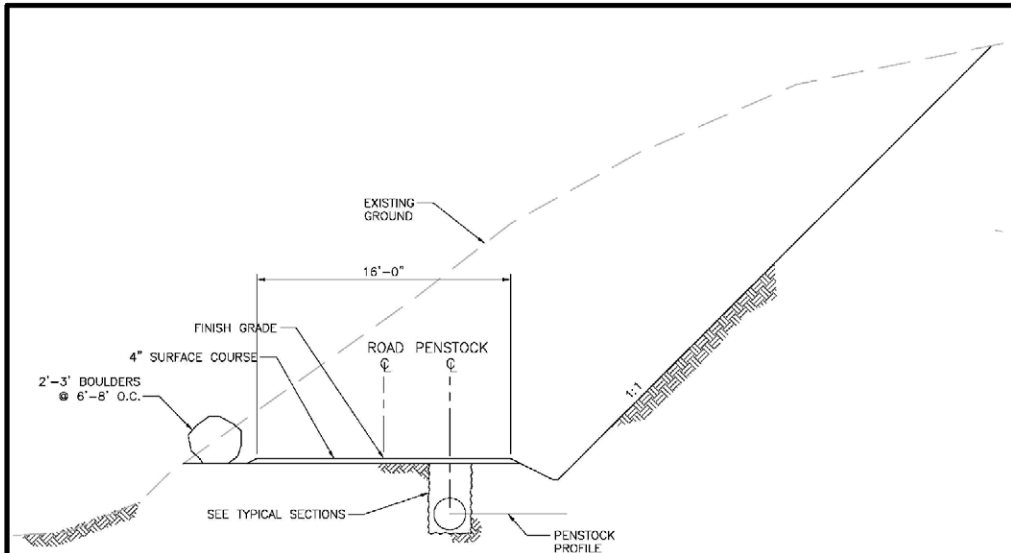
Water Supply Creek Hydroelectric Project

New Upper Access Road Plan & Profile

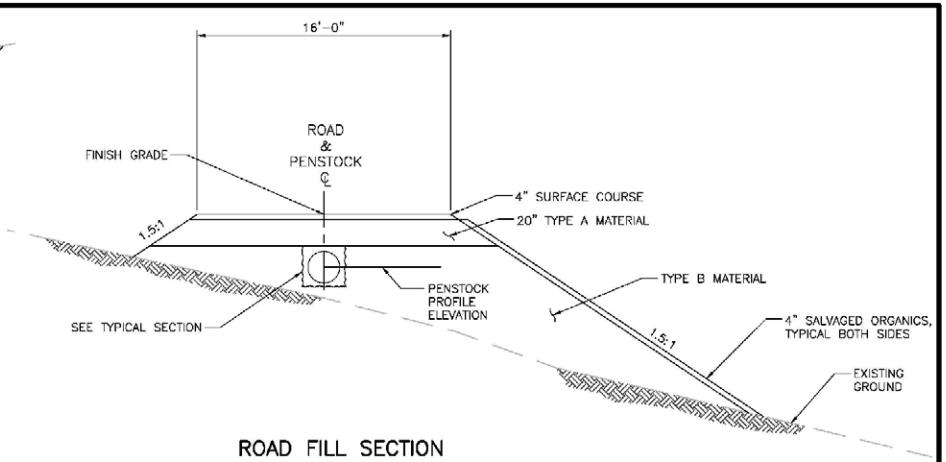
0 100 200 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

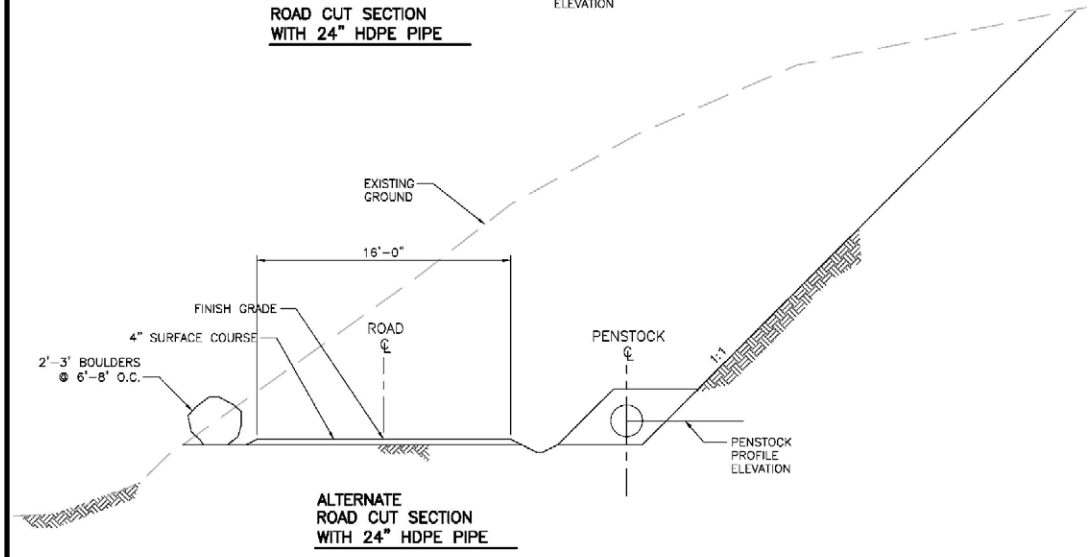
- Alignment Points
- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Top of Bank
- Upper Access Road Cut and Fill
- Diversion/Intake
- Existing Access Road
- Permanent Wetland Impact (1.02 acres)



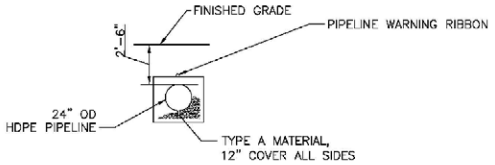
ROAD CUT SECTION
WITH 24" HDPE PIPE



ROAD FILL SECTION
WITH 24" HDPE PIPE



ALTERNATE
ROAD CUT SECTION
WITH 24" HDPE PIPE

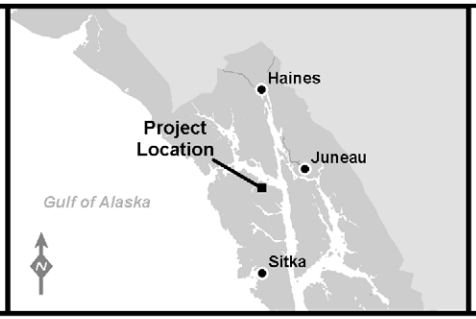


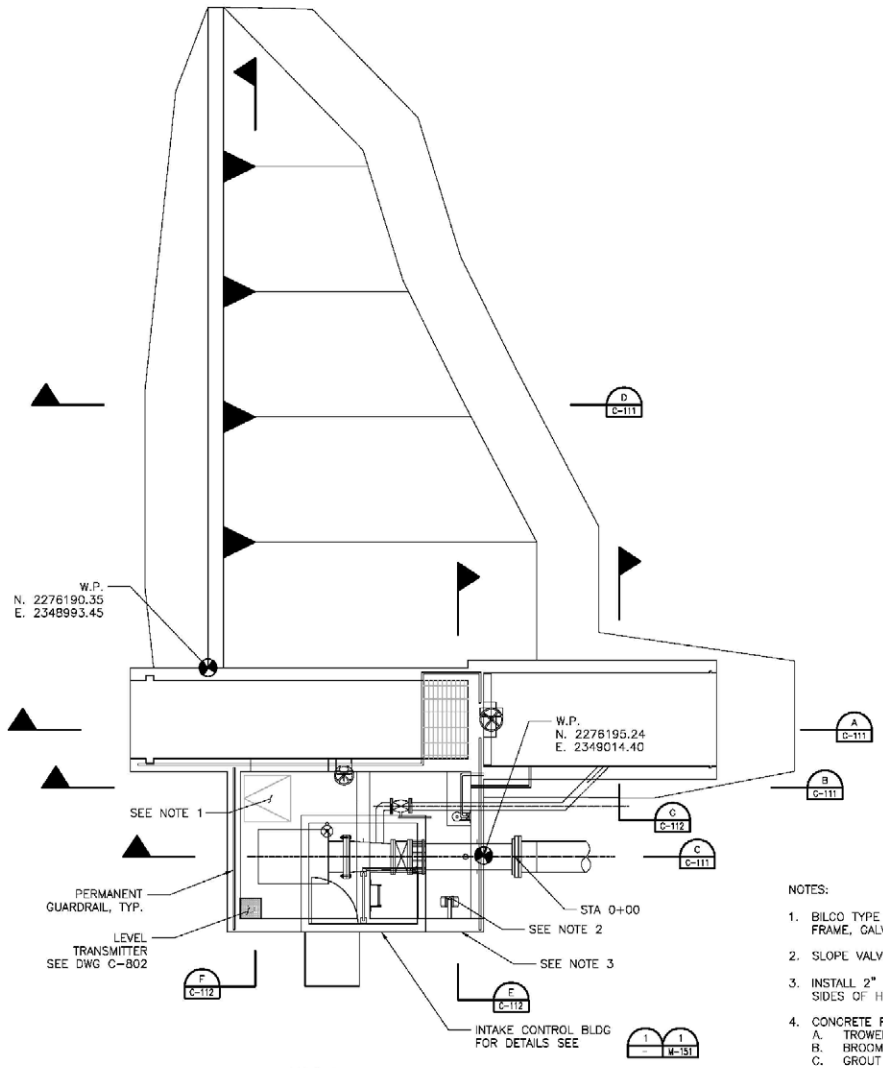
PENSTOCK
TYPICAL SECTION

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Access Road and Penstock
Typical Sections and Details

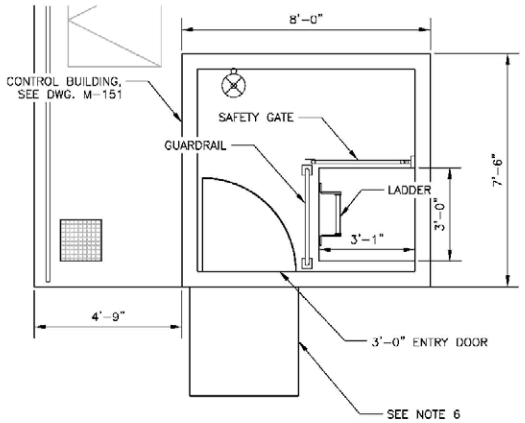




PLAN

NOTES CONT.:

5. SEE SHEET C-801 FOR GUARDRAIL, LADDER AND SAFETY GATE DETAILS.
6. CONCRETE ENTRY LANDING, 6" THICK CONCRETE, 3'-6" WIDE BY 3'-6" DEEP CENTERED ON DOORWAY, REINFORCEMENT SHALL BE 6" WWF 6X6-W2.9xW2.9 UNO. PROVIDE EXPANSION JOINT BETWEEN WALL AND LANDING.



CONTROL BUILDING DETAIL 1

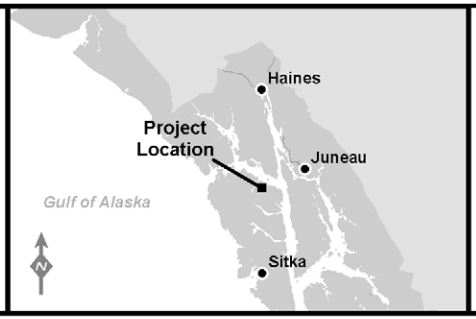
NOTES:

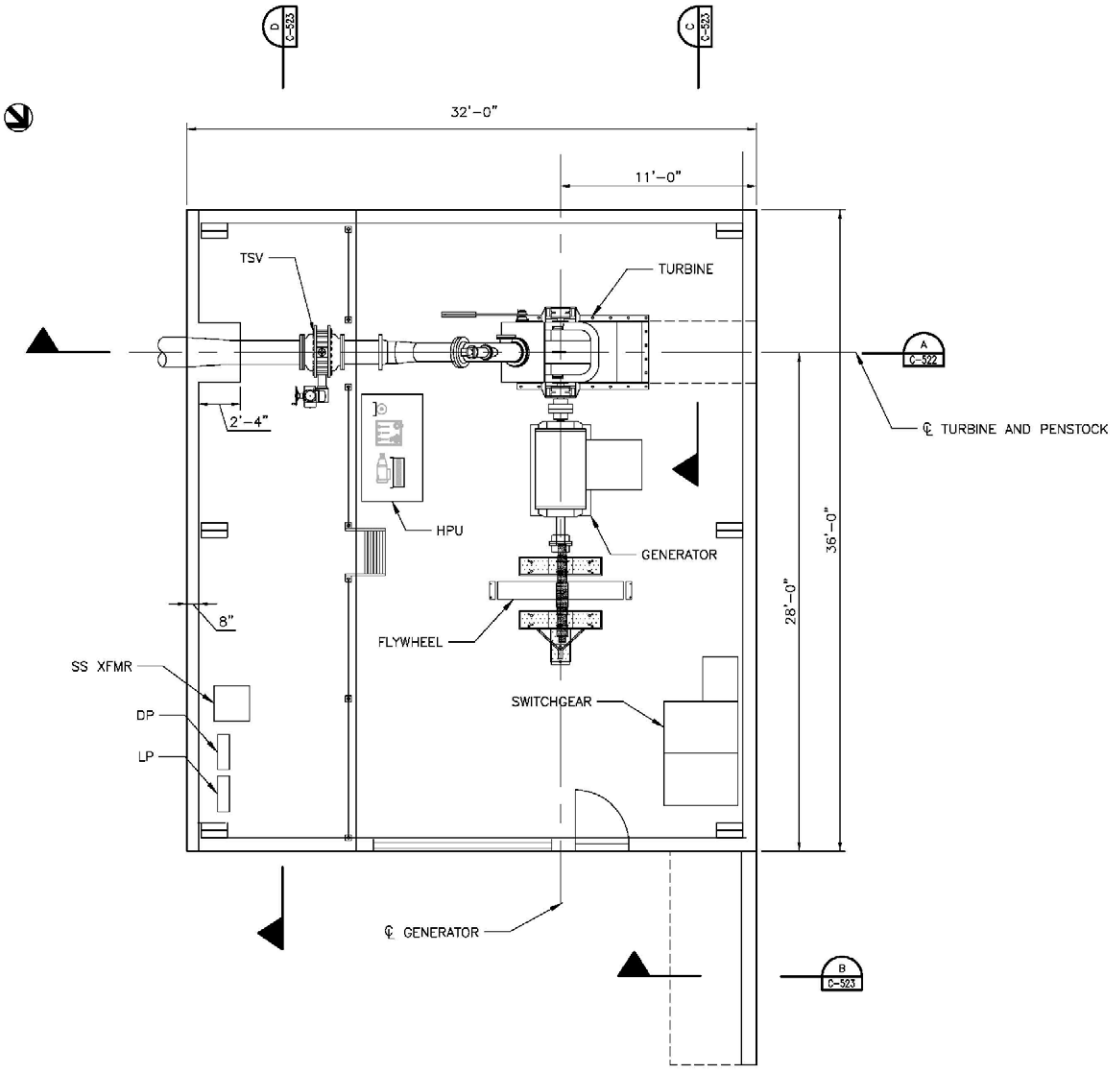
1. BILCO TYPE J HATCH WITH INTEGRAL FALL PROTECTION GRATING, 3'-0"x3'-0", STEEL FRAME, GALV, RAISED PADLOCK, SS HARDWARE.
2. SLOPE VALVE PIT FLOOR TO DRAIN TO SUMP
3. INSTALL 2" RIGID FOAM INSULATION, DOW HI40 OR APPROVED ALTERNATE, ON BURIED SIDES OF HEATED PORTION OF INTAKE BOX.
4. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Plan





NOTES:

1. TURBINE/GENERATOR DIMENSIONS SUBJECT TO CHANGE BASED UPON FINAL EQUIPMENT SELECTION
2. ELECTRICAL COMPONENT LOCATIONS ARE APPROXIMATE. REFER TO ELECTRICAL DRAWINGS.
3. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

ABBREVIATIONS:

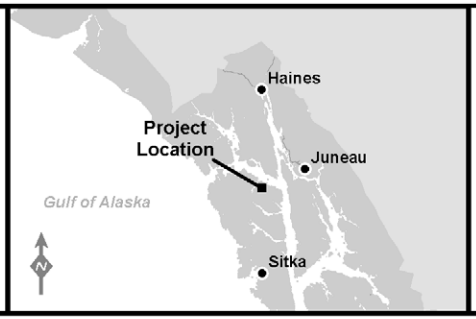
SS XFMR	STATION SERVICE TRANSFORMER
DP	DISTRIBUTION PANEL
LP	LIGHT PANEL
TSV	TURBINE SHUTOFF VALVE
HPU	HYDRAULIC POWER UNIT

1 0 1 8 FEET

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Powerhouse Plan



7.2. Appendix B: ADF&G Fish Habitat Permit

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Fax: 907.465.4759

FISH HABITAT PERMIT FH23-I-0077

ISSUED: September 14, 2023
EXPIRES: Life of Project

Inside Passage Electric Cooperative
ATTN: Brandon Shaw
12480 Mendenhall Loop Rd
Juneau, AK 99801

RE: Hydroelectric Facility
Water Supply Creek
Section 11, T 44S, R 61E, CRM (Juneau A-5)
Location: 58.0638 N, 135.3954 W (WGS 84)

Dear Brandon Shaw:

Pursuant to the Fishway Act at AS 16.05.841, the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to construct a run-of-river hydroelectric project on Water Supply Creek near Hoonah, Alaska.

Project Description
You will install a 10 ft tall concrete and rock diversion weir with an intake screened by a trash rack with 1 inch openings to divert water into a 4,400 ft long penstock and powerhouse for hydroelectric power generation according to plans submitted on August 30, 2023 (enclosed).

Fishway Act
Water Supply Creek supports resident Dolly Varden char in the bypass reach of the project and for at least 1,700 ft upstream and 2,800 downstream to its confluence with Gartina Creek and into tidewater. The bypass reach contains several falls and chutes that constitute barriers to upstream migration, and the diversion weir will not allow upstream passage. Hydroelectric facility design flow is 1.4–14 ft^3/s, which based on 16 months of monitoring, will be exceeded about 18% of the time. ADF&G Habitat Section staff surveyed the bypass reach and found 22 pools and 18 tributaries that contribute streamflow most of the year. Given the supplemental flow, periodic peak flows above 14 cfs, and residual pool habitat, hydro operation does not present an unreasonable impact to fish or fish habitat in Water Supply Creek.

A fish exclusion screen on the intake at this elevation in an area where heavy snow and icing is an annual occurrence presents a maintenance burden. The City of Hoonah's municipal water supply intake and the Gartina Creek hydroelectric facility downstream are not screened to exclude fish; however, fish populations have persisted and benefit from the large pools created upstream of the impoundments, as would be expected at this intake.

In accordance with AS 16.05.841, your project is approved subject to the project description, the permit terms, and the following stipulation:

1. Upon completion of use, all materials in Water Supply Creek shall be removed.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Greg Albrecht at (907) 465-6384 or greg.albrecht@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner

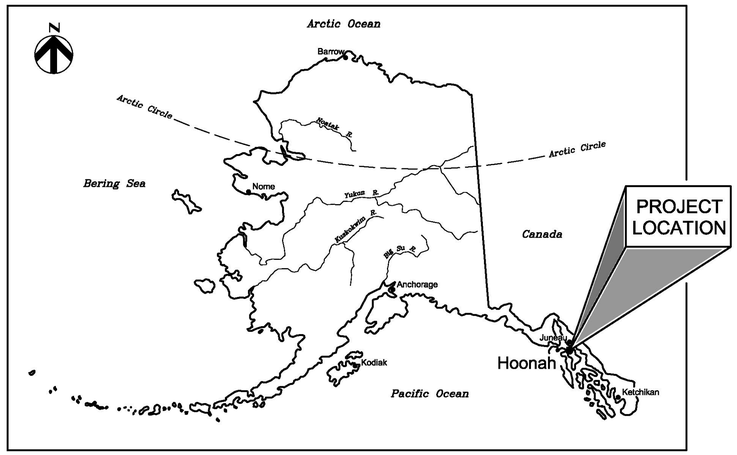
Kate Kanouse

By: Kate Kanouse
Regional Supervisor

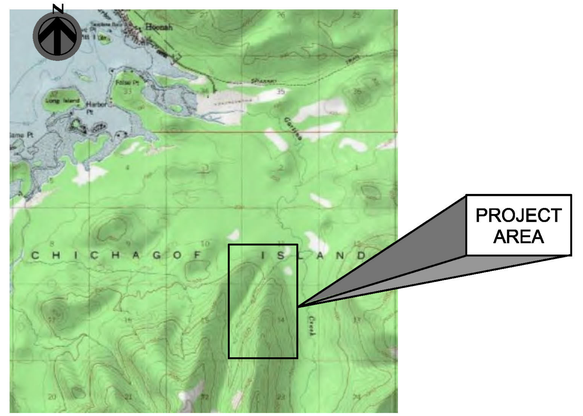
Enclosure: WSC 95% Drawings

Email cc:
Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Leah Elis, ADF&G SF, Anchorage
Scott Forbes, ADF&G CF, Douglas
Roy Churchwell, ADF&G WC, Douglas
Carl Reese, Mike Salyer, USACE, Soldotna
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Sgt. Robert Welch, DPS/AWT, Juneau

WATER SUPPLY CREEK HYDROELECTRIC PROJECT GENERAL CONSTRUCTION



PROJECT LOCATION MAP
N.T.S.



PROJECT AREA MAP
N.T.S.

DRAWING INDEX

GENERAL

G-001	PROJECT MAP & DRAWING INDEX
G-002	PROJECT SITE MAP

CIVIL

C-101	INTAKE SITE PLAN
C-102	INTAKE PLAN
C-105	TEMPORARY DIVERSION DURING CONSTRUCTION INTAKE AREA
C-111	INTAKE SECTIONS, SHEET 1
C-112	INTAKE SECTIONS, SHEET 2
C-121	INTAKE REINFORCEMENT PLAN
C-122	INTAKE REINFORCEMENT SECTIONS

CIVIL CONTINUED

C-310	PENSTOCK AND ACCESS ROAD, PLAN AND PROFILE, STA. 0+00 TO STA. 18+44
C-311	PENSTOCK AND ACCESS ROAD, PLAN AND PROFILE, STA. 18+44 TO STA. 40+40
C-312	PENSTOCK AND ACCESS ROAD, PLAN AND PROFILE, STA 40+40 TO STA. 44+04
C-320	ACCESS ROAD AND PENSTOCK, TYPICAL SECTIONS AND DETAILS
C-330	PENSTOCK DETAILS
C-331	PENSTOCK REINFORCEMENT SECTIONS
C-501	POWERHOUSE SITE PLAN
C-505	TEMPORARY DIVERSION DURING CONSTRUCTION POWERHOUSE AREA
C-521	POWERHOUSE PLAN
C-522	POWERHOUSE SECTIONS, SHEET 1
C-523	POWERHOUSE SECTIONS, SHEET 2
C-530	POWERHOUSE REINFORCEMENT PLAN
C-531	POWERHOUSE REINFORCEMENT SECTIONS
C-540	POWERHOUSE ELEVATIONS
C-801	MISCELLANEOUS STEEL DETAILS, SHEET 1
C-802	MISCELLANEOUS STEEL DETAILS, SHEET 2
C-803	MISCELLANEOUS CONCRETE DETAILS

M-151	INTAKE MECHANICAL PLAN AND SECTIONS, SHEET 1
M-152	INTAKE MECHANICAL SECTIONS, SHEET 2

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

PROJECT MAP & DRAWING INDEX

FILENAME	G-001.dwg
SCALE	AS-SHOWN

SHEET G-001

PLAN
SCALE: 1" = 200'

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK
HYDROELECTRIC PROJECT
HOONAH, ALASKA

PROJECT SITE MAP

FILENAME	WSC-Base-TOPO.dwg
SCALE	1" = 200'

SHEET G-002

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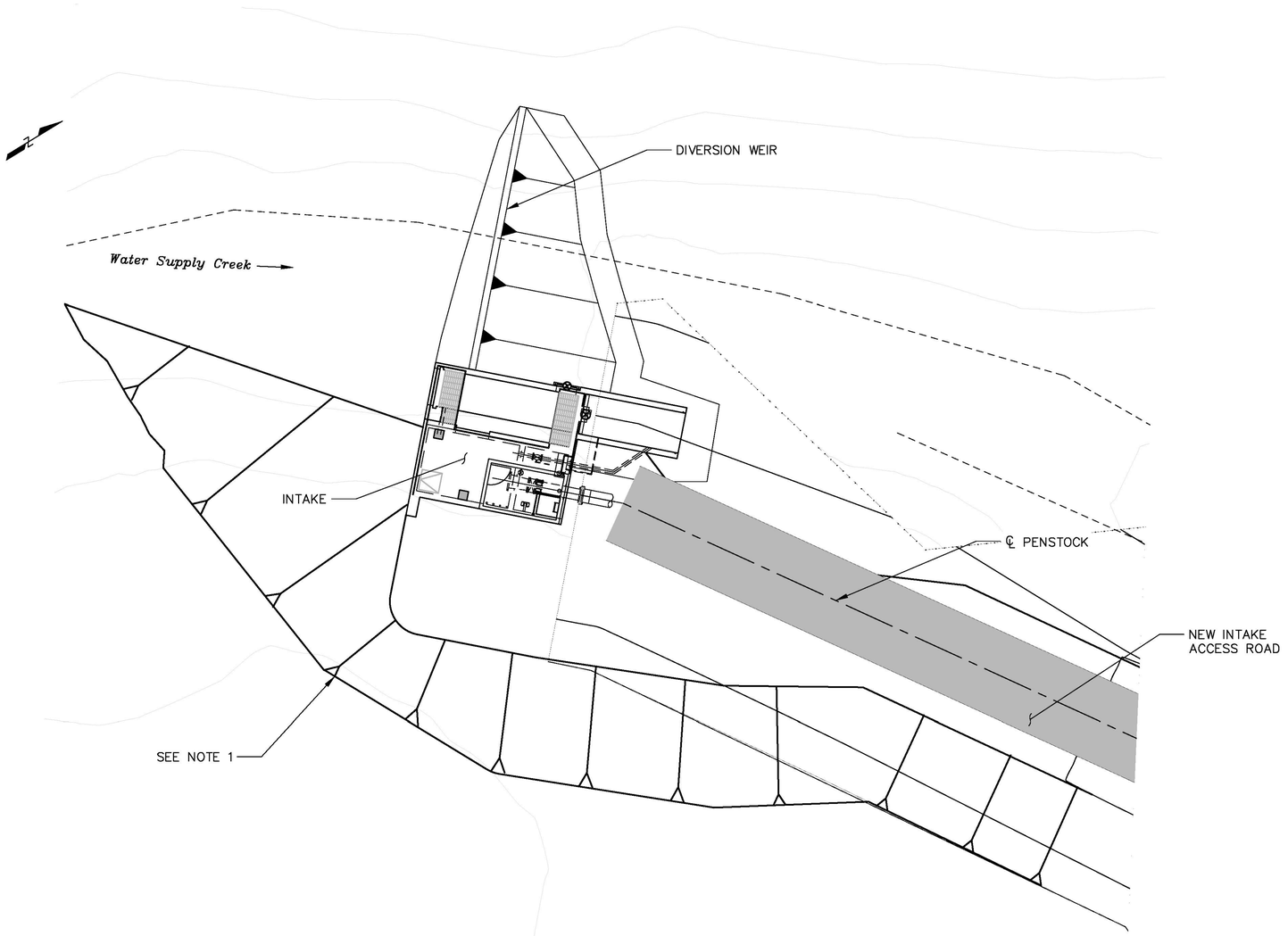

INTAKE
SITE PLAN
1"=10'

NOTES:

1. CUT AND FILL LINES ARE APPROXIMATE. FINAL CUT AND FILL LINES WILL BE DETERMINED AFTER INITIAL EXCAVATION.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK
HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE
SITE
PLAN

FILENAME	WSC-Base-Map.DWG
SCALE	AS-SHOWN

SHEET
C-101

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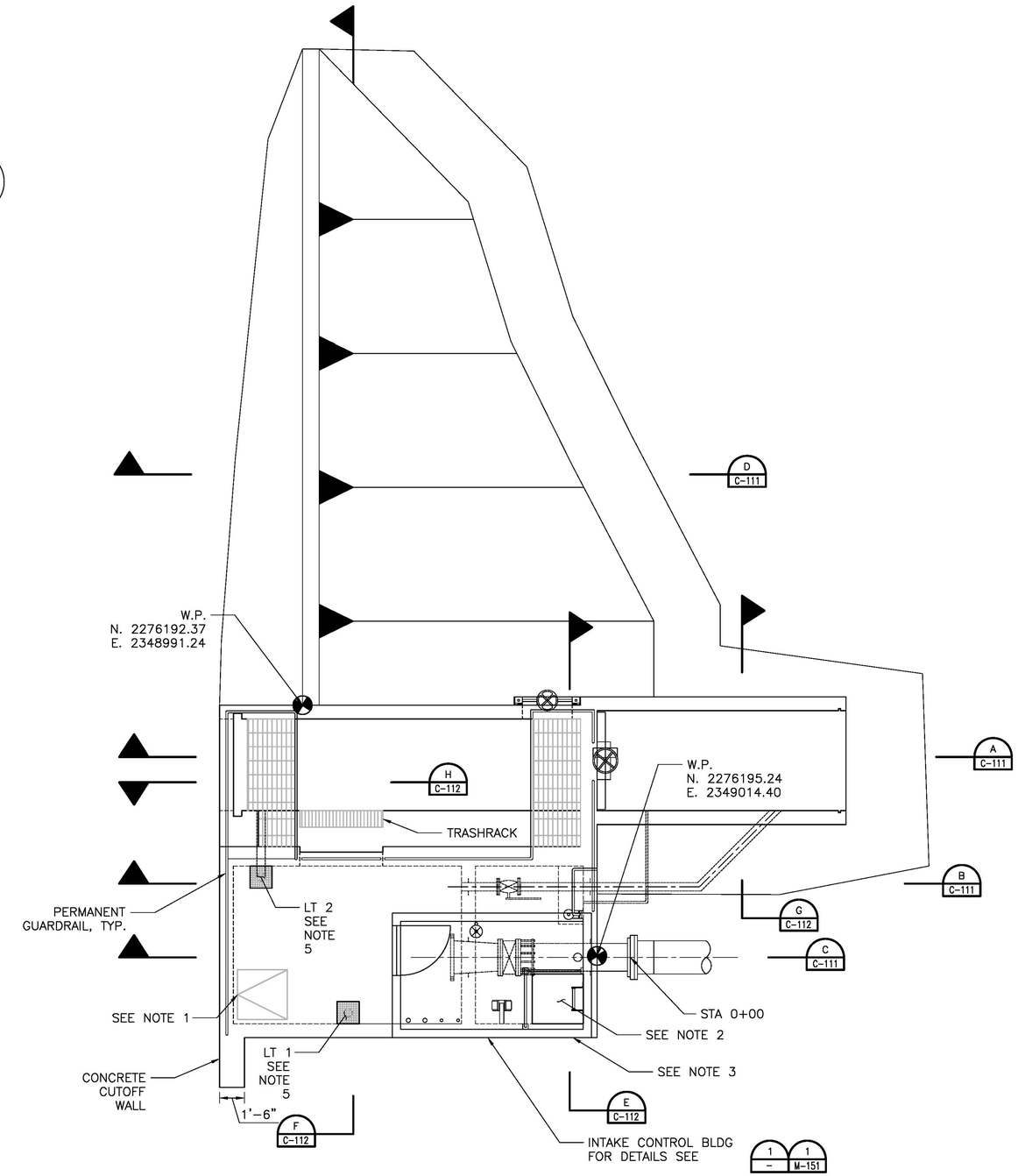
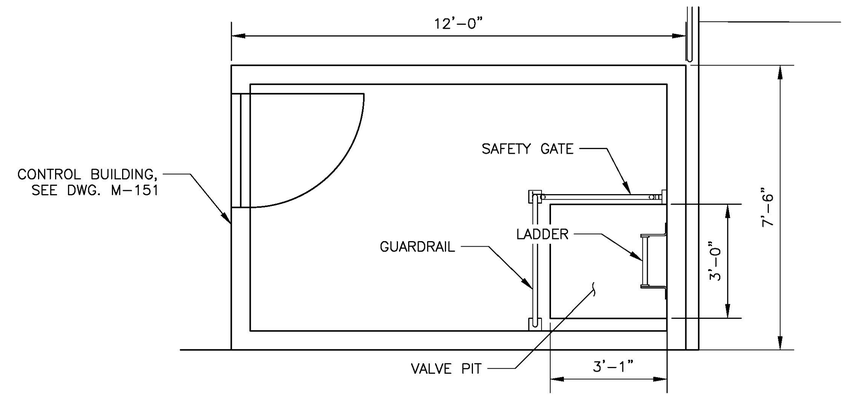
NOTES:

1. BILCO TYPE J HATCH WITH INTEGRAL FALL PROTECTION GRATING, 3'–0"x3'–0", STEEL FRAME, GALV, RAISED PADLOCK, SS HARDWARE.
2. SLOPE VALVE PIT FLOOR TO DRAIN TO SUMP
3. INSTALL 2" RIGID FOAM INSULATION, DOW HI40 OR APPROVED ALTERNATE, ON BURIED SIDES OF HEATED PORTION OF INTAKE BOX.
4. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.
5. SEE DWG. C–802 FOR LT (LEVEL TRANSMITTER) DETAILS
6. SEE DWG. C–801 FOR GUARDRAIL, LADDER AND SAFETY GATE DETAILS.





CONTROL BUILDING DETAIL

1 / –

SCALE: $\frac{1}{2}$" = 1'–0"

4 0 4 8 FEET
1/4" = 1'-0"

1 0 1 2 3 4 5 FEET
1/2" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE PLAN

FILENAME	C–102.dwg
SCALE	AS–SHOWN

SHEET C-102

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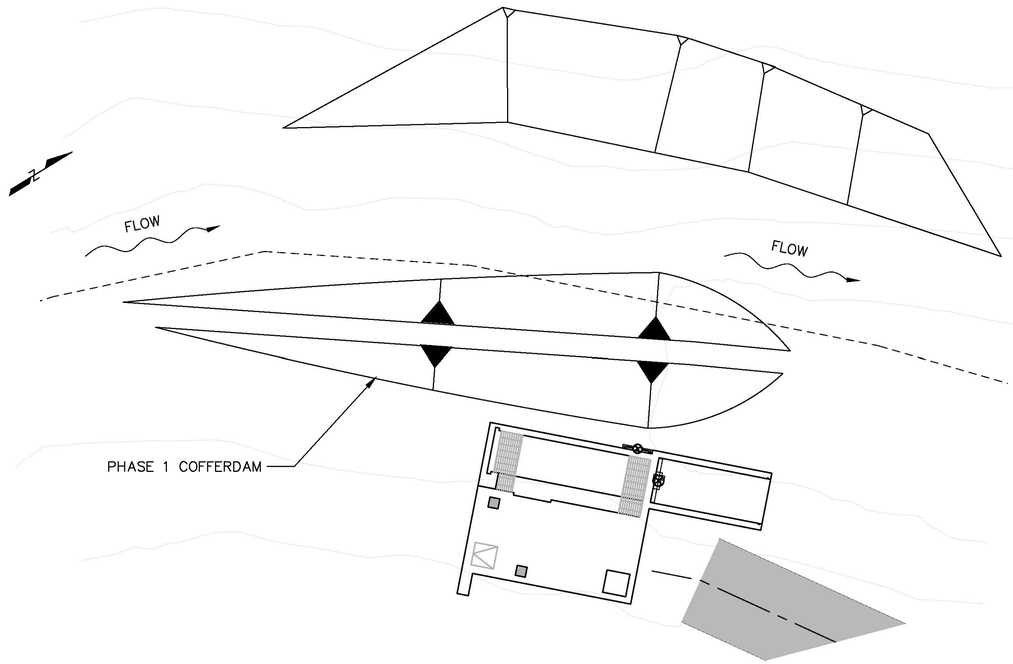
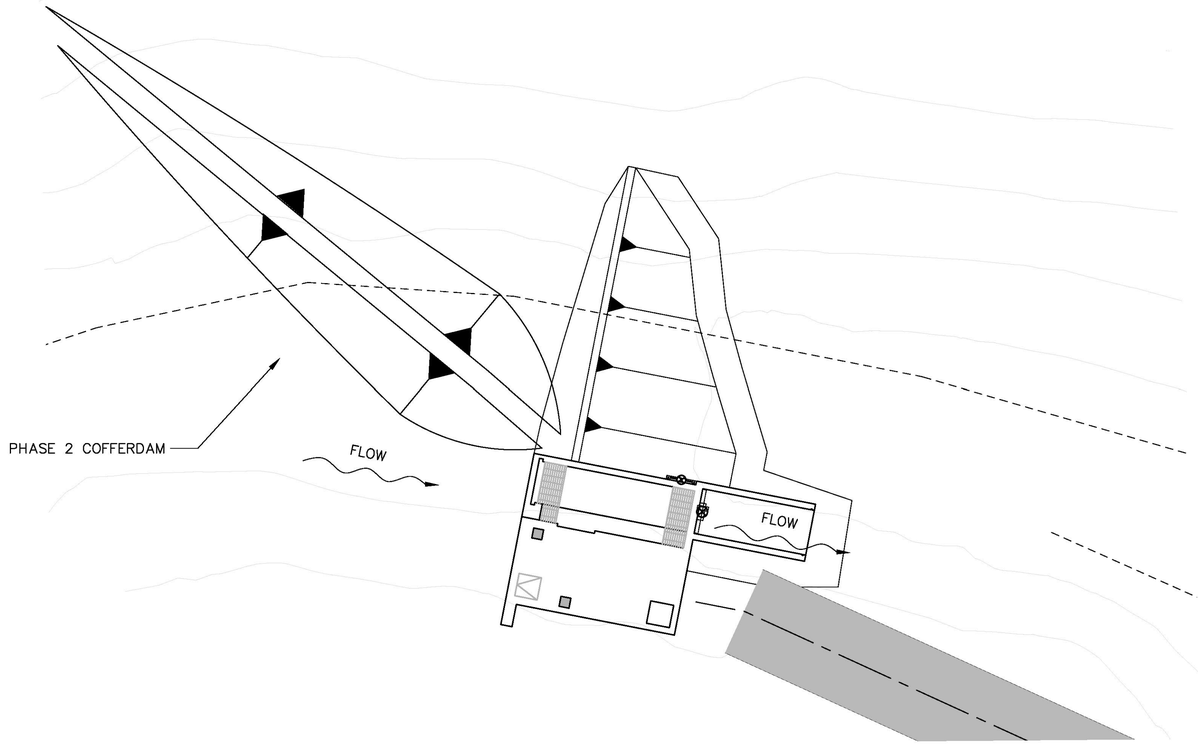


PHASE 1
SCALE: 1"=10'



PHASE 2
SCALE: 1"=10'

DIVERSION SEQUENCE:

PHASE 1

EXCAVATE THE DIVERSION CHANNEL AND CONSTRUCT THE COFFERDAM TO DIVERT WATER AROUND THE CONSTRUCTION AREA.

EXCAVATE AND CONSTRUCT THE INTAKE STRUCTURE, SLUICEWAY, AND PORTION OF DIVERSION.

PHASE 2

DIVERT ALL OF THE CREEK FLOW THROUGH THE SLUICEWAY AND SLUICE GATE BY REMOVING THE PHASE 1 COFFERDAM AND CONSTRUCTING THE PHASE 2 COFFERDAM.

FOLLOWING COMPLETION OF THE DIVERSION DAM, THE COFFERDAMS SHALL BE REMOVED.

NOTES:

1. DIVERSION OF WATER DURING CONSTRUCTION AS ON THIS DRAWING REPRESENTS A SUGGESTED SCHEME FOR THE CONTRACTOR TO PERFORM THE WORK IN THE DRY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE DEWATERING PLAN THEY WILL USE TO PROTECT THE WORK.
2. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF INSTREAM WORK TO THE GREATEST EXTENT POSSIBLE.
3. CONTRACTOR SHALL CONSULT WITH, AND OBTAIN APPROVAL FROM, THE CITY OF HOONAH WATER DEPARTMENT REGARDING THE DESIGN OF THE DEWATERING PLAN AND THE TIMING OF INSTREAM WORK AT LEAST 30 DAYS PRIOR TO STARTING THE WORK.
4. CUT AND FILL LINES ARE APPROXIMATE.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
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8/10/23

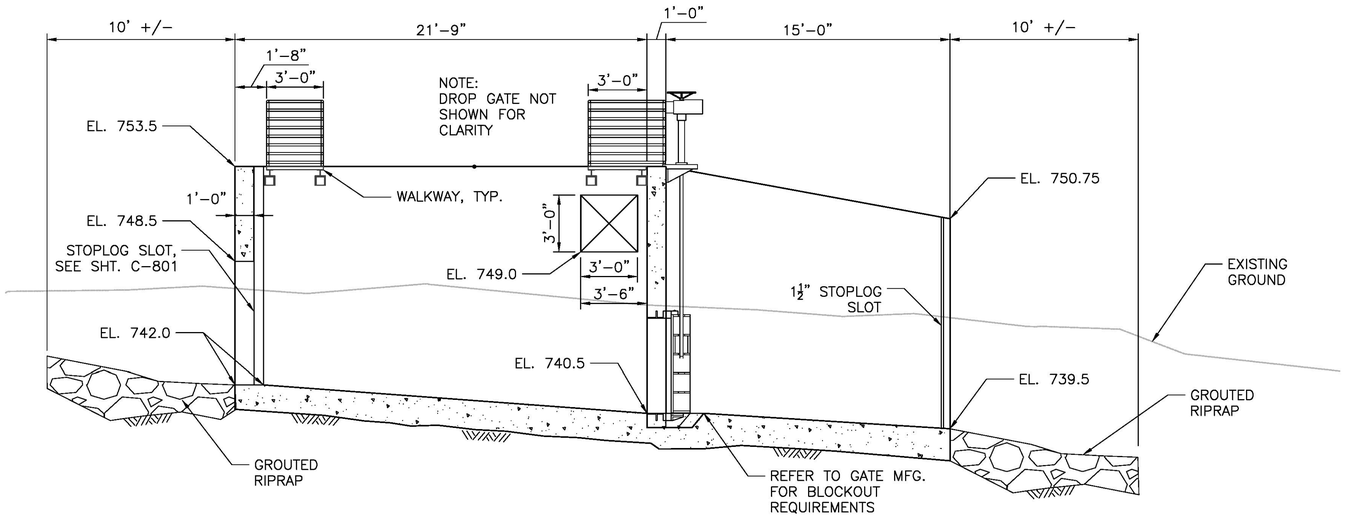
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

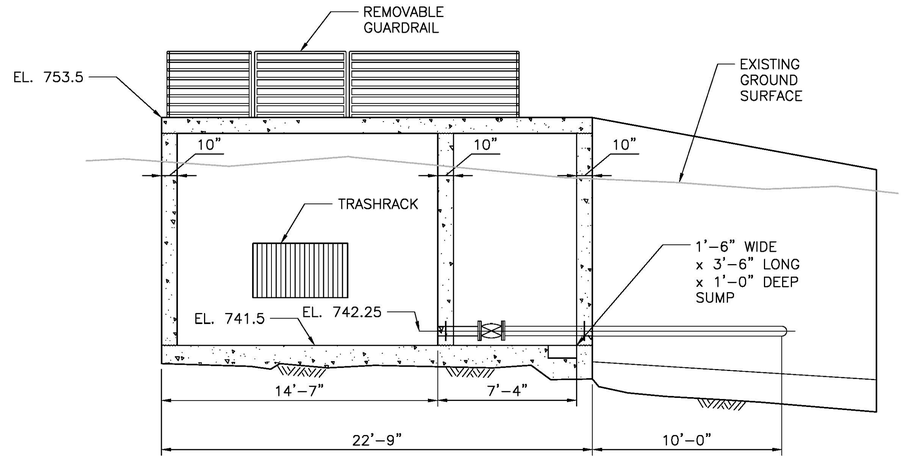
TEMPORARY DIVERSION DURING CONSTRUCTION INTAKE AREA

FILENAME	WSC-Base-Map.DWG
SCALE	AS-SHOWN

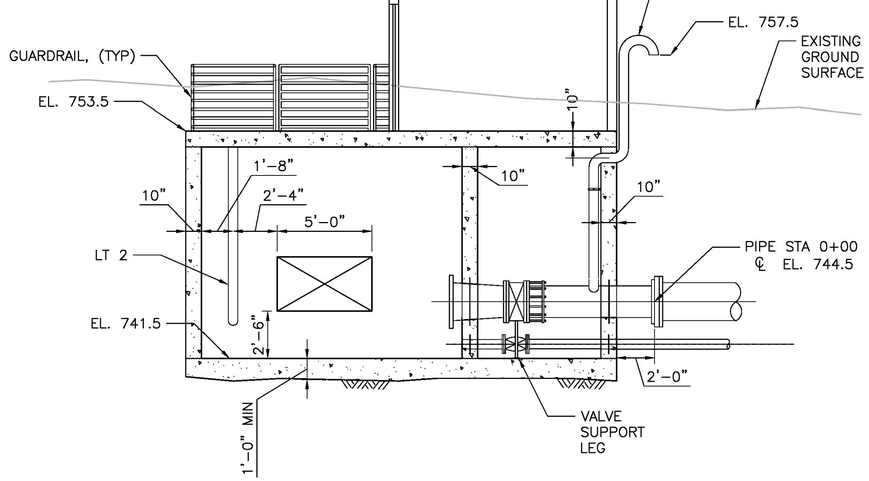
SHEET C-105



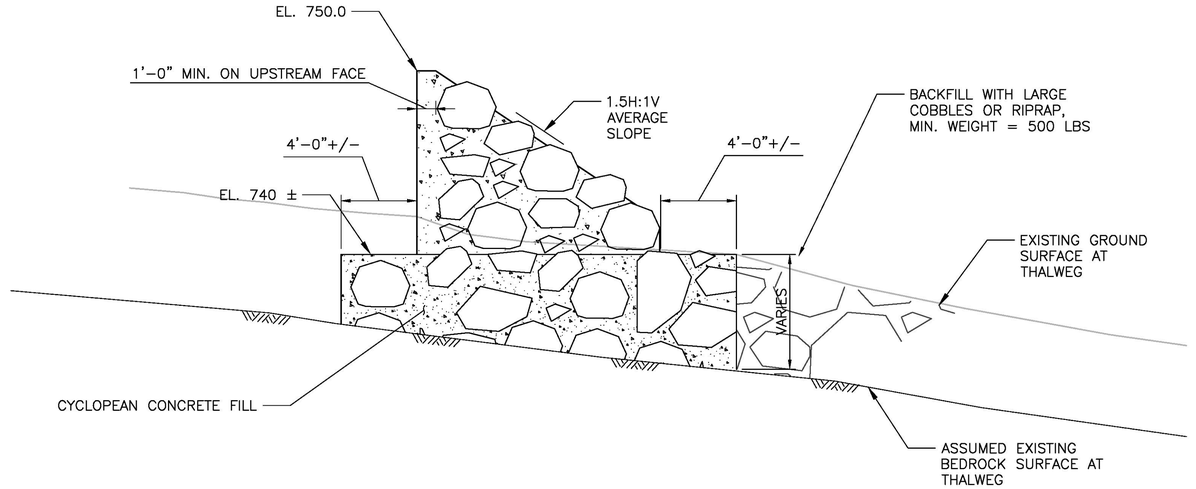
SECTION
SCALE: 1/4"=1'-0"
A C-102



SECTION
SCALE: 1/4"=1'-0"
B C-102



SECTION
SCALE: 1/4"=1'-0"
C C-102



SECTION
SCALE: 1/4"=1'-0"
D C-102

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
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8/10/23

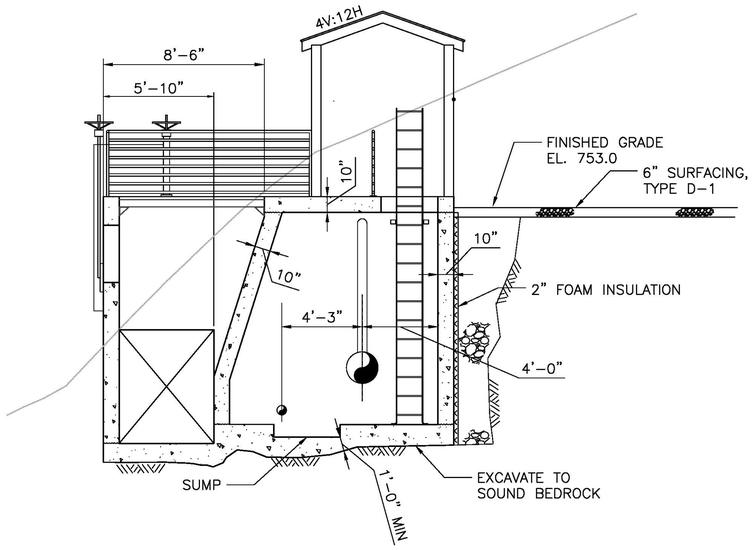
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK
HYDROELECTRIC PROJECT
HOONAH, ALASKA

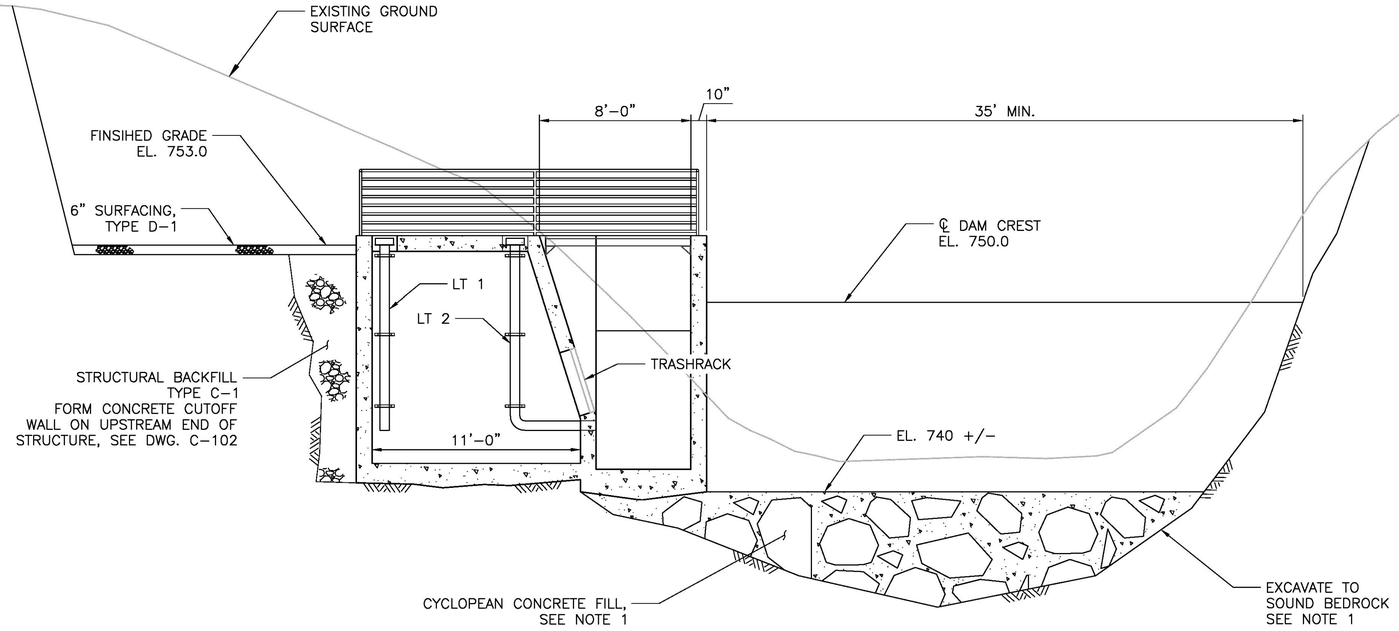
INTAKE SECTIONS
SHEET 1

FILENAME	C-111.dwg
SCALE	AS-SHOWN

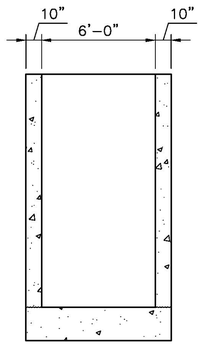
SHEET
C-111



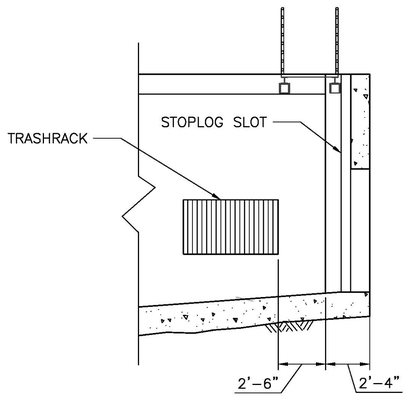
SECTION (E / C–102)
SCALE: 1/4"=1'–0"



SECTION (F / C–102)
SCALE: 1/4"=1'–0"



SECTION (G / C–101)
SCALE: 1/4"=1'–0"



SECTION (H / C–102)
SCALE: 1/4"=1'–0"

NOTES:

1. CYCLOPEAN CONCRETE FILL IS TO BE USED UNDER ALL STRUCTURES TO CREATE A SOLID FOUNDATION TO EL. 740+/–. FOR BIDDING PURPOSES ASSUME 150 CY OF MATERIAL WILL BE REQUIRED. CONTRACT PRICE WILL BE ADJUSTED ON A UNIT PRICE BASIS BASED UPON ACTUAL QUANTITIES

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
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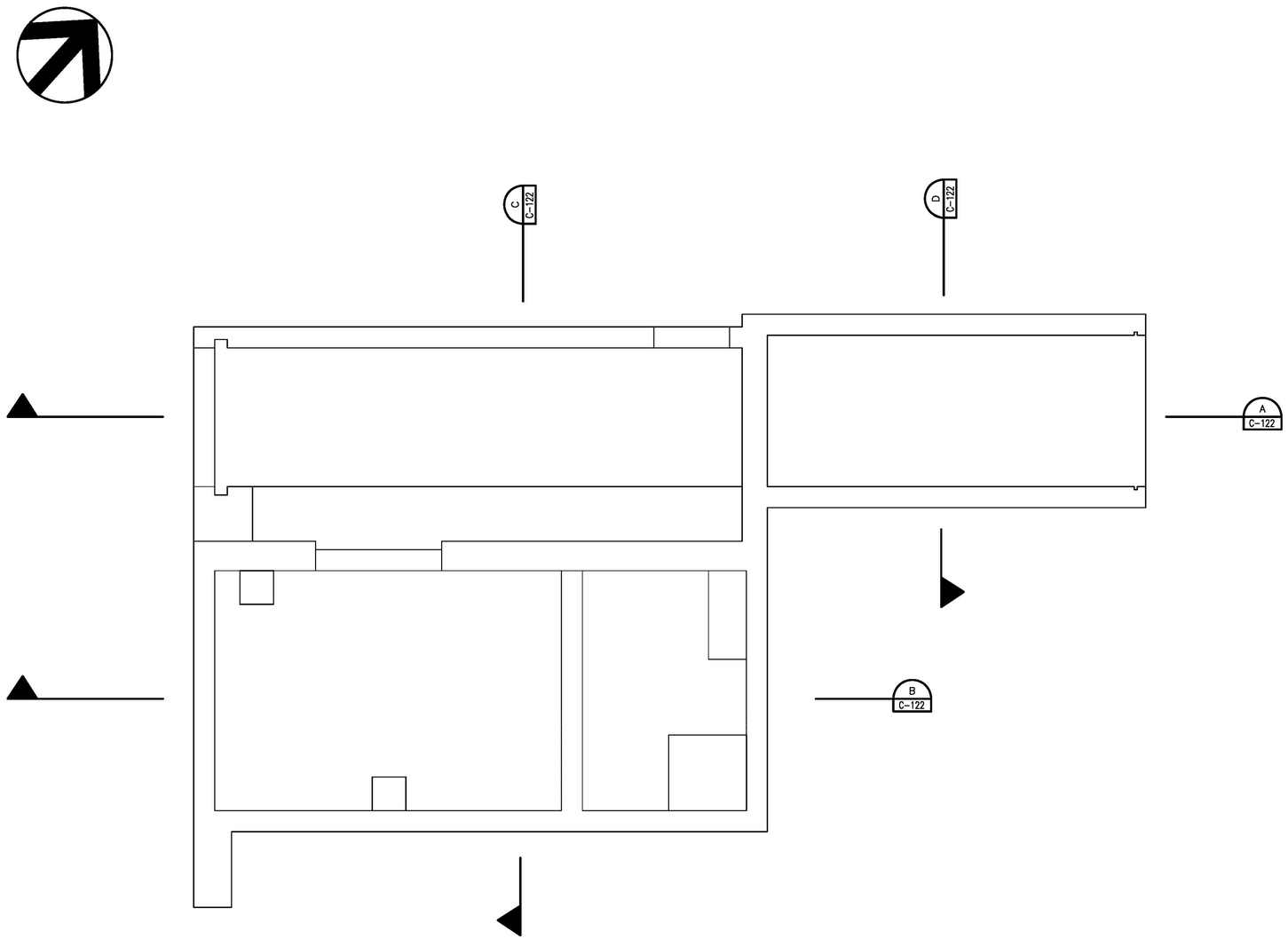
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE SECTIONS SHEET 2

FILENAME	C–112.dwg
SCALE	AS–SHOWN

SHEET C-112



3 0 3 6 FEET

3/8" = 1'-0"

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

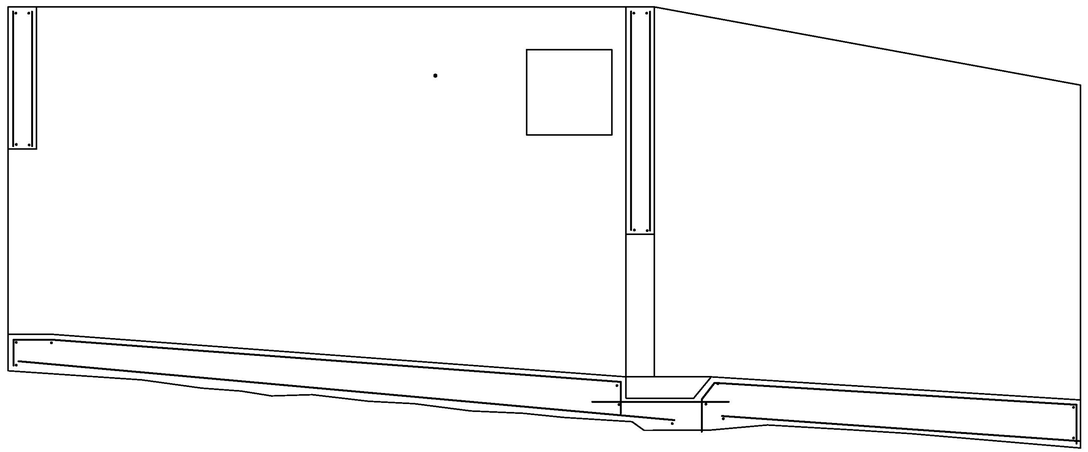
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

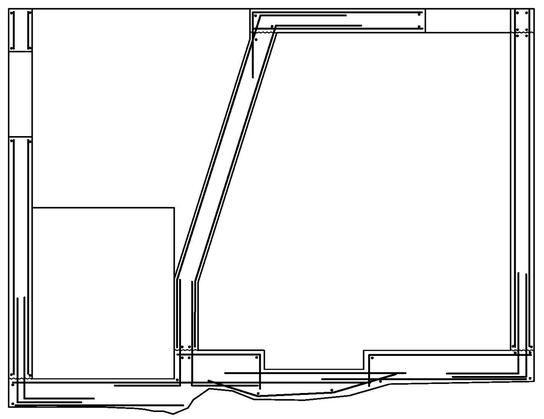
INTAKE REINFORCEMENT PLAN

FILENAME	C-121.dwg
SCALE	3/8" = 1'-0"

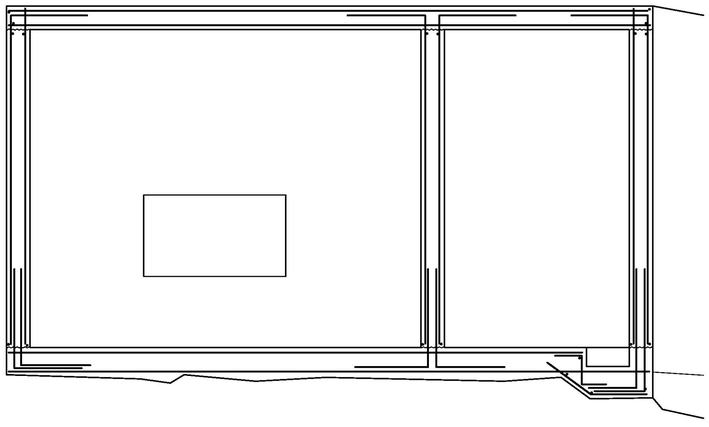
SHEET
C-121



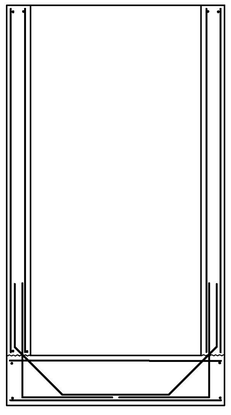
SECTION
3/8" = 1'-0"
A C-121



SECTION
3/8" = 1'-0"
C C-121



SECTION
3/8" = 1'-0"
B C-121



SECTION
3/8" = 1'-0"
D C-121

NOTES:

1. ALL REINFORCEMENT SHALL BE #5 @ 12" EW, EF, UNO.
2. PROVIDE 3" CLEAR BETWEEN BOTTOM BARS AND GROUND
3. SEE SHEET C-803 FOR TYPICAL CONCRETE DETAILS.

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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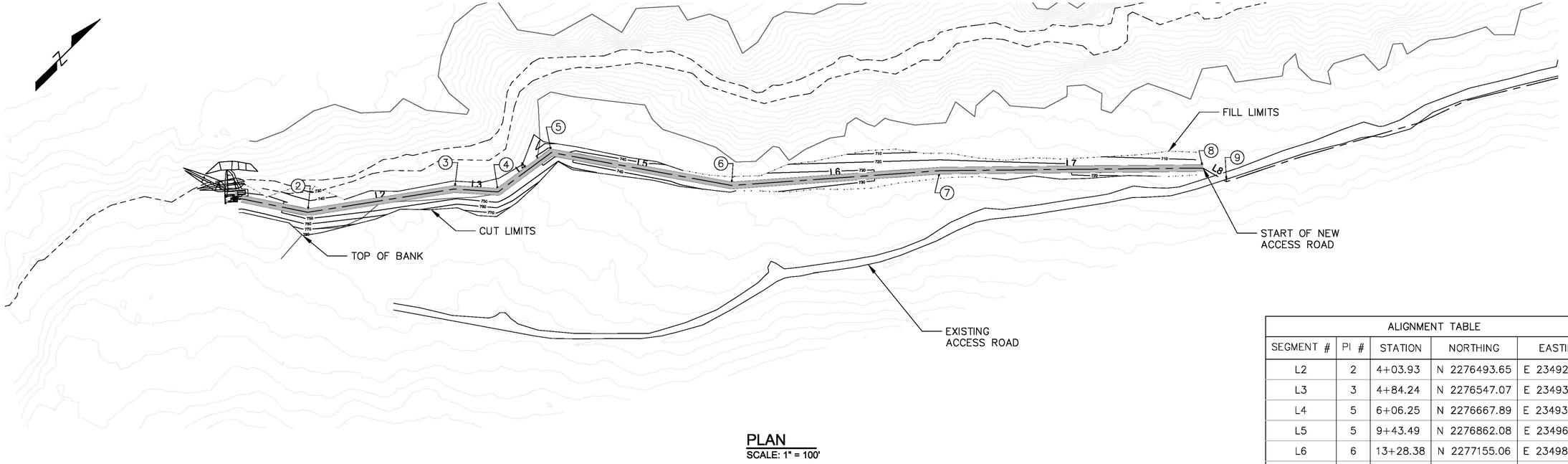
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE REINFORCEMENT SECTIONS

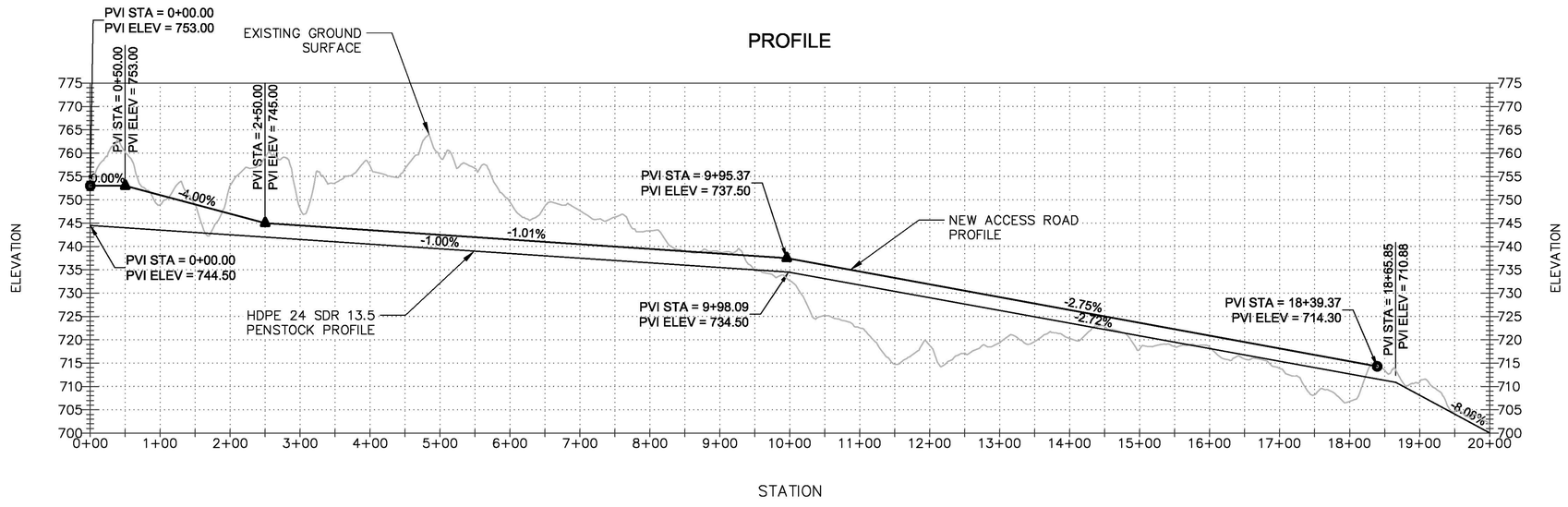
FILENAME	C-122.dwg
SCALE	AS-SHOWN

SHEET
C-122



PLAN
SCALE: 1" = 100'

ALIGNMENT TABLE				
SEGMENT #	PI #	STATION	NORTHING	EASTING
L2	2	4+03.93	N 2276493.65	E 2349281.48
L3	3	4+84.24	N 2276547.07	E 2349341.45
L4	5	6+06.25	N 2276667.89	E 2349358.47
L5	5	9+43.49	N 2276862.08	E 2349634.19
L6	6	13+28.38	N 2277155.06	E 2349883.79
L7	7	18+12.85	N 2277504.12	E 2350219.75
L8	8	18+62.97	N 2277517.38	E 2350268.09



ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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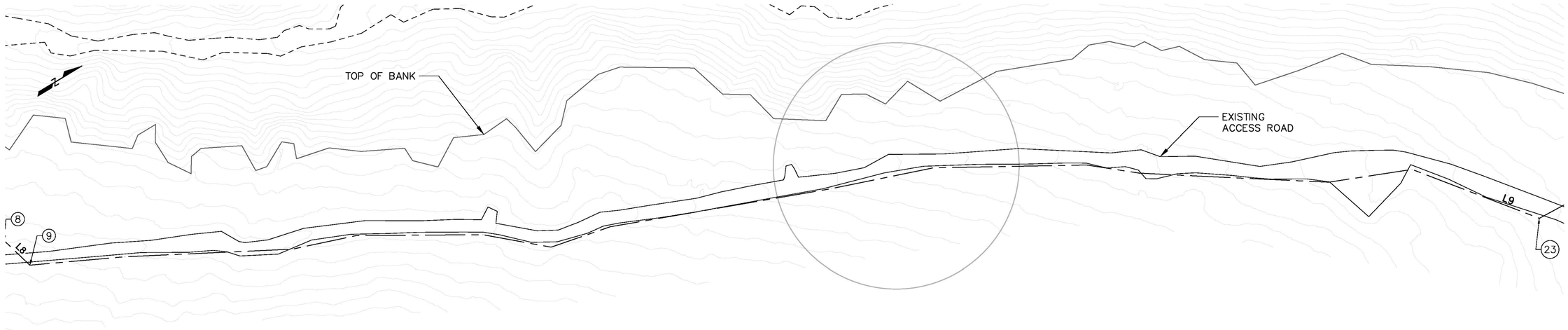
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

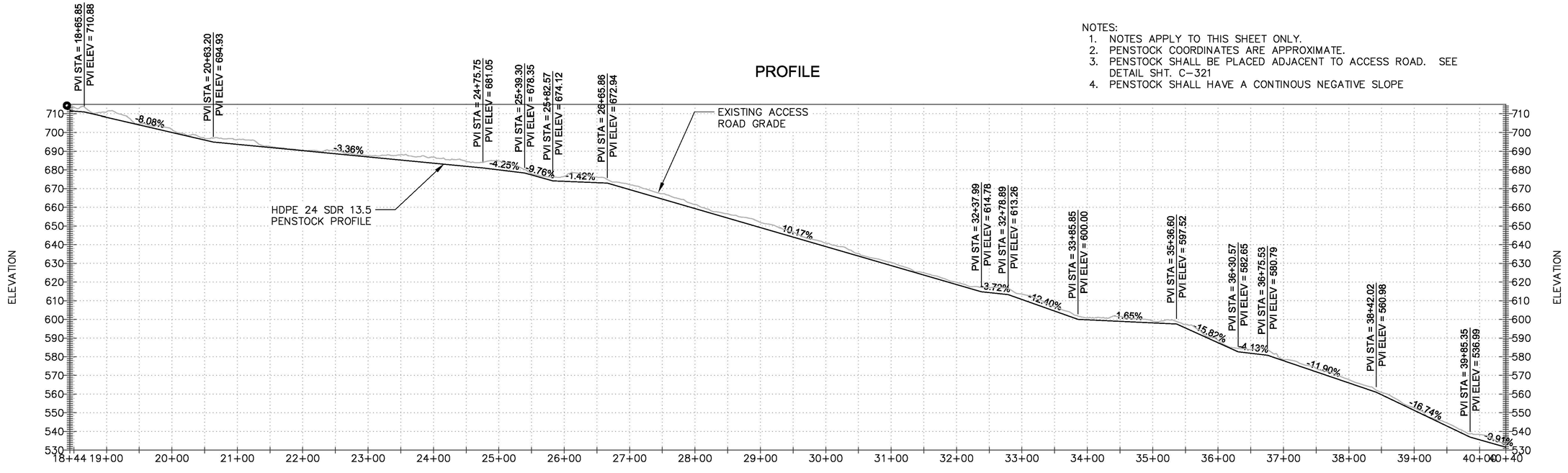
PENSTOCK AND ACCESS ROAD
PLAN AND PROFILE
STA. 0+00 TO STA. 18+44

FILENAME	WSC-Base-TOPO.dwg
SCALE	AS-SHOWN

SHEET C-310



PLAN
SCALE: 1" = 50'



NOTES:
1. NOTES APPLY TO THIS SHEET ONLY.
2. PENSTOCK COORDINATES ARE APPROXIMATE.
3. PENSTOCK SHALL BE PLACED ADJACENT TO ACCESS ROAD. SEE DETAIL SHT. C-321
4. PENSTOCK SHALL HAVE A CONTINOUS NEGATIVE SLOPE

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

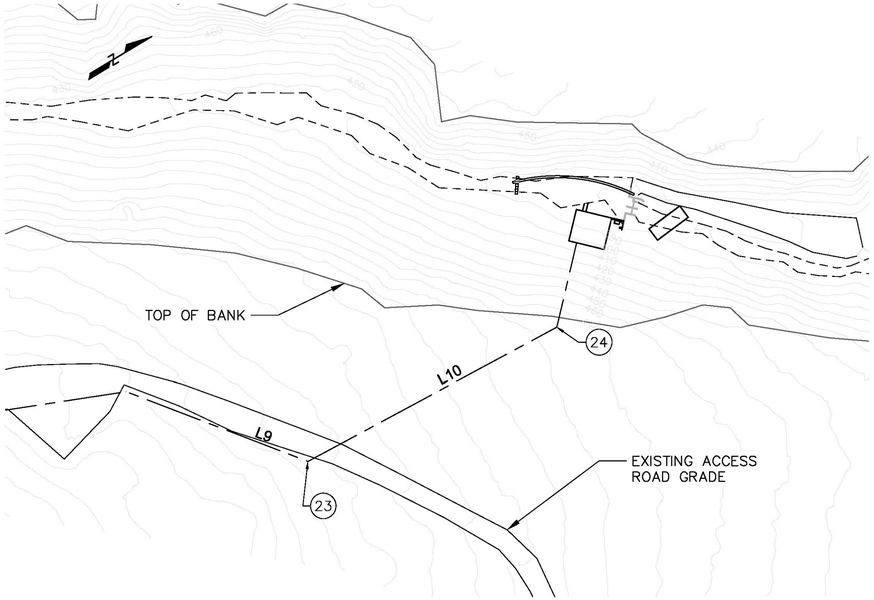
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

PENSTOCK PLAN AND PROFILE STA. 18+44 TO STA. 40+40

FILENAME	WSC-Base-TOPO.dwg
SCALE	AS-SHOWN

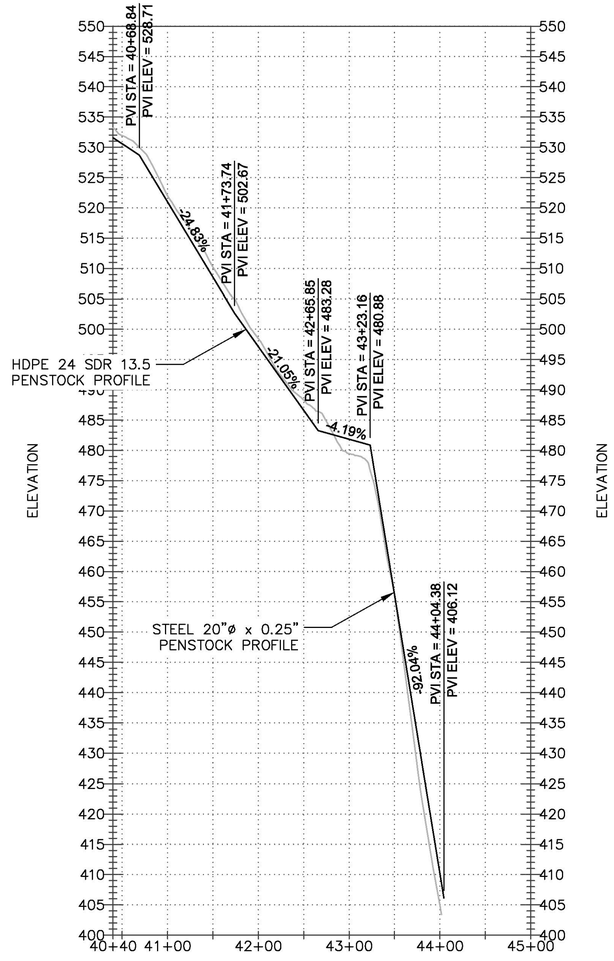
SHEET C-311

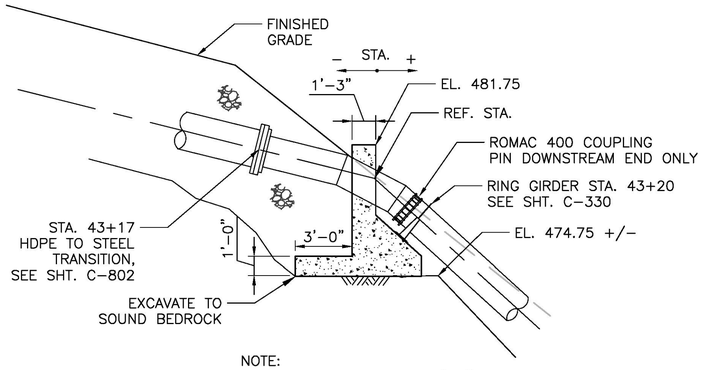


PLAN
SCALE: 1" = 50'

ALIGNMENT TABLE				
SEGMENT #	PI #	STATION	NORTHING	EASTING
L9	23	40+35.19	N 2279386.11	E 2351312.95
L10	24	43+15.66	N 2279666.27	E 2351326.26

PROFILE





NOTE:
THRUST BLOCK WIDTH = 4'-0"

STA. 43+23.16 DETAIL
SCALE: 1/4"=1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
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INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK
HYDROELECTRIC PROJECT
HOONAH, ALASKA

PENSTOCK
PLAN AND PROFILE
STA.40+40 TO STA. 44+04

FILENAME	WSC-Base-TOPO.dwg
SCALE	AS-SHOWN

SHEET C-312

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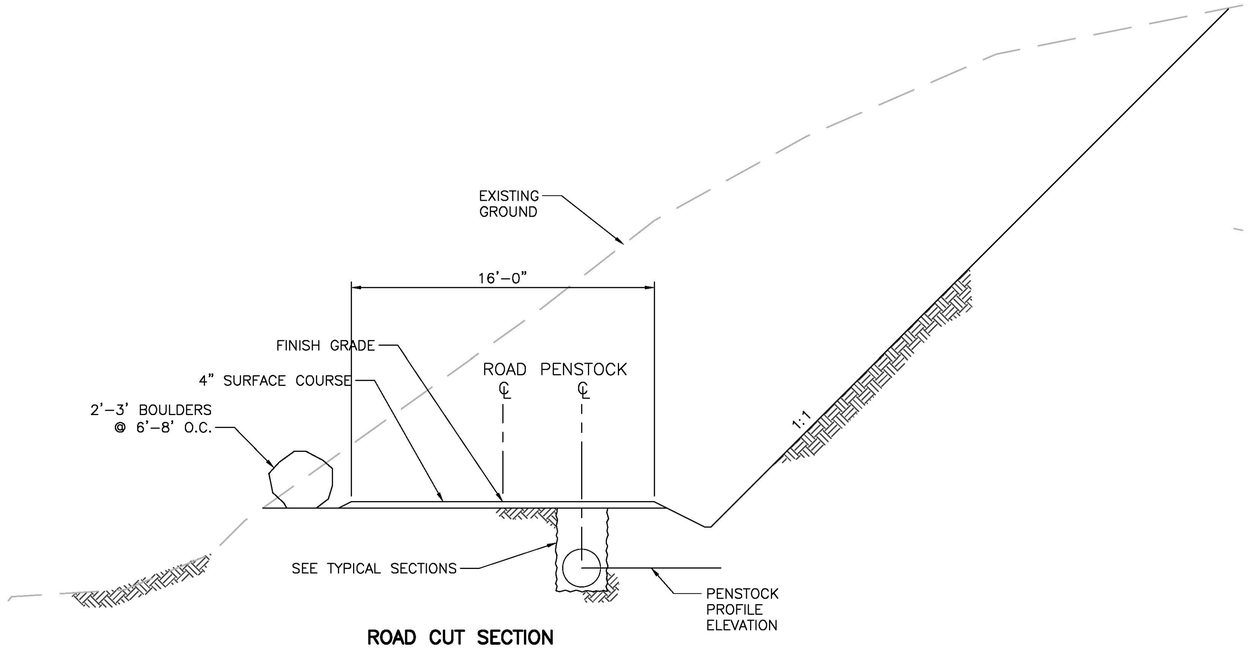
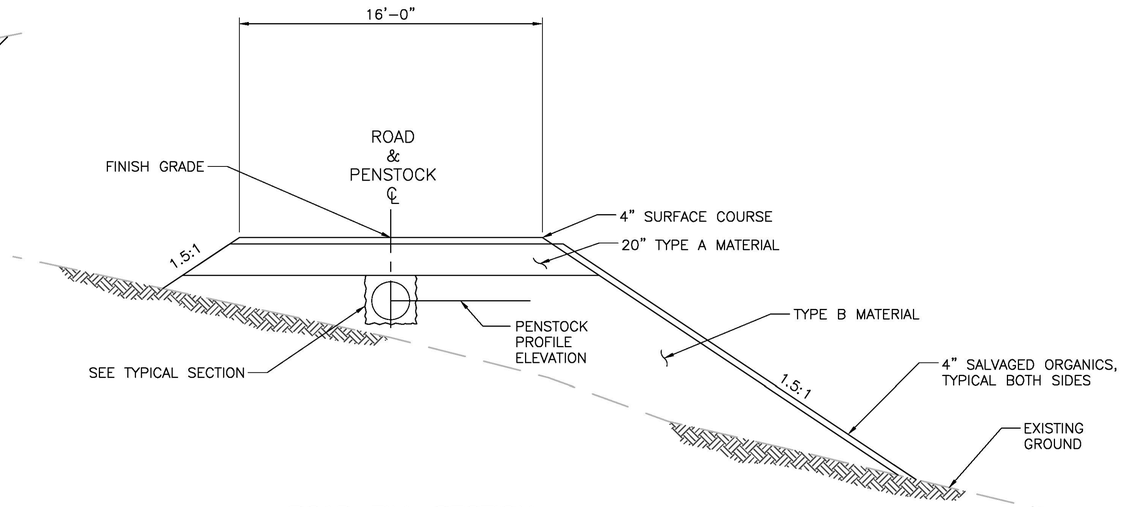


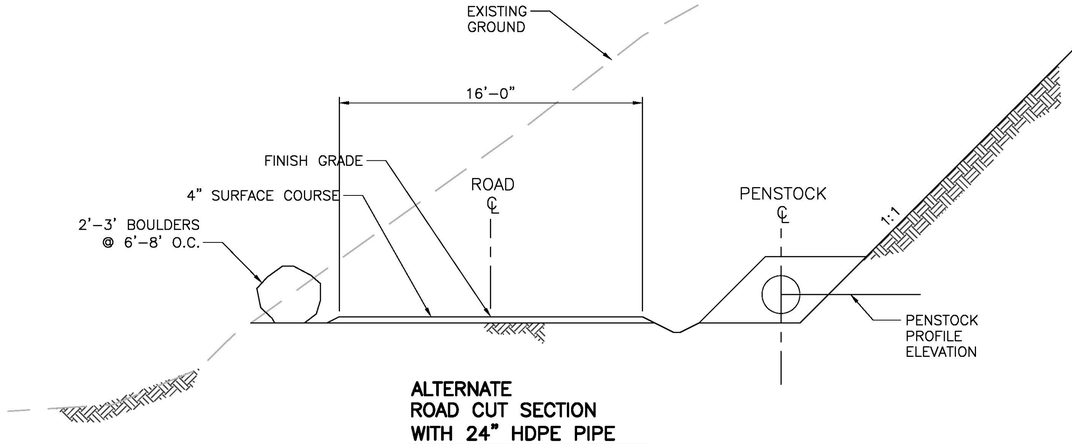
ROAD CUT SECTION WITH 24" HDPE PIPE

SCALE: 1/4" = 1' –0"



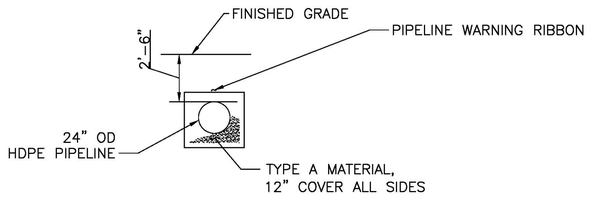
ROAD FILL SECTION WITH 24" HDPE PIPE

SCALE: 1/4" = 1' –0"



ALTERNATE ROAD CUT SECTION WITH 24" HDPE PIPE

SCALE: 1/4" = 1' –0"



PENSTOCK TYPICAL SECTION

SCALE: 1/4" = 1' –0"

4 0 4 8 FEET

1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

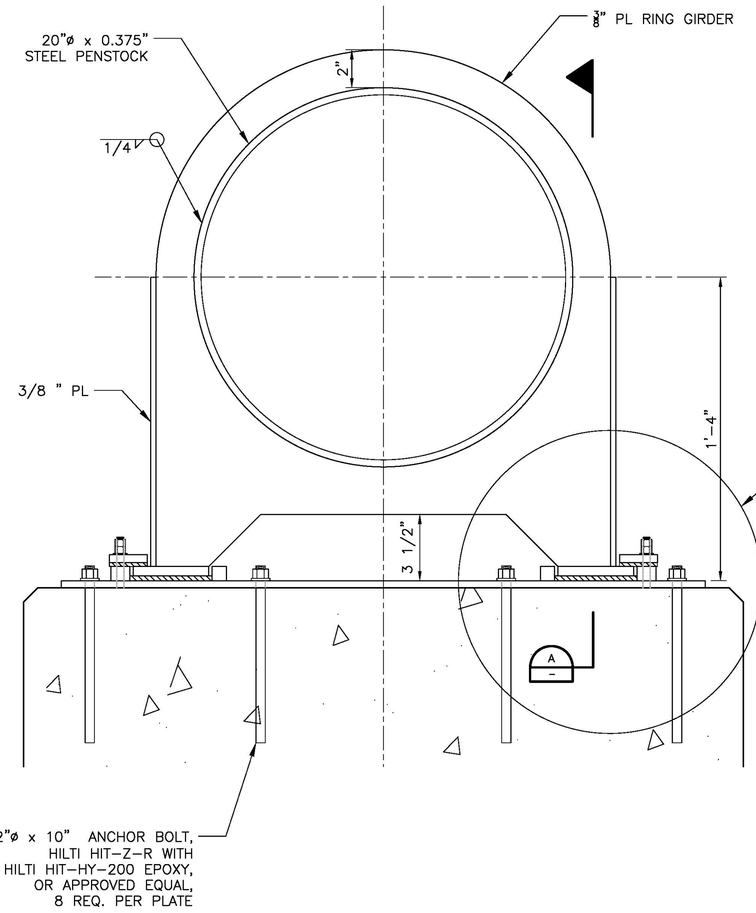
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

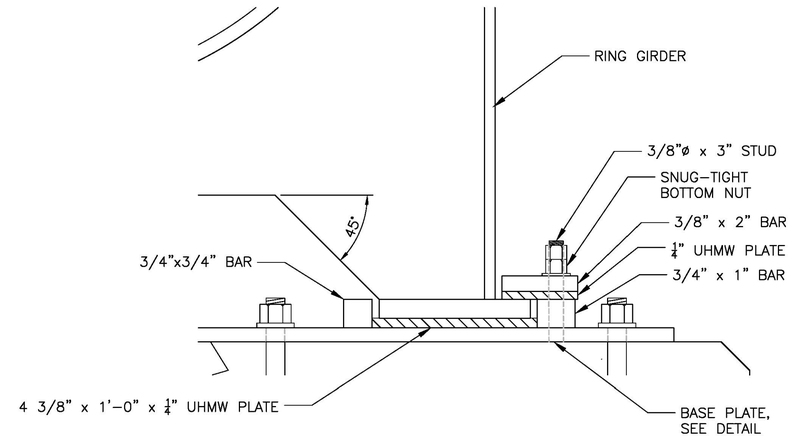
ACCESS ROAD AND PENSTOCK TYPICAL SECTIONS AND DETAILS

FILENAME	C–320
SCALE	AS–SHOWN

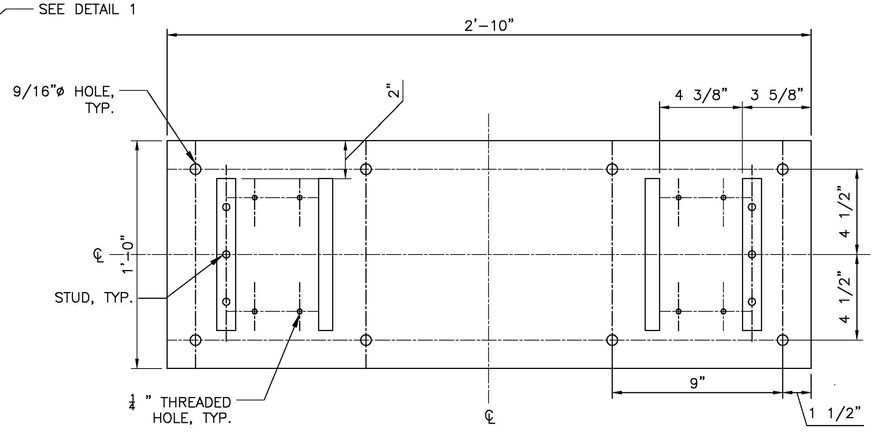
SHEET C-320



RING GIRDER SUPPORT SECTION
SCALE: 3"=1'-0"

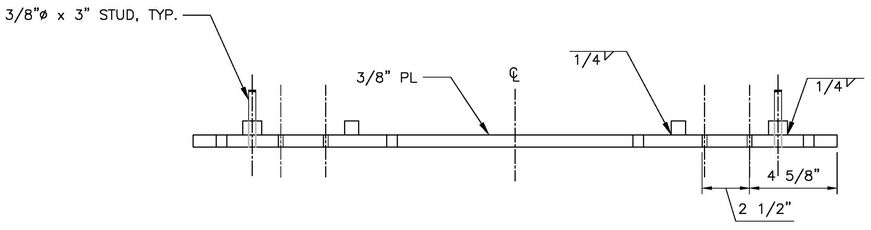


DETAIL 1
SCALE: 6"=1'-0"

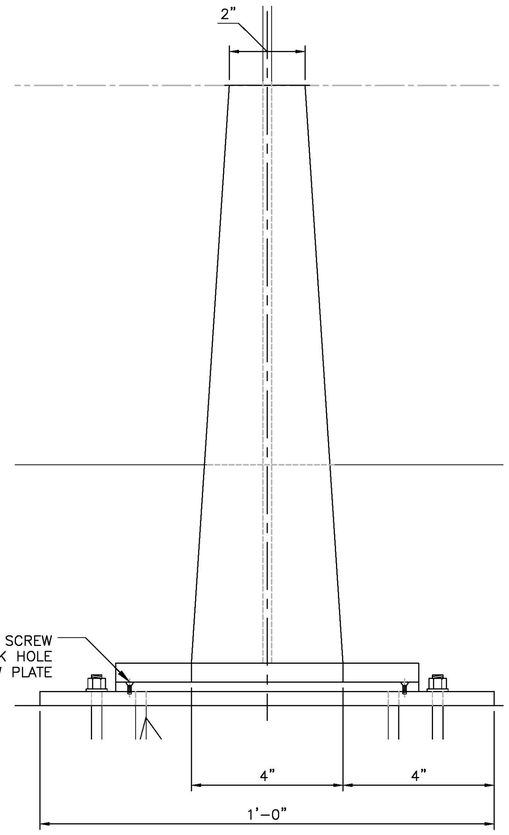


BASE PLATE PLAN
SCALE: 3"=1'-0"

NOTE:
ALL DIMENSIONS AND CALLOUTS ARE SYMMETRICAL AROUND CENTERLINES OF BASE PLATE



BASE PLATE SECTION
SCALE: 3"=1'-0"



SECTION
SCALE: 6"=1'-0"

3" 0 3" 6" 9"
3" = 1'-0"

FILE PATH:\10003691\10331000\6.0_CAD_BIM\6.2_WIP\Model Files\C-330.DWG PLOT DATE:4/12/2023 8:32 AM USER:PBERKSHI

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

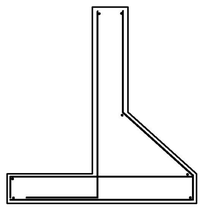
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

PENSTOCK DETAILS

FILENAME	C330.DWG
SCALE	AS-SHOWN

SHEET C-330



SECTION
3/8" = 1'-0"
B
C-331

NOTES:

1. ALL REINFORCEMENT SHALL BE #5 @ 12" EW, EF, UNO.
2. PROVIDE 3" CLEAR BETWEEN BOTTOM BARS AND GROUND
3. SEE SHEET C-803 FOR TYPICAL CONCRETE DETAILS.

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

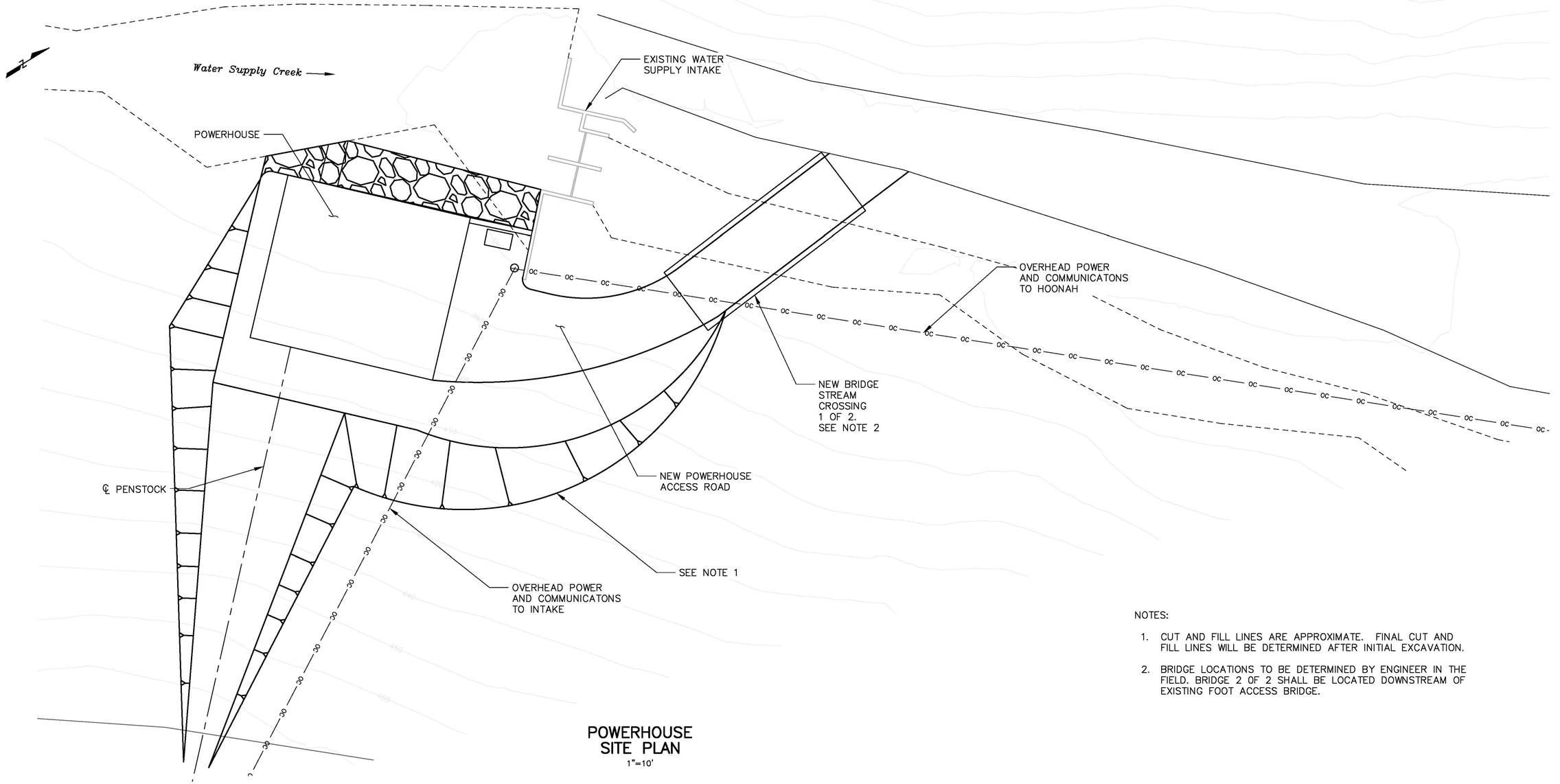
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

PENSTOCK REINFORCEMENT SECTION

FILENAME	C-331.dwg
SCALE	AS-SHOWN

SHEET
C-331



POWERHOUSE SITE PLAN
1"=10'

NOTES:

1. CUT AND FILL LINES ARE APPROXIMATE. FINAL CUT AND FILL LINES WILL BE DETERMINED AFTER INITIAL EXCAVATION.
2. BRIDGE LOCATIONS TO BE DETERMINED BY ENGINEER IN THE FIELD. BRIDGE 2 OF 2 SHALL BE LOCATED DOWNSTREAM OF EXISTING FOOT ACCESS BRIDGE.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10020839

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8/10/23

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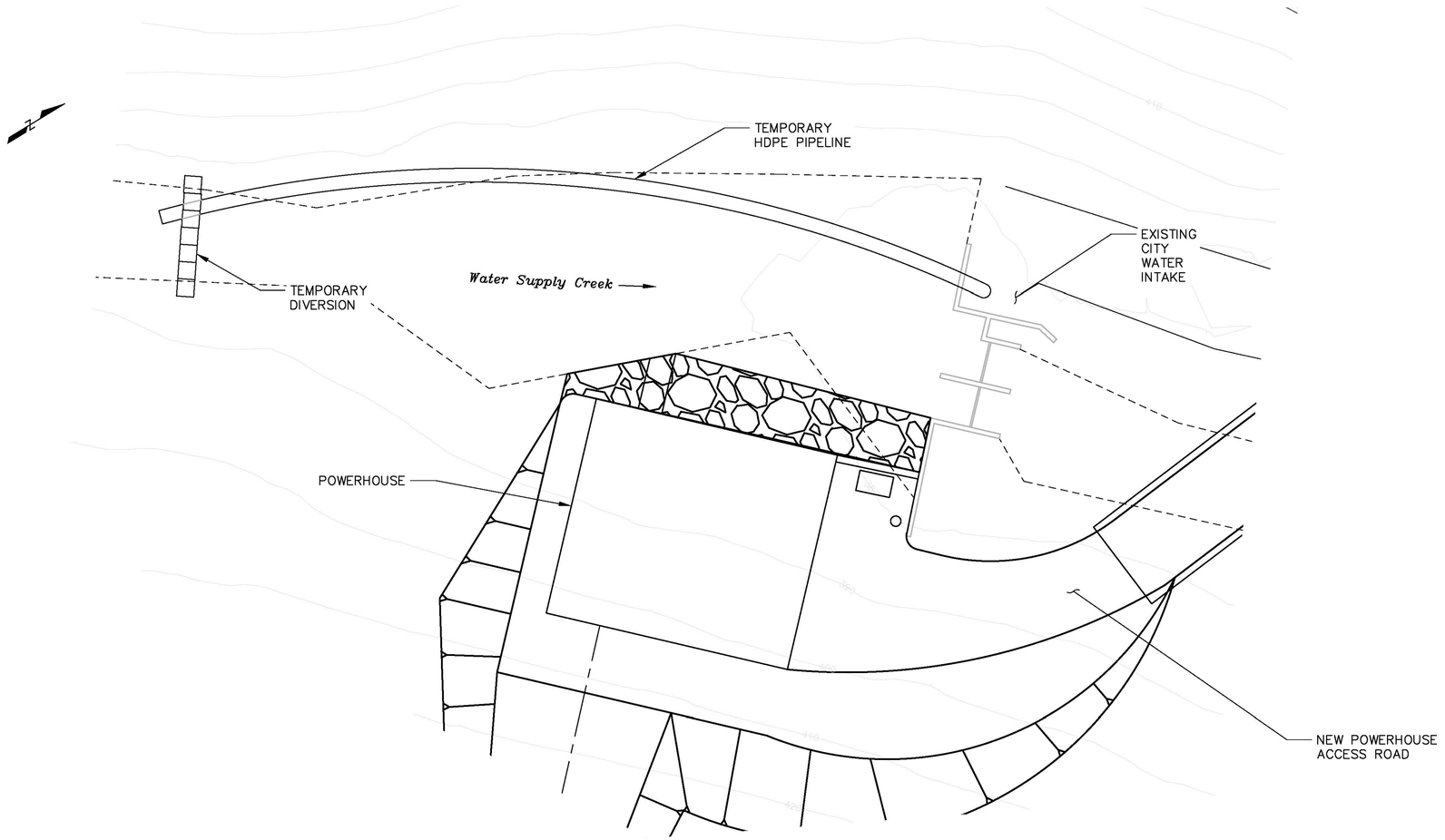
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE SITE PLAN

FILENAME	WSC–Base–Map.DWG
SCALE	AS–SHOWN

SHEET C-501



POWERHOUSE
AREA PLAN
1"=10'

DIVERSION SEQUENCE:

CONSTRUCT A TEMPORARY DIVERSION UPSTREAM OF THE CONSTRUCTION SITE USING 1 CY MATERIAL BAGS FILLED WITH SAND AND GRAVEL.

INSTALL A HDPE PIPE THROUGH DIVERSION AND ROUTE TO EXISTING CITY WATER INTAKE.

FOLLOWING COMPLETION OF THE POWERHOUSE, THE DIVERSION AND PIPELINE SHALL BE REMOVED.

NOTES:

1. DIVERSION OF WATER DURING CONSTRUCTION AS ON THIS DRAWING REPRESENTS A SUGGESTED SCHEME FOR THE CONTRACTOR TO PERFORM THE WORK IN THE DRY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE DEWATERING PLAN THEY WILL USE TO PROTECT THE WORK.
2. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF INSTREAM WORK TO THE GREATEST EXTENT POSSIBLE.
3. CONTRACTOR SHALL CONSULT WITH, AND OBTAIN APPROVAL FROM, THE CITY OF HOONAH WATER DEPARTMENT REGARDING THE DESIGN OF THE DEWATERING PLAN AND THE TIMING OF INSTREAM WORK AT LEAST 30 DAYS PRIOR TO STARTING THE WORK.
4. CUT AND FILL LINES ARE APPROXIMATE.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
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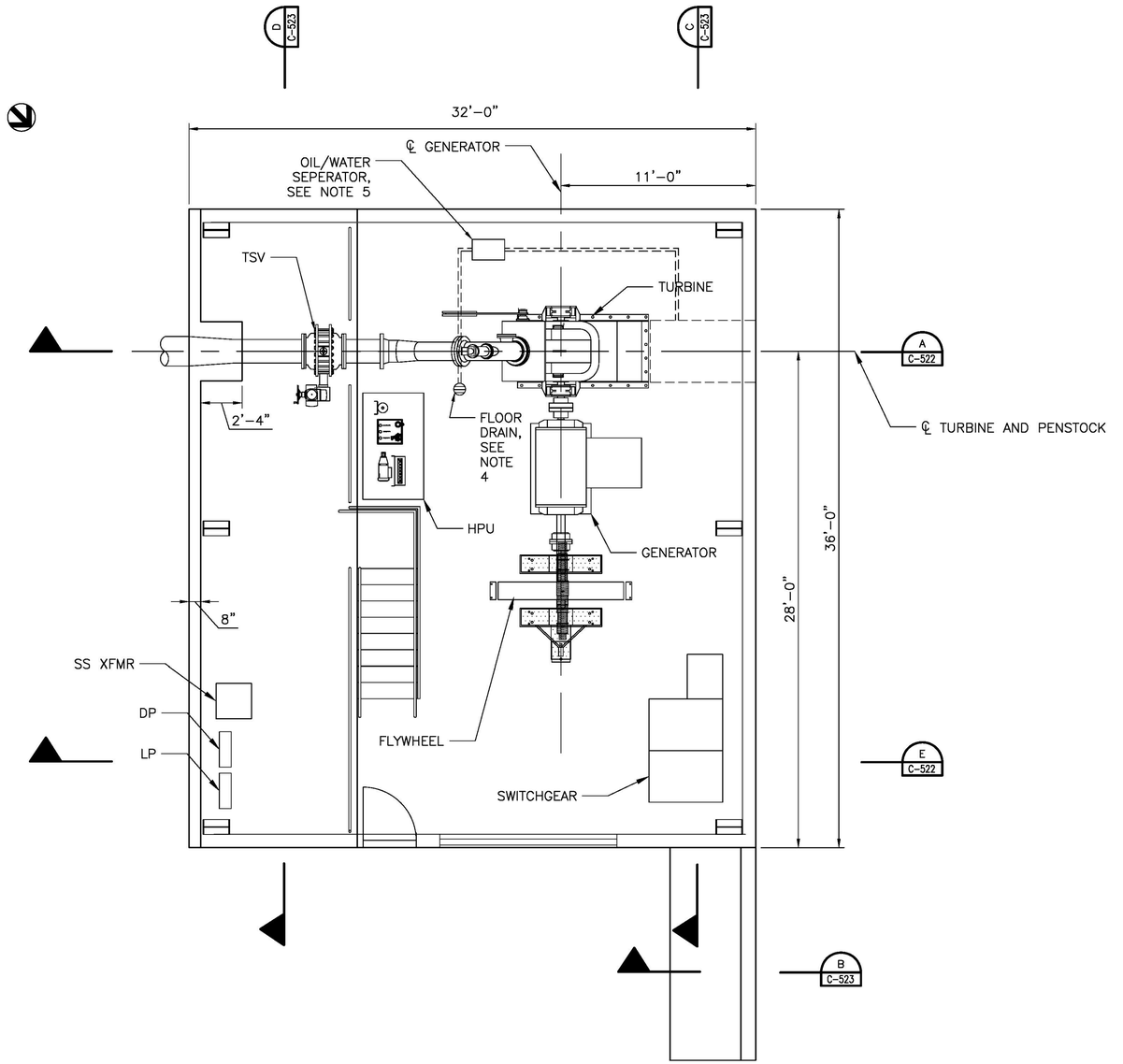
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

TEMPORARY DIVERSION DURING CONSTRUCTION POWERHOUSE AREA

FILENAME	WSC-Base-Map.DWG
SCALE	AS-SHOWN

SHEET C-505



PLAN
SCALE: 1/4"=1'-0"

NOTES:

1. TURBINE/GENERATOR DIMENSIONS SUBJECT TO CHANGE BASED UPON FINAL EQUIPMENT SELECTION
2. ELECTRICAL COMPONENT LOCATIONS ARE APPROXIMATE. REFER TO ELECTRICAL DRAWINGS.
3. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.
4. 8" CAST IRON FLOOR DRAIN. CONNECT TO OIL/WATER SEPERATOR USING 2" GALV. PIPE. SLOPE FLOOR TO DRAIN.
5. ZURN Z-1186-6 SIZE 400 OIL/WATER SEPERATOR OR APPROVED EQUAL. CONNECT DRAIN TO TAILRACE USING 2" GALV. PIPE.

ABBREVIATIONS:

SS XFMR	STATION SERVICE TRANSFORMER
DP	DISTRIBUTION PANEL
LP	LIGHT PANEL
TSV	TURBINE SHUTOFF VALVE
HPU	HYDRAULIC POWER UNIT

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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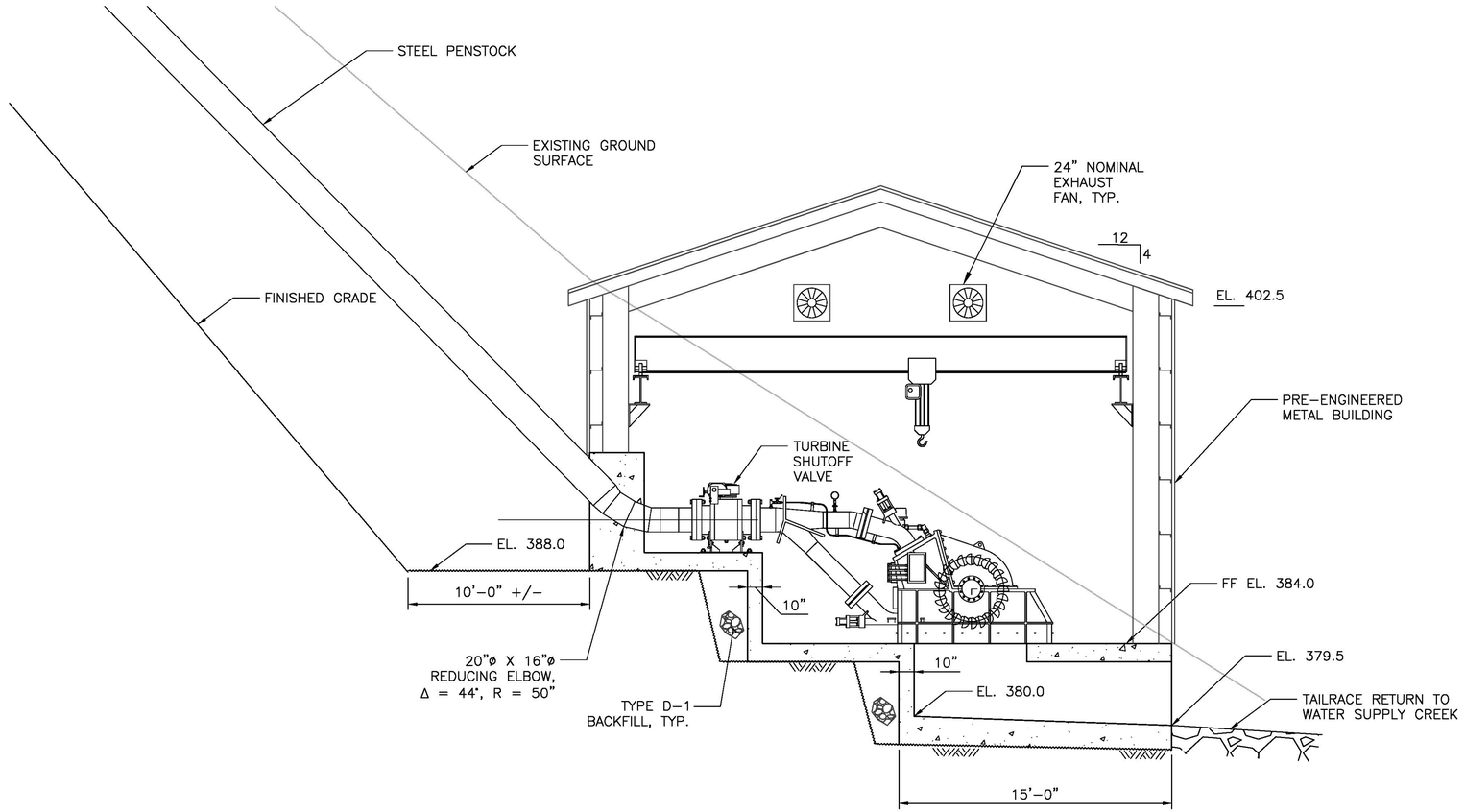
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE PLAN

FILENAME	C-521.dwg
SCALE	AS-SHOWN

SHEET C-521



SECTION
SCALE: 1/4"=1'-0"

A
C-521

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
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DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE SECTIONS
SHEET 1

FILENAME	C-522.dwg
SCALE	AS-SHOWN

SHEET
C-522

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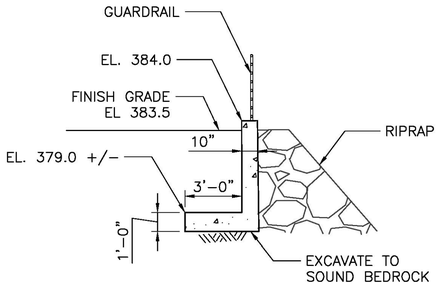
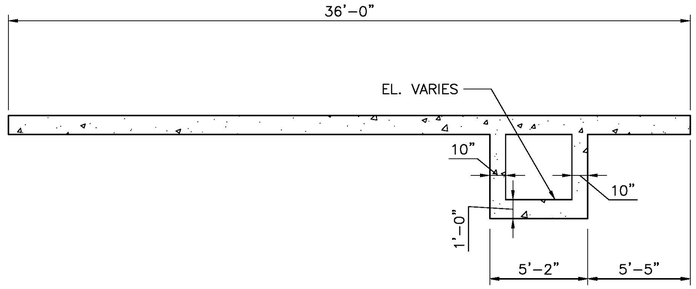
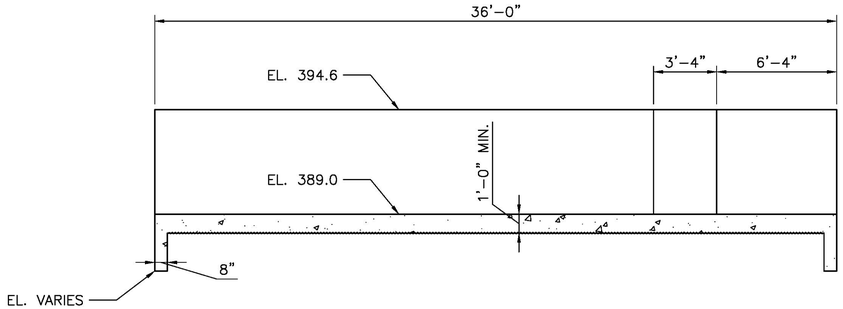


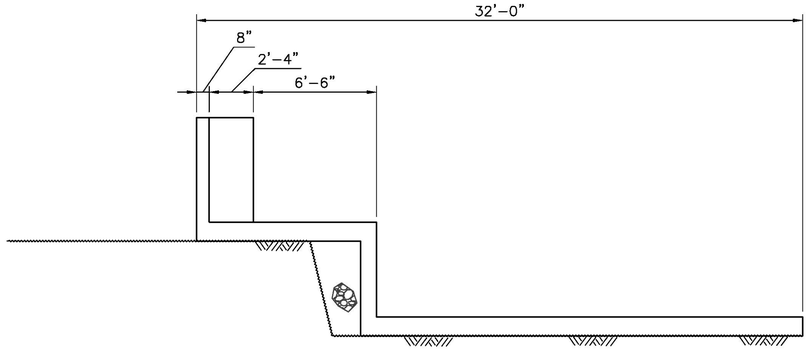
SECTION
SCALE: 1/4"=1'-0"
B
C-521



SECTION
SCALE: 1/4"=1'-0"
C
C-521



SECTION
SCALE: 1/4"=1'-0"
D
C-521



SECTION
SCALE: 1/4"=1'-0"
E
C-521

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE SECTIONS
SHEET 2

FILENAME	C-523.dwg
SCALE	AS-SHOWN

SHEET
C-523

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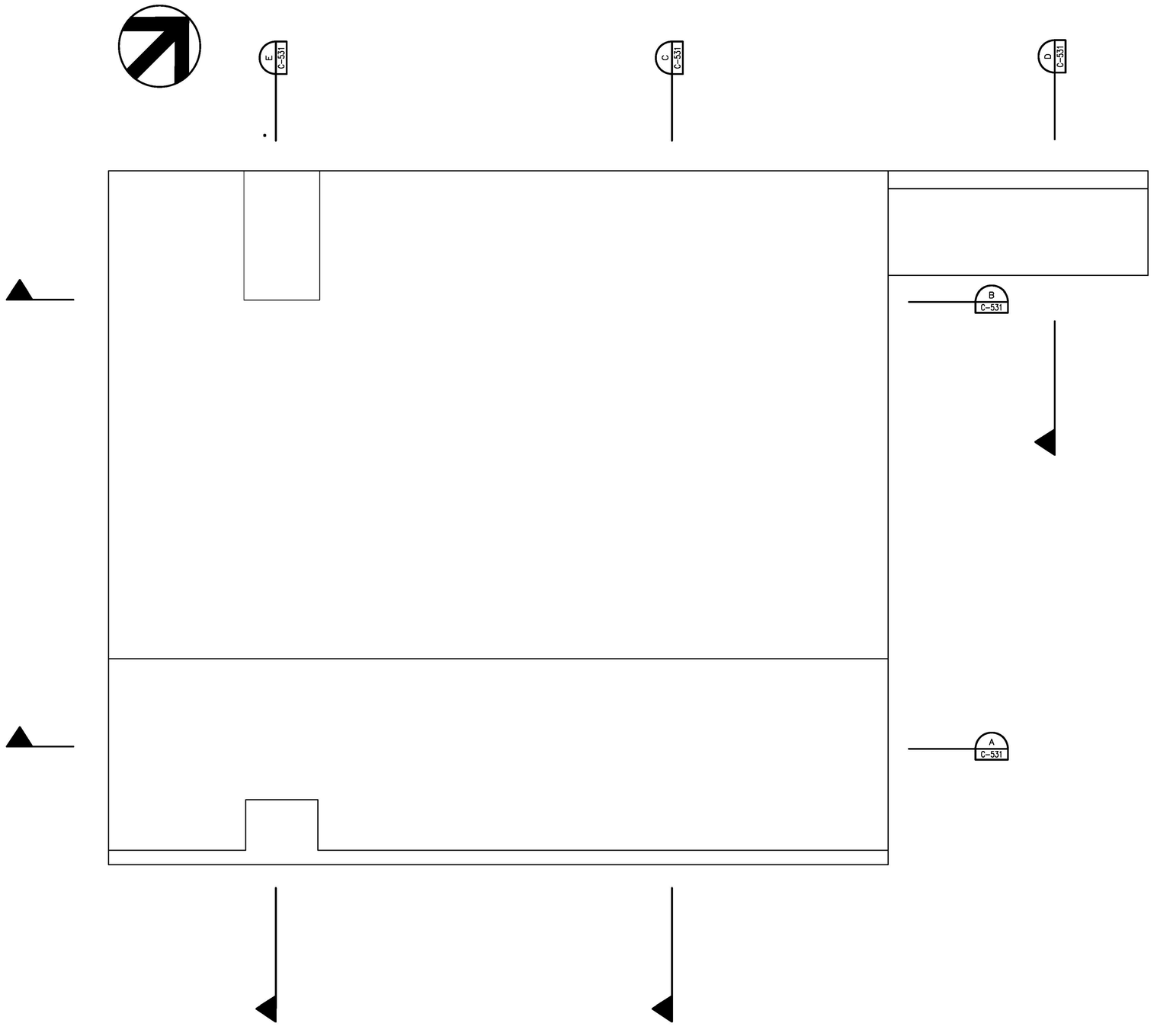

NOTES:

1. ALL REINFORCEMENT SHALL BE #5 @ 12" EW, EF, UNO.
2. PROVIDE 3" CLEAR BETWEEN BOTTOM BARS AND GROUND
3. SEE SHEET C-803 FOR TYPICAL CONCRETE DETAILS.

3 0 3 6 FEET

3/8" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	PLAN
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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IPEC
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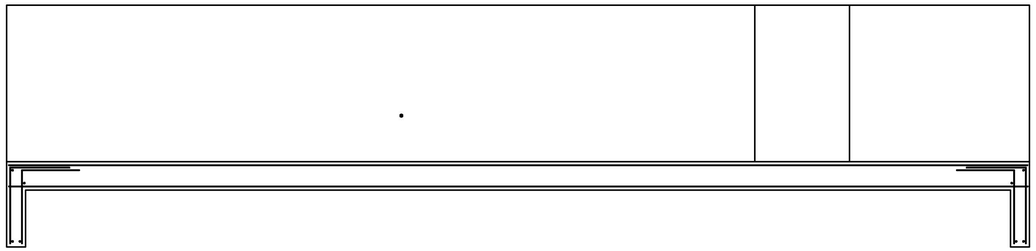
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE REINFORCEMENT PLAN

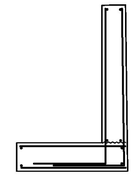
FILENAME	C-530.dwg
SCALE	3/8" = 1'-0"

SHEET C-530

FILE PATH:10003691/10331000/6.0_CAD_BIM/6.2_WIP/Sheet Files/C-530.DWG PLOT DATE:6/5/2023 2:58 PM USER:PBERKSHI

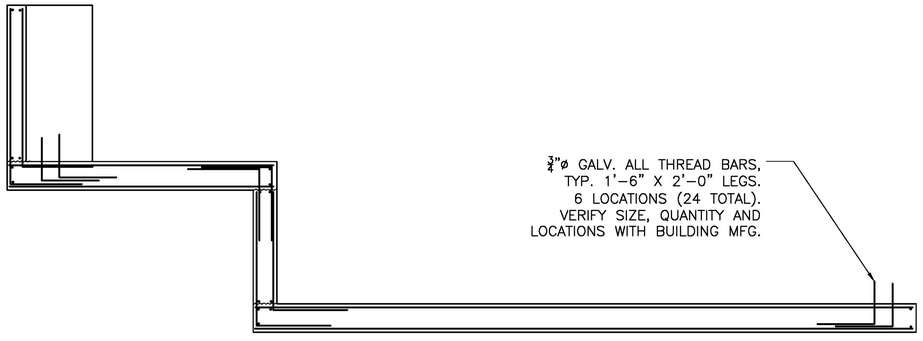


SECTION
3/8" = 1'-0"
A
C-550

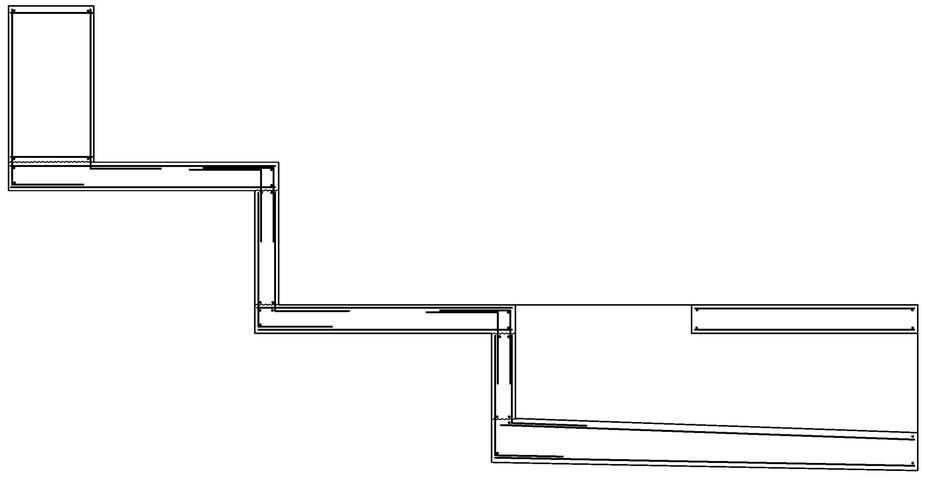


SECTION
3/8" = 1'-0"
D
C-550

SECTION
3/8" = 1'-0"
B
C-550



SECTION
3/8" = 1'-0"
C
C-550



SECTION
3/8" = 1'-0"
E
C-550

3 0 3 6 FEET
3/8" = 1'-0"

NOTES:

1. ALL REINFORCEMENT SHALL BE #5 @ 12" EW, EF, UNO.
2. PROVIDE 3" CLEAR BETWEEN BOTTOM BARS AND GROUND
3. SEE SHEET C-803 FOR TYPICAL CONCRETE DETAILS.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	PLAN
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
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IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

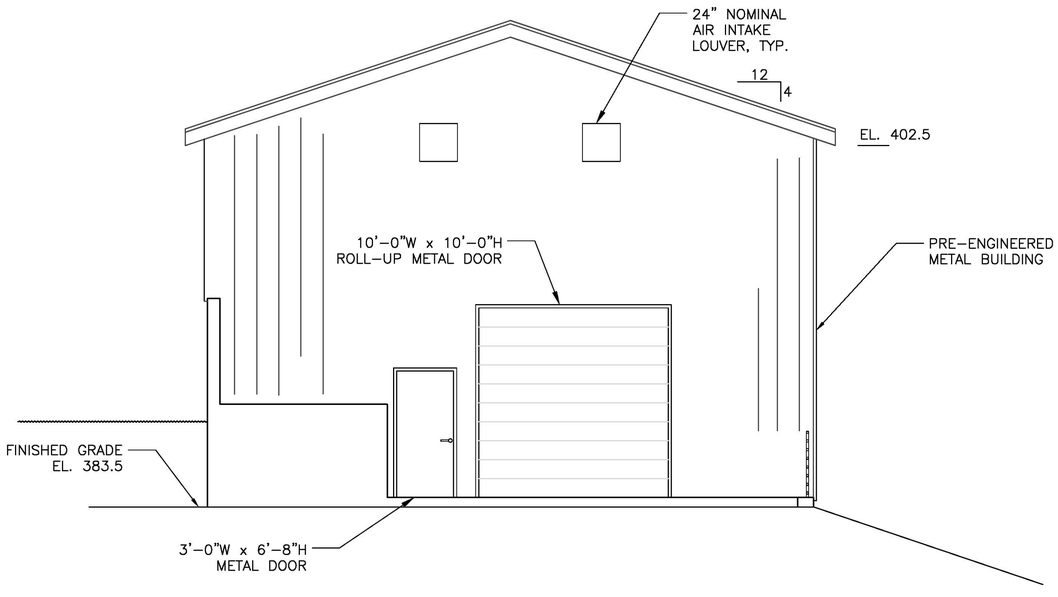
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE REINFORCEMENT SECTIONS

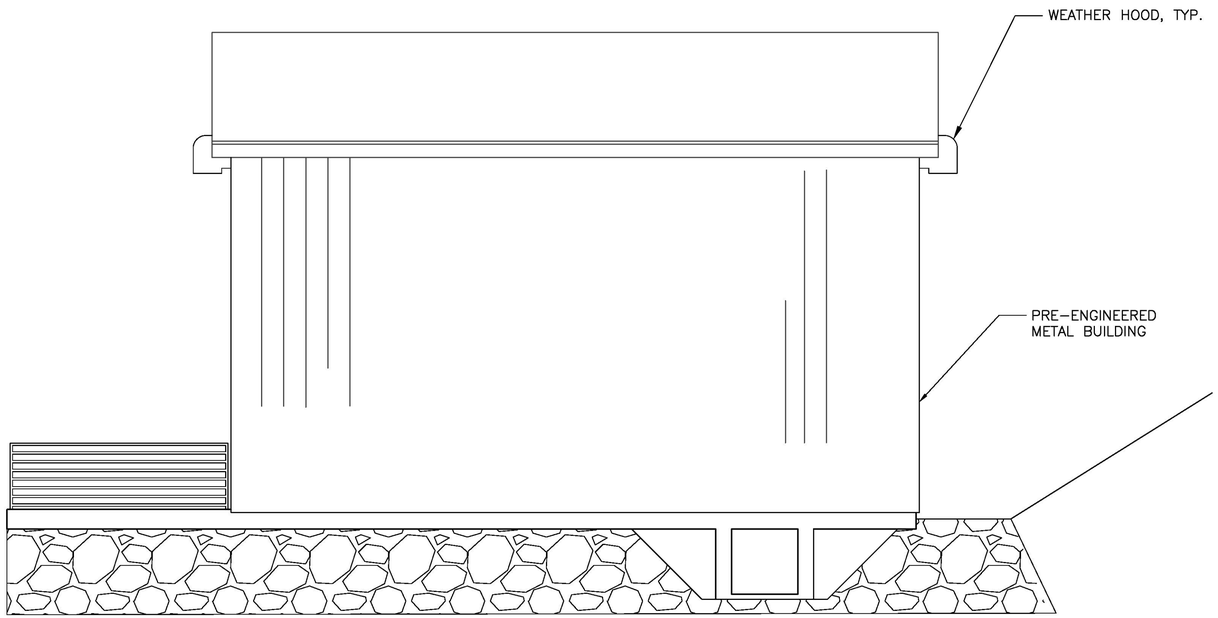
FILENAME	C-531.dwg
SCALE	3/8" = 1'-0"

SHEET
C-531

FILE PATH:10003691/10331000/6.0_CAD_BIM/6.2_WIP/Sheet Files/C-531.DWG PLOT DATE:6/5/2023 3:03 PM USER:PBERKSHI



NORTHWEST ELEVATION
SCALE: 1/4"=1'–0"



NORTHEAST ELEVATION
SCALE: 1/4"=1'–0"

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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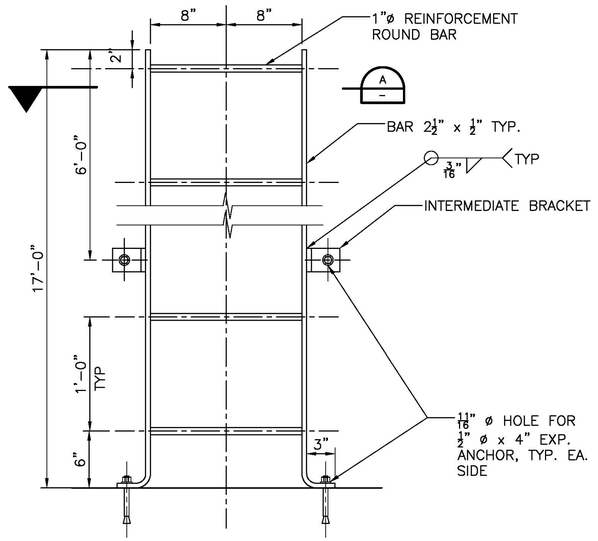
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

POWERHOUSE ELEVATIONS

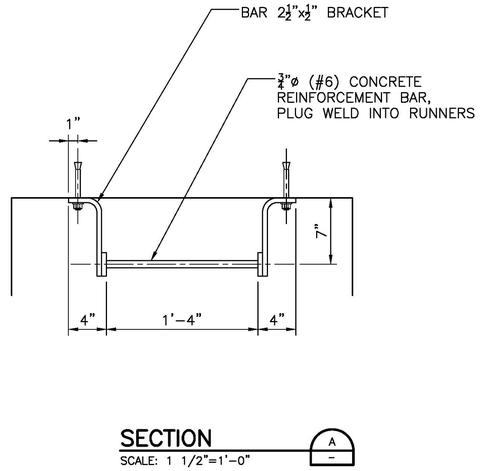
FILENAME	C–540.dwg
SCALE	AS–SHOWN

SHEET
C-540



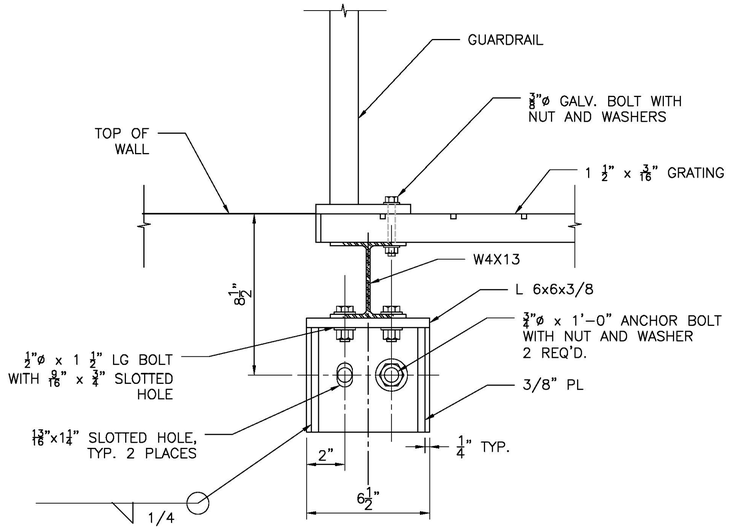
LADDER DETAIL

SCALE: 1 1/2"=1'-0"



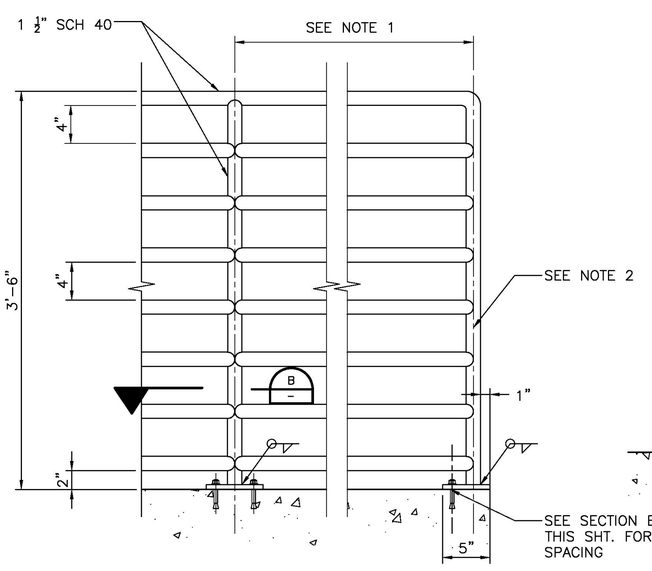
SECTION

SCALE: 1 1/2"=1'-0"



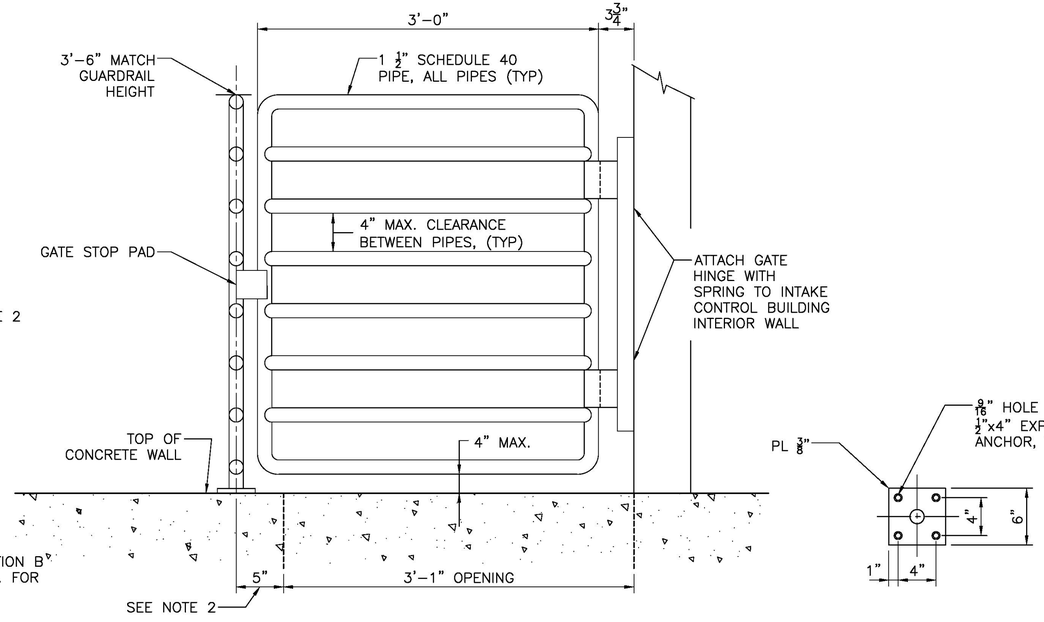
WALKWAY SUPPORT DETAIL

SCALE: 3"=1'-0"



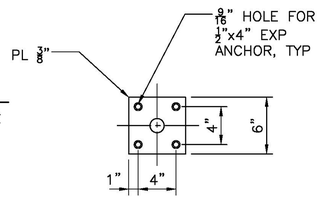
GUARDRAIL DETAIL

SCALE: 1 1/2"=1'-0"



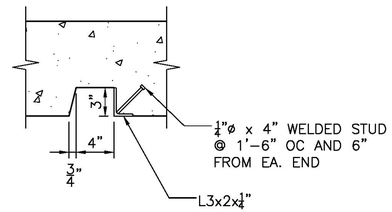
SAFETY GATE

SCALE: 1 1/2"=1'-0"



SECTION

SCALE: 1 1/2"=1'-0"



STOPLOG DETAIL

SCALE: 1 1/2"=1'-0"

NOTES:

1. MAXIMUM GUARDRAIL POST SPACING 6'-0" O.C. SPACE POSTS EQUALLY IN STRAIGHT RUN SECTIONS.
2. PLACE CENTERLINE OF POSTS ALONG CENTERLINE OF WALL OR 5" FROM OPENINGS IN SLABS OR 5" FROM ADJACENT VERTICAL WALL.
3. ALL METAL FABRICATIONS SHOWN ON THIS SHEET ARE TO BE GALVENIZED UNLESS NOTED OTHERWISE.

3" 0 3" 6" 9"
3" = 1'-0"

1 0 1 FOOT
1 1/2" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
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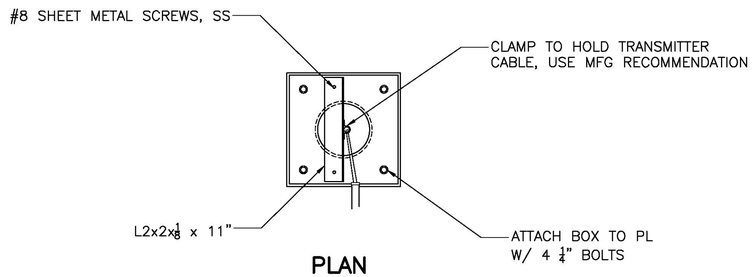
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

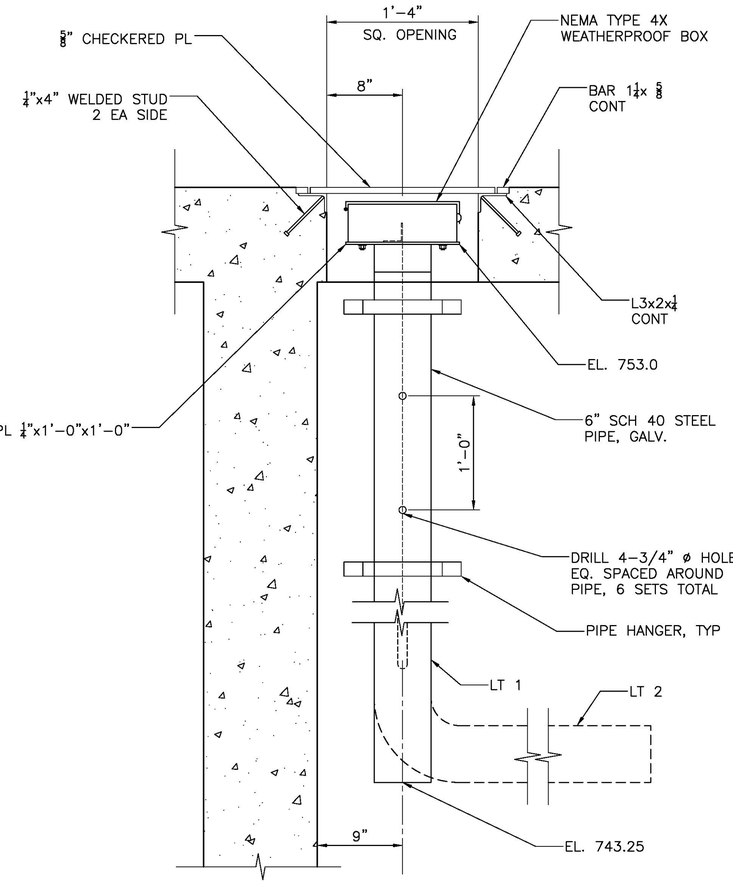
MISCELLANEOUS STEEL DETAILS SHEET 1

FILENAME	C-801.dwg
SCALE	AS-SHOWN

SHEET C-801

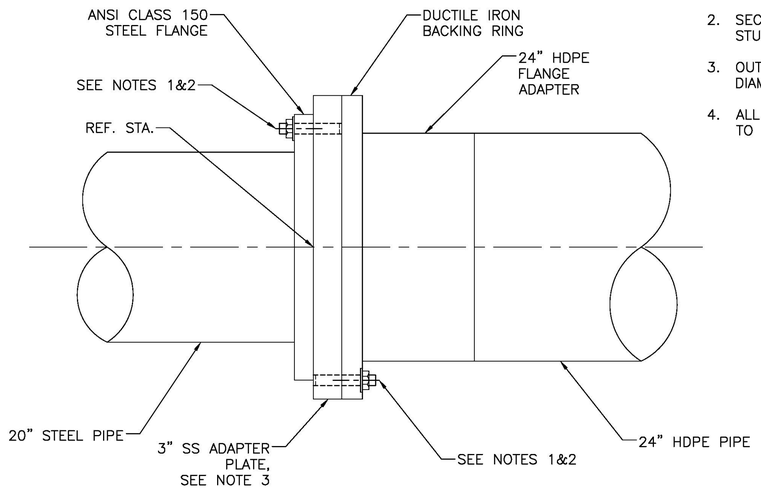


PLAN



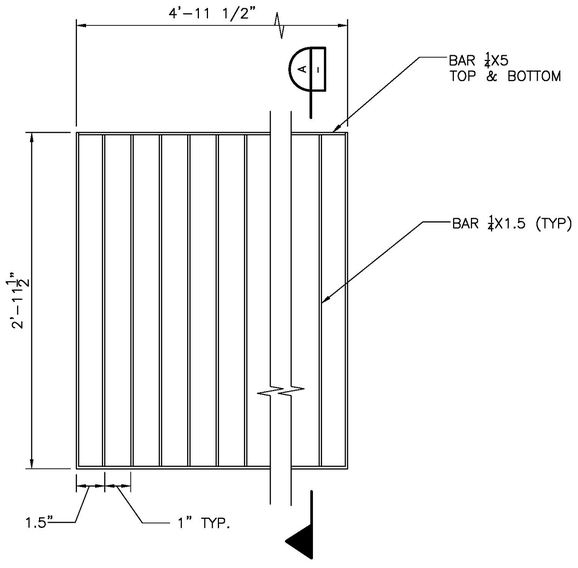
LEVEL TRANSMITTER ELEVATION

SCALE: 1 1/2"=1'-0"



STEEL/HDPE PIPE CONNECTION DETAIL

SCALE: 1 1/2"=1'-0"

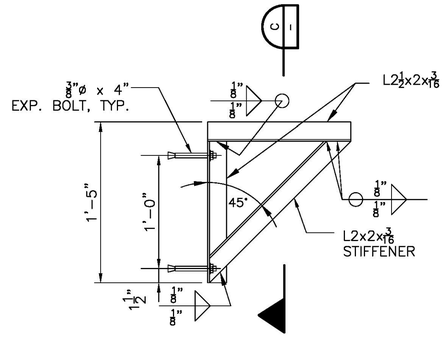


TRASHRACK DETAIL

N.T.S.

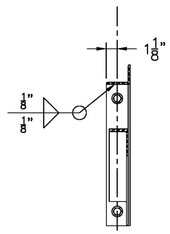
NOTES:

1. DRILL AND TAP ADAPTER PLATE TO MATCH FLANGE BOLT PATTERNS.
2. SECURE TO FLANGES TO ADAPTER PLATE WITH SS STUDS, NUTS AND WASHERS.
3. OUTSIDE DIAMETER TO MATCH LARGEST FLANGE. INSIDE DIAMETER TO MATCH SMALLEST PIPE ID.
4. ALL METAL FABRICATIONS SHOWN ON THIS SHEET ARE TO BE GALVENIZED UNLESS NOTED OTHERWISE.



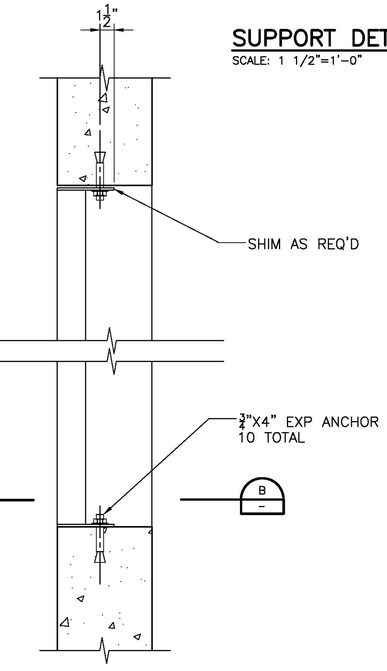
SUPPORT DETAIL

SCALE: 1 1/2"=1'-0"



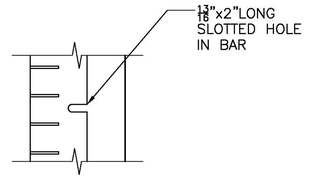
SECTION

SCALE: 1 1/2"=1'-0"



SECTION

N.T.S.



SECTION

N.T.S.

SECTION

N.T.S.

1 0 1 FOOT

1 1/2" = 1'-0"

FILE PATH=I:\0003691\10331000\6.0_CAD_BIM\6.2_WIP\Model Files\C-802.DWG PLOT DATE:5/19/2023 2:35 PM USER:PBERKSHI

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

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8/10/23

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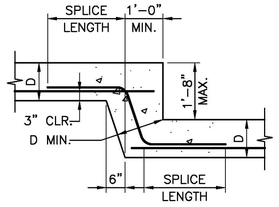
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

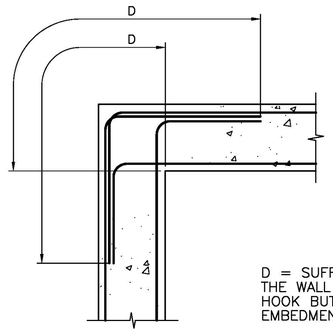
MISCELLANEOUS STEEL DETAILS SHEET 2

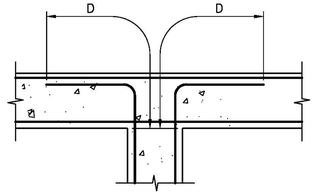
FILENAME	C-801.dwg
SCALE	AS-SHOWN

SHEET C-802



STEPPED FOOTING DETAIL
1/2" = 1'-0"



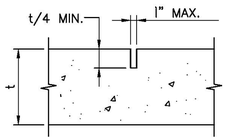


D = SUFFICIENT LENGTH TO PERMIT BARS TO EXTEND THROUGH THE WALL TO THE OPPOSITE FACE AND TERMINATE IN A STANDARD HOOK BUT SHALL NOT BE LESS THAN THE LENGTH REQUIRED FOR EMBEDMENT OF OTHER BARS, AS SHOWN ON THIS SHEET.

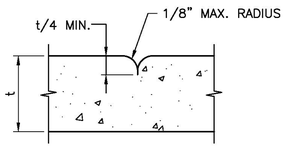
BAR SIZE	MIN. LAP SPLICE LENGTHS (INCHES)		TENSION EMBEDMENT LENGTHS L_{dh}
	OTHER BARS CLASS B	TOP BARS CLASS B	
3	22	29	16
4	29	38	22
5	36	47	28
6	43	56	33
7	62	81	48
8	72	94	55
9	80	105	62
10	90	118	70
11	100	131	77

(f'c = 3ksi, fy = 60ksi)

TYPICAL CORNER REINFORCING DETAILS
NTS



SAWED



HAND-TOOLED

TYPICAL CONTRACTION JOINT
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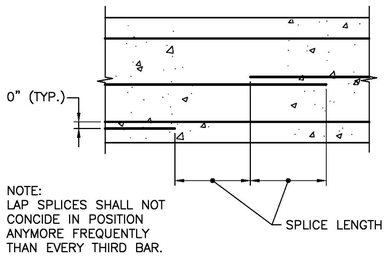
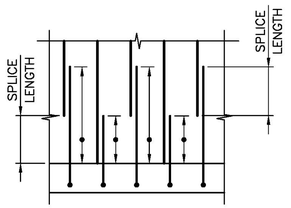
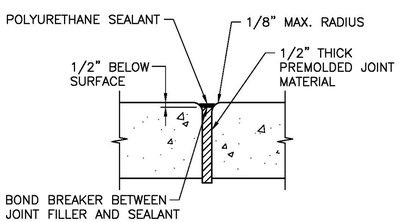


NOTE:
LAP SPLICES SHALL NOT CONCIDE IN POSITION ANYMORE FREQUENTLY THAN EVERY THIRD BAR.

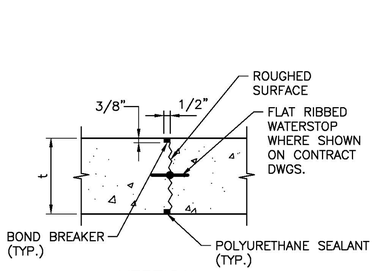


WALL ELEVATION

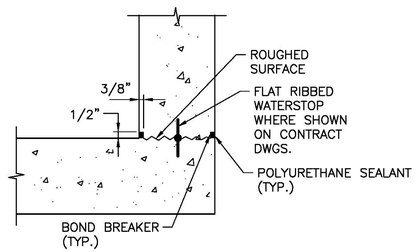
SLAB AND WALL REINFORCING SPLICE DETAILS
NTS



TYPICAL ISOLATION JOINT
NTS



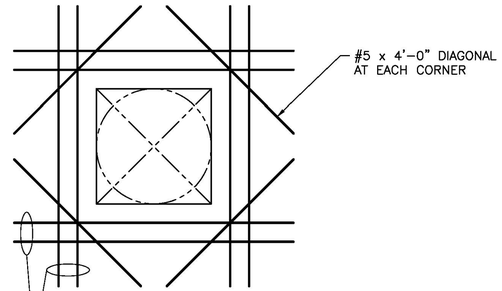
VERTICAL



HORIZONTAL

NOTE: REINFORCING CONTINUOUS THROUGH JOINTS

TYPICAL CONSTRUCTION JOINT
NTS



PROVIDE ADDITIONAL REINF. ON EACH SIDE OF OPENING EQUAL TO AT LEAST 50% OF THE AREA OF THE BARS INTERRUPTED BY THE OPENING BUT NOT LESS THAN 2 – #5. PLACE BARS @ 3" O.C. LENGTH AND TERMINATION SHALL MATCH THAT OF BARS INTERRUPTED.

REINFORCING AROUND OPENINGS IN SLABS AND WALLS
NTS

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

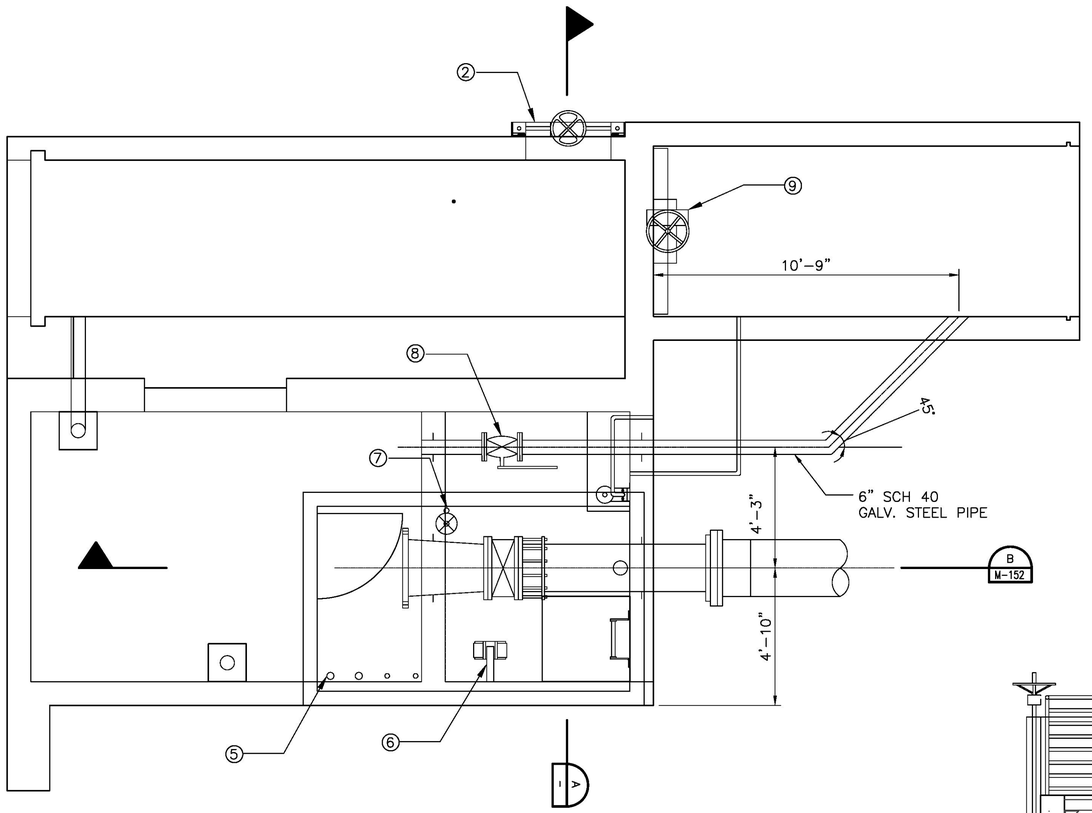
IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

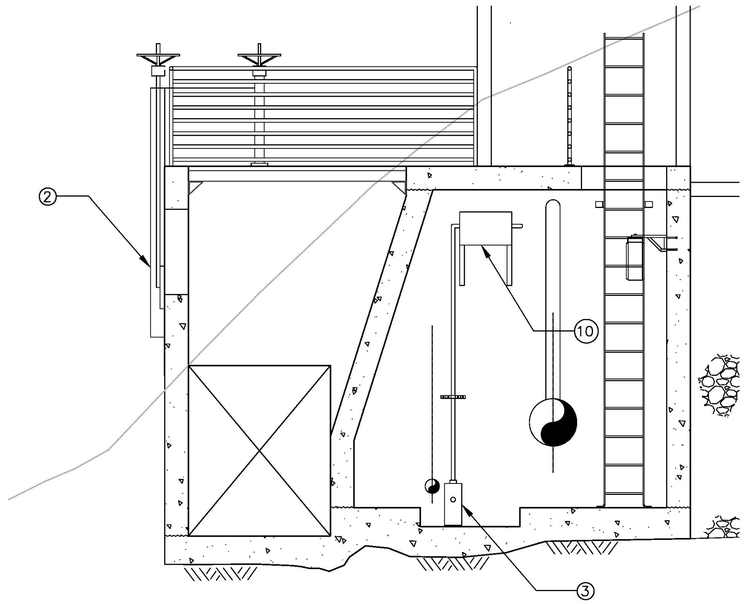
MISCELLANEOUS CONCRETE DETAILS

FILENAME	C-803.dwg
SCALE	AS-SHOWN

SHEET **C-803**



MECHANICAL PLAN
SCALE: 3/8" = 1'–0"



SECTION
3/8" = 1'–0"

NO.	QTY.	EQUIPMENT SPECIFICATION
①	1	BUTTERFLY VALVE, 20–INCH DIAMETER, AWWA CLASS 25, CAST IRON BODY, WAFER TYPE, CAST IRON DISC WITH SS EDGE, 304 SS SHAFT, BUNA–N SEAT RING ON AN ADJUSTABLE SS BACKING SUPPORT RING, TEFLON/EPOXY SHAFT, BEARINGS FOR COLD WATER SERVICE,WITH INTEGRAL DISMANTLING FLANG,WITH ELECTRIC ACTUATOR, NEMA–4 ENCLOSURE, 120 VAC MOTOR, REVERSING STARTER, MANUAL CLUTCH AND BACK–UP MANUAL OPERATOR WITH HANDWHEEL, TORQUE OVERLOAD SWITCHES, LOCAL 3–PUSH BUTTON CONTROL STATION, ADJUSTABLE TRAVEL LIMIT SWITCHES, REMOTE POSITION INDICATION, LOCAL/REMOTE SELECT SWITCH, REMOTE ON/OFF CONTACTS, COMPARTMENT HEATER, MOUNTED AND FACTORY TESTED.
②	1	36–INCH WIDE X 12–INCH DROP GATE, DOUBLE TYPE 304 SS STEMS. SS GATE BODY. GALV. STEEL FRAME. ACTUATOR: 240 VOLT, 25 FT–LB MOTOR, ELECTROMECHANICAL STARTER AND STARTING RELAYS, MANUAL CLUTCH AND BACKUP MANUAL OPERATOR WITH HANDWHEEL, TORQUE OVERLOAD SWITCHES, LOCAL 3–PUSH BUTTON CONTROL STATION, ADJUSTABLE TRAVEL LIMIT SWITCHES, LOCAL POSITION INDICATION, COMPARTMENT HEATER, MOUNTED AND FACTORY TESTED, GEARBOX SUFFICIENT TO OPERATE ABOVE GATE WITH 125% BREAKAWAY TORQUE CAPABILITY FOR ICING CONDITIONS, FOR LOCAL OPERATION ONLY.
③	1	SUMP PUMP, 120 VAC, SINGLE PHASE, 60 HZ, 1/2 HP MOTOR, 15 FEET OF HEAD, INTEGRATED FLOAT SWITCH WITH AUTOMATIC OPERATION, THERMAL OVERLOAD PROTECTION, MCMASTER–CARR, MODEL 9989K62 OR APPROVED EQUAL
④	1	24"X20"X0.25" X 3'–0" LONG STEEL REDUCER. AWWA CLASS 25 FLANGES.
⑤		INSTALL (2) 3" AND (2) 2" CONDUITS AT 1'–0" O.C. THROUGH SLAB TO WET WELL. EXTEND 2" ABOVE AND BELOW SLAB. CAP EACH END. CONDUITS SHALL BE SCH 40 GALV. PIPE.
⑥	1	ELECTRIC UNIT HEATER, 240 VOLT, 5 KW, 17,100 BTUS, WITH FAN MOTOR, WITH BUILT–IN THERMOSTATIC CONTROL, RPM, FAN MOTOR, 1/50 HP, WITH REMOTE 20–90 DEG THERMOSTATIC CONTROL.
⑦	1	CARBON DIOXIDE FIRE EXTINGUISHER, CLASS B, AND C FIRE RATING, 10 LBS., U/L RATING 10B:C, AND CONFORM TO ALL APPLICABLE CODES, RED GLOSSY POLYESTER COATED STEEL CYLINDER WITH PRESSURE GAGE, DISCHARGE HORN AND METAL VALVES, CORROSION RESISTANT FINISH, PULL PIN SQUEEZE GRIP, REPLACEABLE SEALS, WALL MOUNTED BRACKET.
⑧	1	BUTTERFLY VALVE, 6–INCH DIAMETER, AWWA CLASS 25, CAST IRON BODY, WAFER TYPE, CAST IRON DISC WITH SS EDGE, 304 SS SHAFT, MANUAL LEVER OPERATOR.
⑨	1	WATERMAN 60–INCH X 72–INCH SLUICE GATE OR APPROVED EQUAL, MODEL S–5000F, HEAVY DUTY CAST IRON WITH BRONZE SEATS, MANGANESE BRONZE THRUST NUT, TOP, BOTTOM, AND SIDE WEDGES AND STANDARD FLATBACK FRAME, RECTANGULAR FLANGE, RECTANGULAR OPENING, CAST IRON "F" SECTION WALL THIMBLE X 12" DEEP, TYPE 304 SS STEM, BRONZE BUSHED, FULLY ADJUSTABLE CAST IRON STEM GUIDES, LIFT WITH TOP OF WALL MOUNTING BRACKET, SS ANCHOR BOLTS AND ATTACHING STUDS, STANDARD SHOPCOAT PAINT. ACTUATOR: 240 VOLT, 25 FT–LB MOTOR, ELECTROMECHANICAL STARTER AND STARTING RELAYS, MANUAL CLUTCH AND BACKUP MANUAL OPERATOR WITH HANDWHEEL, TORQUE OVERLOAD SWITCHES, LOCAL 3–PUSH BUTTON CONTROL STATION, ADJUSTABLE TRAVEL LIMIT SWITCHES, LOCAL POSITION INDICATION, COMPARTMENT HEATER, MOUNTED AND FACTORY TESTED, GEARBOX SUFFICIENT TO OPERATE ABOVE GATE WITH 125% BREAKAWAY TORQUE CAPABILITY FOR ICING CONDITIONS, FOR LOCAL OPERATION ONLY.
⑩	1	OIL/WATER SEPARATOR. ZURN Z–1186–6 SIZE 400 OR APPROVED EQUAL. OIL SEPARATOR SHALL INCLUDE DRAIN TOP AND VALVE FOR DRAINING OIL PAN SECTION. SET OUTLET AT EL. 751.3'. SEE SHT. C–802 FOR SUPPORT DETAILS.

4 0 4 8 FEET
1/4" = 1'–0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE MECHANICAL PLAN AND SECTIONS SHEET 1

FILENAME	M–151.dwg
SCALE	AS–SHOWN

SHEET
M-151

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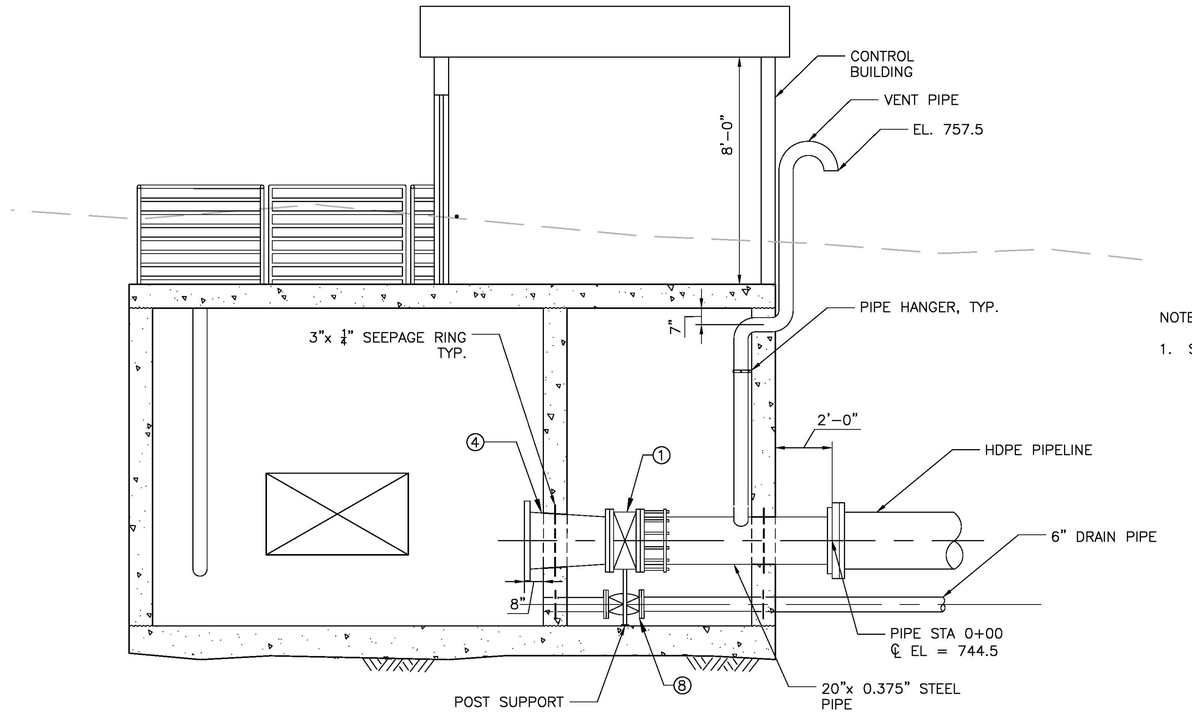

SECTION
3/8" = 1'-0"

NOTES:

1. SEE SHT. M-151 FOR NUMBERED CALLOUTS.

CONTROL BUILDING CONSTRUCTION

WALLS: 2x6 DF, #2 OR BETTER, PRESSURE TREATED BASE PLATE. ANCHOR TO CONCRETE USING ½" ANCHOR OR EMBEDDED J-BOLTS @ 4'-0" O.C. AND 1'-0" FROM EA. CORNER.

ROOF JOISTS: 2x6 DF, #2 OR BETTER

INSULATION: FIBERGLASS R-35 OR BETTER

INTERIOR WALLS: ½" PLYWOOD, PAINT COLOR - COORDINATE WITH OWNER

EXTERIOR WALLS: PANELS TO MATCH POWERHOUSE

ROOF: PANELS TO MATCH POWERHOUSE

ENTRY DOOR: TO MATCH POWERHOUSE

4 0 4 8 FEET
1/4" = 1'-0"

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	P. BERKSHIRE
DESIGNED	
DESIGNED	
CHECKED BY	
DRAWN BY	
DESIGNED	
DESIGNED	
CHECKED BY	
PROJECT NUMBER	10331000

95% DESIGN REVIEW
NOT FOR CONSTRUCTION
8/10/23

INSIDE PASSAGE ELECTRIC COOPERATIVE

WATER SUPPLY CREEK HYDROELECTRIC PROJECT
HOONAH, ALASKA

INTAKE
MECHANICAL
PLAN AND SECTIONS
SHEET 2

FILENAME	M-152.dwg
SCALE	AS-SHOWN

SHEET
M-152

Technical Report No. 23-10

Water Supply Creek Fish and Fish Habitat Assessment

by

Greg Albrecht and Katrina M. Kanouse

December 2023

Alaska Department of Fish and Game **Habitat Section**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in reports by the Divisions of Sport Fish and Commercial Fisheries, and the Habitat Section. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figures or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milligram	mg
milliliter	mL
millimeter	mm
nanometer	nm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
inch of mercury	inHg
kilowatt	kW
Kilopascal	kPa
Nephelometric Turbidity Unit	NTU
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
etalii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
idest (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
no data	ND
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

TECHNICAL REPORT NO. 23-10

WATER SUPPLY CREEK
FISH AND FISH HABITAT ASSESSMENT

by

Greg Albrecht

and

Katrina M. Kanouse

Alaska Department of Fish and Game
Habitat Section, Southeast Region
P.O. Box 110024, Juneau, Alaska 99811

December 2023

This project was funded by the Inside Passage Electric Cooperative and
the Alaska Department of Fish and Game Habitat Section.

Cover: Water Supply Creek and resident Dolly Varden (inset).

Technical Reports are available through the Alaska State Library, Alaska Resources Library and Information Services (ARLIS) and on the Internet: http://www.adfg.alaska.gov/index.cfm?adfg=habitat_publications.main. This publication has undergone editorial and peer review.

Note: Product names or specific company names used in this publication are included for completeness but do not constitute product endorsement. The Alaska Department of Fish and Game, in accordance with State of Alaska ethics laws, does not favor one group over another through endorsement or recommendation.

Alaska Department of Fish and Game, Habitat Section,
P.O. Box 110024, Juneau, Alaska 99811, USA

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ACKNOWLEDGEMENTS

We appreciate Inside Passage Electric Cooperative Operations Manager Brandon Shaw approaching the Alaska Department of Fish and Game Habitat Section to conduct these studies in preparation for hydroelectric project permitting, and for supplying funding for Habitat Section staff time, travel, and equipment. Habitat Biologist Evan Fritz assisted with developing the study plan with Inside Passage Electric Cooperative staff; Inside Passage Electric Cooperative staff in Hoonah assisted with logistics and transportation; and Evan Fritz along with Habitat Biologists Erika King, Flynn Casey, and Dylan Krull assisted with field work. Habitat Section Operations Manager Dr. Al Ott, Dylan Krull, and Hydrologist Carl Reese with the Alaska Department of Natural Resources Division of Mining, Land, and Water reviewed the report.

EXECUTIVE SUMMARY

Inside Passage Electric Cooperative contracted the Alaska Department of Fish and Game Habitat Section to assess fish use and fish habitat in Water Supply Creek, the proposed location for a 400 kW run-of-river hydroelectric project (1.4–14 ft^3/s design flow), which would supplement the City of Hoonah electrical demand that is currently supported by the Gartina Creek hydroelectric project and diesel generators. Water Supply Creek is a tributary of Gartina Creek, above the barrier to anadromous fish migration, and upstream of the Gartina Creek Hydroelectric project.

Habitat Section staff traveled to Hoonah seven times between March 31, 2022, and August 8, 2023, to gage stream discharge and document fish presence and fish habitat in the vicinity of the project. Using water level loggers sampling at 2-hour intervals and stream discharge measurements, we generated a rating curve to approximate daily discharge throughout the 16-month monitoring period at the upstream and downstream ends of the proposed project. We used a backpack electrofisher and minnow traps to sample fish throughout the bypass reach, and repeated trapping efforts conducted in 2010 (unpublished HDR Inc. data obtained from Erin Cunningham, Anchorage, Alaska). We also documented pools and surface tributaries, which would provide habitat and supplemental flow during hydroelectric operation.

Mean annual flow at the proposed intake and tailrace was estimated at 9.4 ft^3/s and 10.9 ft^3/s, with a range of 1.3–106.4 ft^3/s and 2.0–146.2 ft^3/s during the monitoring period. The maximum design flow of 14 ft^3/s was exceeded about 26% of the time at the intake site. The 4,600 ft long bypass reach mean gradient is 12% and contains several upstream fish migration barriers. The reach is bedrock-confined and provides habitat for resident Dolly Varden, primarily in the form of deep pools which provide refuge during high and low flow events; otherwise the canyon mainly provides a downstream fish migration corridor. In August 2023 we sampled the bypass reach for fish presence, capturing 23 Dolly Varden (55–160 mm FL) and documented resident Dolly Varden in lower-gradient habitat 1,700 ft upstream of the intake site. We documented 25 pools having 1–4.5 ft residual pool depth, and 17 surface tributaries in the bypass reach; the tributaries nearly cease to flow during extended cold and warm periods with little precipitation.

The proposed hydroelectric project includes providing up to 1 ft^3/s instream flow reservation for fish habitat and to ensure uninterrupted flow through the bypass reach and to the City of Hoonah water supply intake[a], in the event of a planned or emergency shutdown. Supplemental tributary flow, periodic exceedance of hydroelectric flow capacity, and the presence of many pools provide adequate habitat conditions for resident Dolly Varden to persist in Water Supply Creek, regardless of the amount of instream flow provided.

[a] Located adjacent to the proposed project tailrace.

INTRODUCTION

Water Supply Creek is a tributary to Gartina Creek[b] that provides habitat for resident Dolly Varden. The confluence of the two creeks is 830 ft upstream of Gartina Falls, a natural barrier to upstream anadromous fish migration and the site of the Gartina Creek hydroelectric facility. The City of Hoonah (City) operates a water intake behind a low-head dam for water supply 2,800 ft upstream of the confluence, which has been in place for decades. The intakes for the Gartina Creek hydro and City water supply do not have fish exclusion screens.

Inside Passage Electric Cooperative's (IPEC) proposed location of the tailrace for the Water Supply Creek run-of-river hydroelectric facility would be immediately upstream of the City water supply intake impoundment. The proposed intake would be 4,600 ft upstream at the head of a newly constructed 10 ft tall rock and concrete diversion weir. The proposed hydroelectric operation has a design flow of 1.4–14 ft^3/s and IPEC proposes a continuous instream flow release of up to 1 ft^3/s to maintain fish habitat and supply water to the City water supply intake in the event of a shutdown, which could result in a flow interruption when streamflow is less than 14 ft^3/s. The proposed bypass reach is a bedrock-confined channel characterized by cobble and boulder riffles, bedrock cascades, pools, and a 20 ft waterfall. We documented resident Dolly Varden in the bypass reach and within 1,700 ft upstream of the proposed intake site.

Since the proposed project has the potential to restrict resident fish passage, a Title 16 Fish Habitat Permit from the Alaska Department of Fish and Game (ADF&G) Habitat Section is required to construct the project per the Fish Passage Act at Alaska Statute 16.05.841.[c] Since barriers to upstream migration are naturally present in the drainage, a fishway is not required. This investigation centered on collecting data to evaluate the need for, and potential amount of, instream flow needed for fish habitat during hydroelectric operation.

PURPOSE

The purpose of this assessment was to document fish habitat and seasonal fish use in and around the proposed Water Supply Creek hydroelectric project bypass reach and to generate a continuous streamflow record using water level loggers and discharge measurements for evaluation of the proposed hydroelectric facilities' potential affects to fish habitat.

STUDY AREA

Water Supply Creek is a snowmelt and rain-fed drainage (Figure 1) that has a watershed area of 1.9 mi^2 upstream of the proposed hydro tailrace[d], and is bounded by steep ridgelines ascending to 3,180 ft elevation.[e] The approximately 4,600 ft bypass reach is confined by bedrock slopes and rises from 430 ft elevation at the proposed tailrace site (Figure 2) to 800 ft at the proposed intake site (Figure 3) for an average gradient of 12%; which results in a potential 370 ft of gross hydraulic head. Throughout the bypass reach, gradient ranges 3–30% with numerous cascades, chutes, and falls, characteristics of a high gradient contained channel type (Paustian 2010); the largest of which

---

[b] ADF&G Stream No. 114-31-10090; cataloged for chum, coho, and pink salmon and Dolly Varden.

[c] Project authorized under Fish Habitat Permit No. FH23-I-0077, issued September 17, 2023.

[d] Drainage area upstream of the proposed intake location is 1.4 mi^2.

[e] Drainage area and elevation data obtained from geospatial analysis using Statewide IFSAR 10 ft contours. DGGS Staff, 2013, Elevation Datasets of Alaska: Alaska Division of Geological & Geophysical Surveys Digital Data Series 4, https://elevation.alaska.gov/.

is a 20 ft vertical waterfall that constitutes one of several upstream fish migration barriers (Figure 4). Additionally, there are several other falls and debris jams that are fish migration barriers at some or all stream flows. During our surveys, we observed at least 17 surface tributaries of variable size and seasonal flow that enter the bypass reach. The most valuable fish habitat in the project area are deep pools that provide refuge during high and low streamflow events.

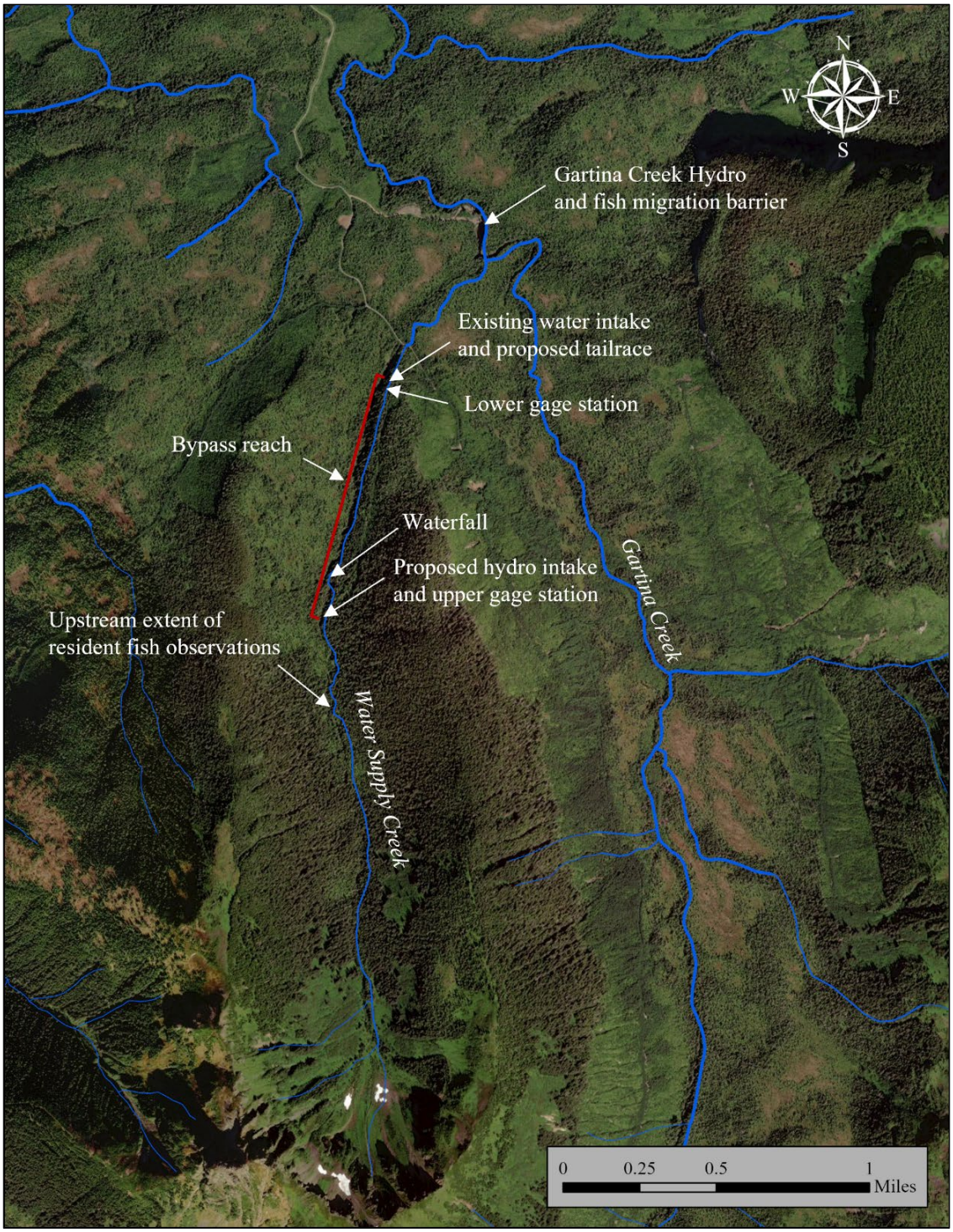

Figure 1.–Water Supply Creek area study map.

Figure 2.–Existing City water supply intake and location of the proposed hydroelectric facility tailrace, 8/9/2023.

Figure 3.–Aerial image of the proposed hydroelectric facility intake site, taken 100 ft above ground level, 12/5/2022.

Figure 4.–Water Supply Creek 20 ft barrier falls, 8/9/2023.

METHODS

STREAM GAGING

Onset® Hobo UL20 water level loggers were installed in PVC cases; one secured to a boulder with concrete anchor bolts in a pool 180 ft upstream of the proposed hydro tailrace location (lower gage station; Figure 5) and one with a rebar stake pounded into the substrate in a riffle at the proposed intake location (upper gage station; Figure 6). Both dataloggers were set to sample at 2 h intervals and corrected for atmospheric pressure by readings taken simultaneously from a third datalogger hung from a tree at the lower station. The datalogger at the lower station was adjacent to an existing staff gage in a plunge pool and stage was recorded at the upper station by measuring the depth of water above the rebar stake with a tape measure to the nearest 0.10 inch.

Figure 5.–Staff gage and data logger at the lower station, 8/22/2023.

Figure 6.–Data logger at the upper station, 4/19/2023.

Stream discharge was measured with a SonTek Flowtracker® acoustic doppler velocimeter at the lower station on nine occasions and at the upper station six times to gage base flow and estimate supplemental flow entering the reach throughout the seasons (Figure 7) following standard procedures from Rantz (1982) and Sontek (2007). Channel ice and snow was removed for discharge measurements if possible. Data collection was impacted when heavy snow and ice covered the channel or impounded the dataloggers on two occasions for 2–4 days. The atmospheric datalogger produced erroneous readings over three periods of cold weather for a total of 22 days; we corrected the data based on readings from the opposite station, or an estimate based on weather conditions during events when both stations were affected, to produce a full 16-month data set for evaluation.

Stage-discharge datapoints were graphed and the logarithmic curve equation generated by the datapoints was used to build rating curves for the range of observed flows and the range above the maximum observed flow to the maximum recorded stage level at both stations. Discharge for the highest recorded stage level at the upper gage station was estimated by surveying channel cross-sectional area and applying the U.S. Geological Survey slope-conveyance method, which uses Manning's equation (Dalrymple and Benson 1968):

$$Q = \left(\frac{1.486}{n}\right) AR^{2/3}S^{1/2}$$

Where n equals the channel roughness coefficient, A equals the cross-sectional area, R equals the hydraulic radius, and S equals channel slope. This method is inappropriate for the lower station, which was in a pool, so we scaled our estimate of peak flow at the downstream station based on relative drainage area: the peak upstream value was multiplied by a factor of 1.357 (the ratio of drainage area at the downstream station and the upstream station; 1.9 mi^2/1.4 mi^2). Daily discharge values were calculated using the mean water level for each 24-hour day and these values were used to calculate mean monthly flow and mean annual flow. In months where sampling occurred in both 2022 and 2023, the average of the data from both years was used for the mean monthly value.

Figure 7.–Habitat Section biologists recording discharge measurement at the upstream station, 6/23/2023.

FISH AND FISH HABITAT

Fish were sampled throughout the bypass reach in all habitat types by using a Smith-Root LR-24 backpack electrofisher on three occasions 2022–2023, and on August 8, 2023, using 1/4 inch mesh minnow traps baited with disinfected[f] salmon roe set for 24 hours. While surveying the bypass reach, we documented surface tributaries and estimated streamflow input in summer and winter; also, we documented the location of pools, and visually estimated pool area and measured residual depth to the nearest inch. Photos were taken from ground level and the air using a drone in summer and winter to characterize and document stream features. We also surveyed fish use and fish habitat about 1,700 ft upstream of the proposed water intake; resident fish habitat appears to exist further upstream based on topography, however the extent of fish use is unknown.

[f] Following methods in Magnus et al. (2006).

RESULTS

STREAM GAGING

Fifteen streamflow measurements were collected to calculate discharge at the upper and lower gage stations between March 31, 2022, and August 8, 2023, which ranged 1.5–32.6 ft^3/s (Table 1). Peak discharge values, which occurred at both stations on October 1, 2022, for the upper and lower sites were estimated at 106 ft^3/s and 144 ft^3/s.

The upstream value was estimated using a recorded stage level of 2.42 ft and Manning's equation values of 0.19 for *n*, a surveyed channel cross sectional area (*A*) of 36.93 ft^2, a surveyed hydraulic radius of 1.63 ft, and a channel slope (*S*) of 0.07. Peak discharge at the lower site was obtained by multiplying the upstream peak discharge value by a factor of 1.357, the ratio of drainage area at the lower and upper stations. Due to the assumptions and estimations in Manning's equation,[g] estimated streamflow statistics above the observed peak discharge values should be treated with caution.[h]

The estimated mean annual streamflow at the upper site was 9.4 ft^3/s, and mean monthly streamflow ranged 2.9–21.1 ft^3/s (Table 2). Mean annual streamflow at the lower site was estimated at 10.9 ft^3/s, and mean monthly flows ranged 4.1–27.6 ft^3/s (Table 3). Estimates of daily exceedances and streamflow frequencies are presented in Figures 8–11, an annual water level and discharge graph is presented in Appendix B, and mean daily water level data is in Appendix C.

Table 1.–Discharge data.

	Upstream site			Downstream site			
Date	Time	Water level (ft)	Discharge (ft^3/s)	Time	Staff gage (ft)	Water level (ft)	Discharge (ft^3/s)
3/31/2022	12:30	0.809	4.1	14:36	1.17	1.16	6.8
9/15/2022	14:09	0.810	5.2	12:27	1.12	1.08	5.5
12/5/2022	11:36	0.729	4.0	13:36	1.00	0.96	4.1
3/13/2023	13:29	0.604	1.5	10:40	0.84	0.77	2.0
4/19/2023	ND	ND	ND	9:00	1.08	0.99	5.1
5/18/2023	ND	ND	ND	10:35	1.57	1.48	25.6
5/18/2023	12:15	1.267	27.0	15:20	1.61	1.51	32.6
8/7/2023	ND	ND	ND	16:00	0.85	0.78	2.5
8/8/2023	12:50	0.631	2.7	14:19	0.88	0.80	2.9

[g] Such as the assumptions of uniform flow and channel roughness.

[h] The estimates are the result of a rating curve produced from two points, one of which is an estimate from the slope-conveyance method multiplied by the ratio of drainage area between the two sites. Scaling the downstream peak discharge value based on drainage area assumes uniform rainfall, water transport, and seasonal temperature characteristics, among others.

Table 2.–Mean annual and monthly flow statistics for the upper gage station.

Time period	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean discharge (ft^3/s)	**9.4**	5.5	3.1	3.3	**4.5**	**21.1**	**18.2**	**6.4**	6.0	11.8	19.7	10.2	2.9

Note: Bold values indicate means derived from more than one year of observations.

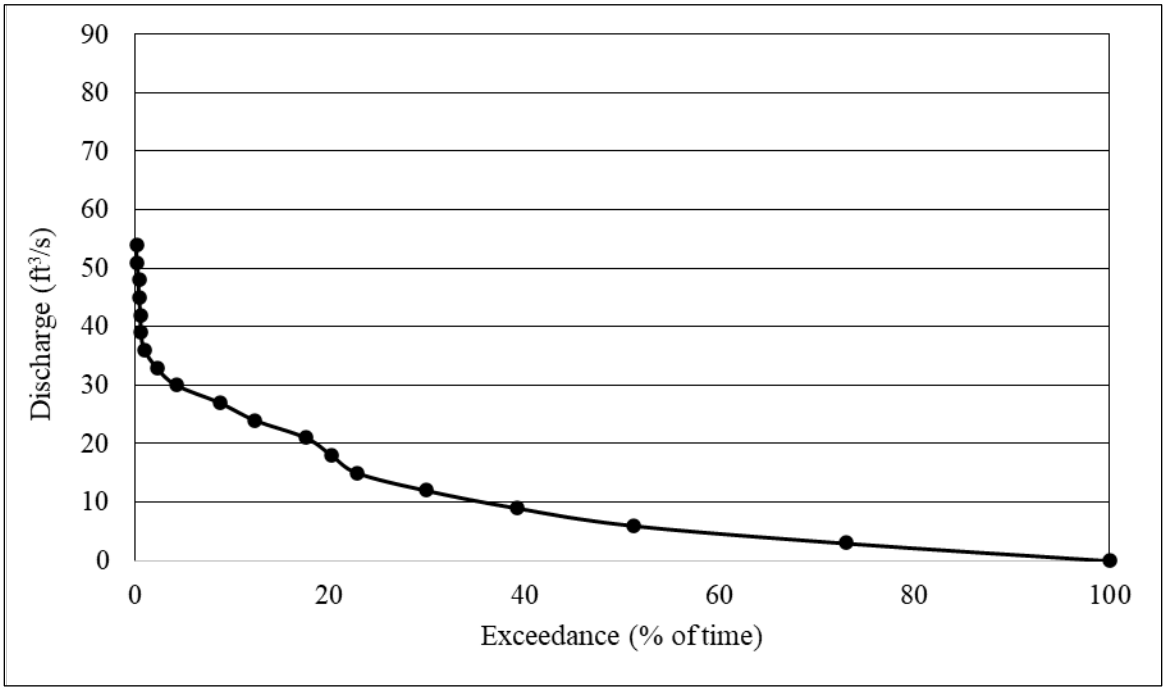

Figure 8.–Flow duration curve for the upper gage station.

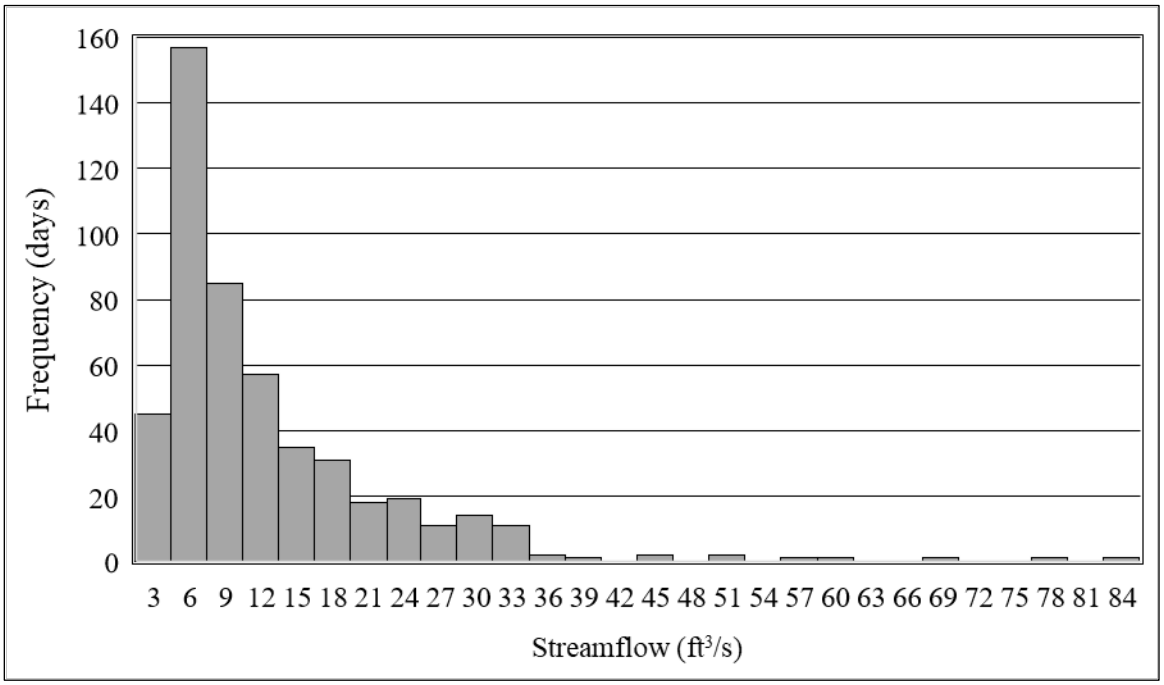

Figure 9.–Flow-frequency histogram for the upper gage station.

Table 3.–Mean annual and monthly flow statistics for the lower gage station.

Month	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean discharge (ft^3/s)	**10.9**	8.6	4.4	4.5	**8.2**	**19.5**	**13.5**	**5.4**	**6.5**	14.7	27.6	13.4	4.1

Note: Bold values indicate means derived from more than one year of observations.

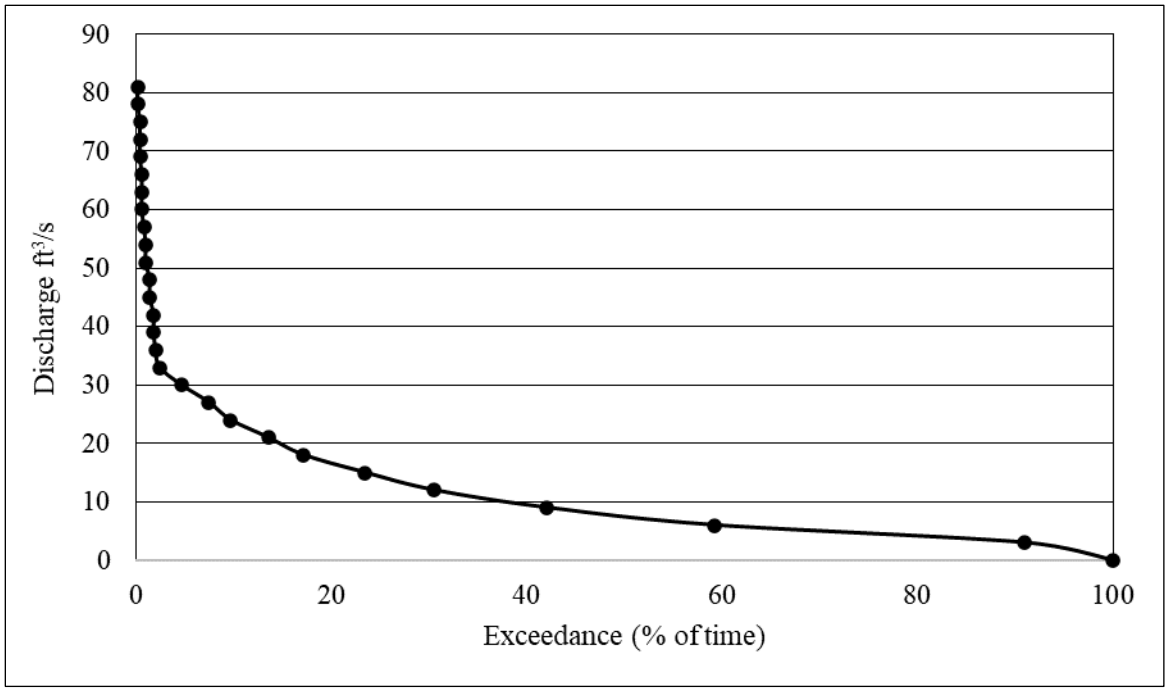

Figure 10.–Flow duration curve for the lower gage station.

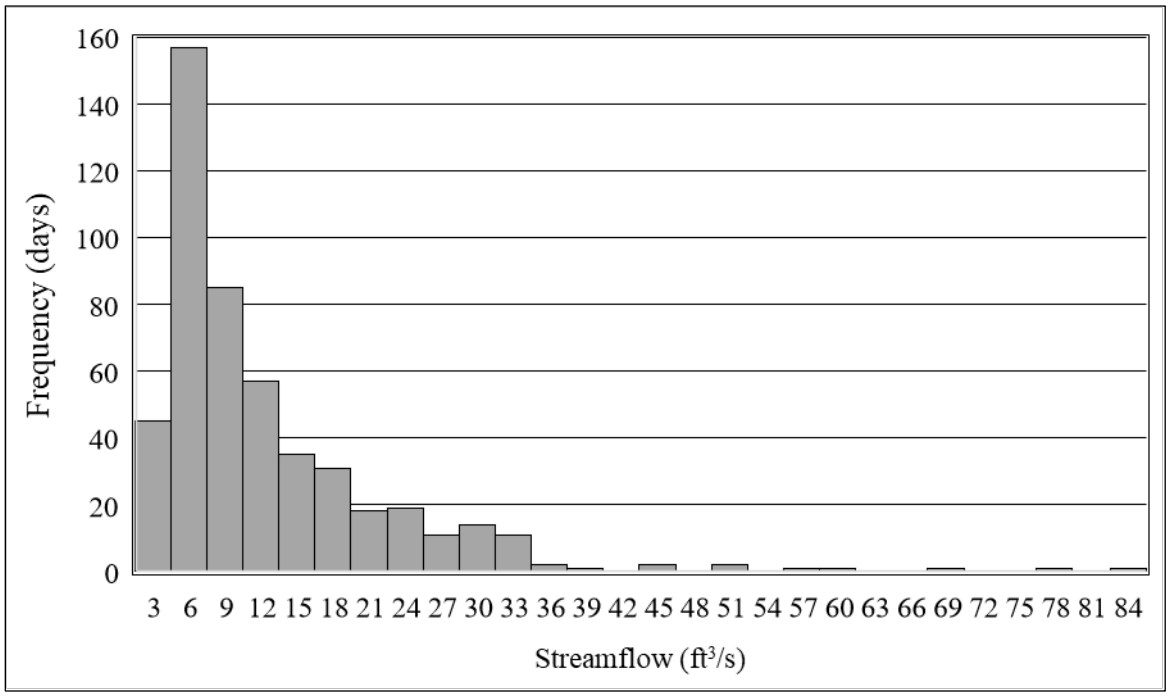

Figure 11.–Flow-frequency histogram for the lower gage station.

Low flow periods, which can limit hydroelectric generation potential, typically occur in mid-summer and mid-winter during warm, dry and extended cold conditions in Southeast Alaska. The 16-month streamflow record period was marked by wet conditions mid-July through November 2022, with a relatively heavy snowpack remaining in the spring and average precipitation in 2023 (ACIS 2023). The lowest mean monthly discharge rates were observed in February, March, and December and peak flows were in May, June, and October. The estimated daily mean discharge at the intake site exceeded 1.4 ft^3/s 100% of the time and 14 ft^3/s 26% of the time.

Supplemental flow entering the bypass reach was variable throughout the seasons and dependent on rainfall, snowmelt, and soil saturation. We visually estimated supplemental flow entering the bypass reach at each tributary mouth and by measuring Water Supply Creek discharge at the upper and lower stations during all seasons; supplemental flow made up 2–39% of total estimated discharges, with lower rates of contribution occurring during dry periods and freezing temperatures (Table 4).

FISH AND FISH HABITAT

Surveys of the bypass reach resulted in identification of 25 pools with residual depths ranging 1–4.5 ft and capture of resident Dolly Varden (Table 4). The lower 2,250 ft of the bypass reach was sampled with a backpack electrofisher on April 19, 2023, prior to breakup of ice and snow; though, only one fish was captured. On August 8, 2023, we captured 7 fish in 16 baited minnow traps placed in the bypass reach, a replication of trapping performed in August 2010 by HDR Inc., in which 11 fish were captured (unpublished HDR Inc. data obtained from Erin Cunningham, HDR Inc., Anchorage, Alaska). On this occasion we also used a backpack electrofisher to extensively sample the bypass reach and within 1,100 ft downstream and 2,000 ft upstream of the project, capturing an additional 23 Dolly Varden. The bypass reach is confined by bedrock canyon walls and has an average gradient of 12%. Dolly Varden spawning substrate is scattered in patches, typically at the tail of pools; however, it is likely subject to scour and redistribution during high flows due to channel confinement.

Overall, the bypass reach appears to provide seasonal habitat that is primarily occupied in the summer as fish move downstream from the source population that extends at least 1,700 ft upstream of the proposed intake site (Appendix A). Dolly Varden are relatively inactive in winter months due to cold temperatures limiting movement and likely reside in pools (Armstrong and Morrow 1980). Due to scour potential in the bypass reach, it is most likely spawning that contributes to the population upstream of the City water intake structure, upstream of the proposed hydro intake location where the stream valley is less confined and gradient is lower (about 3–6%; Figure 12). Therefore, the primary value of the bypass reach is for summer migration and feeding, with the possibility of a few fish overwintering in pools (Figure 13).

Table 4.–Fish habitat survey results.

Waypoint	Pool area (ft^2)	Residual pool depth (ft)	Observed discharge range (gpm)	Fish captured in minnow traps (8/8/2023)	Fish captured with electrofisher (8/8/2023)
MT1				0	5
MT2				0	2
P1	311	3.25			
P2	175	2.5			
MT3				0	9
P3	125	2.75			
MT4				0	1
P4	180	3			
P5	150	2.25			
MT5, TR1			10-65	2	1
TR2			0-50		
P6, TR3	300	3	0-135		
TR4			15-25		
MT6, P7	307.5	3.75		1	3
TR5			10-65		
TR6			0-35		
TR7, P8	100	3	0-30		
TR8, MT7, P9	24	1	20-135	3	1
P10, TR9	73	2.25	0-90		
P11	123	3			
TR10			0-5		
TR11, P11,MT8	25	1.5	0-30	1	
P12	25	1			
P13	25	1			
P14	225	2.5			
TR11, P15	100	2	30-40		
P16	300	2.5			
TR12			0-20		
P17	100	2			
P18, TR13	220	1.25	0-80		
P19, TR14, MT9	300	4.5	20-50	0	
P20	36	2			
P21	48	1			
P22	48	1			
P23, TR15	80	1.25	2-20		
P24, TR16	120	1.5	0-40		
P25, TR17	144	1.5	0-100		
MT10				2	
MT11				1	1

Note: MT = minnow trap; P = pool, and TR = tributary.

Note: Minnow traps that did not capture fish are not shown. Waypoint MT1, MT2, MT10, and MT11 were located outside the bypass reach.

Figure 12.–Low gradient habitat upstream of intake site, 8/23/2023.

Figure 13.–Bypass reach pool habitat, 8/7/2023.

DISCUSSION

The proposed hydroelectric facility has a design flow of 1.4–14 ft^3/s, meaning base flow through the bypass reach would be diverted about 74% of the time based on our observations and streamflow estimates during the 16-month monitoring period. However, periodic high flow events would flood the bypass reach and supplemental flow from tributaries would usually be flowing to maintain sufficient dissolved oxygen in the stream. The bypass reach contains about 25 pools with residual depths of 1–4.5 ft, which provide valuable habitat during periods with little supplemental flow. Given the observed low fish density, low solar gain due to aspect and canyon shade, and the absence of a large lake upstream which could increase water temperature in summer and freeze over in winter, dissolved oxygen is expected to remain sufficient for Dolly Varden in the bypass reach during low flow events. Furthermore, IPEC's proposal includes an instream flow reservation of up to 1 ft^3/s to support fish habitat and ensure uninterrupted flow to the City water supply intake, in the event of a shutdown.

The combination of a continuous flow release from the proposed hydroelectric project, periodic natural high flows, supplemental tributary flow accumulating to about 0.05 ft^3/s –2.2 ft^3/s, pool habitat, and naturally cool water conditions will provide sufficient water quantity and quality for resident Dolly Varden. Therefore, diversion of water for the proposed hydroelectric project is not expected to have a negative impact on the resident fish population in Water Supply Creek.

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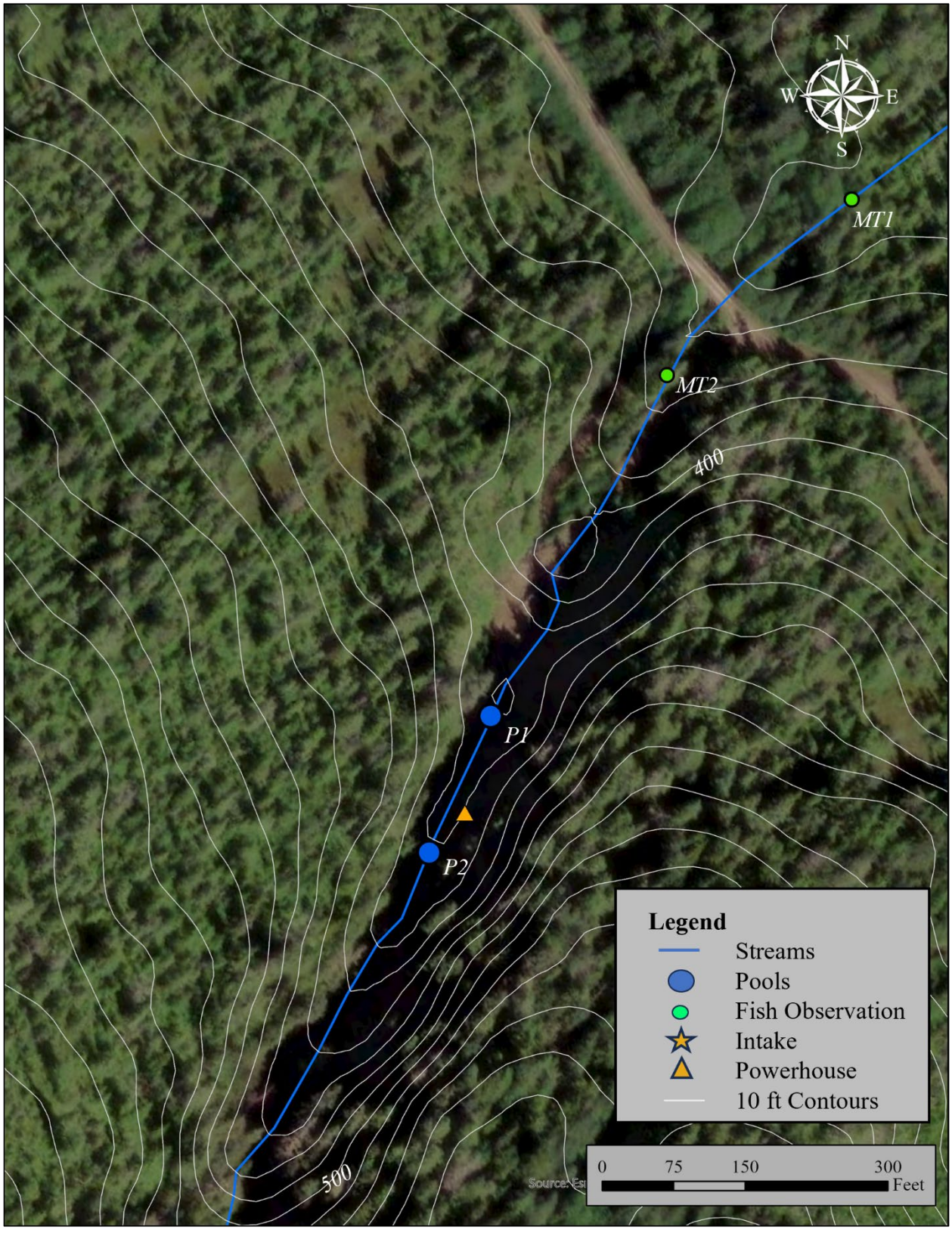
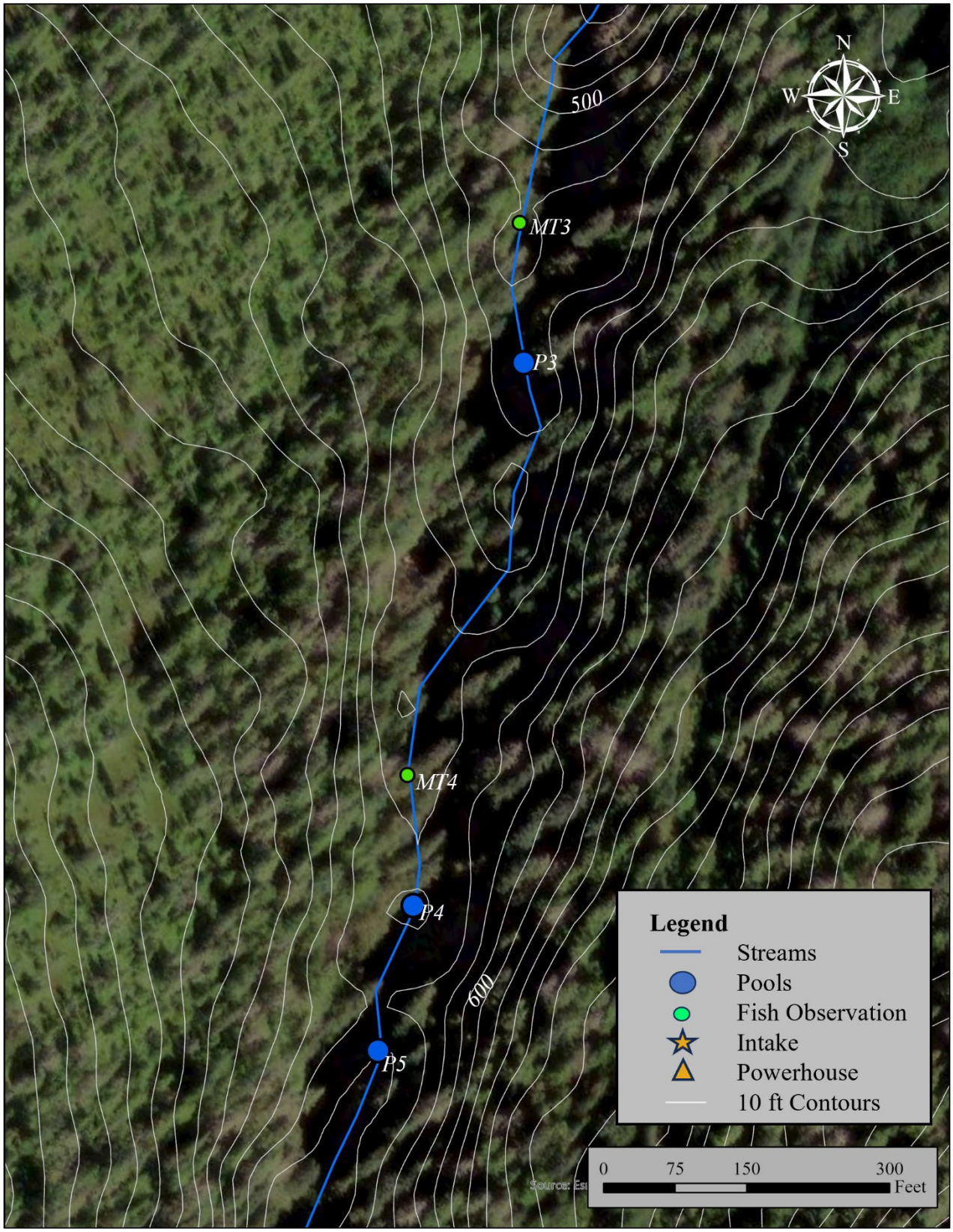
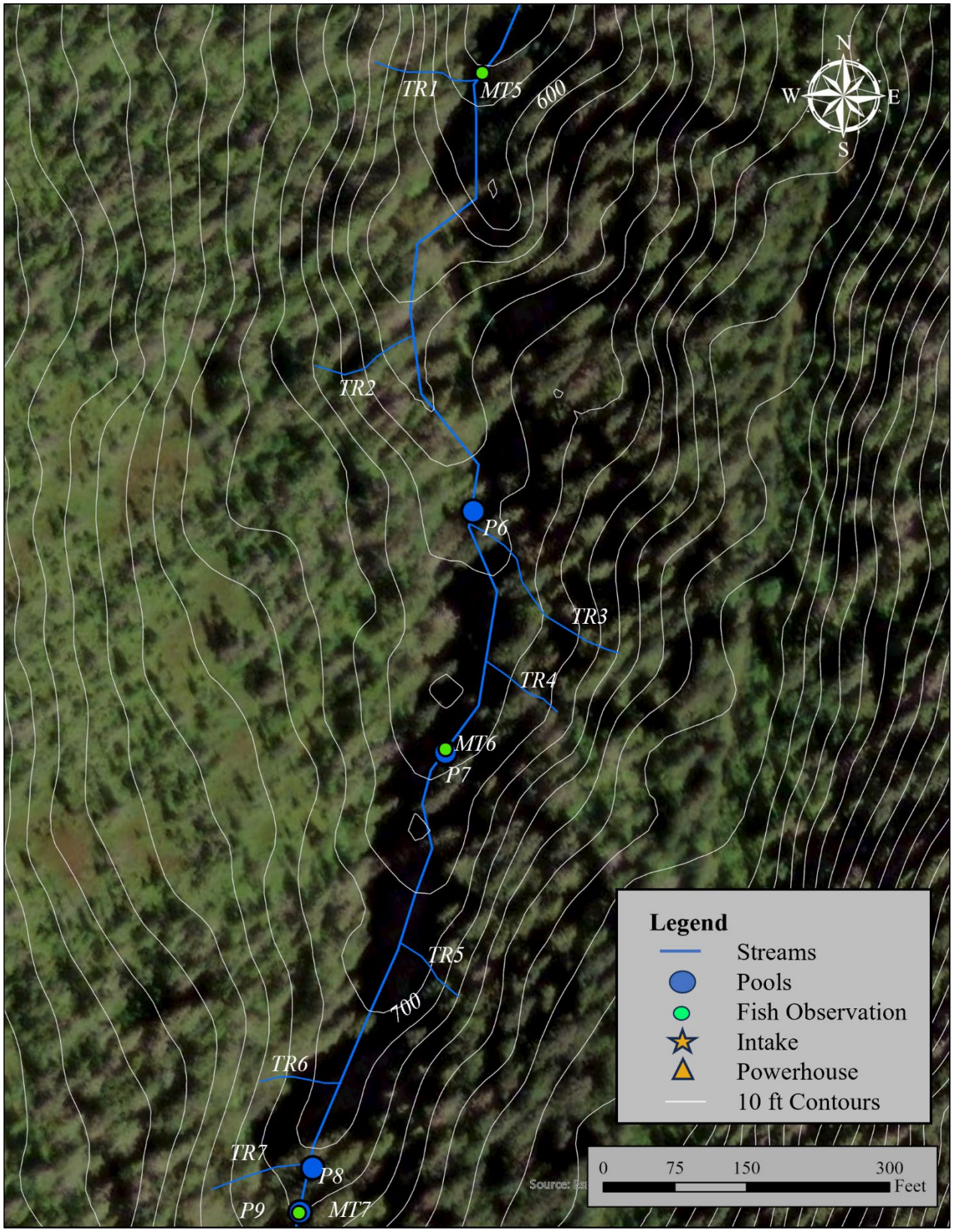
APPENDIX A: FISH HABITAT REACH MAPS

Appendix A.1–Reach scale habitat maps.




N
W
E
S
500
600
MT3
P3
MT4
P4
P5
Legend
Streams
Pools
Fish Observation
Intake
Powerhouse
10 ft Contours
0
75
150
300
Feet


N
W
E
S
TR1
MT5
600
TR2
P6
TR3
TR4
MT6
P7
TR5
700
TR6
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Intake
Powerhouse
10 ft Contours
0
75
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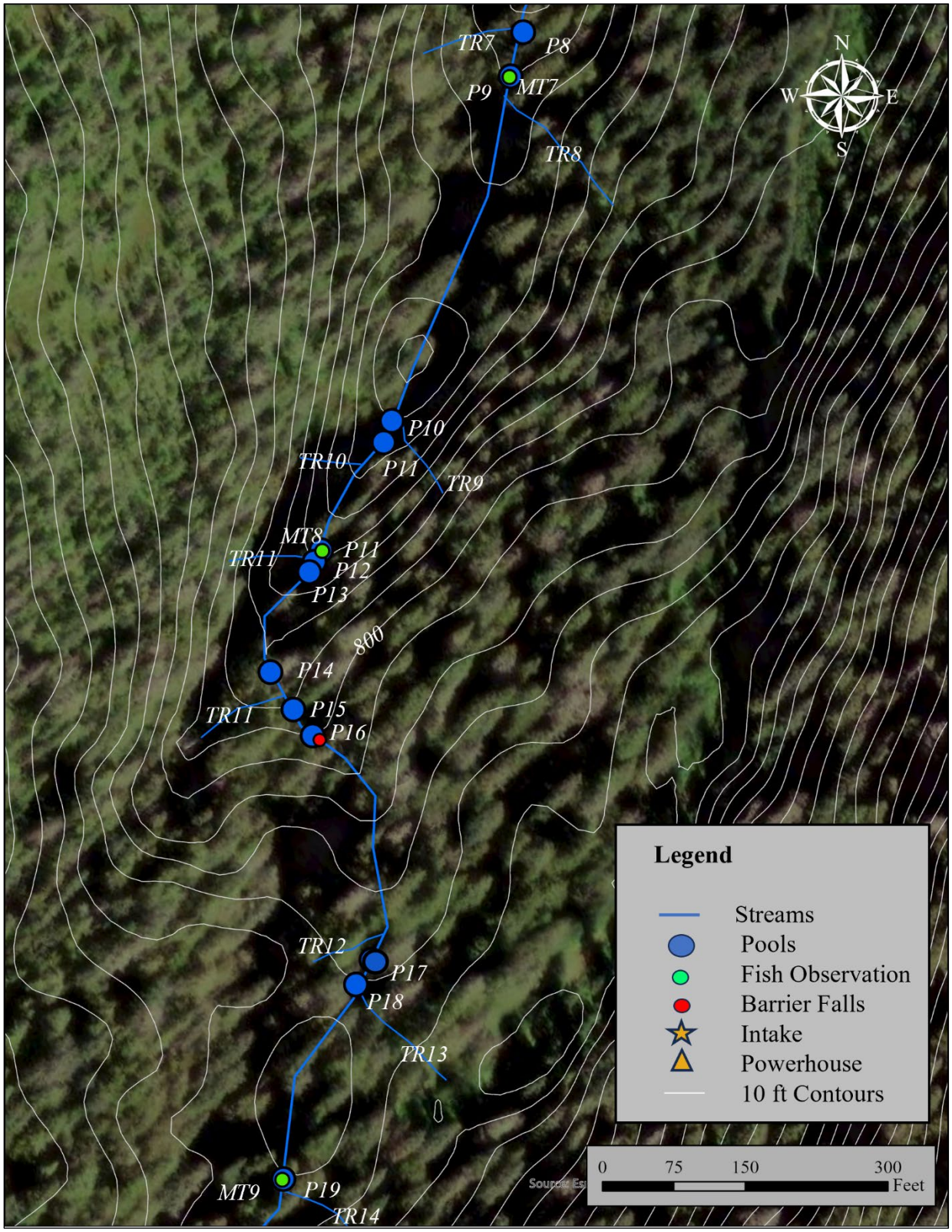
Feet


TR7
P8
P9
MT7
TR8
N
W
E
S
P10
TR10
P11
TR9
MT8
TR11
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P12
P13
800
P14
TR11
P15
P16
TR12
P17
P18
TR13
MT9
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Pools
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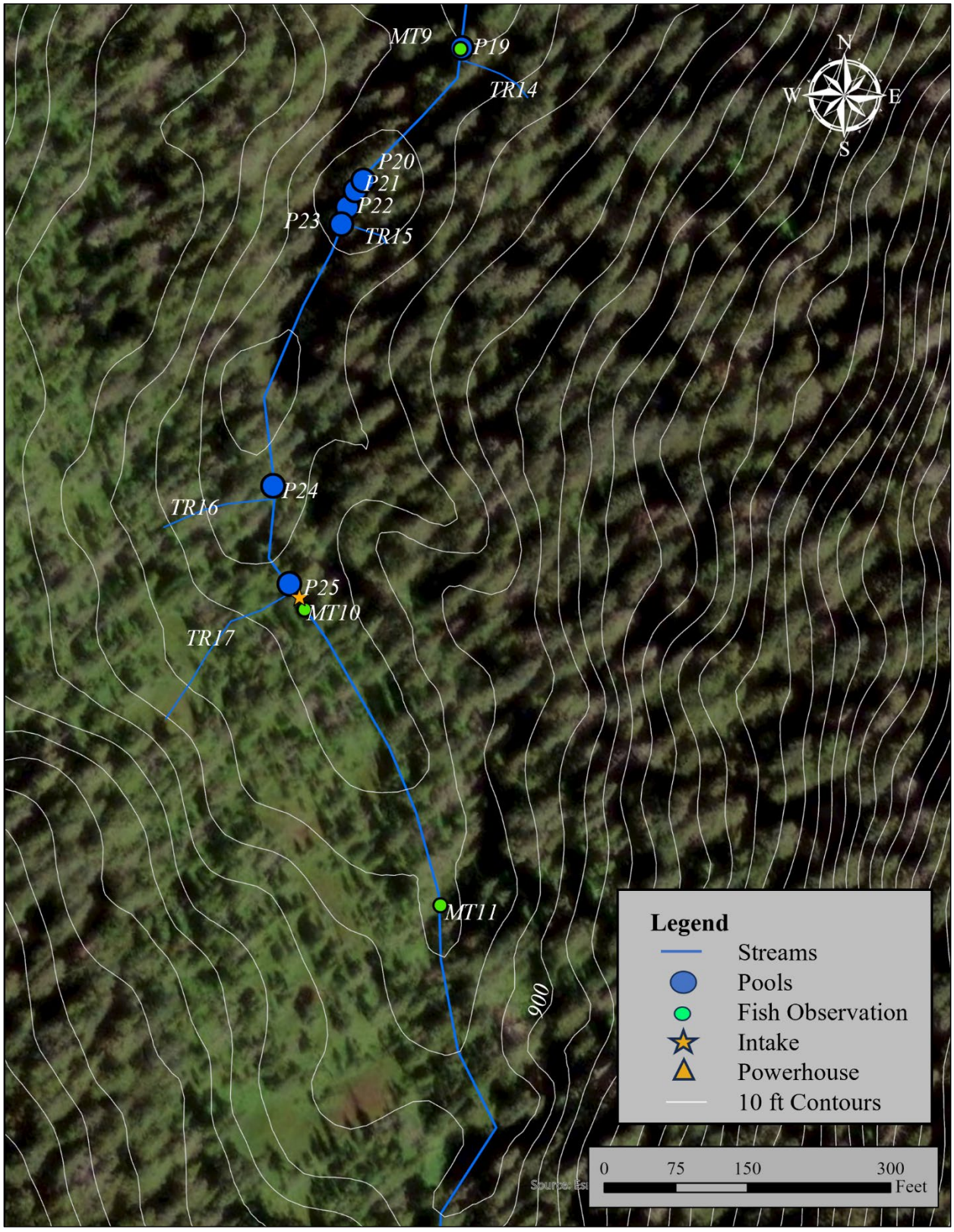
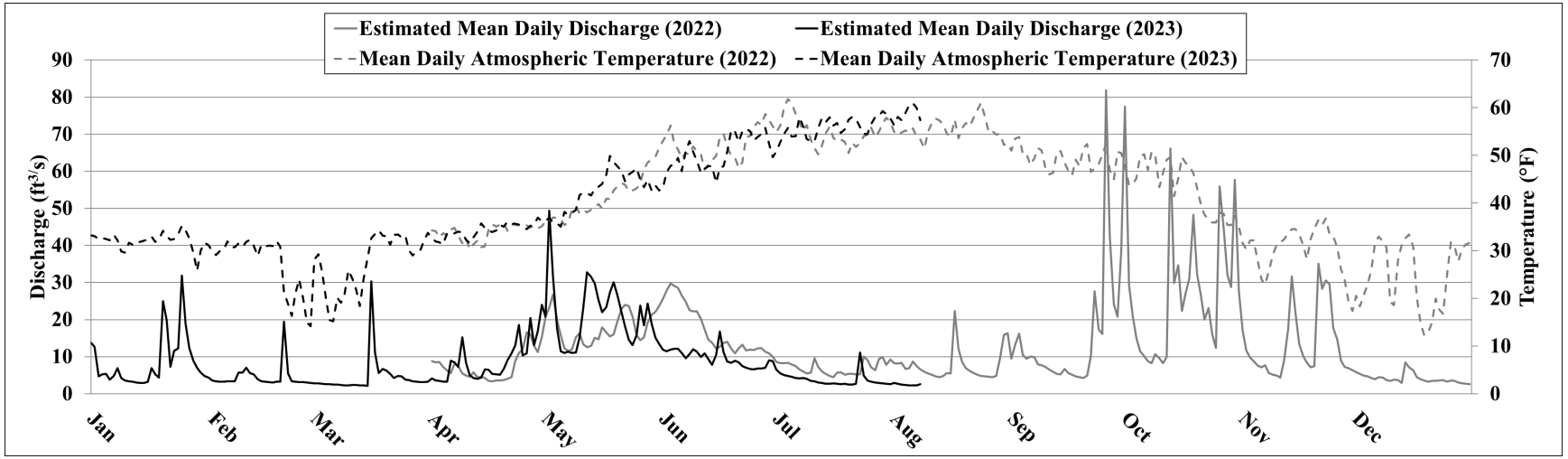
Intake
Powerhouse
10 ft Contours
0
75
150
300
Feet

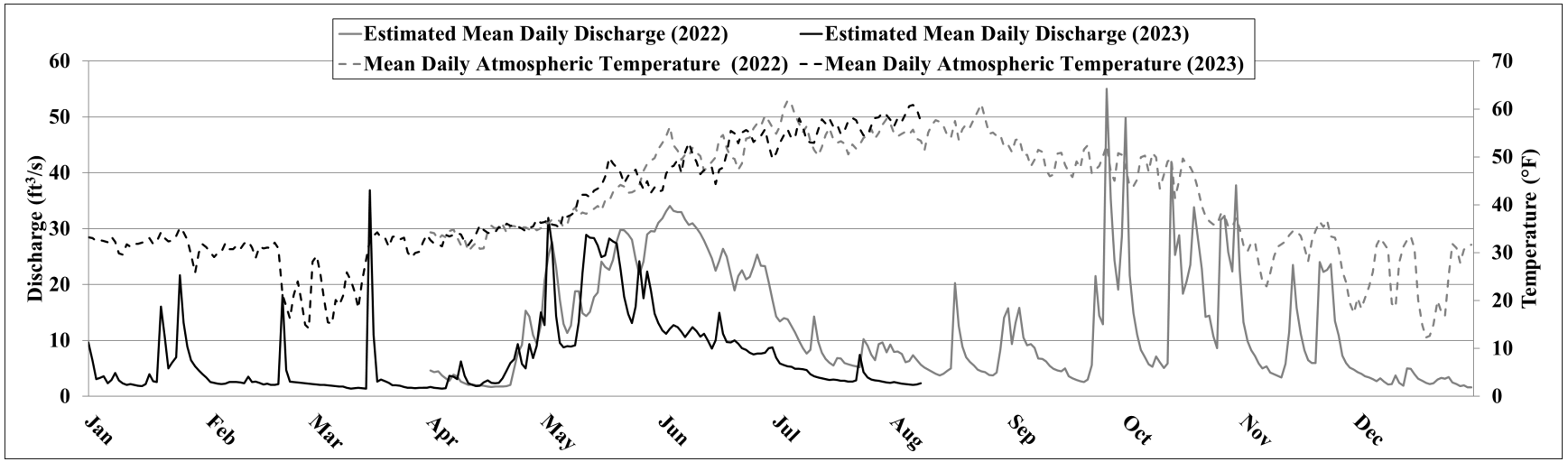

MT9
P19
TR14
P20
P21
P22
P23
TR15
P24
TR16
P25
MT10
TR17
MT11
900
N
W
E
S
Legend
Streams
Pools
Fish Observation
Intake
Powerhouse
10 ft Contours
0
75
150
300
Feet

APPENDIX B: ANNUAL DISCHARGE AND TEMPERATURE SUMMARY

Appendix B.1.–Lower gage station estimated mean daily discharge and atmospheric temperature.



Appendix B.2.–Upper gage station estimated mean daily discharge and atmospheric temperature.



APPENDIX C: MEAN DAILY WATER LEVEL DATA

Appendix C.–Mean daily water level data.

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
4/1/2022	1.17	8.8	0.81	4.6	34.3
4/2/2022	1.16	8.5	0.79	4.4	34.1
4/3/2022	1.16	8.5	0.80	4.5	32.8
4/4/2022	1.11	7.2	0.76	3.7	33.7
4/5/2022	1.07	6.2	0.72	3.2	33.2
4/6/2022	1.04	5.5	0.69	2.8	34.5
4/7/2022	1.14	8.2	0.76	3.9	34.8
4/8/2022	1.12	7.5	0.74	3.5	33.1
4/9/2022	1.04	5.5	0.67	2.6	31.6
4/10/2022	1.01	5.0	0.64	2.3	32.7
4/11/2022	0.99	4.6	0.61	2.1	30.3
4/12/2022	1.04	5.8	0.62	2.1	31.3
4/13/2022	0.98	4.5	0.60	2.0	32.1
4/14/2022	0.98	4.6	0.60	2.0	30.8
4/15/2022	0.96	4.3	0.59	1.9	30.9
4/16/2022	0.91	3.5	0.57	1.8	34.4
4/17/2022	0.90	3.3	0.57	1.7	35.6
4/18/2022	0.92	3.6	0.57	1.7	35.0
4/19/2022	0.92	3.6	0.57	1.7	35.5
4/20/2022	0.93	3.7	0.57	1.8	35.8
4/21/2022	0.95	4.0	0.59	1.9	34.2
4/22/2022	0.98	4.5	0.61	2.1	35.5
4/23/2022	1.17	8.8	0.81	5.0	35.5
4/24/2022	1.23	11.0	0.93	7.7	35.3
4/25/2022	1.26	11.9	0.97	9.2	35.3
4/26/2022	1.35	16.5	1.10	15.3	35.3
4/27/2022	1.34	16.0	1.08	14.3	34.9
4/28/2022	1.28	12.9	1.02	11.0	35.3
4/29/2022	1.24	11.3	0.98	9.5	34.7
4/30/2022	1.33	15.3	1.06	12.8	35.1

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
5/1/2022	1.41	20.8	1.18	20.7	36.2
5/2/2022	1.45	23.2	1.23	25.0	36.2
5/3/2022	1.49	26.8	1.27	27.7	36.9
5/4/2022	1.40	19.9	1.20	23.1	37.0
5/5/2022	1.34	15.8	1.13	17.3	36.6
5/6/2022	1.27	12.2	1.06	13.0	35.4
5/7/2022	1.25	11.6	1.03	11.3	35.9
5/8/2022	1.26	12.0	1.05	12.7	38.5
5/9/2022	1.32	15.3	1.15	18.8	39.4
5/10/2022	1.35	16.3	1.15	18.8	37.8
5/11/2022	1.29	13.4	1.09	14.9	38.4
5/12/2022	1.27	12.6	1.08	14.3	38.1
5/13/2022	1.28	12.9	1.10	15.1	38.6
5/14/2022	1.32	15.1	1.14	17.7	39.1
5/15/2022	1.32	14.7	1.15	18.6	39.8
5/16/2022	1.37	17.9	1.21	24.1	38.8
5/17/2022	1.35	16.5	1.20	23.1	40.9
5/18/2022	1.33	15.5	1.20	22.6	40.8
5/19/2022	1.34	16.0	1.22	24.4	42.6
5/20/2022	1.39	19.4	1.28	27.7	43.5
5/21/2022	1.44	22.9	1.34	29.8	44.2
5/22/2022	1.46	24.1	1.35	29.7	43.8
5/23/2022	1.45	23.7	1.33	29.0	42.5
5/24/2022	1.42	20.9	1.29	28.0	42.6
5/25/2022	1.34	15.8	1.22	24.6	43.1
5/26/2022	1.31	14.4	1.19	21.8	44.1
5/27/2022	1.33	15.2	1.23	24.2	47.1
5/28/2022	1.39	19.2	1.30	29.0	48.5
5/29/2022	1.42	21.3	1.34	29.6	49.2
5/30/2022	1.43	22.1	1.34	29.5	49.7
5/31/2022	1.45	23.7	1.38	31.1	51.6

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
6/1/2022	1.48	25.6	1.41	31.9	53.0
6/2/2022	1.50	27.8	1.44	33.2	54.3
6/3/2022	1.53	29.7	1.46	34.1	56.3
6/4/2022	1.52	29.1	1.44	33.2	52.4
6/5/2022	1.51	28.6	1.44	33.0	51.3
6/6/2022	1.49	26.5	1.43	32.9	49.4
6/7/2022	1.47	24.8	1.40	31.6	50.5
6/8/2022	1.44	22.5	1.37	30.7	50.1
6/9/2022	1.44	22.3	1.38	31.0	51.9
6/10/2022	1.44	22.2	1.36	30.1	50.9
6/11/2022	1.41	20.2	1.33	29.1	50.2
6/12/2022	1.36	17.3	1.28	27.9	47.1
6/13/2022	1.31	14.6	1.23	26.4	48.1
6/14/2022	1.30	13.7	1.22	24.7	48.9
6/15/2022	1.26	12.2	1.19	22.5	49.9
6/16/2022	1.27	12.6	1.21	24.2	53.8
6/17/2022	1.30	13.7	1.24	26.4	54.6
6/18/2022	1.30	14.0	1.22	25.0	51.8
6/19/2022	1.26	12.1	1.19	21.8	49.9
6/20/2022	1.23	10.9	1.15	19.0	49.6
6/21/2022	1.26	12.3	1.18	21.6	47.4
6/22/2022	1.29	13.2	1.20	22.6	48.6
6/23/2022	1.25	11.7	1.18	20.9	53.8
6/24/2022	1.26	11.9	1.18	21.4	54.1
6/25/2022	1.25	11.8	1.20	23.2	55.9
6/26/2022	1.27	12.2	1.22	25.4	57.0
6/27/2022	1.27	12.3	1.20	23.4	56.4
6/28/2022	1.24	11.4	1.20	23.3	58.7
6/29/2022	1.23	10.9	1.17	20.4	57.5
6/30/2022	1.21	10.0	1.13	17.2	56.1

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
7/1/2022	1.16	8.6	1.08	14.3	54.9
7/2/2022	1.15	8.2	1.07	13.4	56.4
7/3/2022	1.15	8.3	1.08	14.0	60.2
7/4/2022	1.16	8.4	1.08	13.8	61.8
7/5/2022	1.14	7.9	1.05	12.6	61.0
7/6/2022	1.13	7.5	1.03	11.4	58.7
7/7/2022	1.09	6.6	0.99	9.8	56.9
7/8/2022	1.06	6.0	0.96	8.6	55.2
7/9/2022	1.04	5.5	0.93	7.7	56.4
7/10/2022	1.05	5.8	0.95	8.3	53.3
7/11/2022	1.19	9.6	1.08	14.3	51.5
7/12/2022	1.12	7.3	0.99	9.8	50.3
7/13/2022	1.06	6.1	0.94	7.8	52.1
7/14/2022	1.03	5.3	0.90	6.7	54.6
7/15/2022	1.00	4.8	0.87	6.1	56.0
7/16/2022	0.98	4.5	0.85	5.5	53.7
7/17/2022	1.05	5.7	0.90	6.8	53.0
7/18/2022	1.05	5.8	0.90	6.8	53.3
7/19/2022	1.02	5.2	0.87	6.0	52.8
7/20/2022	1.03	5.4	0.86	5.7	50.5
7/21/2022	1.03	5.4	0.85	5.5	52.6
7/22/2022	1.02	5.2	0.85	5.4	51.8
7/23/2022	1.03	5.3	0.84	5.2	52.6
7/24/2022	1.20	10.1	1.00	10.3	54.0
7/25/2022	1.18	9.2	0.97	9.1	54.4
7/26/2022	1.11	7.2	0.92	7.4	55.8
7/27/2022	1.08	6.4	0.89	6.4	53.9
7/28/2022	1.18	9.4	0.97	9.4	55.0
7/29/2022	1.20	10.0	0.99	9.7	56.7
7/30/2022	1.14	7.8	0.94	7.9	57.9
7/31/2022	1.18	9.2	0.98	9.3	57.0

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
8/1/2022	1.15	8.3	0.94	8.0	55.0
8/2/2022	1.15	8.1	0.94	8.0	54.3
8/3/2022	1.16	8.4	0.93	7.6	54.9
8/4/2022	1.09	6.7	0.88	6.1	55.3
8/5/2022	1.10	7.0	0.88	6.4	54.8
8/6/2022	1.17	8.7	0.92	7.3	55.7
8/7/2022	1.12	7.4	0.89	6.6	53.8
8/8/2022	1.09	6.6	0.86	5.7	53.3
8/9/2022	1.06	6.0	0.84	5.2	51.4
8/10/2022	1.04	5.5	0.82	4.8	55.1
8/11/2022	1.02	5.1	0.80	4.4	56.7
8/12/2022	1.00	4.7	0.78	4.1	57.7
8/13/2022	0.98	4.5	0.76	3.8	57.3
8/14/2022	1.00	4.8	0.78	4.1	56.5
8/15/2022	1.04	5.5	0.80	4.6	54.5
8/16/2022	1.03	5.4	0.82	5.0	54.0
8/17/2022	1.45	22.3	1.18	20.3	57.5
8/18/2022	1.26	12.1	1.05	12.6	53.6
8/19/2022	1.16	8.6	0.97	8.9	55.8
8/20/2022	1.10	7.0	0.91	7.0	56.8
8/21/2022	1.07	6.1	0.88	6.2	56.1
8/22/2022	1.04	5.6	0.85	5.5	57.9
8/23/2022	1.02	5.1	0.82	4.8	59.5
8/24/2022	1.00	4.9	0.80	4.5	61.0
8/25/2022	1.00	4.8	0.79	4.3	58.0
8/26/2022	0.99	4.6	0.76	3.8	54.8
8/27/2022	0.98	4.5	0.76	3.8	55.1
8/28/2022	1.00	4.8	0.78	4.3	54.4
8/29/2022	1.18	9.3	0.94	8.3	54.6
8/30/2022	1.30	15.9	1.04	14.1	52.2
8/31/2022	1.33	16.3	1.10	15.7	52.5

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
9/1/2022	1.19	9.4	0.98	9.3	51.0
9/2/2022	1.28	13.2	1.06	13.2	53.5
9/3/2022	1.34	16.2	1.11	15.9	53.8
9/4/2022	1.22	10.5	1.01	10.5	50.3
9/5/2022	1.19	9.5	0.97	9.1	50.4
9/6/2022	1.21	10.1	0.98	9.3	48.0
9/7/2022	1.20	10.0	0.96	8.7	49.4
9/8/2022	1.14	7.9	0.90	6.7	51.5
9/9/2022	1.13	7.7	0.90	6.7	51.0
9/10/2022	1.12	7.3	0.88	6.2	47.4
9/11/2022	1.08	6.5	0.85	5.5	46.0
9/12/2022	1.06	6.0	0.83	4.9	46.3
9/13/2022	1.03	5.4	0.81	4.6	50.7
9/14/2022	1.02	5.2	0.80	4.5	50.9
9/15/2022	1.09	6.7	0.82	5.0	48.4
9/16/2022	1.04	5.6	0.75	3.6	46.8
9/17/2022	1.02	5.1	0.72	3.2	45.8
9/18/2022	0.99	4.7	0.70	2.9	49.1
9/19/2022	0.98	4.5	0.68	2.7	47.7
9/20/2022	0.96	4.2	0.67	2.6	51.6
9/21/2022	1.00	4.9	0.69	3.0	52.4
9/22/2022	1.20	10.2	0.85	5.6	46.5
9/23/2022	1.54	27.7	1.18	21.5	47.3
9/24/2022	1.36	17.4	1.08	14.4	48.2
9/25/2022	1.34	16.1	1.05	12.9	50.1
9/26/2022	2.33	81.9	1.78	55.0	52.4
9/27/2022	1.82	42.7	1.48	35.3	47.0
9/28/2022	1.46	24.1	1.21	24.3	45.0
9/29/2022	1.42	20.7	1.15	19.1	50.8
9/30/2022	1.73	38.5	1.33	28.7	50.5

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
10/1/2022	2.29	77.5	1.69	49.9	47.8
10/2/2022	1.55	29.5	1.18	21.7	43.8
10/3/2022	1.42	21.0	1.09	14.9	43.9
10/4/2022	1.32	15.1	1.02	11.0	45.2
10/5/2022	1.25	11.5	0.95	8.3	49.9
10/6/2022	1.21	10.1	0.91	7.0	50.2
10/7/2022	1.17	8.8	0.86	5.8	46.9
10/8/2022	1.15	8.2	0.84	5.3	50.8
10/9/2022	1.23	10.7	0.91	7.1	49.9
10/10/2022	1.20	9.6	0.87	6.1	43.4
10/11/2022	1.15	8.2	0.83	5.1	46.3
10/12/2022	1.18	10.1	0.86	5.9	49.1
10/13/2022	2.20	66.2	1.61	42.0	49.6
10/14/2022	1.55	29.8	1.24	25.3	41.4
10/15/2022	1.66	34.6	1.30	28.8	45.1
10/16/2022	1.43	22.3	1.14	18.4	49.7
10/17/2022	1.51	27.1	1.17	20.6	48.4
10/18/2022	1.60	31.1	1.23	23.5	47.8
10/19/2022	1.95	48.3	1.46	33.9	46.3
10/20/2022	1.60	32.2	1.27	27.9	43.2
10/21/2022	1.50	26.8	1.19	22.8	39.8
10/22/2022	1.40	20.0	1.08	14.3	37.6
10/23/2022	1.45	23.1	1.08	14.4	36.6
10/24/2022	1.34	16.0	1.01	10.7	35.9
10/25/2022	1.27	12.4	0.96	8.6	35.9
10/26/2022	2.00	56.0	1.42	31.5	38.0
10/27/2022	1.89	44.4	1.42	32.3	37.8
10/28/2022	1.61	32.1	1.25	25.8	35.4
10/29/2022	1.56	28.7	1.21	22.3	35.4
10/30/2022	2.11	57.7	1.54	37.8	37.3
10/31/2022	1.52	27.6	1.20	22.6	35.1

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
11/1/2022	1.36	17.1	1.07	13.3	31.6
11/2/2022	1.25	11.7	0.99	9.9	30.3
11/3/2022	1.20	9.8	0.95	8.2	32.1
11/4/2022	1.17	8.8	0.92	7.2	32.2
11/5/2022	1.13	7.6	0.87	5.9	27.8
11/6/2022	1.11	7.1	0.83	5.0	24.0
11/7/2022	1.13	7.7	0.84	5.4	22.9
11/8/2022	1.04	5.5	0.79	4.3	25.7
11/9/2022	1.02	5.1	0.77	4.0	29.2
11/10/2022	1.00	4.9	0.76	3.7	31.3
11/11/2022	0.98	4.4	0.73	3.4	31.8
11/12/2022	1.10	8.8	0.83	5.8	32.4
11/13/2022	1.36	17.4	1.02	11.5	33.7
11/14/2022	1.62	31.7	1.22	23.5	34.5
11/15/2022	1.43	21.7	1.11	15.8	34.6
11/16/2022	1.29	13.5	1.02	11.2	33.5
11/17/2022	1.21	10.2	0.95	8.2	31.1
11/18/2022	1.16	8.3	0.89	6.5	28.2
11/19/2022	1.11	7.2	0.87	6.0	32.4
11/20/2022	1.13	7.5	0.87	6.0	34.6
11/21/2022	1.69	35.1	1.25	24.0	36.5
11/22/2022	1.52	28.4	1.19	22.2	35.4
11/23/2022	1.60	30.5	1.22	22.7	36.8
11/24/2022	1.56	29.5	1.22	23.7	33.4
11/25/2022	1.37	17.8	1.07	13.5	33.1
11/26/2022	1.31	14.6	1.01	10.9	30.7
11/27/2022	1.17	8.9	0.92	7.3	26.2
11/28/2022	1.12	7.3	0.87	6.0	23.9
11/29/2022	1.10	6.9	0.84	5.2	19.5
11/30/2022	1.08	6.4	0.82	4.8	17.3

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
12/1/2022	1.06	5.9	0.80	4.4	20.6
12/2/2022	1.03	5.4	0.77	4.0	18.3
12/3/2022	1.01	5.0	0.75	3.6	20.6
12/4/2022	0.99	4.6	0.73	3.4	23.0
12/5/2022	0.96	4.2	0.71	3.1	26.0
12/6/2022	0.94	3.9	0.68	2.7	31.6
12/7/2022	0.98	4.4	0.72	3.2	33.0
12/8/2022	0.97	4.4	0.67	2.6	31.9
12/9/2022	0.93	3.7	0.62	2.1	30.6
12/10/2022	0.90	3.4	0.62	2.2	19.3
12/11/2022	0.93	3.8	0.76	3.8	18.6
12/12/2022	0.93	3.7	0.65	2.4	28.0
12/13/2022	0.86	3.0	0.59	1.9	31.3
12/14/2022	1.11	8.5	0.80	5.0	32.6
12/15/2022	1.11	7.2	0.82	4.9	33.4
12/16/2022	1.08	6.3	0.77	4.0	30.9
12/17/2022	0.98	4.5	0.72	3.2	20.2
12/18/2022	0.94	3.9	0.68	2.8	14.9
12/19/2022	0.91	3.6	0.65	2.4	12.3
12/20/2022	0.89	3.3	0.62	2.2	12.7
12/21/2022	0.90	3.4	0.64	2.3	14.9
12/22/2022	0.91	3.5	0.71	3.0	20.0
12/23/2022	0.92	3.6	0.73	3.3	17.7
12/24/2022	0.93	3.7	0.71	3.1	16.8
12/25/2022	0.89	3.3	0.73	3.4	25.2
12/26/2022	0.91	3.6	0.65	2.5	31.8
12/27/2022	0.91	3.5	0.63	2.2	31.0
12/28/2022	0.86	3.0	0.59	1.9	27.8
12/29/2022	0.85	2.8	0.60	1.9	30.6
12/30/2022	0.84	2.7	0.55	1.6	31.4
12/31/2022	0.83	2.6	0.55	1.6	31.7

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
1/1/2023	1.23	13.7	0.93	9.6	33.2
1/2/2023	1.25	12.6	0.87	6.4	33.0
1/3/2023	0.99	4.7	0.71	3.1	32.4
1/4/2023	1.01	5.2	0.72	3.3	32.6
1/5/2023	1.03	5.4	0.75	3.6	32.5
1/6/2023	0.93	3.8	0.64	2.3	32.2
1/7/2023	0.97	4.8	0.69	2.9	33.3
1/8/2023	1.09	7.0	0.78	4.2	32.2
1/9/2023	0.96	4.2	0.69	2.8	29.8
1/10/2023	0.92	3.6	0.65	2.4	29.6
1/11/2023	0.89	3.3	0.61	2.0	31.7
1/12/2023	0.89	3.2	0.62	2.2	31.2
1/13/2023	0.87	3.1	0.61	2.0	31.9
1/14/2023	0.86	2.9	0.59	1.9	31.9
1/15/2023	0.86	2.9	0.59	1.8	32.1
1/16/2023	0.89	3.3	0.62	2.2	32.4
1/17/2023	1.08	6.9	0.76	3.9	33.0
1/18/2023	1.02	5.3	0.67	2.7	31.9
1/19/2023	0.96	4.4	0.65	2.5	32.4
1/20/2023	1.49	25.0	1.10	16.1	34.2
1/21/2023	1.40	19.8	0.98	10.9	33.1
1/22/2023	1.11	7.3	0.83	5.0	32.3
1/23/2023	1.22	11.5	0.86	6.0	32.5
1/24/2023	1.25	12.2	0.90	7.0	33.5
1/25/2023	1.60	31.8	1.19	21.7	35.2
1/26/2023	1.39	18.9	1.06	13.2	34.2
1/27/2023	1.26	12.3	0.97	8.9	32.7
1/28/2023	1.18	8.9	0.89	6.4	29.6
1/29/2023	1.11	7.0	0.85	5.4	25.9
1/30/2023	1.05	5.7	0.81	4.7	30.1
1/31/2023	1.00	4.8	0.77	4.0	31.7

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
2/1/2023	0.97	4.3	0.73	3.4	31.2
2/2/2023	0.92	3.6	0.66	2.5	30.0
2/3/2023	0.90	3.4	0.65	2.4	29.1
2/4/2023	0.89	3.3	0.64	2.3	29.9
2/5/2023	0.88	3.2	0.63	2.2	30.2
2/6/2023	0.90	3.4	0.64	2.3	31.9
2/7/2023	0.90	3.4	0.66	2.6	30.7
2/8/2023	0.90	3.4	0.66	2.5	30.8
2/9/2023	1.02	5.7	0.67	2.6	31.5
2/10/2023	1.03	5.7	0.66	2.5	30.8
2/11/2023	1.10	7.0	0.64	2.4	31.9
2/12/2023	1.04	5.6	0.74	3.5	32.3
2/13/2023	1.02	5.2	0.66	2.6	31.1
2/14/2023	0.94	3.9	0.67	2.6	28.9
2/15/2023	0.90	3.4	0.65	2.4	31.3
2/16/2023	0.89	3.3	0.62	2.2	30.9
2/17/2023	0.87	3.1	0.63	2.2	31.1
2/18/2023	0.87	3.0	0.61	2.1	31.0
2/19/2023	0.88	3.2	0.61	2.1	32.1
2/20/2023	0.89	3.2	0.62	2.2	30.9
2/21/2023	1.36	19.5	1.12	18.2	21.2
2/22/2023	1.03	5.5	0.81	4.7	18.8
2/23/2023	0.90	3.4	0.68	2.7	16.3
2/24/2023	0.89	3.3	0.67	2.6	21.1
2/25/2023	0.88	3.2	0.66	2.5	24.0
2/26/2023	0.87	3.1	0.65	2.4	19.9
2/27/2023	0.87	3.0	0.64	2.4	14.9
2/28/2023	0.86	2.9	0.64	2.3	14.2

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Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
3/1/2023	0.85	2.9	0.63	2.2	28.1
3/2/2023	0.84	2.8	0.62	2.1	29.3
3/3/2023	0.84	2.7	0.61	2.1	25.6
3/4/2023	0.83	2.6	0.61	2.0	20.2
3/5/2023	0.82	2.6	0.60	2.0	15.5
3/6/2023	0.81	2.5	0.59	1.9	15.2
3/7/2023	0.81	2.4	0.58	1.8	20.1
3/8/2023	0.80	2.4	0.58	1.8	19.1
3/9/2023	0.79	2.3	0.57	1.7	21.0
3/10/2023	0.78	2.2	0.53	1.6	25.9
3/11/2023	0.79	2.3	0.51	1.4	24.1
3/12/2023	0.80	2.4	0.53	1.5	21.8
3/13/2023	0.78	2.2	0.54	1.5	18.4
3/14/2023	0.78	2.2	0.52	1.4	24.0
3/15/2023	0.77	2.2	0.51	1.4	28.5
3/16/2023	1.44	30.3	1.34	36.9	32.6
3/17/2023	1.21	11.1	0.95	11.1	33.5
3/18/2023	1.04	5.6	0.67	2.7	34.3
3/19/2023	1.09	6.7	0.70	3.0	33.1
3/20/2023	1.07	6.2	0.68	2.7	33.1
3/21/2023	1.03	5.4	0.65	2.5	31.3
3/22/2023	0.96	4.2	0.60	2.0	33.3
3/23/2023	1.00	4.9	0.60	2.0	33.4
3/24/2023	0.99	4.7	0.59	1.9	32.8
3/25/2023	0.94	3.9	0.56	1.7	33.2
3/26/2023	0.93	3.7	0.54	1.6	30.1
3/27/2023	0.90	3.4	0.54	1.6	29.0
3/28/2023	0.89	3.2	0.53	1.5	30.0
3/29/2023	0.88	3.2	0.54	1.5	30.2
3/30/2023	0.88	3.2	0.54	1.5	32.2
3/31/2023	0.89	3.2	0.54	1.5	33.7

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
4/1/2023	0.96	4.1	0.57	1.7	32.7
4/2/2023	0.92	3.6	0.54	1.5	31.9
4/3/2023	0.91	3.4	0.52	1.4	31.8
4/4/2023	0.89	3.2	0.52	1.4	31.3
4/5/2023	0.89	3.3	0.53	1.5	33.7
4/6/2023	1.15	8.9	0.73	3.7	33.4
4/7/2023	1.16	8.5	0.74	3.5	33.7
4/8/2023	1.11	7.2	0.71	3.1	34.0
4/9/2023	1.32	15.3	0.88	6.2	33.9
4/10/2023	1.14	8.3	0.75	3.7	32.3
4/11/2023	1.01	5.0	0.64	2.3	31.6
4/12/2023	0.97	4.3	0.61	2.0	32.8
4/13/2023	0.95	4.0	0.59	1.9	34.0
4/14/2023	0.97	4.4	0.59	1.9	35.7
4/15/2023	1.08	6.6	0.65	2.5	34.8
4/16/2023	1.08	6.5	0.69	2.8	34.2
4/17/2023	1.03	5.3	0.65	2.4	34.0
4/18/2023	1.03	5.3	0.64	2.3	34.3
4/19/2023	1.02	5.2	0.65	2.4	35.4
4/20/2023	1.09	6.7	0.72	3.2	35.0
4/21/2023	1.17	9.0	0.81	4.7	36.1
4/22/2023	1.23	10.9	0.87	6.0	35.7
4/23/2023	1.28	13.0	0.90	6.7	35.7
4/24/2023	1.38	18.5	0.98	9.3	35.5
4/25/2023	1.21	10.3	0.86	5.8	35.0
4/26/2023	1.22	10.9	0.83	5.0	34.5
4/27/2023	1.40	20.5	0.97	9.4	35.2
4/28/2023	1.28	13.2	0.90	6.9	35.5
4/29/2023	1.35	16.9	0.96	9.1	36.9
4/30/2023	1.46	24.0	1.10	15.1	36.2

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
5/1/2023	1.42	20.8	1.05	12.7	36.4
5/2/2023	1.91	49.4	1.41	31.9	36.9
5/3/2023	1.61	31.8	1.29	27.2	35.9
5/4/2023	1.37	17.7	1.08	14.3	35.7
5/5/2023	1.24	11.5	0.98	9.5	35.1
5/6/2023	1.23	11.0	0.96	8.8	38.1
5/7/2023	1.24	11.3	0.97	9.0	37.6
5/8/2023	1.24	11.1	0.97	8.9	37.9
5/9/2023	1.24	11.1	0.97	9.1	38.6
5/10/2023	1.32	15.3	1.06	13.3	41.7
5/11/2023	1.45	23.2	1.19	22.1	42.1
5/12/2023	1.62	32.8	1.32	28.9	42.1
5/13/2023	1.59	31.6	1.30	28.4	41.6
5/14/2023	1.54	29.8	1.27	28.3	43.0
5/15/2023	1.47	25.3	1.24	27.0	43.4
5/16/2023	1.43	22.1	1.22	24.9	44.0
5/17/2023	1.45	23.4	1.23	25.2	45.9
5/18/2023	1.50	27.4	1.28	28.2	49.9
5/19/2023	1.54	30.1	1.29	27.7	48.6
5/20/2023	1.49	26.7	1.25	27.4	47.8
5/21/2023	1.43	22.2	1.20	22.9	46.8
5/22/2023	1.38	18.2	1.14	17.8	44.5
5/23/2023	1.32	14.6	1.09	14.8	46.0
5/24/2023	1.28	13.1	1.06	13.1	46.5
5/25/2023	1.33	15.8	1.11	16.1	47.3
5/26/2023	1.45	23.8	1.21	24.2	45.0
5/27/2023	1.38	18.4	1.13	17.5	43.3
5/28/2023	1.46	24.4	1.19	22.4	44.9
5/29/2023	1.39	18.8	1.15	19.0	42.5
5/30/2023	1.33	15.1	1.09	14.8	43.6
5/31/2023	1.29	13.4	1.06	13.1	42.7

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
6/1/2023	1.26	12.0	1.04	11.8	43.1
6/2/2023	1.25	11.5	1.03	11.2	46.5
6/3/2023	1.26	11.9	1.04	12.1	47.9
6/4/2023	1.26	12.2	1.06	12.8	48.1
6/5/2023	1.26	12.2	1.05	12.4	49.4
6/6/2023	1.24	11.0	1.03	11.6	46.7
6/7/2023	1.20	9.6	1.01	10.6	50.9
6/8/2023	1.23	10.7	1.03	11.5	53.0
6/9/2023	1.26	12.1	1.05	12.4	50.7
6/10/2023	1.24	11.3	1.03	11.7	48.9
6/11/2023	1.20	9.9	1.01	10.7	46.4
6/12/2023	1.23	10.9	1.02	11.2	47.2
6/13/2023	1.19	9.4	1.00	10.0	47.7
6/14/2023	1.14	7.8	0.96	8.6	47.8
6/15/2023	1.18	10.5	0.98	10.0	44.3
6/16/2023	1.35	16.8	1.09	14.9	47.4
6/17/2023	1.24	11.3	1.02	11.2	47.8
6/18/2023	1.17	8.6	0.99	9.7	50.7
6/19/2023	1.16	8.3	0.99	9.6	55.5
6/20/2023	1.17	8.9	1.00	10.0	54.9
6/21/2023	1.16	8.5	0.98	9.4	52.8
6/22/2023	1.12	7.4	0.96	8.6	55.1
6/23/2023	1.11	7.0	0.95	8.3	55.6
6/24/2023	1.10	6.8	0.94	7.8	55.1
6/25/2023	1.09	6.6	0.93	7.5	53.1
6/26/2023	1.10	6.8	0.93	7.6	53.9
6/27/2023	1.10	6.8	0.93	7.7	54.4
6/28/2023	1.11	7.1	0.94	7.8	55.8
6/29/2023	1.17	9.0	0.96	8.6	52.5
6/30/2023	1.17	8.8	0.96	8.8	49.6

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
7/1/2023	1.08	6.4	0.91	6.9	50.8
7/2/2023	1.04	5.5	0.87	5.9	52.9
7/3/2023	1.01	5.0	0.86	5.6	54.6
7/4/2023	1.00	4.8	0.85	5.4	55.7
7/5/2023	0.99	4.6	0.84	5.3	53.9
7/6/2023	0.97	4.3	0.83	5.0	54.1
7/7/2023	0.95	4.1	0.83	4.9	58.0
7/8/2023	0.96	4.2	0.82	4.9	56.2
7/9/2023	0.95	4.0	0.81	4.7	53.4
7/10/2023	0.91	3.5	0.77	3.9	53.0
7/11/2023	0.89	3.3	0.75	3.6	53.0
7/12/2023	0.87	3.1	0.73	3.4	55.7
7/13/2023	0.86	3.0	0.72	3.2	57.9
7/14/2023	0.84	2.8	0.71	3.0	57.0
7/15/2023	0.84	2.7	0.70	3.0	58.0
7/16/2023	0.84	2.8	0.70	3.0	56.3
7/17/2023	0.84	2.7	0.70	2.9	56.8
7/18/2023	0.82	2.6	0.68	2.8	54.8
7/19/2023	0.83	2.7	0.69	2.8	55.5
7/20/2023	0.82	2.5	0.68	2.7	57.5
7/21/2023	0.82	2.5	0.68	2.7	58.1
7/22/2023	0.84	2.7	0.69	2.8	57.7
7/23/2023	1.21	11.1	0.91	7.4	55.9
7/24/2023	1.00	4.9	0.79	4.3	54.5
7/25/2023	0.92	3.6	0.73	3.4	54.5
7/26/2023	0.88	3.2	0.70	3.0	56.6
7/27/2023	0.87	3.1	0.69	2.9	58.1
7/28/2023	0.86	2.9	0.69	2.8	58.2
7/29/2023	0.84	2.8	0.67	2.6	59.3
7/30/2023	0.83	2.7	0.66	2.5	58.7
7/31/2023	0.83	2.6	0.65	2.4	57.8

- continued -

Date	Lower Station Mean Daily Stage (ft)	Lower Station Mean Daily Discharge Estimate (ft^3/s)	Upper Station Mean Daily Stage (ft)	Upper Station Mean Daily Discharge Estimate (ft^3/s)	Atmospheric Temperature at Lower Station (°F)
8/1/2023	0.86	2.9	0.66	2.6	56.4
8/2/2023	0.84	2.7	0.65	2.4	58.1
8/3/2023	0.82	2.5	0.63	2.3	57.4
8/4/2023	0.80	2.4	0.63	2.2	58.9
8/5/2023	0.79	2.3	0.62	2.1	60.6
8/6/2023	0.79	2.3	0.61	2.1	60.9
8/7/2023	0.79	2.3	0.62	2.1	60.0
8/8/2023	0.82	2.5	0.64	2.3	57.4

7.3. Appendix C: USACE Verification Letter and NWP Application

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 22270
JUNEAU, AK 99802-2270

July 8, 2024

Regulatory Division
POA-2024-00137

Inside Passage Electric Cooperative
Attention: Brandon Shaw
12480 Mendenhall Loop Road
Juneau, AK 99801

Dear Mr. Shaw:

This is in response to your May 11, 2024, application for a Department of the Army (DA) permit, to construct a small-scale run-of-the river hydroelectric project on Water Supply Creek. It has been assigned file number POA-2024-00137, Water Supply Creek, which should be referred to in all future correspondence with this office. The project site is located within Sections 11, 14, and 15, T. 44 S., R. 61 E., Copper River Meridian in USGS Quad Map JNU A-5; Latitude 58.0540º N., Longitude 135.4063º W.; near Hoonah, Alaska.

DA authorization is necessary because your project will involve work in into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which will be performed in accordance with the enclosed plan (sheets 1-12), dated February 23, 2024, is authorized by Nationwide Permit (NWP) No. 17, Hydropower Projects. Enclosed is a copy of the NWP No. 17, as well as the Regional and General Conditions. These documents are also available on our website at https://www.poa.usace.army.mil/Missions/Regulatory/Types-of-Permits/Nationwide-Permits/. The following Regional Conditions apply to your project: Regional Condition F-Maintenance of Hydrology Patterns. You must comply with all terms and conditions associated with NWP No. 17.

Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to our office.

Unless this NWP is modified or revoked, it expires on March 14, 2026. If you commence or are under contract to commence this activity before the date that the NWPs are modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWPs to complete the activity under the present terms and conditions of these nationwide permits. It is incumbent upon you to remain informed of the changes to the NWPs.

Nothing in this letter excuses you from compliance with other Federal, state, or local statutes, ordinances, or regulations.

Please contact Ms. Delana Wilks via email at Delana.P.Wilks@usace.army.mil, by mail at the address above, by phone at (907) 201-5021, if you have questions. For more information about the Regulatory Program, please visit our website at www.poa.usace.army.mil/Missions/Regulatory.

Sincerely,

Randal P. Vigil
Chief, Southeast Section

Enclosures

ENCLOSURE

US Army Corps of Engineers
Alaska District

Permit Number: POA-2024-00137

Name of Permittee: Inside Passage Electric Cooperative

Date of Issuance: July 8, 2024

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to Ms. Delana Wilks at CEPOA-RD-Kenai@usace.army.mil, or the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Division
P.O. Box 22270
Juneau, AK 99802-2270

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

DISTRIBUTION LIST

EMAIL

To:

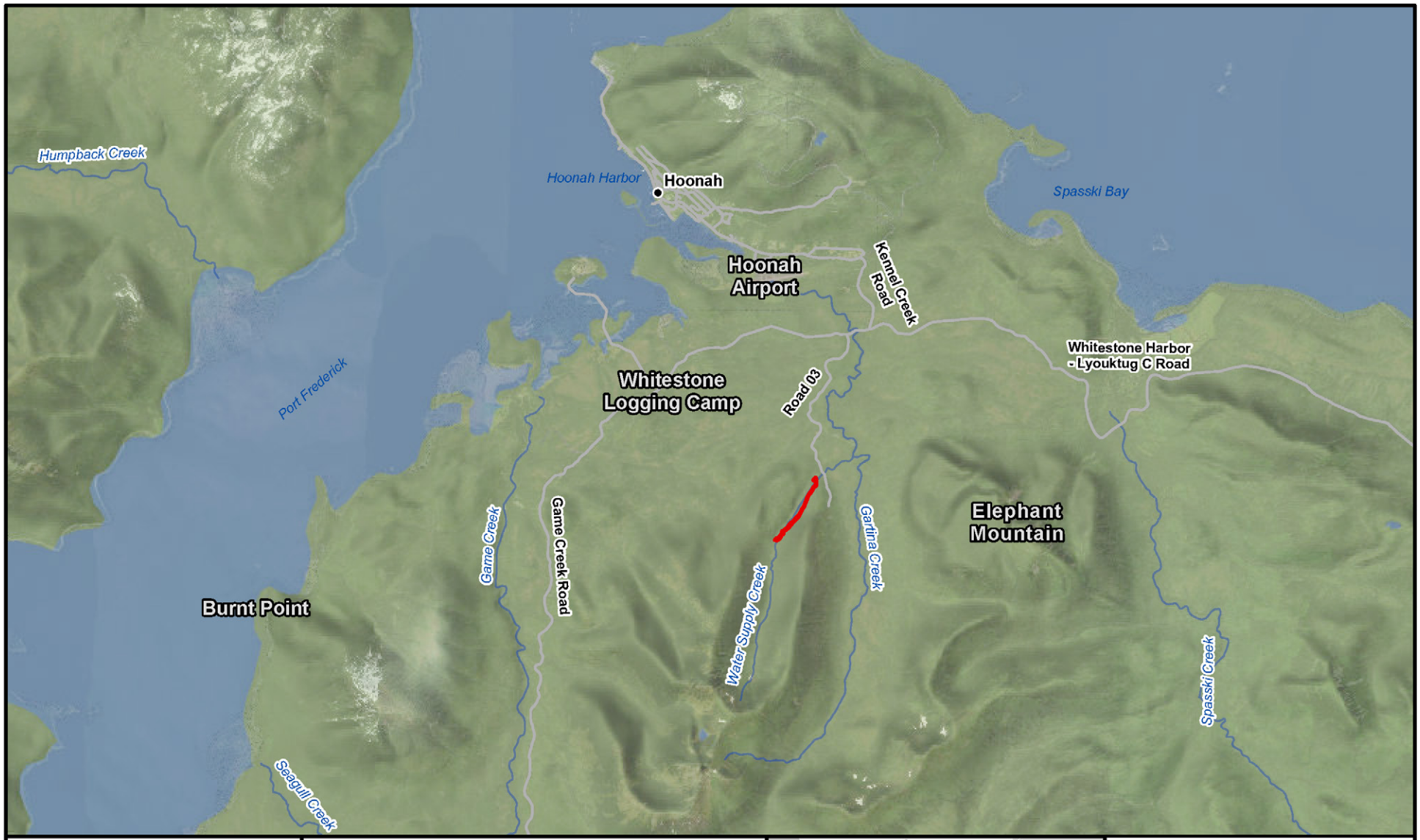
bshaw@insidepassageelectric.org

paul.mclarnon@hdrinc.com

Cc (Carbon Copy):

Delana.p.wilks@usace.army.mil

regpagemaster@usace.army.mil



Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Vicinity Map

0 1 2 Miles

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

Project Location

Road

Stream

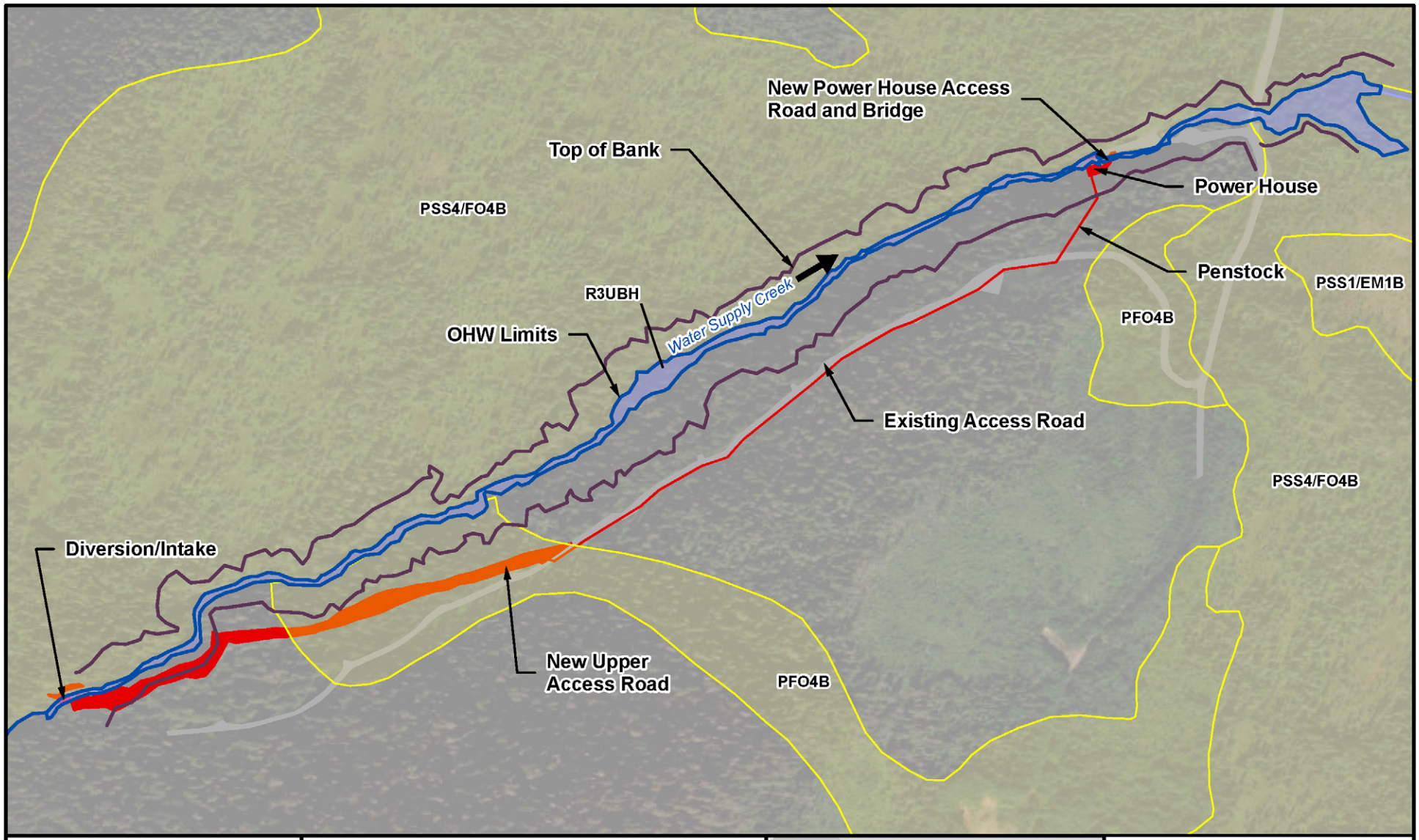
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 1 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

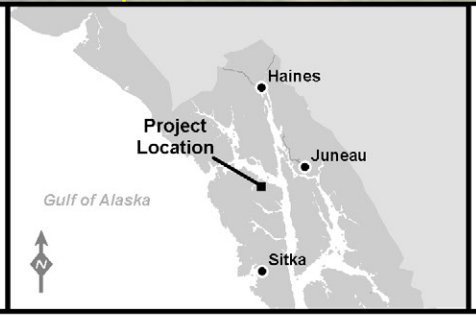
Water Supply Creek Hydroelectric Project

Overview

0 250 500 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Top of Bank
- Project Components
- Existing Access Road



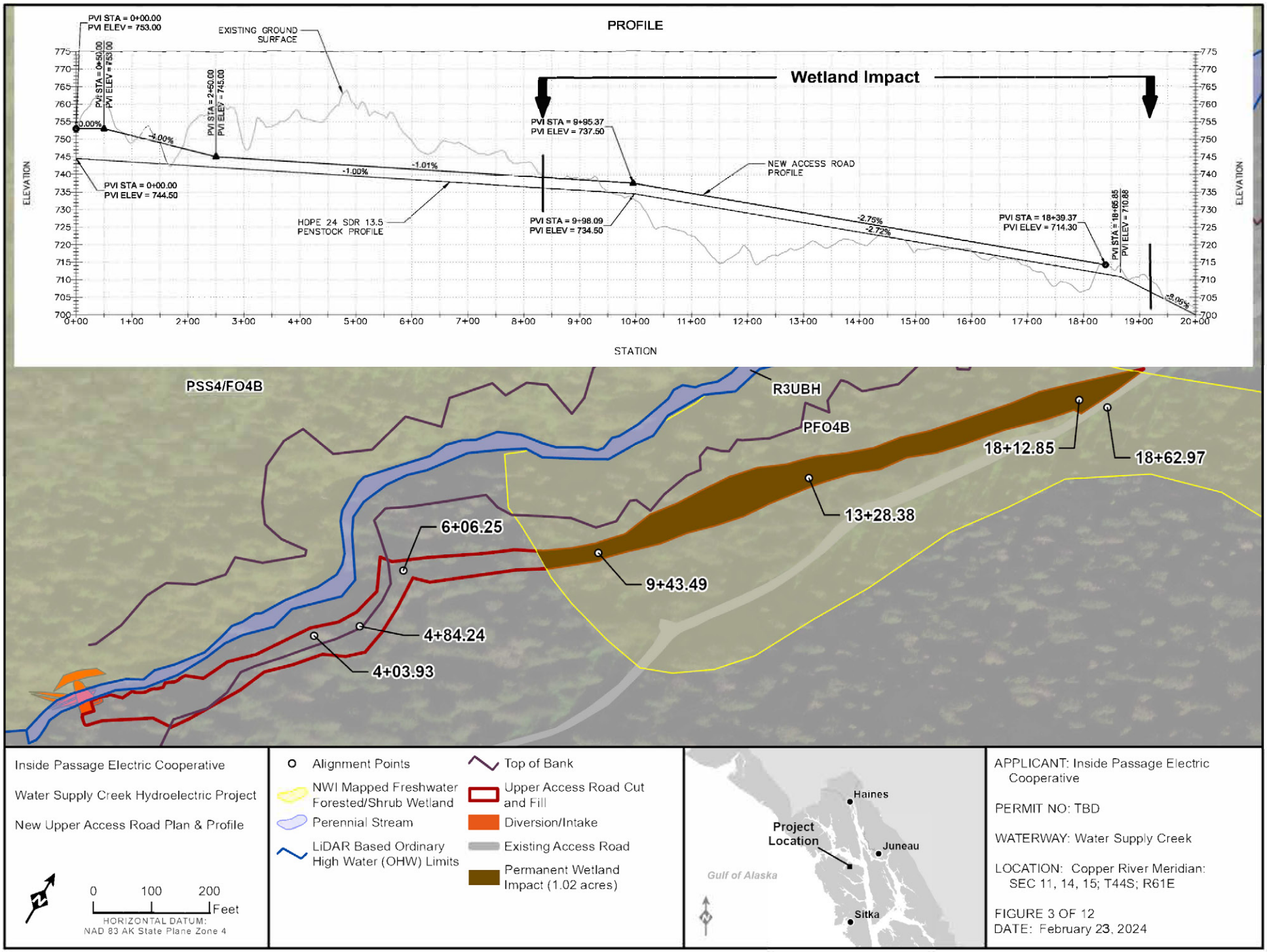
APPLICANT: Inside Passage Electric Cooperative

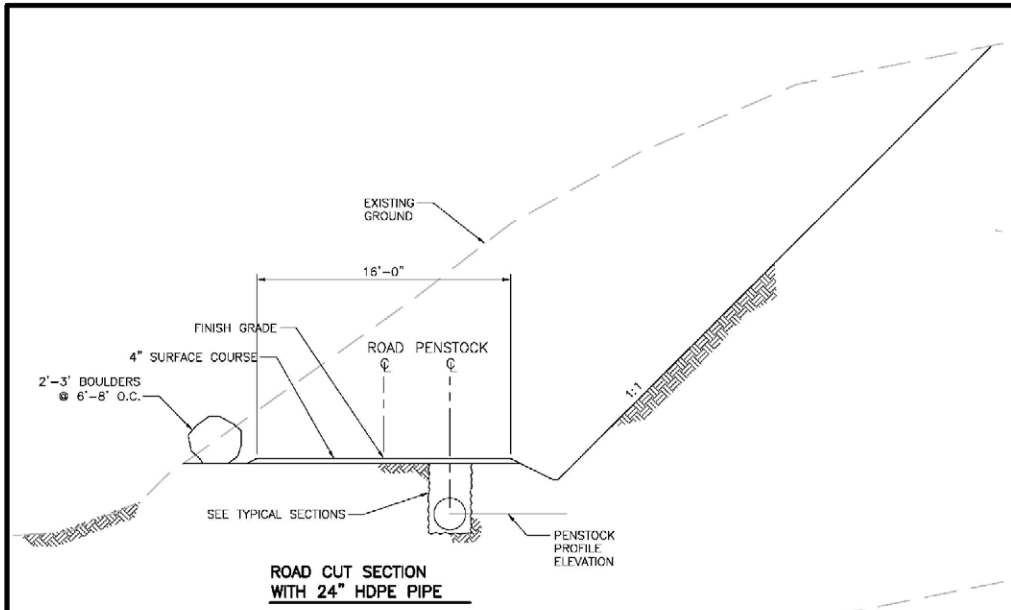
PERMIT NO: TBD

WATERWAY: Water Supply Creek

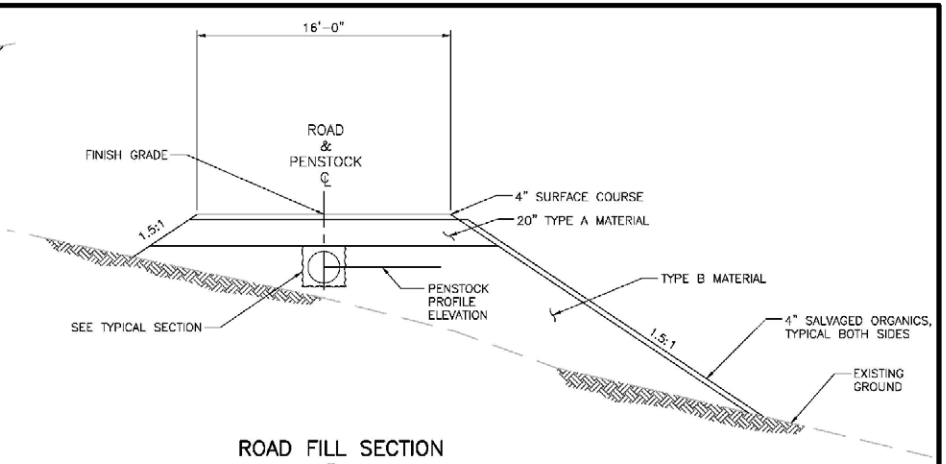
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 2 OF 12
DATE: February 23, 2024

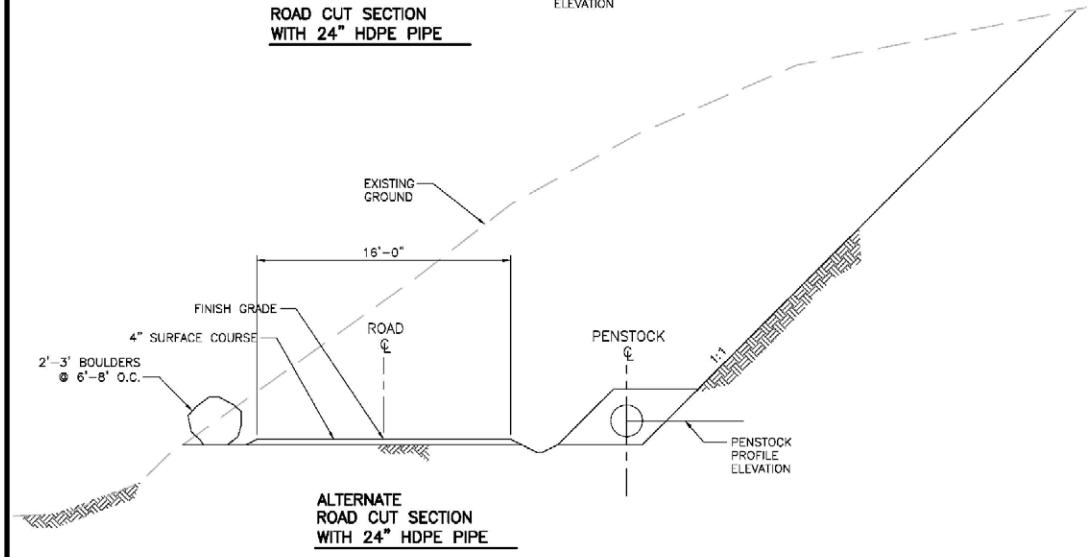

PROFILE
PVI STA = 0+00.00
PVI ELEV = 753.00
EXISTING GROUND SURFACE
PVI STA = 0+50.00
PVI ELEV = 753.00
PVI STA = 2+50.00
PVI ELEV = 745.00
Wetland Impact
PVI STA = 9+95.37
PVI ELEV = 737.50
NEW ACCESS ROAD PROFILE
0.00%
-3.00%
-1.00%
-1.01%
PVI STA = 0+00.00
PVI ELEV = 744.50
HDPE 24 SDR 13.5 PENSTOCK PROFILE
PVI STA = 9+98.09
PVI ELEV = 734.50
-2.75%
-2.72%
PVI STA = 18+39.37
PVI ELEV = 714.30
PVI STA = 18+65.85
PVI ELEV = 710.88
-8.05%
ELEVATION
STATION
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
PSS4/FO4B
R3UBH
PFO4B
18+12.85
18+62.97
13+28.38
6+06.25
9+43.49
4+84.24
4+03.93
Inside Passage Electric Cooperative
Water Supply Creek Hydroelectric Project
New Upper Access Road Plan & Profile
0
100
200
Feet
HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4
Alignment Points
NWI Mapped Freshwater Forested/Shrub Wetland
Perennial Stream
LiDAR Based Ordinary High Water (OHW) Limits
Top of Bank
Upper Access Road Cut and Fill
Diversion/Intake
Existing Access Road
Permanent Wetland Impact (1.02 acres)
Haines
Project Location
Juneau
Gulf of Alaska
Sitka
APPLICANT: Inside Passage Electric Cooperative
PERMIT NO: TBD
WATERWAY: Water Supply Creek
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E
FIGURE 3 OF 12
DATE: February 23, 2024



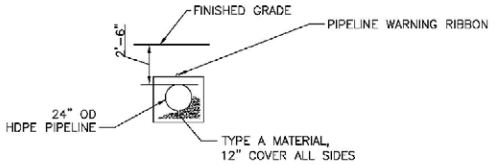
ROAD CUT SECTION
WITH 24" HDPE PIPE



ROAD FILL SECTION
WITH 24" HDPE PIPE



ALTERNATE
ROAD CUT SECTION
WITH 24" HDPE PIPE

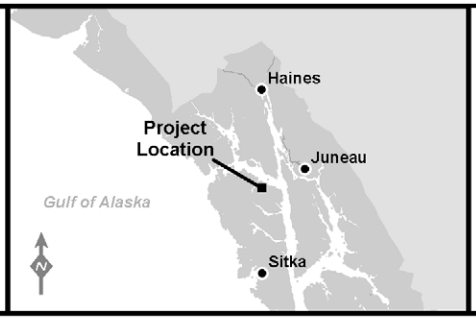


PENSTOCK
TYPICAL SECTION

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Access Road and Penstock
Typical Sections and Details



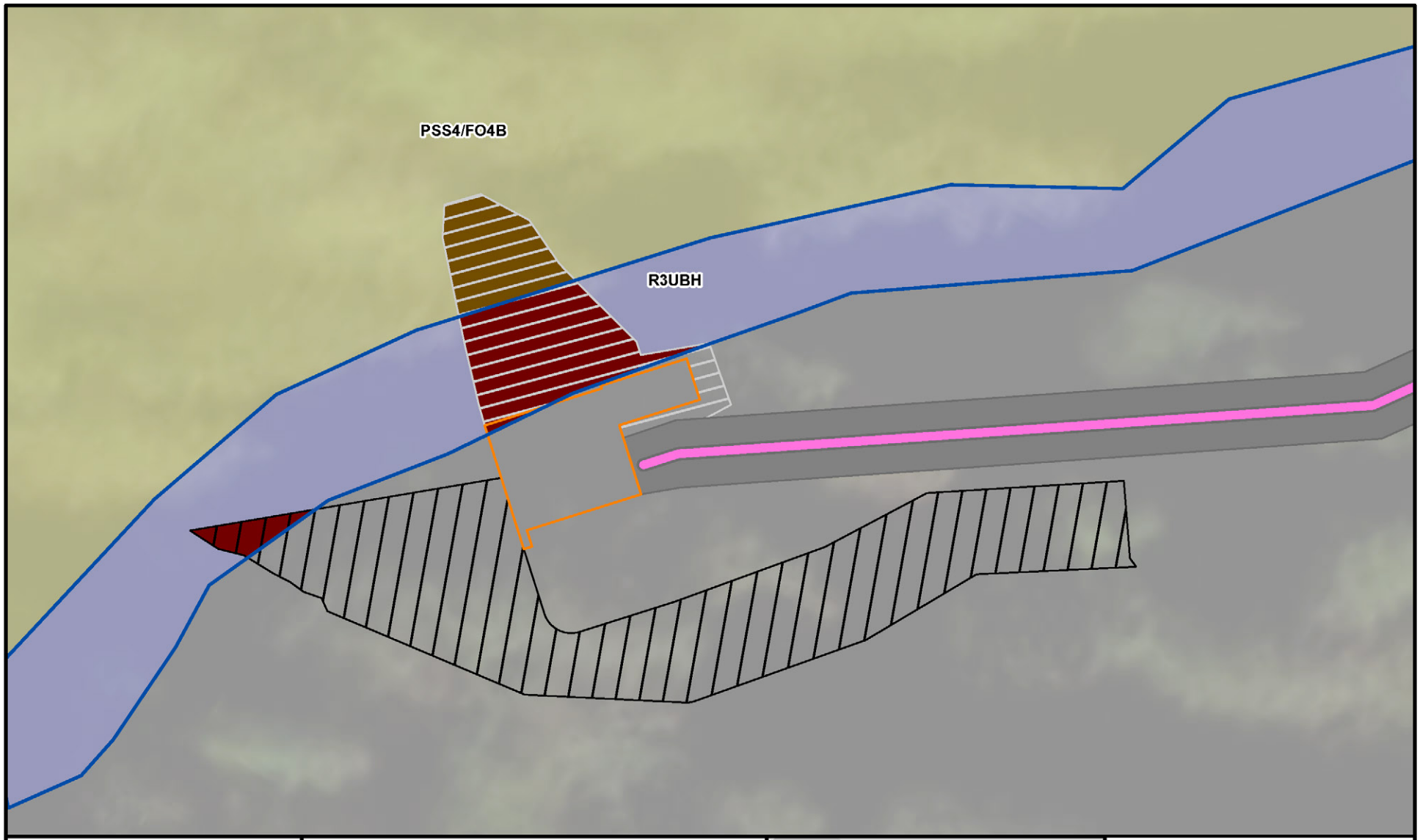
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 4 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

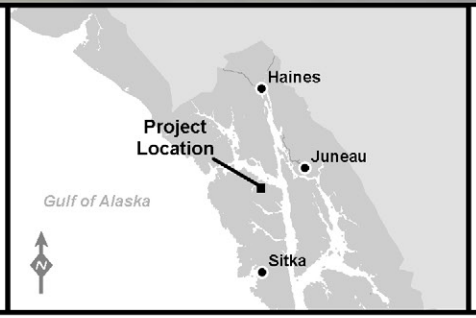
Water Supply Creek Hydroelectric Project

Intake Plan View

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Intake
- Intake Site Cut & Fill
- Diversion Weir Cut & Fill
- Penstock
- New Access Road
- Permanent Stream Impact (0.02 acres)
- Permanent Wetland Impact (0.01 acres)



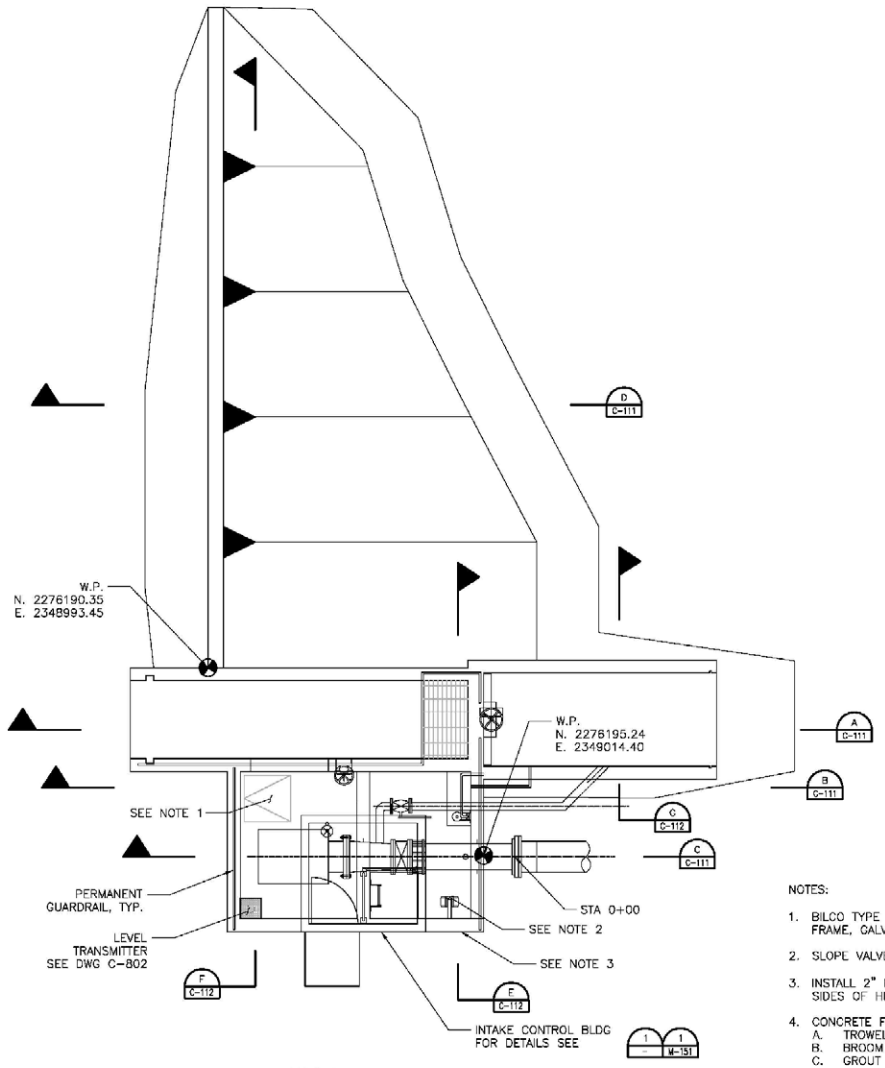
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 5 OF 12
DATE: February 23, 2024



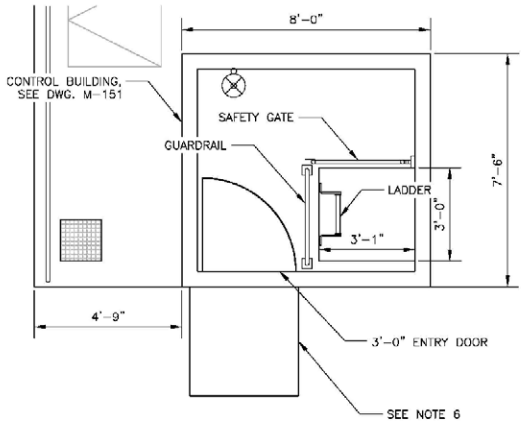
PLAN

NOTES:

1. BILCO TYPE J HATCH WITH INTEGRAL FALL PROTECTION GRATING, 3'-0"x3'-0", STEEL FRAME, GALV, RAISED PADLOCK, SS HARDWARE.
2. SLOPE VALVE PIT FLOOR TO DRAIN TO SUMP
3. INSTALL 2" RIGID FOAM INSULATION, DOW HI40 OR APPROVED ALTERNATE, ON BURIED SIDES OF HEATED PORTION OF INTAKE BOX.
4. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

NOTES CONT.:

5. SEE SHEET C-801 FOR GUARDRAIL, LADDER AND SAFETY GATE DETAILS.
6. CONCRETE ENTRY LANDING, 6" THICK CONCRETE, 3'-6" WIDE BY 3'-6" DEEP CENTERED ON DOORWAY, REINFORCEMENT SHALL BE 6" WWF 6X6-W2.9xW2.9 UNO. PROVIDE EXPANSION JOINT BETWEEN WALL AND LANDING.

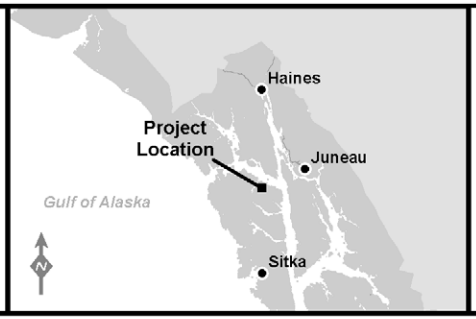


CONTROL BUILDING DETAIL 1

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Plan



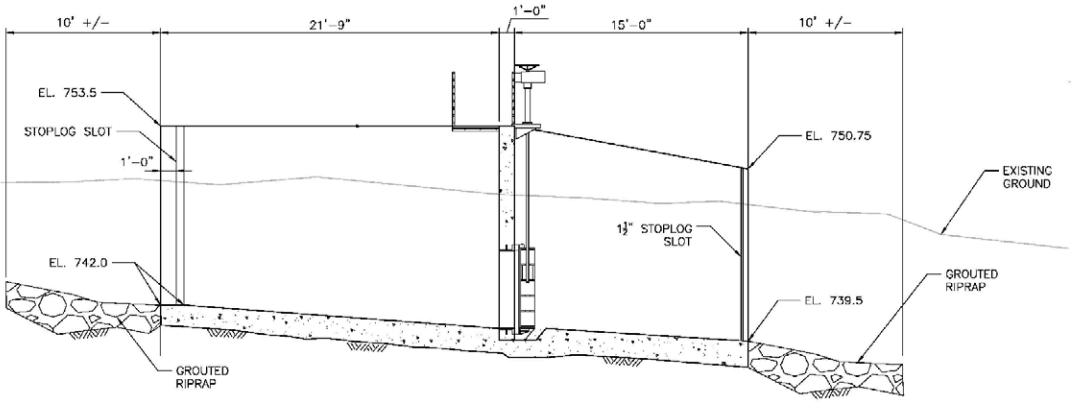
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

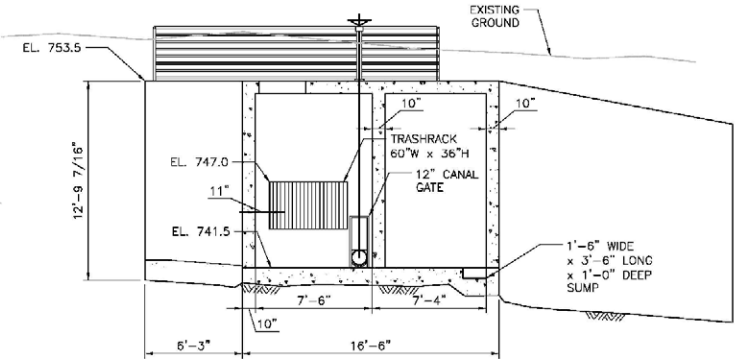
WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

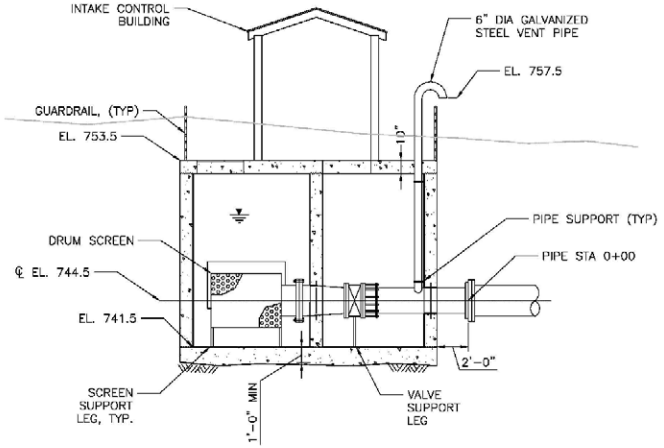
FIGURE 6 OF 12
DATE: February 23, 2024



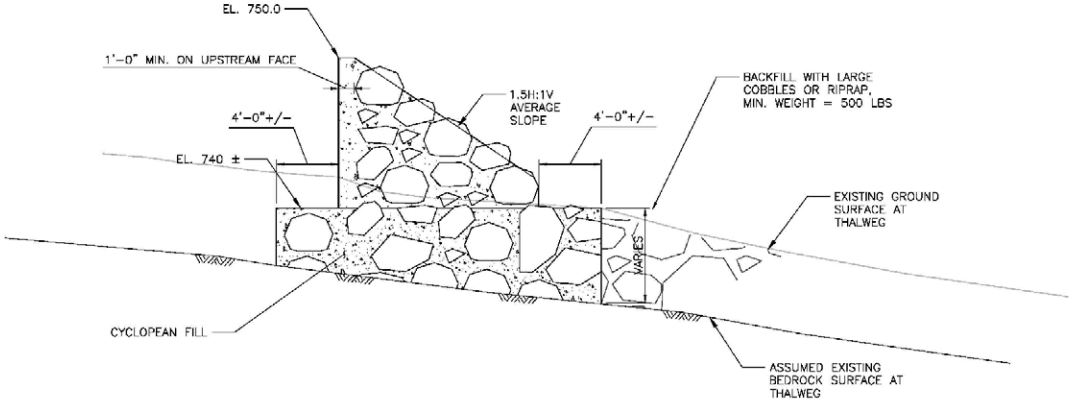
SECTION A C-102



SECTION B C-102



SECTION C C-109



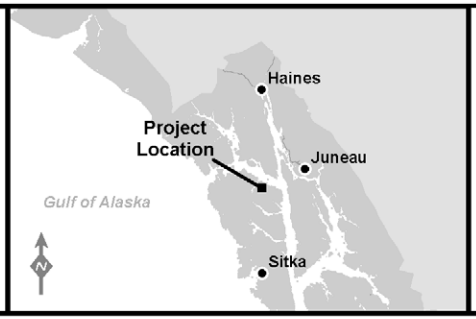
SECTION D C-102

4 0 4 8 FEET

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Sections 1



APPLICANT: Inside Passage Electric Cooperative

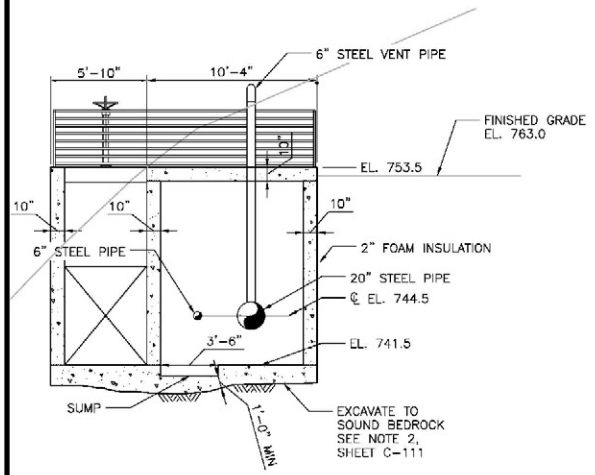
PERMIT NO: TBD

WATERWAY: Water Supply Creek

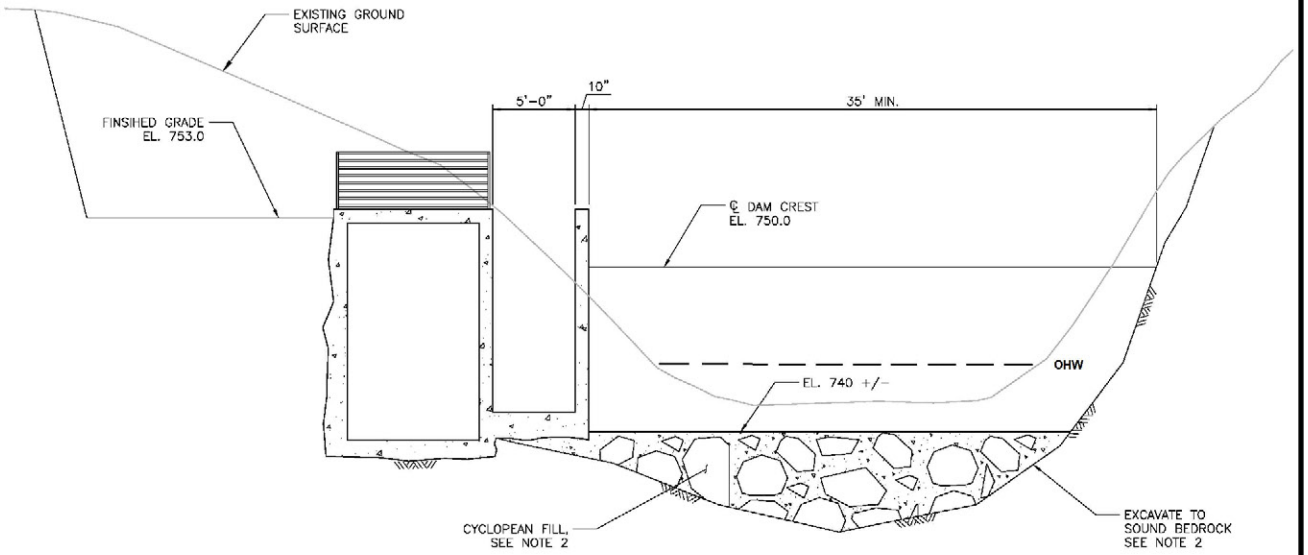
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 7 OF 12

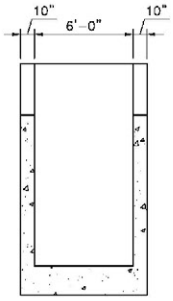
DATE: February 23, 2024



SECTION E C-102



SECTION F C-101



SECTION G C-101

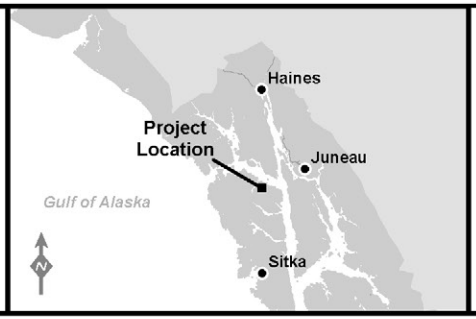
NOTES:

1. STEP FOOTING ELEVATIONS AND DISTANCES SUBJECT TO CHANGE BASED UPON ACTUAL FOUNDATION CONDITIONS
2. CYCLOPEAN FILL IS TO BE USED UNDER ALL STRUCTURES TO CREATE A SOLID FOUNDATION TO EL. 740+/-. FOR BIDDING PURPOSES ASSUME 150 CY OF MATERIAL WILL BE REQUIRED. CONTRACT PRICE WILL BE ADJUSTED ON A UNIT PRICE BASIS BASED UPON ACTUAL QUANTITIES

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Sections 2



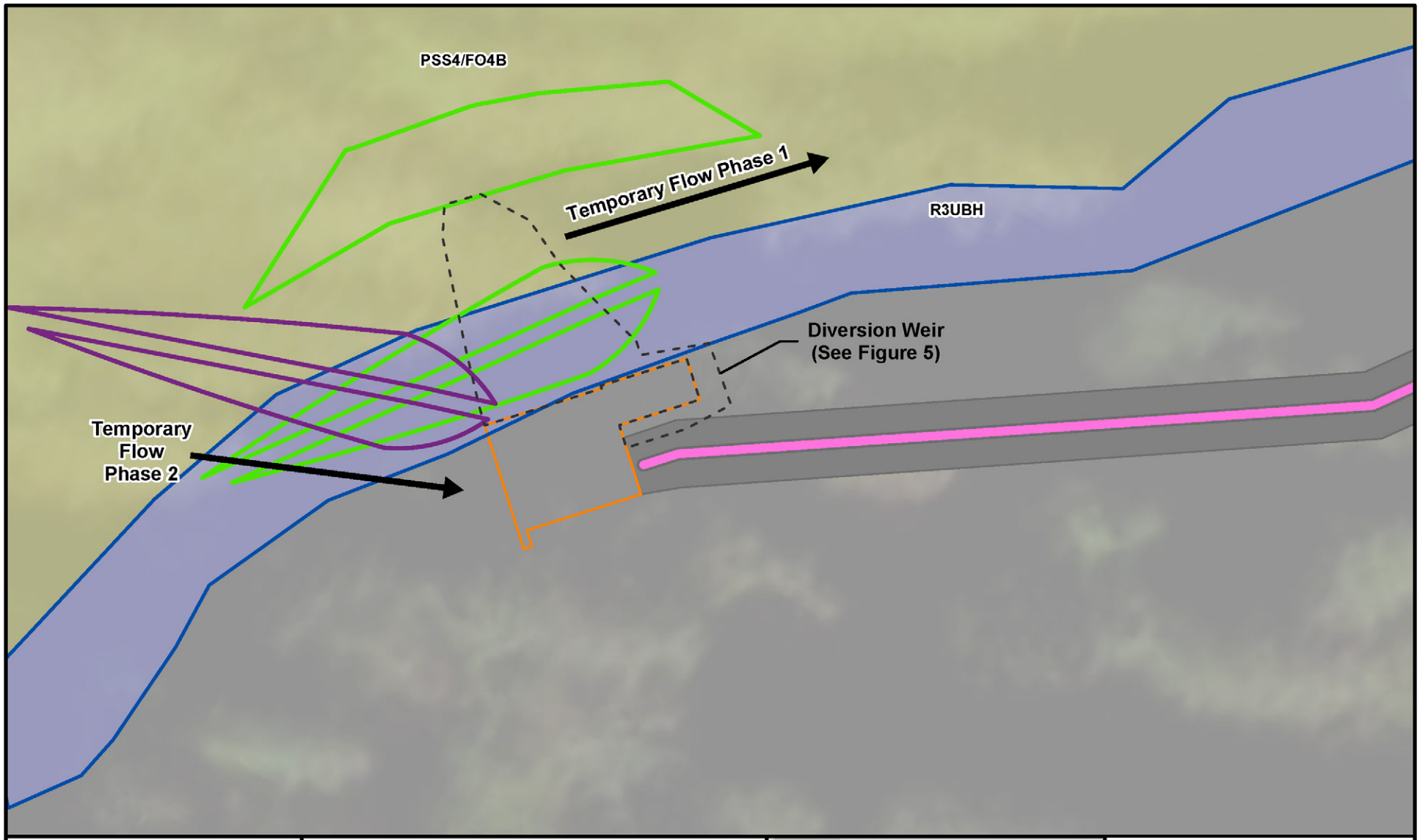
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 8 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Temporary Diversion
During Construction
Intake Area

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

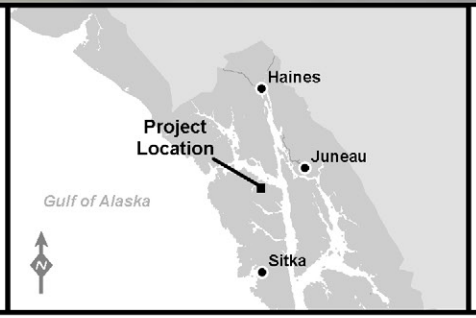
- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Intake
- Diversion Weir Cut & Fill
- Penstock
- New Access Road

Total Temporary Stream Impact (0.02 acre)

- Diversion Phase 1 Temporary Stream Impact
- Diversion Phase 2 Temporary Stream Impact

Total Temporary Wetland Impact (0.04 acre)

- Diversion Phase 1 Temporary Wetland Impact
- Diversion Phase 2 Temporary Wetland Impact



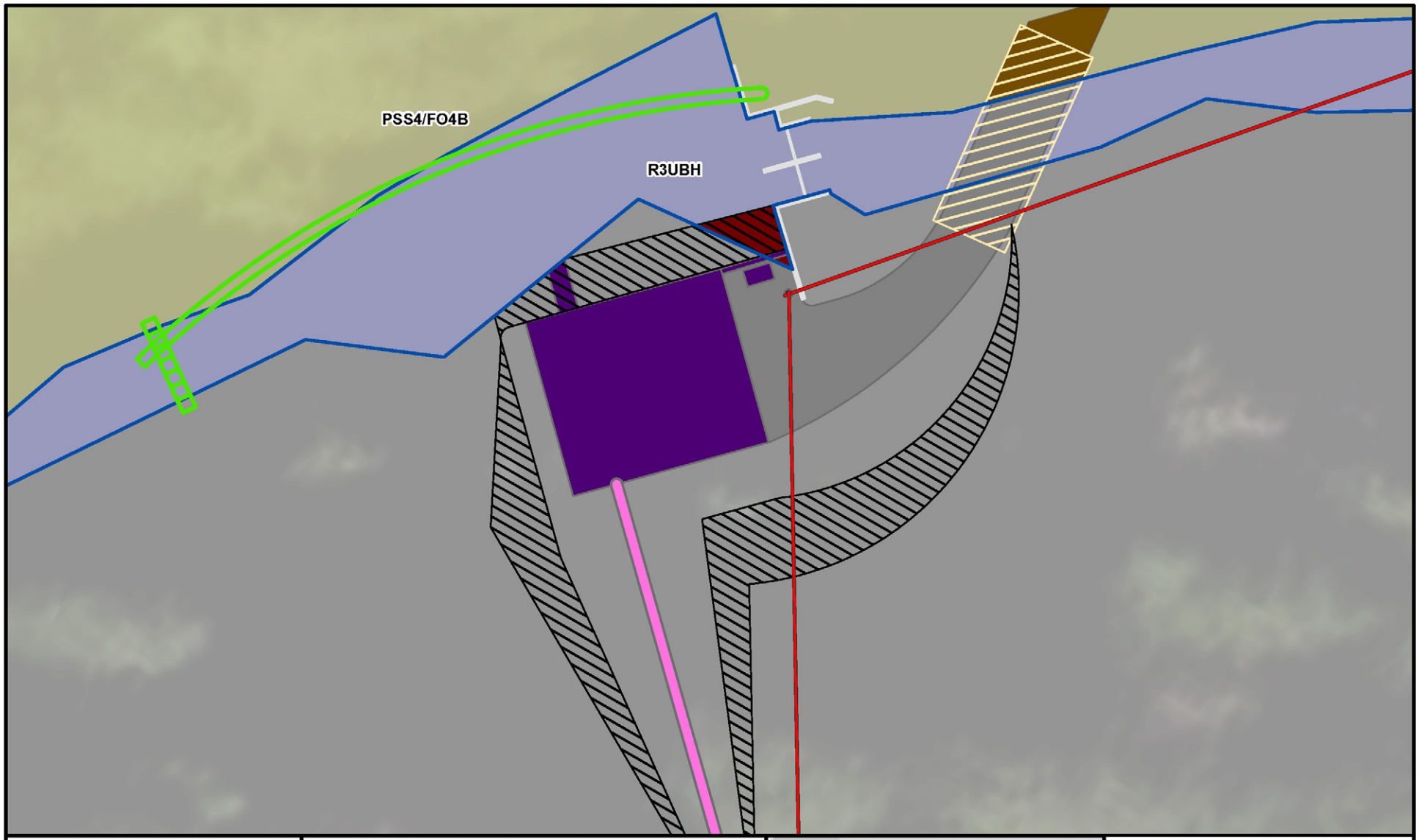
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 9 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

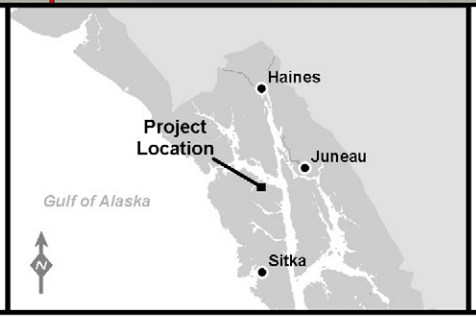
Water Supply Creek Hydroelectric Project

Powerhouse Site Plan

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Powerhouse
- Powerhouse Cut & Fill
- Overhead Transmission Line
- New Access Road
- Bridge
- Penstock
- Diversion Phase 1
- Existing Water Supply Intake
- Permanent Stream Impact (< 0.01 acre)
- Permanent Wetland Impact (0.01 acre)



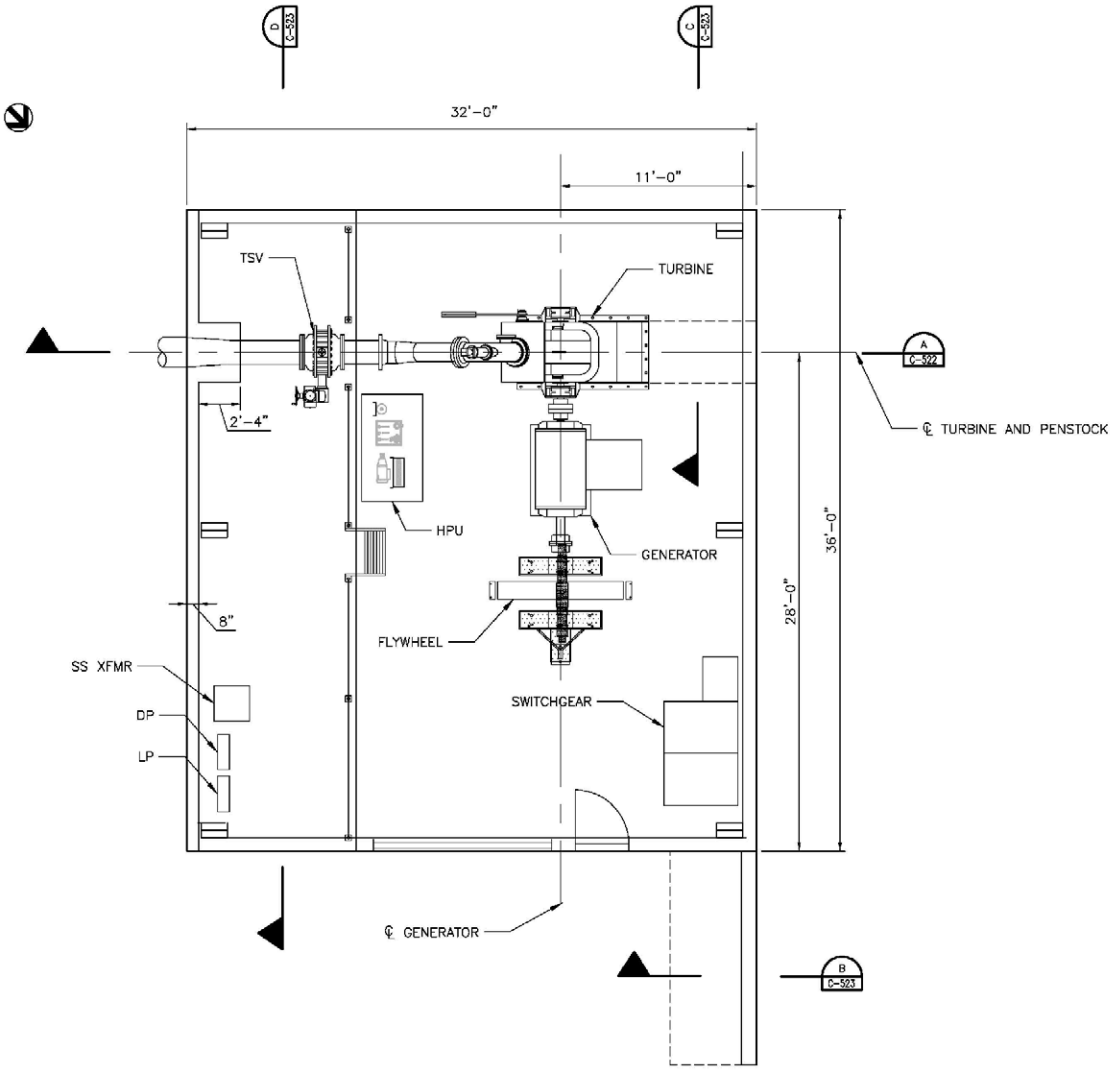
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 10 OF 12
DATE: February 23, 2024



NOTES:

1. TURBINE/GENERATOR DIMENSIONS SUBJECT TO CHANGE BASED UPON FINAL EQUIPMENT SELECTION
2. ELECTRICAL COMPONENT LOCATIONS ARE APPROXIMATE. REFER TO ELECTRICAL DRAWINGS.
3. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

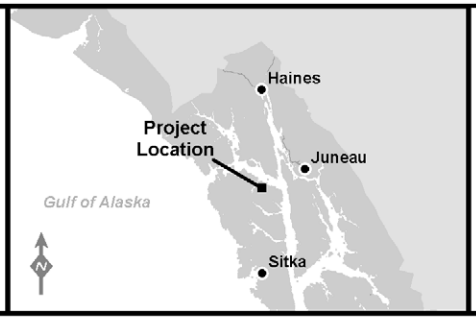
ABBREVIATIONS:

SS XFMR	STATION SERVICE TRANSFORMER
DP	DISTRIBUTION PANEL
LP	LIGHT PANEL
TSV	TURBINE SHUTOFF VALVE
HPU	HYDRAULIC POWER UNIT

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Powerhouse Plan



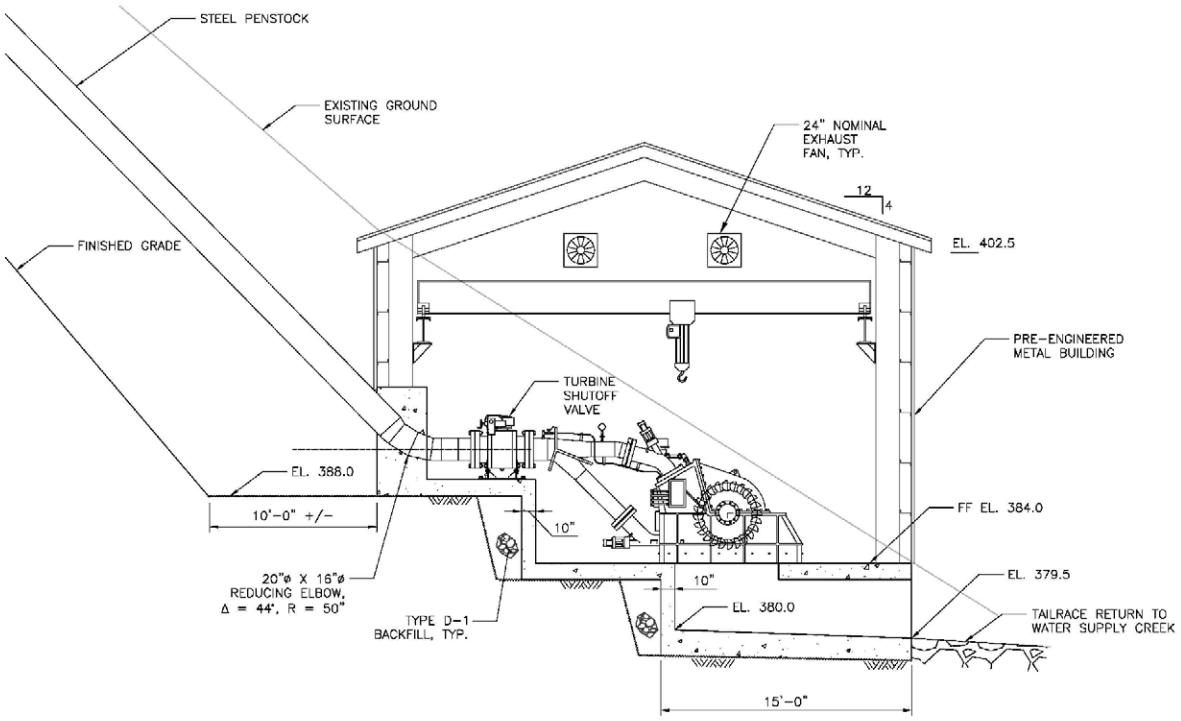
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 11 OF 12
DATE: February 23, 2024



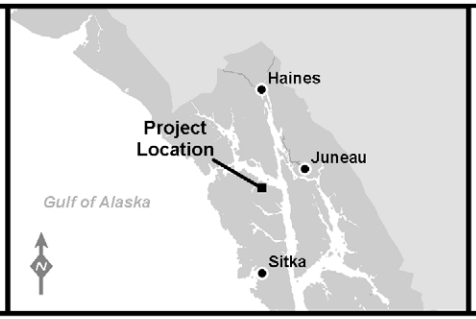
SECTION A (C-521)

4 0 4 8 FEET

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Powerhouse Sections



APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 12 OF 12
DATE: February 23, 2024

2021 Nationwide Permit General Conditions:

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which ''may affect'' a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of ''effects of the action'' for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding ''activities that are reasonably certain to occur'' and ''consequences caused by the proposed action.''

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity ''may affect'' or will have ''no effect'' to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have ''no effect'' on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the ''take'' of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with ''incidental take'' provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word ''harm'' in the definition of ''take'' means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at *http://www.fws.gov/* or *http:// www.fws.gov/ipac* and *http:// www.nmfs.noaa.gov/pr/species/esa/* respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether ''incidental take'' permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties.

(a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will

verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the

undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1⁄10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1⁄10-acre or less that require preconstruction notification, the district engineer may determine on a case-bycase basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3⁄100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3⁄100-acre or less that require preconstruction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses

the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2- acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permitteeresponsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the

permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires preconstruction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of the United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the

nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: ''When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.''

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a ''USACE project''), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification.

(a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the

additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is ''no effect'' on listed species or ''no potential to cause effects'' on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ''study river'' for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the ''study river'' (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers

federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) *Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination:*

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for:

(i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States;

(ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and

(iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

ALASKA DISTRICT REGIONAL CONDITIONS
for the
2021 NATIONWIDE PERMITS (NWP)

The Alaska District Regulatory Office has issued the following Regional Conditions to ensure that activities authorized by NWPs in the Alaska District cause no more than minimal adverse environmental effects, individually and cumulatively. Before the Alaska District will verify an activity under one or more NWPs, the proposed activity must comply with the NWP terms and all applicable General and Regional Conditions.

APPLICABILITY: The following apply throughout the state of Alaska.

RESTRICTIONS:

Regional Condition A – Revoked Permits: The following NWPs are revoked within Alaska:
2. Structures in Artificial Canals
24. Indian Tribe or State Administered Section 404 Programs
30. Moist Soil Management for Wildlife
34. Cranberry Production Activities

Regional Condition B – Additional Pre-Construction Notification (PCN) Requirements
1. NWP 13, Bank Stabilization: In addition to the PCN requirements specified by NWP 13, a PCN is required for proposed bank stabilization projects in fresh water when the proposed methods and techniques are not included in the Streambank Revegetation and Protection: A Guide for Alaska Revised 2005 (Walter, Hughes and Moore, April 2005) (Guide) or its future revisions. The Guide is available at: http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main.

2. A PCN is required for projects that qualify for NWPs 12, 57 (C), and 58 (D) within the Municipality of Anchorage.

3. NWP 48: A PCN is required for impacts to greater than 1/2 acre of special aquatic sites (wetlands, mudflats, vegetated shallows, coral reefs, etc.).

4. NWP 12, 57 (C), 58 (D). In addition to other triggers for the PCN, a PCN is required for projects located within permafrost soils identified using the appropriate soil survey or other appropriate data.

REGIONAL CONDITION C - Activities Involving Trenching
Trenches may not be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.

Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non waters of the U.S. location. The backfilled trench shall achieve the pre-construction elevation, within a year of disturbance unless climatic conditions warrant additional time. The additional time must be approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

REGIONAL CONDITION D - Site Revegetation for Projects with Ground Disturbing Activities
Re-vegetation of all disturbed areas within the project site shall begin as soon as site conditions allow and in the same growing season as the disturbance, unless climatic conditions warrant additional time. Topsoil (the outermost layer of soil, usually the top 2 – 8 inches) removed from the

construction area shall be separated and used for site rehabilitation. When backfilling, topsoil shall be placed as the top layer to provide a seed bed for regrowth. If topsoil is not available from the project site, local native soil material obtained from an approved site may be used. Species usedfor seeding and planting shall be certified seed sources free of invasive species and follow this order of preference: 1) species native to the site; 2) species native to the region; 3) species native to the state.

REGIONAL CONDITION E - Delineation of Project Footprint
Prior to commencement of construction activities within waters of the U.S., the permittee shall clearly identify the permitted limits of disturbance at the project site with highly visible markers (e.g. construction fencing, flagging, silt barriers, etc.). The permittee shall properly maintain such identification until construction is complete and the soils have been stabilized. The permittee is prohibited from conducting any unauthorized Corps-regulated activity outside of the permitted limits of disturbance (as shown on the permit drawings).

REGIONAL CONDITION F - Maintenance of Hydrology Patterns
Natural drainage patterns shall be maintained using appropriate methods. Excessive ponding or drying adjacent to fill areas shall indicate non-compliance with this condition.

REGIONAL CONDITIONS G, H, I AND J APPLY TO SPECIFIC NWPs

REGIONAL CONDITION G - NWP 40 Agricultural Activities
The following activities are not authorized by NWP 40: a. Installation, placement, or construction of drain tiles, ditches, or levees; and b. Mechanized land clearing or land leveling in wetlands within 300 feet of an anadromous water (anadromous water is defined by the state of AK see https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive).

REGIONAL CONDITION H - NWP 44 Mining Activities
Placer mining activities are excluded from coverage by NWP 44 (Mining Activities). Placer mining may be authorized by Regional General Permit POA-2014-00055-M1. In Alaska, NWP 44 may only authorize the following activities:

1. Hard rock mining within waters jurisdictional under only Section 404 of the Clean Water Act, not including trenching, drilling, or access road construction.

2. Temporary stockpiling of sand and gravel in waters of the U.S., limited to seasonally dewatered unvegetated sand/gravel bars. Stockpiles shall be completely removed and the area restored to pre-project contours within one year, in advance of seasonal ordinary high water events, or prior to equipment being removed from site, whichever occurs first.

REGIONAL CONDITION I – NWP 48, 55 (A), and 56 (B):
When an Aquatic Farm Lease is required from the Alaska Department of Natural Resources (ADNR) for a new or modified aquatic farm, the applicant must obtain and submit a copy of the ADNR preliminary decision with a Preconstruction Notification to the USACE.

REGIONAL CONDITION J –- NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52:
The proposed NWP activity must not cause:
1) the loss of anadromous streambed, and/or
2) the discharge of dredged or fill material into waterbodies, including wetlands, adjacent to and/or upstream of an anadromous waterbody;
unless the district engineer issues a waiver by making a written determination concluding that these discharges will result in no more than minimal individual and cumulative adverse environmental effects.

17. Hydropower Projects

Discharges of dredged or fill material associated with hydropower projects having: (a) Less than 10,000 kW of total generating capacity at existing reservoirs, where the project, including the fill, is licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; or (b) a licensing exemption granted by the FERC pursuant to Section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and Section 30 of the Federal Power Act, as amended.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404)

U.S. Army Corps of Engineers (USACE)

NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)

33 CFR 330. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 02-28-2022

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority	Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.
Principal Purpose	Information provided on this form will be used in evaluating the nationwide permit pre-construction notification.
Routine Uses	This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process.
Disclosure	Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (*see sample drawings and/or instructions*) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*)
First – Brandon Middle - Last - Shaw	First - Paul Middle - Last – McLarnon
Company – Inside Passage Electric Cooperative (IPEC)	Company – HDR Engineering, Inc.
Company Title – Operations Manager	E-mail Address – paul.mclarnon@hdrinc.com
E-mail Address – bshaw@insidepassageelectric.org	
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 12480 Mendenhall Loop Road	Address- 582 East 36th Avenue, Suite 500
City - Juneau State - AK Zip - 99801 Country - USA	City - Anchorage State - Alaska Zip - 99503 Country - USA
7. APPLICANT'S PHONE NOs. with AREA CODE	**10. AGENT'S PHONE NOs. with AREA CODE**
a. Residence b. Business c. Fax d. Mobile	a. Residence b. Business c. Fax d. Mobile
907-634-3033	907-644-2020

STATEMENT OF AUTHORIZATION

11. I hereby authorize Paul McLarnon to act in my behalf as my agent in the processing of this this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

SIGNATURE OF APPLICANT — DATE: 2/27/2024

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)

Water Supply Creek Hydroelectric Project

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Water Supply Creek

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
N/A
City: Closest is Hoonah State: AK Zip: 99892

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)
Latitude N 58.06402 Longitude W -135.39500
Please see attached Project Description.

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID
N/A

Municipality
Hoonah-Angoon Census Area

Section	Township	Range
11, 14, and 15, Copper River Meridian	44 South	61 East

17. DIRECTIONS TO THE SITE.

Upon arrival by boat or plane in Hoonah, the project site can be accessed by driving east from the Hoonah Airport on Kennel Creek Road for approximately 1.0 mile, which then travels south for approximately 1.0-mile, then west for 0.2 mile, crossing Gartina Creek. After crossing Gartina Creek, travel south on access road "03" for 1.9 miles to the existing Water Supply Creek crossing. Please see attached Project Description for additional detail.

18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE:

NWP #17 – Hydropower Projects

19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY (*see instructions*)

IPEC is proposing to construct a small-scale run-of-the-river hydroelectric project (project) on Water Supply Creek located on the north side of Chichagof Island in southeast Alaska. The project will supply reliable, lower-cost renewable energy to the town of Hoonah. Hoonah is located approximately 40 miles west from Juneau and is accessed only by air or water. The proposed facility on Water Supply Creek would be located approximately 5.0-miles southeast of Hoonah. Water Supply Creek is a high-gradient stream that flows northeast into Gartina Creek, which flows north then west into Fredrickson Bay of the Pacific Ocean approximately 0.3-mile southwest of Hoonah. Please see attached Project Description for additional details.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

Please see attached Project Description.

21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

Hoonah is only accessible by air or water and relies on diesel generators to meet all it's energy needs since the community is electrically isolated. As such, Hoonah's electricity rates are some of the highest in the country The purpose of this project is to bring reliable, lower-cost renewable energy to Hoonah by constructing a financially viable and logistically feasible hydroelectric facility on Water Supply Creek, which will reduce energy costs for Hoonah and its consumption of and dependence on diesel fuel, and in turn, improve air quality in the community and surrounding area. Please see attached Project Description for additional information.

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed Nationwide Permit Activity (*see instructions*)

Acres	Linear Feet	Cubic Yards Dredged or Discharged
0.07 Temporary / 1.06 Permanent	NA	160 Temporary / 5,300 Permanent

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

No other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used.

24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity.

The proposed project would bring reliable, lower-cost renewable energy to Hoonah by constructing a financially viable and logistically feasible hydroelectric facility on Water Supply Creek, which will reduce energy costs for Hoonah and its consumption of and dependence on diesel fuel, and in turn, improve air quality in the community and surrounding area. IPEC has committed to employing several design measures to avoid and minimize unavoidable impacts to WOTUS and therefore no formal compensatory mitigation for the unavoidable impacts is proposed. Please see attached Project Description for additional detail.

25. Is Any Portion of the Nationwide Permit Activity Already Complete? [ ] Yes [X] No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (*see instructions*)

No listed species or designated critical habitat would be affected. Please see attached Project Description.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (*see instructions*)

No historic properties would be affected. Please see attached Project Description.

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

The proposed activity will not occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river".

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? [ ] Yes [X] No

If "yes", please provide the date your request was submitted to the Corps District:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

No additional information is required for NWP #17 – Hydropower Projects.

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that this information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
[signature]	2/27/2024	[signature]	2/27/2024

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a

Department of the Army

Nationwide Permit (NWP) Pre-Construction Notification (PCN)

Blocks 1 through 4. To be completed by the Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the preconstruction notification, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed Nationwide Permit Activity Name or Title. Please provide a name identifying the proposed NWP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the NWP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed NWP activity is located at a site having a street address (not a box number), please enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed NWP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed NWP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed NWP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed NWP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific Nationwide Permit(s) You Propose to Use. List the number(s) of the Nationwide Permit(s) you want to use to authorize the proposed activity (e.g., NWP 29).

Block 19. Description of the Proposed Nationwide Permit Activity. Describe the proposed NWP activity, including the direct and indirect adverse environmental effects the activity would cause. The description of the proposed activity should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide sketches when necessary to show that the proposed NWP activity complies with the terms of the applicable NWP(s). Sketches usually clarify the activity and result in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed NWP activity (e.g.,a conceptual plan), but do not need to be detailed engineering plans.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20. Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed NWP activity. The description of any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or additional mitigation measures.

Block 21. Purpose of Nationwide Permit Activity. Describe the purpose and need for the proposed NWP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed Nationwide Permit Activity. For discharges of dredged or fill material into waters of the United States, provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed NWP activity. For structures or work in navigable waters of the United States subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed NWP activity.

For multiple NWPs, or for separate and distant crossings of waters of the United States authorized by NWPs 12 or 14, attach an extra sheet of paper marked Block 21 to provide the quantities of wetlands, streams, or other types of waters filled, flooded, excavated, or drained (or dredged or occupied by structures, if in waters subject to Section 10 of the Rivers and Harbors Act of 1899) for each NWP. For NWPs 12 and 14, include the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained for each separate and distance crossing of waters or wetlands. If more space is needed, attach an extra sheet of paper marked Block 21.

Block 23. Identify Any Other Nationwide Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by NWPs 12 or 14 that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 24. Compensatory Mitigation Statement for Losses of Greater Than 1/10-Acre of Wetlands When Pre-Construction Notification is Required. Paragraph (c) of NWP general condition 23 requires compensatory mitigation at a minimum one-for-one replacement ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed NWP activity are no more than minimal without compensatory mitigation, and provides an activity-specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than 1/10 acre, or provide an explanation of why the district engineer should not require wetland compensatory mitigation for the proposed NWP activity. If more space is needed, attach an extra sheet of paper marked Block 23.

Block 25. Is Any Portion of the Nationwide Permit Activity Already Complete? Describe any work that has already been completed for the NWP activity.

Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the Nationwide Permit Activity. If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

Block 27. List Any Historic Properties that Have the Potential to be Affected by the Nationwide Permit Activity. If you are not a federal agency, and if any historic properties have the potential to be affected by the proposed NWP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the Nationwide Permit Activity Would Occur in such a River. If the proposed NWP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a “study river” under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit http://www.rivers.gov/

Block 29. Nationwide Permit Activities that also Require Permission from the Corps Under 33 U.S.C. 408. If the proposed NWP activity also requires permission from the Corps under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a Corps federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the Corps district having jurisdiction over that project.

Block 30. Other Information Required For Nationwide Permit Pre-Construction Notifications. The terms of some of the Nationwide Permits include additional information requirements for preconstruction notifications:

* NWP 3, Maintenance –information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
* NWP 31, Maintenance of Existing Flood Control Facilities –a description of the maintenance baseline and the dredged material disposal site.
* NWP 33, Temporary Construction, Access, and Dewatering –a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
* NWP 44, Mining Activities –if reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre-construction notification.
* NWP 45, Repair of Uplands Damaged by Discrete Events –documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
* NWP 48, Commercial Shellfish Aquaculture Activities –(1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).
* NWP 49, Coal Remining Activities –a document describing how the overall mining plan will result in a net increase in aquatic resource functions to the district engineer and receive written authorization prior to commencing the activity.
* NWP 50, Underground Coal Mining Activities –if reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre-construction notification.

If more space is needed, attach an extra sheet of paper marked Block 29.

Blocks 31 and 32. For bank stabilization activities, we are collecting information on the use of living shorelines in coastal waters and lakes to inform future NWP rulemaking efforts. If the PCN is for a proposed NWP 13 activity, and it is located in coastal waters or a lake, please check the appropriate box in block 31 to indicate whether you considered the use of a living shoreline to protect your property from erosion. If the PCN is for a proposed NWP 13 activity, and it is located in coastal waters or a lake, please check the appropriate box in block 32 to indicate whether there are contractors in your area that construct living shorelines.

Block 33. Signature of Applicant or Agent. The PCN must be signed by the person proposing to undertake the NWP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the NWP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the NWP activity (including compliance with special conditions, mitigation, etc.).

DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 45 day PCN review period will not start until the delineation is submitted or has been completed by the Corps.

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one original, or good quality copy, of all drawings on 8½x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

ADDITIONAL INFORMATION AND REQUIREMENTS

For proposed NWP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived (see NWP general condition 25). Some States, Tribes, or EPA have issued water quality certification for one or more NWPs. Please check the appropriate Corps district web site to see if water quality certification has already been issued for the NWP(s) you wish to use. For proposed NWP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur (see NWP general condition 26). Some States have issued Coastal Zone Management Act consistency concurrences for one or more NWPs. Please check the appropriate Corps district web site to see if Coastal Zone Management Act consistency concurrence has already been issued for the NWP(s) you wish to use.

Project Description
to support Nationwide Permit 17 Preconstruction Notification:

Water Supply Creek Hydroelectric Project

Hoonah, Alaska

February 27, 2024

Prepared for:

IPEC
INSIDE PASSAGE ELECTRIC COOPERATIVE

12480 Mendenhall Loop Rd.
Juneau, Alaska 99801

Prepared by:

HDR Engineering, Inc.
582 E. 36th Avenue, Suite 500
Anchorage, Alaska 99503

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Attachments

List of Acronyms

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADF&G	Alaska Department of Fish and Game
AMSL	above mean sea level
BMP	Best Management Practices
cfs	cubic feet per second
cy	cubic yards
CWA	Clean Water Act
ESA	Endangered Species Act
fps	feet per second
HDPE	high density polyethylene
HDR	HDR Engineering, Inc.
H:V	horizontal:vertical
IPaC	Information for Planning and Consultation
IPEC	Inside Passage Electric Cooperative
kW	kilowatt
LiDAR	light detection and ranging
NWI	National Wetland Inventory
NWP	Nationwide Permit
OHW	ordinary high water
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WOTUS	Waters of the U.S.

1.0 Introduction

Inside Passage Electric Cooperative (IPEC) is proposing to construct a small-scale run-of-the-river hydroelectric project (project) on Water Supply Creek located on the north side of Chichagof Island in southeast Alaska. The project will supply reliable, lower-cost renewable energy to the town of Hoonah. Hoonah is located approximately 40 miles west from Juneau and is accessed only by air or water. The proposed facility on Water Supply Creek would be located approximately 5.0-miles southeast of Hoonah. Water Supply Creek is a high-gradient stream that flows northeast into Gartina Creek, which flows north then west into Fredrickson Bay of the Pacific Ocean approximately 0.3-mile southwest of Hoonah (Figures **1** and **2**).

HDR Engineering, Inc. (HDR) completed a Design Criteria Report for the project in December 2021 (HDR 2021). Construction of the project will require excavation and discharge of fill materials into waters of the U.S. (WOTUS), including wetlands, an activity subject to Section 404 of the Clean Water Act (CWA) of 1972 (as amended). IPEC is seeking authorization from the U.S. Army Corps of Engineers (USACE) to conduct the activities under Nationwide Permit (NWP) 17 – Hydropower Projects.

This document, which focuses on proposed activities that involve the discharge of fill into WOTUS, supports IPEC's Preconstruction Notification (PCN; Blocks 19-22, 26-27 of ENG Form 6082) to USACE. This document describes the proposed project's components, focusing on those elements that require placement of fill in WOTUS; describes how construction will not have impacts on species protected under the Endangered Species Act (ESA) or historic properties; and identifies proposed avoidance and minimization measures intended to avoid and/or minimize potential effects to WOTUS. Impacts to WOTUS from proposed activities are described in **Section 5.0,** and **Section 9.0** identifies the applicant's proposed avoidance and minimization measures for this project.

2.0 Project Location

The project is located within the Hoonah-Angoon Census Area in Sections 11, 14, and 15, Township 44 South, Range 61 East, Copper River Meridian in the U.S. Geological Survey Juneau A-5 Quadrangle. The project will intersect the ordinary high water (OHW) line of Water Supply Creek, and will also intersect two wetland areas, all considered WOTUS. Latitude and longitude (North American Datum 1983) of the intersections are provided in Table 1. Project location, plan overview maps, and cross sections are provided as **Figures 1** through **12**.

Table 1. Location of WOTUS Intersected by the Project

WOTUS Intersected by Project	Latitude	Longitude
Water Supply Creek – Perennial Stream	58.05404° 58.06402°	-135.40639° -135.39500°
Palustrine Forested Wetland	58.05702°	-135.40143°
Palustrine Scrub-Shrub/Forested Wetland	58.05411°	-135.40651°

Upon arrival by boat or plane in Hoonah, the project site can be accessed by driving east from the Hoonah Airport on Kennel Creek Road for approximately 1.0 mile, which then travels south for approximately 1.0-mile, then west for 0.2 mile, crossing Gartina Creek. After crossing Gartina Creek, travel south on access road "03" for 1.9 miles to the existing Water Supply Creek crossing. An existing access road to the City of Hoonah's existing water intake on Water Supply Creek is located immediately after the crossing. This existing road would be used, in part, to access the power house construction area following construction of two bridges. The existing access road that travels up the southeast side of Water Supply Creek valley is located approximately 0.2 mile south of the existing Water Supply Creek crossing and would be travelled for 0.6 miles, where construction of a new access road approximately 0.35 miles in length would begin to access the proposed intake location on Water Supply Creek.

Crews will access the site via the existing access road, then by the 0.35 mile of newly constructed access road. All components of the project will be located on land owned by the Sealaska Corporation. Coordination with Sealaska Corporation and other state agencies regarding construction related activities and state permitting is underway. IPEC has applied for and received an Alaska Department of Fish and Game (ADF&G) Fish Habitat Permit (FH23-I-0077, Attachment A) for construction and operations which is valid for the life of the project (ADF&G 2023).

3.0 Project Purpose (Block 21)

Hoonah is only accessible by air or water and relies on diesel generators to meet most of its energy needs since the community is electrically isolated. The community currently receives a small portion of its electricity from the existing Gartina Falls hydro project on Gartina Creek, however Hoonah's residential electricity rates are some of the highest in the state (https://findenergy.com/ak/).

The purpose of this project is to bring additional reliable, lower-cost renewable energy to Hoonah by constructing a financially viable and logistically feasible hydroelectric facility on Water Supply Creek, which will reduce energy costs for Hoonah and its consumption of and dependence on diesel fuel, and in turn, improve air quality in the community and surrounding area. IPEC proposes to begin construction of the new permanent access roads in Fall 2024, with the remainder of project construction planned for Summer 2025.

4.0 Project Summary (Block 19)

The project generally includes construction, operation, and maintenance of small sections of new permanent overland access roads, Phase 1 and 2 temporary diversion structures during construction, a permanent diversion and intake structure, penstock, powerhouse, and short section of new transmission line.

Proposed project features include (**Figures 3** through **12**):

- A permanent, unpaved, gravel access road, approximately 0.35 mile long, to provide access for construction of the intake and reliable year-round access for operations and maintenance. An additional permanent, unpaved section of gravel access road approximately 0.02 mile long, including two bridges over Water Supply Creek, to provide access for construction and maintenance of the power house.
- Phase 1 and 2 temporary stream diversion structures in order to construct permanent project components in-the-dry.
- A small permanent diversion weir with a crest at an elevation of about 750-feet above mean sea level (AMSL) with a fixed crest overflow section.
- A small concrete box-type intake structure and sluiceway (elevation 740-feet AMSL) located on the right side of the permanent diversion. The diverted flow will first enter the sluiceway and will then be drawn down through a trash rack and into the penstock (pipeline) to reach the powerhouse (380-feet AMSL). The sluiceway will be used to pass accumulated sediment during high-flow events.
- An approximately 4,700-feet-long penstock to convey water from the intake structure to the powerhouse, with an inside diameter of 20-24-inches, corresponding to a maximum flow rate of 12-14 cubic feet per second (cfs). The pipeline will be buried and located within or next to the access road for most of its length. The upper portion will be high density polyethylene (HDPE) and the lower portion will be steel or HDPE.
- A small, pre-engineered metal powerhouse building on a concrete foundation to contain one horizontal Pelton turbine/generator set, inlet piping, guard valve, switchgear, and controls. The building will be about 25 feet by 25 feet wide and the powerhouse will have a target install capacity of 300-350 (kilowatts kW). An open tailrace channel will convey water back to Water Supply Creek.
- A short 12.5 kilovolt overhead transmission line, approximately 1.5 miles long, to transmit the power generated from the project to the existing Gartina Falls hydroelectric project transmission line and ultimately back to Hoonah.

The project will operate in a run-of-the-river mode and will not have any usable storage. Activities within WOTUS required to construct the project are described in **Section 5.0**. The lack of notable impacts to fish habitat, ESA listed species, and cultural resources are described in **Sections 6** through **8**.

5.0 Activities within Waters of the U.S. (Block 22)

In support of Section 404 of the CWA permitting process, HDR used a combination of modified U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory Mapping ([NWI] USFWS 2023) to identify wetlands and topographic LiDAR-based delineation of the OHW of Water Supply Creek to calculate the project's impacts to WOTUS. HDR modified the NWI mapping by removing the coarse-scale NWI mapped stream polygon and then replaced that polygon with the more accurately digitized OHW of Water Supply Creek using a Geographic Information

System. NWI wetland polygons were then adjusted to remain adjacent to the revised OHW line, as originally intended by the NWI mapping dataset. The wetland and waterbody boundaries within the project area identified from the mapping sources are also shown on the figures where appropriate.

Proposed activities within wetlands or the mapped OHW of Water Supply Creek include the following:

- Construction of a new permanent upper access road approximately 0.35-mile in total length from the existing road system to the intake site of which approximately 0.20-mile would occur over 1.02 acres of mapped PFO4B wetlands (cut and fill with approximately 5,000 cubic yards (cy) of clean riprap and gravel). Installation of the penstock pipe within and adjacent to newly constructed road resulting in 0.01 acre of temporary impact to PFO4B wetlands (**Figures 3** and **4**).
- Construction of a second, new permanent power house access road approximately 0.02-mile long, including two bridges over Water Supply Creek, from the existing access road system to the power house location resulting in 0.01 acre of permanent impact to PSS4/FO4B wetlands and <0.01 acre of permanent impact to Water Supply Creek (50 cy clean riprap, gravel, **Figure 10**). The location of the second, downstream most bridge is to be determined by engineers in the field however this bridge would clear span the OHW of Water Supply Creek and therefore no impacts within OHW would occur.
- Excavate a diversion channel and construct Phase 1 Temporary Diversion Structure (cofferdam) to divert water around the intake construction area and allow for construction of the intake structure in-the-dry, resulting in 0.03 acre of temporary impact to PSS4/FO4B wetlands and 0.01 acre of temporary impact to Water Supply Creek (100 cy clean riprap, native fill, **Figure 9**). Phase I Temporary Diversion Structure also includes construction of an additional temporary diversion upstream of the power house construction site using 1-cy material bags filled with sand and gravel and installation of an HDPE pipe through the diversion to route water to the existing city water intake to construct the power house in-the-dry (**Figure 10**).
- Construction of the concrete intake structure, sluiceway, and portion of the permanent diversion weir resulting in <0.01 acre of permanent impact below OHW of Water Supply Creek (150 cy of concrete, clean riprap, native fill, **Figures 5** through **8**).
- Construction of Phase 2 Temporary Diversion Structure to divert all of the creek flow through the sluiceway and sluice gate by removing the Phase I Temporary Diversion Structure at the intake and constructing the Phase 2 Temporary Diversion Structure, resulting in temporary impacts to 0.01 acre of PSS4/FO4B wetlands and temporary impacts to 0.01 acre of Water Supply Creek (50 cy of clean riprap/native fill, **Figure 9**).
- Construction of the remainder of permanent diversion weir resulting in 0.01 acre of permanent impact to PSS4/FO4B wetlands and 0.01 acre below OHW of Water Supply Creek (50 cy of concrete, clean riprap, native fill, **Figures 5** through **8**).

- Construction of the power house structure foundation resulting in cut and fill of <0.01 acre below OHW of Water Supply Creek (50 cy concrete, clean riprap, native fill, **Figures 10** through **12**).
- Fill placed for the temporary diversion structures will be removed following construction and the areas restored to pre-construction elevations where other permanent developments do not overlap (50 cy clean riprap, native fill, **Figures 9** and **10**).

Table 2 identifies the proposed activities in WOTUS and summarizes anticipated temporary and permanent fill and/or excavation quantities in WOTUS by volume and type of material. All activities conducted within the channel of Water Supply Creek would occur roughly between June and September, during anticipated low-flow conditions.

Table 2. Summary of Activities in WOTUS for Project Construction

Temporary Impact Type and Location	NWI Code[1]	Acres	Cubic Yards	Fill Type[2]
Temporary Impact from Excavation and Backfill for Phase I and 2 Diversion Structures	PSS4/FO4B	0.04	100	Clean riprap/native fill – 1 cubic yard material bags filled with sand and gravel
	R3UBH	0.02	50	
Excavation and Backfill of Penstock Trench Adjacent to New Access Road	PFO4B	0.01	10	
Total Temporary Impact and Cubic Yards		**0.07**	**160**	
Permanent Impact Type and Location	**NWI Code**	**Acres**	**Cubic Yards**	**Comment**
New Upper Access Road Cut and Fill	PFO4B	1.02	5,000	Clean riprap and gravel
Diversion Weir Cut and Fill	PSS4/FO4B	0.01	50	Concrete, clean riprap/native fill
	R3UBH	0.01		
Intake Structure and Site Cut and Fill	R3UBH	<0.01	150	Concrete, clean riprap/native fill
Power House Structure and Site Cut and Fill	R3UBH	<0.01	50	
Power House Access Road and Bridges	PSS4/FO4B	0.01	50	Clean riprap and gravel
	R3UBH	<0.01		
Total Permanent Wetland Impacts		**1.04**	**5,050**	Concrete, clean riprap/native fill, and gravel
Total Permanent Stream Impacts		**0.02**	**250**	
Total Permanent Aquatic Resources Impacts		**1.06**	**5,300**	

[1]NWI Code = National Wetland Inventory Code (Cowardin et al. 1979); PFO4B = Saturated, palustrine, forested, needle-leaved evergreen wetland; PSS4/PFO4B = Saturated, palustrine, scrub-shrub, needle-leaved/forested, needle-leaved evergreen wetland; R3UBH = Permanently flooded, upper perennial stream with an unconsolidated bottom (Water Supply Creek).

[2]Engineering properties for earth and rock, including allowable temporary and permanent excavated slopes as well as bearing capacities will be determined by a geotechnical investigation conducted prior to final design.

The project would result in the permanent loss of approximately 1.02 acres of PFO4B and 0.02 acre PSS4/FO4B wetlands, and 0.02 acre of perennial stream bed located below the OHW of Water Supply Creek from fill placement (total of 1.06 acre of permanent loss of WOTUS), and would temporarily impact 0.04 acre of PSS4/FO4B and 0.01 acre of PFO4B wetlands, and 0.02 acre of perennial stream bed below OHW of Water Supply Creek from temporary construction related activities (total of 0.07 acre temporary impact to WOTUS).

6.0 Fish Presence

In August 2023, IPEC submitted a Fish Habitat Permit application to ADF&G for construction and operation of the project. ADF&G determined that while Water Supply Creek supports resident Dolly Varden char (*Salvelinus malma*) in the bypass reach of the project and for at least 1,700 feet upstream and 2,800 feet downstream to its confluence with Gartina Creek and into tidewater, the hydro operation does not present an unreasonable impact to fish or fish habitat in Water Supply Creek. In September 2023, ADF&G issued a Fish Habitat Permit (Appendix A) for the project which is valid for the life of the project (ADF&G 2023).

7.0 Endangered Species Act (Block 26)

HDR submitted a query to USFWS's Information for Planning and Consultation (IPaC) web service which determined no endangered or threatened species or their critical habitats listed under the ESA are known to occur in the project area.

8.0 Cultural Resources/Historic Properties (Block 27)

HDR cultural resource specialists completed a search of the Alaska Heritage Resources Survey Database for known historic properties or cultural resources within the project area and no known sites were identified within over 0.50-mile of the project area (Attachment B). Two historic-era sites were located along Gartina Creek associated with an attempt to construct hydro power there in the 1920's, however the location is approximately 0.75-mile northeast of the project area.

9.0 Mitigation

9.1. Avoidance and Minimization Measures (Block 20)

IPEC has incorporated the following measures into the design and construction of the project to avoid or reduce impacts to WOTUS and other resources:

- Siting of the project facilities and new access roads on southeast side of Water Supply Creek will maximize use of the existing access roads and reduce impacts to near continuous wetlands mapped on the northwest side of the creek.
- To the extent possible, access roads will be aligned to minimize cost and environmental impact. Access roads will have a minimum 12-foot traveled way and will be used for

construction and maintenance, and the design speed limit will be no more than 20 miles per hour.

- Road grades will be limited to a maximum of 15 percent. Curves will have a minimum radius of 65 feet. Maximum excavation slopes will be 3/4H:1V (horizontal:vertical) in soil and 1H:4V in rock (subject to revision following results of geotechnical investigations). Excavated slopes will be benched where the vertical depth of excavation exceeds 20 feet. Bin walls, gabions, or reinforced concrete will be installed to reduce backslope cuts where appropriate. Maximum fill slopes will be 1 1/2H:1V.
- Drainage ditches and culverts will be installed to carry runoff from the roads and to prevent erosion. Drainage ditches will have a minimum depth of 18 inches and a minimum slope of 2 percent. Runoff velocities will be limited to 3 feet per second (fps) where no armor protection of the ditch is provided. Appropriate armor protection will be designed where velocities exceed 3 fps. Culverts will have a minimum diameter of 18 inches. The minimum depth cover over culverts will be 12 inches. Culverts will have slopes of at least 2 percent.
- Fill material placed for the Phase 1 and 2 Temporary Diversion Structures that allow for construction in-the-dry will be removed following completion of construction of the intake and power house structures and the areas will be restored to pre-construction elevations where other permanent developments do not overlap.
- Staging areas and disposal of materials generated from excavations for the power house and intake access roads will not occur in mapped WOTUS.
- All work performed below OHW of Water Supply Creek will occur during predicted low-flow periods.
- Where feasible, topsoil from trenches excavated in wetlands for burial of the penstock will be stockpiled separately from underlying materials and will be placed as the top layer during backfill.
- Disturbed areas adjacent to excavated trenches in wetlands will be restored to preconstruction elevations and reseeded with an appropriate seed mix if needed.
- Fueling will not occur within or adjacent to stream beds or wetlands.
- Heavy machinery operating in the stream channels will be limited to the amount necessary to complete the work. The contractor will minimize the amount of instream work to the greatest extend possible.
- The contractor shall consult with, and obtain approval from, the Hoonah Water Department regarding the design of the dewatering plan and the timing of instream work at least 30 days prior to starting the work.
- The contractor will follow applicable best management practices BMPs for the work being performed in accordance with the Alaska Pollution Discharge Elimination System Construction General Permit. The contractor will be required to prepare a project-specific Erosion and Sediment Control Plan and a Stormwater Pollution Prevention Plan (SWPPP) for IPEC approval prior to construction. The SWPPP will identify additional BMPs as needed.

- As part of the SWPPP, the contractor shall minimize erosion and sedimentation of all waterways by implementing control measures as areas are disturbed by construction.
- The contractor shall install sandbags, silt fences, or straw bales as necessary to protect Water Supply Creek and other streams from sediment due to construction per the SWPPP. The contractor shall install perimeter fences or sandbag dikes at construction sites to prevent runoff from being directly discharged into nearby streams.
- The contractor will be responsible for obtaining (and adhering to) stipulations of Temporary Water Use Authorization(s) from the Alaska Department of Natural Resources.

9.2. Compensatory Mitigation (Block 24)

The project has been designed to avoid and minimize adverse effects to WOTUS to the maximum extent practicable given the water-dependent nature of the activity. Impacts to WOTUS are considered minimal. The proposed project would only result in permanent impacts to 0.02 acres of stream bed below OHW of Water Supply Creek and 1.04 acres of adjacent wetlands (1.06 acres of permanent impact to WOTUS). Temporary impacts would occur to 0.02 acre below OHW and to 0.04 acre of adjacent wetlands.

The proposed project would bring additional reliable, lower-cost renewable energy to Hoonah by constructing a financially viable and logistically feasible hydroelectric facility on Water Supply Creek, which will reduce energy costs for Hoonah and its consumption of and dependence on diesel fuel, and in turn, improve air quality in the community and surrounding area. IPEC has committed to employing several design measures to avoid and minimize unavoidable impacts to WOTUS and therefore no formal compensatory mitigation for the unavoidable impacts to WOTUS is proposed.

10.0 References

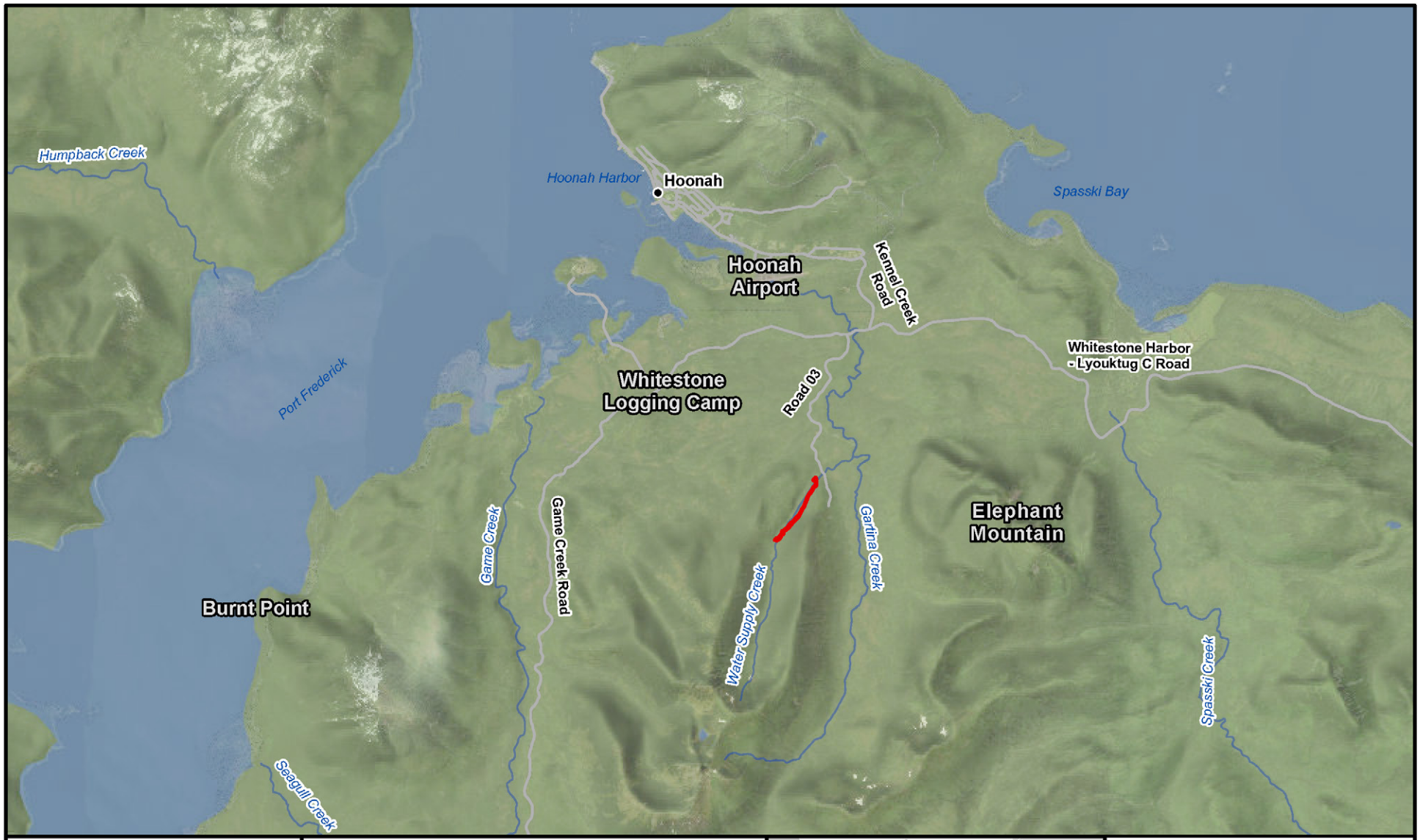
ADF&G (Alaska Department of Fish and Game). 2023. Fish Habitat Permit FH23-I-0077. Inside Passage Electric Cooperative Water Supply Creek Hydroelectric Facility. September 14, 2023.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. FWS/OBS-79/31. Performed for U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC.

HDR (HDR Engineering, Inc.). 2021. *Design Criteria Report. Water Supply Creek Hydroelectric Project.* Prepared for Inside Passage Electric Cooperative. December 22, 2022.

U.S. Fish and Wildlife Service. 2023. National Wetland Inventory Mapping. Downloaded from https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper on October 1, 2023.

Figures



Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Vicinity Map

0 1 2 Miles

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

Project Location

Road

Stream

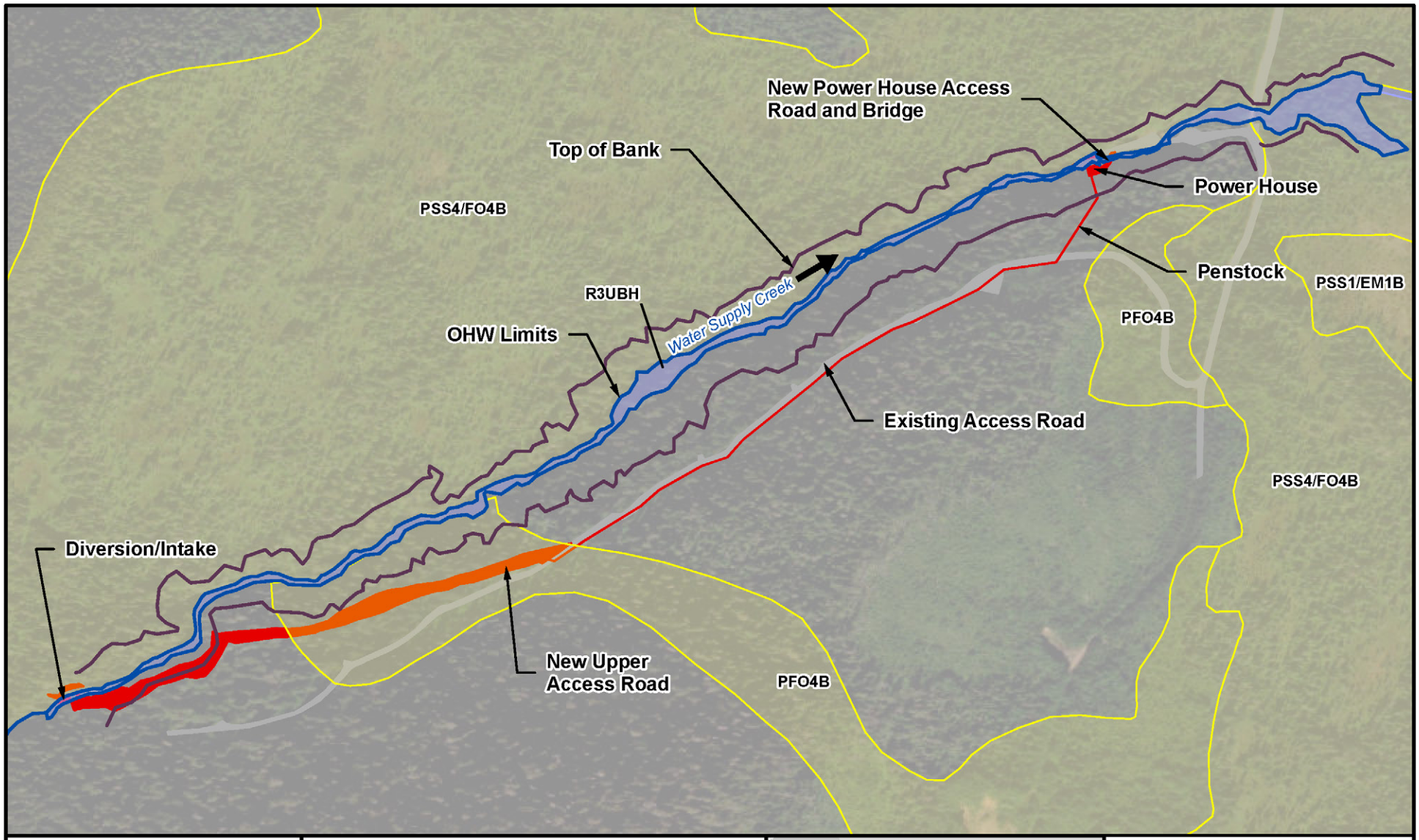
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 1 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

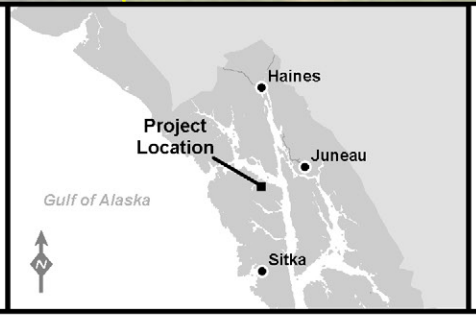
Water Supply Creek Hydroelectric Project

Overview

0 250 500 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Top of Bank
- Project Components
- Existing Access Road



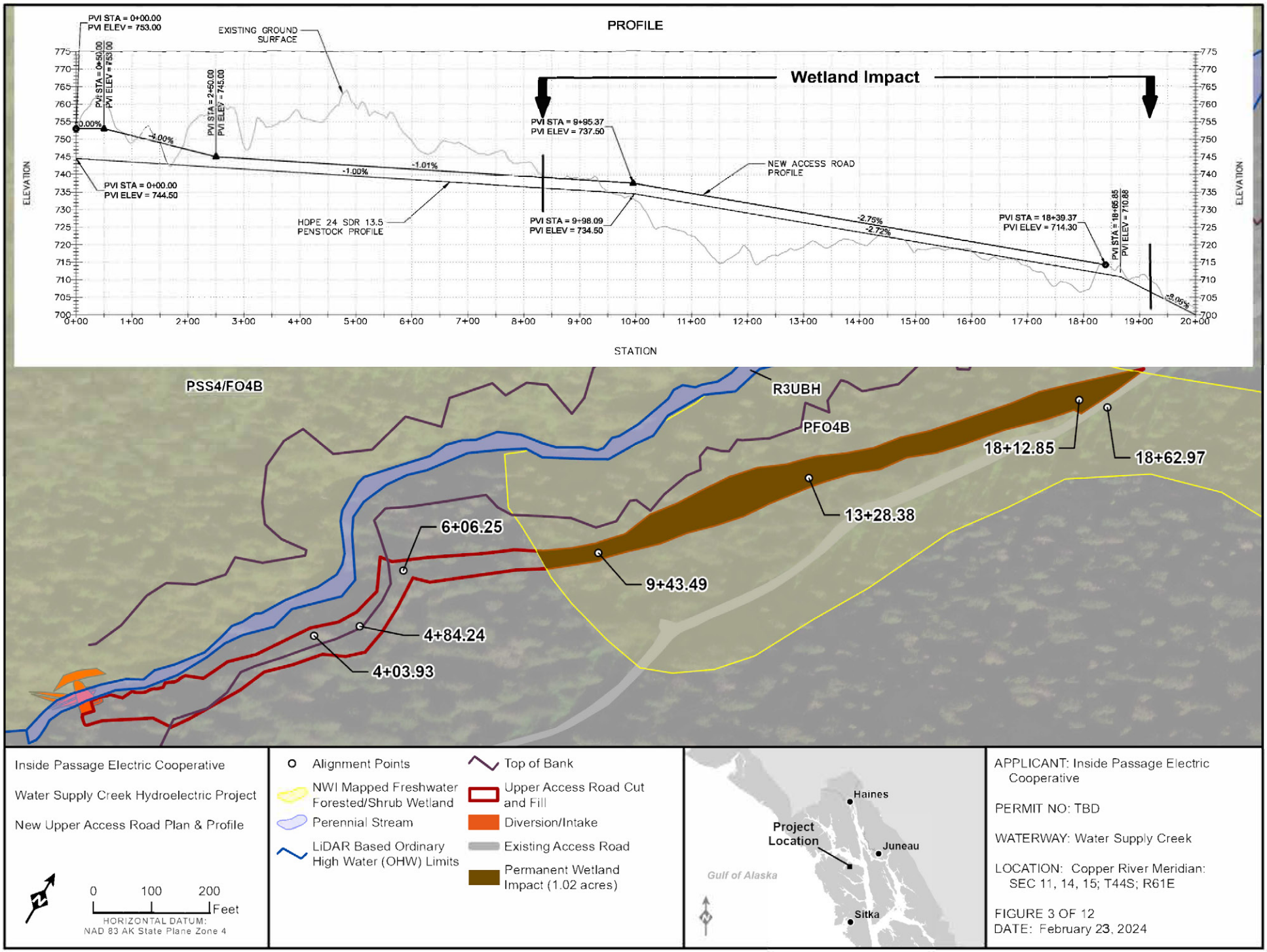
APPLICANT: Inside Passage Electric Cooperative

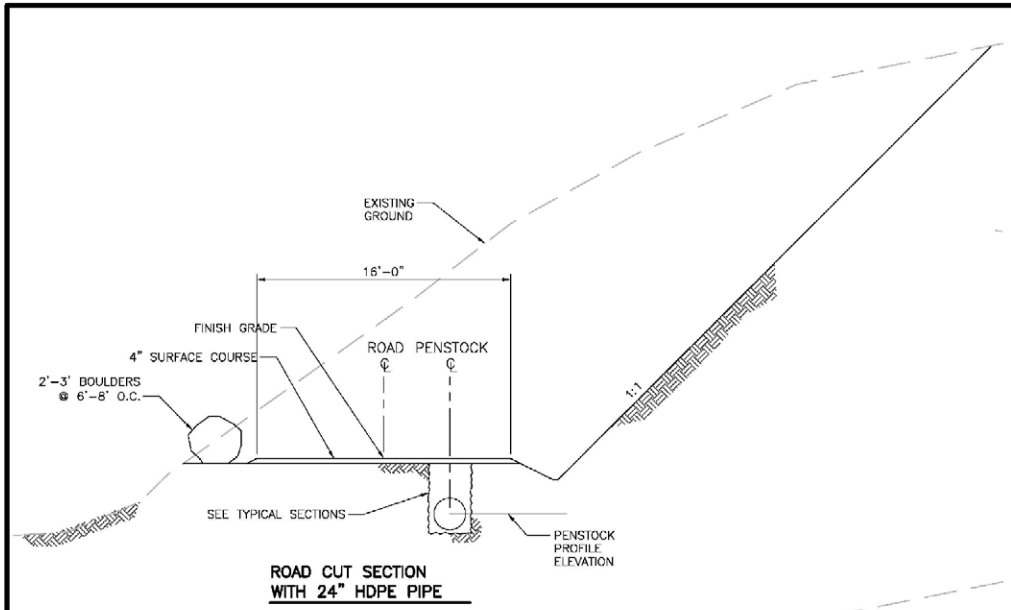
PERMIT NO: TBD

WATERWAY: Water Supply Creek

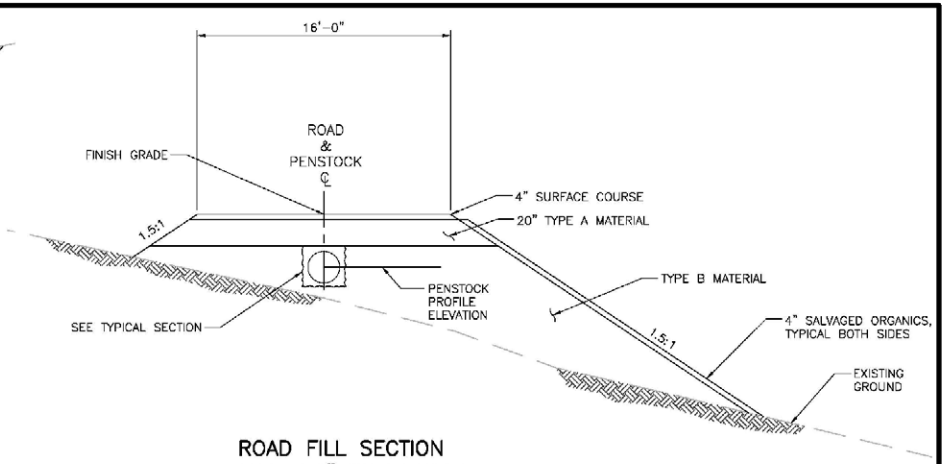
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 2 OF 12
DATE: February 23, 2024

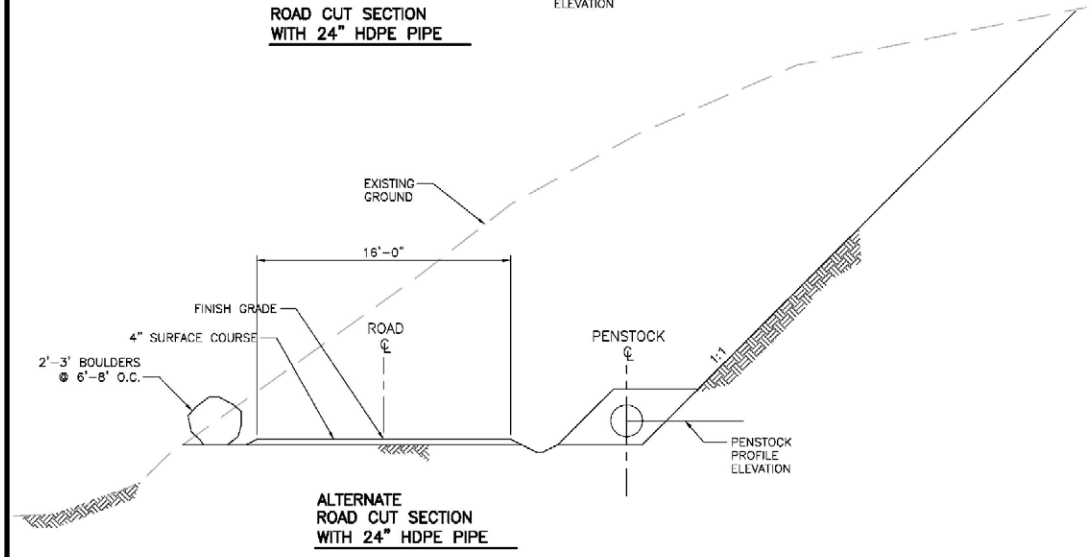

PROFILE
PVI STA = 0+00.00
PVI ELEV = 753.00
EXISTING GROUND SURFACE
PVI STA = 0+50.00
PVI ELEV = 753.00
PVI STA = 2+50.00
PVI ELEV = 745.00
Wetland Impact
PVI STA = 9+95.37
PVI ELEV = 737.50
NEW ACCESS ROAD PROFILE
0.00%
-3.00%
-1.00%
-1.01%
PVI STA = 0+00.00
PVI ELEV = 744.50
HDPE 24 SDR 13.5 PENSTOCK PROFILE
PVI STA = 9+98.09
PVI ELEV = 734.50
-2.75%
-2.72%
PVI STA = 18+39.37
PVI ELEV = 714.30
PVI STA = 18+65.85
PVI ELEV = 710.88
-8.05%
ELEVATION
STATION
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
PSS4/FO4B
R3UBH
PFO4B
18+12.85
18+62.97
13+28.38
6+06.25
9+43.49
4+84.24
4+03.93
Inside Passage Electric Cooperative
Water Supply Creek Hydroelectric Project
New Upper Access Road Plan & Profile
0
100
200
Feet
HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4
Alignment Points
NWI Mapped Freshwater Forested/Shrub Wetland
Perennial Stream
LiDAR Based Ordinary High Water (OHW) Limits
Top of Bank
Upper Access Road Cut and Fill
Diversion/Intake
Existing Access Road
Permanent Wetland Impact (1.02 acres)
Haines
Project Location
Juneau
Gulf of Alaska
Sitka
APPLICANT: Inside Passage Electric Cooperative
PERMIT NO: TBD
WATERWAY: Water Supply Creek
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E
FIGURE 3 OF 12
DATE: February 23, 2024



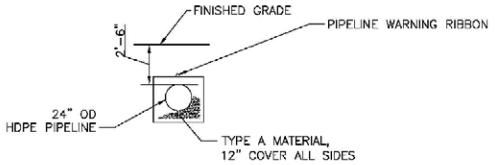
ROAD CUT SECTION
WITH 24" HDPE PIPE



ROAD FILL SECTION
WITH 24" HDPE PIPE



ALTERNATE
ROAD CUT SECTION
WITH 24" HDPE PIPE

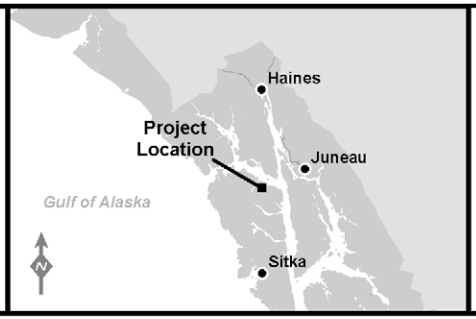


PENSTOCK
TYPICAL SECTION

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Access Road and Penstock
Typical Sections and Details



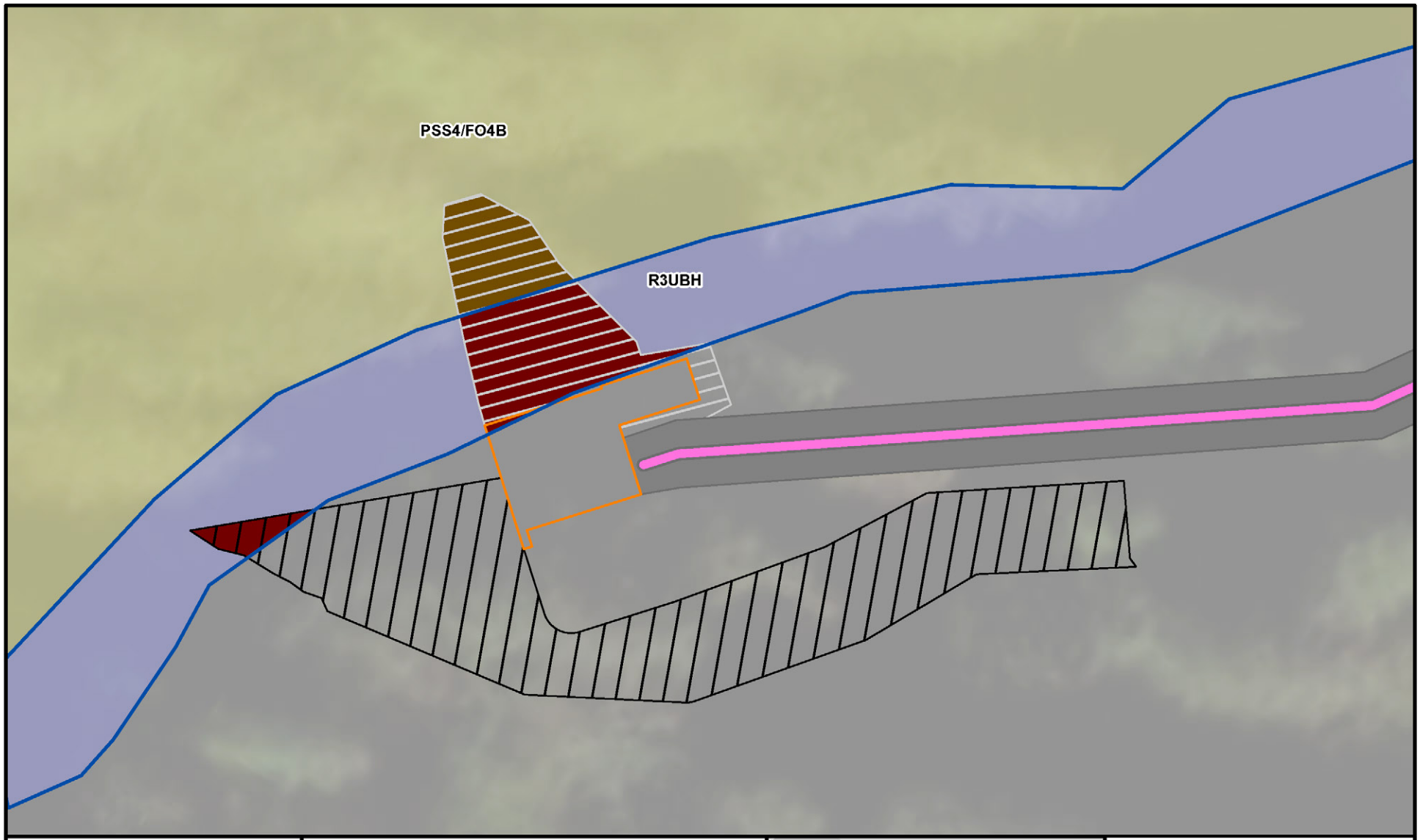
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 4 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

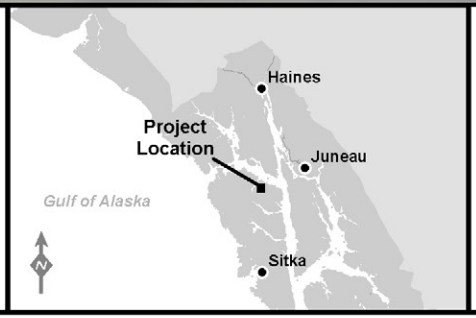
Water Supply Creek Hydroelectric Project

Intake Plan View

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Intake
- Intake Site Cut & Fill
- Diversion Weir Cut & Fill
- Penstock
- New Access Road
- Permanent Stream Impact (0.02 acres)
- Permanent Wetland Impact (0.01 acres)



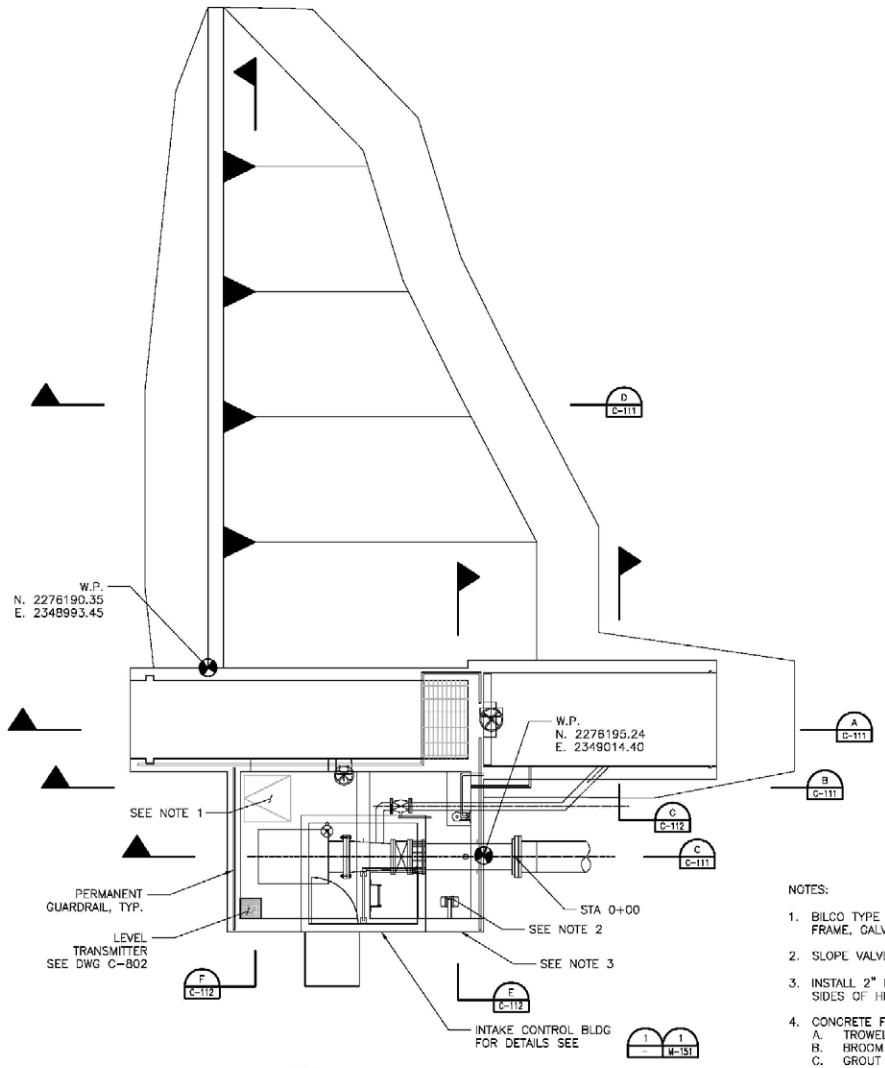
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 5 OF 12
DATE: February 23, 2024



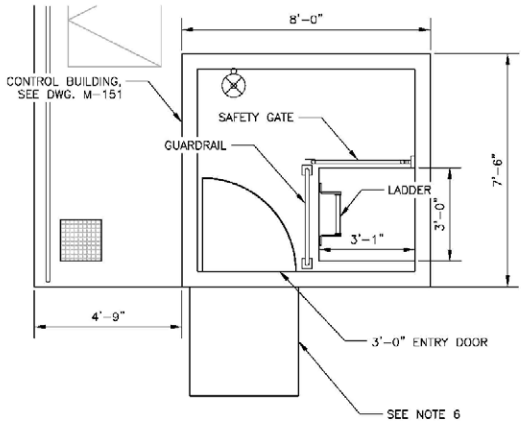
PLAN

NOTES:

1. BILCO TYPE J HATCH WITH INTEGRAL FALL PROTECTION GRATING, 3'-0"x3'-0", STEEL FRAME, GALV, RAISED PADLOCK, SS HARDWARE.
2. SLOPE VALVE PIT FLOOR TO DRAIN TO SUMP
3. INSTALL 2" RIGID FOAM INSULATION, DOW HI40 OR APPROVED ALTERNATE, ON BURIED SIDES OF HEATED PORTION OF INTAKE BOX.
4. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

NOTES CONT.:

5. SEE SHEET C-801 FOR GUARDRAIL, LADDER AND SAFETY GATE DETAILS.
6. CONCRETE ENTRY LANDING, 6" THICK CONCRETE, 3'-6" WIDE BY 3'-6" DEEP CENTERED ON DOORWAY, REINFORCEMENT SHALL BE 6" WWF 6X6-W2.9xW2.9 UNO. PROVIDE EXPANSION JOINT BETWEEN WALL AND LANDING.

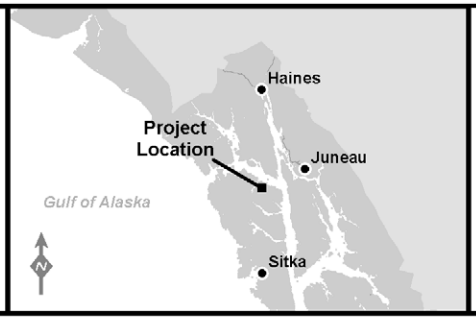


CONTROL BUILDING DETAIL 1

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Plan



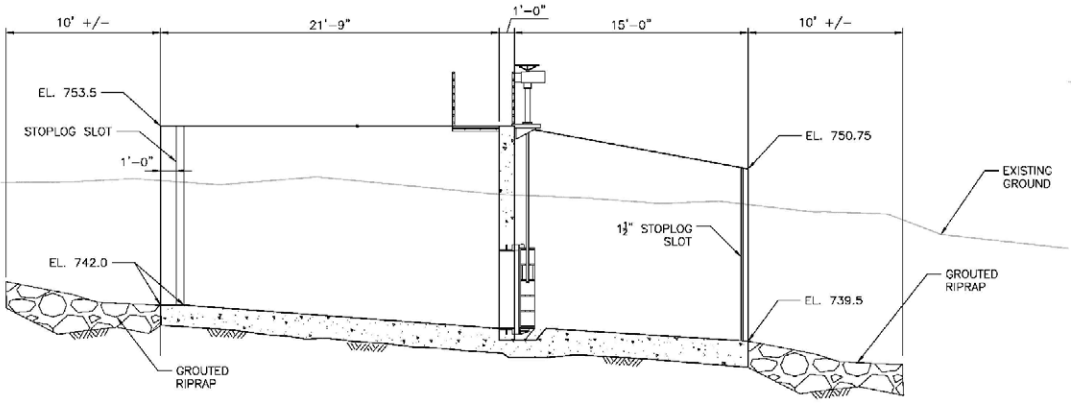
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

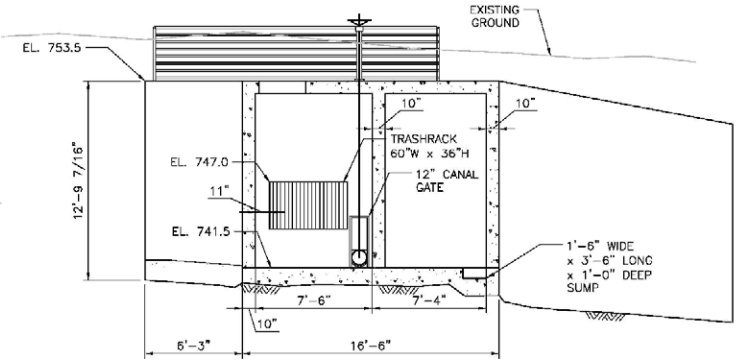
WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

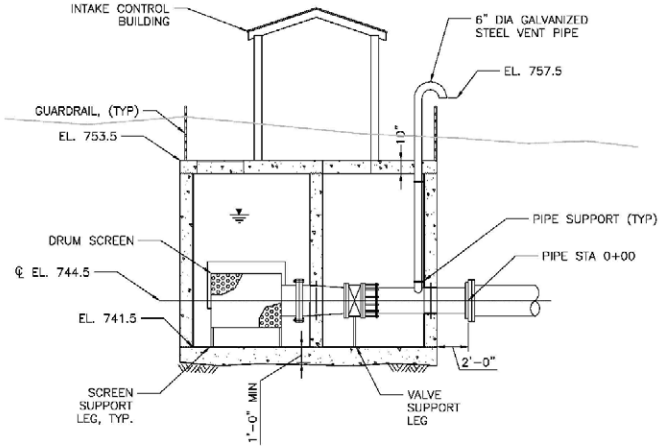
FIGURE 6 OF 12
DATE: February 23, 2024



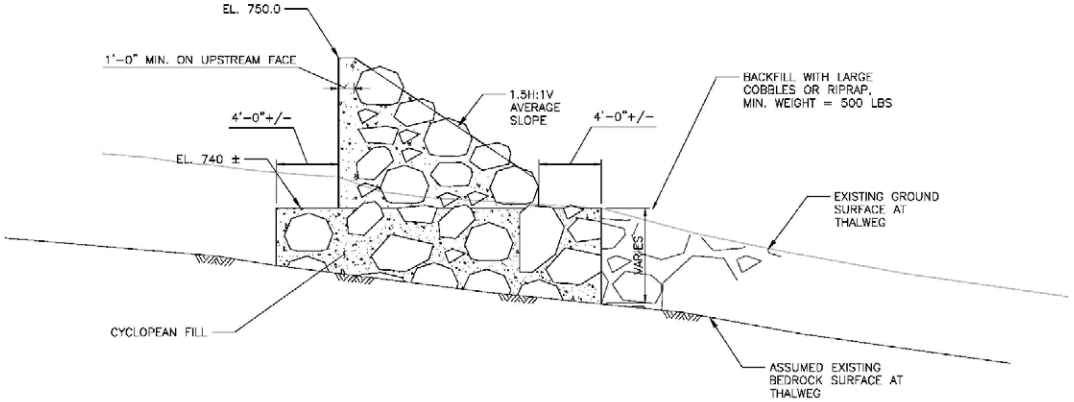
SECTION A C-102



SECTION B C-102



SECTION C C-109



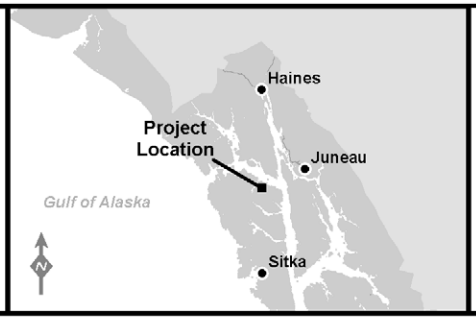
SECTION D C-102

4 0 4 8 FEET

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Sections 1



APPLICANT: Inside Passage Electric Cooperative

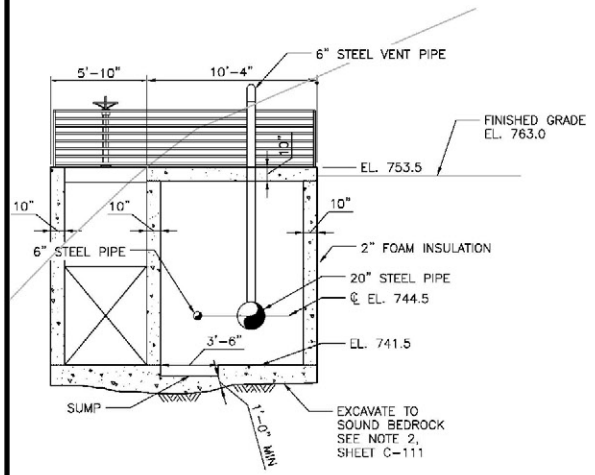
PERMIT NO: TBD

WATERWAY: Water Supply Creek

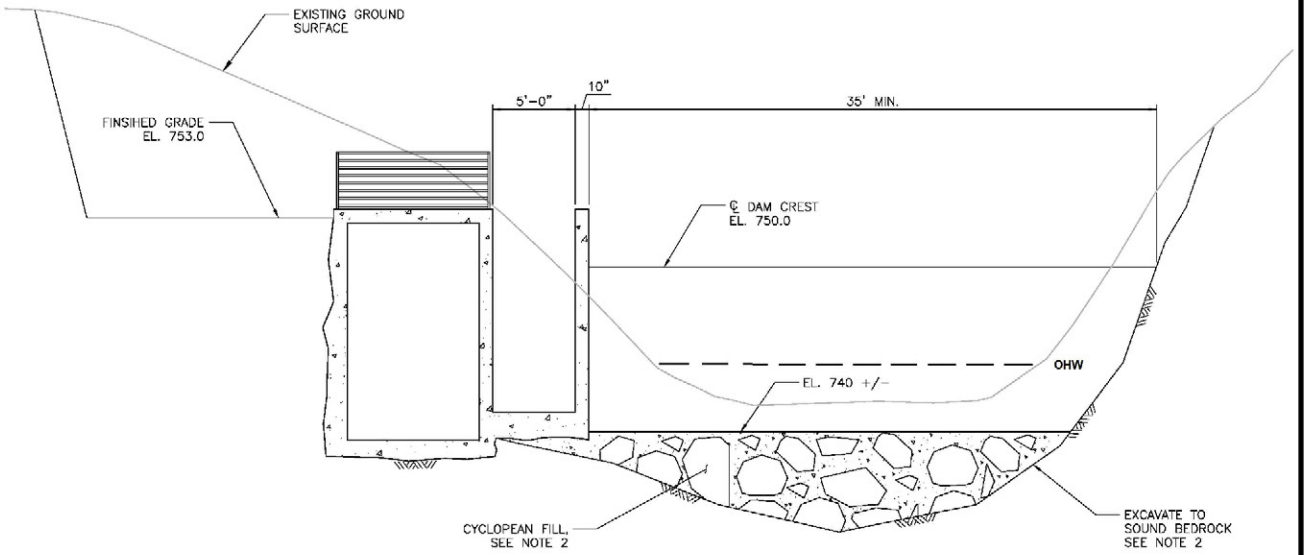
LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 7 OF 12

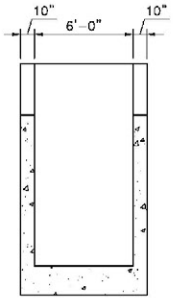
DATE: February 23, 2024



SECTION E C-102



SECTION F C-101



SECTION G C-101

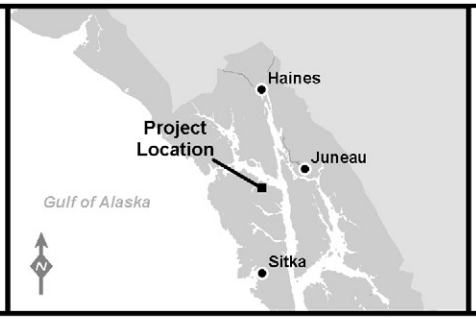
NOTES:

1. STEP FOOTING ELEVATIONS AND DISTANCES SUBJECT TO CHANGE BASED UPON ACTUAL FOUNDATION CONDITIONS
2. CYCLOPEAN FILL IS TO BE USED UNDER ALL STRUCTURES TO CREATE A SOLID FOUNDATION TO EL. 740+/-. FOR BIDDING PURPOSES ASSUME 150 CY OF MATERIAL WILL BE REQUIRED. CONTRACT PRICE WILL BE ADJUSTED ON A UNIT PRICE BASIS BASED UPON ACTUAL QUANTITIES

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Intake Sections 2



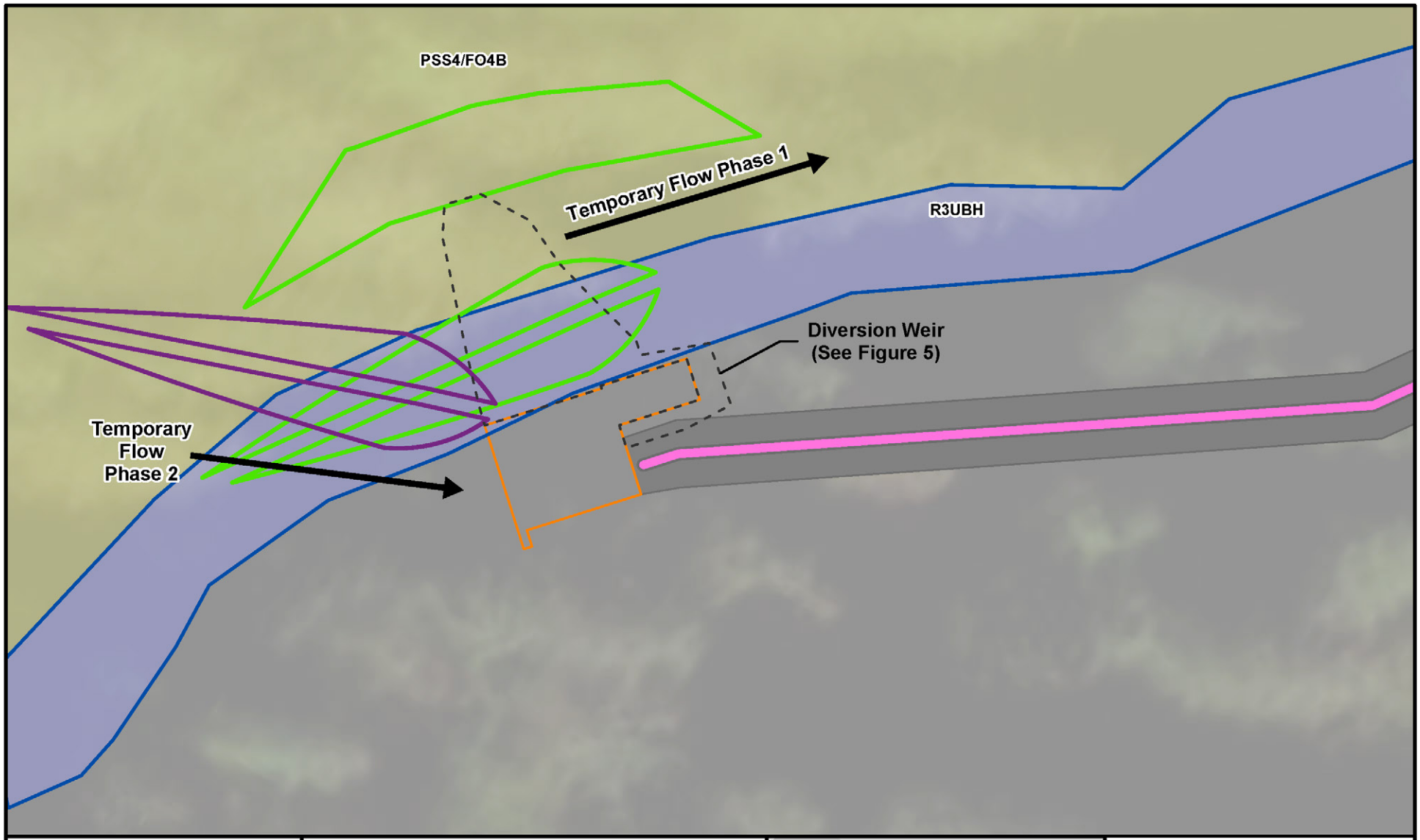
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 8 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Temporary Diversion
During Construction
Intake Area

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

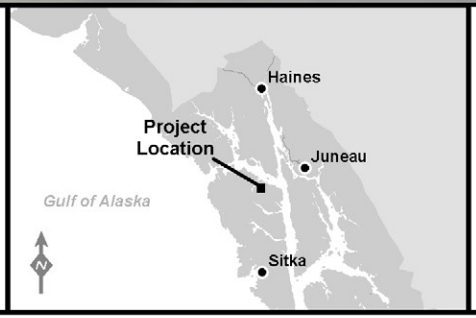
- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Intake
- Diversion Weir Cut & Fill
- Penstock
- New Access Road

Total Temporary Stream Impact (0.02 acre)

- Diversion Phase 1 Temporary Stream Impact
- Diversion Phase 2 Temporary Stream Impact

Total Temporary Wetland Impact (0.04 acre)

- Diversion Phase 1 Temporary Wetland Impact
- Diversion Phase 2 Temporary Wetland Impact



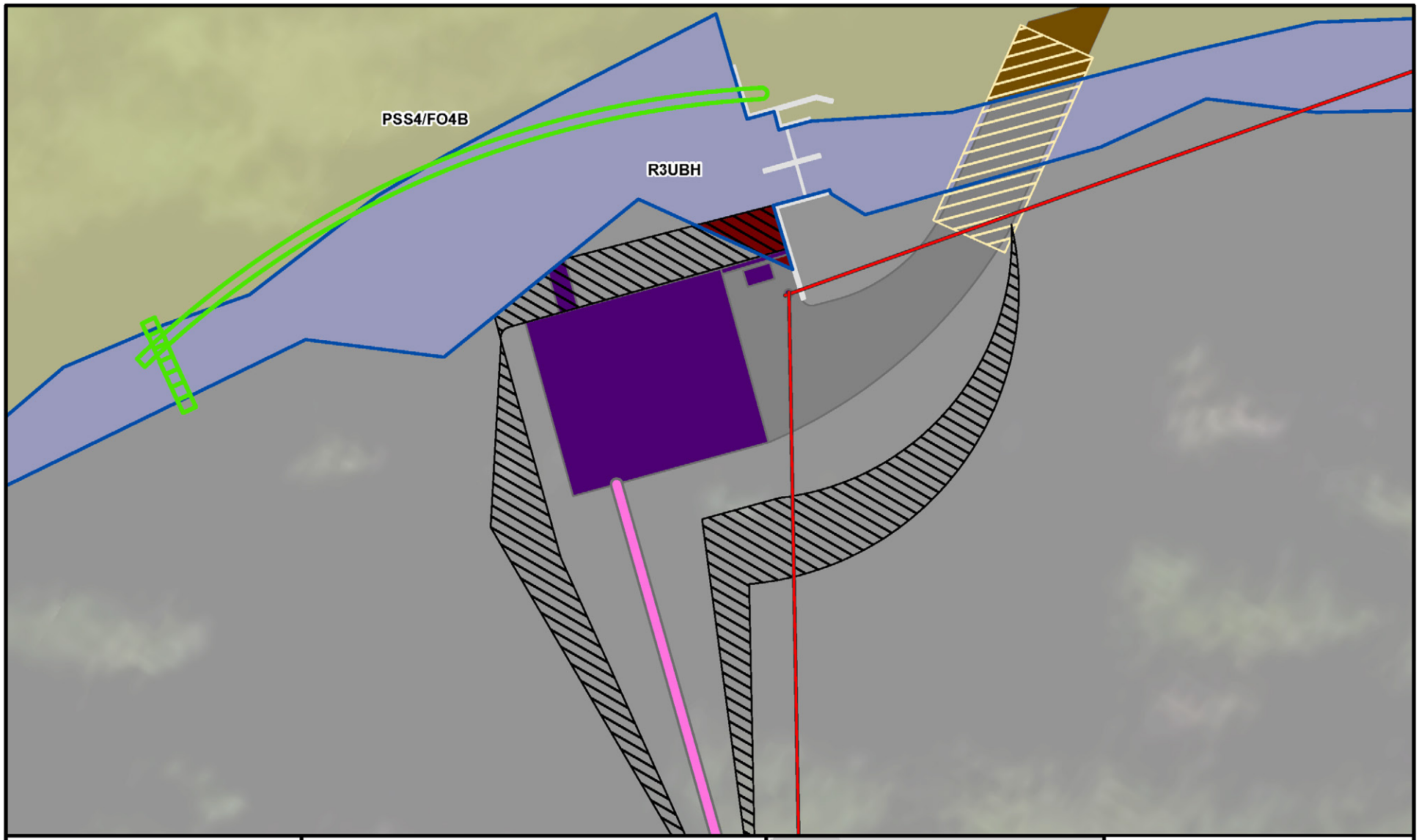
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 9 OF 12
DATE: February 23, 2024



Inside Passage Electric Cooperative

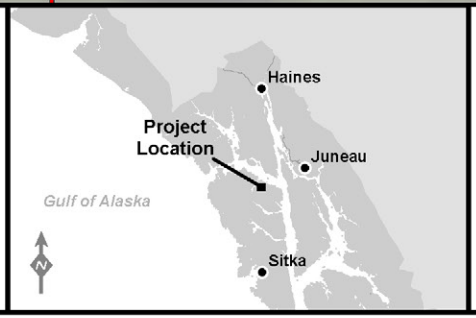
Water Supply Creek Hydroelectric Project

Powerhouse Site Plan

0 10 20 Feet

HORIZONTAL DATUM:
NAD 83 AK State Plane Zone 4

- NWI Mapped Freshwater Forested/Shrub Wetland
- Perennial Stream
- LiDAR Based Ordinary High Water (OHW) Limits
- Powerhouse
- Powerhouse Cut & Fill
- Overhead Transmission Line
- New Access Road
- Bridge
- Penstock
- Diversion Phase 1
- Existing Water Supply Intake
- Permanent Stream Impact (< 0.01 acre)
- Permanent Wetland Impact (0.01 acre)



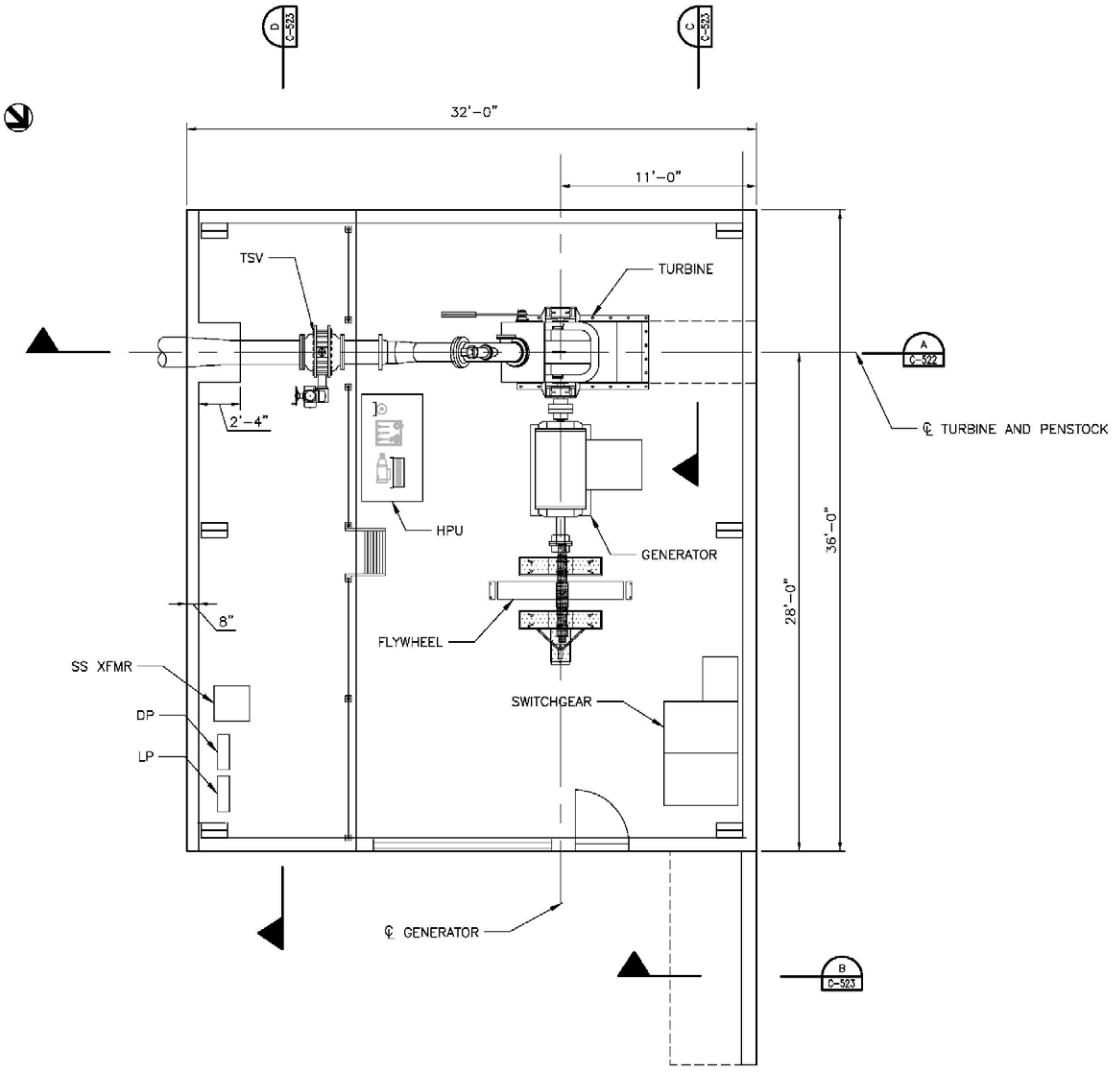
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 10 OF 12
DATE: February 23, 2024



NOTES:

1. TURBINE/GENERATOR DIMENSIONS SUBJECT TO CHANGE BASED UPON FINAL EQUIPMENT SELECTION
2. ELECTRICAL COMPONENT LOCATIONS ARE APPROXIMATE. REFER TO ELECTRICAL DRAWINGS.
3. CONCRETE FINISH SCHEDULE:
   A. TROWEL FINISH ON INTERIOR FLOOR SLABS AND EQUIPMENT BASES.
   B. BROOM FINISH ON ALL EXTERIOR WALKING SURFACES.
   C. GROUT CLEANED FINISH ON REMAINDER OF ALL EXPOSED CONCRETE SURFACES.

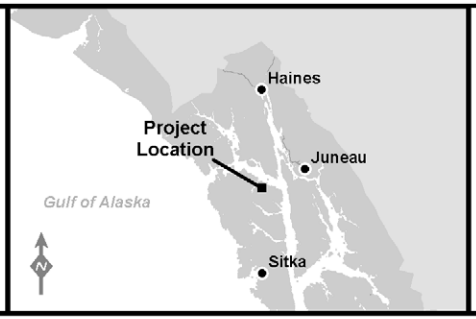
ABBREVIATIONS:

SS XFMR	STATION SERVICE TRANSFORMER
DP	DISTRIBUTION PANEL
LP	LIGHT PANEL
TSV	TURBINE SHUTOFF VALVE
HPU	HYDRAULIC POWER UNIT

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Powerhouse Plan



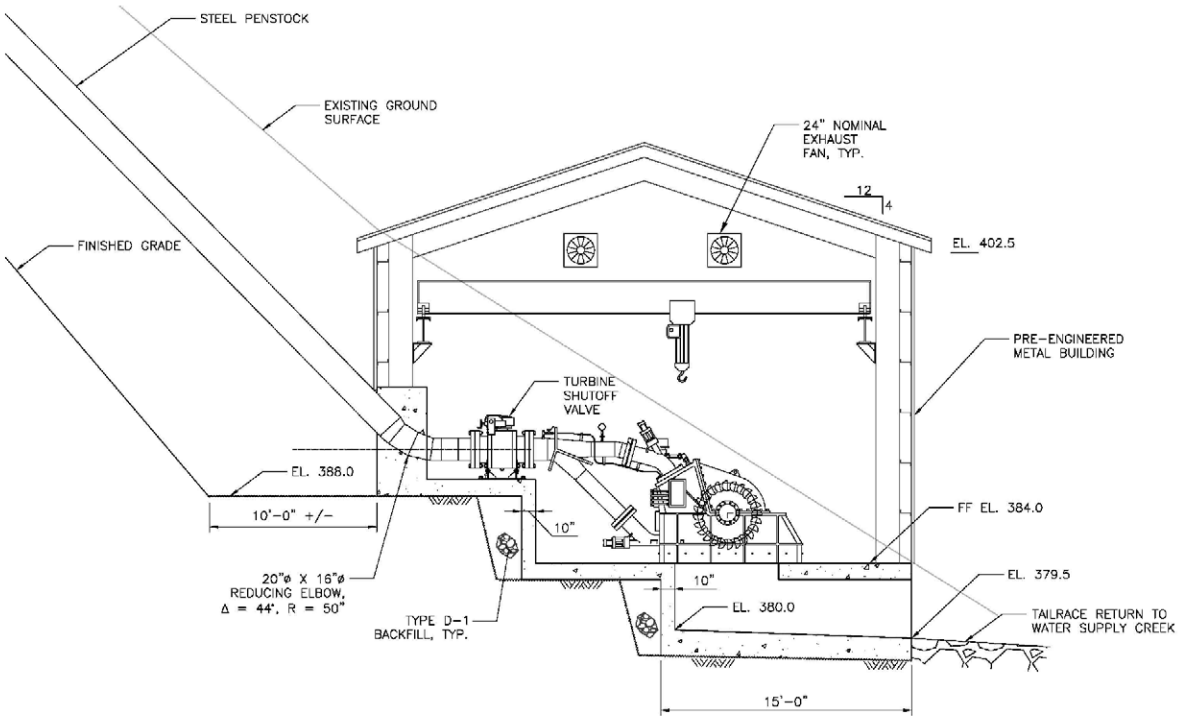
APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 11 OF 12
DATE: February 23, 2024



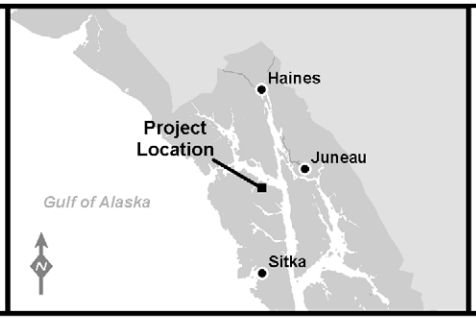
SECTION A (C-521)

4 0 4 8 FEET

Inside Passage Electric Cooperative

Water Supply Creek Hydroelectric Project

Powerhouse Sections



APPLICANT: Inside Passage Electric Cooperative

PERMIT NO: TBD

WATERWAY: Water Supply Creek

LOCATION: Copper River Meridian: SEC 11, 14, 15; T44S; R61E

FIGURE 12 OF 12
DATE: February 23, 2024

Attachment A: ADF&G Fish Habitat Permit

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Fax: 907.465.4759

FISH HABITAT PERMIT FH23-I-0077

ISSUED: September 14, 2023
EXPIRES: Life of Project

Inside Passage Electric Cooperative
ATTN: Brandon Shaw
12480 Mendenhall Loop Rd
Juneau, AK 99801

RE: Hydroelectric Facility
Water Supply Creek
Section 11, T 44S, R 61E, CRM (Juneau A-5)
Location: 58.0638 N, 135.3954 W (WGS 84)

Dear Brandon Shaw:

Pursuant to the Fishway Act at AS 16.05.841, the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to construct a run-of-river hydroelectric project on Water Supply Creek near Hoonah, Alaska.

Project Description
You will install a 10 ft tall concrete and rock diversion weir with an intake screened by a trash rack with 1 inch openings to divert water into a 4,400 ft long penstock and powerhouse for hydroelectric power generation according to plans submitted on August 30, 2023 (enclosed).

Fishway Act
Water Supply Creek supports resident Dolly Varden char in the bypass reach of the project and for at least 1,700 ft upstream and 2,800 downstream to its confluence with Gartina Creek and into tidewater. The bypass reach contains several falls and chutes that constitute barriers to upstream migration, and the diversion weir will not allow upstream passage. Hydroelectric facility design flow is 1.4–14 ft^3/s, which based on 16 months of monitoring, will be exceeded about 18% of the time. ADF&G Habitat Section staff surveyed the bypass reach and found 22 pools and 18 tributaries that contribute streamflow most of the year. Given the supplemental flow, periodic peak flows above 14 cfs, and residual pool habitat, hydro operation does not present an unreasonable impact to fish or fish habitat in Water Supply Creek.

A fish exclusion screen on the intake at this elevation in an area where heavy snow and icing is an annual occurrence presents a maintenance burden. The City of Hoonah's municipal water supply intake and the Gartina Creek hydroelectric facility downstream are not screened to exclude fish; however, fish populations have persisted and benefit from the large pools created upstream of the impoundments, as would be expected at this intake.

In accordance with AS 16.05.841, your project is approved subject to the project description, the permit terms, and the following stipulation:

1. Upon completion of use, all materials in Water Supply Creek shall be removed.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Greg Albrecht at (907) 465-6384 or greg.albrecht@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner

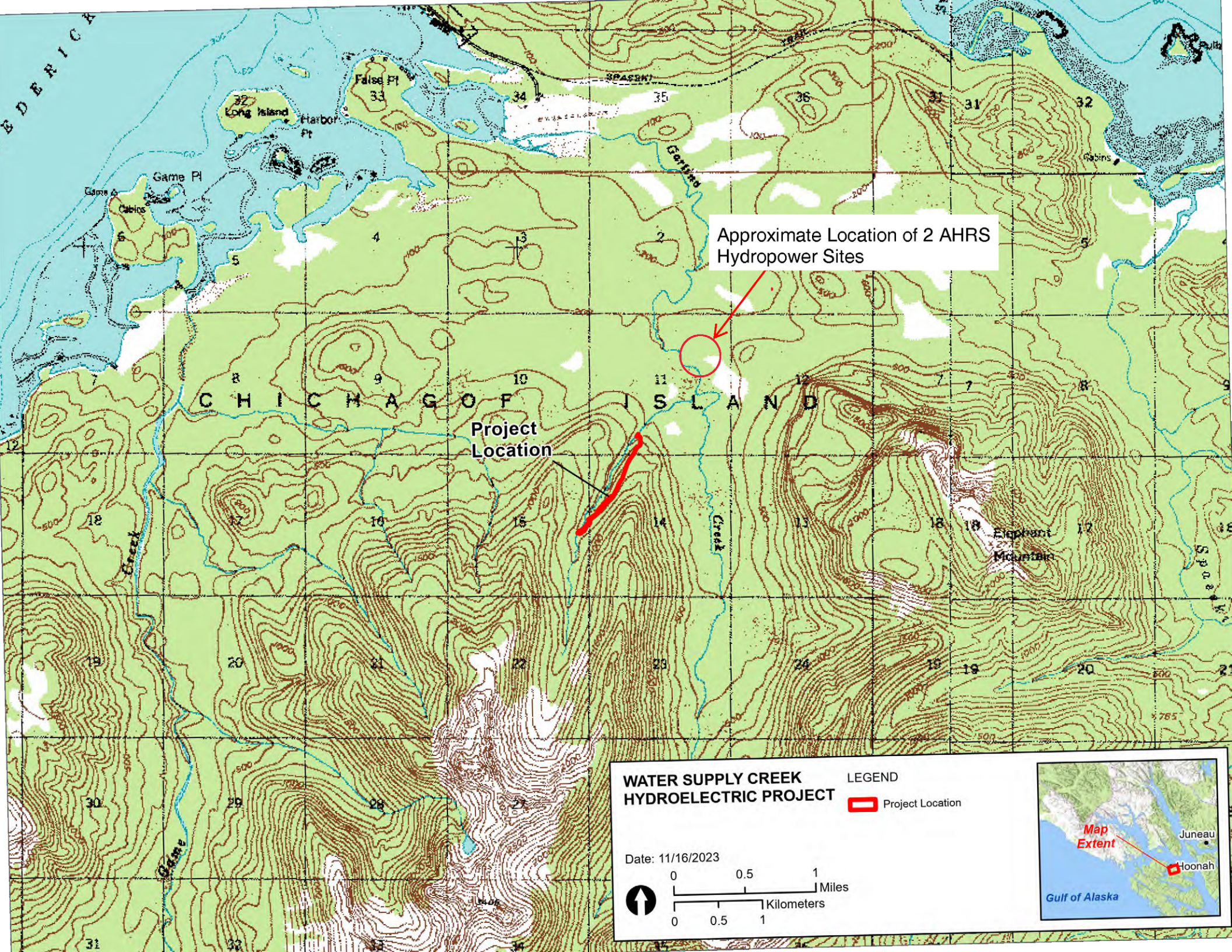
Kate Kanouse

By: Kate Kanouse
Regional Supervisor

Enclosure: WSC 95% Drawings

Email cc:
Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Leah Elis, ADF&G SF, Anchorage
Scott Forbes, ADF&G CF, Douglas
Roy Churchwell, ADF&G WC, Douglas
Carl Reese, Mike Salyer, USACE, Soldotna
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Sgt. Robert Welch, DPS/AWT, Juneau

Attachment B: Cultural Resources AHRS Database Search Results


Approximate Location of 2 AHRS Hydropower Sites
Project Location
C H I C H A G O F J S L A N D
Long Island
Harbor Pt
False Pt
Game Pt
Cabins
Garfield Creek
Elephant Mountain
WATER SUPPLY CREEK HYDROELECTRIC PROJECT
LEGEND
Project Location
Date: 11/16/2023
0 0.5 1 Miles
0 0.5 1 Kilometers
Map Extent
Juneau
Hoonah
Gulf of Alaska

7.4. Appendix D: Prime and Other Important Farmland

Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

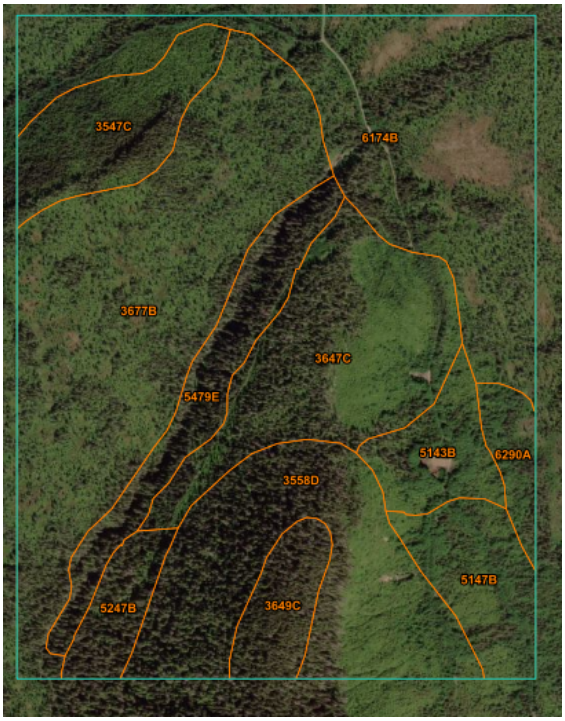
In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands

Prime and other Important Farmlands–Chatham Area, Alaska		
Map Symbol	**Map Unit Name**	**Farmland Classification**
3547C	Yakobi mucky silt loam, smooth, 36 to 55 percent slopes	Not prime farmland
3558D	Yakobi-Karta complex, smooth, 56 to 75 percent slopes	Not prime farmland
3647C	Yakobi mucky silt loam, broken, 36 to 55 percent slopes	Not prime farmland
3649C	Tolstoi-Mosman-McGilvery complex, broken, 36 to 55 percent slope	Not prime farmland
3677B	Kina-Nakwasina association, broken, 6 to 35 percent slopes	Not prime farmland
5143B	Nakwasina muck, footslopes, 6 to 35 percent slopes	Not prime farmland
5147B	Yakobi mucky silt loam, footslopes, 6 to 35 percent slopes	Not prime farmland
5247B	Yakobi mucky silt loam, dissected footslopes, 6 to 35 percent slopes	Not prime farmland
5479E	Entic Cryumbrepts, McGilvery, and Rock outcrop soils, valley gorges, 76 to 140 percent slopes	Not prime farmland
6174B	Kina-Kasiana association, sloping lowlands, 6 to 35 percent slopes	Not prime farmland
6290A	Kina peat, 0 to 5 percent slopes	Not prime farmland

Data Source Information

Soil Survey Area: Chatham Area, Alaska
Survey Area Data: Version 24, Sep 16, 2024



7.5. Appendix E: Notification of Emergency Undertaking

United States Department of Agriculture

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 4105
Stop 1570,
Washington, DC,
20250

Date: 4/24/2025

Subject: **Notification of Emergency Undertaking pursuant to 36 CFR § 800.12(b)**
AK0000, Inside Passage Electric Cooperative, The Water Supply Creek Hydroelectric Project
Hoonah-Angoon Census Area

To: Advisory Council on Historic Preservation, AK SHPO, Hoonah Indian Association & Hoonah Delegate to the Central Council of Tlingit & Haida, Sealaska Corporation, Huna Totem Corporation, Skagway Village.

Inside Passage Electric Cooperative is seeking financial assistance from the USDA Rural Development (RD), Rural Utilities Service (RUS) under its Electric Program for The Water Supply Creek Hydroelectric Project (Project). Projects funded by RUS are undertakings subject to review under Section 106 of the National Historic Preservation Act, 54 U.S.C. § 306108, and its implementing regulations, found at 36 CFR § 800.

This project facilitates the production and generation of domestic energy resources. It expands the integrity and reliability of our Nation's energy infrastructure to more adequately meet our Nation's needs and therefore responds to the National Energy Emergency formally declared by the President of the United States on January 20, 2025, Executive Order 14156, Declaring a National Energy Emergency. In accordance with this Executive Order, the project described below is an emergency undertaking which requires expedited review consistent with 36 CFR § 800.12(b). These provisions require that RUS notify the ACHP, appropriate SHPO(s) and/or THPO(s), and Indian Tribes or Native Hawaiian Organizations (NHOs) of the undertaking and provide them an opportunity to comment. This letter serves as notification of the The Water Supply Creek Hydroelectric Project.

The Project will construct a small-scale run-of-the-river hydroelectric project on Water Supply Creek located on the north side of Chichagof Island in southeast Alaska. The Project is located in Township 44S, Range 61E, Sections 11,14, and 15 of the Juneau Meridian. 2.66 miles to the south-southwest of the city of Hoonah and is located completely on private land owned by the Sealaska Corporation; there are no Tribal or Federal lands in the project area. The Project includes construction, operation, and maintenance of 0.35 mile of existing overland access road and 130 feet of new permanent access roads, Phase 1 and 2 temporary diversion structures during construction, a permanent diversion and intake structure, penstock, powerhouse, and short section of new transmission line. Proposed Project features include:

1. A diversion structure located on Water Supply Creek at about elevation 740 feet+/-. The crest of the diversion will be at elevation 750 feet, which will raise the water surface approximately 10 feet. The diversion structure will be a cyclopean concrete structure.

2. A concrete intake structure and sluiceway on the right abutment of the diversion structure. The flow diverted to the power plant will first enter the sluiceway and then be drawn through a trashrack into a bellmouth pipe entrance.

3. A combination steel and high-density polyethylene (HDPE) 4,400-foot-long penstock will convey water from the intake structure to the powerhouse. The initial 4,300 feet of penstock

will be 24-inch diameter HDPE pipe and will be buried. At approximately station 43+17, the penstock will transition to 20-inch diameter steel pipe and will be above ground to the powerhouse.

4. A low-level outlet to release environmental flows into the bypass reach of Water Supply Creek.

5. A powerhouse approximately 32 feet by 36 feet and 18 feet high.

6. A horizontal axis 2-jet Pelton turbine and synchronous generator having a rated capacity of 350 kW. Centerline elevation was set at 386.0 feet, so flow will return to the pool upstream of the existing water supply intake. Returning flow upstream of the water supply intake is desired so that the City's water intake is unaffected by the hydroelectric project.

7. A new 12.5 kilovolt (kV) transmission line to transmit the power from the powerhouse approximately 3,400 feet to an interconnection point near the Gartina Falls hydroelectric project access road.

8. Clearing and refurbishment of the existing timber harvest road and approximately 1,800 feet of new access road to connect to the intake structure.

9. Approximately 130 feet of new access road to connect to the powerhouse. Crossing of Water Supply Creek will be done using two short-spanned bridges.

10. The Project will operate in a run-of-the-river mode and will not have any usable storage.

A cultural resources records search and data gap analysis was performed by HDR Engineering Inc. in March of 2025 for a 2-mile area surrounding all Project components. As part of this effort, HDR reviewed the Alaska Heritage Resources Survey (AHRS) database and its curated literature as well as linguistic placename databases. The results of this research indicate two documented AHRS sites within the Project study area and over 1 mile from the project area; there will be no ground disturbance at these sites and the project will not be visible from their locations. JUN-01170, the Historic Gartina Creek Crib Ban was determined not eligible for the national Register of Historic Places (NRHP) in 2012. JUN-01170, the historic remains of a Francis turbine, has not been evaluated for the NRHP but is over a mile from the project area and will not be impacted by the project.

There is low potential for the project to disturb intact cultural resources as; the local geography of the planned work alongside Water Supply Creek is predominated by steep slopes indicating a low probability of encountering cultural resources, and as the consensus on landscape use focused on coastal areas by traditional communities. As the project area is located away from river terraces, bluffs, or elevated areas and within lowlands there is low potential for undocumented resources in the project area. Project activities requiring ground disturbance will occur in areas previously disturbed such as the road right of way (ROW) and trail corridor.

Gartina falls, located downstream of the project area, is 20ft high and is a natural barrier to anadromous fish.

Based on the information available, including the magnitude and nature of the undertaking and the avoidance and/or minimization measures included, this undertaking is not likely to affect historic properties.

Compliance with NHPA and 36 CFR § 800.12(b) does not supersede the obligations of RUS, its Borrowers/Awardees, or other Federal agencies to comply with other applicable state, Tribal, and Federal laws regarding the protection and treatment of inadvertently discovered archaeological material and human remains, including but not limited to the Native American Graves Protection and Repatriation Act (codified as amended at 25 U.S.C. §§ 3001-3013), and its implementing regulations (codified at 43 CFR §10). If any potential human remains and/or archaeological resources are discovered during ground disturbing activities, Inside Passage Electric Cooperative will immediately cease construction in the immediate vicinity and notify RUS, who will notify the appropriate SHPO/THPO, land managing agency (if any), and Tribes or NHOs, as applicable.

Consistent with 36 CFR § 800.12(b)(2), please provide any additional information or comments you may have within **seven days** to Phoebe Gilbert via email at Phoebe.Gilbert@usda.gov or 907.409.0203.

Sincerely,

James F. Elliott

James F. Elliot
Deputy Assistant Administrator
Electric Program
Rural Utilities Service, Rural Development
United States Department of Agriculture

Enclosure(s)

1. Cultural Resources Desktop Survey and Data Gap Analysis

7.6. Appendix F: Threatened and Endangered Species in the Project Area

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish & Wildlife Field Office
4700 Blm Road
Anchorage, AK 99507
Phone: (907) 271-2888 Fax: (907) 271-2786

In Reply Refer To:
Project Code: 2024-0039340
Project Name: Water Supply Creek Hydro

January 23, 2024

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

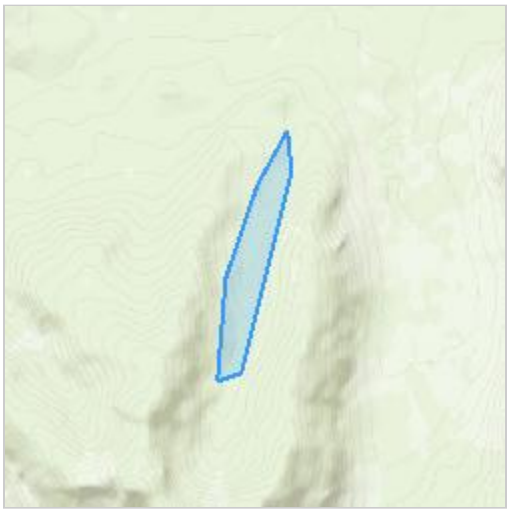
This species list is provided by:

Anchorage Fish & Wildlife Field Office
4700 Blm Road
Anchorage, AK 99507
(907) 271-2888

PROJECT SUMMARY

Project Code: 2024-0039340
Project Name: Water Supply Creek Hydro
Project Type: Power Gen - Hydropower - Non-FERC
Project Description: Hydroelectric Project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@58.0526788,-135.40614613914403,14z



Counties: Hoonah-Angoon County, Alaska

ENDANGERED SPECIES ACT SPECIES

There is a total of 0 threatened, endangered, or candidate species on this species list.

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

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

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

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

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: MALCOLM SALWAY
Address: 2525 C Street
Address Line 2: Suite 500
City: ANchorage
State: AK
Zip: 99507
Email macsalway@hotmail.com
Phone: 9076442051

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers