Table 1. Comments received on the Updated Study Report (USR) for the Nuyakuk River Hydroelectric Project (P-14873), and Nushagak Electric & Telephone Cooperative's (Cooperative's) responses.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
1	Natel Energy (Natel) Kate Stirr	Attachment C: Entrainment and Impingement Study Section 5.1.3 Summary (pg. 24)	It is stated that; *"Various turbine types were evaluated for fish survival rates, with Alden and Minimum Gap Runner turbines showing the highest survival rates (>99%). Study results on juvenile fish size relative to mortality indicate that survival rates are near 100% for fish under 70 mm and over 99% for fish over 70 mm (Olbertz 2021)."* This statement requires further diligence to be factual. The Olbertz 2021 report is published in "The Educational Journal of Renewable Energy Short Reviews," a collegiate class project which does not undergo a formal peer-review process.[1] The report inaccurately characterizes fish survival rates for different turbine types in broad strokes, without describing any of the important parameters (i.e., fish size, fish species, turbine size, turbine speed, etc.) that dictate the survival outcomes for a given fish through a given hydropower turbine—even of a "fish-friendly" type. Additionally, the Olbertz 2021 report does not mention survival rates for 70 mm fish. It cites survival rates of ~98% for 200 mm fish and up to 100% for fish 100 mm and less in length (Dixon, 2011); these survival rates represent the expected performance of a specific application of the Alden turbine, distinct from the operating conditions of the Nuyakuk project. Based on our experience in turbine design for high fish survival rates, we agree that a >98% survival rate of juvenile fish at the Nuyakuk River Hydroelectric Project is likely achievable for a turbine designed to meet the specific operating conditions of the site. A dedicated performance analysis of a proposed fish-friendly turbine design under relevant operating conditions is needed to support claims of the >98% fish survival rate. Natel has the capability to provide such design and analysis (Natel Energy, 2024).	At the time of the Entrainment Report, the proposed Project engineering design, and turbine design and selection generally were at a conceptual stage. Turbine selection, operational considerations, and project design will be advanced in future design phases, which may include additional analysis to develop a project-specific survival estimate for the Nuyakuk Hydropower Project. Given the size, head, volume of water, and other factors including turbine survival studies published for other locations, the Cooperative believes that a high level of survival is possible at Nuyakuk, and future design phases will be implemented to ensure that the highest feasible survival level is achieved for migrating smolts of all sizes.
2	Natel Energy (Natel) Kate Stirr	Attachment C: Entrainment and Impingement Study Section 5.1.3 Summary (pg. 24)	On the same page, Table 5-3 posits Natel as a source for the data presented in the table. The Natel website does not, and has not previously, presented any data on the Alden turbine or minimal gap runner. Furthermore, the data is contingent on specific operational conditions and fish species. As described above, it is crucial to consider the operating conditions and fish species present when assessing the overall efficiency and survivability for fish for a given turbine design.	Noted. Operational conditions and engineering design/ turbine selection beyond the conceptual designs presented in the USR are currently underway, and will be presented in future phases of the licensing process.
3	United Tribes of Bristol Bay (UTBB)	General Comment	UTBB continues to have significant concerns about the lack of opportunities for meaningful engagement in the licensing process, particularly for the Tribal communities closest to the proposed project area. Opportunities for engagement have largely been limited to Dillingham, which creates significant barriers to participation for the remote Tribal communities closest to the proposed project area. After reading FERC's summary of the consultation, we wanted to acknowledge the Tribal outreach the applicant, Nushagak Electric & Telephone Cooperative ("Cooperative"), has undertaken. Though the Cooperative must do more to provide opportunities for engagement with all potentially impacted Tribal communities, we want to clarify any potential misunderstanding that the Cooperative has not engaged in any Tribal outreach. Additionally, we wanted to make clear that our concerns related to the shortcomings in Tribal engagement extend both to the Cooperative and FERC. We look forward to our upcoming consultation with FERC in association with the Updated Study Report meeting. Moving forward, UTBB hopes to work collaboratively with FERC and the Cooperative to provide meaningful and accessible opportunities for Tribal and public engagement throughout the licensing process.	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a "lack of opportunity to participate" in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
4	UTBB	General Comment / Request for Public Meeting and Extension of Time to Submit Comments on the USR.	The United Tribes of Bristol Bay (UTBB) submits the following request for a public meeting and a 90-day extension of the current public comment period on the Updated Study Report for the proposed Nuyakuk River Hydroelectric Project. If granted, this would change the public comment period deadline from February 19th to May 20, 2025. We request the public meeting be held in person in the Bristol Bay region to allow for meaningful public engagement around the delayed studies. The Cooperative is not releasing three critical components of the Updated Study Report until February 15, 2025—a mere four days before the current comment deadline on February 19, 2025. Four days is grossly insufficient, particularly in light of the unique significance of the Nuyakuk River for Tribes and community members.	As UTBB is aware, FERC did grant an extension of time for review of the wholistic USR. With respect to the technical nature of the USR; While it is understood that some of the results and associated analysis are highly technical in nature, it is important to understand that the methods and analyses utilized were collaboratively developed with a group of regional experts

[1] Educational Journal of Renewable Energy Short Reviews.

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			On December 2, 2024, the Nushagak Electric and Telephone Cooperative (Cooperative) filed its Updated Study Report. The Updated Study Report did not include the Subsistence Study, the Integrated Risk Assessment, or the Lifecycle modeling. These delayed reports are fundamental to further understanding the potential impacts and risks of the proposed Project. During the Updated Study Report meetings, on January 15 and 16, 2025, the Cooperative indicated that it will be filing an addendum with the delayed reports on February 15, 2025. Impacts and risks to subsistence are of primary concern for the region. Without the delayed reports, Tribes and community members are significantly hindered in their ability to provide meaningful comments on the Updated Study Report as a whole. As we have raised at each step of this process, we want to reiterate the importance of meaningful Tribal and public engagement throughout the licensing process. The Nuyakuk River is crucial to the Bristol Bay Watershed, significantly contributing to the region's salmon runs and sustaining our subsistence ways of life. Thus, it is critical that Bristol Bay Tribes and community members have a voice in this process. Adequate time is required to disseminate, digest, and evaluate a highly technical report that is over 1,300 pages. As discussed during the Updated Study Report meeting, the missing subsistence study is an additional 150 pages, and the Integrated Risk Assessment is an additional 80 pages. Members of our communities, especially Elders, speak Yup'ik as their first language and are experts in the ecological and cultural resources described in the Updated Study Report. However, the Updated Study Report was not written in a way that is easily accessible to these experts. Given the benefits of meaningful engagement with Elders and knowledge bearers in our communities as well as the fundamental significance of the Nuyakuk River, additional time is needed beyond the usual period provided under the Integrated Licensing Process to analyze the potential risks to the river, the watershed, and our Tribal communities. An in-region, in-person public meeting would be an important step toward improved community engagement. To date, Tribes and community members have faced significant barriers to participation in the licensing process. For example, the Cooperative held public meetings on the Initial and Updated Study Reports only in Dillingham with unreliable, virtual participation options for those outside of the community. Limiting in-person meetings to Dillingham is not accessible for all Bristol Bay Tribes and community members, including the communities closest to the proposed Project. Additional time to evaluate the critical, delayed studies for Bristol Bay communities is warranted given the exceptional salmon resource and the critical issues that must be addressed during this phase of the licensing process, including the potential impacts on our subsistence ways of life. The subsistence study undertaken by the Cooperative significantly diverged from the study approved by FERC in the study plan. Given these substantial changes, additional time is also warranted to review the sufficiency of the study and the information gathered before moving to the next steps in the licensing process. A 90-day extension to submit comments on the Updated Study Report, **until May 20, 2025**, will provide additional time for Tribes and community members to review the delayed study reports as well as the potential risks and benefits of the proposed Project, without unduly delaying the licensing process.	and deemed necessary to adequately assess the impacts (positive and negative) of potential project development. Finally, the Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a "lack of opportunity to participate" in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
5	Choggiung, Limited	General Comments	On behalf of Choggiung, Limited, I write to express our support for the rigorous and transparent process undertaken by FERC in evaluating Nushagak Electric Cooperative's Nuyakuk River Hydroelectric Project (P-14873-001). As an Alaska Native Village Corporation representing the interests of our shareholders (numbering almost 2,800), our foremost priorities are the protection of our lands, waters, and fish resources for future generations, as well as the economic sustainability of our communities. We believe that a sound scientific process, as upheld by FERC, is crucial in ensuring that all environmental, subsistence, and economic concerns are adequately addressed. At this stage, Choggiung, Limited supports the thorough review and analysis of Nushagak Electric's Updated Study Report (USR) and any amendments submitted heretofore facilitated by FERC. Our support of this process continuing to its conclusion is significant and remarkable given our predisposition to protect the resources we dearly value over anything else – clean water, healthy fish returns for generations to come, and our way of life. Our overall position on the project will be determined based on the results of this process. We have engaged in public presentations given by Nushagak Electric and the study consultants for	The Cooperative appreciates the comment.

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			this project, reviewed the scientific information gathered (the many 1,300 pages of information submitted in the USR), and the results we see so far are promising to meet our very high standards – a healthy fishery going forward AND the benefit of stable, renewable energy production. As stewards of our almost 300,000 acres of surface estate lands, we take the awesome responsibility, with a heavy burden owed to the new generations that will come after us, that our lands will be healthy and useful to support our people forever. Our shareholders expect us to think and act with this overall philosophy.	
6	Choggiung, Limited	General Comments	Our people participate in the modern world and we never take for granted the gift of energy. We NEED energy. It warms us on cold days, lights our dark nights, provides a way to raise families in safety and comfort, gives us economic opportunity to provide, and allows our future generations to thrive. This project has the potential to solve this longstanding regional challenge – energy that is low cost, stable, predictable, and reduces the potential to harm our fisheries from the risks of spills. We recognize the significant potential benefits of renewable energy development, including reduced dependence on diesel, stabilized energy costs, and economic growth. However, we also recognize the need for careful consideration of potential impacts on subsistence resources, particularly fish passage and survivability, which are essential to our way of life. We do our best to look ahead to the future and think in terms of seven generations at minimum – the next 100 years. The Nuyakuk Hydro Project offers that generational opportunity to transform the economic and energy landscape of Bristol Bay and our collective future. By transitioning from costly diesel-electric generation that risks fuel spills in our fishery and emits harmful chemicals into the air to a sustainable penstock hydroelectric system diverting a small percentage of the run of river water, this project has the potential to provide lasting benefits, such as: • Economic Prosperity: Stable, lower-cost energy can help businesses and local industries grow, creating jobs and opportunities for residents. • Stable Energy Costs: The transition to hydroelectric power can provide consistent and predictable energy pricing, reducing the financial burden on households and businesses. • New Opportunities for Industry and Individuals: Access to reliable energy can spur economic development, allowing fisheries, manufacturing, and small businesses to expand. Choggiung, Limited operates several businesses in Dillingham, Alaska. We own a hotel and diner, apartment homes, and other commercial real estate. All have unique power demands. The power is provided by Nushagak Electric. From our experience, we have seen significant fluctuation in our energy bills annually primarily driven by the cost of diesel fuel and regulatory environment. We have seen our businesses operate profitably in low fuel cost years and lose money in years when those costs rise. We have also had to consistently keep increasing the price of our services to keep up with this specific driver – energy costs. Looking forward, when we can plan for and manage our businesses with certainty from the energy perspective, we can invest in things that make our business more likely to exist over the long term. For example, our diner requires energy intensive appliances to store, cook and deliver the meals it serves year-round. Dillingham is only accessible year-round by air and the city frequently experiences inclement weather prohibiting people and goods from reaching our business timely. Simply, the availability of all our menu items requires our orders to arrive on time since we have limited storage space. We experience shortages in our inventory frequently because of the unreliability of deliveries and our limitations on storage given the high energy costs associated with additional cold storage. If we had stable, low-cost energy we could expand our storage capacity bringing more certainty to having the product when we need it, allowing us to take advantage of volume discounts, and will have a stabilizing effect on the prices we charge - ultimately benefiting our customers. Another example of a potential positive impact of low cost, stable energy is the total costs of renting apartment homes. The apartments are currently heated using oil-fired boilers, which contributes to our operating costs and what we need to charge our tenants. With stable, low-cost energy we could convert our apartments to electric heat which would improve the rental rates we charge our tenants.	The Cooperative appreciates the comment. As the Member owned, not-for-profit Cooperative responsible for the energy production and delivery in our rural community, Nushagak Cooperative has a unique perspective on the effects fossil fuels have had on us. We realize the magnitude of this endeavor and certainly appreciate the Village Corporations forward thinking comments in this matter. This assessment could provide an answer that will not only support our members in their daily life, but also our industry, the Salmon fishery and processing which has sustained our region for more than the past century.

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			There are countless other ways that local energy production will impact our economy and outlook. While there are direct measurable impacts to our business, individuals and businesses in the community will have the opportunity to think differently about how they use the energy provided and where the money they would save from a hydro power production facility would be invested. Would the fish processing industry shift to additional local value add activities before a final product is shipped to the end retailer? Would the hospital be able to invest in energy intensive healthcare support systems and equipment? Would the City be able to positively impact water and sewer management and offer more efficient delivery of services? Would individuals change home heating oil to electric and spend the saved dollars on other areas of interest/need? Will people have more dollars to practice subsistence activities? Will our young people see the value of living at home and invest in education that directly benefits the long-term health of the community? Additionally, the environmental benefits of transitioning from diesel-electric generation to hydroelectric power are meaningful. Diesel generation releases greenhouse gases and chemicals that impact human health and carries risks of spills and contamination. From Nushagak Electric's estimates, the hydro power production facility has the potential to reduce the annual fuel purchase for all supportable communities from about 1.5 million gallons to under 250,000 gallons. Given that potential, the use of hydroelectric energy will: • Profoundly reduce the environmental risks associated with diesel transportation, storage, and combustion; • Support Alaska's long-term sustainability goals by harnessing the region's renewable energy potential. • Substantially reduce carbon emissions and improve air quality.	
7	Choggiung, Limited	General Comments	FERC's stringent requirements for fish passage protections and survivability are particularly critical in assessing this project. The Bristol Bay region relies heavily on healthy salmon populations for subsistence, commercial, and cultural purposes. We trust that the FERC licensure process will rigorously evaluate: • The potential effects of hydroelectric development on fish migration, spawning, and juvenile survival rates; • The implementation of scientifically validated mitigation measures to ensure fish passage and long-term viability of salmon runs, in alignment with FERC's fish survivability standards under 18 C.F.R. § 4.34(e) and Section 10(j) of the Federal Power Act; • Compliance with the Fish and Wildlife Coordination Act, which mandates consideration of fish and wildlife conservation measures in hydroelectric project licensing; • The preservation of subsistence resources and traditional land uses that are central to Alaska Native values; • The overall environmental impact, including potential changes in river flow, water temperature, and habitat conditions.	The Cooperative appreciates the comment.
8	Choggiung, Limited	General Comments	Additionally, FERC's licensing process incorporates compliance with the Endangered Species Act (ESA) and the Bald and Golden Eagle Protection Act, ensuring that wildlife and critical habitats are adequately protected. Section 7 of the ESA mandates consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to assess potential impacts on threatened and endangered species. Furthermore, the National Environmental Policy Act (NEPA) requires a comprehensive environmental review of potential effects on wildlife populations and biodiversity. These measures help safeguard the ecological balance of the region while allowing for responsible energy development.	The Cooperative appreciates the comment.
9	Choggiung, Limited	General Comments	The FERC process also mandates compliance with the National Historic Preservation Act (NHPA) under Section 106, which requires federal agencies to consider the effects of infrastructure projects on historic and culturally significant sites. This includes consultation with Tribal entities and local stakeholders to identify and mitigate impacts on heritage resources. The Advisory Council on Historic Preservation (ACHP) plays a key role in ensuring that any adverse effects on historic properties, traditional cultural landscapes, and	The Cooperative appreciates the comment.

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			archaeological sites are addressed appropriately. Through this process, we trust that the cultural integrity of the Bristol Bay region will be respected and preserved.	
10	Bristol Bay Regional Seafood Development Association (BBRSDA)	General Comment / Request for Public Meeting and Extension of Time to Submit Comments on the USR.	On behalf of the Bristol Bay Regional Seafood Development Association (BBRSDA), a fishermen-funded organization, we request a public meeting and a 90-day extension of the public comment period for the Updated Study Report on the proposed Nuyakuk River Hydroelectric Project. Extending the deadline from February 19 to May 20, 2025, will allow commercial fishing stakeholders—who rely on Bristol Bay's world-class salmon fishery— time necessary to review the report's full scope and implications. The Nushagak Electric and Telephone Cooperative (Cooperative) intends to file an addendum to the current report, including studies and further detail related to subsistence fishing, risk assessment, and salmon life cycle. These studies are essential for evaluating potential risks to Bristol Bay's salmon fishery, which generates over $2 billion in annual economic impact and supports thousands of fishermen, processors, regional economies and communities. The addendum is anticipated to be filed on February 15, 2025, just four days before the current comment deadline on February 19, 2025. The Nuyakuk River, where the project will be developed, is a crucial contributor to the watershed's productivity. Without adequate time to review and respond to the complete record, the commercial fishing industry cannot properly assess the potential risks this project may pose to fishery sustainability, economic stability, and the broader seafood supply chain. Moreover, this project has direct consequences for Bristol Bay's fishing- dependent communities and the broader regional economy, which rely on the sustainability of the salmon fishery for jobs, businesses, and cultural continuity. A 90-day extension, **until May 20, 2025**, will allow for thorough analysis without unnecessary delays to the process.	As BBRSDA is likely aware, FERC did issue and extension of time for review of the USR.
11	Bristol Bay Native Corporation (BBNC)	General Comment	Several studies were incomplete at the time of the USR filing, and their results will not be available before the public comment period closes. While we are not requesting FERC to delay its review of the USR or to extend the comment period, FERC should include a mechanism in its licensing a decision to incorporate post-licensing requirements based on the findings of these pending reports.	As BBNC is likely aware, FERC did issue and extension of time for review of the USR.
12	BBNC	General Comment	Bristol Bay's wild salmon populations are essential to the region's cultural, economic, and subsistence identity and way of life. While the USR provides a thorough assessment of salmon populations and river flows in the Nuyakuk River at the vicinity of the Nuyakuk Falls, the fieldwork and sampling were conducted over just two years (2023 and 2024). To build a more comprehensive and robust dataset, these studies should continue post-licensing. For example, this winter's low snowfall will likely result in lower water flows and an earlier peak flow in the Nuyakuk River. Incorporating data from next summer into the future flows and fish passage studies would provide valuable insights into fish passage across a broader range of river conditions.	The Cooperative is confident in the collaboratively developed fisheries study program that was implemented between 2022 and 2024. We are also aware of the fact that, if developed, any FERC license will likely include fisheries monitoring protocols to confirm level of impact (positive and/or negative) of project implementation are falling within the range assessed via the licensing studies. Finally and as the Cooperative has stated many times, if developed, we are cognizant that the project would represent a logical location for further biological assessments from other agencies and Tribal entities. If implemented, the Cooperative is open to discussing the utilization of the project site for additional biological research to further inform the natural resource condition of the area.
13	BBNC	General Comment	NETC should continue refining its studies and integrating new data as it becomes available. For instance, the USR and its presentations cited statistics indicating that the proposed turbine design would ensure safe passage of 98% or more of salmon entrained in the intake and turbine infrastructure. However, comments from Natel Energy (filed December 10, 2024) indicate that the survival rates referenced from Natel's studies were misconstrued in the USR, and actual survival rates depend on various river- and project-specific factors. NETC should address these discrepancies and avoid using data or statistics that have been called into question.	As noted in the USR, all engineering design is currently at a conceptual level, and the evaluation of turbine designs, site-specific design concerns and scaling, and installation are being considered by the Nushagak Cooperative in ongoing phases of the licensing process. As the Project is still conceptual, and as there is limited in situ data on turbine performance at locations such as the Nuyakuk River, the range of turbine performance data presented in the USRs was intended as an example of potential survival rates, not a definitive statement about survival rates at a yet-to-be-designed turbine build by any turbine design firm on the Nuyakuk River. The Cooperative expects that a high survivorship of smolts passing a potential Nuyakuk turbine to be high based on available data from other projects, but future assessment, and ultimately, turbine

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				survival testing or modeling will define more specifically what the expected survivorship would be at Nuyakuk.
14	BBNC	General Comment	The Caribou Population Evaluation study provides useful insights into potential impacts on caribou populations and caribou-human interactions near the transmission corridor. However, moose is also an important subsistence species in the region, and the USR does not appear to assess moose populations or potential impacts. Such a study would be beneficial and compliment the studies completed to date.	The Cooperative undertook a comprehensive and collaborative study planning process with state and federal agencies, Tribal entities and all public members that chose to participate. A portion of that study planning effort incorporated identification of areas of focus for terrestrial studies. Caribou were identified as a primary focus species for the study program.
15	BBNC	General Comment	BBNC appreciates NETC's efforts in evaluating a potential hydroelectric power system at Nuyakuk Falls and acknowledges that the USR reflects a good faith effort to access the potential ecological, subsistence, and economic impacts of the project. Given the importance of the project and the resources under consideration, it is crucial that these efforts continue post-licensing and throughout the design, construction, and operational phases. While BBNC believes a hydroelectric project like Nuyakuk could be a transformative energy upgrade for the region, we also believe that such projects should proceed only when proponents can demonstrate, on balance, sufficient local support and the assurance that the project will not cause unavoidable or unacceptable impacts to the fisheries, wildlife, and other resources of the region.	The Cooperative is confident in the collaboratively developed fisheries study program that was implemented between 2022 and 2024. We are also aware of the fact that, if developed, any FERC license will likely include fisheries monitoring protocols to confirm level of impact (positive and/or negative) of project implementation are falling within the range assessed via the licensing studies. Finally and as the Cooperative has stated many times, if developed, we are cognizant that the project would represent a logical location for further biological assessments from other agencies and Tribal entities. If implemented, the Cooperative is open to discussing the utilization of the project site for additional biological research to further inform the natural resource condition of the area.
16	United Tribes of Bristol Bay 1. Judy Jo Matson - Naknek, AK 2. Anastasia Ishnook - New Stuyahok, AK 3. Reed Tennyson - Dillingham, AK 4. Lynelle Roberts - Wasilla, AK 5. Celine Alakayak - Manokotak, AK 6. Darlene Paul - Manokotak, AK 7. Alexander Tallekpalek - Levelock, AK 8. Holly Wysocki - Dillingham, AK 9. Louise Ruby Murphy - Dillingham, AK 10. John Sidik - Lincolnville, ME 11. Lindsay Layland - Dillingham, AK 12. Barbara Riley Asher - Dillingham, AK 13. Margaret Schroeder - Dillingham, AK 14. Ethel J Nelson - Dillingham, AK 15. Malia Acovak – Seward, AK	14 Comment Letters	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, I am thankful the Cooperative and the Federal Energy Regulatory Commission will hear public input throughout the licensing process. Reviewing publicly available materials makes clear the ongoing Integrated Licensing Process and associated studies are inherently technical. The Updated Study Report is not easily digested by many community members who are not versed in western science, yet will most directly experience the impacts of the proposed project. Given this, I expect the Cooperative to provide accessible materials, and engage in person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, I am first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process. Additionally, I am disappointed by the delayed Subsistence Study Report and incomplete Cultural Resources Study Report, which deviate from the approved study plan and are critical to local understanding of the proposed project's impacts. The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, none of the studies' analysis include Traditional Knowledge. Relying solely on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Historic places should inform the design and selection of the route alternatives. Finally, the failure to incorporate Traditional knowledge and provide opportunities for community members to meaningfully participate in the risk assessment suggests inadequate assessment of risks to salmon, especially Chinook, which is lacking a species-specific model. I support Nushagak Cooperative's attempt to transition Bristol Bay communities toward adoption of sustainable energy. In doing so however, it is imperative the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project.	Comment noted. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input.

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	16. Molly Dischner – Sterling, AK 17. Bedushia Nicholi – Wailuku, HI 18. Nellie Thomas – Togiak, AK 19. Fr. Ivan Gumlickpuk – Koliganek, AK 20. Sue Parsell – Ann Arbor, MI 21. Amber Webb – Aleknagik, AK		Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. Specifically, the delay of the Subsistence Study Report and the failure to incorporate Traditional knowledge are both departures from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. Meaningful Tribal consultation and community engagement, more comprehensive analysis of potential impacts and risks, and long-term planning is necessary before the project should move forward in the licensing process.	
17	Frances A. Heliou	General Comments	I am writing in opposition of Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project. Nushagak Electric Coopertive's 2 years of studies are insufficient. More work needs to be done before FERC can even consider their application for development. I am concerned that Nushagak Cooperative took a lot of shortcuts and that their studies do not include Traditional Ecological Knowledge from the people that live along the Nushagak River. They have not done any studies up Main River, Mulchanta River and Kokwok River either. Nushagak Cooperative's main focus is on salmon, but 2 years of studying salmon is not sufficient. Mainly because the life cycle of the salmon is 5 years. I am concerned not only for salmon, but I am also concerned about moose and moose habitat, the caribou and the caribou migration, freshwater fish such as pike, white fish, grayling rainbow trout and lake trout, small game like beaver, porcupine, fox, otter, muskrat and rabbit, other wild game like lynx, coyote, and wolves, and lastly water fowl like geese, ducks, spruce chicken and ptarmigan. The Nushagak/Mulchatna River System is a healthy, pristine ecosystem, virtually untouched and is home to an abundance of wildlife, fish, plants and berries. Nushagak Electic Cooperative's studies do not include a lot of fish, wildlife, plants and berries that me and my family depend on. I live a subsistence way of life hunting, fishing and gathering to support me and my family. I'd also like Nushagak Electric Cooperative to study water flow, water levels and how the changing climate is affecting the entire Nushagak/Mulchatna Watershed. They need to do studies up Main River, Mulchatna River and Kokwok River. No studies have been done on any of those rivers and this proposed project is at the Falls where water flows from Tikchik Lake into Nuyakak River, which is the headwaters of the entire Nushagak/Mulchatna Watershed. Nushagak Electric Cooperative did not do any household studies. They obtained their information through 1 Day workshops and looked at past studies. That is completely insufficient! We are the people that live alongside all the fish, wildlife, plants and berries and we harvest from the land and water every year. We are the specialists concerning fish, wildlife, plants and berries, the ecosystem and environment in and around our villages and throughout the entire watershed. Nushagak Electic Cooperative has had very little public engagement with the villages and people along the Nushagak River. Their interest and concern is mainly for their own community of Dillingham. More work has to be done before FERC can even consider Nushagak Electric Coopertive's application. At least the full life cycle of the salmon needs to be studied, maybe 2 life cycles. Big game like moose and caribou needs to be studied. Other wild game like lynx, coyote, wolves, beaver, porcupine, fox, otter, muskrat, and rabbit needs to be studied and also water fowl like geese, ducks, spruce chicken and ptarmigan. Also, more thorough studies need to be done for households in all the communities in regards to annual harvest of fish, wildlife, plants and berries. They need to include Traditional Ecological Knowledge of the people that live and harvest within the entire Nushagak/Mulchatna Watershed. This must be an in depth	Comment noted. The Cooperative stands by the rigor of the collaboratively developed study program that was implemented between 2022 and 2024. Participation was consistently solicited by the Cooperative to all state and federal agencies, Tribal entities and the public, as a whole. Further, the Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. Our Member Owned Not-for-Profit Cooperative also conducts Monthly board meetings the third Tuesday of the month, open to the public, as well as an annual shareholder meeting which was held on April 8th, 2025 where we had 80 members cast ballots, receive updates, and have an opportunity to ask questions. This process has been open and inclusive.

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			study since all the communities rely so much on fish, wildlife, plants and berries to provide for ourselves, our families and our communities. It is important that all my concerns are addressed regarding Nushagak Electric Cooperative's Nuyakuk River Hydroelectric Project application. I also would appreciate it if FERC and Nushagak Electric Cooperative would have more public engagement with the villages along the Nushagak River and throughout the Bristol Bay Region. Be more transparent, not just focus on Nushagak Electric Coopertive and Dillingham, Alaska.	
18	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	USR Meeting and Review Period	The USR meetings held in mid-January were very informative and the explanations from the study team members were helpful. However, four of the study reports â€"[sic] Salmon Lifecycle modeling, Subsistence, Integrated Risk Assessment of Fish Populations, and Aesthetics were not completed until mid-February. Therefore, there was no chance for a meeting to ask questions and little time to digest and fully understand these important studies before having to comment on them by March 21. (The original comment deadline was February 19 and the United Tribes of Bristol Bay asked for a 90 day extension and was granted only 30 days by FERC)	FERC issued an extension of time for review of the specific study elements being addressed in this comment.
19	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	Integrated Risk Assessment	The Integrated Risk Assessment study pages 22, 24, 37, and 42 clearly shows that ARWG IRA Subcommittee agreed there is a high probability risk of damage to the sockeye salmon populations. Particularly the downstream passage success of the smolt. This should be studied in more detail and consideration of not operating the power plant during this sensitive 6-week peak downstream migration period should be considered.	The Integrated Risk Assessment was intended to identify potential risks to fish populations, particularly Sockeye Salmon, from construction and operation of a hydropower project. Risks to downstream-migrating Sockeye Salmon smolts was identified as having the potential to affect the population, and therefore, is absolutely being considered in the ongoing engineering work on the intake structure, exclusion rack system, velocity profiles at the intake and outlet, turbine design and operations, etc. so that the final design of the proposed Project addresses the identified risks and mitigates them to avoid impact. If design alone cannot sufficiently mitigate risks to downstream migrants, operational conditions to protect any migrating fish (not only Sockeye Salmon migrating downstream) will be considered for inclusion in license terms to ensure that the Project does not damage populations of Sockeye Salmon.
20	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	Aesthetics Study	The Aesthetics study shows what the project would look like at the project site but totally ignored the miles of transmission lines and the visual effects created by them. That should be considered and studied.	As noted in the Aesthetics Report, a very detailed video (aerial and on the ground) of the project is provided on the Cooperative's project website (https://www.nuyakukhydro.com/) for viewing by all. The video provides a rendering of all proposed project works as well as the transmission line as it leaves the falls. This portion of the proposed transmission line provides valuable context into the visual impact of the line and is accurate from an elevation perspective given the comprehensive topographical survey data collected by the Cooperative and taken into account when developing the rendering.
21	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	Recreation Study	The Recreation Study seems incomplete. There was only two weeks of in-person surveys at the site and little involvement by villagers at the meetings. We were part of the Recreational Technical Working Group and attended all of the meetings. The Commercial Operator Questionnaire did not contain many of the questions the group discussed and seemed to be hurried into completion. It was only completed by two operators. During the working group meetings, we asked on two occasions if a questionnaire could be developed for our lodge guests to complete but it was not done. We believe valuable insight could â€™ve [couldn't have] been attained by these guests that have been coming to fish the Nuyakuk falls area for many years. Additionally, the responses to the Resident Recreation Survey questions 22 & 30 shows that most locals are not in favor of the project and want the Nuyakuk Falls left alone.	Comment noted. It is notable that there is a distinction to be made between responses received and those solicited by the Cooperative.
22	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	Construction Plans and Logistics	A study analyzing how the equipment needed to build this project would be delivered to the site should have been added. A project of this scope will require heavy machinery. Having heli-lifted various loads into our lodge over the past 20 years, weâ€™re [we're] not sure that equipment this big could not be delivered by helicopter. A barge can only make it to Koliganek on the Nushagak river. That leaves about 33 miles that this machinery would have to be driven over-land to the site. What type of habitat damage would be done during a trip of that magnitude? It would be good to have answers about those logistics.	There are presently 2 prominent contemporary and very well-developed lodges within just the Tikchik lake system, one with an airstrip on site. There are a number of private property inholdings that have been developed as well. Some of these have been in place for as many as 60 years. We have landing crafts capable of making the trip to the falls that are working on the river today, and if a project of this magnitude were to

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				manifest itself, I am sure operators would respond to the opportunity with more equipment and answers. Also, Nushagak Cooperative is happy to report the completion of construction on our Akuluraq Middle Mile fiber project, a $29M project in Partnership with Curyung Tribe and Choggiung Limited, our local Tribe and Village Corporation, connecting Dillingham with Levelock via a 135 mile buried fiber optic cable across our region to create a very much needed link to the outside world. From this experience, we are confident equipment and even material could be brought into the site over the course of winter on a transmission route after one was chosen with minimal impact.
23	Pat Vermillion / Scott Schumacher of the Royal Coachman Lodge	Life Cycle Model	Most studies and particularly the Salmon Lifecycle Modeling study took place during two relatively wet years with higher-than-average river flows. A longer study period should be done to accurately represent some low water years and see how lower flows would affect the study results. Most importantly the smolts downstream and adult salmon upstream migrations. With climate change, the lower flows may be the norm for the future.	FERC stipulates a 2-year study program for environmental evaluations, and even with longer study programs, it is rarely possible to capture the entire range of conditions that might be expected over the operational life of a hydropower project or the term of a operational license. In order to maximize the potential that studies could address as wide a range of conditions as might be experienced in the long term, the Cooperative developed models, including the LCM, IRA, ABM, Entrainment, False Attraction, 2D Hydraulic, and Habitat Suitability that were able to consider a wide range of hydrologic conditions at the project site from less than 1,000cfs to over 25,000cfs. The development and consideration of the results of these models provided significantly more insight and extrapolative opportunities than would have been possible if only data collected during the 2-year study was considered for the life cycle or risk assessment exercises.
24	Pat Vermillion Royal Coachman Lodge, Copper River Lodge, and Sweetwater Travel	General Comment	I am very disappointed that we were not given a good overview of the studies, that were submitted late. We have tried to read through them and find their technical aspects tough to follow. As these were the most important studies, I think another comment period/ overview is appropriate. The elephant in the room keeps getting ignored! Quit beating around the bush and ask this one question of everyone: " if this project has the potential to risk our healthy salmon runs on the Nushagak would you support it?" You will see your support whither away to nothing. This question was not asked by the subsistence study or any study. All of the subsistence studies, tourism studies, ignore this question. Your studies say it has the potential to affect the salmon runs so why not ask that question? In one of the studies and meetings, as much as 50% of the smolt migration will be potentially going through these turbines. I have not read anything on the turbines, other than we have been "told" by the manufacturer that there is near 100% survival. That is not good enough. We do not think it is appropriate that you are risking one of the healthiest salmon runs in the world to chance (first time these turbines have been used on a salmon run of this size), and the word of the manufacturer. Cigarette companies used to tell us that cigarettes were healthy. It is essential that another impact study is done when all of the engineering is complete. You cannot guarantee that this project will not affect the salmon runs. These studies do not disprove that. If this goes forward and you are so confident in your studies, we need a commitment saying, " If this project gets put in and it has a negative affect on the Nushagak and Nuyakuk salmon runs, we will shut it down." Yes, you are destroying one of the most beautiful spots in Alaska (you do not need a study to say that). Although your aesthetic study says it will not be impactful? You have a pristine waterfall/rapid that will now	The Cooperative does not wish to dive into every unfounded or motive-driven assertion made in this lengthy comment. As will be stated multiple times in our responses, we stand by the collaboratively developed and technically based natural resource study program implemented to assess this project's viability. A group of local, state and federal experts assisted in the development of this program. Throughout the process and to this day, all objective participation has been solicited, encouraged and utilized. Further, we would be remiss in not pointing out that this comment has been developed by a for-profit entity with established infrastructure inside the state park with the primary purpose of benefiting themselves financially and catering to individuals that are not regionally based. The Cooperative and people of the region will always, always be looking out for what is best for our home. The Cooperative has its 61-year history of not for profit, member ownership to fall back on. As times have changed, so have the challenges, the carbon-based fossil fuel existence we have participated in as a region necessitates a change. Over the years Nushagak Cooperative has explored wind in region, as well as two other Hydro sites, both within the park, to no avail. Nuyakuk could provide a long-term answer to our region's energy needs, securing an absolutely critical component of today's existence in a reliable source of energy.

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			have a massive intake, massive tailrace, power lines, large buildings, etc…At least admit that it will destroy the wilderness aspect of this beautiful location. If you cannot admit to this what else is hidden in these studies? Yes, you will be draping power lines across pristine wilderness that will be changed forever. That does not seem to be covered in the aesthetic studies? Yes, it will affect our lodges business in the area. Our guests come to experience wilderness, not powerlines and development that they can see at home. It is the untouched aspect of this wilderness that makes it special, and valuable, as a tourism location. Yes, it will affect a potential subsistence and certainly a rare sport fishing location, (as the salmon will most likely just power through with the lower flows). On low flow years the salmon do not hold up as much, making fishing much more difficult. Yes, you will affect the smolt predation by the birds, grayling, trout, and other species by altering the flows of the rapid. How it will affect them does not seem to matter, but maybe I missed that in the massive amount of data that has been sent to us. Yes, you have set the precedent that state parks actually do not protect the land from development. You do not need studies to tell you that. What a scary precedent that is? Thank you for that. But truthfully none of that matters, when compared to the salmon runs. Will we be given an opportunity to shut down this project when we know the final engineering on it? Or is this it? These studies have occurred before we even know the full impact and design. The Risk assessment summary uses words like " may, appears, potentially " all because we do not have all the information yet on the engineering and turbines. These studies are based off of incomplete data. Salmon are the life blood of this region. People have destroyed salmon runs across the world, all in the name progress and people have been reassured it will be ok. Climate change will put more pressure than ever on our salmon runs (as the study points out). We do not know 100% what this project will do to the salmon run. To Quote your life cycyle model " the model was not able to quantitatively assess population level risk." We cannot take that risk. Please do not go forward with this project, and pursue other renewable energy resources for the villages.	Nuyakuk coupled with our Akuluraq Fiber connection would not only establish two very important utilities for our residents and region, but our industries as well and we believe it can be done responsibly, respectfully, and in conjunction with the life we live in our home. If this were not the case, we would not be pursuing it.
25	Chelsey Decker, Dillingham, AK	General Comment	I am writing to express my strong opposition to the proposed Nuyakuk Hydro Project. As a lifelong Alaskan who has spent considerable time on the Nuyakuk River, I can personally attest to its pristine and untouched nature. This project threatens one of the last truly wild watersheds in our state, and I urge decision-makers to reconsider its placement. While I understand the need for reliable electricity, the environmental costs of hydroelectric development at the headwaters of such a critical ecosystem far outweigh the benefits. Hydropower projects, even run-of-the-river designs, have well-documented impacts, including: Disruption of Fish Populations – The Nuyakuk River is home to essential salmon runs and other aquatic species. Even minimal flow alterations or fish bypass systems can disrupt migration and spawning, affecting subsistence fishing and commercial fisheries. Ecosystem Alterations – Damming or diverting water flow, even partially, can change sediment transport, water temperature, and oxygen levels, impacting the delicate balance of aquatic and riparian habitats. Lack of Justification for Scale – This project is not essential for local energy needs; it aims to provide electricity for various cities rather than directly serving the immediate area. Large-scale hydro should not come at the cost of an irreplaceable natural resource. Better Alternatives Exist – Wind, solar, and microgrid advancements offer more sustainable solutions without compromising the integrity of a major waterway. Investing in modern renewable technologies could reduce reliance on disruptive hydro projects in ecologically sensitive regions. The Nuyakuk River is not just another resource to be exploited—it is a vital part of Alaska's wilderness, subsistence lifestyle, and identity. Industrializing its headwaters sets a dangerous precedent, opening the door for further degradation of our last untouched	Comment noted. As you are aware, the Cooperative is a local, not for profit entity. One of our primary roles in the region is to provide efficient and cost-effective power. We are abundantly aware that this power will only be necessary into the future if our fisheries remain strong and protected. Given this, we would never promote a project that we feel (based on science and objectivity) has the potential to destroy our most precious resource. This project represents a potential option to provide renewable power to our region for generations to come. We are proud of the collaboratively developed and implemented natural resource study program and conceptual design process that has taken place. The Cooperative looks forward to continued regional collaboration as further decisions are made as to the potential for the project.

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			rivers. I urge the responsible agencies and stakeholders to reject this project and pursue energy solutions that do not jeopardize our critical waterways.	
26	Federal Energy Regulatory Commission (FERC)	Characterization of Fish Community and Behavior near the Project Intake Study	As stated in Commission staff's April 18, 2024 study plan modification determination (study determination), the Revised Study Plan (RSP) includes a proposal to quantify baseline smolt survival through Nuyakuk Falls, but this information was not included in the ISR. Because the baseline smolt survival data were not included in the ISR, we stated in the study determination that we expected the data to be included in the USR. However, the USR does not include this information, nor does it provide an explanation for this apparent variance, stating instead that "measuring smolt survival quantitatively at this site was determined to be infeasible, but a qualitative assessment of predation pressure on smolts based on stomach content analysis would provide some valuable information on this topic." There is no other specific information in the USR that we are aware of that explains why calculating baseline smolt survival through the falls was determined to be "infeasible." Please explain how you reached this conclusion.	The conclusion that measuring smolt survival through the Nuyakuk Falls should have been more completely discussed in the USR and included as a variance to provide FERC with a record of the discussions that took place within the ARWG meetings following feasibility studies at the project site in 2022. This will be corrected in the DLA. To provide brief justification in this comment response, after site visits during low flow in 2022 and during field work during high flows (corresponding to smolt outmigration) in 2023, it became obvious to the project team that getting an accurate estimate of survivorship through the Falls Reach would not be feasible or cost/resource effective. To measure survival in situ, a mark-recapture study would be necessary whereby smolts measuring about 100mm would be tagged (PIT Tag, dye-mark, fin-clip, etc.) and released above the Falls Reach, and some portion recaptured below the Falls Reach to assess injury, mortality, condition, etc. Considering that millions of smolts pass the Falls Reach, and the impossibility of sampling even 10% of the river downstream for recaptures using net, IPT/Screw Traps, or other methods, the number of fish that would need to be tagged to derive a survival estimate with any statistical rigor would be tens if not hundreds of thousands of fish. Compounding the sample size, capture methods for both marking and recapture (such as nets or traps) have inherent mortality and injury rates, especially for delicate smolts, and these factors could easily confound genuine mortality data. Even a recapture system that did not require physical handling such as a PIT tag array could not feasibly be deployed in a river as large and swift as the Nuyakuk at a location that would be meaningful for deriving a rigorous survival estimate. This information was shared with the ARWG during 2023 pre-study implementation meetings, and there was interest among ARWG members to determine whether any information on predation could be obtained, which prompted the effort in 2024 to selectively lavage predator fish to confirm that smolts and other small fishes were consumed in the Project Area by predator species including Rainbow Trout and Arctic Grayling.
27	FERC	Characterization of Fish Community and Behavior near the Project Intake Study	Commission staff's study determination required the Cooperative to include the spawning life stage of all five salmon species in the instream flow model fish habitat analysis. Section 5.6.1.3 of the Fish Community and Behavior Study report identifies 8 areas near the project that contain suitable spawning substrate, 6 of which appear to be in areas in the proposed bypassed reach that could be affected by project flow diversions. The study report also indicates that some adult salmon were observed spawning at the project site. However, even though spawning and spawning habitat were both documented at the falls, the USR does not include any instream flow model results for adult salmon spawning, nor does it explain the reasoning for this apparent variance from the approved study plan. Please explain why the USR did not include the fish habitat modeling analysis for adult salmon spawning.	A more specific discussion on why adult salmon spawning was not considered during the Habitat Suitability Assessment should have been included in the ISR and USR. This omission will be corrected in a future DLA, if submitted. Briefly, while initial study planning included the use of substrate data in the Nuyakuk Falls Reach for consideration in the Habitat Suitability Study for all fish, feasibility studies and site visits in 2022 made it clear that collecting data on substrate within the Nuyakuk Falls Reach is not possible using the typical protocols for these measurements (transects in which substrate, depth, and velocity are measured). Therefore, the HSC analysis was completed using the data that were available, which included depth and velocity but not substrate. To provide some data on the potential existence of spawning habitat within the Falls Reach and the areas immediately upstream and downstream of the Falls which may be affected by Project Operations, the Cooperative undertook pedestrian surveys, substrate mapping, and pebble counts to identify potential spawning locations. A very small amount of potentially-suitable gravel

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				was identified in areas with suitable hydraulic conditions, however, these areas are all dewatered during winter ice conditions. The location where a Sockeye Salmon redd was observed (near the proposed intake) did indicate that some spawning may occur in the Falls Reach, but that spawning area was likewise dewatered and iced over in the winter of 2023. To summarize, the Cooperative believes there is a negligible amount of spawning habitat for Pacific Salmon in the Falls Reach itself, and what is there in fall may become frozen or dry in winter. Deeper areas of the Falls Reach where the field assessment team could not sample may contain additional high-quality spawning habitat, but as it is in deep water, it would not be affected by proposed Project operations. This will be made more clear in a DLA.
28	FERC	Subsistence Study	To evaluate the potential effect of constructing and operating the project on subsistence harvest and use, the approved study plan required the Cooperative to conduct subsistence harvest surveys in six communities: Koliganek, New Stuyahok, Ekwok, Aleknagik, Levelock, and in the city of Dillingham. The approved study methodology required systematic household surveys conducted by community-based survey technicians in cooperation with Alaska Department of Fish and Game (Alaska DFG) subsistence resource specialists. The study methods were to follow the research principles outlined in the *Alaska Federation of Natives Guidelines for Research*[2] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[3], as well as the Alaska confidentiality statute (AS 16.05.815). These principles include community approval of research designs, informed consent, anonymity of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research. The approved study plan required the Cooperative to follow Alaska DFG's typical standard mapping method to collect subsistence use location data. Neither the *Alaska Federation of Natives Guidelines for Research* nor the *Principles for the Conduct of Research in the Arctic* specifically define how such studies would obtain information from village elders or others with local knowledge of subsistence activities (i.e., in-person interviews, telephone conferences, virtual meetings, harvest permit data, etc.). However, both publications emphasize the importance of providing reasonable opportunities to local collaborators and Tribes to participate in planning, data collection, analysis, interpretation of results, and development of conclusions. This includes the research being guided by the community about the most effective and preferred methods of communication. The Cooperative intended to conduct the Subsistence Study in 2023 and report the results in the ISR, but due to budget constraints, the study was delayed to 2024. In response to comments filed on the ISR concerning tribal engagement, we required in the April 2024 study determination that the study plan be modified to specifically require the Cooperative to schedule in-person meetings with Tribal elders and other Tribal members knowledgeable in subsistence activities in six specific communities: Koliganek, New Stuyahok, Ekwok, Aleknagik, Levelock, and in Dillingham. The Cooperative completed the study in 2024 and filed the results in a USR addendum on February 15, 2025. The methodology described in the USR is significantly	The Cooperative appreciates the comment and has filed, along with this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024. For the subsistence study, the study team worked with the tribal councils to gain community approval of the workshops (including obtaining resolutions); sent draft protocols for the councils to review; had participants review and sign an informed consent form which guaranteed participants' anonymity, and sent the draft subsistence report to the councils for review. See section "Subsistence Workshops" under Methods for additional information.

[2] Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed June 6, 2020. http://www.ankn.uaf.edu/IKS/afnguide.html.
[3] National Science Foundation Interagency Social Science Task Force. 2018. "Principles for the Conduct of Research in the Arctic." Accessed June 6, 2020. https://www.nsf.gov/geo/opp/arctic/conduct.jsp.

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			different from the approved study plan and the primary reason provided for the variance is cost. In general, there is minimal additional specific information in the USR that explains why the alternative methods that were employed collected sufficient information and data to meet the goals and objectives of the study. Below we summarize the major variances from the approved study plan and request more information to help us understand the rationale for making the changes and why you believe the study is complete.	
29	FERC	Subsistence Study, In-Person Interviews	The approved study plan required the Cooperative to conduct in-person interviews and surveys in the six communities identified above; however, the USR reports that this method was modified to only collect in-person data in a workshop setting in three communities (i.e., Koliganek, New Stuyahok, and Dillingham). There is no specific information that describes how this change in study scope provides sufficient information to meet the goals and objectives of the approved study. Therefore, please describe how the 2-hour workshops[4] are a sufficient replacement for conducting in-person household surveys and interviews in the six communities as required by the approved study plan.	While household surveys provide comprehensive updated baseline data on community-level harvest amounts and household use patterns, community-level household harvests surveys are not always feasible, and do not collect information to directly inform an assessment of Project specific impacts and mitigation. While it is important to have updated baseline data prior to a development project so that future changes in harvest amounts and use areas can be measured, updated data are not always necessary to analyze the types and nature of impacts that may arise from a proposed project, particularly if targeted workshops identify potential changes since previous surveys. Workshops provide an alternative to more comprehensive surveys by focusing on project-specific information (which would not be documented in a typical household harvest survey) and by asking participants to identify whether existing subsistence information accurately captures current uses. For this project, workshop participants responses regarding more recent changes to subsistence harvests, use areas, and timing are provided alongside descriptions of existing subsistence data. While surveys are more useful for providing accurate community-level harvest data, workshops can have advantages over individual surveys by providing the opportunity for residents to corroborate personal observations, and facilitate recall through participant interactions. Workshops also reduce community burden by shortening the overall presence of researchers in the community and focusing on key individuals in the community rather than all households. In addition to the workshops, the study included an in-depth literature review of all existing subsistence data, including previously unpublished subsistence use area and timing data which were incorporated into the report. During the literature review, the study team identified that a comprehensive household harvest survey was conducted in Dillingham in 2021. Further, the Cooperative appreciates the comment and has filed, along with comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024.
30	FERC	Subsistence Study, Survey Technicians	The approved study plan required collecting data using community-based survey technicians in cooperation with Alaska DFG Division of Subsistence resource specialists. There is no specific information in the USR explaining why community-based technicians did not assist with the workshops. Please explain why you did not use community-based survey technicians during the study.	As displayed in the subsistence consultation provided with this filing, despite the timely outreach and consultation regarding the Cooperative's desire to hold workshops in the identified communities, there were significant hurdles related to wait time for responses from the villages and minimal dates identified by the villages as being suitable to hold the forums. Given this, by the time agreements were reached with

[4] The USR states that the workshops lasted approximately 2 hours.

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				respective villages on the temporal component, urgency existed to get the workshops completed and data analyzed and reported on, commensurate with the USR schedule. As FERC is aware, the Subsistence Study was a primary reason for the need for the USR addendum. As discussed in the previous response, the study plan was modified to include subsistence workshops rather than household harvest surveys, so the use of community-based survey technicians was no longer appropriate under the revised study plan. The study team coordinated with the tribal councils to plan and conduct the subsistence workshops.
31	FERC	Subsistence Study, Workshop Format	The USR includes copies of PowerPoint presentations used in the workshops, but there is no explanation of how data was collected or how information was presented at the workshops. The stated purpose of the workshops from the PowerPoint presentations is to "verify and document subsistence knowledge in potentially affected communities near the Nuyakuk River Hydroelectric Project (Nuyakuk Project)" and "document knowledge that helps identify concerns and potential impacts and mitigation associated with the Nuyakuk Project." Please explain how participants were afforded an opportunity to share information and exactly what information was provided. For example, was the entirety of the workshop conducted as a presenter and audience or were there break-out groups to allow for more one-on-one discussions between consultants and participants?	An explanation of workshop methods, including how the workshop facilitatory used the PowerPoints to guide the workshops and how participants were provided an opportunity to share their information, is included in the section "Workshop Method" under "Subsistence Workshops." In short, the workshop facilitator used the PowerPoint presentation to guide the workshop. Each section of the workshop began with the presenter introducing the topic to be addressed and then allowing participants to provide knowledge they believed to be relevant to that topic. The presenter then followed up with more specific questions and facilitated discussion among the workshop participants.
32	FERC	Subsistence Study, Research Design and Sharing of Draft Study Results	The approved study plan required community approval of research designs and a provision to present study findings to each study community upon completion of the research. As stated in the RSP, public community in-person review meetings were to be held in each study community to present draft study results and provide an opportunity for residents to provide feedback to be incorporated into the final report. Based on our review of the USR, there is no information indicating that you obtained community approval of research designs or held follow-up meetings in each community to discuss the draft study results and provide opportunities for in-person community feedback. Please explain the reasoning for these apparent variances from the approved study plan, including how the methods you implemented are sufficient to meet these study objectives.	The Cooperative appreciates the comment and has filed, along with this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the agreements with the villages and modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024. For the subsistence study, the study team worked with the tribal councils to gain community approval of the workshops (including obtaining resolutions); sent draft protocols for the councils to review; had participants review and sign an informed consent form which guaranteed participants' anonymity, and sent the draft subsistence report to the councils for review. See section "Subsistence Workshops" under Methods for additional information.
33	FERC	Subsistence Study, Mapping of Subsistence Sites	The approved study plan required the Cooperative to follow Alaska DFG's typical mapping methods. These methods include "identifying points on maps to indicate harvest locations and polygons to indicate harvest effort areas, such as areas searched while hunting caribou. Harvest locations and fishing, hunting, and gathering areas are typically documented on electronic tablets by researchers using the Collector application (ESRI, or Environmental Systems Research Institute)." The approved study plan also required the Cooperative to engage members of the communities to document subsistence use areas, ancestral travel routes, and other significant places important to the Tribes and their subsistence culture and way of life. According to the informed consent forms provided to workshop participants, the description of the study stated: "The workshops will document the location and timing of subsistence activities in the vicinity of the project, in addition to travel methods and routes that are used to access these use areas." It is not clear from the information in the USR what specific location data was requested in the workshops (e.g., subsistence camps, travel routes, fishing locations, etc.) or how this data was collected (e.g., GIS utilization, hand-written on maps, etc.). The maps in the USR entitled "Subsistence	See response above regarding the implementation of workshops as opposed to harvest surveys. The study team did not conduct a comprehensive harvest and mapping survey. While the study team came to each community prepared to document specific subsistence harvest locations and travel routes, during the workshops, participants did not identify any additional specific subsistence harvesting areas, camps, or routes, that were not already identified on existing maps, and many workshop participants indicated a decrease in use of the Nuyakuk Falls project area. Therefore, the USR provides maps show already-documented subsistence use areas for the study communities which were confirmed by the study communities to be representative of current subsistence patterns.

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			Use Areas, All Studies," present subsistence study results in geographic locations from literature reviews of data collected from the 1970s through mostly the early 2000s. However, there does not appear to be any maps showing results of the subsistence use data obtained via the workshops, which was a primary goal of the study. Further, there is little information describing the location of subsistence fishing sites upstream and downstream of the project. Please explain why the location data collected and mapped from the participant workshops is not included on the maps in the USR and provide maps showing identified fishing and hunting sites identified through the workshops.	
34	FERC	Subsistence Study, Transmission Line	Figure 1-1 in the USR entitled "Proposed Project location and transmission line alternative routes" shows two alternative routes for the proposed transmission line. However, only one of the routes was presented in the Subsistence Study as shown on the maps in USR Attachment M (including both the study result maps and the maps presented at the community workshops). Please explain why only one of the two potential transmission line routes was included in the Subsistence Study.	Both alternative routes are displayed on the Page 2 map in the Subsistence Report, they are just not labeled as "A" and "B" as they are in the USR. You'll note that there are two dashed lines leaving the proposed hydro site at the falls. Those two lines represent the same two options identified as "A" and "B" in the USR.
35	FERC	Subsistence Study, Workshop Locations	As noted above, the approved study plan required the Cooperative to conduct subsistence harvest surveys and in-person interviews in the communities of Koliganek, New Stuyahok, Ekwok, Aleknagik, Levelock, and Dillingham. The USR states that workshops were held in Koliganek, New Stuyahok, and Dillingham. In support of the study modification, the USR states that the Cooperative decided to focus efforts on areas with a proximal connection to the project site at Nuyakuk Falls and "use desktop information (i.e., literature survey) for Villages further away from the Nuyakuk Falls site", including Ekwok, Levelock, and Aleknagik. Literature review results indicate that community members from Ekwok, Aleknagik, and Levelock do use the transmission line route for harvesting, and may harvest less at Nuyakuk Falls, compared to community members that live closer to the falls. However, based on the information in the USR it is unclear how members of Ekwok, Aleknagik, and Levelock currently use the Nuyakuk Falls area, how they use the project transmission line corridor, and whether the workshops captured any of this information. Please explain why workshops were not offered at Ekwok, Aleknagik, and Levelock and how the existing information provides sufficient information to characterize effects of project construction and operation on current subsistence activities.	The workshop in Dillingham included participants from Aleknagik who provided information on current subsistence uses of the transmission line corridors and Nuyakuk Falls area. Their observations were incorporated into the subsistence report. The study relied on existing information to characterize subsistence uses for other study communities. Please note that the conceptual layout of the project currently involves the utilization of the already disturbed and recently installed (2024) fiber optic line between Aleknagik, Ekwok and Levelock. Given this corridor already exists and the appropriate assessments and permits have been conducted/issued for it's implementation, it is anticipated that limited additional impact would result as a product of the transmission line utilizing the same corridor. The Cooperative is acutely aware of the sensitivity in region regarding subsistence use and camps and settlements in and around the proposed project. The Nuyakuk Falls site, as important as it is for many reasons, is a relatively little visited remote site. The transmission corridors considered are all inland and by all appearances do not conflict with any known settlements or camps along any course identified to date. As mentioned, we have adjusted parts of the perspective course to align with our Akuluraq middle mile fiber build to align with the previously permitted route, and would continue to approach development in that manner.
36	FERC	Subsistence Study, Consultation Record	Attachment M of the USR entitled "Deviations from Study Plan" states, "If a license application is filed for the project, the entire project consultation record will be filed alongside the application itself. If it would assist FERC, the Cooperative would be happy to file the subsistence portion (or any other portion) of that record in advance, for additional context." To better inform staff's understanding of some of the study variances, please file the complete consultation record for the Subsistence Study by the due date for the reply comments on the USR (April 21, 2025).	The Cooperative appreciates the comment and has filed, along with this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the agreements with the villages and modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024.
37	FERC	Noise Study	The approved study plan required the identification and assessment of existing noise levels at sensitive noise receptor areas (i.e., sensitive wildlife habitat, recreation areas including trails within Wood-Tikchik State Park, the Royal Coachman Lodge, fishing and hunting areas, and areas used for subsistence and other traditional practices).	As was stated during collaborative study plan development and during study reporting meetings, noise impacts associated with any transmission development would be over an extremely short duration and associated with transmission pole installation. Once operational,

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			The approved study plan states that "noise receptor areas will be established in collaboration with the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Alaska Department of Fish and Game, local outfitters, and Native Alaskan tribes in advance of study implementation. This collaboration will occur in the early spring of 2023, at the latest." An objective of the approved study plan was to "describe, through the use of sound models, the expected noise levels in the identified sensitive areas during project construction and operation." The USR discusses expected noise levels using sound models on recreation areas around the proposed project facilities near the falls and around the Royal Coachman Lodge. The Royal Coachman Lodge was the only identified Noise Sensitive Area (NSA) at the proposed project site. Figure 6-1 of the Noise Study in the USR shows the change in sound level due to construction activities at the Nuyakuk Falls area in relation to the Royal Coachman Lodge. There is no discussion of your efforts to identify and evaluate noise effects through sound models on other sensitive receptor sites, such as areas used for subsistence or for traditional cultural practices (including Traditional Cultural Properties, or TCPs), yet the USR states that there were no significant variances in the study.	noise associated with the transmission corridor would be negligible, at worst. Given this, focus was placed on the primary infrastructure at the falls to determine it's impact, if any, associated with infrastructural development and long-term operations. Similar to limited impacts associated with transmission line development and given the natural and persistent noise associated with the falls, both short-term construction and long-term operations of the project were determined to have extremely limited noise impacts.
38	FERC	Noise Study	Comments from the United Tribes of Bristol Bay (UTBB) during the ISR meeting indicate that there are large numbers of (subsistence/hunting) camps along the transmission line route that have the potential to be adversely affected by the construction and operation of the transmission line(s). The Subsistence Study results indicate that the Nuyakuk Falls proposed project site and the proposed transmission line areas are both used for subsistence, and noise from the construction and operation of the project would have impacts to subsistence use. Commission staff requested in comments on the ISR[5] that the Cooperative describe how and when it intends to identify the additional sensitive receptors in consultation with the parties listed above. Commission staff stated that if the consultation efforts and study conclude that there would be no additional sensitive receptors affected by project-related noise, then the Cooperative should so state and explain why. In your reply comments[6] you agreed to determine if any additional sensitive receptor sites exist and/or are impacted because of potential project construction and operation and that you would include these results and analysis into the USR. As noted above, it is unclear how you determined that the only sensitive receptor was the Royal Coachman Lodge, and what efforts you made to identify sensitive receptors (e.g., subsistence use areas, TCPs, wildlife migration corridors, etc.). Please explain how you determined that there were no other sensitive receptors. So that we have a better understanding of the stakeholder consultation history for the Noise Study, please file the complete consultation record for the study by the due date for reply comments on the USR (April 21, 2025).	The Cooperative is not aware of any "Duck camps, Goose camps, Moose camps, or Caribou camps" along any potential routes identified at all. As offered at the ISR, if those site locations were shared, it would help us continue to design around sensitive sites and we commit to honoring that. None have been shared to date, confirming none exist. To answer this question directly, I am relying on my traditional ecological knowledge as a lifelong resident, subsistence user and predator control participant to state that there are no sites, to my 30+ years of use of this area or that have been identified yet through conversation that will be affected.
39	FERC	Cultural Resource Study, Area of Potential Effect	The approved study plan required the Area of Potential Effect (APE) to be defined in cooperation with all consulting parties, including Commission staff, the State Historic Preservation Office (SHPO), and Tribes who have an interest in the project. The approved study plan required the SHPO to concur with the APE in writing prior to any field surveys. It was also required that the Commission be included on any correspondence with the SHPO regarding the APE. Commission staff were not consulted on the APE nor has there been any correspondence with the SHPO filed to the record. Also, the approved study plan states, "The APE for TCPs (i.e., indirect APE) will be larger than the APE for archeological and historical sites and include more of the general project area. Its final boundaries will be determined in consultation with Tribal organizations and any other groups and individuals who may ascribe traditional cultural	During the May 28, 2024, Cultural Resources Technical Working Group, Monty Rogers, a consultant for the United Tribes of Bristol Bay, raised a concern that the APE had not been defined properly. Sarah Meitl, the lead in review and compliance at the Alaska SHPO office, stated that the Cooperative's phased approach to their APE, including a phased approach to identification and effects was acceptable and happened all the time in Alaska as projects evolved. The Cooperative has viewed the APE as the permit area for the Project. Based on the status of Project plans in the fall of 2024, the Cooperative and their consultant did not include an APE for the proposed powerline.

[5] Staff's comments on the ISR and meeting summary were issued on January 25, 2024.
[6] The Cooperative filed reply comments on March 20, 2024.

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			significance to locations within the study area." The USR does not describe the indirect APE, the efforts you made to identify and define the indirect APE, and any concurrence of the Alaska SHPO on the both the direct and indirect APE. Please provide this information, including the consultation record for the Cultural Resources Survey Study by the due date for reply comments on the USR (April 21, 2025). Please provide a figure depicting the APE overlaid with the proposed project features and project boundary for the project facilities near Nuyakuk Falls.	Because archaeological sites and Traditional Cultural Places are locatiomn-specific, and the powerline is still conceptional, the Cooperative opted not to have their consultants do more than an in-depth literature review for the proposed alignments. The Cooperative does not wish to advance the design of the powerline until they have determined whether the project is feasible. If the project is determined to be feasible, the Cooperative will determine and appropriate APE for the transmission line, in consultation with FERC, SHPO, and Tribes.
40	FERC	Cultural Resource Study, Study Status	Table 2-1 of the USR indicates that the Cultural Resource Survey Study is "complete;" however, based on our review of the USR, the following study components do not appear to be complete: (1) defining the APE (e.g., along the transmission line route or an indirect APE as discussed above); (2) surveying the transmission line corridor; (3) identifying any TCPs ; and (4) determining eligibility of identified site in consultation with Tribes. The April 2024 study determination required the Cooperative to schedule and conduct in-person meetings with Tribal elders to identify the APE and TCPs, and to make eligibility determinations in the communities of Koliganek, New Stuyahok, Ekwok, Aleknagik, Levelock, and in Dillingham. It also required the Cooperative to file quarterly progress reports with the Commission documenting its efforts to conduct the interviews and surveys, which were not filed. Please explain why you believe the study is complete and if it is not complete, provide a detailed schedule for completing any outstanding tasks.	The table should be updated to say that the Cultural Resource Study at the facilities area is complete. The proposed powerline has not yet been fully evaluated from a Section 106 standpoint. Additional consultation with the SHPO, FERC, and Tribes will be required to determine an appropriate APE for the transmission line. The study of the transmission line is also an area that will require consultation with communities to discuss the possibilities of TCPs within or near the APE.
41	FERC	Aesthetics Study	The approved study plan required you to identify Key Observation Points and develop visual values and classifications that describe the level of change from the existing conditions at the KOPs that would result from project construction. The KOPs were to be selected, and the evaluations made, using an interdisciplinary team composed of invited members from the Alaska Department of Natural Resources Division of Parks and Outdoor Recreation, local outfitters such as the Royal Coachman Lodge, and Tribes that use the project area for subsistence, residence, or other traditional cultural practices. At a minimum, KOPs were to be established near Nuyakuk Falls and from representative public use sites along the transmission line and within the six communities served by the proposed project transmission line. The USR does not describe using an interdisciplinary team to conduct the evaluation, or why you deviated from the study protocols. If an interdisciplinary team was used, please describe who was represented on the team. Further, KOPs were not established along the transmission line (e.g., subsistence use camps) or by the six communities served by the project transmission line. Please explain why and if and how this information will be gathered.	The Aesthetics Study design was intended to be comprehensive in its approach and assess the entirety of the project area at the falls from both the air and the ground. As displayed in the report, a series of KOP's were established near the falls to compare/contrast aesthetic conditions with and without the project in place. In addition, the high-quality and comprehensive rendering video referenced in the report and provided at the project's website (www.nuyakukhydro.com) provides, n great detail, a flyover and ground referenced video of the project works. This video includes imagery of the substation connection to the transmission line and the transmission line, as it transitions into its corridor. By taking this comprehensive approach, the Project works were looked at globally, not just from a KOP perspective. This allowed for a comprehensive view of the entire hydroelectric project and provided all context necessary to evaluate the aesthetic impact to the area. One of the key features of the concept has been the minimal effect it would have on our land held up against the energy it would provide. It is development, and we are averse to that, but the energy it would provide relative to the amount of development has to be considered. We have a single thread connecting our region to energy in diesel, if that thread should be compromised we will suffer equally and immensely.
42	National Marine Fisheries Service (NMFS)	Fish Community Behavior Study, Section 4.3.2.2	Understandable that range testing within the Nuyakuk Falls reach was difficult. However, please provide a better description of the verification process of receiver functionality within the falls after each download. To the degree possible, please use plain language.	Range testing for radio telemetry detection efficiency was difficult because the river could not be accessed for placement of test tags and verification of receiver detection (ability to hear the tag) and detection efficiency (proportion of tag pings decoded by the receivers). The array was designed to attempt to assign left-bank/ right-bank position to fish transiting the Falls, therefore, tags were carried along the bluff top and at the river bank on the opposite site of the river from each receiver, and

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				the gain was reduced until the tag could not be heard from the opposite bank, but could be heard from the location of the receiver. For the receivers where the river was accessible, tags were dragged near the river bottom at various distances away from the receiver from upstream to downstream and those data were processed to ensure that detection range and efficiency was adequate to distinguish presence at each receiver uniquely.
43	NMFS	Fish Community Behavior Study, Table 5-1	As an obligatory migrating species, we deduce that Arctic lamprey ascend and potentially use the falls because of presence in Zone 1 and Zone 3 during the sampling program.	Noted. Arctic Lamprey were present though rare in Fish Community sampling but were not selected by the ARWG for specific study in this 2-year program.
44	NMFS	Fish Community Behavior Study, Section 5.1.2.1	For fry and parr life stages, please conduct additional analyses to ascertain the relative significance of presence near the proposed intake of the Project. For example, in Figures 5-7 and 5-11, the combination of all sampling zones does not provide us with information on the relative number and size distribution of juveniles in the zone-of-influence of the Project intake compared to the rest of the study areas. Please provide additional information on spatial and seasonal distribution of juvenile pink salmon in relation to the proposed Project intake.	The RSP for Fish Community included directive to determine the presence and seasonal distribution of species and life stages of fish species in Zones 1, 2, and 3 of the project area. Smolts of Sockeye Salmon, Pink Salmon, and a smaller number of Chinook Salmon smolts were observed at the intake area in early sampling (May/June). Later season sampling indicated temporally sporadic use of the area by grayling and whitefish juveniles. Construction of the project would change the hydrologic conditions of the intake location which would affect how non-migratory fish would use the area.
45	NMFS	Fish Community Behavior Study, Section 5.1.4.2	Range testing alone is not sufficient for determining detection efficiency at each receiver array over the course of the study. Ideally, the experimental design would include replicate arrays at the gate receivers to determine the true detection efficiency as that does not remain static after range testing. What changes in the receiver array setup from 2023 to 2024 likely caused the simultaneous detections in 2024?Detection overlap occurred between R01 and R02 as well as between R02 with R10/R12 suggesting R02 was problematic. Indeed, this likely only effects residence time analysis, but this assumes high detection efficiency which was only determined during range testing.	The array design did include double arrays at the passage gates to ensure that fish were detected passing into the study area (receivers 1 and 2 downstream), and successfully exiting the system (receivers 3 and 4 upstream). In many cases, "detections" used to calculate passage success included detection on at least one of the pair. Detection efficiency was calculated for the paired gated receivers but it was not possible to determine detection efficiency for Falls Reach receivers as access to the river to present test tags was infeasible. In 2024, the R01 receiver was mounted at a higher elevation and a slightly more upstream angle than in 2023 to provide safer crew access which seems to have resulted in the antenna being able to detect tags further upstream than was indicated by the range testing.
46	NMFS	Fish Community Behavior Study, Section 5.1.4.4	Passage rates in Table 5-2 are raw percentages that assume 100%detection efficiency with a priori removal of false-positive detections using PyMast. Is it possible to apply biostatistics to this dataset? The report states that there are significant differences in residence time for sockeye among flow bins. Is this the case for all flow bin comparisons? For example, is the variance in the 21,000 cfs bin significantly different from the 22,000 cfs bin? Are there enough observations in each flow bin to conduct this analysis? ANOVA does not require equal sample sizes, but there are issues with disparate or low sample size in bins. As shown in the hydrograph, flow is not static, for a fish that arrived at a flow of 22,000 cfs and then transitioned into the falls 10 days later at a flow of 20,000 cfs, what flow bin is that fish put into? Did the detection history data suggest fish transitioned between R10, R11, and R12? That is, do fish actively move between the resting pools to attempt passage into the falls? In the falls reach transit time analysis, how was the >98% detection efficiency determined? In addition, we have the same questions for transit time using flow bins as mentioned above in the residence time statistical analysis. In falls passage route selection, why was there no discrimination between the zone of passage of the right chute and the center chute? What was the purpose of the R12 and R11, if not to determine which chute was preferred under different flow conditions?Particularly for sockeye which showed a preference for river right at flows above 20,000 cfs. Was there any difference in transit time for particular routes? For example, for the sockeye in a flow bin that chose Route 2 over Route 3, did one fish take longer? I doubt there is enough sample size to do statistical testing, but some descriptive statistics may be informative.	As noted in the USR and in person presentation, the telemetry data for Sockeye Salmon, and especially the limited sample size of Chinook Salmon were not as well distributed among flow bins as would be ideal for a statistically rigorous comparison of passage rates, residence times, and failed passage attempts between flow levels that would be possible under a more controllable, less dynamic environment. Range testing on R10, R11, and R12 was conducted, but it was not possible to deploy the test tags in all locations, depths, hydraulics, and tag density that could be represented by study fish locations, especially as fish transitioned from the resting pools into the chutes and areas upstream where the tags could also be detected but where range testing was not possible. Therefore, we chose to be conservative with analysis of transitions between these receivers. Your supposition that there is insufficient replication and insufficient certaintly about passage route selection of tagged Sockeye salmon to enter the Falls Reach is correct. Additional fish-by-fish records of receiver detection histories can be provided as examples in the upcoming DLA, but we did not feel that there was sufficient clarity in detection data for fish entering the Falls from the holding pools to conduct a statistical analysis by flow bin for this topic.

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47	NMFS	Fish Community Behavior Study, Section 5.1.5.1	Based on the mobile tracking data, diversion of the flow from the falls through the Project may allow more predator access to the intermediate falls during smolt emigration because the flows within the falls may resemble the current receding limb of the annual hydrograph. That is, instead of 18 thousand cubic feet per second (kcfs), the falls convey 12 kcfs. It's unclear whether this would exacerbate or alleviate smolt predation, but something AWRG should consider.	The Cooperative appreciates the comment.
48	NMFS	Fish Community Behavior Study, Section 5.1.6.3	In Figure 5.37 there are three turquoise colored asterisks, do those symbols represent anything? Based on this spawning substrate survey, Sites 5 and 6 likely will be lost after Project development. In Figure 5-38, what do the red brackets represent?	In figure 5-37, the asterixis are errors from a prior version. These will be removed. In Figure 5-38, the brackets represent range of preferred spawning gravel based on data from Kondolf and Wohlman (1993).
49	NMFS	Fish Community Behavior Study, Section 6.1	GLOBAL We are unfamiliar with the terminology "conveyance habitat" and prefer "migratory corridor." As mentioned earlier, less river flow may lead to changes in predator-prey dynamics in the falls reach due to increased access by predatory fish, in particular rainbow trout. As we have no data on the emigration of smolts during lower flows in the falls, we will likely have to monitor/study this post-construction to determine if there is a significant difference in mortality rate based on flow. A Habitat Suitability Curve (HSC), though the best we have at this stage of Project development, is a stretch to use for a zone-of-passage assessment. Though the agent-based model (ABM) is a useful assessment tool, the conclusion that passage success approaches zero at flow near 2,000 cfs seems unlikely to me. In Figure 5-26, a sockeye salmon is passing a rapid section in less than 4 inches of water so unless the water depth at low flow has extensive lengths of dry patches or jumps exceeding 6 feet, the urge to spawn will allow sockeye to surpass these potential obstacles to some degree at low flows. Nonetheless, we should monitor/study the potential effect of lower flows in Nuyakuk Falls on adult passage.	Noted. In future, we will use "migratory corridor" instead of "conveyance habitat". The ABM model is useful for estimating how passage rate may be affected by changes in flow conditions, but as noted in the USR, the ABM is limited by the amount of time that the model has to run, process the behavior of modeled agents, and estimate passage success. At very low flows, it is difficult to distinguish between lack of passage success because hydraulic conditions are too challenging, and lack of passage success *within-the-allotted time*, because agents were not able to find a suitable passage route during processing window. We agree that Sockeye Salmon may well be able to ascend the Falls under all flow conditions if sufficient time, competition among other fish trying to access reduced passage routes, etc. allow. It is expected that there will be future opportunities to monitor behavior of fishes at the Nuyakuk River project (if built) as part of the compliance monitoring requirements.
50	NMFS	Fish Community Behavior Study, Section 6.2.1	The last sentence of the first paragraph does not seem to belong in this section. The report covered the emigration of smolts in the previous section and the purpose of the section is rearing and foraging habitat use. In the last sentence of the second paragraph, the report states that suitable habitat in Zone 2 would be accessible at summer base flow from downstream habitats. Is there really an upstream zone-of-passage for fry and parr through the right chute, center chute, and left braids at summer base flow? We disagree with the conclusion that the frequency of risk to rearing juvenile classes appears low in Zone 3 proximal to the intake. The Project proposes to operate throughout the year and based on HSC and sampling results, we can anticipate that the Project will entrain rearing juveniles of various age classes throughout the year. Even for a low head, well-designed facility, the shear and barotrauma stresses on juvenile salmon during entrainment likely will result in higher than natural mortality. The key will be the magnitude of this effect; that is, how many fish will be near the intake throughout the year.	The statement that Zone 2 habitats may be accessible to rearing juveniles classes in summer base flow is based on the observation of rearing Chinook Salmon juveniles in the lower reaches of Zone 2 at low summer flows as well as the presence of Rainbow Trout fry on the upper left bank of Zone 2 during the same period. The USR did not intend to suggest that these habitats are only accessible from downstream of the Falls. While the flow through the chutes is predominantly too swift for juveniles to pass through, we do not discount the possibility that there may be interstitial, marginal, or small pockets of slower water that juveniles could use to move upstream. Certainly, accessing Zone 2 from upstream is feasible for juveniles under any flow condition. It is anticipated that future design phases on the intake (beyond the current conceptual design) will include further assessment of 3D hydraulics that may affect the suitability of habitat near the intake for both downstream migrants and juveniles residing in the Nuyakuk River.
51	NMFS	Fish Passage Study, Figures 4-1 and 4-2	Please address the following by updating figures and tables: • Figure 4-1 does not show the location of level logger number 108. • Figure 4-2 should include a second y-axis to show the river flow during themonitoring period.	The map is missing the location of LL#108, but its position is provided in Table 4-1 as 59.910348, -158.114499. If a future iteration of this figure is required in the DLA, a second Y-axis showing 2023 Nuyakuk River discharge will be added.
52	NMFS	Fish Passage Study, Section 4.1.2.2	Where did you collect the rating curve data?	The ADCP data used to develop the stage discharge relationship was collected along a perpendicular transect approximately 100m upstream of the portage trail upstream of the Falls, in a similar location to where the sonar transducer array was deployed. This was determined to be the

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				best location based on the uniform shape of the river channel, being downstream of the last tributary upstream of the Falls, and being upstream of the left bank island/ backwater area which has complex hydraulics and heavy macrophyte growth that could complicate ADCP measurements. Audit measurements were made downstream of the Falls in 2023 to ensure that the discharge measurements were comparable.
53	NMFS	Fish Passage Study, Section 4.1.4	Provide a citation for the following statement, "Typically, a model calibrated for a flow range is valid for flows ±10% outside the range of calibration".	This statement was provided based on the extensive professional experience of the hydraulic engineers who have developed and calibrated dozens of similar 2D and 3D hydraulic models.
54	NMFS	Fish Passage Study, Table 4-4	The low flow calibration ideally would be lower as it reflects the proposed condition (i.e., 30% diversion) at a river flow of roughly 9,722 cfs which is between the 75% and 90% exceedance value in June, the 50% and 75% exceedance value in July, and the 10% and 25% exceedance value in August and September. This means that the model is outside the calibration range for large portions of the migratory season under the proposed condition. The high flow should work well as it represents a proposed condition river flow of approximately 23,561 cfs that is above the 5% exceedance value.	Comment noted. Calibration data were collected across as wide a flow range as possible under the field conditions during 2023 when data were collected to calibrate the 2D model.
55	NMFS	Fish Passage Study, Table 4-5	Table 4-5 shows that over 50% of the production runs are outside the calibration. As mentioned, the high flows are not concerning under the proposed conditions. However, there would be a lot more confidence in the lower production runs if the low calibration flow was less.	Comment noted. The Cooperative collected as wide a range of calibration data as was possible in 2023, and completed sensitivity testing to ensure that modeled data outside the calibration range for Manning's n roughness, turbulence parameters, and energy grade slope at the downstream boundary condition. Section 4.1.7.2 of Attachment B describes the results of the sensitivity analysis for these parameters, along with the model development team's determination that even at flows below the calibration range, the model results for velocity do not vary by more than 1 ft/s and WSE by not more than 0.6 ft, which indicate that the model is not unsuitable for representing conditions outside of the calibration range.
56	NMFS	Fish Passage Study, Figures 4-9 and 4-10	Figure 4-9 and 4-10 are illegible.	The figures that display in the published version appear legible to the Cooperative.
57	NMFS	Fish Passage Study, Table 4-7	Were the Manning's coefficients adjusted based on water level? Relative roughness is important for rapids and other turbulent environments.	A described in Section 4.1.7.1 Model Calibration (Attachment B), Manning's n roughness was the primary tool used for model calibration as manning's n is expected to increase in conditions of hydraulic roughness, especially under low-flow conditions.
58	NMFS	Fish Passage Study, Figure 4-15	Why is the Manning's n in Zone 1 so different than Zone 3? The channel morphology and substrate are the same. In the falls, the outer bend has a higher n value than the main channel and the inner bend has a lower n value than the main channel. This likely doesn't have anything to do with roughness differences, but rather is a reflection of the centrifugal force acting on the water as it flows around the bend in the falls.	The channel morphology and substrate were not observed to be the same between Zone 1 and Zone 3. Zone 1 contains large, angular substrate, heavy macrophyte growth, areas of accumulated organic debris and mud, and slow, laminar flow and no turbulence upstream of the Falls reach (Zone 2) crest. Zone 3 contains smooth rounded boulders, cobble, gravel, and sand, shallower channel, swifter flow and surface turbulence from near-surface boulders, etc., Therefore, the Manning's n roughness for Zone 3 was more similar to the Falls Reach (Zone 2) than Zone1.
59	NMFS	Fish Passage Study, Section 4.1.6.6	Upstream and downstream rating curves would be better boundary conditions, if the data are available.	Comment noted. We feel confident with the analysis that was conducted.
60	NMFS	Fish Passage Study, Section 4.1.7.1	Model development involves calibration flows where the modeler turns the dials of the model to match measured conditions. However, a modeler should validate a calibrated model by simulating a different flow/s and comparing the output with measured data. Did the modeler do this? The report states, "Under these low-flow conditions, Manning's n would be expected to increase because of increased hydraulic roughness; however, this was expected to have a minor effect in the Falls Reach." Why? My understanding of natural channel hydraulics is that at lower water depths, the relative roughness increases dramatically, particularly if the roughness elements are no longer submerged (Yadav et al. 2022).	Yes, the model was calibrated by comparing measured Water Surface Elevation (WSE) at 11 sites across the Project Area to the modeled results for WSE at those sites, and adjustments were made to model parameters to improve the model's performance. The Falls Reach (Zone 2)has considerable roughness across the flow ranges observed and modeled within the Falls Reach.
61	NMFS	Fish Passage Study, Section 4.1.7.2	We appreciate the sensitivity analysis for better understanding the flows outside of the calibration range, particularly at the low end as they are the most germane to the proposed development. However, why was the sensitivity analysis conducted with the sensitivity analysis with flows of 19,900 cfs and 12,000 cfs? The	Sensitivity flow selection was made during discussions with the ARWG, and analysis was completed for two flows of interest for which

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			low calibration flow was 7,479 cfs. If the flows of interest that we need to understand are on the low end, it makes more sense to do the sensitivity exercise at the low end of the calibrated flows. Tweaking of the Mannings n at high flows ±20% is not going to be reflective of low flows in the falls reach. We do not have a good handle on the low flows outside of the calibrated range and these flow conditions are important for the proposed development.	calibration data were available and for which surveyed WSE data were available.
62	NMFS	Fish Passage Study, Section 4.2.4	Five of the thirteen flow scenarios are outside the calibration range making validation tenuous. Two of the six inflection flows are outside the calibration range. In addition, the majority of the real fish telemetry data passed at the high end of the flow range with increased variability in transit rate at higher flows making validation for agent fish at low flows tenuous as well.	Comment noted. The WSE data used to calibrate the model were collected to dover as wide a range of conditions in the assigned study year (2023) as possible. The sensitivity analysis completed to test the model's ability to predict WSE outside of the measured range indicates that while there is likely some error in predicting WSE both at high and low flows outside of the range of calibration data, the errors are within 1 fps/ 0.6ft (low flow) and 0.8 fps/ 0.8 ft, and the model is still a productive tool for understanding how the hydraulic conditions in the Falls Reach may change under varying input discharges from the Nuyakuk River.
63	NMFS	Fish Passage Study, Section 5.2	How many real fish in each of the flow bins passed the falls in 6 hours? How realistic is it to limit the passage time for agent fish? Can you clarify this statement: "Modeled passage success rate and passage timing for the 6-hour time limit were calculated as a percentage change in each variable for flows relative to the observed range of baseline flows at which Sockeye and Chinook salmon encountered and passed the Falls Reach during the 2-year study." Please explain and consider rewording.	As noted in the USR, the ABM was initially parameterized to run for 6 hours. After comparison on the results of the 6-hour runs against the telemetry data, it was clear that 6 hours was insufficient to represent real fish and the model was therefore adjusted to be run for significantly longer. However, the model is computationally complex and it was not possible to allow modeled fish unlimited time (as real fish have) to ascend the Falls or not. Therefore, results of the ABM are caveated with the statement that results are time-limited.
64	NMFS	Fish Passage Study, Section 5.2.1	Were the entry points (i.e., chutes) to the falls reach a velocity barrier, leaping barrier, or depth barrier? Does this partial/full barrier change with flow condition? In Figure 5-4 & 5-5, the confidence intervals derive from three simulations, which seems to be a small sample size for confidence estimates.	The ABM does not provide results in terms of what type of barrier or behavior (i.e, schooling) results in transition from one state to another, though species specific limitations (i.e., velocity, leaping, depth) were parameterized in the model computations. We considered three iterations to be sufficient considering that each iteration represented 100 agents, and iterations were modeled separately for fish that were "released" on the left bank vs. the right bank.
65	NMFS	Fish Passage Study, Section 5.2.2	Based on Figures 5-1, 5-2 and 5-3, the center channel velocity decrease dramatically, so what is causing the poor performance in the agents at extremely low flows like 1 kcfs and 3 kcfs? Did the agents switch routes mid-transit as the real fish did during the telemetry study? In Table 5-2, it would be useful to know what attributes(depth, velocity, or leaping) are causing the compromised, restricted, and inaccessible routes.	As noted above, the ABM produces 'results' as behavior of study fish, not a record of why the compilation of cues, con-specific interactions, fatigue, or physical conditions resulted in a specific movement pattern. Further review of results of the 2D hydraulic model results for these locations may provide the requested information on why certain routes became less-frequently-selected than others as lower flows.
66	NMFS	Fish Passage Study, Figure 5-12	During emigration, increases in flow decrease the amount of preferable habitat while less flow produces more preferable habitat in the falls. Yet, with less flow in the falls, predation success would increase and the potential for impact on substrate or fluid shear forces would increase. At high flows, do the fish just emigrate as relatively passive particles or are they actively seeking and using habitat during migration?	There is likely a species-specifc answer to this question. Observations by others indicate that some weak-swimming fry migrants (Pink Salmon, Ocean-type Sockeye, etc.) migrate passively while others orient themselves with the flow. There is a write up on these tendencies in the Sonar Study appendix to the Fish Community Study.
67	NMFS	Fish Passage Study, Section 7.1	As you may ascertain from previous comments, we do not agree with the conclusion in the first bullet. Flows less than the low calibration flow are important and we propose doing the sensitivity analysis with the low flows, not the high flows. We do not agree with the conclusion that the lack of calibration at low flows does not affect the use of the model to support the IRA.	Comment noted.
68	NMFS	Entrainment and Impingement Study, Section 1.2	Last sentence first paragraph. Another factor that affects fish entrainment is habitat preference and usage.	The Cooperative appreciates the comment.
69	NMFS	Entrainment and Impingement Study	The citation (Laoi 2006) is Liao (2006), which is also not in the list of references.	The Cooperative appreciates the comment.
70	NMFS	Entrainment and Impingement Study	Trash racks (or equivalent) will likely deter fish from entrainment; however, the1-inch spacing suggested by USFWS (2019) does not effectively protect Atlantic salmon smolts from entrainment unless the rack	The Cooperative appreciates the comment. As engineering design progresses from conceptual/ theoretical design into 30%/60%/90%

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			structure creates sweeping velocities that lead to effective bypass entrances. In addition, sockeye salmon smolts are generally smaller than Atlantic salmon smolts. Please reference design criteria and guidance from NMFS (2022)as that document is specific to the salmon species pertinent to this proposed Project.	design, there will be further opportunities to address fish passage and exclusion guidance from NMFS and other entities.
71	NMFS	Entrainment and Impingement Study	For entrained fish, injury can result from mechanical forces (e.g., impact, grinding, scraping), shear forces (compression, stretching, contortion), and barotrauma. Though barotrauma is typically more of an issue at high head facilities, using computational fluid dynamic (CFD) tools, modelers recently have estimated that pressure gradients at low head projects may create unacceptable stressors, particularly for juvenile life stages that are more susceptible to barotrauma (Brown et al. 2014) and hydraulic strain (Navarro et al. 2019). During the design process of the facility components, the Cooperative must analyze and account for each of these injury risks. Assuming the majority of injury occurs proximal to the runner from mechanical forces may result in detrimental effects to the fishery and costly retrofits later on in the design life of the proposed Project. We urge the Cooperative to use all the tools available to design the safest conveyance possible for entrained fish. The Department of Energy has developed tools (Biological Performance Assessment Toolset and the Hydropower Biological Evaluation Toolset) to execute fish friendlier design; please take advantage. Thankfully, we now have engineers working on hydropower facilities with fish safety in mind. There is no doubt this proposed Project will entrain juvenile fish; we need to do the best we can to avoid any population level effects to the fishery resource.	The Cooperative appreciates the comment and will consider the tools recommended. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.
72	NMFS	Entrainment and Impingement Study, Figure 3-2	Minimum intake depth is 14.2 feet. Maximum intake depth is 24.2 feet. This may allow for a skimmer wall incorporated into the intake that helps prevent entrainment as emigrating smolts that are typically in the top 6 feet of the water column (see Figure 5-2). When fish are near the intake (during migration or seasonal habitat use), use flow duration curves (or equivalent) to estimate the how the hydraulics in front of the intake will change with flow conditions. That way we can have a likelihood of impingement or entrainment risk based on operating and flow conditions. In addition, the upstream and downstream termini of the rack design should create smooth transitions such that debris does not accumulate or ineffective flow areas develop that inhibit fish movement.	The Cooperative appreciates the comment and will consider the skimmer method recommended. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.
73	NMFS	Entrainment and Impingement Study, Section 4.1	Please rephrase the following, "The population impacted by mortality impact (N) is given with N = E**m." Recommend stating the number of sockeye smolt individuals affected by the Project is the product of the total abundance, the entrainment rate, and the mortality rate. As documented on other river systems, latent affects do occur for fish that pass through powerhouses. We recommend evaluating this with the life cycle models (LCMs) in development.	The Cooperative appreciates the comment.
74	NMFS	Entrainment and Impingement Study, Section 4.1.1	What makes this exceedingly difficult is determining the zone of diversion under multiple operating/flow conditions and characterizing the behavior of the emigrating fish a priori. We recommend using the LCMs to do a sensitivity analysis on these probabilities.	Comment noted.
75	NMFS	Entrainment and Impingement Study, Section 4.1.2	With one year of data, it is hard to know if this spatial pattern is consistent across years and operating/flow conditions.	Two years of smolt distribution data were used, and the data selected for inclusion represents both intense and sparse migratory events. These selections were made to provide the most diversity of data included as possible.
76	NMFS	Entrainment and Impingement Study, Section 4.1.3	As stated, the two-dimensional model uses a depth averaged velocity that rectifies the Cartesian velocity vectors. The zone of influence of the intake is a three-dimensional issue, which requires discriminating between the sweeping and approach velocity vectors on the face of the intake rack. That said, as shown in Figure 4-1, the "zone of diversion" looks conservative for this preliminary analysis.	The Cooperative appreciates the comment. It is expected that future design phases will include development of 3-dimensional tools to evaluate and estimate the diversion zone.
77	NMFS	Entrainment and Impingement Study, Section 4.1.4	For entrained fish, mortality can result from mechanical forces (e.g., impact, grinding, scraping), shear forces (compression, stretching, contortion), and barotrauma. The mortality may be instantaneous or delayed.	The Cooperative appreciates the comment.
78	NMFS	Entrainment and Impingement Study, Section 4.1.5	The conclusion that fish entrainment will occur if the interorbital width is less than the rack clear space; not considering swimming performance is ignoring the behavioral component. The behavior of the fish is the enigma of this analysis. We just do not know whether a fish will prefer to stay in the bulk flow of the river and proceed downstream through the falls or if the fish will prefer to interact with the intake rack and potential entrainment. Because the proposal includes a tailrace barrier with 1-inch spaced profile bars, then the intake rack clear spacing cannot exceed one inch. A 6-inch spaced intake rack is not allowable with a 1-inch clear space tailrace barrier.	The Cooperative appreciates the comment. The rack spacing for the intake and tailrace will match.

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79	NMFS	Entrainment and Impingement Study, Section 4.1.6	Though the assumption regarding limited risk of barotrauma may be valid, this will need to analyzed further using CFD and biological response models during the design process. Please refer to the DOE report by Pflugrath et al. (2020) to review the methodology. Brown et al. (2012) developed response models for Chinook salmon. To my knowledge, models are unavailable for sockeye salmon, but Beirão et al. (2021) developed models for Kokonee, which may be a suitable surrogate.	The Cooperative appreciates the comment. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.
80	NMFS	Entrainment and Impingement Study, Section 4.1.7	Please provide further analysis on other powerhouse components regarding risk of injury and mortality during fish entrainment. A fish friendlier runner design is imperative, but there are other potential stressors and risks during passage through a powerhouse. Hou et al. (2018) determined that at some facilities the risk of mechanical injury was higher near the wicket gate region than the runner region. Though We have worked regularly with horizontal, axial, bulb-style Kaplan turbines, but are much less familiar with the pit-style, so will have many questions regarding the flow path, flow characteristics, flow topology, and risk of mechanical injury from structural components, stay vanes, and wicket gates during the design process.	The Cooperative appreciates the comment. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.
81	NMFS	Entrainment and Impingement Study, Section 4.2.2	Shear stress are fluid forces acting on the body of a fish, not physical abrasion, which is mechanical injury. A recent review by Cox et al. (2023) provides good explanations of these potential stressors.	The Cooperative appreciates the comment.
82	NMFS	Entrainment and Impingement Study, Figures 5-3 to 5-6	The velocity scale should be between 0 and 2 m/s in increments of 0.25 m/s to be more visually informative. No simulated velocities are above 1.88 m/s near the intake.	The Cooperative appreciates the comment.
83	NMFS	Entrainment and Impingement Study, Table 5-1	Based on the FDC, river flow less than or equal to 5,000 cfs does not occur during the smolt emigration period of mid-May to mid-July. Was the purpose of including such low flows to cover the potential climate change affects in the region?	The purpose of including all 2-D modeled flows was to provide the full range of potential effect, whether those conditions are likely in the region or not. Climate change does present that possibility of an altered hydrograph in the future, as do potential extreme situations such as drought or flood years.
84	NMFS	Entrainment and Impingement Study, Section 5.1.1.3	We do not recommend 1-inch clear spacing for bar racks in NMFS (2022). In the Columbia River Federal Hydropower System, we have partial screens on the hydropower intakes that meet our screening guidelines of 3/32-inch square or punch plate opening or 1/16-inch profile bar opening. This may be an option for this proposed facility on a seasonal basis, but will be problematic during the winter due to frazil ice.	The Cooperative appreciates the comment.
85	NMFS	Entrainment and Impingement Study, Section 5.1.1.4	The literature derived critical swim speed (CSS) is 0.6-0.65 m/s or 0.5-0.65 m/s; the text and Figure 5-8 do not match. CSS is a function of temperature. Use the CSS values that are relative to the temperatures expected during emigration. A juvenile sockeye may be able to perform at a CSS of 0.65 m/s at 20°C, but that will not be the temperature during emigration. Eventually, the intake will need to be evaluated using three-dimensional CFD models to meet design criteria. For example, the eddy formation at 12,000 cfs is concerning as is ensuring uniform draw across the intake.	The Cooperative appreciates the comment. Temperature at time of passage was not considered in the analysis other than for selecting lab-derived swim speeds at temperatures closest to Nuyakuk conditions when available.
86	NMFS	Entrainment and Impingement Study, Section 5.1.2	This is a rose-colored view of the proposed project. The project may be able to get there, but there needs to be a lot of design work to actualize these high survival rates of entrained fish. The Alden runner is at the scaled prototype phase and we are unsure if it is applicable to a horizontal, axial orientation: whereas there is multiple full-scale installations of the minimum gap runner (MGR) though we are unsure if any of those are horizontal orientations. In addition, the runner is only one component of the internal workings of the proposed project that may lead to injury and mortality.	The Cooperative appreciates the comment. The engineering design in at a conceptual stage, and there is absolutely future significant work to be done to select, design, and configuring a turbine system for the proposed Nuyakuk Hydro project.
87	NMFS	Entrainment and Impingement Study, Section 5.1.3	The analysis is conservative with entrainment rate, but liberal with entrainment survival. Please refer to the data from the Columbia system for real estimates of MGR survival (Skalski et al. 2021). The Alden runner has not shown any survival rates, as a full-scale deployment does not exist (i.e., survival rates are model estimates, not empirical data). The proposed project cannot have 6-inch spaced bar rack at the intake if there is a tailrace barrier that meets our criteria. The effects analysis for the proposed project cannot assume no barotrauma effects of other modes of injury during powerhouse passage.	The Cooperative appreciates the comment
88	NMFS	Entrainment and Impingement Study, Section 5.2	A 6-inch clear space will not work, but it is nice to see that a 1-inch clear space bar rack will physically exclude all of the target species adults.	The Cooperative appreciates the comment

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89	NMFS	Entrainment and Impingement Study, Section 5.2.1	The sockeye salmon fry (among other species) are likely too sensitive to survive passage through the powerhouse resulting in extirpation of nest builders proximal to the intake. GLOBAL - The Project does not "create barometric pressure change"; rather it produces rapid changes in hydraulic pressure that can injure or kill fish during passage. Our goal is to have a thriving population of sockeye salmon, not just sustainable.	The Cooperative appreciates the comment
90	NMFS	Entrainment and Impingement Study, Section 5.2.2	Like sockeye, Chinook fry are likely too fragile to survive turbine passage. GLOBAL - The critical swim speed (CSS) values from Katopodis and Gervais (2016) have high variance because the data comes from a variety of sources and methodologies. We recommend using CSS values that are relative to the likely environmental conditions during emigration. However, at the end of the day, Chinook are not going to be the limiting species when it comes to CSS.	The Cooperative appreciates the comment
91	NMFS	Entrainment and Impingement Study, Section 5.2.3	Though Coho are in low numbers lowering the likelihood of Project impacts the potential for population level effect increases because of lower abundance.	The Cooperative appreciates the comment
92	NMFS	Entrainment and Impingement Study, Section 5.2.4	Pink salmon are of concern due to their life history characteristics. Small fish, though less likely to be struck by a moving turbine blade are much more susceptible to fluid shear forces and barotrauma impacts.	The Cooperative appreciates the comment
93	NMFS	Entrainment and Impingement Study, Section 6	The 6-inch spaced bar racks at the intake are not allowable. 0.55-1.1%entrainment mortality rate is not the "worse-case scenario".	The Cooperative appreciates the comment
94	NMFS	Entrainment and Impingement Study, References	Alex Haro's paper from 1998 has a duplicate in the references. Natel Energy is cited but their technology is not discussed in the report.	Noted.
95	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 1.0	It's unclear how the range of a single unit is 600 cfs to 3,000 cfs, yet the assumed range of flows existing in the tailrace are 429 cfs to 6,000 cfs. The description in the second paragraph is confusing; please provide a clear proposed operation in your draft license application.	The operating range at peak efficiency ranges from 600 to 3,000 cfs, however the turbine may operate at flows down to approximately 300 cfs. This section will be revised to improve clarity on the operations of the project.
96	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Figure 1-2	The proposed project seems optimized at the low range, but seems overdesigned at the high range of the annual hydrograph. Why design a turbine to 6,000 cfs when it is unlikely that the diverted flow will exceed 5,000 cfs? Does this have something to do with maximum efficiency?	Historical river flows exceeding 20,000 cfs happen approximately 8% of the period of record, which would allow bypass up to approximately 6,000 cfs. The operating point was chosen to maximize energy generation from the facility based on the existing hydrograph.
97	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 1.1	We understand the reasoning behind moving the tailrace barrier downstream from the South Eddy, however, it does create the risk that the fish will be delayed at two locations instead of just at the South Eddy where we know they may hold station for hours to a few days. Is part of the concern that the additional flow may attract fish to the South Eddy from the North Eddy where immigrating fish are more successful at initiating their falls ascent at certain river flows? Because the flow emanating from tailrace diffuser is less than one foot per second (fps), we question whether that will result in much of a near-field false attraction from the existing right and center chutes where jets of water produce a clear hydraulic cue for fish to swim upstream? Under barrier dimensions, the stated criteria of 2 feet minimum depth is for picket barriers. We do not have a listed minimum submergence depth for tailrace diffusers (NMFS 2022), though the full depth of the diffuser panel must be submerged under all operating conditions. The final design of the tailrace barrier will need to balance the length with the depth. Excessively long tailrace barriers may elicit unwarranted delay, whereas excessively deep tailrace barriers may struggle to maintain uniform flow distribution. The proposed clear spacing of the diffuser will be fine for adult salmonid species, but that clear spacing will not exclude arctic lamprey.	The Cooperative appreciates the comment The tailrace was relocated for several reasons including: 1. The complexity of hydraulics at the South Eddy 2. The proximity and potential influence on the Portage Trail 3. Potential for altering hydraulics in a critical resting location 4. Affect on recreational use of the South Edy.
98	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 3.0	A 500-foot-long by 12-foot-deep tailrace diffuser equals 6,000 square feet of diffuser area without compensating for any structural members that result in an average velocity of exactly 1 fps. During the design, please consider the effect of structural members. In addition, if the design depth is 12 feet, then that must remain submerged at the low design flow.	The design will consider velocities through the bars and structural support elements. The depth of the structure considers the minimum river flows for adequate submergence. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.

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99	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 4.1	The proposed maximum hydraulic capacity is 6,000 cfs, why then is 5,400 cfs a "worst case scenario"? In addition, at lower flows the top of the diffuser panel must remain submerged. Once the three-dimensional model is available for the proposed project, a few flows (e.g., high design flow, low design flow, quartiles) covering the full range of proposed operating conditions will need evaluating. The limitation of the two-dimensional model precludes us from understanding the potential effect of false attraction at the tailrace barrier. Uniform flow distribution is likely the most important design criterion and the existing two-dimensional model is set up to ensure a uniform flow distribution, so we are actually not evaluating what might occur at the tailrace of the proposed Project. What happens if the final design does not meet the uniform flow distribution criterion? We are essentially assuming that the final design meets this criterion for this evaluation, which is problematic.	This section will be updated to show the maximum hydraulic capacity of the units (6,000 cfs). The final design will undergo detailed 3D hydraulic modeling and/or physical modeling to validate the assumptions used in the study.
100	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 4.3	The spatial distribution of the immigrating fish may not remain the same under the proposed condition with additional flow on river right.	The Cooperative appreciates the comment
101	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 5.1	At less than station capacity, the proposed operating conditions for the turbines will have effects on the hydraulic characteristic at the tailrace diffuser even if the average velocity is less than 1 fps. For example, at a particular river flow, Turbine A may be operating at maximum efficiency and Turbine B may be operating at 40% load. This will result in complex hydraulics at the tailrace diffuser. We understand it is early in the development process, but these operating conditions will need evaluating. Please explain the following sentence. "The gradient of the river is sufficiently steep that the predicted water surface elevation at the upstream edge of the proposed barrier location was higher than at the downstream edge such that the model simulated velocities faster than 1 ft/s coming through the upstream half of the barrier." If the tailrace barrier floor is level and the water is deeper on the upstream side, why would the velocity be higher at the upstream end under a uniform flow distribution condition?	Detailed hydraulic modeling will be performed to understand velocities at various operating conditions. The sentence regarding the river gradient explains how to boundary was set up in the model. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place.
102	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Figure 5-1	If the water surface elevation (WSE) is 266 feet at the low design flow, then the floor of a 12-foot-deep tailrace diffuser will be 254 feet, not 260 feet, to meet our design criteria.	The depth of water within the tailrace is only 6 feet at minimum flow
103	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Figures 5-2 and 5-3	Both of these figures suggest that the risk of extensive delay (i.e., false attraction) is low. However, the analysis is evaluating only one operating condition with assumed uniform distribution of flow.	Detailed hydraulic modeling will be performed to understand velocities at various operating conditions
104	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Figures 5-4, 5-5, and 5-6	All of these figures bode well for minimal migration delay because bins 18 and 19 are relatively unused. However, the schooling behavior of immigrating fish may cause interception of more of those fish and the additional flow on river right may change the spatial distribution of the approaching fish from existing conditions. Good to see that none of the simulated sockeye shifted from river left to river right.	The Cooperative appreciates the comment
105	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Figure 5-8	July 6, 2024 represents a day with river flow over 22,000 cfs, so we have one data point for that particular condition during that particular year class. Better than nothing, but hardly a comprehensive understanding of the spatial distribution of approaching fish.	The Cooperative appreciates the comment
106	NMFS	Assessment of False Attraction at the Tailrace Fish Barrier, Section 6.0	Under bullet four, as mentioned previously, we are not convinced that the proposed tailrace diffuser "obviates" any risks of migratory delay. I do agree that if the tailrace diffuser is designed appropriately, it will likely result in minimal delay.	The Cooperative appreciates the comment
107	NMFS	Sockeye and Chinook Life Cycle Models	As an FYI, Hendrix et al. (2024) have updated their LCM for the Sacramento River.	Noted
108	NMFS	Integrated Risk Assessment Study, Table 5-1	Under "Operation of a Hydroelectric Project", the risk element "Tailrace outfall/predation" is narrow in focus. I recommend expanding that to ecological effects including altered predator/prey dynamics and other trophic interactions. Hydroelectric facility facilitated predation is established in the literature (Blackwell and Juanes 1998,Evans et al. 2022) throughout the zone of influence of a project by multiple types of predators.	The Risk Elements were nominated, brainstormed, revised, and finalized by participating members of the ARWG in December of 2023 and January of 2024 and cannot be revised at this point.

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			In addition, hydroelectric facilities may affect lower trophic levels, such as macroinvertebrate communities (Kuriqi et al. 2021).	
109	NMFS	Integrated Risk Assessment Study, Section 5.3	The conclusions from many of the studies conducted so far may be underestimating the risk. Particularly for entrainment/impingement effects, migratory delay effects, and trophic interaction effects, some sensitivity analyses may be necessary to provide in the integrated risk assessment.	The IRA was intended to identify risks that will be considered as engineering design goes forward and the Cooperative decides whether to pursue a license application.
110	NMFS	Ice Processes Assessment, Section 5.2	How does the 2023-2024 winter compare to other winters? Was it mild, cold, wet, dry? Please put the year of site data into context. In addition, glad to hear that there is no evidence of localized ice jams near the proposed intake. How might that change with a 30% diversion of river flow?	Based on historical King Salmon Airport weather station data provided at: https://www.weather.gov/wrh/Climate?wfo=afc, the winter of 2023-2024 would be best described as normal, but variable. Daily data fluctuated around the normal temperature range with sustained periods (i.e. several days) above or below historical norms. Precipitation data was also variable, with daily accumulated precipitation values slightly below normal to normal from November to mid-February. From mid-February to the end of April, daily accumulated precipitation values remain above normal. This is primarily due to a wet February of 2024 in which the monthly precipitation total (3.28 inches) is the highest recorded for the 2000-2024 period of record. Overall, the November 1, 2023-April 30, 2024 period would be classified as slightly above normal, with a monthly precipitation average of 1.5 inches vs. 1.2 inches for the 25-year period of record. A 30% flow reduction downstream of the intake structure is not expected to increase the potential for ice jam formations. The current intake design allows for bypass flows to sweep past the intake, with no obstructions to river conveyance. During the winter operational period, river discharge is expected to range from 6,500 to 1,800 cfs. At these flow ranges, a 30% flow reduction will lead to river stages decreasing by 2.2 inches (1,800 cfs) to 4.3 inches (6,500 cfs). This slight decrease in water levels downstream of the intake should not impact river connectivity and movement of ice floes.
111	NMFS	Ice Processes Assessment, Section 5.3	What nexus is there between frazil ice at Igiugig 20% of the time and the environmental assessment (EA) of the Federal Energy Regulatory Commission? Why would the EA include enhancement/mitigation measures for frazil ice? The Tazimina Falls hydroelectric facility provides valuable lessons for the proposed Project. How similar are the current operations of the Tazimina Falls to the proposed Project? For example – Are the intake depths similar? Are the hydraulic capacities similar? Does the Page 11 of 12 diversion dam at Tazimini Falls contribute to the formation of the ice jams? Presumably, the proposed Project will include a supervisory control and data acquisition system that measures differential and temperature. Is the Cooperative considering a heated rack system? How might a heated rack affect species spatial distribution? May it increase species interaction with the rack in the winter and potentially cause increased entrainment or impingement?	No nexus is suggested. As stated in the opening sentence of Section 5.3… "The Susitna River and Kvichak River [Iguigig Project] icing studies provided technical information directly observed within their river systems, but their respective findings are not applicable to the proposed Nuyakuk Project." The FERC EA typically analyzes the effects of project operation and recommends conditions for a license. These conditions may be additional FERC measures not required by resource agencies. The EA statement was included to emphasize that regional energy development projects have been approved by FERC in river systems that are impacted by frazil ice. The projects both operate in a run-of-river mode. The scale of these two Projects is different. Tazimina Falls is currently operating at a hydraulic capacity of 100 cfs with an intake structure that is approximately 26 feet wide with a depth of 10 feet. The Nuyakuk Project is being proposed with a hydraulic capacity of 2,970 cfs with an intake structure that is 170 foot wide by 18 foot deep. At Tazimina Falls, the sill blocks maintain intake water depths at ~10 feet year-round, whereas intake water depths at the proposed Nuyakuk Project would range from about 18 feet during

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				peak summer flows down to about 14.5 feet in the winter low-flow period. Based on a discussion with the Tazimina Falls GM, naturally occurring river and weather dynamics are the primary cause of ice jams within the river system and can lead to Project shutdowns due to a blocked intake. According to the GM, the diversion sill blocks do not create ice jams at the intake, however, they are likely to delay the ability of the river to clear away these ice accumulations when a warming trend occurs and other parts of the river are opening up nearby. NMFS is correct that a SCADA system would be installed and includes the monitoring of water temperature, air temperature, and pressure differentials across the trash rack intake. More research will need to occur before the Cooperative commits to the installation of heated trash racks. Other methods, such as mechanical removal, are also viable options to deter frazil ice accumulation on the intake structure. Should a heated trash rack be installed, the heat source will be the circulation of warm water (50°F) within the trash rack frame. It is notable that the trash racks are only heated when there is the threat or detection of frazil ice formation via differential pressure measurements, they will not be on 24/7 for the entire winter operational season. Therefore, it is not expected that the intermittent warming of the trash racks would create a large field or pocket of warm water to attract the nearby fish population.
112	NMFS	Ice Processes Assessment, Section 6.0	How was it determined that frazil ice was infrequent during the 2023/24 winter? Though the proposed Project will benefit from the rapids at the outlet of Tikchik Lake, we do not recommend relying on that to prevent devastating ice floes once the Project is online. In particular if the winter become milder and wetter, catastrophic ice break up may occur more frequently from Tikchik Lake.	Based on the site-specific photogrammetry, there was one observation of a potential small frazil ice floe (February 26), typically seen as a slushy-snow slurry, neutrally buoyant within the water column. In addition, the two observations of anchor ice in late January and February indicate that frazil ice crystals had formed within the water column and began adhering to the riverbed. Therefore, these two short duration periods qualitatively represent an infrequent occurrence given the total observation timeframe of 6 months (November 1, 2023-April 30, 2024). The Cooperative appreciates NMFS comments in regard to the rapids upstream of the proposed Project site and ice floes.
113	NMFS	Ice Processes Assessment, Appendices	In Image 08 as an example, it looks like anchor ice can form throughout the Project area both upstream and downstream of the proposed hydroelectric facilities, however the bulk of the anchor ice does seem to form within the Falls reach, as anticipated. Based on the air temperature data, it looks like the winter of 2023/24 was mild resulting in only a brief period of significant ice cover.	Comment noted. However, the resolution of the satellite imagery is not fine enough to clearly distinguish anchor ice from surface ice or snow.
114	NMFS	Conclusion	It is clear to us that the Cooperative values their fisheries resource and strives to make the best possible decision concerning this potential hydroelectric development. The Cooperative overcame significant difficulties and cost to produce the data for the studies under adverse conditions at a remote location. We urge the Cooperative to view our comments as constructive and use them to prepare the best possible draft license application. Our biggest concern with the execution of the studies is that we do not have high confidence in the analyses that relied on the uncalibrated low flows (that will become more frequent with the 30% diversion) in the two-dimensional hydraulic model. The study analyses would be better if the Cooperative collected more data (e.g., WSEL, ADCP transects) at the lower flows. Additionally, our biggest concern regarding the potential population-level effects involves impingement and entrainment injury as well as mortality. The proposed Project will entrain fish, so the design of the hydroelectric facility must be	The Cooperative appreciates the comment.

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			as fish friendly as possible. We now have methods to accomplish this and minimize the impact on fish populations.	
115	Bristol Bay Native Association (BBNA)	Subsistence Study	To begin, I would like to reference the Bristol Bay Native Association Policy Guidelines for Research in Bristol Bay. "The Bristol Bay Native Association (BBNA) is a service agency dedicated to the betterment of the Native People of the Bristol Bay region…Alaska Natives in Bristol Bay share with the scientific community an interest in learning more about the history and culture of our societies. The best scientific and ethical standards are obtained when Alaska Natives are directly involved in research conducted in our communities and in studies where the findings have a direct impact on Native populations." The Alaska Federation of Natives (AFN) Guidelines for Research, and similarly, BBNA Policy Guidelines for Research in Bristol Bay were provided to the Nushagak Electric and Telephone Cooperative (NETC) early and consistently throughout the ILP process. Additionally, the New Koliganek Village Council submitted resolution 24-07 to FERC on March 29, 2024, which outlined conditions for conducting research to reinforce their right to acknowledge, review and approve any data collected from the Tribal citizens in their community. These statements are meant to ensure that our communities are directly involved and supportive of any research which may be representative of their way of life. We were encouraged to hear that the Tribal Councils' approval was obtained prior to the subsistence-themed workshops being held in the three communities. While good faith efforts were made by the sub-contractors of NETC, the decision to skip the 2023 study season and the delay in initiating the workshops in 2024 resulted in the inability to fully adhere to a number of these principles. They are a standard within the social science research community in Alaska and were outlined in the methodology section 4.4.1.7 in the Aug. 1, 2022 Revised Study Plan (RSP), which was then approved by FERC in the Aug. 24, 2022 Study Plan Determination.	To be clear, the Cooperative never committed to conducting the subsistence workshops in 2023. We did, in 2022/early 2023 indicate a proactive desire to complete the subsistence work in 2023, if possible. Due to modifications in the appropriate technical specialists to utilize, financial considerations, and the amount of other technical studies being conducted in other areas (fish, water quality, terrestrial, cultural and recreation) during 2023, a decision was made to conduct the subsistence analysis in 2024, during Year 2 of the study program. Further and of key note, a substantial and consistent level of effort was undertaken to consult and reach agreement with the village councils on appropriate timing for the respective workshops. Despite the proactivity in these efforts, a substantial amount of time passed without responses in general and/or ones that allowed the Cooperative to schedule the workshops. Additionally, all of the unacceptable times to conduct the workshops during the spring/summer/fall timeframe ultimately resulted in the need to conduct the workshops in October 2024 and include the final subsistence report later than the USR filing, in the addendum.
116	BBNA	Subsistence Study	These research guidelines may have been referenced by NETC. However, the workshop study methods were not identified in the table of the May 6, 2024 Supplemental Methods Summary. Nor were they identified in the workshop protocol emailed to the Cultural Working Group in September of 2024. This Supplemental Methods Summary document was referenced numerous times in response to concerns at the Initial Study Report (ISR) meetings. The basis of these concerns stemmed from the discrepancy in study timelines which had been published in the Proposed Study Plan (PSP) and in the RSP for public review and comment in 2022.	See responses to comment #115 with respect to subsistence study implementation timeline.
117	BBNA	Subsistence Study	As previously stated, the decision to delay the studies compressed the timeline, and the diminished study efforts resulted in less community involvement in the ILP process. In turn, this neglected to meaningfully incorporate the traditional knowledge and life experience of community members in other study designs as well. If the communities' collective knowledge was gathered early and referenced consistently throughout the ILP process, the other study categories and Technical Working Groups would have benefited immensely. Although the workshop attendee respondent's comments were holistic and very insightful, the ILP process would have benefitted from additional interviews, and systematic household surveys, as originally designed. Unfortunately, the project timeline left no opportunity to expand on the communities' collective knowledge and incorporate it into the other study categories. While the subsistence studies were scheduled to be conducted in 2023, which would then provide insight into year 2 studies, the workshops were the last report published. As example, traditional knowledge from interviewing key community respondents could inform study design when evaluating predation from bird populations which are seasonally present and abundant such as red-breasted merganser, harlequin, arctic tern, and numerous species of gull.	See responses to comment #115 with respect to subsistence study implementation timeline.
118	BBNA	Subsistence Study, Life Cycle Model	The Sockeye Life-cycle model (LCM) report highlights the potential range of impacts on salmon resources based on flow-to-survival outcomes, which includes predation by fish. The study may have benefitted from information gathered during systematic household surveys and with input from knowledgeable citizens of the six tribal communities. The example above may have been used in the LCM studies to inform and compliment the methodology, or at a minimum be used to corroborate and compliment study outcomes.	Comment noted. The subsistence workshops did document traditional knowledge and concerns regarding potential impacts to fish survival and passage and incorporated the traditional knowledge into the analysis of subsistence impacts.

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119	BBNA	Subsistence Study	With respect to the NOAA Fisheries Service (NOAA) and U.S. Dept. of the Interior (DOI) as interveners and with reference to the Bureau of Land Management May 4, 2018, letter to FERC, the comprehensive subsistence studies were not required solely to satisfy the requests by the affected communities and State agencies. They also serve as a significant source of information to each of the federal land management agencies tasked with conducting a review of impacts on subsistence users and resources. These assessments are conducted in accordance with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). Without documentation of the contemporary uses of subsistence resources, the federal agency reviews will be incomplete or significantly delayed. These considerations were explicitly identified during the January 15, 2025, USR review meeting but were either redacted or generalized and are not precisely conveyed in the meeting summary documents.	See the consultation record filed as part of this filing for further detail regarding all consultation associated with the subsistence study.
120	BBNA	Subsistence Study	To emphasize, the three workshops are in no way a substitute for the original studies approved by FERC in the 2022 Study Plan Determination. Variances to subsistence study methods were not acknowledged or developed by NETC during the 2023 ISR public review process. Nor were they published in the 2024 Methods Supplement Summary.	The Cooperative has filed, along with this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the agreements with the villages and modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024.
121	BBNA	General Comment	We are supportive of the efforts by NETC to investigate additional sources of energy. In advancing our regional future energy needs, we encourage NETC and other power companies to secure the necessary grant funding or direct appropriations to thoroughly study each of the research areas identified through these public processes. We hope to use this letter to better emphasize to FERC and our regional partners the value in incorporating traditional and experiential knowledge to better inform, compliment, and corroborate the myriad of future research efforts within our communities.	Comment noted.
122	Portage Creek Village Council	General Comment	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands, we believe it to have significant potential impacts on local resources and our communities. After reviewing the publicly available materials it is clear the ongoing Integrated Licensing Process and associated studies are most technical. The USR is not easily understandable by many community members, including me, who are not educated in western science. Knowing this, the least the Cooperative can do is provide understandable material and conduct in person meetings so that those closest to the project can understand the risks and potential impact of the project. With respect to the specifics of the Updated Study Report, we are: (1) disappointed by the excuses/obstacles for meaningful Tribal and public engagement in the licensing process. (2) Our Tribe is disappointed by the delayed Subsistence and Integrated Risk Assessment study reports. (3) the most incomplete Cultural Resources Study Report.	Comment noted. FERC granted an extension of time for review of the subsistence and IRA report. A portion of the delay with respect to the former was the result of a substantial amount of time passing without community responses in general and/or ones that allowed the Cooperative to schedule the workshops. Additionally, all of the unacceptable times to conduct the workshops during the spring/summer/fall timeframe ultimately resulted in the need to conduct the workshops in October 2024 and include the final subsistence report later than the USR filing, in the addendum. Finally, the Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
123	Portage Creek Village Council	Review and Comment Periods	Allowing 30 days to review the delayed reports and provide comment is insufficient as these critical studies directly relate to our traditional and subsistence ways of life. A traditional fact, some villages have Traditional Chief and Orthodox priest. When a village activity is going to happen they would go through the hierarchy for approval. The Chief and Priest would confer to make sure it doesn't conflict with religious holidays and then approve. Most Chief's first language is Yupik. So this activity would have to be explained in his language so that he fully understands the situation before approval. This process hasn't happened	Comment noted.

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			because the USR information is too technical and would take more time than provided in the comment period.	
124	Portage Creek Village Council	Tribal Consultation and Public Engagement	The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. These report elements are critical to local understanding of the proposed project's impacts. As an example, in a meeting with Matt Cutlip a question was addressed to him: In reading the material from the Nuyakuk Project, if he had an understanding of each communities traditional ways of life? Koliganek and New Stuyahok are mostly Orthodox Christians. Orthodoxy has existed in Alaska for 200-250 years and without fail on January 19th the river waters are blessed every single year! Mr. Cutlip was not aware of this fact. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Historic places should inform the design and selection of the route alternatives	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
125	Portage Creek Village Council	Life Cycle Model	Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding of the risks of this project.	Comment noted.
126	Portage Creek Village Council	General Comment	We recognize and live with the high cost of energy and applaud Nushagaks' attempt to alleviate this problem. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project.	Comment noted.
127	Portage Creek Village Council	Tribal Consultation and Public Engagement	Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. Specifically, the delay of the subsistence and integrated risk assessment study reports and the failure to incorporate Traditional knowledge are both departures from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. As a Bristol Bay Tribal government, the Portage Creek Village Council strongly encourages the Cooperative and FERC to provide meaningful Tribal consultation and community engagement. More comprehensive analysis of potential impacts and risks, and long-term planning is necessary before the project should move forward in the licensing process.	A portion of the delay with respect to the subsistence report was the result of a substantial amount of time passing without community responses in general and/or ones that allowed the Cooperative to schedule the workshops. Additionally, all of the unacceptable times to conduct the workshops during the spring/summer/fall timeframe ultimately resulted in the need to conduct the workshops in October 2024 and include the final subsistence report later than the USR filing, in the addendum. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
128	Alaska Department of Fish & Game (ADF&G)	Fish Community and Behavior Study, Juvenile Salmon	Stakeholders requested two full seasons of juvenile salmon outmigration studies. This information is necessary to understand the enumeration and apportionment by species of the out-migrating juvenile salmon. FERC's response to this request, which is contained in the comment matrix from the Request for Study Modifications document, indicated it was premature to "opine on the need for additional study seasons until the USR is filed". Now that the USR results are available, the study results do not provide thorough data or a full analysis of species composition and the timing of outmigrants by species. This information is vital to establish a	During initial feasibility testing, and discussion among the Cooperative's consultant team and the ARWG on the best approaches for addressing data gaps, it was clear that understanding the dynamics of outmigrating smolts is of importance to determining potential impact on species and life stages in the Project Area. Information that was deemed especially important, was the horizontal and vertical distribution of smolts throughout the water column at different times of the day and night, and how the distribution of migrating fish may overlap or interact with the

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			baseline for comparison to be used during post construction monitoring, as well as to have temporal information regarding which species migrate at what times to inform potential operational modifications that might be necessary to avoid entrainment. The Applicant's consulting team noted during the last Integrated Risk Assessment meeting that enumeration was not necessary if they used relative abundance metrics via Catch Per Unit Effort. ADF&G does not believe that there has been enough juvenile salmon outmigration data collected at this point to achieve that metric either. The methods and attempts utilized to capture juvenile salmon were sporadically employed rather than continuously operated throughout the outmigration and the efforts that were undertaken were largely unsuccessful. Juvenile salmon (both smolt and fry) are the most vulnerable species and life phase to be affected by the Project. Mortality to out-migrating juvenile salmon would be the biggest source of risk from the Project. From the studies that were conducted, it is difficult to understand the spatial and temporal passage of the different species of juvenile salmon as they migrate through this stretch of river. The topic should receive a more thorough investigation through the successful deployment of a full-scale juvenile salmon outmigrant enumeration and apportionment study that can provide information on what species are out-migrating during which date ranges and in what volumes. The adult salmon studies revealed significant numbers of pink salmon spawn above the falls. Given this find, ADF&G recommends that further work needs to be conducted to determine when juvenile pink salmon out-migrate, what side of the river they travel on, and how well will they respond to the Project operation, entrainment, and below the trailrace. Pink salmon in Bristol Bay have a dominant even-year cycle so studies to determine outmigrant timing need to be conducted in even years. There appears to be pulses of outmigrants based on the sonar data. It is important to identify if the different species represented in these pulses are from higher up in the lakes system and was there any overlap between returning adult salmon and out-migrating juvenile salmon that might have interfered with the sonar that was monitoring juvenile salmon outmigration. Are these pulses representing different species or mixed species from higher up in the lakes system? Was there any overlap between returning adult salmon and out-migrating juvenile salmon that might have interfered with the sonar that was monitoring juvenile salmon outmigration? ADF&G realizes that with the large sockeye salmon population it is difficult to sort out other species during outmigration. However, without this information it is impossible to know when and where these juvenile fish will be and how susceptible they will be to changes caused by the Project. Having a thorough understanding of the magnitude and timing of juvenile salmon outmigration for all five salmon species is arguably the most important fish passage consideration when evaluating the effects of this project and developing potential protection, mitigation, and enhancement measures and section 10(j) recommendations.	structure and flow fields of the proposed Project intake structure. While initial study plan documents suggested that incline plane or rotary screw traps could be used to contribute to the collection of this information, deploying and operating enough of these traps to cover the entirety of the thalweg (but only surface water), 24 hours/day, over three months, just upstream of a significant hazard was determined to be unsafe, infeasible, and financially prohibitive. Operating traps upstream where conditions are more suitable (and where previous smolt trapping efforts have been carried out) would eliminate the site-specific data on lateral distribution that is so important. This tissues was discussed with the ARWG following the site visit (and feasibility testing for the telemetry array) in 2022 when the consultant team + BBSRI considered possible locations for a IPT/RST at summer baseflow and even under those benign conditions determined that deploying/ operating such a trap at the intake location infeasible. The sonar system, which cannot distinguish well between species of small fish, nonetheless provided a safe, and highly informative site-specific dataset that shows how migrating smolts were distributed vertically, horizontally, and temporally across the channel throughout the smolt outmigration seasons in two successful study years. While we do not know exactly what species of smolts were present during which time periods, we know that they were predominantly Sockeye Salmon originating from a wide range of upstream habitats including the Nuyakuk River mainstem, tributaries, lakes, and tributaries to lakes. Chinook Salmon, Coho Salmon, and Pink Salmon (2024) were observed by the project team, but in very small numbers compared to Sockeye Salmon. If hands-on sampling were to be implemented to determine the horizontal and vertical distribution of these less-common species at the intake location, it is likely that hundreds of thousands, if not more, fish would need to be captured to overcome the dilution factor of the tens of millions of Sockeye Salmon smolts that move through the system throughout the migration period. ADF&G is correct, that while the consultant team planned 24-hour shifts of subsampling, and implemented a fyke net system just below the sonar side-scan transducer in 2024 to provide additional information on the size and species distribution of smolts migrating along the shoreline where the proposed intake would be, the especially high water year in 2024 and associated depth, velocity, and debris at the fyke net location made it difficult, and moreover, unsafe, to operate effectively, especially during the dark times of night when smolt migration is most intense, in 2024.
129	ADF&G	Fish Community and Behavior Study, Chinook Salmon	The original goal from the study planning was to tag 100+ Chinook salmon. ADF&G appreciates the considerable efforts that the study teams employed to find and target Chinook salmon for tagging. Ultimately, less than 15 adult Chinook salmon were tagged and tracked. This sample size is too small to satisfactorily come to any conclusions about passage through the Project reach regarding migration corridors or rates of success at various flows. Investigations of spawning areas and enumeration of spawners were	The Cooperative appreciates that the goals of tagging 100+ Chinook salmon was not achieved, but also maintains that the consulting team dedicated more than reasonable effort to capture Chinook Salmon, and asked the ARWG to provide any data, suggestions, or other recommendations that would support the consultant team in collecting more Chinook Salmon. BBSRI also collected some data on Chinook

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			requested by ADF&G and other stakeholders in the Request for Study Modifications, but this request was declined with the response indicating it would not inform the analysis. Conducting studies to calculate the approximate abundance of both adult Chinook salmon moving through the Project reach and juvenile Chinook salmon out-migrating through the Project reach is important information as Chinook salmon have been designated a Stock of Management Concern in the Nushagak Drainage in 2022. This necessitated the creation and implementation of a Stock of Concern (SOC) Action Plan to rebuild the stock. Any proposed Project in the watershed that has the potential to harm a SOC fish species should provide additional effort in analyzing effects on this stock due to its decline in recent years.	observations at the counting tower in the lower River and corroborated the consultants observations that Chinook Salmon are present in low number in the Nuyakuk River. Fishing guides have said that they take clients elsewhere to fish for Chinook Salmon. ADF&G asserted that more than 20,000 Chinook Salmon use the Nuyakuk, but have not provided data or reports that support this information. Enumerating Chinook Salmon use of the Nushagak System as a whole by ADF&G has not provided robust data, nor do regional managers have recent data on how Chinook Salmon use the Nuyakuk River for passage, spawning, juvenile rearing, etc. A regional plan to rebuild the stock should begin with resource managers making watershed level population studies, and the buden of these assessments should not fall on the Cooperative.
130	ADF&G	Entrainment and Impingement Study	We appreciate the information presented to inform stakeholders of the preliminary designs for the intake structure, orientation, and trash rack spacing. This information will help inform the potential for the Project to entrain fish that are in the vicinity of the intake and to minimize the level of potential injury and mortality that might be associated with impingement and/or entrainment. We support the proposed design to remove the groin and continued evaluations of the flow fields and approach velocities near the intake over a range of flows to better understand and mitigate for these potential impacts.	The Cooperative appreciates this comment.
131	ADF&G	Entrainment and Impingement Study, Trash Rack	The USR states that the trash rack spacing will be one inch, but during the presentations, 1 ½ inches was mentioned. Future rack spacing designs should be equal to 1 inch or less. The Entrainment and Impingement Study uses a 6-inch trash rack as conceptual design for the entrainment mortality estimates (pg. 23-34). The qualitative risk assessment (pg. 25) and discussion and findings section (p.49) referenced consideration of a 1-inch and a 6-inch trash rack. If the Project design is for a 1-inch trash rack as indicated in some parts of the USR and during presentations, then 1-inch spacing should be used consistently for modeling impacts to fish related to entrainment and impingement. The Entrainment and Impingement Study discussion and findings section (pg. 49) states "the risk of impingement on the proposed 6-inch trash rack at the intake is considered negligible". This finding of negligible impingement risk to out-migrating juvenile salmon or adult fish is based on a 6-inch trash rack and the Project is proposing a 1-inch rack. While the swimming abilities of adult fish minimize or eliminate the likelihood of impingement at most flows, it is important that the study report accurately relays the potential impacts of the Project as designed using a 1-inch trash rack. Entrainment and Impingement Study does not address debris collection at the trash rack and whether this could increase the potential for impingement if intake velocity is increased at areas of the trash rack without debris blocking flow. BMPs should be included in the license to ensure that the trash racks are regularly cleared of debris to reduce the potential for impingement.	The Cooperative appreciates this comment.
132	ADF&G	Entrainment and Impingement Study, Entrainment/Delayed Mortality	Based on the current proposed design, 42-55% of the out-migrating juvenile salmon will be potentially exposed to entrainment. Given this percentage, it is important that the data gaps identified above be filled so that the potential long term impacts to salmon runs in the Nuyakuk from delayed injury or mortality due to entrainment can be fully understood. Additional mitigation measures should be analyzed as Project design progresses to reduce the risk of entrainment and lessen the potential for delayed mortality in juvenile fish due to injury or stress from entrainment.	The Cooperative appreciates this comment.

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			The summary for results section of USR Attachment C (section 5.1.3; pg. 24) states that "nearly all smolts of sizes observed during this and other studies (60-80mm) have the swimming capability to avoid entrainment…". The range of sizes observed in the studies completed thus far are listed as 50-110mm for sockeye salmon and 80-100mm for Chinook salmon in section 5.2.1 of the same report. While it may not change the statement regarding capability to avoid entrainment, the report should accurately identify the smolt sizes observed (50-110mm) and ensure the statement is still accurate.	
133	ADF&G	Entrainment and Impingement Study, Tailrace	The Entrainment and Impingement Study includes mention of a proposed 1-inch bar rack in the downstream tailrace (pg. 21) to prevent false attraction of adult salmon. More information about this design aspect will be needed and whether it is necessary to consider the potential for compounding impacts to juvenile salmon who have already been entrained and traveled through the turbine. If the velocities are high where these bars are placed, ADF&G may have concerns regarding the potential for additional injury to stunned fish that are disoriented hitting this downstream barrier or being impinged if the barrier becomes blocked with debris. Please see additional comments regarding design elements that help mitigate delayed mortality due to injury or stress.	Noted. Also, as shared during the USR public meetings during the Engineering portion of the presentation, the proposed Project is at a conceptual phase of engineering and elements such as the debris exclusion screen design and spacing and geometry of the intake are still in process. Ongoing work on the engineering design will include further discussions with natural resource agencies on selection of exclusion technology, and refinement of engineering designs to maintain criteria considered acceptable to avoid risk to fish either passing through or being excluded by Project infrastructure.
134	ADF&G	Entrainment and Impingement Study, Design and Operation Considerations	Based on the results of the Sockeye Salmon Life Cycle model, reduced water flows could affect adult salmon passage and increase predation on juvenile salmon. Developing protection, mitigation, and enhancement measures and section 10(j) recommendations will be important to mitigating potential Project impacts. According to the Entrainment and Impingement Study (USR Attachment C), smolt survivorship after passing through fish-friendly turbines is estimated to be 98-100%. Future design and operational considerations should include ways to study actual juvenile salmon survivorship at intervals beyond passing through the turbine to better understand long-term juvenile salmon survival for this system. For example, a holding pool within the tail race to access juvenile salmons post travel through the turbine. An alternative to this may be to have shut down windows during peak juvenile outmigration. Ensuring high survival of juvenile salmon will be an ADF&G priority.	The Cooperative appreciates this comment.
135	ADF&G	Assessment of False Attraction to the Tailrace Fish Barrier	ADF&G recommends that further attention be given to the potential for false attraction to the tailrace. A well-designed tailrace barrier structure and location away from resting areas is important to mitigate any impacts particularly given the large numbers of migrating salmon.	Noted. Also, as shared during the USR public meetings during the Engineering portion of the presentation, the proposed Project is at a conceptual phase of engineering and elements such as the debris exclusion screen design and spacing and geometry of the outfall are still in process. Ongoing work on the engineering design will include further discussions with natural resource agencies on selection of exclusion technology, and refinement of engineering designs to maintain criteria considered acceptable to avoid risk to fish either passing through or being excluded by Project infrastructure.
136	ADF&G	Caribou Population Evaluation	ADF&G recommends that the option of underground cables continues to be evaluated either for all or portions of the transmission line route. As acknowledged in the USR, transmission lines for the proposed project would transect portions of the Mulchatna caribou herds range and run through portions of the east segment's winter and summer ranges. ADF&G agrees that while there is varied evidence on how caribou herds respond to linear features, given the location of these transmission lines there is potential impact to caribou distribution or migratory timing. The USR states, "….continued investigation of the impacts on the MCH from the proposed transmission line as the Project evolves would help to better understand the overall effects of the proposed Project." ADF&G agrees with this statement and looks forward to the continued investigation into the impact of linear features to the Mulchatna caribou herd.	Comment noted.
137	ADF&G	Chinook and Sockeye Life Cycle Model	The Chinook salmon life cycle model was not completed. Given the potential impacts this Project may have on Chinook salmon, and this population's listing as a SOC, these impacts should be closely scrutinized. Additional studies on juvenile salmon passage/survivorship as well as completing the Chinook life cycle model, which would require additional fish tagging, would be beneficial to better understanding the potential effects this Project would have on the Nuyakuk River Chinook salmon.	The Chinook Salmon Life Cycle model was not completed in part due to lack of site-specific data on Chinook salmon, but also due to lack of sufficient regional data on Chinook populations that could inform the development of the model. The LCM development team requested that any information on Chinook Salmon abundance, smolt to adult return data, Nushagak River escapment data, be provided, but there was not enough regional data available on the species to make a Chinook Salmon

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				LCM viable or meaningful. Even the escapement of Chinook Salmon into the Nushagak River, monitored and reported by ADF&G is not known with a high level of certainty, and while ADF&G reported that there are more than 20,000 Chinook Salmon that enter the Nuyauk River annually, supporting data or reports were not provided for the consideration of the Cooperative in this study.
138	ADF&G	Subsistence Study, Study Design	ADF&G would like to take the opportunity to stress the need for clarity leading to the modified study methods that were ultimately utilized for gathering the data and information analyzed in the Subsistence Study. No clear process was utilized for stakeholder review and comments on the reduction in scope or proposed new methods that the subsistence study ended up employing. No formal or comprehensive revised study plan (RSP) was ever presented. Although the applicant indicated that discussions were taking place through the Cultural Technical Working Group and all methods associated with the upcoming study would be incorporated into the 2024 Supplemental Methods document to be distributed in May 2024, a comprehensive Supplemental Methods document was never developed. The Supplemental Methods Supplement Summary, a simple two-page table style document, did not specify any deviations from the RSP besides expanding literature reviews. The principles on which original study plans were designed stress community approval of research designs, informed consent, anonymity of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research. The primary method for collecting subsistence harvest and use information in this Project was originally approved by FERC to be through a systematic household survey, which did not take place.	The Cooperative appreciates the comment and has filed, along with to this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024. Consistent with our communication with ADFG in late 2024 preceding the distribution of the subsistence consultation record, our original intent was to utilize ADFG for the subsistence study as it would have represented a mutually beneficial opportunity. ADFG had an internal desire to update their regional subsistence information and the Cooperative's proposed subsistence study area was included in ADFG's much larger area or regional interest. When discussions related to the scope and associated cost of ADFG's efforts occurred, it became clear that the overall financial obligation to the Cooperative related to the wholisitc study was cost prohibitive. As a result, the Cooperative elected to focus their study one the much smaller potential area of impact associated with the proposed project as opposed to the more regional effort needed for ADFG. The Cooperative wishes to note that all of the dialogue related to the potential ADFG partnership on this study was handled in an extremely collaborative and objective fashion and we appreciate all of the efforts ADFG put into these discussions, and their input related to this process as a whole. As noted in previous responses, while it is important to have updated baseline data prior to a development project so that future changes in harvest amounts and use areas can be measured, updated data are not always necessary to analyze the types and nature of impacts that may arise from a proposed project, particularly if targeted workshops identify potential changes in subsistence baseline information since previous surveys. Workshops provide an alternative to more comprehensive surveys by focusing on project-specific information (which would not be documented in a household survey) and by asking participants to identify whether existing subsistence information accurately captures current uses. The study team worked with the tribal councils to gain community approval of the workshops (including obtaining resolutions); sent draft protocols for the councils to review; had participants review and sign an informed consent form which guaranteed participants' anonymity, and sent the draft subsistence report to the councils for review.
139	ADF&G	Subsistence Study, Study Results	The report could benefit from explaining how the three communities were selected for the subsistence workshops conducted while the other three were eliminated. There is a brief discussion at the end of the	Per discussions with ADFG when the Cooperative was still considering utilizing ADFG for the subsistence work, it was agreed that those three communities closest to the proposed project site would be evaluated in-

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			report in the Deviations from Study Plan section but considering that Ekwok has the oldest data, an argument could be made for having the workshop conducted there. Due to the change in Project methods, almost none of the data employed in the study are recent - Dillingham data is from 2021 but for the other five communities, the newest data still about a decade old. There have been many changes to caribou and Chinook salmon populations (referenced in the report) that likely have changed subsistence practices in these communities. While the workshops attempt to capture these changes, only in Koliganek did there appear to be good turnout. Four participants for the Dillingham/Aleknagik workshop is a particularly low turnout given the size of Dillingham and it's questionable how representative or comprehensive those individuals were of subsistence harvesting in Dillingham contemporarily. For each community, there is a paragraph that discusses a previous study conducted in 2010 that documented subsistence travel routes (pg. 24 for Aleknagik) but there is no citation provided for this study, or any other information about the study that ADF&G could locate in Attachment M.	person as part of the subsistence study for the project given them having the highest potential for impact associated with project development/operations.
140	ADF&G	Subsistence Study, Table 5	Table 5 (pg. 27) and the same table in each of the community results – it is recommended that the caption be revised to include "select species" because it does not provide data for all the species for which there is harvest data. It is recommended that captions for tables presenting average harvests and participation should include the years. The information is in the footnotes of the tables, but it can be made clearer that these tables are not presenting current data (except for Dillingham).	Comment noted. If included in any upcoming licensing documentation, the Cooperative will correct the tables, per this recommendation.
141	ADF&G	Subsistence Study, Figures 5 and 6	Figures 5 and 6 (pg. 26) and similar figures in the other community results sections - the y-axis is "percentage of use areas" but that may not be what is being depicted in the figure. It appears to depict a percentage of harvesters, or some measure of how many people were using the areas. Please update axis title if it is in fact incorrect. If it is a measure of use, please indicate what the measure is based on.	The figures are based on use areas, not harvesters. The study these figures are based on documented subsistence use areas by resource and location, with associated information (timing, travel method) documented for each subsistence use area. Will add an explanation to the text for clarity.
142	ADF&G	Subsistence Study, pg. 77	Page 77 has a MS Word error inserted.	Comment noted. If in included in any upcoming licensing documentation, the Cooperative will correct the error, per this recommendation.
143	ADF&G	Subsistence Study, Relative Importance Discussion	Relative importance discussion - based on the tables presented in the appendix and in the report itself, it appears that the relative importance was based on an average of all harvest data for a community over time. It would be helpful to specify that in the written discussion.	Correct. The analysis of resource importance is based on an average across all available study years; this prevents a resource from being underrepresented if the representative year was particularly low for that resource (e.g., caribou remains an important resource despite its lack of availability in recent years). Will revise text for clarity.
144	Trout Unlimited	General Comment	Consistent with our organization's mission and expertise, our review and comments focus on fisheries, aquatic ecology, recreation, and aesthetics. While we appreciate that a great deal of attention, effort, and cost was invested in the Integrated Study Process as a whole, we found several concerning issues that undermine the ability to make a scientifically-informed decision about the potential risks of this project. For example, some studies involved relying on untested or otherwise unjustified assumptions, compromising the final study results. In other cases, data used in study analyses were simply unrealistic or erroneous, producing results that were meaningless or even detrimental with respect to informing project risk or design. The studies also neglect virtually all species other than sockeye salmon, leaving out the four other salmon species (notably Chinook salmon) and many resident fish species which are critical to subsistence, sport and commercial fisheries. Furthermore, many studies altogether failed to consider important and available material, particularly in the form of local knowledge which is easily the richest source of information in an otherwise "data poor" region.	Comment noted.
145	Trout Unlimited	General Comment	Due to the general negligence in the studies we reviewed, as summarized above and detailed below, we are concerned that stakeholders will not be able to draw accurate conclusions on how this project may impact the region's fisheries, aquatic ecology, recreation, or aesthetics. Without accurately applying the best available science, the risk of causing harm to the fisheries and the communities and businesses that rely upon them increases substantially.	Comment noted. The Cooperative is compelled to note the amount of objective collaboration with regional technical experts that went into the development and implementation of these studies. No other entity that participated in the process used terms such as "negligence" in their comments. In fact, certain other objective, technically proficient and

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			For stakeholders to evaluate the full risks and benefits of this project, a significant amount of additional information and adjustments need to be made to make an informed decision on this project. We have outlined some of the most important studies and analyses that should be conducted to provide a robust picture of the projects' impact on salmon and other critical fish species.	reputable licensing participants overtly recognized the Cooperative's genuine intent and efforts to technically evaluate this proposed project based upon its potential impacts (positive and negative) and its potential long-term benefits to the region. To imply anything other than consistent collaboration, technical detail and objective high-level science were implemented and reported on during this process would be inaccurate and inconsistent with the Cooperative's steadily held (and conveyed) mandate for this process.
146	Trout Unlimited	Fish Community and Behavior Study	Given that the fish community and behavior study informed all other fish related studies (i.e., fish passage, entrainment and impingement, false attraction, lifecycle modeling, and the integrated risk assessment), we believe that our concerns about this study compound and further complicate problems with those other studies. General concerns include the fact that data were collected for (only) two summers, which happened to be unusually high streamflow summers. Consequently, it is unclear if and how these data may be applicable to even average, much less low flow years. In short, these are simply insufficient for characterizing uncertainty inherent to environmental conditions under natural, future climate change, and/or project operation conditions.	FERC stipulates a 2-year study program for environmental evaluations, and even with longer study programs, it is rarely possible to capture the entire range of conditions that might be expected over the operational life of a hydropower project or the term of a operational license. In order to maximize the potential that the Cooperative could address as wide a range of conditions as might be experienced in the long term, the Cooperative developed models, including the LCM, IRA, ABM, Entrainment, False Attraction, 2D Hydraulic, and Habitat Suitability that were able to consider a wide range of hydrologic conditions at the project site from less than 1,000cfs to over 25,000cfs. The development and consideration of the results of these models provided significantly more insight and extrapolative opportunities than would have been possible if only data collected during the 2-year study was considered for the life cycle or risk assessment exercises.
147	Trout Unlimited	Fish Community and Behavior Study, Fish Community Composition	In general (with some exceptions noted below), we found the evaluation of sockeye dynamics and behavior to be relatively robust. However, the study failed to meaningfully evaluate all other fish species that will be affected by project development—salmon and resident species alike. This is important to freshwater ecology and food webs, but also to subsistence and recreational uses. For example, the subsistence study indicated that some villages closest to the project site harvest nearly twice the weight of Chinook salmon compared to sockeye salmon (Figure 1). Subsistence studies also reflect the importance of coho and chum salmon, as well as pike, Dolly Varden, rainbow trout, and lake trout which all could be impacted by the Project (Figure 1). Figure 1. Aleknagik subsistence harvest average by species (Table 5 from the Subsistence study in the USR Addendum). The lack of consideration for Chinook salmon is concerning not only because of their subsistence value, but also their global population declines even in areas relatively unimpacted by human development. The Nuyakuk watershed produces a substantial proportion of Nushagak River Chinook, which are amongst the world's largest remaining populations (ADFG data, Brennan et al., 2019). Despite a solid effort on the part of Project consultants, only twelve adult Chinook were captured and evaluated during the entirety of the study process. Given their subsistence and global importance, this is wholly insufficient for characterizing risk to that population.	Comment noted.
148	Trout Unlimited	Fish Community and Behavior Study, Fish Community Composition	Additionally, coho and pink salmon are largely overlooked. Table 4-1 in the fish community and behavior study combines data collected for the Project along with information from a literature review and members of the Aquatic Resources Working Group (AWRG). It indicates that both coho and pink salmon spawn only through the month of October but fails to mention that was also the end of the Project sampling period or the consequent possibility that the Project simply failed to adequately characterize salmon use of the project area. Coho salmon are known to spawn into November in many places in Alaska (ADFG 2025), but can spawn "late into December" in the right habitat conditions (ADFG 2005). This is important because of the critical roles coho play in both human and ecological food webs, but also because hydrologic conditions, power use, and other factors vary drastically between Fall and Winter. Consequently, failing to consider coho salmon use of (and particularly spawning migration through) the project area during those times may risk their population productivity and sustainability if the Project is developed. No coho salmon were	During study planning, the ARWG, which included representatives from ADF&G, NMFS, USFWS, BBSRI, UTBB, Trout Unlimited, and others selected Sockeye Salmon and Chinook Salmon to be the focal species for field studies on migration dynamics, passage dynamics, and behavior within the study area. The study program was executed to reflect the prioritization of those species, and therefore did not fail to consider other species. The relative abundance of Coho salmon observed or known of in the project area was considered justification for the species to be considered of lower priority by the ARWG, especially since passage conditions during Coho salmon migrations and the swimming capacity of those fish could be inferred from telemetry data from priority species and the results of ABM and hydraulic modeling efforts. The "study

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			captured or meaningfully observed for the entire 2024 study year, suggesting the study window failed to characterize their use of the project area.	window" in the RSP was not designed to characterize the behavior of migrating Coho salmon therefore, the Cooperative does not agree that this represents a failure.
149	Trout Unlimited	Fish Community and Behavior Study, Fish Community Composition	Pink salmon may also spawn after the period of observation for this study, but warrant more focused attention regardless. While pink salmon are often overlooked because of their biennial spawning cycle and relatively low economic value, they are often the second most abundant salmon species in the Bristol Bay region in even numbered years (ADFG 1989), as reflected in the 2024 Project data. This makes pink salmon an important potential stock for future food security, but a critical source of marine derived nutrients that support hundreds of aquatic and terrestrial species upon which sockeye and human subsistence, recreation, and economics already depend (Cederholm 1999). It is worth noting that the subsistence study also documented subsistence activity related to both salmon and non-salmon fishes year-round, suggesting the presence of harvestable salmon is nearly constant (Figure 2). Figure 2. Timing of subsistence activities in Aleknagik by resource (Figure 4 from the subsistence study in the USR Addendum).	Comment noted.
150	Trout Unlimited	Fish Community and Behavior Study, Upstream Adult Salmon Migration	There is a clear assumption that flow is the one and only factor limiting upstream migration of spawning adult salmon (e.g., "Flow more than fish size affected transit time [up the falls]," USR Attachment A, pg. 51). See below (regarding the Fish Passage Study) for more detail, but we are concerned that this assumption is not only erroneous, but may potentially mislead stakeholders regarding project risk, design, monitoring, and mitigation. Dissolved oxygen and other data suggest that relying only on flow is an unreasonable, untested, and unrepeatable assumption.	Throughout these studies, flow was a main focal point as the lack of a dam or other regulatory structure means that operation of the Proposed project will overwhelmingly affect flow in the Falls Reach which contributes to many other conditions including velocity, physical barriers, etc. It is unclear from this comment why priorizing consideration of flow-related effects could mislead stakeholders.
151	Trout Unlimited	Trout Unlimited Fish Community and Behavior Study, Predator Collection and Monitoring	We appreciate that the Project attempted to characterize existing predation risks on juvenile salmonids in the study area. However, we are concerned that they failed to evaluate fish, and especially avian and mammalian predators sufficiently (or at all). Throughout the range of Pacific salmon, areas where juvenile and/or adult salmon concentrate (e.g., hydropower projects, hatcheries, natural migration hurdles) attract predators of all kinds (e.g., Carey et al. 2012). Predation by other fishes, birds, and mammals are all well documented as continued threats to the recovery of endangered Pacific salmon species in the Lower 48. However, for this Project which runs the risk of concentrating prey in the form of juvenile and adult salmon, the only two predators evaluated were Arctic grayling (96% of "predators sampled, pg. 71) and rainbow trout. The Project's own data clearly indicates that Arctic grayling are not a significant predator of juvenile (much less adult) salmon, and the majority of rainbow trout gut contents consist of invertebrates as opposed to juvenile salmon (Figure 3). The USR even states, "Most of the juvenile [salmon] collected in these habitats were too large to be consumed by Arctic grayling." (p. 71). Perhaps more importantly, grayling simply don't have the gape width to consume salmon smolts—a fact which the Project either did or should have known prior to collecting these meaningless data. Figure 3. The proportion of prey items recovered from Arctic grayling and rainbow trout guts, Figure 5-36 in the USR. These are the ONLY two species for which salmon predation was evaluated, ignoring a multitude of other juvenile salmon predators, and all adult salmon predators. We are concerned that the Project failed to consider other piscivorous fishes (e.g, pike), under-considered avian predators, and ignored mammalian predators (like bears) altogether.	Evaluating the role of bear predation on adult salmon was not included in the RSP and was therefore not considered for that reason. Predation assessment by gut content analysis was also not requested, nor included in the RSP. During ARWG meetings in early 2024, BBSRI and ADF&G suggested that any information the study team could gather on whether ARWG-identified priority resident fish species (and piscivores) (i.e., Rainbow Trout, Arctic Grayling, and Northern Pike) were consuming juveniles salmon and smolts would be appreciated and informative. Therefore, stomach samples were collected from these species. While most Arctic Grayling are likely limited in their consumption of smolts by insufficient gape, there are large individuals capable of consuming fry (of any species), so we did not eliminate Grayling for this reason.
152	Trout Unlimited	Nuyakuk Falls Fish Passage Study	We have some major concerns about the Fish Passage Study data analysis and believe that it lacks the scientific rigor necessary to draw conclusions from the data. The data should be appropriately reported and analyzed before continuing with the permitting process. One of our main concerns is that the Project did not estimate detection probabilities at their antennas as part of their fish passage data analysis. Although this may sound like a relatively minor issue, it is a major problem for the analysis because passage success can be significantly underestimated if detection probability is not accounted for.	Detection efficiency between passage gates was measured for the locations used to determine passage success (i.e., R01 paired with R02 for entrance into the study area, and R03 and paired with R04 for exit from the study area following transit). It was not possible to measure detection efficiency for receivers within the Falls as they were not intended as passage "Gates". Based on an analysis of the proportion of fish detected on one receiver of each pair relative to the other, we had high confidence that passage gate (i.e., enter study area, transition into falls, exit study area above falls) detection efficiency was near 100%. The detection history of every unsuccessful fish (i.e., arrived at study

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			For example, the way the Project did their analysis was to say if 50% of tagged fish are observed at an antenna, then passage rates were 50%. However, if the detection probability at that antenna was only 50%, then the correct conclusion is that passage rates could be up to 100% after accounting for detection probability. The contractors did use a test tag to measure 'detection efficiency', however, this is not equivalent to estimating detection probability from the data and is not a scientifically defensible way to measure detection efficiency (Pollock 1982, White and Burnham 1999). The reported passage success rates are meaningless without calculating and reporting detection probabilities and the associated confidence intervals around passage.	area and was either not detected in the Falls or was detected in the Falls but not at the exit array, was reviewed individually). As described in the USR, the fish passage telemetry study was designed to be a behavior study based on presence absence detection records in a highly complex, turbulent area with potential for changing conditions, tag collision, and blind spots, not a paired release-recapture model study for purposes of estimating survival which requires the input of detection efficiency data for each passage gate to correct/adjust ultimate survival estimates. Nonetheless, The PyMast software takes into account gaps in detection records between gates and flags missing detection data or mis-ordered detection data for review. The consultant team believes that the behavior data gathered during this study provides meaningful insight on passage success rate of Sockeye salmon transiting Nuyakuk Falls.
153	Trout Unlimited	Nuyakuk Falls Fish Passage Study	Additionally, the Project reported that residence time (i.e., holding time) below the falls was correlated with flow volume – that as flows increased, residence time also increased (Figure 5-24). The Project then noted that "flow also seems autocorrelated with the density of individual Sockeye Salmon in the area, so it is not clear how high flow and crowding interact to affect residence time." (Page 51). This is both an unclear and important statement. We are not sure what 'seems' means here because the data was not provided in the report or to the ARWG (which we participate in). We are also not sure how the data could be 'autocorrelated with density' because autocorrelation is correlation within a parameter over time (e.g., escapement in year 1 is correlated with escapement in year 2). So, we are interpreting the reported statement to mean that holding time and density are correlated similarly to holding time and flow, and that if they plotted the data, holding time vs density would have a similar linear relationship to Figure 5-24. If our interpretation is correct, then this suggests that flow may not be the dominant driver of holding time, but rather fish density has a large impact on holding time. This is a perfectly reasonable prediction; fish take longer to pass the falls when there are more fish present. Similar to people trying to get into a stadium with only three doors, it takes longer when there are more people trying to get in. If holding time and density are in fact correlated, then the Project must reconsider their base assumption and limited analysis on flow as a main driver for holding time. This reconsideration is hugely important for future monitoring and management planning. If we leave this study period understanding 'flow as the only significant predictor of holding time below the Falls prior to transit' (Page 69), or that flow is the main driver of transit time, then monitoring and management will focus on flows alone and ignore density. However, if density is also an important factor, then it needs to be monitored and considered during water diversion management. The dissolved oxygen (DO) data showed that fish sockeye densities in the pools below the falls can decrease DO (Attachment H), highlighting how density can in fact be an important driver within the system.	Comment noted. As crowding of Sockeye Salmon and peak flows occurred at the same time, it was not possible to determine which factor contributed most to observed passage rates, as stated in the USR, and there is likely an interaction between those and other factors which was also explored in the Fish Passage study through the ABM.
154	Trout Unlimited	Nuyakuk Falls Fish Passage Study	Lastly, we have concerns around the lack of exploration and statistical analysis on what factors influenced holding time, transit time, and passage success. The report states that "Flow level was the only significant predictor of holding time below the Falls prior to transit." However, it appears that flows were the only predictor considered in the analysis. The effect of individual body size was considered (although the data was not included in the report or presented to the ARWG), but only in binned flow data and not part of a complete statistical model. This lack of testing various predictors leads to an incomplete picture of what controls passage and holding time, and the true impact that flows have on those. Additionally, there was increased variance in passage time at higher flows (Figure 5-25), which violates a key assumption of the statistical tool the Project used to analyze this data (i.e., linear regression). An alternative method should be used to accommodate the increased variance.	Comment Noted.
155	Trout Unlimited	Nuyakuk Falls Fish Passage Study, Upstream Passage	We have major concerns about the agent-based model (ABM) that was used to model sockeye salmon transit time and passage success through the falls, and do not think it is scientifically appropriate to use it to predict future passage delay or success. Our concerns are as follows:	Comment Noted. The ABM is a model product, which by its nature, can never predict or reflect passage delay or success as accurately as telemetry data on these

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		Success and Transit Time	1. The ABM uses a large number of parameters which have not been studied or estimated in salmon or require unrealistic values. For example, the model was sensitive to "low velocity search cues" and "the transition point from sustained to sprint". What these are and how these values are derived from previously published data is unclear. Additionally, in order to increase passage success outcomes from the model so that they were a closer match to the empirical (field tagging) data, sockeye swimming speed was set to 5.5 meters per second through the project reach, which is 12.3 miles per hour. 12.3 mph is an unrealistic sustained swimming speed, as it is far greater than what is reported in the literature. For context, sockeye in the Copper River travel 0.08-0.26 miles per hour (two to 6.2 miles per day) depending on flow (Alaska Department of Fish and Game 2025). 2. The ABM outputs of transit time and passage success do not match the telemetry data that was measured with real fish, which makes any predictions from the model unreliable. The model was run for four flows that overlapped with the measured field data (14,500, 16,421, 18,100, 19,900 cfs). In almost all of these modelled flow scenarios, 50% of the fish that passed the falls did so in 2 hours (one outlier being 6.5 hours at 18,000 cfs on left bank). None of the tagged fish in the study passed this fast (Figure 5-25 on pg 52). A small number passed at 5 hours, but the vast majority took 10-50 hours to pass the falls. Additionally, at the measured study flows, the model predicted that generally 75-90% of fish would pass the falls at 18 hours, which is also not consistent with the observed data. The observed data is not directly reported beyond Figure 5-25, so we can't say exactly, but it appears that nearly half of the fish took longer than 18 hours to pass under all flow conditions. 3. If the model is not successful at predicting measured fish passage success and transit times, it should not be relied upon to predict future passage success and transit times, particularly for conditions that were not observed (i.e., passage at flows less than 13,000 cfs).	parameters for real fish over the entire range of conditions possible would provide. However, as it is not feasible to expect that any study, even a long term one, would encounter conditions in the river representative of future flows under a with-Project or with-climate change condition, this advanced and highly sophisticated model can provide a great amount of insight and estimates of trends that provides the Cooperative with a tool to understand how fish passage may be affected by flow conditions that we are unable to measure with field studies. The model was developed and parameterized with input from the ARWG over two years of meetings, and was calibrated and considered with the fish data from telemetry studies in 2023. The Cooperative appreciates that no model can be 100% predictive, and that selecting criteria such as swim speed, fatigue rates, schooling response, edge response, etc., is complicated, but the same criteria are used to evaluate behavior at all flow rates, so relative changes in passage success can be identified. The Cooperative believes that the ABM does provide meaningful insight on how flow variation in the Falls, especially at lower flow rates, might present challenges for upstream migrating Pacific Salmon.
156	Trout Unlimited	Fish Entrainment and Impingement Study	Several of the study goals and questions in the Entrainment and Impingement Study were not completed. The Final Study Plan (2022) lists one of the Study Goals and Objectives of: "Estimate turbine mortality rates for target fish species and sizes by evaluating mortality at other hydroelectric facilities with similar turbine specifications and comparable physical features and operating conditions" (Bullet 6, Page 72). It goes on to list the following "Questions and hypotheses that will be addressed by this study" (Page 72) as: 3. What is the estimated direct and indirect mortality of fish (by life stage or size class) that are entrained into the powerhouse? 4. What is the estimated direct and indirect mortality of fish (by life stage or size class) that bypass entrainment into the Falls Reach? 5. Is estimated passage-related mortality greater for the powerhouse or Falls Reach? 6. Is estimated future mortality in the Falls Reach greater or lesser than baseline condition through the Falls? 7. Are intake design modifications available for use at this location to reduce risk of entrainment? ***None of the Objectives or Questions listed above were addressed by the study.*** A main concern of the project is entrainment probabilities and survival through the turbines and each of these study questions are critical for assessing the potential impact of the project on fish populations in the Nuyakuk River. Notably, in Trout Unlimited's comments on the Interim Study Report, we expressed our concern that the planned study design would not be able to "estimate direct and indirect mortality of fish (by life stage or size class) that bypass entrainment into the Falls Reach". The project was not using study methods that would make that possible. And, as a result, they would not be able to meet their next two study goals of comparing power house to Falls Reach mortality or generating a baseline dataset.	If the Cooperative elects to develop a DLA, more direct question-answer responses to the listed questions will be provided in list form, to supplement the integrated discussion type format which is included in the USR. There has been extensive and ongoing discussion among the Cooperative and ARWG over how to address and understand baseline mortality of smolts that pass the Falls Reach under baseline without-project or future with-Project conditions. The HSC study that addressed passage route connectivity for downstream-migrating smolts provided some insight on potential mortality-inducing stranding or insufficient flow conditions at very low flows (under 5,000cfs, Attachment B). Further, counting the number of avian predators observed at the Falls over the study program also provided categorical data on whether Falls Passage might incur heavy losses due to bird predation, and also, data collected on the presence of piscivores and some data on their diet during smolt migration help provide some insight on Falls Passage risk to migrating smolts. While these efforts to provide insight on passage risk in the falls reach do not provide a %-survival number, they nonetheless provide insight that would otherwise be lacking, considering that a downstream survival study was considered, but determined to be infeasible. Some stakeholders (ADF&G) suggested a downstream survival study for smolts using dye-marking or other mass-marking technology, the Cooperative and other stakeholders determined that such as study would be infeasible due to the logistics of operating smolt traps above and below the Falls Reach, the necessity of dye-marking or tagging hundreds-of-thousands (or more) fish to get a recapture rate that would

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				yield any statistical rigor, and the likely detriment to the study fish of multiple smolt traps encounters that would also likely confound determination of whether injury or mortality occurred due to trapping/ handling or passage.
157	Trout Unlimited	Fish Entrainment and Impingement Study	***Additionally, the study cites erroneous data when describing potential survival through the turbines.*** Throughout the final report, the authors state that turbine passage survival would be somewhere in the range of 98-100% (e.g., 'at least 99%' page 24 of Entrainment Appendix; 'over 98%' on page 68 of Fish Community and Behavior Appendix; 'worst-case scenario of 0.55-1.1% mortality [99-99.5% survival] page 49 of Entrainment Appendix; 98-100% in Table 5-3). The citations the Project used to support their assertion that survival would be 98-100% do not support this assertion. In fact, the citations they used were not studies of survival. Despite committing to do a literature review to estimate turbine passage survival, the authors relied on two studies (Odeh 1999 and Olbertz 2021), and neither study survival. The Odeh 1999 study describes a federally-funded program that produced two design concepts for fish-friendly turbines. Neither turbine was built during the study and the study did not test, measure, or report survival rates for either turbine design. The Olbertz (2021) report, as noted by the Natel comment letter to FERC on December 10, 2024, was a university student project that was not published in a journal or formal (federal, state, industry) report, and many of the values Olbertz cite need context or additional follow-up (i.e., some of the cited reports are not available). The remaining citations used in Table 5-3 similarly need additional context or are not direct studies of survival, as the Natel comment letter to FERC on December 10, 2024 point out. It is important to note that there are many studies that have studied survival through a range of turbine designs. For example, a literature review on risks of mortality and injury for fish during downstream passage at hydroelectric dams (Algera et al. 2020) contains many references for studies on turbine survival, as does Natel's publication website (https://www.natelenergy.com/publications).	At the time of the Entrainment Report, the proposed Project engineering design, and turbine design and selection generally were at a conceptual stage. Turbine selection, operational considerations, and project design will be advanced in future design phases, which may include additional analysis to develop a project-specific survival estimate for the Nuyakuk Hydropower Project. Given the size, head, volume of water, and other factors including turbine survival studies published for other locations, the Cooperative believes that a high level of survival is possible at Nuyakuk, and future design phases will be implemented to ensure that the highest feasible survival level is achieved for migrating smolts of all sizes.
158	Trout Unlimited	Fish Entrainment and Impingement Study	Lastly, a key piece of information that is missing from this study is the potential impact of delayed mortality after turbine passage. Concern about delayed mortality was listed as one of the 'four central potential impacts' in the 2020 Study Plan (page 33, bullet 4), and what emphasized and supported by the National Marine Fisheries Service in their comments. Delayed mortality is mortality that occurs not as the immediate result of turbine passage, but at some time after. For example, if a fish sustains an injury from turbine passage, they may live for several more days before perishing. Delayed mortality can be significant for fish that pass-through turbines, as has been clearly demonstrated in the Columbia Basin hydrosystem (Comparative Survival Study annual reports (https://www.fpc.org/documents/Q_fpc_cssreports.php) and should be studied and considered as a potential impact should the Nuyakuk project proceed.	Comment noted.
159	Trout Unlimited	Assessment of False Attraction at the Tailrace Fish Barrier	We have two concerns about the Assessment of False Attraction at the Tailrace Fish Barrier study. The first is that we have serious concerns about the reliability and accuracy of the ABM and do not think it should be used to assess False Attraction risks. The ABM as currently written does not produce fish movement patterns that are supported with empirical data, and therefore there is no evidence that the ABM can predict fish behavior under altered scenarios, such as a tailrace in the river. We further describe our concerns with the ABM in our comments on the ABM study chapter	Comment noted.
160	Trout Unlimited	Assessment of False Attraction at the Tailrace Fish Barrier	Second, the conclusion that "false attraction is unlikely to be a frequent or high-magnitude source of risk for adult salmon at the proposed tailrace barrier site" (Page 22) seems to rely heavily on the statement that "By limiting the diversion fraction to approximately 30 percent of the total river flow, the tailrace presents a smaller volume attraction flow than the Falls Reach upstream." (Bullet 1, Page 22 and referenced throughout the chapter).	Comment noted.
161	Trout Unlimited	Assessment of False Attraction at the Tailrace Fish Barrier	While we generally agree that less flow should lead to less false attraction, it is unclear from the references cited whether 30% of the flow would be a low enough percentage to reduce false attraction. None of the sources cited study specific flow percentages and their relationship to false attraction. Importantly, the studies that were cited all find that false attraction occurred and appears to be a widespread issue at tailraces.	There is evidence to suggest that adult salmon, Sockeye Salmon in particular, follow the bulk flow in seeking migratory passage opportunities (described in Attachment D), and would thus follow the 70% of the flow signature coming from the Falls Reach. The USR also

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			Therefore, we ask for additional clarification on what information is the Project using to conclude that 30% of the total river flow will not create a false attraction?	indicates that while some adult fish may be attracted and encounter the 30% of the flow coming from the tailrace barrier, the lack of holding habitat, presence of exclusions screens, and propensity of Sockeye to search for viable passage routes would not constitute a high risk of false attraction leading to migratory delay.
162	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	The Life-Cycle Model Study did not meet most of the specific questions and a study goal listed in the Study Plan (2022) and is missing details in the methods that would allow readers to fully understand how the model works. The study goal that was not completed was supplying the "strategic scenario" outcomes to the quantitative Integrated Risk Assessment (page 87 of Final Study Plan 2022). The outcomes of the life-cycle model were never made available to the Aquatic Resources Working Group that participated in the Integrated Risk Assessment. A meeting to present the life-cycle model results to that group was scheduled for February 5, 2025, but was cancelled on February 3, 2025 due to time constraints from the contractor. Even if that presentation would have occurred, there would not have been time to incorporate the feedback or results into the Integrated Risk Assessment before the due date. This was a frustrating experience as we (Trout Unlimited) repeatedly requested in the ARWG meetings that the Life-Cycle model results be used to guide and inform the Integrated Risk Assessment, but were told that this was not possible or not part of the Study Plan.	As described in the ISR and USR and in ARWG meetings in 2023 and 2024, the Life Cycle Model and Integrated Risk Assessments were not intended to be integrated or to inform one another. They were intended to provide two separate and independent (one qualitative and based on professional judgment and expertise—IRA, and one quantitative on regional species-specific data—LCM) risk assessment tools for the Cooperative to consider identified risks of constructing and operating the proposed Project to resident and migratory species that use the Project area. Maintaining the separation of these models was in adherence to the RSP and the agreed-upon execution of its component studies, and therefore TU's request that one model be used to inform the other was not adopted.
163	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	Additionally, the study questions that were not addressed include (page 87 of Final Study Plan 2022): "a. How will estimated changes to upstream passage, behavior and survival of salmon through the Falls Reach impact population projections? b. How will estimated changes to downstream passage and behavior of salmon through the Falls Reach impact population projections? c. How will estimated rearing habitat changes in the Falls Reach impact the populations? d. How will estimated changes to downstream survival impact the populations? e. How will estimated stranding/trapping rates impact the populations? f. How will estimated reductions in fringe spawning habitats impact the populations? g. How will estimated migration delays and injuries due to false attraction to the tailrace impact the populations? 2a. What is the probability that Chinook and Sockeye salmon escapement will drop below their escapement goals under the Project compared to without-Project? 5. What is the expected natural level of variability (without-Project) in population dynamics? 6. How will Project operations affect population dynamics and the magnitude and how do these compare to the population dynamics without-Project under future climate conditions?"	Comment noted.
164	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	The project focused on three hypotheses about how future climate could change the timing of juvenile and adult passage, three hypotheses about the role of predation on juvenile survival, and three climate conditions (baseline, future low, and future high emissions). These did not cover the study questions listed in the study plan (quoted above) and arguably missed one of the most-commonly asked about components of the project: smolt survival through the turbines. The life-cycle model analysis only considered scenarios where turbine-passage survival was 95%. As stated above, the 95% assumption was not based on a literature review and does not represent the range of survival probabilities that could occur. This also misses a question and concern around turbine survival impacts on the population that has come up repeatedly in the Aquatic Resources Working Group, from the public during the Study Plan comment period, during the public presentation on the USR, and comments on the ISR.	At the time of the Entrainment Report, the proposed Project engineering design, and turbine design and selection generally were at a conceptual stage. If the Cooperative elects to proceed with a license application and ultimately, a license is issued, further refinement of the conceptual design will take place in a collaborative fashion similar to that of the study planning process. That collaboration would culminate in a series of design deliverables (30%, 60%, 90%, etc.) for requisite approval prior to project implementation taking place. Given the size, head, volume of water, and other factors including turbine survival studies published for other locations, the Cooperative believes that a high level of survival is possible at Nuyakuk, and future design phases will be implemented to ensure that the highest feasible survival level is achieved for migrating smolts of all sizes. A 95%

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
				survival number used for the LCM is an estimate, and while the Cooperative hopes to provide all stakeholders the most robust estimate of smolt survival possible as engineering design progresses, the use of 95% in the LCM allows comparison of Project effects under different future flow scenarios (and other factors such as escapement, returns, etc.) to show how operation at different hydrographs may affect the population, while the turbine survival value (95%, or otherwise) is expected to be relatively constant as river discharge changes if each independent turbine is operating at capacity.
165	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	Additionally, we have questions about how the model works and some of the results and assumptions. Specifically: 1. The model estimates fixed transition probabilities for the parameters in equations 1-8, however the model outputs (i.e., number of spawners by age class) vary over time. Where does this stochasticity (i.e., variation over time) come from? Is it only driven by the error term in the Ricker equation? Related, what underlying process do you assume underlies the population trajectory? For example, are you assuming it is a random-walk process with error? 2. Our assumption is that variation in environmental conditions drives some portion of the variance we see in spawners over time. For example, some years with poor ocean conditions have lower smolt survival and therefore fewer spawners. However, the model only identifies one environmental covariate (flow at the falls), but leaves out known drivers such as ocean conditions. How can this represent the baseline population dynamics without accounting for known drivers? 3. The model estimate for flow effect on passage was 0.429 with a 95% credible interval of (-1.935—2.571). The inclusion of zero in the 95% credible interval indicates that flow is unlikely to be a predictor of passage rates. In other words, the analysis suggests that flow does not affect passage in this population. Since this is the case, why does the model analysis then go on to compare various flow relationships (none, linear, non-linear?)? 4. The statistical fits presented in Figure 5-1 are hard to interpret because the y-axis is not appropriately scaled for nearly all of the return age groups. With that said, the statistical fit of Returns 1.3 is very close to the observed values. While a close fit is generally a good thing, it can also be an indication that the model is over parameterized. When a model is overparameterized it does a great job of fitting the observed data, but a terrible job of predicting future data. We are concerned that is the case here and that predictions from this model should be considered with caution. 5. Why was a 80% credible interval used to show the spawner-juvenile production curve? 95% is the much more commonly used credible interval. Our concern is that a 80% credible interval would be so wide that the relationship would be almost meaningless. I that is the case, it should be presented here as it represents a large source of uncertainty.	1. Variation in upstream migrant success comes from estimated Project affects for different flow levels and escapement variation from the relative proportion of fish returning that were 0+ out-mgirants relative to those that out-migrated from the lakes upstream of the Project as 1- and 2-year old freshwater juveniles. 2. Certainly variation in environmental conditions, including ocean conditions, harvest, etc. contribute to variation in adult abundance, though the availability of site-specific, and stock-specific data linking other conditions to variance in Nuyakuk or Nushagak river returns would be necessary to consider these factors in the model beyond the LCM's accumulation of mortality impacts over multiple generations in the ocean as described in Section 4.1.1.2 of the LCM USR. 3. The 95% confidence interval includes 0, it does not definitively exclude values that are non-zero. The flow relationships have to do with categorical relationships between flow relative to effect on other variables in the model and are therefore 4. Comment noted. 5. 80% provides a more conservative range of potential juvenile production which were estimated from retrospective analysis of historical Nuyakuk River Sockeye Salmon escapement (data from pre-2000s) and adult return data from the Nushgak ADF&G sonar counting system on the Nushagak.
166	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	Lastly, we are unclear how the Project intends to use the life-cycle model as it is currently developed. The study plan indicates that the model will be used to assess differences between current (baseline) conditions and future conditions that include the project and different climate scenarios and as part of a risk assessment. However, in the discussion of the Updated Study Report (page 49), the authors state that: "The results of this study should not be viewed as a forecast of what the population size will be under the Project (or under Baseline conditions without the Project). Instead, it is a useful tool for understanding the sensitivity of the Nuyakuk River Sockeye Salmon population to various potential Project effects (Figure 4-1)."	Comment noted.
167	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	Additionally, "the outputs of this study should not be mis-construed as indicating population level differences between the Project and Baseline. Rather, the results of the linear and non-linear flow-to-survival relationships reflect the underlying equations (e.g., Eq 5b, Eq 5c) and parameter values (Table 5-2) employed in those relationships. The role of this study is in educating and informing engineering design and future development of a minimum flow requirement, identifying protection, mitigation, and enhancement (PM&E) measures, and drafting a Monitoring and Adaptive Management Plan that collectively can help	Comment noted.

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			avoid or minimize identified risks from this and other studies (USR Attachment E Integrated Risk Assessment)."	
168	Trout Unlimited	Chinook and Sockeye Salmon Life Cycle Model	First, how was sensitivity measured? The report states that the results do not indicate "population level differences between Project and Baseline", but then present the difference between Project and Baseline models in Table 5-3, 5-4, and 5-5. Second, it is unclear how the model will be used to "educating and informing engineering design and future development of a minimum flow requirement, identifying protection, mitigation, and enhancement (PM&E) measures". The model outputs do not provide the types of information that would be necessary to inform those topics, and the authors provide no specific examples of how they will make those links in the future.	The intention of the statement about "educating and informing" future engineering design was discussed in the USR for both the LCM and IRA in that the primary outcome of both models is an indication that there is possible risk to the population of salmon associated with the intake/ entrainment and turbine passage. Therefore, these risk sources will be considered especially critically in the future design phases of the intake, debris racks, turbines, tailrace, and exit trash racks, and will also help inform operational conditions and the establishment of any limitations of project operation during periods of time or flow conditions at which species and life stages cannot be protected through engineering design alone.
169	Trout Unlimited	Integrated Risk Assessment of Fish Populations	Within the Aquatic Resources Working Group (AWRG), there was an ongoing conversation about how the life cycle model and the integrated risk assessment (IRA) could and should inform one another. There was consensus amongst some members that the processes should complement one another. That didn't happen, but it's still unclear if that was because of straightforward logistics, a difference of opinion/expertise, or some combination thereof. Whatever the reason, we are concerned about the lack of interaction and feedback between the lifecycle model and the integrated risk assessment. We are also concerned about the shortcomings of virtually all of the studies we reviewed with respect to their influence on the IRA.	As discussed during the ARWG meetings on the IRA in 2024, the determination of how the IRA and LCM were designed and intended to be concurrent and independent occurred during study planning in 2021. It was not reasonable or feasible to revise or reverse decisions that were made by representatives of all members of the ARWG that had been made in the past, even if new representatives of some entities were not aware of or did not agree with previous decisions and study plans.
170	Trout Unlimited	Integrated Risk Assessment of Fish Populations	The methodology of the IRA was generally intractable for "voting" members, and consistently changed (on an approximately weekly basis). The so-called delphi voting method that is defined many times in many different ways throughout the USR was ultimately rejected due to logistical constraints, and/or redefined to suit consultants' objectives. The USR addendum describing the IRA fails to report numbers of votes (i.e., sample size) much less affiliations of voters. For example, it appears that very few voters described the project as having beneficial effects on fisheries. As far as we can tell, the only voters suggesting beneficial effects are project consultants with a clear financial interest in the success of the project.	The Delphi method was carried out with as close to its intended protocol as possible. The consultant team was forced to pivot and alter the schedule and logistics of the scoring process to accommodate members of the ARWG, including TU, who requested last minute changes. The Cooperative disagrees that any changes were made to "suit the consultants objectives" as the objective of the study team was to gather opinions and insight from the ARWG on the risk sources and elements identified by the ARWG and present those findings to the Cooperative. Members of the ARWG requested that the consultant team provide opinions, which were then available to all for debate and alteration. The USR does not fail to report the affiliation of ARWG members who provided ranked scores. The Delphi scoring process was intended to be anonymous, therefore, scores for each risk source/ element were provided in the USR anonymously. Finally, the consultant team has no financial stake at all in the success or failure of Project, and disagrees with Trout Unlimited's statement that they do. As noted in the assumptions section of the IRA, and discussed extensively with ARWG members, the IRA was not intended to be a referendum on the project, but a collaborative and objective process to identify potential risks for further consideration. All members of the ARWG, including Trout Unlimited were asked to provide written justification for the scores they submitted to be included in the USR. All written justifications provided were included anonymously, regardless of who submitted them or their position on the project. Very little justification was provided for scores indicating high risk/ high likelihood, and therefore, those opinions are captured in the USR in the combined scores and figures, but are not well represented in the text sections on score justification because they were not provided.

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171	Trout Unlimited	Integrated Risk Assessment of Fish Populations	As participants of the ARWG contributing to the IRA, we received multiple confusing messages from the Project team especially after requesting an "extra" option to recuse ourselves from voting if we either didn't consider ourselves qualified, OR didn't believe sufficient information existed to support our vote. For example: "Even if you feel as though you are unqualified in one specific area, your perspective can represent a valid and critical part of the group's overall judgement. The Delphi does not require every participant to be an expert on every question, your intuition, experience, and uncertainties in your knowledge can inform the process and capture a diversity of views." Additional communications indicated, "We don't have a lot of participants, I believe there were only 9 voters on the call, which means a plurality of 7 or more votes is needed. Abstaining from voting could mean that we don't reach consensus. Your vote is not a definitive statement of fact, but an expression of opinion based on your best judgement, you are encouraged to participate even if you feel unsure. The simple act of asking for clarification from an expert in that field could shape the outcome of the discussion." These and other similar communications undermined any confidence we had in the IRA process.	Comment noted. The IRA team attempted to accommodate repeated requests for changes to the process, options for abstaining from votes, and other scheduling delays related to the ARWG being unprepared to submit Delphi scores on the schedule defined in 2023. This understandably led to confusion as the Delphi process, and the scoring math is predicated on 100% participation, as was described in detail during regular ARWG meetings in 2023 and 2023.
172	Trout Unlimited	Recreation Inventory	We appreciate that recreational surveys were wide ranging and well done where they were conducted. That said, we're concerned that the only surveys analyzed were from voluntary respondents as opposed to any kind of rand sampling that might better represent area interests. We are also concerned about how few responses were received and described for this study in general: 99 responses from 6 villages strikes us insufficient with respect to evaluating project risks.	As with every aspect of this process, participation in the recreation workshops was proactively and widely solicited and encouraged. The Cooperative is not and would never assume they were in a position to force anyone to participate. The number of responses received is a function of those that chose to involve themselves in the process.
173	Trout Unlimited	Recreation Inventory	Additionally, as we stated in our ISR comments, we find the 6-day field collection effort wholly insufficient to characterize recreational use, much less evaluate potential impacts.	Comment noted.
174	Trout Unlimited	Recreation Inventory	In general, we are concerned about the short duration and small sample size of the recreation inventory. It also strikes us that these shortcomings may be compounded by a lack of information amongst respondents regarding the potential impacts of the project to fish populations. While we recognize this study is focused on out of state recreationalists, we are concerned that the recreation inventory in general overlooks local (recreational and other) interests.	Comment noted.
175	Trout Unlimited	Aesthetics Study	This study lacks substance to that point that we struggle to provide meaningful feedback. We are concerned that the geographic scope of this study is overly limited (including neglecting to consider the transportation corridor), that analyses are subjective, and that this study should more comprehensively consider/integrate results from other studies (when and if those studies become worthwhile).	The Cooperative would like to reiterate the reference to the approximately 5-minute long video posted on the project website (www.nuyakukhydro.com) which provides an aerial and ground-level rendering video of all proposed project works at the falls and for the initiation of the transmission line corridor. Based on other projects recently licensed in Alaska, the combination of the key observation points and this video is beyond commensurate with the Aesthetic studies conducted during the those respective licensing processes.
176	Alaska Department of Natural Resources, Wood-Tikchik State Park Management Council (ADNR/WTSPMC)	General Comment	The Council has been engaged in the ILP process since it was initiated in 2018. We are appreciative of the comment period extension which has allowed additional time to evaluate the USR Addendum reports. The Council met on March 14, 2025, to provide stakeholders with an opportunity to discuss and provide comments on the proposed Nuyakuk River Hydroelectric Project Updated Study Report (USR). For the meeting, ADF&G staff provided the Council with their initial assessment of the USR. ADF&G's comments were drafted by staff who are technical experts in their respective fields and. ADF&G's comments are supported by the Council, consistent with the management objectives in the Plan. The Council also supports comments from the United Tribes of Bristol Bay, a tribal consortium of 15 federally recognized tribes in Bristol Bay whose mission is protecting the subsistence resources and subsistence way of life for the people of the Bristol Bay region. Previous community engagement efforts led by the consortium are representative of the communities in our Council membership. These efforts are aligned with the Council's outreach responsibilities and are consistent with the primary purpose for establishing the Park.[7]	Comment noted.

[7] Wood-Tikchik State Park Management Plan (1-1)

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			The Aug. 24, 2022, Study Plan Determination has been a key document which the Council has relied upon to assess the study requirements, objectives, and methods during the two-year study period. The statement which assists in qualifying our comments follows: 'Unless otherwise indicated, all components of the approved studies not modified in this determination must be completed as described in the Cooperative's RSP.'[8]	
177	ADNR/WTSPMC	General Comment	During the ISR review period, the Council held public meetings and relayed comments on research results. The Council and stakeholders requested additional analysis on a number of studies. Most responses were deferred to a future report referenced as the 2024 Study Supplement Document. One example request stemmed from valid concerns of an unplanned trail network spurring from the transmission line corridor. The Council relied on the Study Supplement Document as the mechanism to address our request. This example has been consistently requested since the Scoping Document 1 and 2 stages of the ILP.[9]	Comment noted.
178	ADNR/WTSPMC	Subsistence Study	Similarly, the Subsistence Studies approved in the Study Plan Determination were essential to assess how the current uses of subsistence resources in the Park might be influenced by development of a commercial facility and related infrastructure. The Council was concerned that any delay in the subsistence studies would reduce the ability to feasibly incorporate results into year 2 study designs. The Council concern was again referred to the future Supplement Document as such; 'The entirety of the methodological process will again be provided in the 2024 Supplemental Methods document to be distribute in early May.'[10] The Supplemental Methods Document failed to address the concerns of the Council. The Council's ISR comments, which relied on the Supplement Document, remain unaddressed.	To be clear, the Cooperative never committed to conducting the subsistence workshops in 2023. We did, in 2022/early 2023 indicate a proactive desire to complete the subsistence work in 2023, if possible. Due to modifications in the appropriate technical specialists to utilize, financial considerations, and the amount of other technical studies being conducted in other areas (fish, water quality, terrestrial, cultural and recreation) during 2023, a decision was made to conduct the subsistence analysis in 2024, during Year 2 of the study program. Further and of key note, a substantial and consistent level of effort was undertaken to consult and reach agreement with the village councils on appropriate timing for the respective workshops. Despite the proactivity in these efforts, a substantial amount of time passed without responses in general and/or ones that allowed the Cooperative to schedule the workshops. Additionally, all of the unacceptable times to conduct the workshops during the spring/summer/fall timeframe ultimately resulted in the need to conduct the workshops in October 2024 and include the final subsistence report later than the USR filing, in the addendum.
179	ADNR/WTSPMC	General Comment	As previously discussed, the Council is tasked with maintaining current uses of recreational and subsistence resources, and levels of access to the park. One specific action for implementing the Plan includes monitoring trends by conducting subsistence use surveys.[11] Any changes to the disposition of lands within and around the Park may influence subsistence uses. To meet our mandate, we continue to request a full assessment of the potential impacts of those changes. The Plan was developed with an extensive amount of input from the communities represented on our Council, landowners with inholdings, and stakeholders within and adjacent to the Park. The Nuyakuk Falls are located within what is classified as the Natural Land Use Designation as outlined on Map 8-1 in the Plan.	Comment noted.
180	ADNR/WTSPMC	General Comment	The Plan also defines specific conditions for permitting in a matrix on Table 8-2, with the following guidance: Federal regulatory agencies should also refer to the matrix.'[12] These permitted and prohibited uses are closely aligned with the Nushagak and Mulchatna Rivers Recreational Management Plan (RRMP) objectives, as defined through the management intent statements.[13] Table 3-1 of the RRMP establishes the guidelines for uses of the Nuyakuk River Corridor.[14] The Nuyakuk River Corridor is described in Unit 8 of the RRMP. The management intent is "Primitive", which is defined as:	The Cooperative assisted in the passing of Senate Bill 91 which allowed evaluation and, assuming feasibility and the adherence to specific criteria, the development of the proposed project within the park.

[8] Study Plan Determination for the Nuyakuk River Hydroelectric Project 08/24/2022
[9] Scoping Document 2 for the Nuyakuk River Hydroelectric Projects 03/05/2020
[10] Initial Study Report (ISR and ISR Meeting Responses to Comments Received, Comment No. 181
[11] Wood-Tikchik State Park Management Plan (11-4)
[12] Wood-Tikchik State Park Management Plan (8-15)
[13] Nushagak and Mulchatna Rivers Recreation Management Plan (2005 Revision) (A-2)
[14] Nushagak and Mulchatna Rivers Recreation Management Plan (3-3)

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			'Primitive Use Experience: A use experience characterized by little to no evidence of human use (little to no manmade changes to the environment from development or other human activities)'[15] The Bristol Bay Area Plan (BBAP) clarifies the unit R06-25 management intent as follows: *'In general, authorizations should not be issued for non-recreational uses that are incompatible with the management intent of this unit and the management objectives of the RRMP...'*[16]	
181	ADNR/WTSPMC	Recreation Study	We would like to acknowledge these planning efforts and management intent statements, and attest that a primitive use experience and scenic values are major considerations for the recreational users visiting the remote lodges in the park. This is reflected in the recreational study responses as being a significant visitation factor for wildlife viewing, sport fishers and big game hunters. Through the Council, commercial operators who use the park have consistently requested an evaluation of the fiscal impacts on the tourism businesses that leverage the high value of the Park's visual resources and scenic values in promoting their operations.	Comment noted.
182	ADNR/WTSPMC	Aesthetics Study	The Aesthetics study report in attachment S of the USR addendum did not address the concerns identified by FERC, Alaska Department of Natural Resources (ADNR), and Royal Coachmen Lodge in the RSP.[17] While the graphic renderings depict the Nuyakuk Falls area, the transmission line corridor and community impacts were not assessed. The interdisciplinary review team was never formalized for evaluating the study design, methodology, or discussion of results. The discussion of study results contains value statements which do not align with the comments and discussions held at our Council meetings. The Council represents a local and diverse membership which would be an appropriate forum to steer any future efforts to recreate this study and may be considered as the appropriate interdisciplinary team for the aesthetics study evaluation as requested by FERC in the Study Plan Determination.	The Cooperative would like to reiterate the reference to the approximately 5-minute long video posted on the project website (www.nuyakukhydro.com) which provides an aerial and ground-level rendering video of all proposed project works at the falls and for the initiation of the transmission line corridor. Based on other projects recently licensed in Alaska, the combination of the key observation points and this video is beyond commensurate with the Aesthetic studies conducted during the those respective licensing processes.
183	Kay Andrews, City of Aleknagik	General Comment	I am submitting this comment regarding the preliminary permit application and notice of intent/pre-application for a license (Docket: P-14873) for the proposed Nushagak Cooperative Hydroelectric Project in the Wood-Tikchik State Park. While the City of Aleknagik recognizes the value of renewable energy, I strongly urge FERC to require a more comprehensive study of the project's potential impacts due to the sensitive environmental conditions and the protections afforded to this state park. This watershed is a vital ecosystem that sustains a diverse range of life, from the force of fresh water shaping the landscape to the vibrant fish, wildlife, and plant species that depend on its natural flows. The proposed hydroelectric project could significantly disrupt these delicate relationships, affecting not only the immediate area but also downstream habitants and communities that rely on this watershed for clean water, subsistence, ecotourism, and ecological stability. Furthermore, the designation of this area as a state park is intended to protect it from extensive development that could degrade its natural and cultural values. Allowing industrial-scale hydro development within boundaries undermines this purpose and risks setting a precedent for further encroachment protected lands. Before moving forward, it is essential that independent, science-based studies thoroughly assess the short- and long-term ecological impacts, including: 1. Changes to stream flow and water quality that could impact fish populations and aquatic life. 2. Disruptions to wildlife corridors and nesting grounds. 3. Impacts on local and Indigenous communities that depend on the watershed for subsistence and cultural practices. 4. The potential for erosion, sedimentation, and other unintended environmental consequences.	Comment noted, also important to note, that two other hydro electric resources were identified in the WTSPMC Charter when it was created in Grant Lake and Elva.

[15] *Id*.
[16] Bristol Bay Area Plan (Revised 2013) (03-107)
[17] Revised Study Plan Filing for the Nuyakuk River Hydroelectric Project (Comment No. 36, 74,125, 137)

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			Given these concerns, the City of Aleknagik request that FERC require extensive environmental review and community consultation before any further action is taken on this application. The long-term health of our ecosystems and the integrity of our protected lands must take precedence over industrial development in such sensitive areas. Thank you for your time and consideration.	
184	U.S. Fish and Wildlife Service (USFWS)	General Comment	The Service appreciates the Cooperative's extensive work to understand the potential impacts of the proposed project on fish and wildlife resources, and on the people who rely on those resources. We also appreciate the Cooperative's efforts to address our concerns on the Initial Study Report (ISR, filed December 1, 2023; Service comments filed February 20, 2023), including their increased efforts and modified methods to capture Chinook salmon (Oncorhynchus tshawytscha), tagging efforts to understand migration patterns, and efforts to assess the diet and distribution of native piscivores.	The Cooperative appreciates the comment.
185	USFWS	Subsistence Study	Our primary concern is related to the modification of the Subsistence Study, and how the significant deviations from the approved study plan impact the quality and comparability of baseline subsistence use information for communities in the vicinity of the project. The goal of the original Subsistence Study, as described in the Proposed Study Plan (filed March 2, 2022) was to document traditional and contemporary subsistence harvest and use in the project area in order to provide a basis for impact assessment, avoidance, and minimization; to inform the development of protection, mitigation, and enhancement measures; and ultimately serve as the basis for project license analysis in accordance with the National Environmental Policy Act. Study objectives to meet this goal included subsistence harvest surveys for Koliganek, New Stuyahok, Ekwok, and Aleknagik, with the addition of Levelock and Dillingham in the Revised Study Plan (filed August 1, 2022). The harvest surveys would have consisted of household studies in the communities to document diversity and magnitude of subsistence harvest, the spatial extent of harvesting activities, and estimate community participation. The methodology would have included the development of a survey instrument that could produce comprehensive baseline information about subsistence hunting, fishing, gathering, and other topics that address subsistence needs and are compatible with information collected in past household interviews. Additionally, communities would have been consulted to help identify liaisons for the study, and to seek study support. The household surveys would have captured the following information: 1) demographic information; 2) involvement in use, harvest, and sharing of fish, wildlife, and wild plants in their study year; 3) estimate of amount of resources harvested in their study year; 4) information about employment and cash income; 5) assessments of changes in subsistence harvest and use patterns based on data available from past study years; and 6) location of fishing, hunting, and gathering activities in their study year. The standardized methodologies would have facilitated data quality and consistency so that past and future results would be comparable, and were meant to maintain positive working relationships with communities.	The Cooperative appreciates the comment and has filed, along with \this comment response matrix, a comprehensive consultation record of all communications, meetings, etc. that led to the modifications to the Subsistence Study. This same consultation package was requested by ADFG (and provided by the Cooperative) in late 2024. Consistent with our communication with ADFG in late 2024 preceding the distribution of the subsistence consultation record, our original intent was to utilize ADFG for the subsistence study as it would have represented a mutually beneficial opportunity. ADFG had an internal desire to update their regional subsistence information and the Cooperative's proposed subsistence study area was included in ADFG's much larger area or regional interest. When discussions related to the scope and associated cost of ADFG's efforts occurred, it became clear that the overall financial obligation to the Cooperative related to the wholisitc study was cost prohibitive. As a result, the Cooperative elected to focus their study one the much smaller potential area of impact associated with the proposed project as opposed to the more regional effort needed for ADFG. The Cooperative wishes to note that all of the dialogue related to the potential ADFG partnership on this study was handled in an extremely collaborative and objective fashion and we appreciate all of the efforts ADFG put into these discussions, and their input related to this process as a whole. While it is important to have updated baseline data prior to a development project so that future changes in harvest amounts and use areas can be measured, updated data are not always necessary to analyze the types and nature of impacts that may arise from a proposed project, particularly if targeted workshops identify potential changes since previous surveys. Workshops provide an alternative to more comprehensive surveys by focusing on project-specific information (which would not be documented in a typical household harvest survey) and by asking participants to identify whether existing subsistence information accurately captures current uses.
186	USFWS	Subsistence Study	The Subsistence Study that was ultimately conducted and described in the USR Addendum used literature review and workshops to develop a summary of subsistence information for the six study communities, complete an analysis of the potential impacts of the Project on subsistence uses and activities, and identify potential mitigation aimed at minimizing impacts to subsistence (Subsistence Study, page i). Workshop were held in Dillingham (4 participants from both Dillingham and Aleknagik), New Stuyahok (7 participants) and Koliganek (2 workshops, 34 participants; Subsistence Study, page 14). Workshop participants were asked questions related to subsistence resources in different areas potentially impacted by the project. They were	Comment noted. See response to Comment #185 and the consultation record portion of this filing.

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			also asked to provide any comments or concerns regarding subsistence, suggestions for mitigation, and general comments and concerns (Subsistence Study, Appendix B). Using information from the literature review and workshops, the report presented information for each community including descriptions and maps of subsistence use patterns, summary of resource importance, summary of subsistence use data, analysis of potential impacts, and potential mitigation measures.	
187	USFWS	Subsistence Study	The robust compilation of literature provided a solid characterization of available subsistence information. However, many of the sources were well over ten years old, and the study used community engagement from workshops to capture current subsistence use information. We appreciate that the Cooperative conducted the workshops in-person in New Stuyahok, Koliganek, and Dillingham so that it would be easier for community members to participate. In our comments on the ISR, we recommended in-person listening sessions to increase engagement and gather long-term natural resource data that could be used to inform decision making, but we recommended the listening sessions in addition to conducting the household surveys and other methods described in the approved study plan. By relying on workshops instead of household surveys, the study is obtaining current subsistence use information from available, and perhaps the most active, community members and may miss important input from members not in attendance, whereas the household surveys were intended to gather information from a representative sample of community members. Also, the workshops occurred in three communities instead of all six. In-person meetings at all the originally proposed communities would have provided a more accurate current accounting of how communities in the region use subsistence resources that could be impacted by the project. Finally, the original Subsistence Study would have used standardized methodologies so that past and future data on subsistence use patterns would be comparable, potentially revealing changes that could be attributable to project impacts.	Comment noted. See response to Comment #185 and the consultation record portion of this filing.
188	USFWS	Subsistence Study	The Cooperative explains their deviations from the study plan at the end of the Subsistence Study report, and state they made the determination that "the regional survey approach was in excess of what they could responsibly afford and justify given the intent of their effort was to define potential site-specific impacts to subsistence associated with the proposed Project" (Subsistence Study, page 112). Had the deviation from the original study plan been available and presented at the ISR meeting on December 5, 2023, there would have been in-person discussions; opportunities for filing official comments, concerns, and suggestions on the ISR; an opportunity for the Cooperative to respond; and FERC would have made a determination on the revised study plan after having weighed the concerns and responses. Instead, there was a methods supplement summary shared on May 6, 2024 that briefly noted a change to expand literature review to include more communities and to capture the overall subsistence use for those study communities. And on October 16, 2024, the Cooperative filed a progress report related to the subsistence interviews and stated that workshops had been scheduled for Dillingham/Aleknagik, New Stuyahok, and Koliganek. The Cooperative has been inclusive and welcomed all interested participants to the technical working groups where updates, concerns, and ideas were regularly shared, including information related to the Subsistence Study. While anyone was invited to participate, limiting updates on study plan modifications to the technical working group did not allow for the type of transparency and discussion that would have been afforded with a formally filed revised study plan, comment period, Cooperative response, and subsequent determination by FERC.	Comment noted. See response to Comment #185 and the consultation record portion of this filing.
189	USFWS	Subsistence Study	We continue to recommend an additional year of data collection in order to complete the study as it was approved so that subsequent decisions can be informed by robust and representative data on current subsistence use. This includes conducting household studies with the assistance of community liaisons and hosting follow-up workshops in the communities to share and discuss study results. We believe that gathering information with consistent methodologies is important so that changes over time will be comparable, especially since subsistence will continue to be a priority consideration for this license and relicensing in the future.	Comment noted.
190	Commercial Fishermen for Bristol Bay (CFBB)	General Comment	Bristol Bay's pristine waters produce over half the world's wild sockeye salmon each year. Over the past decade Bristol Bay has seen salmon returns break all previous recorded catches and total runs. While salmon populations around the globe struggle, the record-breaking runs in Bristol Bay continue thanks to thousands of years of careful stewardship, sustainable fisheries management, and above all, sufficient and intact habitat. The Nuyakuk River is an important tributary in the Nushagak system which has accounted for	Comment noted. As you are aware, the Cooperative is a local, not for profit entity. One of our primary roles in the region is to provide efficient and cost-effective power. We are abundantly aware that this power will only be necessary into the future if our fisheries remain strong and protected. Given this, we would never promote a project that

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			nearly a third of Bristol Bay's sockeye in recent years and one of the greatest king runs left in the world. In addition to sustaining the people and cultures of Bristol Bay, the salmon fishery provides an economic engine for the region and the nation, supporting 15,000 jobs and a value of approximately $2.2 billion annually. CFBB submits comment as part of its commitment to advocate for a fishery which can continue to thrive for generations to come and believes public participation and complete and sound science must be central to assessing risks to the Bristol Bay watershed. Recognizing that a sustainable fishery must include sustainable communities within the Bristol Bay watershed, CFBB is committed to supporting solutions towards sustainable economies in Bristol Bay that are compatible with the cultural, ecological, and economic priorities of the region. As opportunities arise, decisions must be weighed considering all potential impacts. To ensure potential risks related to the development of the proposed Nuyakuk River Hydroelectric Project are adequately evaluated, full and inclusive public participation is necessary in every step of the FERC licensing process. Also crucial to Bristol Bay's continued stewardship and management of sustainable salmon runs is the prioritization of the best available science and research. When evaluating potential risks of any development project within the Bristol Bay watershed, a full study of salmon habitat, behavior, populations and water flow requirements is necessary. Based on participation in working groups providing technical analysis of the USR, it is clear that additional study is needed in order to adequately evaluate risks. Recommendations for additional study made by the State and Federal agencies in charge of managing Bristol Bay's resources as well as the regional entities representing Bristol Bay's communities must be taken into consideration and implemented in order to ensure all risks are fully evaluated and understood. CFBB again requests that a Study Report be considered Final only once risks to salmon and habitat are fully studied and can be adequately assessed by all stakeholders in the region.	we feel (based on science and objectivity) has the potential to destroy our most precious resource. This project represents a potential option to provide renewable power to our region for generations to come. We are proud of the collaboratively developed and implemented natural resource study program and conceptual design process that has taken place. The Cooperative looks forward to continued regional collaboration as further decisions are made as to the potential for the project.
191	CFBB	Economic Decision Support Tool (EDST)	Finally, the Bristol Bay region's economic wellbeing and over 15,000 jobs rely on a sustainable and intact salmon fishery. CFBB requests that the study implementation for the Economic Decision Support Tool (EDST) include participation from the fishing industry throughout the process to ensure that the tool accurately predicts potential impacts to the commercial fishing economy. As the EDST model is updated with input from the study programs, economic scenarios should be presented to Bristol Bay communities and fishing industry members for their input. As the region's economic driver, any potential direct impacts to salmon populations as well as indirect impacts to the fishing economy must be accurately evaluated.	The EDST was a voluntary assessment deemed necessary and implemented by the Cooperative outside of the FERC process. Assuming the Board moves forward with the licensing process and as advancements to the EDST are needed, the Cooperative is committed to working with all interested parties.
192	CFBB	General Comment	CFBB shares in the Nushagak Electric and Telephone Cooperative's endorsement of a Fish First directive when evaluating any resource utilization in the watershed. CFBB therefore requests the Cooperative expand studies to include recommendations made by Bristol Bay's Tribes, regional stakeholders, State of Alaska, and Federal agencies and science based organizations in order to ensure potential impacts are fully assessed. Additionally, CFBB requests adequate opportunities for public education and comments on all studies within the USR and the additional studies to come. Finally, CFBB recommends that additional effort be undertaken to ensure that the commercial fishing community both within Bristol Bay and outside are fully engaged and informed on potential impacts to the fishery. For the Economic Decision Support Tool to be effective in evaluating impacts to the fishery, participants in the industry which represents the economic engine of Bristol Bay must be fully engaged in the process.	Comment noted.
193	CFBB Signed by: 1. Mr. Neville Bruce - Anchorage, AK 2. Mrs. Cathy Hook – Edmond, OK 3. Mr. Charles Carpenter – Everett, WA 4. Mr. Dogan Ozkan – Fairbanks, AK	General Comment Letter	I am writing in regards to the Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project and the potential impacts its development and operation could have on Bristol Bay's natural resources, communities, and fishing economy. It is my position that any large project developed in the Bristol Bay watershed with the potential to significantly harm salmon must be adequately studied and opportunity for public engagement given to ensure Bristol Bay's unparalleled salmon runs are not impacted. While I appreciate the Federal Energy Regulatory Commission's willingness to give opportunity for public input through this licensing process, it is clear that the studies and materials made available to date in this Integrated Licensing Process are complex and present difficulties for a layperson to adequately assess. The Updated Study Report available for comment is not easily digestible with limited access to presentations; many fishermen and community members have not had adequate opportunity to assess the USR.	Comment noted. The Cooperative would like to reiterate their confidence in the rigor, results and analysis associated with their collaboratively developed comprehensive study program associated with this licensing process.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
	5. Mrs. Annmarie McCann – Venice, FL 6. Mr. Sammy Steen – Snowmass, CO 7. Mr. William A. O'Brien – Vancouver, WA 8. Mr. Ed Fiedler – Austin, TX 9. Ms. Barbara Helser – Waupaca, WI 10. Mr. Mark Caso – Gulfport, MS 11. Mr. Ap Franceschini – Dillingham, AK 12. Mr. John Oda – San Francisco, CA 13. Mr. Matt Brzezinski – Saint Clair Shores, MI 14. Mr. Nels Ure, Naknek, AK 15. Ms. Gabriella Hill – Naknek, AK 16. Ms. Katherine Carscallen – Dillingham, AK		The Nuyakuk River is an increasingly important river in the Bristol Bay watershed and the region's salmon runs. In recent years, the Nushagak has been the most productive river system in Bristol Bay with salmon runs increasing significantly over the past decade. This complex system supports all five species of salmon including one of the last remaining managed Chinook salmon runs in the state. This population of Chinook is currently listed as a stock of management concern, only heightening the need for careful consideration of impacts to this river. The Nushagak Electric Cooperative's desire to transition Bristol Bay communities toward adoption of sustainable energy sources is a positive endeavor, however, it is imperative the Cooperative and FERC ensure that no negative impact on the salmon and their habitat would occur as a result of this proposed project. The requirements for public comment within the FERC process are an acknowledgement that public participation and input will create a more comprehensive result ensuring no risks to salmon habitat and Bristol Bay's way of life are overlooked. Thorough and informed participation in this process should be a shared goal of the Nushagak Electric Cooperative, FERC, Bristol Bay's Tribal, Community, and Fishing organizations. The process to study potential impacts of the Nuyakuk River Hydroelectric Project must be rigorous enough to ensure any impacts to this productive river system and the fish, wildlife and people dependent on it are accounted for, and must be inclusive of all residents and fishermen dependent on Bristol Bay's waters. To ensure adequate public engagement is allowed for and all risks are meaningfully assessed, additional community and fishing industry engagement including more comprehensive and digestible analysis of potential impacts and risks is necessary before the project moves forward in the licensing process.	
194	Ms. Jill Harmer, Submitted by CFBB	General Comment Letter	I am writing in regards to the Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project and the potential impacts its development and operation could have on Bristol Bay's natural resources, communities, and fishing economy. Please adequately study and give opportunity for public engagement given to ensure Bristol Bay's unparalleled salmon runs are not impacted. salmon is my favorite and most nutritious food and they already live a hard life. The Updated Study Report available for comment is not easily digestible with limited access to presentations; many fishermen and community members have not had adequate opportunity to assess the USR. The Nuyakuk River is an increasingly important river in the Bristol Bay watershed and the region's salmon runs. In recent years, the Nushagak has been the most productive river system in Bristol Bay with salmon runs increasing significantly over the past decade. This complex system supports all five species of salmon including one of the last remaining managed Chinook salmon runs in the state. This population of Chinook is currently listed as a stock of management concern, only heightening the need for careful consideration of impacts to this river. The Nushagak Electric Cooperative's desire to transition Bristol Bay communities toward adoption of sustainable energy sources is a positive endeavor, however, it is imperative the Cooperative and FERC ensure that no negative impact on the salmon and their habitat would occur as a result of this proposed project. The requirements for public comment within the FERC process are an acknowledgement that public participation and input will create a more comprehensive result ensuring no risks to salmon habitat and Bristol Bay's way of life are overlooked. Thorough and informed participation in this process should be a shared goal of the Nushagak Electric Cooperative, FERC, Bristol Bay's Tribal, Community, and Fishing organizations. The process to study potential impacts of the Nuyakuk River Hydroelectric Project must be rigorous enough to ensure any impacts to this productive river system and the fish, wildlife and people dependent on it are accounted for, and must be inclusive of all residents and fishermen dependent on Bristol Bay's waters. To	Comment noted. The Cooperative would like to reiterate their confidence in the rigor, results and analysis associated with their collaboratively developed comprehensive study program associated with this licensing process.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
			ensure adequate public engagement is allowed for and all risks are meaningfully assessed, additional community and fishing industry engagement including more comprehensive and digestible analysis of potential impacts and risks is necessary before the project moves forward in the licensing process.	
195	Mr. Theodore Bartko, submitted by CFBB	General Comment Letter	I am writing in regards to the Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project and the potential impacts its development and operation could have on Bristol Bay's natural resources, communities, and fishing economy. It is my position that any large project developed in the Bristol Bay watershed with the potential to significantly harm salmon must be adequately studied and opportunity for public engagement given to ensure Bristol Bay's unparalleled salmon runs are not impacted. While I appreciate the Federal Energy Regulatory Commission's willingness to give opportunity for public input through this licensing process, it is clear that the studies and materials made available to date in this Integrated Licensing Process are complex and present difficulties for a layperson to adequately assess. The Updated Study Report available for comment is not easily digestible with limited access to presentations; many fishermen and community members have not had adequate opportunity to assess the USR. The Nuyakuk River is an increasingly important river in the Bristol Bay watershed and the region's salmon runs. In recent years, the Nushagak has been the most productive river system in Bristol Bay with salmon runs increasing significantly over the past decade. This complex system supports all five species of salmon including one of the last remaining managed Chinook salmon runs in the state. This population of Chinook is currently listed as a stock of management concern, only heightening the need for careful consideration of impacts to this river. The Nushagak Electric Cooperative's desire to transition Bristol Bay communities toward adoption of sustainable energy sources is a positive endeavor, however, it is imperative the Cooperative and FERC ensure that no negative impact on the salmon and their habitat would occur as a result of this proposed project. The requirements for public comment within the FERC process are an acknowledgement that public participation and input will create a more comprehensive result ensuring no risks to salmon habitat and Bristol Bay's way of life are overlooked. Thorough and informed participation in this process should be a shared goal of the Nushagak Electric Cooperative, FERC, Bristol Bay's Tribal, Community, and Fishing organizations. The process to study potential impacts of the Nuyakuk River Hydroelectric Project must be rigorous enough to ensure any impacts to this productive river system and the fish, wildlife and people dependent on it are accounted for, and must be inclusive of all residents and fishermen dependent on Bristol Bay's waters. To ensure adequate public engagement is allowed for and all risks are meaningfully assessed, additional community and fishing industry engagement including more comprehensive and digestible analysis of potential impacts and risks is necessary before the project moves forward in the licensing process. Note: The damning of the Elwha River in the State of Washington has had extremely adverse impacts on the anadromous fish in the Elwha River system. The damn was recently removed after decades of adverse environmental impacts on the Elwha River ecosystem that devastated the river's ecosystem and subsequent marine biodiversity. I personally oppose the Nuyakuk Project because I believe that development on the Nuyakuk River WILL adversely impact the Nuyakuk ecosystem and the Nushagak River water shed and by extension the Bristol Bay area water shed(s) that are a genesis point and or biodiversity source for the Bristol Bay fish resources based economy. I don't have to have a degree in marine biology or environmental sciences to make my point. It's a matter of "common sense" and prudent reasoning. Thank you for this opportunity to comment.	Comment noted. The Cooperative would like to reiterate their confidence in the rigor, results and analysis associated with their collaboratively developed comprehensive study program associated with this licensing process.
196	Mr. Mark Niver, submitted by CFBB	General Comment Letter	I am writing in regards to the Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project and the potential impacts its development and operation could have on Bristol Bay's natural resources, I'm against this project as it will harm salmon.	Comment noted. The Cooperative would like to reiterate their confidence in the rigor, results and analysis associated with their collaboratively developed comprehensive study program associated with this licensing process.

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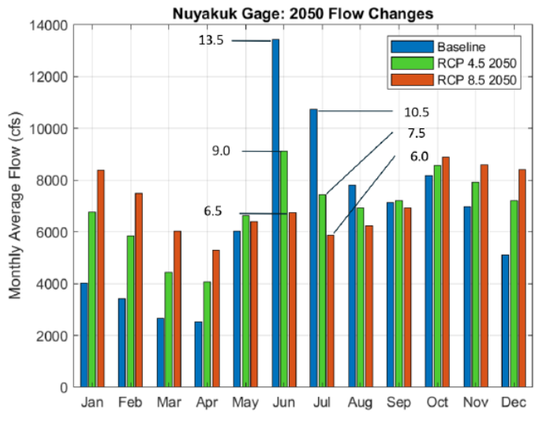
197	Captain Will McCabe, submitted by CFBB	General Comment Letter	Hello I have been a sport fishing guide in the Wood Tikchik State Park for 16 years! With all my experience and knowledge of the fisheries current state and challenges. I am against a hydroelectric project at the Nuyakuk river!	Comment noted.
198	Bristol Bay Science and Research Institute (BBSRI)	General Comment	We identify and focus herein on critical aspects to consider in the next stages of the FERC process and to prepare for future monitoring and evaluation should the Cooperative choose to proceed further with the proposed Project. Our recommendations require considerable additional effort, but are forward-looking. We recognize that there are many objectives of the RSP that have been satisfied and the fisheries studies have produced some exceptional technical assessments from which to advance our understanding of potential risks and impacts. However, there is more to be done to shore up some existing studies and to move into refined activities identified from new information and understanding generated over the past 2+ years. Note that the fisheries section of the USR is extensive in quantity of material and technically complex, so it is possible that we could misinterpret or overlook some information that may affect our perspective.	Comment noted.
199	BBSRI	General Assessment	One observation is that some studies provided limited documentation and conclusions that assist stakeholders to understand potential effects of a hydro operation under future discharge conditions and miss the opportunity to support informed decisions regarding the future of power and fisheries in the region. For example, baseline conditions appear to be adequate for upstream and downstream passage, but what will conditions be and how will fish and aquatic habitats respond when hydraulic conditions are different according to predicted seasonal flows in 25 years? Future flow conditions data is integrated in the 2D modeling and used in the LCM, however the Fish Community Study does not appear to discuss the potential implications of changes in hydrology due to future climate conditions. That study makes the following statements (Attachment A, Section 6, Discussion and Findings): Regarding juvenile sockeye downstream migrants - *"Results of the Habitat Suitability Criteria (HSC) Assessment (see Attachment B) suggest that flow levels above about 7,500 cfs maintain all Falls passage routes for downstream migrating juveniles with suitable depths (>1 ft) to keep the Falls Reach itself and the Falls crest over which smolts must pass an effective conveyance route relative to baseline conditions during smolt migrations observed during this 2-year study program (>17,000 cfs)… Since smolt out-migration correlates with the highest flows in the Nuyakuk River, operation of the proposed Project is unlikely to result in flow conditions under 7,500 cfs during this time.".* Regarding adult sockeye upstream migrants - *"While the ABM corroborated the trend of decreasing passage time with decreasing flow, it also identified that passage time would begin to increase again as passage success drops off precipitously at flows less than approximately 5,000 cfs and would drop to near zero below 2,000 cfs if flows at these low levels occurred during the period of upstream salmon migrations between June and mid-August. These results directly correlate to the loss of passage route options that are available at lower flows based on insufficient depth and velocity that adult Sockeye and Chinook salmon must use to access the Falls Reach (see Attachment B)… Since the natural hydrograph of the Nuyakuk River is high during upstream migration (over 18,100 cfs for most of the migratory period) even with a 30% diversion for power generation during upstream migration (>12,600 cfs remaining in Falls), there is little risk that flows low enough to cause passage delay or failure would be encountered by fish of any species trying to migrate upstream through the Falls Reach between June and early August."* These summaries describe baseline conditions and related information from the HSC, telemetry and ABM studies. Minimum flow thresholds of 7,500 cfs and 5,000 cfs were determined to provide adequate hydraulic conditions for downstream juveniles and upstream adults, respectively.	The range of flows selected for consideration under all modeled studies (1,000cfs – 20,000+ cfs) were designed to capture both baseline conditions and future flow conditions which may occur either natural baseline conditions as documented by the USGS hydraulic record, or future variation under climate change. For this reason, and because the concept of hydrologic baseline for the entire system is difficult to describe over two years of field studies, results and discussion of data products are provided relative to absolute flow values so that there could be greater clarity on the role of specific flow levels in affecting species and life histories rather than providing results with wide confidence intervals relative to "baseline" vs. "future flow" conditions.
200	BBSRI	General Assessment	We conducted an assessment using information from the USR and documentation provided to the ARWG to consider how future climate conditions may affect outcomes with an operational Project. Our interpretive assessment below assumes that the Future Flows model and 2D / Habitat Suitability Criteria model provide accurate representations of water flow and habitat conditions for baseline and future scenarios. Flow values were assigned based on visual interpretation of data charts and downstream migration timing is derived from the sonar study in the USR and counts of adult sockeye at the Nuyakuk towers. Note also that all	Comment noted.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
			models produce estimates with some degree of variability and difference from actual values, and the associated uncertainty should be considered when developing conclusions. At the ARWG meeting of Nov 7, 2023, Wobus et al. presented empirically-based modeling analyses of seasonal discharge for baseline conditions and discharge anticipated in 2050 (as based on climate modeling and Representative Concentration Pathway (RCP) trajectories of greenhouse gas concentrations) (Figure 1 and 2, Wobus et al. 2023). The overarching conclusions are that an increase in air temperature and precipitation will create conditions within the next ~25 years that will flatten the hydrograph. The Nuyakuk will have higher winter flows, and lower spring and summer flows. We used that information to assess whether the concluding statements regarding juvenile and adult migration through the falls were still valid in future climate scenarios. We confirmed for both downstream juveniles and upstream adults that future baseline conditions would provide adequate conveyance across a broad range of flows and down to the minimum hydraulic flows, and that assessment also held true with the Project diverting 30% of the river. In fact, up to ~44% of the river is available for diversion during the juvenile migration (June) and 52% during the adult migration (July), while still maintaining minimum hydraulic passage conditions (Table 1, variable D). However, modeled future discharge based on climate scenarios parameterized with RCP 4.5 and RCP 8.5 conditions indicate that average flows will be considerably lower during juvenile and adult migrations and may decrease the amount of water available for suitable passage flows and power generation above the minimum thresholds (Table 1, variable A). For the juvenile migration, up to ~17% of the river could be diverted under scenario 4.5 and 0% for scenario 8.5. For the adult migration, up to ~33% could be diverted under scenario 4.5 and 17% for scenario 8.5. While maximum diversion is limited to 30%, this illustrates there may not be enough water to divert at 30% in future climate scenarios. Therefore, the conclusion that 30% diversion would create little risk for adults is based solely on baseline conditions. Note also that these potential diversion estimates are considered in isolation from other factors that may affect the feasibility of power generation with hydraulic constraints.	
201	BBSRI	General Assessment	The preceding analysis demonstrates the quantification of a potential impact on salmon migrations through the Project (e.g., suitable passage conditions and quantity of habitat available) and the related necessary constraints on Project operations because of potential future flow conditions. We suggest that this type of value-added analysis is needed for the various characterizations of baseline conditions and related fish responses as presented in the USR so that stakeholders can better understand the potential effects of operating a hydro facility on the Nuyakuk River in the future.	Comment noted.
202	BBSRI	General Assessment		Comment noted.

<table>
<tr><th>Comment No.</th><th>Agency/Organization/Individual</th><th>Topic</th><th>Comment</th><th>Cooperative's Response</th></tr>
<tr><td></td><td></td><td></td><td>Figure 1. Modeled average monthly discharge at Nuyakuk River based on 20 year hydraulic period of gage data and two greenhouse gas trajectories (Wobus et al. 2023). For the purpose of this analysis, we consider June as the period of juvenile downstream migration and July as the period of adult upstream migration. Estimates of discharge for the three conditions are indicated by callouts.</td><td></td></tr>
<tr><td>203</td><td>BBSRI</td><td>General Assessment</td><td>Table 1. Assessment of baseline and future flows analysis for downstream and upstream salmon migrations on the Nuyakuk River. This is a BBSRI analysis based on data from Wobus et al. 2023.

<table>
<tr><td colspan="6"><u>Smolts DNS, 1-30 June at falls, 7.5 Kcfs minimum through falls (B), no diversion at 7.5 Kcfs or lower (all flows in Kcfs).</u></td></tr>
<tr><td colspan="2">Avg. monthly flow</td><td>Min flow</td><td>Difference</td><td>D=max proportion to divert</td><td></td></tr>
<tr><td>A-B=X</td><td>A</td><td>B</td><td>X</td><td>X/A=D</td><td></td></tr>
<tr><td>Base</td><td>13.5</td><td>7.5</td><td>6</td><td>44%</td><td>The Project could divert up to 30% of the river at baseline conditions and maintain minimum hydraulic passage conditions through the falls. However, there may be other considerations that would necessitate the diversion to be less than 30%. It is unlikely that conditions would reach the minimum flow threshold for juvenile downstream passage during this period.</td></tr>
<tr><td>F 4.5</td><td>9</td><td>7.5</td><td>1.5</td><td>17%</td><td>The Project could divert up to 17% of the river at future climate condition 4.5 and maintain minimum hydraulic passage conditions through the falls. However, there may be other considerations that would necessitate the diversion to be less than 17%. Climate 4.5 could require the facility to shut down generation at the minimum flow threshold.</td></tr>
<tr><td>F 8.5</td><td>6.5</td><td>7.5</td><td>-1</td><td>-15%</td><td>The Project would likely not be able to divert any water for a period of time at future climate condition 8.5 as the flow could already be 15% below minimum hydraulic passage conditions. Climate 8.5 would likely require the facility to shut down generation at the minimum flow threshold.</td></tr>
<tr><td colspan="6"><u>Adults UPS, 27 Jun - 25 Jul @ towers, 5 Kcfs minimum through falls. No diversion at 5 Kcfs or lower.</u></td></tr>
<tr><td>Base</td><td>10.5</td><td>5</td><td>5.5</td><td>52%</td><td>The Project could divert up to 30% of the river at baseline conditions and maintain minimum hydraulic passage conditions through the falls. However, there may be other considerations that would necessitate the diversion to be less than 30%. It is unlikely that conditions would reach the minimum flow threshold for adult upstream passage during this period.</td></tr>
<tr><td>F 4.5</td><td>7.5</td><td>5</td><td>2.5</td><td>33%</td><td>The Project could divert up to 30% of the river at future climate condition 4.5 and maintain minimum hydraulic passage conditions through the falls. However, there may be other considerations that would necessitate the diversion to be less than 30%. Climate 4.5 could require the facility to shut down generation at the minimum flow threshold.</td></tr>
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</table></td><td>Comment noted.</td></tr>
<tr><td>204</td><td>BBSRI</td><td>Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar</td><td>The activities conducted to support the characterization of the fish community in the Project Area collected much of the critical data necessary to address the objectives of the study plan (RSP Section 4.1.1.3).

In 2023 and 2024, the smolt sonar study successfully determined the timing and vertical/horizontal distribution of downstream migrating juvenile fish (within the constraints of the acoustic and physical coverage limitations of the system).

In 2023 and 2024, the radio-telemetry study on adult salmon and resident fish movements in the Project Area successfully captured and tracked an adequate number of sockeye and grayling to support analytical assessments of fish movement. However, sustained and targeted effort to capture and tag Chinook resulted ~10% of the goal to be achieved.

In 2023 and 2024, the fish inventory component captured and recorded a wide variety of adult and juvenile fish, including piscivores, across numerous habitat types. No sampling in the winter was conducted.</td><td>Comment noted.</td></tr>
<tr><td>205</td><td>BBSRI</td><td>Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar</td><td>Recommendations:
1. Spring outmigration of juvenile fish

<u>Activity 1 - Operate an Inclined Plane Trap (IPT)</u> at one of the three channels exiting the falls-proper. Conduct length, age and genetic sampling of downstream migrating juvenile sockeye. Confirm species identification with genetics and determine the length-at-age structure.

Rationale – In response to the ISR, BBSRI recommended that "A directed effort is required to sample for species composition and size distribution of juvenile fish migrating downstream past the acoustic array… the fish sampling effort likely requires new or enhanced method(s) to effectively capture (e.g. trawl net, rotary/inclined plane trap), both horizontally and vertically, as different species/life stages may be</td><td>Given the success of the outmigration studies over the two-year window in documenting timing and numbers of fish, the Cooperative feels this study should be deemed complete for the purposes of the impact assessment.</td></tr>
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Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
			inhabiting different parts of the water column at different times of the outmigration period." As we suspected, the acoustics study demonstrated that the bulk of the downstream migrating population of juvenile sockeye (and potentially other species) are primarily located in the channel's zone of dominant flow (velocity and depth) near the thalweg (USR, Attachment A, Appendix A-1). Longitudinal trawl surveys down the channel below the falls reach had been attempted as a fish inventory technique in 2023, however this approach was deemed ineffective due to hydraulic conditions. Therefore, trapping operations for biological sampling in 2023 and 2024 were conducted adjacent to the shoreline because it was too dangerous sample in the migration corridor above the falls. A sampling approach using a fyke net was crafted based on sampling experienced in the prior season and was a creative and operationally effective effort to characterize the fish population migrating downstream through the sonar array. Unfortunately, we assert that the objectives of that sampling was not achieved based on the information presented in the USR, as discussed below.	
206	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	During preparation of the RSP, the ARWG discussed the topic of fish community sampling in relation to the juvenile sockeye acoustic study. At that time, the RSP indicated that fish would be captured with an IPT to characterize species composition (p. 77), however BBSRI supported moving forward with the simpler biological sampling approaches (beach seining and fyke net) as the inclined plane trap operation was costly and logistically complex to carry out. Further, there was substantial uncertainty regarding the feasibility of this trapping method at the study location and we suggested that it could be reconsidered depending on whether objectives were achieved. Our proposed sampling approach is necessary to accurately characterize the migrating population of fish passing through the sonar array (species composition and length-frequency). This is justified by: a) Species and life stage identification was likely challenging with many migrants being on the small end of their expected size range (very few samples >80 mm), so there is some uncertainty about their classification (i.e., there is a possibility that fish could have been misidentified by species and/or life stage). While those lengths are possible for out-migrating smolts, other Bristol Bay sockeye smolts typically average 80-95 mm for age 1 and 103-122 for age 2 (data for Kvichak and Ugashik, 2016-2019). This is a potential indication that the sampling method was biased toward smaller fish size. For comparison, in the USR, Section 5.1.2, Table 5-1 and Figure 5-7 provide some information regarding the number of sockeye samples and their length. However, the focus of that presentation is for seasonal periodicity by life stage and therefore does not adequately quantify the needed characterization. More specifically, Table 5-1 presents life stage for all community sampling and Figure 5-7 presents the respective size distribution by season. However, this is not specific to sampling with the fyke net at the sonar site, the respective sockeye smolt catch and size range, or the smolt period. It is not possible to ascertain from the USR the needed statistics to accurately characterize sockeye smolts and other co-migrating species passing over the array; b) It is expected that fish may distribute differently vertically and horizontally in the river channel depending on their species and life stage, so larger and older fish may not have been in that part of the channel where fish were sampled near the shoreline. Further, spatial distribution is influenced by the light of day and dark of night, as is the potential for size-selective trap avoidance. Note that turbine survival is partly fish length dependent, so if larger fish were indeed missed in the sampling, mortality and impact could be underestimated (larger fish have a higher risk of turbine mortality); c) No samples were collected for genetic confirmation of species or scales for confirmation of age (life stage). As sonar by itself does not provide that information, there is some uncertainly in what fish populations were being detected passing over the array; d) Fish length distribution is needed to support acoustic analyses (relationship between length and acoustic size) and survival analyses for the entrainment study. As per our comments on the ISR, we recommended a sampling protocol to measure the length of at least 100 sockeye smolts every four	Comment noted and the Cooperative concurs with the collaborative decisions that were made during the study planning phase regarding methods to be implemented.

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			days for the period starting the last week of May and continuing through the first week of July in order to collect the appropriate data to characterize the population. However the data presented in the USR does not provide the number of samples, species, or length statistics of fish collected only by the fyke net (the default representative for the sonar array) to allow a valid assessment. e) Capturing downstream moving juvenile salmon at the base of the falls may provide the opportunity to assess "the baseline (natural) condition of injury/mortality in juvenile salmon passing the falls proper" (RSP Fish Community study, Objective 8). Basically, this asks the question whether changes in depth and hydraulic conditions affect the survivability of downstream migrants. To our knowledge, this aspect has not been evaluated, but could be inferred from the proposed trapping and sampling effort; f) Assuming the proposed Project will continue into additional phases of the FERC process, proving the IPT as a useful and representative sampling method (evaluate catch and effort) could support more detailed survival studies in the future that would be necessary for license compliance.	
207	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	For the above reasons, fish community sampling did not achieve the objectives of accurately characterizing fish species and life stages migrating through the sonar array, and most importantly for juvenile sockeye. However, our recommended approach will provide the necessary data. Juvenile sockeye are the single most important species and life stage of fish migrating through the Project Area for many reasons, but in part, because the returning adults are the core of existence for the people of the region and the productivity of the Nuyakuk River basin.	Comment noted.
208	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	Activity 2 - Objective 7 in the Fish Community study plan aims to determine the proportion of juvenile salmon that successfully pass downstream through the falls reach. This is one of the more challenging aspects of this study because typical methods (simple and paired-release mark-recapture) are not readily applicable for this location. In our comments on the ISR, we recommended to compare the existing and With-Project hydraulic conditions using data from the 2D model to infer how similar or dissimilar they are with respect to the potential for injury and stranding/trapping of juvenile fish (conveyance was the legitimate focus). Metrics to consider are total suitable habitat composition and connectiveness, water depth and velocity. We did not see that this issue was addressed in the USR when it was an objective of the study. At a minimum, a Study Variance or Modification should be provided. Note that the proposed IPT monitoring described above would be one empirical approach to evaluating Objective 7.	Comment noted.
209	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	**Recommendation 2: Adult Sockeye enumeration and timing** Adult sockeye counting towers were operated by BBSRI in 2023 and 2024 with financial and logistical collaboration with Nushagak Cooperative. Those studies demonstrated the value to informing the Cooperative with respect to their required studies. The results of the counting tower operation also provided complementary data for sockeye stock assessment of the Nushagak River. If the Cooperative continues in the FERC process, we recommend that they continue to collaborate in the Nuyakuk adult sockeye counting operation as that data will be critical for future evaluations of the proposed Project.	Comment noted. The Cooperative sincerely appreciates the collaboration and genuine objectivity BBSRI representatives have shown throughout this process. Their work has been essential in developing a robust and comprehensive study program. If the project is licensed, the Cooperative is committed to continued collaboration and monitoring, to the extent necessary to further confirm project impacts, if any, both positive and negative.
210	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	**Recommendation 3: Adult Chinook passage and behavior** Substantial and directed fishing effort in 2024 did not catch the desired number of Chinook to radio-tag for the study. Unfortunately, the lack of statistics regarding upstream passage of adult Chinook remains as a result of the small sample size. Further, there is a lack of consensus regarding the suspected number of Chinook that are present. The relatively high fishing effort conducted by the study team and qualitative observations by tribal fishermen indicates there were relatively few Chinook migrants, but the professional judgement of at least one agency staff person believes there are many more that which are simply not being captured (BBSRI is uncertain of the basis for that assessment). Given the extensive and comprehensive results on sockeye passage through the Project Area, hydraulic analyses with respect to potential hydro operations, and the passage data that was obtained for eight Chinook, we propose that it is reasonable to assume that Chinook would have at least the capability to	Comment noted.

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			navigate the falls as sockeye do and the respective analyses can be relied upon for the purpose of evaluating the potential impact on Chinook upstream passage by the Project. In this regard, sockeye have demonstrated passage success of approximately 96% for the observed flow regimes, and thereby, Chinook would too.	
211	BBSRI	Fish Community and Behavior – Inventory, Radio-Telemetry, and Smolt Sonar	**Recommendation 4: Radio-tagging of other salmon and resident fish** • The USR indicates that the last positions for adult salmon were collected as part of mobile tracking (Section 4.3.2.3), but no positions were included in the results. A figure for this information would have been appropriate. • The USR provides the location of predator tags as based on mobile tracking data (Section 5.1.5.1), however, there does not appear to be a related assessment based on detections by the fixed telemetry array in the Project Area. Given that the behavior and movements of these tags were described, it would have been appropriate to include fixed array detections to bolster the sample size and improve the accuracy of the characterization. Further, 56 Grayling and 34 Rainbow were tagged in 2024, ending June 30, and the last mobile survey of the study was 1 August 2024. It appears that no other tracking or fix station monitoring occurred after that last survey and represents a drastic underutilization of potential data on predator movements as fall and winter surveys could have been conducted.	The RSP stipulates that radio tagging of adult Sockeye Salmon and Chinook Salmon be carried out to determine passage rates and other metrics of passage at the Falls Reach. The data that were collected on the winter-time location of adult salmon tags was a biproduct of the RSP-required study of predator overwintering behavior. As a full analysis of adult salmon tag locations following the spawning season was not included in the RSP or budgeted, these analyses were not included in the USR beyond a single figure showing some of the tag locations. The Cooperative is willing to share the raw detection data for adult Salmon tag locations if any stakeholder wishes to pursue supplemental analysis of these data. The
212	BBSRI	2D Model, Habitat Suitability Model (HSC)	The activities conducted to support the development of the 2-Dimensional and Habitat Suitability models have produced an impressive and useful data series to allow the evaluation of various natural and generation hydraulic scenarios. The collection of several sets of LiDAR data, water surface elevations, and stage-discharge measures have allowed the development of highly refined models of bathymetry (elevation profiles), water flow (depth, velocity, vector), adult fish passage, and habitat suitability for some species of juvenile salmonids and adult resident fish to address the many questions regarding aquatic habitat and fish passage in the Project Area.	Comment noted.
213	BBSRI	2D Model, Habitat Suitability Model (HSC)	**Recommendations – Objectives and Products of 2D and HSC modeling.** One of the products of 2D modeling described in the RSP (Section 4.1.2, Nuyakuk Falls Fish Passage Study) is the classification and quantification of habitat based on the suitability for adult upstream migration and holding, juvenile downstream migration, juvenile rearing, and other fish activities. More specifically, it is essential to estimate the change in the quantity of aquatic habitat of the various habitat types and suitability between natural conditions and a 30% diversion. As we are conducting a risk assessment that compares before and after (anticipated) conditions, these analyses should allow to quantify/qualify the potential magnitude of change in the habitat, and thereby infer fish behavior (distribution) and survival. For combinations of discharge and diversion, where and through which habitats are fish migrating as based on habitat suitability and connectiveness? To answer this question, it is necessary to know habitat characteristics of where they are presently migrating Without-Project, and transfer that understanding to assessing With-Project conditions.	Comment noted.
214	BBSRI	2D Model, Habitat Suitability Model (HSC)	Objectives 1 and 4 of the Fish Passage study (RFP 4.1.2.3) These Objectives aim to evaluate upstream and downstream fish passage and identify primary respective migration corridors through the falls reach (USR Section 5.2.2, Fig 5.6 and 5.7) and their relationship with changes in discharge. This task was completed for upstream adult sockeye migrants through the Agent Based Model, but there does not appear to be an analysis for downstream moving sockeye smolts migrating down the falls reach (See RFP 4.1.2.3 study questions 3, 4, and 6). The related habitat suitability criteria curves and related geographic mapping were conducted for several target species and life stages (Section 4.3.2, Table 4-11). However, this task was completed for some salmon fry and adult resident fish (adult sockeye preferences for migratory habitat was completed as part of the ABM component), but not for downstream migrant sockeye smolts. Lastly, Study Questions 3, 4, and 6 (p. 52) aim to consider how flow related changes affect downstream fish passage conditions (conveyance) and related fish densities and time duration of passage, but these questions did not appear to be addressed for sockeye smolts (we did not see where density was considered for any species or life stage, and time duration was only addressed for adults).	The Habitat Suitability assessment for downstream migrating smolts generally (all species) was addressed by considering NMFS criteria for the minimum amount of depth required (1ft) for downstream migration protection of Pacific salmon smolts including Sockeye Salmon, Pink Salmon. Using results of the 2D model at different flow levels, the entire Falls Reach was divided into portions that met the criteria (>1ft depth) and those that did not (<1 ft depth), and the consultant team considered how the 3 major flow paths/ velocity concentrations in the thalweg and left/ right banks maintain or lose connectivity of water that was >1ft in depth to determine whether there was fragmentation or potential for stranding. Fragmentation was observed at flows 4,000cfs in the Falls Reach, which could result in more limited downstream flow paths for smolts migrating with the flow (Sockeye and Pink Salmon) relative to those that are more active swimmers (Chinook and Coho Salmon).

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			As you know, the fry life stage is entirely different and virtually opposite from the smolt life stage in terms of behavior and habitat preference.	Stranding was not considered because there are as yet no data on potential project ramping rates that might result in short time-scale changes in flow through the Falls Reach that can result in stranding as water levels change rapidly. To improve clarity, further details of the HSC analysis that highlight potential changes in migratory pathway access as flows change will be provided in the DLA.
215	BBSRI	2D Model, Habitat Suitability Model (HSC)	We contend that sockeye smolts are the single most important species/life stage with respect to the proposed Project for many economic and societal reasons. It is also highly abundant (10's of millions) and is only present in the Project area for approximately 2 months of the year. As one of the downstream migrant fish that strongly follow-the-flow, they are also very susceptible to entrainment through the proposed Project. These aspects are well documented and constitute part of the rationale for why the smolt sonar study was conducted as part of the impact and risk assessment. Therefore, it is critically important that it is determined where sockeye smolts are likely to travel when passing downstream through the falls reach, but this species/life stage was not considered as part of passage corridor identification or HSC development and evaluation for the falls reach. The USR indicates that the species of focus were chosen based on the availability of literature to conduct the analysis which is mostly related to the rearing life stage (Section 4.3). We suggest that the opportunity was missed to use data collected as part of the two years of dedicated study to conduct a similar assessment for sockeye smolts. Further, this apparent gap in analysis indicates that the Discussion and Findings, Section 6.0 and Table 6-1, may be missing an important component of the overarching assessment.	Comment noted. It is notable that BBSRI collaboratively and objectively took part in all aspects of the study planning process that led to the fisheries analyses that were done.
216	BBSRI	2D Model, Habitat Suitability Model (HSC)	The method for HSC development is outlined in Section 4.3.1 and indicates that a functional relationship relates independent variables such as velocity and depth to observed preferences for certain combinations of those variables. With our limited familiarity of the specific hydraulic and habitat data collected, we think that the appropriate data can likely be derived from the smolt sonar assessment and applied to determining smolt passage corridors through the falls reach using the 2D and ABM models. More specifically, Appendix A-1 of the USR presents a detailed assessment of the horizontal and vertical distribution of downstream migrating sockeye smolts as they approach the falls reach. This includes information on bathymetry (Fig. 3, water depth, although more detailed data is available in the 2D model), smolt run timing and respective discharge (Fig. 5), the spatial distribution of smolts relative to 2D modeled water velocity profiles (Fig. 7, 9, 11), cross-river distribution of abundance (Fig. 12), and combined cross-river / vertical distribution of abundance by day, night, and in total (Fig. 13, 14, 15). Therefore, it appears that empirical data for the critical variables to develop a HSC curve for Nuyakuk sockeye smolts exists.	Comment noted.
217	BBSRI	2D Model, Habitat Suitability Model (HSC)	Upon visual inspection of the available data, we can determine that sockeye smolts prefer to migrate in the deepest (up to 5 m) and highest velocity (1.8 m/s) section of the river channel, and predominantly within the top 1.5 m of the water column. These observations and their values are consistent with multiple years of sockeye smolt studies in the Bristol Bay region by BBSRI. As minimum depth and velocity are both 0.0 at the monitoring site, a complete range of values can be related to the relative abundance of sockeye smolts to quantify the conditions of preference for downstream migration. Values that are more accurate than the visual interpretation above would likely be derived with a detailed analysis. It stands to reason that the resulting HSC curves could be applied to the bathymetry of the falls reach to determine the connected corridors of habitat that smolts will most likely take. This preceding analysis is absolutely required to conduct an accurate assessment of comparing base conditions over the range of observed and predicted discharge and those affected by operations of the Project so that inferences can be developed regarding how this population may be impacted.	Comment noted.
218	BBSRI	2D Model, Habitat Suitability Model (HSC)	As per the presentation of CSI and conveyance-mapped results in Section 5.3 of the USR, the same should be presented for sockeye smolts using the derived metrics. That includes results for 15 flows (Table 5.3) and respective CSI maps (e.g., Fig. 5-8 to 5-10), conveyance suitability (Fig. 5-11) using smolt specific criteria (e.g., depth greater than 1.5 m and velocities greater than 1.0 m/s), wetted area of high preference (Table 5-4), and relative change in preferred habitat (Fig. 5-12). We suspect that the results for sockeye smolts will be dramatically different from salmon fry for the above metrics and will influence the Findings in USR Section 6 (Table 6-1).	Comment Noted. The Cooperative can provide a more thorough compendium of figures showing how the HSC and specifically, distribution of NMFS-criteria depth changes at different flow levels. For the USR, the Cooperative elected to provide examples of the results at four flow levels rather than all 15 flows, and compiled the relative change in proportion of the Falls that contained suitable depths to summarize. These additional figures can be included as an attachment to the DLA.

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219	BBSRI	2D Model, Habitat Suitability Model (HSC)	With respect to the adult salmon passage assessment, the ABM proved to be an impressive and informative analytical tool and provided considerable insight. The general conclusion was that the Project could be operated to maintain flow conditions in the falls reach that are necessary to achieve baseline passage success. As with most good things, one may want more of it and we recommend conducting the passage route and accessibility assessment using mid and late century modeled flows as these might provide more challenging conditions for the Project to operate within baseline passage success and still generate the needed power. We will also note that this study does not consider whether the quantity of suitable habitat at those flows (30% of water diverted) is sufficient to pass the number of adult sockeye migrants present (Table 5-4). To be clear, hydraulic conditions may be suitable for passage in terms of velocity and depth, but it is possible that the quantity of suitable passage habitat is limited to effectively pass high numbers of migrating adult salmon and maintain baseline passage time and success. We know that the three channels to the falls proper can be bottlenecks to the migration, but will other sections of the falls become bottlenecks due to high fish density?	Comment noted. The ABM was conducted at 15 different flow levels that were selected to represent the range of hydraulic conditions under current hydrology, and also under future hydrological conditions between 1,000cfs and 25,000. Extreme flows above 25,000 were not considered. The ABM also was designed to handle a "release group" of 1,000 fish which required substantial computational resources and time, and allows for some interaction and schooling behavior among conspecifics. It is computationally infeasible for the ABM to consider a release group of 100,000 fish, or any other immense number that might represent the number of Sockeye Salmon actually present at the South Eddy area. Further, even ADF&G does not provide estimates on the number of Sockeye Salmon that escape into the Nuyakuk River each year, so building such a model that considers how many fish might be present in the future would require data that do not presently exist, and analysis of those data to predict future population numbers.
220	BBSRI	2D Model, Habitat Suitability Model (HSC)	**Objectives 3 and 4 of the Fish Passage study (RFP 4.1.2.3)** These objectives aim to identify potential areas susceptible to stranding / trapping of juvenile fish in the falls reach and evaluate the potential effects of Project operations on susceptibility. We did not see that this issue was addressed in the USR. At a minimum, a Study Variance or Modification should be provided to explain why this is the case.	Comment Noted. As mentioned above, the relationship between the results of the HSC analysis and potential for dewatering of migration routes will be re-addressed and clarified in a potential DLA, especially as there may be more information available at that time about potential ramping rates within the project operation plans that could educate an analysis of potential stranding by helping the 2D modeling team understand how quickly the Nuyakuk river stage may respond to project operations.
221	BBSRI	Fish Entrainment and Impingement Study	When the ISR was released, none of the objectives of this study had been pursued as they required data and tools from the Fish Community and Fish Passage studies, respectively. Therefore, our recommendation at the time was to complete all the objectives of the study in time for filing of the USR. This study provided a sound approach toward determining the potential for fish entrainment and passage survival through the powerhouse from the acoustic study, 2D flow modeling, and specifications for fish-friendly turbines. This assessment was particularly important with respect to the high abundance of sockeye smolts as presumed to be the dominant species/life stage passing over the acoustic array.	Comment Noted.
222	BBSRI	Fish Entrainment and Impingement Study	**Recommendations** One aspect of the study report that would benefit from a clarification is the value of the entrainment rate. Fig. 5-2 indicates that 17.5% of smolts will pass the intake diversion zone, although it can't be interpreted from the figure how that value was determined. If one adds up all the % of smolts columns in the yellow box, it is much higher than 17.5. Further, the calculated proportion of the smolts at risk ranges from 36%-55%, so it is not clear what the difference is between the proportion passing, at risk, or what is entrained. It appears that the proportion at risk and the proportion entrained are the same (Table 5-3).	Thank you for the comment. We understand that there is a lack of clarity in the USR to differentiate the 17.5% estimate and the 36-55% estimate. To clarify here, based on the position of salmon smolts from the SONAR STUDY—17.5% of sonar-observed fish would have been present in the Zone of Diversion during our 2-year study. Without considering the data on where actual smolts were distributed based on the sonar data, 36 – 55% of the Nuyakuk River would incur minor changes in flow associated with the Project intake at the full capacity of the turbines, and therefore, any fish within that area have the potential to detect the flow field. For purposes of selecting the most conservative, worst-case-scenario of the potential entrainment rate, 36-55% was used for purposes of the Entrainment Study with the understanding that the actual rate (if future smolt migration behavior is similar to that observed during the 2-year study may be considerably lower.
223	BBSRI	Fish Entrainment and Impingement Study	**Recommendations, cont.** The results of the study as presented in the USR appear to address all except study objective 7 which aims to "Estimate Project-related and overall mortality of target fish species on a seasonal and annual basis using flow-based entrainment and mortality models". Further, the study addresses some of the study questions except for 3, 4, 5, and 6 which generally aim to estimate mortality of entrained fish by life stage or size class, however with the specification of considering indirect mortality for fish passage through the powerhouse, direct and indirect mortality through the falls reach, and a comparison of powerhouse and falls	As noted in a prior comment above, the questions outlined in the USR were not answered question-by-question in the discussion section of the report, which may have helped clarify these points. If a future DLA is filed, the Cooperative will provide more clarity on how results of the Entrainment and Impingement study, which included extensive literature review on these topics, can provide further information to support these objectives.

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			reach passage mortality for baseline and future flow conditions. Those questions and concepts are not discussed.	
224	BBSRI	Fish Entrainment and Impingement Study	**Recommendations, cont.** The entrainment study results present a specific assessment for "survivability of fish" as a mortality rate (Table 5-3), however it is not evident to what size range this applies too. The discussion centers on juvenile fish, but a 6 in trash rack spacing may allow fish up to 1.5 m long. That uncertainty results in the question of "what is the survivability for adult rainbow and grayling which could be entrained if following the flow?".	Comment noted. The current intake design includes trash rack spacing of either 1.5" or 1", the 6" spacing is no longer being considered, and therefore, we do not expect that adult Rainbow Trout or Grayling would be likely to pass.
225	BBSRI	Fish Entrainment and Impingement Study	**Recommendations, cont.** We recognize that measuring or inferring mortality or survival outside of the laboratory is a challenging proposition (e.g., pair release or sensor fish methods), however non-the-less it is a critical metric that will necessarily be required if a facility was operated. Importantly, that assessment will be focused on Project mortality/survival, not just passing through the turbine. It is impressive that newer design fish-friendly turbines can claim 98%-100% for a wide variety of species and sizes, but it is important to recognize that this is only part of the Project survival equation. As discussed by the ARWG in June of 2022 as part of the Project site visit and respective meetings, NOAA fisheries representative Sean McDermott aptly stated that the Project-based metric is what matters in evaluating a facility's operation. This refers to a fish entering one Project boundary and exiting by the other. Obviously, this necessitates knowing mortality/survival through both the powerhouse and falls routes, so that differentials may be traced back to potential causes and effects. In that regard, this is one reason why conducting a more thorough catch monitoring study of the smolt outmigration using an IPT would be beneficial toward providing baseline information on catchability, species/life stage composition, and condition (health/injury).	Comment noted, however the Cooperative maintains that a downstream migrant study to determine the baseline injury/ mortality rate on out-migrating smolts may present significant logistical, safety, and infeasible sample size requirements in order to produce any statistically rigorous or reliable results that could be used to evaluate injury or mortality rates with varied flow.
226	BBSRI	Fish Entrainment and Impingement Study	**Recommendations, cont.** In the USR, turbine survival rates appear to have been compiled from at least 6 references. Most of these sources are not readily available (one reference does not even have a source) so it is difficult for stakeholders to understand how these survival rates are measured or how the lab or field experiments may differ from a full-scale turbine operated at Nuyakuk falls. It would have been beneficial to include a summary description, an illustration of representative survival tests, and a discussion of what assumptions are inherent to the estimates so that readers can comprehend these super-critical values. Without that, there can be much skepticism that such high survival can be achieved.	Comment noted. The cited references can be provided to any interested parties, and if a DLA is submitted, your recommendation that the cited studies be summarized and described more thoroughly, including information on where, what species (and fish sizes), etc. were studied will be provided to ensure stakeholders understand how the available data on turbine survival were compiled.
227	BBSRI	Life Cycle Model	**Recommendations** For study objectives or tasks that were not conducted or completed or in need of additional investigation, it is essential that the next phase of the licensing process develop a plan to do so in cooperation with the ARWG. We recommend to: 1. Reconsider the two fundamental questions for the LCM study as related to the Project nexus: what effect does the Project have on the number of successful spawners and the number of juvenile outmigrants?, and b) what magnitude and likelihood of this effect is necessary to jeopardize the sustainability of the populations ? (RSP, Section 4.1.5, p.89). Spawners and catch were provided numerically as a key metric but an equivalent was not provided for juveniles. The magnitude of some effects was provided but the likelihood of the effects was not considered.	Comment noted. If the Cooperative elects to file a DLA, it will include information noted by USR commenter that can provide meaningful clarification to completed studies.
228	BBSRI	Life Cycle Model	**Recommendations, cont:** 2. Engage with stakeholders to define fisheries management questions and numeric thresholds for related metrics to evaluate impacts at the population and Project levels (Section 7, variance 1). In part, this results in the study not conducting the quantitative IRA to evaluate population-level risk in terms of the magnitude and likelihood to exceed thresholds (section 6).	Comment noted. There are more opportunities throughout the licensing process (DLA comments, FLA comments, etc.) when stakeholders will be engaged and be able to submit comments, provide insight, and input, and help the Cooperative design features and operations to minimize risk to fish populations. There will also be opportunities under future phases of licensing (if pursued) for the development of PM&Es, monitoring studies, establishment of criteria and values, etc.

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229	BBSRI	Life Cycle Model	**Recommendations, cont:** 3. Use the LCM to assess which parameters are primary drivers in the life cycle so that field studies could investigate and measure respective components. While that did not occur over the 2 study seasons, this approach would serve the broader hydro assessment well going forward to identify data gaps and refinements that can be conducted to improve our understanding of potential impacts.	Comment noted. There are more opportunities throughout the licensing process (DLA comments, FLA comments, etc.) when stakeholders will be engaged and be able to submit comments, provide insight, and input, and help the Cooperative design features and operations to minimize risk to fish populations. There will also be opportunities under future phases of licensing (if pursued) for the development of PM&Es, monitoring studies, establishment of criteria and values, etc.
230	BBSRI	Life Cycle Model	**Recommendations, cont:** 4. Assess population dynamics. The core of this study was to develop and evaluate a model that would address the specific questions outlined in Section 2. Each of those questions refers to populations and population dynamics. However, the results of the study focus on key relationships of cause and effect and do not take the assessment to the higher level of making inferences into how population abundance will respond over the life of the Project. Modeling seven brood year generations begins that analysis but does not appear to provide an understanding of whether the population remains sustainable, which is the most fundamental aspect of all. That next step may include developing a run reconstruction for Nuyakuk sockeye and predicting future population abundance using established relationships.	Comment noted.
231	BBSRI	Life Cycle Model	**Recommendations, cont:** 5. Improve the presentation of documentation. Simulation results are presented only in tabular form and make it extremely difficult for stakeholders to comprehend the overarching and detailed results of the study. This is a moderately complex multivariate assessment and presenting the data as figures or other creative objects would illustrate patterns and trends more effectively. We suspect that many readers were shaking their heads due to the futile effort to see what the text is describing.	Comment noted. If deemed necessary to provide results in a different fashion, and the project moves forward to the development a license application, those visuals will be provided in that application.
232	BBSRI	Life Cycle Model	**Recommendations, cont:** Provide additional discussion regarding the results. The interpretation of comparative results is generally incomplete. Knowing that a specific metric changed up or down is insufficient. The result must be put into the context of direct or indirect Project effects (the primary goal of the study, section 2, first bullet). For example, the LCM uses a relationship between discharge and upstream passage success in a Monte Carlo simulation to calculate estimates and bounds of adult sockeye abundance. However, there is not an apparent summary analysis that illustrates what the cumulative upstream passage success rate is for each of the baseline and Project scenarios based on those simulations. Therefore, it is not possible for stakeholders to know if passage success trended up, down, or stayed the same. Further, many results are presented, but there are few conclusions provided, or it is vague. For example, from the text, p.41 – "*Under the no-flow effect on survival, abundances and catch were slightly lower, but 95% confidence intervals included zero. This result indicated similar abundances and catch under the no-flow relationship*". Perhaps more simply, there is apparently no effect of the Project for baseline migration timing and mid-century climate (discharge) conditions. It would be very helpful to readers if a summary of conclusions was provided that interprets each of the key tested relationships as it relates to baseline and with-Project conditions. It is surprising that the entirety of the study boils down to six paragraphs and three tables. We suspect that material insights would be gained from further analysis and consideration.	Comment noted. If deemed necessary and project moves forward to the license application phase, additional detail may be provided in the license application.
233	BBSRI	Life Cycle Model	**Recommendations, cont:** 7. Conduct additional sensitivity analysis. We think it is a significant shortcoming that the LCM analysis did not appear to explore what impact various levels of entrainment and turbine survival may have on spawner / catch metrics (sensitivity analysis) and the sustainability of the population. This risk source was identified early and often through the license process as likely the most significant potential source of impact by the Project.	Comment noted.
234	BBSRI	Life Cycle Model	**Recommendations, cont:**	Comment noted.

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			8. Describe metrics in common conceptual terms. The methods explained that juvenile survival through the falls reach was modeled as including the reach out to the ocean. This is understandable given the format of the LCM. However, this masks the survival rate through the falls alone. That rate is not known and may be challenging to measure, but the equations and parameter values (Table 5-1 and 5-2) provide no context to translate into values in common conceptual terms (e.g., 90% survival or 10% mortality through the falls). Note also that the value of the entrainment rate(s) (D*y*) used does not appear to be presented in the text. The reader does not know the magnitude of survival or that of the change that may occur between climate scenarios, and thereby have little appreciation for a quantity of predation that is occurring relative to the population abundance. The presentation is simply not informative for many stakeholders.	
235	BBSRI	Life Cycle Model	**Recommendations, cont:** 9. Review for potential outlier results. Tables 5-3, 4 and 5 present estimates of the number of spawners and catch for multiple dimensions of hypotheses and conditions. Statistics are what they are, but our reality check assessment produced a few observations that generate some uncertainty that may require further consideration. It is also possible that we have misinterpreted aspects of the analysis (which is not unreasonable given the complexity). Our interpretation from the results of the ABM/telemetry studies is that mean adult salmon passage success is greater than 90% for 5 of 6 flow range bins above 5,000 cfs (Attachment B, Table 5-1). One conclusion was that the Project could be operated to achieve baseline passage success. The LCM modeled baseline and Project conditions (no predation mortality) which resulted in a surprising reduction in adult salmon passage success by 8%. The text indicates that this run used factors due to "*adult passage effects only*" (p.40), but Project conditions include the effects of entrainment and turbine survival (Table 5-3), so we think that the reduction may also include that factor (i.e., that would make more sense, and why would the comparison of baseline and Project conditions be run only with adult effects?). While the LCM was not run using minimum flow requirements which may also be responsible for the reduction, flows including 30% diversion did not decline below 5,000 cfs for more than a couple brief periods (Fig. 4-10). Whatever the case, it would be helpful to confirm the criteria for that specific comparison. Tables 5-3, 4, and 5 provide statistics for paired differences between baseline and Project conditions. All comparisons for baseline climate conditions indicate the Project estimates for spawners and catch are "not similar" as differences do not include 0.0. It is not clear if this result means they are significantly different as there are no P values indicated, but the conclusion is a surprising result given that the confidence intervals are so broad (values range from 8-800+). It would seem unlikely to be able to discern whether the estimates are similar or different, but perhaps that is possible given 1,000 iterations.	Comment noted.
236	BBSRI	Life Cycle Model	**Recommendations, cont:** 10. Incorporate the concept of Project survival into a future evaluation framework. Section 6 (Discussion and Findings) describe the primary Project-related effects identified in the study as adult passage success, fate of adults that don't pass, entrainment, and juvenile survival as affected by predation. The first three will apparently be considered in the following phases of the FERC process, but juvenile survival as affected by predation will not. What is the rationale for this decision ? Not considering the survival component going forward is surprising given that the juvenile survival component was identified as that which the LCM was most sensitive too. Further, regardless of whether juvenile survival is affected by predation or any other sources (latent mortality, physical injury during passage, or density-dependent interactions), the effect is apparently substantial and warrants additional and thorough investigation. Recall our earlier comment that it is Project survival that which the Cooperative is going to be held accountable for and it will illuminate the cumulative effects of everything regardless of source. While predation may not be easily measured or controlled, juvenile mortality of any kind and its function in the LCM needs to be revisited and run-to-ground.	Comment noted. The LCM is a "living model" with the capability to be used in the future if/when a license application is developed, design advances and the project is in place and operational.

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237	BBSRI	Integrated Risk Assessment (IRA)	**Recommendations** The IRA was only able to complete one species assessment of seven target species. Specific consideration should be dedicated to evaluating where the sockeye assessment is similar and different from the other target salmon species to determine whether it is necessary to conduct a complete assessment for any of the others.	Recommendation noted. While the IRA team hoped to engage with the ARWG to complete the IRA for all target species, variances described in the IRA USR indicate why that was not achieved prior to filing of the USR.
238	BBSRI	Integrated Risk Assessment (IRA)	**Recommendations, cont.** Second, a complete IRA should be conducted for rainbow trout to identify the most significant concerns for resident species. Like the salmon IRA, consideration should be given to evaluate where the rainbow trout assessment is similar and different from other resident fishes to determine whether it is necessary to conduct a complete assessment for any of the others.	Recommendation noted. While the IRA team hoped to engage with the ARWG to complete the IRA for all target species, variances described in the IRA USR indicate why that was not achieved prior to filing of the USR.
239	United Tribes of Bristol Bay (UTBB)	Tribal and Public Engagement	We want to reiterate the importance of meaningful Tribal and public engagement throughout the licensing process. The Nuyakuk River is crucial to the Bristol Bay watershed, significantly contributing to the region's salmon runs and sustaining our subsistence ways of life. Thus, it is essential that Bristol Bay Tribal governments and community members have a central voice in this process. There are two interrelated deficiencies that we wish to highlight: (A) insufficient engagement with Tribal governments and community members; and (B) failure to incorporate Indigenous knowledge in study reports.	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
240	UTBB	Tribal and Public Engagement	**Insufficient Tribal Engagement** Despite our persistence in raising these concerns, the USR demonstrates continued insufficient engagement with Tribes in the licensing process to date. **i. Insufficient engagement from the Cooperative** For the Proposed Study Plan, Initial Study Report, and now the USR, the Cooperative held in person public meetings only in Dillingham with unreliable virtual participation options for those outside of the community. The Cooperative chose not to hold public meetings in any of the six service communities for the proposed project. Limiting in-person meetings to Dillingham precluded reasonable engagement for many Tribes and community members, particularly for individuals who reside in the remote communities closest to the proposed project. Travel to Dillingham requires airplane charters that can be prohibitively expensive and unreliable due to inclement weather. Because of internet access inequities in rural Alaska, virtual participation in meetings is not a reliable option for all and is not an adequate substitute for in-person meetings. We recognize that the Cooperative attended sustainable energy meetings organized by UTBB in 2023 in the six service communities for the proposed project. UTBB held these meetings in response to requests from communities for more information about current alternative energy initiatives in our region and the proposed project. We want to emphasize that such outreach should be continued by the Cooperative itself. The Cooperative also conducted in-person recreation surveys and subsistence workshops. The Cooperative chose to only conduct subsistence workshops in three communities, instead of all potentially impacted communities. Workshops were hastily planned and poorly attended. These efforts demonstrate initial steps to improving Tribal and community engagement in the licensing process, but do not negate continued barriers. Moving forward, the Cooperative should provide more opportunities for in-person Tribal engagement. Regular updates to Tribes, with sufficient time allowances and during appropriate seasons, could help facilitate meaningful in-person Tribal engagement at each step of the licensing process.	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
241	UTBB	Tribal and Public Engagement	**ii. Insufficient engagement from FERC**	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of

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			FERC has an obligation to consult with Tribes in a manner that recognizes their sovereign status.[18] In accordance with the agency's trust responsibilities to Tribes, FERC must "assure that tribal concerns and interests are considered" whenever a proposed project may adversely affect Tribes.[19] It is important for FERC to appreciate how remote Bristol Bay's communities are, with no roads inter-linking them, which necessitates extra planning and resources to appropriately engage with our Tribes and community members. At every step of this process, UTBB has reiterated to FERC the importance of in-person engagement in our Tribal communities. For example, in 2019, UTBB requested that FERC hold in-person scoping meetings in multiple communities near the proposed project site. FERC responded that a scoping meeting held in Anchorage was sufficient, despite the substantial distance from the proposed project and significant barriers to participation for Bristol Bay Tribes and community members. In-person meetings in the Tribal communities closest to the project were necessary for FERC to provide an adequate scoping process. In addition, every time the Cooperative was required to hold a public meeting, UTBB requested that FERC require public meetings in multiple impacted communities. In response to these requests from UTBB, FERC has never required the Cooperative to conduct public meetings in the communities closest to the Nuyakuk Falls. This has undercut the potential for meaningful engagement with the Tribes that are most likely to be impacted by the proposed project. Most recently, FERC denied UTBB's request to hold an in-region, in-person meeting to discuss delayed study reports, including the subsistence study, life cycle model, and integrated risk assessment. The Cooperative did not include these reports in its initial USR filing and they were not available at the time of the USR meeting. Impacts and risks to subsistence are of primary concern for the region. FERC's decision to deny UTBB's request for a public meeting to discuss the delayed study reports hindered meaningful engagement on these critical studies, as well as the USR as a whole. We recognize that FERC participated in an in-person Tribal consultation in Dillingham in conjunction with the USR meeting. This consultation provided an opportunity for our Tribal leaders to share the importance of the Nuyakuk River and voice their concerns about the proposed project. In addition, this consultation provided an opportunity for FERC staff to better understand our subsistence ways of life and Tribal concerns about the proposed project.[20] This was the first opportunity for in-person consultation in the licensing process so far and illustrates the importance of FERC providing opportunities for in-person consultation to facilitate meaningful Tribal engagement.	means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
242	UTBB	Tribal and Public Engagement	**iii. Lack of Accessible Information** Accessible and understandable information, with appropriate time for assessment, is fundamental to providing meaningful opportunities for engagement. The USR and associated public meetings are highly technical and fast-paced, which creates substantial barriers to participation for community members. Additionally, the language in the summaries is highly technical. The Cooperative should tailor presentations and written materials with the goal of being understandable and relevant to community members. We also continue to encourage the use of infographics to communicate, in non-technical terms, the most salient components of the project's potential risks and benefits. We appreciate that the USR included a list of acronyms. However, we were surprised that an executive summary was not included. In past comments, we requested an executive summary to provide an overview of key takeaways from the studies. The summaries of the studies in the USR do not meet this need as many summarize the methods of the study without providing key takeaways.	Comment noted. As UTBB and all of the collaborative regional technical experts involved in this process are aware, the studies are highly technical because they need to be. As a result, the analysis and associated reporting mechanisms are also inherently technical. A distinct effort was made during both the ISR and USR study report meetings to present results and analysis in as intuitive a fashion as possible (maps, imagery, charts, videos, etc.) with the understanding that studies as complex as the ones performed for this process result in technical and scientifically intricate results. As has been mentioned many times regional, state, local and Tribal experts who understand these intricacies and represent the region were involved in the development of this study program for just this purpose.
243	UTBB	Tribal and Public Engagement	**b. Failure to Include Indigenous Knowledge in Study Reports** One clear marker of insufficient engagement with Tribes is USR's failure to incorporate Indigenous knowledge at either the design or study implementation stages. This is perplexing given the directives to	The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. All individual and perspectives have been encouraged to participate. Whether it be in-person, via phone calls, virtual, project

[18] 18 C.F.R. § 2.1c(a).
[19] 18 C.F.R. § 2.1c(e).
[20] *See* 18 C.F.R. § 2.1c(e), (j).

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			federal agencies to include Indigenous knowledge in their decision making.[21] The information gathered in the Cooperative's studies are intended to inform FERC's licensing decision, and thus should incorporate Indigenous knowledge. Though FERC authorized the Cooperative to initiate consultation under the National Historic Preservation Act (NHPA) Section 106 process, FERC remains responsible for adhering to its Nation-to-Nation relationship with Tribes and must consult with Tribes in a manner that recognizes their sovereign status.[22] The USR is incomplete without Yup'ik knowledge. The word Yup'ik does not appear once in the USR outside of the NHPA Section 106 Evaluation (Attachment N) and surprisingly only appears once in the Subsistence Report (Attachment M to the USR addendum). We appreciate that the USR included Indigenous place names gathered from websites of organizations in the region but there is no Yup'ik place names map.[23] Yup'ik names for the fish, plants, and animals are readily available, yet are missing from this report. Notably, the Cultural Resource Survey made insufficient efforts to include Indigenous knowledge, despite the study's intended purpose to document the Tribes' cultural heritage. During the first study season, the Cooperative's minimal effort to engage in consultation included a mailed letter and follow-up email sent at the height of the subsistence and commercial fishing season when most Tribal offices are closed and Tribal employees are out for subsistence and commercial activities Though the Cooperative held in-person, subsistence and recreation workshops during the second study season, there continues to be an overall lack of meaningful Tribal engagement on the studies included in the approved study plan. Additionally, Indigenous knowledge was not incorporated into the design or implementation of the study plan. Relying solely on western science is not a holistic approach and engaging with Tribes on these studies is an essential step in assessing and understanding the impacts of the proposed project.	website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there were "excuses" made in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
244	UTBB	Ice Processes Assessment	As noted in our comments on the Initial Study Report, our biggest concern with this study is that only two years of ice dynamics were observed when in fact it is probable that more extreme events associated with less common spring climate conditions will pose challenges to the operations of the facility. Consequently, we encourage communication with Tribes and Traditional Knowledge Holders who live in the watershed and have long-term perspectives about the dynamics of ice in the river. The interaction between hydropower generation and river-ice is a complex process which is determined by climatic conditions, river morphology, and hydropower operational strategies. In the proposed project area, ice processes have the potential to affect project operations and infrastructure, as well as the river's ecology in the proposed bypass reach. For example, anchor ice formation can cause fish and invertebrate stranding, fish egg displacement, and invertebrate displacement. Discharge changes in the bypass reach may also cause ice buildup in dewatered margins of the stream because of alternating cycles of increased and decreased discharge that cause stream stage to fluctuate. Consequently, it is important that the potential for ice to complicate the proposed Project's operations be included in the Cooperative's risk assessment in the USR, which only provides cursory treatment of potential risks.	The two years of studies and seven years of satellite imagery obtained at the intake provide guidance for engineering and inform the layout and design of the intake. River ice is a complex process and will be accounted for in the detailed design
245	UTBB	Life Cycle Model	The USR describes a state-of-the-art Life Cycle Model (LCM) for sockeye salmon that integrates existing data for this species in Bristol Bay and provides a defensible approach for quantifying potential impacts of the proposed project on the Nushagak sockeye salmon stock and the fisheries it supports. The model effectively synthesizes data from sockeye salmon at various life stages from both the Nushagak River and from other ecosystems in western Alaska. The model was used to explore a range of scenarios for how the project could affect adult and smolt life stages as they move through the study reach, and whether the project could interact with future flows expected with ongoing climate warming. The model shows that	Comment noted.

[21] Office of Science and Technology Policy & Council on Environmental Quality, *Guidance for Federal Departments and Agencies on Indigenous Knowledge* (Nov. 30, 2022), https://planning.erdc.dren.mil/toolbox/library/MemosandLetters/IKGuidance_30Nov2022.pdf; White House Office of Science and Technology Policy and Council on Environmental Quality, *Memorandum on Indigenous Traditional Ecological Knowledge and Federal Decision Making*, (Nov. 15, 2021) https://bidenwhitehouse.archives.gov/wp-content/uploads/2021/11/111521 OSTP-CEQ-ITEK-Memo.pdf.

[22] 36 C.F.R. § 800.2(c)(2) & (4); see also 18 C.F.R. § 2.1c (affirming that consultation should recognize Tribes' status as "governmental sovereigns" and FERC "will assure that tribal concerns and interests are considered" in decision-making consistent with the agency's trust responsibility to Tribes).

[23] A map with Yup'ik place names is readily available online from Bristol Bay Native Corporation. *GIS web map of Bristol Bay*, BRISTOL BAY ONLINE! NATIVE PLACE NAMES PROJECT, https://bbonline.bbnc.net/explore/ (last visited Mar. 20, 2025).

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			certain plausible combinations of future climate and project impacts on juvenile survival translate into major reductions in sockeye salmon abundance and fisheries harvest. In particular, the loss of snowpack in a warmer future will eliminate the high spring flows that currently occur during smolt migrations downstream and adult migration upstream to the spawning grounds. The LCM shows that when the spring freshet is eliminated, if the project diverted 30% of the river flow,[24] it is likely to reduce both successful smolt migration and adult migration through the falls. Therefore, the LCM indicates that if the project uses 30% of flows in a warmer climate, it would reduce the abundance of this sockeye salmon stock.	
246	UTBB	Life Cycle Model	What was not evaluated was how different minimum flow requirements could be used to reduce project impacts on sockeye salmon, and what the trade-off with reduced energy production might be. For example, the LCM should have incorporated the instream flow reservation that currently requires specific flow rates to remain in the Nuyakuk River.[25] The Certificate of Reservation was granted to the Alaska Department of Fish and Game with a stated purpose to "protect fish and wildlife habitat, migration, and propagation."[26] The sockeye salmon LCM is well-suited for exploring these minimum flow requirements and should be implemented for assessing project economic viability and the potential effectiveness of alternative adaptive management strategies for protecting fish.	The LCM was intended primarily to identify risk sources to Nuyakuk fish population from potential operation of the Project resulting in flow levels in the Falls Reach ranging from 1,000 – 25,000cfs. It was not a study objective to extrapolate results of the LCM to development of PM&Es related to minimum flow requirements. While there will absolutely be a point at which a minimum flow requirement is developed for the Nuyakuk Project (if constructed), it is premature to consider at this juncture.
247	UTBB	Life Cycle Model	An additional issue needing further consideration is whether fish size affects their passage through the Nuyakuk Falls and whether the project might have size-dependent effects that play out at the scale of the life cycle of sockeye salmon.	Comment Noted.
248	UTBB	Life Cycle Model	UTBB is concerned that the Chinook salmon LCM was not developed. As such, project risks to this species are based entirely on qualitative assessments as done in the Integrated Risk Assessment (IRA). We do not feel the assessment of project risks to Chinook salmon were adequately explored due to the lack of data for this species in the Nuyakuk River. As the Chinook salmon were identified as a stock of concern by the Alaska Department of Fish & Game (ADF&G) in 2022,[27] ADF&G will be increasing monitoring of the species.[28] The datasets available for Chinook will likely be more helpful over time but currently are not useful for adequate LCM assessment.	As noted in the USR for the Life Cycle Model and Integrated Risk Assessment, it very difficult, and inadvisable to develop a model without sufficient data. A Chinook Life Cycle model would require data that the ADF&G and other regional managers or entities studying the populations and dynamics of Chinook Salmon in the Nushagak system are not able to provide at this time. Additional monitoring of the species by ADF&G and others following the establishment of the species as a stock of concern may eventually provide data that will make a Chinook Salmon LCM both rigorous and informative.
249	UTBB	Life Cycle Model	A final concern with the LCM component of the risk assessment is in describing how these efforts were integrated with the IRA. The IRA is a qualitative approach for assessing risks of the project and is addressed in more detail below. Given our concerns about the rigor of the IRA, higher priority should be given towards using the IRA to inform the LCM analysis. Mechanisms or project effects with high uncertainties, as identified in the IRA, should be prioritized for focused sensitivity analysis in the LCM to bound potential impacts of particularly uncertain effects. The USR does not sufficiently describe the approach for integrating the LCM and the IRA.	As discussed during the ARWG meetings on the IRA in 2024, the determination of how the IRA and LCM were designed and intended to be concurrent and independent occurred during study planning in 2021. These models were intended to provide independent evaluations of risk, qualitative—IRA and qualitative—LCM. They were not intended to be integrated.
250	UTBB	Life Cycle Model	UTBB appreciates the inclusion of the sockeye LCM which is the most rigorous component of the overall risk assessment. How the LCM would be used to inform an adaptive management strategy that includes monitoring and adaptive operations of the facility, if the project is to proceed, should also be described by the Cooperative.	Comment noted.
251	UTBB	Integrated Risk Assessment	The Cooperative adopted the Delphi method as a qualitative approach for an integrated risk assessment of the proposed project. UTBB is concerned that the USR provides no justification for using the Delphi method as the most appropriate approach for assessing risks to fish. The Cooperative should provide information on how well this qualitative approach performs in other situations. The failure to provide a	The Delphi method is not an approach for assessing risks to fish, and implementing a Delphi approach to decision making does not require site specific knowledge. The Delphi system is described in depth in the ISR and was presented as a recommended approach for consensus-finding for the IRA to the ARWG in 2023 . The Delphi method is a

[24] *See* AS 41.21.167(e) (providing that "development and operation of a hydroelectric site at the Nuyakuk River Falls is a compatible use if the development and operation . . . maintains at least 70 percent of the daily upstream water flow of an affected river along the natural course of the river . . .).
[25] State of Alaska Dep't of Natural Resources, Certificate of Reservation LAS 28250 (Nov. 7, 2013).
[26] *Id*.
[27] *State of Alaska Special Status Species, Fish Stocks of Concern*, ALASKA DEP'T OF FISH AND GAME, https://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (last visited Mar. 20, 2025).
[28] Alaska Dep't of Fish and Game, *Nushagak River King Salmon – Stock Status and Action Plan,* Report to the Alaska Board of Fisheries, 23 (Nov. 29, 2022), https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022 2023/bb/Nushagak%20King%20Salmon%20Action%20Plan.pdf.

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			justification for the Delphi method is particularly problematic given the limited site-specific experience of many of the researchers involved in the analysis.	procedure for a group of people (in the case of the IRA, the ARWG, stakeholders, and anyone else with knowledge about the system and affected species interested in providing input) to share opinions and submit ranked scores on topic and for those ranked scores to be compiled by a facilitator, re-shared with the group, and discussed. The Cooperative supports the use of the Delphi method for the IRA.
252	UTBB	Integrated Risk Assessment	UTBB is also concerned that the Cooperative did not engage Traditional Knowledge Holders in the Delphi analysis. This was a major opportunity to incorporate Traditional knowledge into the risk assessment which the Cooperative did not pursue. At the USR meeting, the Cooperative's consultants indicated that local knowledge was solicited through a webform and through a sign up sheet at the Initial Study Report meeting. These efforts are insufficient to meaningfully engage Traditional Knowledge Holders and incorporate Traditional knowledge into the studies.	All people were invited to participate in the ARWG IRA subcommittee, and all people were invited to share information, provide feedback, contribute data, and engage with the other members of the group, including UTBB's representative on the ARWG IRA subcommittee.
253	UTBB	Integrated Risk Assessment	As described above, the IRA should be formally integrated with the LCM to provide the most rigorous assessments of potential risks and assess the potential effectiveness of alternative adaptive management approaches for project operations. There is no formal description that lays out how this integration will be achieved.	As noted above, the IRA and LCM were intended to be independent assessments of risk based on two different approaches, qualitative and quantitative.
254	UTBB	Flow Regimes	UTBB appreciates the inclusion of the comprehensive analysis to develop scenarios for future hydrologic flows given climate change. These scenarios should be incorporated into most other aspects of the overall risk assessment for assessing both operational performance in a climate altered future and ecological impacts of the proposed project on the ecosystem and fish. The integration of the future flows assessment with the Life Cycle Model for sockeye salmon was a particularly important component of the USR and provides the most compelling evidence that the project has the potential to affect sockeye salmon populations that migrate through the project reach.	Comment noted.
255	UTBB	Flow Regimes	Analysis of historical hydrology data to assess whether there is non-stationarity in the hydrograph (flow duration curve analysis) is not a relevant component of the risk assessment when compared to the magnitude of expected changes due to future climate change. This component of the overall study has a relatively low level of uncertainty for assessing risks of the project. The emphasis must be placed on assessing risks under scenarios that include the most plausible expected changes in the future hydrograph from ongoing climate warming as demonstrated in the future flows study.	Comment noted with the understanding that the relevance of any assertions related to future conditions are only as reliable as their accuracy.
256	UTBB	National Historic Preservation Act Section 106 Process	UTBB has significant concerns regarding FERC and the Cooperative's approaches to compliance with the NHPA Section 106 process thus far and the Cooperative's Section 106 Evaluation Report (Attachment N) included in its USR. To date, FERC and the Cooperative have yet to conduct meaningful consultation. Many of the concerns outlined below can be directly tied to this lack of consultation.	Comment noted.
257	UTBB	National Historic Preservation Act Section 106 Process	The Advisory Council on Historic Preservation's (ACHP) regulations implementing the Section 106 process specifically require consultation with Tribes as part of the identification of historic properties, evaluation of historic significance, and assessment of adverse effects.[29] Efforts to initiate collaborative consultation early on in the project licensing process would have enabled communities to participate in the process, raise concerns, and ensure project designs avoid, minimize, and mitigate effects.[30]	The Cooperative is using a phased approach to Section 106 identification, and the cultural resources study for the Project should not be viewed as complete. As discussed on May 28, 2024, with the Cultural Technical Working Group, the Project APE was not finalized prior to the 2023 and 2024 field study seasons due to changes in the Project footprint and because the route(s) of the proposed transmission line had not been finalized.
258	UTBB	National Historic Preservation Act Section 106 Process	The Cooperative made a single attempt to consult before completing the Section 106 Evaluation Report included in the USR. As discussed above, the Cooperative sent a letter initiating consultation and a follow-up email during the height of the subsistence and commercial fishing seasons.	In March 2020. FERC granted authorization to Cooperative, Inc. to conduct day-to-day Section 106 consultation responsibilities for the Project licensing effort. This authorized the Cooperative to initiate consultation with the Alaska State Historic Preservation Officer,

[29] 36 C.F.R. §§ 800.4(b) & (c)(1), 800.5; *see also* 54 U.S.C. § 302706(b) (requiring an agency to "consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance" to historic properties that may be affected by an undertaking when carrying out the agency's responsibilities under Section 106).

[30] The Cooperative could have followed the model of other successful consultation efforts. For example, Federal Highways Administration and North Dakota Department of Transportation proactively "involve Indian tribes early enough in project planning [to] sufficient[ly] understand . . . traditional cultural properties, sacred sites, and tribal cultural and spiritual practices to properly address tribal issues in Section 106 consultations." Advisory Council on Historic Preservation, *106 Success Story, TCC: A Better Model for Tribal Involvement in Transportation Projects*, https://www.achp.gov/sites/default/files/2017-01/TCC.pdf (last visited Mar. 20, 2025).

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				appropriate Tribes and Native Corporations, and other consulting parties, pursuant to 36 CFR Part 800.2(c)(4) of the National Historic Preservation Act; however, the Commission remained ultimate responsible for all findings and determinations. In January 2023, after re-initiating the formal ILP for the Project, the Cooperative formally requested that the FERC again designate the Cooperative as its non-federal representative for the purposes of consultation pursuant to the implementation of regulations associated with Section 106 of the National Historic Preservation Act. Although FERC can authorize an applicant to initiate Section 106 consultation, ultimately only the federal agency can consult on a government-to-government basis with federally recognized Indian tribes [36 CFR § 800.2(c)(2)(ii)(B) and (C)]. The Cooperative received few responses to their May 2023 initiation of consultation letters. Two were from state agencies, one private individual, an NGO, and a regional Native Corporation. Additional organizations and individuals asked to be included in the cultural resources TWG after the December 5, 2023, Project initial study report meeting in Dillingham. The initial letter was followed up with phone calls and emails. No other responses were received. The Cultural Resources Technical Working Group was set up to continue and facilitate day-to-day consultation, and meetings were held through the spring and summer of 2024. Further, the Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input.
259	UTBB	National Historic Preservation Act Section 106 Process	In the March 12, 2024, Cultural Resources Technical Working Group (TWG) meeting, the Cooperative's cultural resource contractor acknowledged they had received concerns about Section 106 consultation efforts and expressed hope they could improve the consultation: > We've been told since the initiation of consultation letters last spring, I think it was May with follow up phone calls, that it was bad timing. I'm not sure there actually is the best time. … [W]e will be continuing to work through this winter and into next year trying to get more participation. … I would really like to get more direct participation from folks in the community, so obviously we need to work on that.[31] To UTBB's knowledge, there were no additional Section 106 consultation letters sent to Tribes and the Cooperative's cultural resource contractor did not travel to villages in 2024 "to get more direct participation" from Tribal governments.	Please see response for comment #258. In addition, we would reiterate that the Section 106 process is ongoing and should not be viewed as complete.
260	UTBB	National Historic Preservation Act Section 106 Process	The Cultural Resources TWG meetings do not equate to Section 106 consultation with Tribal governments as required by law. Furthermore, neither the applicant nor their cultural resource contractor ever stated the Cultural Resources TWG meetings were "consultation" under Section 106.	The Cooperative does not have the authority to conduct government-to-government consultation with Tribal governments. FERC cannot

[31] Cultural Resources TWG Meeting, Zoom recording (Mar. 12, 2024).

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				delegate that authority without Tribal approval. The Cooperative has engaged in day-to-day consultation.
261	UTBB	National Historic Preservation Act Section 106 Process	Because of the lack of consultation on identification efforts, evaluation, and assessment of effects, FERC and the Cooperative must consider the Section 106 Evaluation Report a draft report, not a final report. The lack of consultation fails to meet the requirements under Section 106, something that FERC and the Cooperative must address before moving forward.	Comment noted. As stated in Attachment N of the USR, there will be a full consideration of effects when the assessment of the APE, including the transmission line corridor(s), has been completed. The largest component of the cultural resources study has yet to be completed. The effects discussion will benefit from Tribal involvement.
262	UTBB	National Historic Preservation Act Section 106 Process	**a. Area of Potential Effects** When determining the APE, FERC and the Cooperative must consider the potential adverse effects to historic properties, including direct and indirect effects. The ACHP's regulations define the APE as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties."[32] Adverse effects may also "include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative."[33]	Comment noted.
263	UTBB	National Historic Preservation Act Section 106 Process	The U.S. Court of Appeals for the District of Columbia Circuit clarified the meaning of direct effects, rejecting the argument that direct effects are limited to physical effects.[34] Instead, the court concluded that "directly" refers to the "causation and not physicality" of the effect.[35] This means direct effects encompass immediate effects with no intervening cause.[36] Whereas indirect effects refer to effects that "are later in time or farther removed in distance."[37] The ACHP and the Alaska State Historic Preservation Officer (SHPO) concur with these clarifying definitions.[38] The NHPA does not define cumulative effects, however the National Environmental Policy Act (NEPA) provides an "analogous and instructive"[39] definition for a cumulative impact: Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non Federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time.[40]	Comment noted. As stated in Attachment N of the USR, there will be a full consideration of effects when the assessment of the APE, including the transmission line corridor(s), has been completed. The effects discussion will benefit from Tribal involvement.
264	UTBB	National Historic Preservation Act Section 106 Process	So far, the Cooperative has limited their effects analysis for historic properties to ground disturbance. The Cooperative offers no consideration of other effects like sensory disturbances (e.g., visual, auditory, olfactory), changes in atmospheric conditions (e.g., increased equipment exhaust, dust), increases in access to traditional use areas, and changes in land use.	Please see response to comment #263. The Section 106 process for the Project is ongoing and should not be considered complete.
265	UTBB	National Historic Preservation Act Section 106 Process	Limiting the discussion of effects to ground disturbance and archaeology is contrary to the NHPA's requirements. FERC and the Cooperative must consider and describe the full range of potential effects anticipated from the project to establish the APE. This failure to describe potential effects does not meet the documentation standard for the Section 106 process, which requires "that a determination, finding, or agreement . . . is supported by sufficient documentation to enable any reviewing parties to understand its	The Section 106 process for the Project is ongoing and should not be considered complete.

[32] 36 C.F.R. § 800.16(d).
[33] 36 C.F.R. § 800.5(a)(1).
[34] *National Parks Conservation Association v. Semonite*, 916 F.3d 1075, 1088 (D.C. Cir. 2019), available at https://www.achp.gov/sites/default/files/2019-06/NPCA%20v%20Semonite.pdf.
[35] *Id.*
[36] *Id.*
[37] Memorandum from Office of General Counsel, Advisory Council on Historic Preservation on *Recent Court Decision Regarding the Meaning of "Direct" in Sections 106 and 110(f) of the National Historic Preservation Act* (June 7, 2019), http://shpo.nv.gov/uploads/documents/OGC_memo_to_ACHP_staff_re_meaning_of_direct_6-7 19.pdf.
[38] *Id.*; Letter from Judith Bittner, State Historic Preservation Officer, to Shane McCoy, U.S. Army Corps of Engineers, Program Manager, Pebble Project – Area of Potential Effects and Amakdedori Port Cultural Resources Investigation (2019) (on file with Office of History and Archaeology).
[39] Council on Environmental Quality, Executive Office of the President, and Advisory Council on Historic Preservation, *NEPA and NHPA A Handbook for Integrating NEPA and Section 106*, 41 (Mar. 2013) [hereinafter *NEPA and NHPA Handbook*].
[40] 40 C.F.R. § 1508.1(i)(3).

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			basis."[41] The Cooperative has provided insufficient information on the potential effects they have considered for UTBB, Tribes, and community members "to understand its basis."	
266	UTBB	National Historic Preservation Act Section 106 Process	In previous comments on the Initial Study Report, UTBB requested that FERC and the Cooperative clarify, reconsider, and expand the existing APE. Though UTBB stated the following concerns in their Initial Study Report comments, we are restating them here to again request FERC and the Cooperative clarify in writing and with maps the existing APE to address three deficiencies that make the current APE unclear and inadequate: 1) There has been no consultation on potential effects and how far they can potentially extend out from the project footprint; 2) FERC and the project proponent have not sufficiently described the different kinds of effects the project is likely to have on historic properties that may alter their character or use. It seems the only impacts FERC and the project proponent are considering are ground disturbances; and 3) There is no evidence FERC and the project proponent are taking into account indirect and cumulative effects in establishing the APE.	Please see responses to comment numbers 264 and 265.
267	UTBB	National Historic Preservation Act Section 106 Process	**i. The APE appears to be arbitrary and not based on potential effects.** In its comments on the Initial Study Report, FERC expressed concerns about the arbitrariness of the APE. For example, FERC noted that the State Historic Preservation Officer did not sign off on the APE determined by the Cooperative and that transmission lines may be part of the APE.[42] FERC requested an explanation for these deficiencies. FERC also expressed concern that the Initial Study Report did not include an APE that accounts for potential effects to Traditional Cultural Places (TCPs) or discuss consultation efforts with Tribes to establish the APE.[43] FERC noted that the "APE for TCPs should be developed in consultation with interested Native Alaskan Tribes" and requested that the Cooperative "describe when the consultation discussions and potential surveys would be completed."[44] In its Determination on Requests for Study Modifications, FERC reiterated that "we are recommending that the Cooperative travel to the Tribal Villages in 2024 to conduct in-person interviews for the Traditional Cultural Properties component of the Section 106 Study."[45]	The Cooperative is using a phased approach to Section 106 identification, and the cultural resources study for the Project should not be viewed as complete. As discussed on May 28, 2024, with the Cultural Technical Working Group, the Project APE was not finalized prior to the 2023 and 2024 field study seasons due to changes in the Project footprint and because the route(s) of the proposed transmission line had not been finalized. This study has proceeded a two-part project. The first phase relates to the proposed facilities at Nuyakuk Falls, while the second concerns the proposed transmission line(s). Because consideration of the transmission line corridor, the largest component of the cultural resources study, is still ongoing, the Cooperative has opted to not conduct in person interviews until the final route has been determined. Archaeological sites and Traditional Cultural Properties are location-specific, and as such, it makes more sense to conduct in-person interviews until finalized maps of the transmission line(s) are in hand.
268	UTBB	National Historic Preservation Act Section 106 Process	The Cooperative has not adequately addressed UTBB and FERC's concerns about the arbitrariness of the APE in the USR. In the USR, the Cooperative refers to a proposed APE that "includes lands or properties outside the project boundary where project operation or other project-related activities may cause changes in the character or use of historic properties" and features a "direct" APE around ancestral sites and an "indirect" APE for "aboveground resources" (i.e., the transmission line corridors).[46] The project proponent's description of its study area refers to a 90-acre area and buffers of approximately 150 feet around Project infrastructure. Neither the preliminary APE description nor the study area defines what the actual APE is or	Comment noted.

[41] 36 C.F.R. § 800.11(a).
[42] FERC, *Comments on Initial Study Report and Meeting Summary and Request for Additional Information*, 3-4 (Jan. 25, 2024).
[43] *Id*. At 4.
[44] *Id*.
[45] FERC, *Determination on Requests for Study Modifications for the Nuyakuk River Hydroelectric Project*, at B-4 (Apr. 18, 2024) [hereinafter FERC Determination on Study Modifications].
[46] Nushagak Cooperative, *Nuyakuk River Hydroelectric Project USR, Attachment N: Cultural Resource Survey*, 2 (Dec. 2, 2024) [hereinafter *USR Attachment N*].

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			describes potential effects that are informing and justifying these distances. The USR further states that consideration of effects will only be presented in the "draft and final License Applications."[47]	
269	UTBB	National Historic Preservation Act Section 106 Process	**ii. Tribes must be consulted before an APE for the transmission lines is defined.** Section 106 identification efforts can only occur in an APE, and the process of defining an APE must include consultation with impacted Tribes.[48] UTBB has significant concerns about the failure to clarify the APE for the transmission corridor. These transmission routes will become seasonal highways that increase access to lands Bristol Bay Tribes have relied on for generations to sustain our ways of life. The APE for the transmission corridor must account for increased access to communities' traditional use areas. Increased access is a reasonably foreseeable impact. Increased access to Tribes' traditional use areas, which are likely historic properties, is a potential effect that concerns Tribes. Transmission corridors will create new winter travel routes to Tribes' traditional use areas. The transmission corridors will essentially be winter highways between communities through use of snowmobiles. This easy access means Tribes will have to compete with individuals from outside their communities for access to the animals and plants that they rely upon. Increased access from those outside their villages and more competition will adversely affect how Tribes feel and associate with these traditional use areas. FERC and the Cooperative must take this potential effect into account.	Comment noted. The Cooperative has been transparent about the phased approach to the Section 106 process. The transmission line had not been finalized prior to the 2024 study season. FERC, Tribal governments, and SHPO will be consulted to determine an appropriate APE for the transmission line(s). All historic properties, whether buildings, archaeological sites, or Traditional Cultural Places will be considered.
270	UTBB	National Historic Preservation Act Section 106 Process	The lack of clarity on the APE for the transmission lines is an example of the project proponent improperly limiting the extent of the APE to only address archaeological data and prioritizing archaeological resources over other types of historic properties. Based on vague statements from the Cooperative and their consultants, it seems like they will be limiting the APE to the 100-foot right of way (ROW) and only considering archaeology. Because the ROW does not account for the potential impacts of the transmission lines, basing the APE on the ROW is arbitrary.	The Cooperative has been transparent about the phased approach to the Section 106 process. The transmission line had not been finalized prior to the 2024 study season. FERC, Tribal governments, and SHPO will be consulted to determine an appropriate APE for the transmission line(s). All historic properties, whether buildings, archaeological sites, or Traditional Cultural Places will be considered.
271	UTBB	National Historic Preservation Act Section 106 Process	The Cooperative is providing contradictory information about whether the APE for the transmission lines has been determined. In the response to FERC's comment on the Initial Study Report, the Cooperative wrote that "[t]he Project APE has not been finalized due to changes in the project footprint and because the final route of the proposed transmission line has not been finalized."[49] However, in the same response, the Cooperate stated that they planned to conduct "initial reconnaissance of the proposed transmission line corridor. A detailed literature review of the general transmission line area was completed in early 2024 as an additional step in the Section 106 study."[50] Any "initial reconnaissance" is part of the identification efforts under the Section 106 process.[51] Therefore, the Cooperative cannot reasonably assert that the APE is not developed and that they do not have an obligation to consult with Tribes. This line of reasoning ignores FERC's Initial Study Report comments on the lack of a developed APE.	See response to comment #270. Also, this comment is not entirely correct. The "detailed literature review" was based on conceptual routes of the transmission lines that continued to change even after the aerial reconnaissance. The latter in no way could be viewed as anything more than an overview of the terrain and topography between the villages and the facilities area
272	UTBB	National Historic Preservation Act Section 106 Process	Because FERC and the project proponent have not provided a justifiable APE for the transmission line corridor, UTBB is providing an evidence-based APE that agencies have used in other parts of the country for potential effects of transmission lines. The federal government's Argonne Laboratory through support from the Bureau of Land Management (BLM) provides the most thorough guidance on developing APE for transmission lines. Their guidance is applicable to the proposed Project's transmission line corridors. Argonne Laboratory's analysis focuses on 500-kV lattice towers and monopoles (typically 160-200 feet tall) along with 230-kV H-frame tower facilities (typically 120 feet tall).[52] The Argonne Laboratory provides that 500kv towers are visible up to 10 miles away.[53]	The Cooperative appreciates UTBB's input on the APE for the transmission line.

[47] *Id.*
[48] 36 C.F.R. § 800.4.
[49] Nushagak Cooperative, *Initial Study Report Comment Response Matrix for the Nuyakuk River Hydroelectric Project* (P-14873), 4 (March 20, 2024).
[50] *Id.* At 5.
[51] 36 C.F.R. § 800.4.
[52] U.S. Dep't of the Interior, National Park Service, *Powering the Grid*, https://parkplanning.nps.gov/showFile.cfm?sfid=76974&projectID=25147#:~:text=Typical%205 00kV%20structure%20height%3A%20180,single%20pole%20or%20lattice%20towers.&text=M ost%20500kV%20towers%20are%20made,%2C%20ice%2C%20and%20conductors (last visited Mar. 20, 2025).
[53] Robert G. Sullivan, et. al, *Electric Transmission Visibility and Visual Contrast Threshold Distances in Western Landscapes*, 38-39 (Apr. 2014), https://shpo.nv.gov/uploads/documents/NAEP14_Sullivan_TransmissionVCTDFinal141029.pdf

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273	UTBB	National Historic Preservation Act Section 106 Process	The Project is using Fiber Reinforced Polymer (FRP) Poles that are 100 feet tall. Given that the Project's transmission poles will be half as tall as the towers in the Argonne Laboratory guidance, we can halve the Argonne Laboratory's APE guidance. This would result in the Project's 100-foot towers (Figure 1)[54] being visible up to 5.5 miles, noticeable to casual observers at 2.5 miles, and a major attractant of visual attention at 1.25 miles. While the Argonne Laboratory's guidance primarily focuses on visual impacts, these distances are relevant to the indirect and cumulative impacts of increased access to Tribes' traditional use areas by those from other communities.	The Cooperative appreciates UTBB's input on the APE for the transmission line.
274	UTBB	National Historic Preservation Act Section 106 Process	The Nuyakuk Hydro Project's Transmission Line Corridors APEs need to extend out a minimum of 5.5 miles from the 100-foot ROW. This distance should ensure that FERC and the project proponent take into account direct, indirect, and cumulative effects from this project to historic properties.	The Cooperative appreciates UTBB's input on the APE for the transmission line.
275	UTBB	National Historic Preservation Act Section 106 Process	**b. "Reasonable and Good Faith Effort" Standard** After reviewing the USR, UTBB continues to have concerns about whether the "reasonable and good faith effort" standard for the Section 106 process is being met for this project. FERC and the project proponent must make a "reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey."[55] To meet the reasonable and good faith effort standard, the agency must consider: 1) past planning, research and studies; 2) the magnitude and nature of the undertaking and the degree of Federal involvement; 3) the nature and extent of potential effects on historic properties; and 4) the likely nature and location of historic properties within the area of potential effects.[56]	Comment noted. The cooperative would like to reiterate that the Section 106 process is ongoing and should not be viewed as complete.
276	UTBB	National Historic Preservation Act Section 106 Process	The ACHP provides guidance on meeting the reasonable and good faith effort standard. The ACHP provides that field surveys to identify historic properties should be carried out in consultation with the State Historic Preservation Officer, Tribes, and other consulting parties.40 An identification plan is carried out in good faith when it acknowledges the "special expertise possessed by" Tribes "in assessing the eligibility of historic properties that may possess religious and cultural significance to them."41 Additionally, an identification plan should be initiated "in a timely manner that allows for appropriate analysis and reporting, with adequate time for review by the consulting parties."[57]	Comment noted.
277	UTBB	National Historic Preservation Act Section 106 Process	Failing to consult with Tribes on research design and not providing an opportunity to comment before finalizing reports does not meet the reasonable and good faith standard. There was not a single opportunity for Tribes to comment on Attachment N prior to the release of the USR. There were no meetings to discuss what the archaeologists identified during their fieldwork and there was no opportunity to consult on the National Register of Historic Places Determinations of Eligibility for sites the Tribes' ancestors created and used.	The Cultural Technical Working Group met on July 30, 2024, to report on the results of 2024's short field season at the Project facilities area.
278	UTBB	National Historic Preservation Act Section 106 Process	UTBB understands, as outlined in ACHP's guidance, a reasonable and good faith effort does not require "approval" from consulting parties, "identification of every historic property within the APE;" "investigations outside of, or below, a properly documented APE;" or "ground verification of the entire APE."[58] What UTBB continues to request is: consultation with the Tribes in their villages, so Elders and Traditional Knowledge Holders can participate; an APE determined through consultation; field surveys using sampling strategies established through consultation for all project alternatives; and including Tribally appointed cultural advisors for all field sampling, survey, excavation, analysis, and reporting efforts. None of this has happened to date.	The Cooperative appreciates UTBB's efforts in ensuring the cultural resources study is carried out appropriately. We would like to reiterate that the Section 106 process is ongoing. As the project moves forward. The Cooperative will again reach out to Tribal governments when defining the APE for the transmission line(s).

[54] McMillen. PowerPoint presentation for Nuyakuk Falls Conceptual Design Update Meeting on July 15, 2024, provided by Laura Johnson via email on July 16, 2024.
[55] 36 C.F.R. § 800.4(b)(1).
[56] *Id.*; 36 C.F.R. § 800.4(c)(1).
[57] *Meeting the "Reasonable and Good Faith" Identification Standard in Section 106 Review* at 2.
[58] *Id.* (emphasis added).

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279	UTBB	National Historic Preservation Act Section 106 Process	**c. Determinations of Eligibility** The Cooperative's cultural consultants identified three ancestral sites and one ancestral portage during their archaeological surveys in June 2023 and July 2024.[59] Instead of examining how these ancestral sites and travel routes may relate to one another or whether any such inter connection may be the basis for a potential district, Attachment N itemized each of the places and evaluated them individually for the National Register of Historic Places without consideration of the sites in relation to the historic context.[60] This is a flawed approach.	Comment noted.
280	UTBB	National Historic Preservation Act Section 106 Process	A historic context provides the framework to evaluate the significance of a historic property and is identified through the history of the property and surrounding region.[61] Historic contexts consist of themes, geographic scale, and chronology.[62] Themes are "means of organizing properties into coherent patterns based on elements such as environment, social/ethnic groups, transportation networks, technology, or political developments that have influenced the development of an area during one or more periods of prehistory or history."[63] Themes are significant if they are important to American history.[64] The geographic scale of a historic context can be at the local, state, or national level.[65] Failing to include a historic context, themes, and geographic scale results in a flawed National Register of Historic Places Determination of Eligibility process which is one of the central tenets of the Section 106 process.	Comment noted.
281	UTBB	National Historic Preservation Act Section 106 Process	When making determinations of eligibility, the ACHP's regulations require agencies to "apply the National Register Criteria for Evaluation."[66] The National Register Bulletin No. 15 provides guidance on applying these criteria to evaluate properties for inclusion on the National Register of Historic Places. The following sections outline how the Cooperative has not properly followed these criteria for the determination of eligibility included in the USR.	Comment noted.
282	UTBB	National Historic Preservation Act Section 106 Process	**i. Criterion A** To be considered for inclusion under Criterion A, a property must be "associated with events that have made a significant contribution to the broad patterns of our history."[67] Bulletin No. 15 further explains that a property must be associated with one or both of the following events: 1) A specific event marking an important moment in American prehistory or history, or 2) A pattern of events or a historic trend that made a significant contribution to the development of a community, the State, or the nation.[68]	Comment noted.

[59] *USR Attachment N* at 25-36.
[60] *Id.* At 36-40.
[61] National Park Service, National Register Bulletin No. 15: *How to Apply the National Register Criteria for Evaluation* 7-9 (1997), https://www.nps.gov/subjects/nationalregister/upload/NRB 15_web508.pdf [hereinafter "National Register Bulletin No. 15"].
[62] *Id.* at 7.
[63] *Id.* at 8.
[64] *Id.*
[65] *Id.*
[66] 36 C.F.R. § 800.4(c).
[67] 36 C.F.R. § 60.4(a).
[68] National Register Bulletin No. 15 at 12.

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283	UTBB	National Historic Preservation Act Section 106 Process	National Register Bulletin No. 15 specifically lists "[a] site where prehistoric Native Americans annually gathered for seasonally available resources and for social interaction" as a type of significant event that may qualify properties for inclusion in the National Register.[69] Attachment N presents an incomplete and inaccurate view of the National Register Criteria for Evaluation[70] in its recommendations for the three ancestral sites (DIL-00270, DIL-00271, and DIL-00273) and portage (DIL-00272).[71] Attachment N states the ancestral sites are not eligible under Criterion A because while these three ancestral sites "demonstrate traditional Yup'ik use of the Nuyakuk River," "they are not associated with any significant events and are therefore not recommended as eligible under Criterion A [Significant Events]."[72] This recommendation is perplexing as the consultants recommend the portage as eligible under Criterion A: "The portage trail demonstrates traditional Yup'ik use of the Nuyakuk River prior to Russian contact and is associated with the evolution of transportation networks in the region."[73] While traveling the land is a significant event, so is the Yup'ik traditional harvest of salmon on the Nuyakuk River. All these places are connected in the eyes of the Yup'ik people whose ancestors used and lived at these places. National Register eligibility guidance recommends evaluating these three ancestral sites in the context of nearby Yup'ik named places as well. The three ancestral sites (DIL-00270, DIL-00271, and DIL-00273) and the portage (DIL-00272) are the material remains of ancestral Yup'ik people who harvested "seasonally available resources" in the upper Nuyakuk River as part of ancestral use of the Nushagak watershed. The three ancestral sites and portage along with nearby Yup'ik named places relate to one another and form a district.	We appreciate the constructive criticism of the recommendations of eligibility.
284	UTBB	National Historic Preservation Act Section 106 Process	ii. Criterion C In evaluating the three ancestral sites and portage for their National Register eligibility, Attachment N only partially applied Criterion C. Criterion C is for properties: > that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, o*r that represent a significant and distinguishable entity whose components may lack individual distinction*.[74] National Register Bulletin No. 15 uses identical language as the regulations to define Criterion C and further provides that a significant and distinguishable entity whose components may lack individual distinction "portion of Criterion C refers to districts."[75] National Register Bulletin No. 15 clarifies the relationship between Criterion C and districts stating, "districts that are significant will usually meet the last portion of Criterion C plus Criterion A, Criterion B, other portions of Criterion C, or Criterion D."[76] To reiterate the regulatory language for Criterion C, National Register Bulletin No. 15 states: > A district can comprise both features that lack individual distinction and individually distinctive features that serve as focal points. It may even be considered eligible if all of the components lack individual distinction, provided that the grouping achieves significance as a whole within its historic context.[77]	We appreciate the constructive criticism of the recommendations of eligibility.

[69] *Id.*
[70] 36 C.F.R. § 60.4.
[71] *USR Attachment N* at 36-40.
[72] *Id.* at 38-40.
[73] *Id.* at 38-39.
[74] 36 C.F.R. § 60.4(c) (emphasis added).
[75] National Register Bulletin 15 at 20.
[76] National Register Bulletin 15 at 5.
[77] *Id.*

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			Attachment N mischaracterizes Criterion C repeatedly throughout stating "[t]hey are not architecturally significant and do not embody any particular style, period, or method of construction. Nor do they represent the work of a master or possess high artistic value."[78]	
285	UTBB	National Historic Preservation Act Section 106 Process	Attachment N does not evaluate whether the three ancestral sites (DIL-00270, DIL-00271, and DIL-00273) and the portage (DIL-00272) along with nearby Yup'ik named places "represent a significant and distinguishable entity whose components may lack individual distinction." The last part Criterion C pertains to historic districts, and the Cooperative must apply this section of the Criterion to the sites it identified.	This can be explored further, and we appreciate UTBB's input.
286	UTBB	National Historic Preservation Act Section 106 Process	iii. Criterion D Attachment N also needs to reassess its application of Criterion D to two of the ancestral sites. National Register Bulletin No. 15 explains the two requirements for Criterion D, both of which must be met for National Register eligibility: 1) The property must have, or have had, information to contribute to our understanding of human history or prehistory, and 2) The information must be considered important.[79] Additionally, the updated National Register Bulletin on identifying, evaluating, and documenting Traditional Cultural Places underscores the importance of Tribal consultation in evaluating Criterion D: > The existence and significance of culturally significant places can be understood first and foremost by learning from the people who live in, use, or value the area, or did so historically. This traditional knowledge is an independent line of evidence provided by the people who value the place; they are the authorities in their culture and the connection that culture has to a place. The subtlety with which the significance of these places may be expressed makes it easy for an outsider to overlook or misinterpret them.[80]	The Cooperative appreciates UTBB's input and understands that the significance of an ancestral site would best be determined by the group whose history it represents. Future consultation may alter recommendations.
287	UTBB	National Historic Preservation Act Section 106 Process	Attachment N recommends ancestral site DIL-00271 and the portage (DIL-00272) as eligible for the National Register of Historic Places under Criterion D while rejecting the eligibility of ancestral sites DIL-00270 and DIL-00273.[81]	Historically, depressions that do not have clear indications of being cultural are not eligible for the National Register. Future consultation may affect eligibility recommendations.
288	UTBB	National Historic Preservation Act Section 106 Process	However, ancestral sites DIL-00270 and DIL-00273 may meet the requirements of Criterion D in that they have contributed to the understanding of human history or prehistory. While the project proponent did conduct subsurface tests in several of the depressions at these sites, considering the concentration of potentially cultural features in this area, more testing would be expected to support their interpretations. Aside from these concerns about methods, our Tribes' heritage is more than a research topic for archaeologists. It is our way of life through millennia, something our Tribal communities continue to teach to younger and future generations.	Comment noted. The Cooperative appreciates UTBB's input and understands that the significance of an ancestral site would best be determined by the group whose history it represents. Future consultation may alter recommendations.
289	UTBB	National Historic Preservation Act Section 106 Process	Additional consultation with Tribes is needed to determine if the ancestral sites meet the requirements of Criterion D. Yup'ik people, as well as archaeologists, can have "research concerns" that can make places eligible under Criterion D. The first requirement of Criterion D states, "contribute to our understanding of human history."[82] "Our" in these requirements and in the other National Register Criteria refer to the group of people who perceive the property as significant. At the local level of significance, this means places important to Yup'ik people. The ancestral sites along the Nuyakuk River may be significant to Yup'ik people because the sites have information that contributes to the understanding of their history.	Comment noted. The Cooperative appreciates UTBB's input and understands that the significance of an ancestral site would best be determined by the group whose history it represents. Future consultation may alter recommendations.
290	UTBB	National Historic Preservation Act Section 106 Process	FERC and the project proponent must identify and evaluate whether there is a historic district in the APE for this project and reevaluate the application of the National Register of Historic Places eligibility criteria for	Comment noted.

[78] USR Attachment N at 38-40.
[79] National Register Bulletin No. 15 at 21 (emphasis added).
[80] National Park Service, *Identifying, Evaluating, and Documenting Traditional Cultural Places National Register Bulletin* 13 (Dec. 5, 2024), https://parkplanning.nps.gov/document.cfm?parkID=442&projectID=107663&documentID=141 175.
[81] *USR Attachment N* at 39-40.
[82] National Register Bulletin No. 15 at 21 (emphasis added).

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			the Section 106 process. As it stands now, these evaluations and findings of effects[83] are invalid and premature without consultation with Tribes.	
291	UTBB	National Historic Preservation Act Section 106 Process	**d. Traditional Cultural Places** FERC and the project proponent have not conducted any research, interviews, or Tribal consultation to document Traditional Cultural Places or cultural landscapes in the project area. Early identification of Traditional Cultural Places would allow for avoidance, minimization, and mitigation of impacts to cultural landscapes and Traditional Cultural Places before the project design has been finalized. The Section 106 identification efforts have solely focused on archaeology that has not included meaningful Tribal consultation. Despite raising this issue repeatedly in meetings and comments for this project, there is no apparent progress. The USR's Attachment N reflects this flawed approach.	Comment noted. It should also be noted that the Section 106 process has not been completed and is ongoing while the Cooperative assesses the Project's feasibility.
292	UTBB	National Historic Preservation Act Section 106 Process	The ACHP and Council on Environmental Quality provides guidance on proper identification efforts, stating: Agencies should take particular care when the proposed undertaking will affect types of historic properties whose boundaries might not be well defined or include natural features. The intensity of the action's effect on a property such as a cultural landscape or historic property of religious and cultural significance to Indian tribes or Native Hawaiian organizations might not be as immediately apparent as it would be when considering effects on a discrete structure or archaeological site. The intensity of the proposed action in these situations is likely to affect the more intangible aspects of the property, such as "feeling" as this term is used in the criteria for evaluating properties for the National Register. Consultation with Indian tribes and Native Hawaiian organizations to identify the character-defining features of such a cultural landscape is vital.[84]	Comment noted.
293	UTBB	National Historic Preservation Act Section 106 Process	Cultural resources with natural features include landscapes and Traditional Cultural Places. There are over 2,600 cultural landscapes listed on the National Register of Historic Places. While cultural landscapes and Traditional Cultural Places are not distinct historic property types, they are an added layer of cultural significance that frequently involve the interconnectedness of cultural and natural resources. The National Park Service defines cultural landscapes as: A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.[85] There are four kinds of non-mutually exclusive types of cultural landscapes: "historic designed landscapes, historic vernacular landscapes, historic sites, and ethnographic landscapes."[86]	Comment noted.
294	UTBB	National Historic Preservation Act Section 106 Process	Adapting the National Park Service's definition for cultural landscapes, Dr. Thomas King, a preeminent cultural resources management expert in the United States defines cultural riverscapes as "a river and its environs, including their natural and cultural resources, wildlife, and domestic animals, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."[87] Ethnographic research of Indigenous cultural resources along the Colorado River highlight the interconnectedness of cultural and natural features in riverscapes and the detriment of assessing them individually this way: Tribal representatives suggest that these places are all fundamentally "linked" so that the significance of individual sites along this portion of the Colorado River corridor cannot be understood outside the context of the larger constellation of sites of which they are a part. They should, in the view of some of these individuals, be assessed as a unit rather than individually. In this context, agencies might consider a cultural landscape or multiple property model for any TCP nomination relating to the	Comment noted. The Cooperative is aware of the Nushagak River Traditional Cultural Landscape, and this will be considered as the Section 106 process continues.

[83] *USR Attachment N* at 21.
[84] *NEPA and NHPA Handbook* at 23.
[85] National Park Service, *Cultural Landscapes*, https://www.nps.gov/subjects/culturallandscapes/understand cl.htm#:~:text=The%20National%20Park%20Service%20defines,other%20cultural%20or%20ae sthetic%20values.%22 (last visited Mar. 20, 2025).
[86] *Id.*
[87] Thomas F. King., First Salmon: *The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project*, 4 (Mar. 25, 2004), https://sipnuuk.karuk.us/digital-heritage/first-salmon klamath-cultural-riverscape-and-klamath-river-hydroelectric-project.

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			Colorado River corridor from Black Canyon downstream (perhaps as far as Davis Dam), linking property types that are functionally and historically linked to one another.[88] Anna Willow expands upon this concept when she summarizes the cultural significance of natural systems and features as "the plants and animals, the rocks and minerals, the waters and waterways, and the landscape and ecosystems that contain cultural meanings for the people who use, relate to, and behold them."[89] The holistic approach proposed by the National Park Service, King, Deur and Confer, and Willow is appropriate for the places this project may affect. There is already one documented cultural landscape in the project APE. Dr. Alan Boraas detailed the Nushagak River Traditional Cultural Landscape, a portion of which is within the APE for this project. The Nushagak River Traditional Cultural Landscape includes: 1) the watershed of the Nushagak River including its major tributaries … as well as smaller anadromous streams that comprise the watershed … [including] the riparian zone on either side of the river and its tributaries, and the hyporheic zone at the base of the river and its tributaries; 2) [ancestral] sites that reflect the development of the modern Yup'ik salmon culture; 3) Lewis Point fish camp where subsistence fish are caught and where the First Salmon Ceremony occurs; and 4) Nushagak river ice sites of the Great Blessing of the Water at Koliganek, New Stuyahok, Dillingham, and Ekwok.[90]	
295	UTBB	National Historic Preservation Act Section 106 Process	Attachment N describes the Nushagak River Traditional Cultural Landscape in one paragraph and does not mention it again. Despite this being a known cultural place in the APE, the project proponent does not provide a recommendation on its National Register of Historic Places eligibility. This is an example of the archaeological bias in Attachment N.	The Cooperative is aware of the Nushagak River Traditional Cultural Landscape, and this will be considered as the Section 106 process continues.
296	UTBB	National Historic Preservation Act Section 106 Process	The Cooperative has not followed FERC's recommendations for the TCP assessment. In the Determination on Requests for Study Modifications, FERC wrote, "we are recommending that the Cooperative travel to the Tribal Villages in 2024 to conduct in-person interviews for the Traditional Cultural Properties component of the Section 106 Study."[91] UTBB repeatedly advised the applicant, as early as 2024, that they would need to do cultural interviews in communities to document ethnographic places. In the March 12, 2024 Cultural Resources TWG meeting, UTBB's consultant asked about the Cooperative's plan to document ethnographic places, and the Cooperative said they would further discuss the question.[92] The Cooperative has not yet conducted in-person interviews to document TCPs.	Please see response to comment #268.
297	UTBB	National Historic Preservation Act Section 106 Process	The Cooperative is aware that the Nuyakuk Falls are a widely recognized culturally important place to Tribes. At the March 12, 2024 Cultural Resources TWG Meeting, Nushagak Cooperative CEO Will Chaney acknowledged the falls' cultural significance stating, "we've always known that it's a time immemorial site. I'll say now we have a little more definitive information and artifacts to speak to that."[93] Mr. Chaney reiterated the widely known cultural significance of the Nuyakuk Falls to communities at the January 16, 2025 USR Meeting in Dillingham.[94] The Cooperative has yet to document the Nuyakuk Falls as a TCP.	Traditional Cultural Places can only be defined by the group(s) who ascribe value to the place. As such, the Cooperative urges any person or Tribal entity to who believes that the falls are a TCP to contact the Cooperative. We appreciate UTBB's suggestion that Nuyakuk Falls is a TCP, and would ask that UTBB share any specific knowledge they may have about Nuyakuk Falls as a TCP, as appropriate. The Cooperative is not trying to exclude any information and will welcome any and all additional information. In addition, the Section 106 process is ongoing, and future consultation may result in information that will lead to

[88] Doug Deur and Deborah Confer, *People of Snowy Mountain, People of the River: A Multi Agency Ethnographic Overview and Compendium Relating to Tribes Associated with Clark County, Nevada*, Anthropology Faculty Publications and Presentations 98, 273 (2012) https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsre dir=1&article=1098&context=anth_fac, accessed January 26, 2024.
[89] Anna Willow, *Culturally Significant Natural Resources: Where Nature and Culture Meet, in* A COMPANION TO CULTURAL RESOURCE MANAGEMENT, 114-127 (Thomas F. King, ed. 2011).
[90] Alan Boraas, *The Nushagak River Traditional Cultural Landscape* (2019), document on file with UTBB.
[91] *FERC Determination on Study Modifications* at B-4.
[92] Nushagak Cooperative, *Cultural Resources TWG Meeting Summary* (March 12, 2024).
[93] Cultural Resources TWG Meeting, Zoom recording (Mar. 12, 2024).
[94] Nushagak Cooperative, *Nuyakuk River Hydroelectric Project (FERC No. 14873) Updated Study Report Meeting Summary* (Jan. 16, 2025).

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				recommending Nuyakuk Falls (*Tuqunerliq)* eligible for the National Register as a TCP.
298	UTBB	National Historic Preservation Act Section 106 Process	The project's recreation surveys further highlight the sacredness and cultural significance of the falls and highlight the importance of doing research in the communities. Results from the recreation surveys document the most important reasons residents travel to the Nuyakuk Falls. Those reasons are: "being close to the land," "sharing traditions with your family," "being in open space," "experiencing a special or sacred place," "being with people who share your values," and "reflecting on your values"[95] These reasons all indicate that the Nuyakuk Falls is a TCP.	Please see response to Comment #297.
299	UTBB	National Historic Preservation Act Section 106 Process	For this project, things and places of value to archaeologists receive most of the attention, while places the Tribes value receive little attention. It is also apparent that while the applicant has a multidisciplinary research team working on the project, these different disciplines do not share information they have learned with others on the applicant's research team. This is a classic example of the silo effect (i.e., a lack of communication between the different researchers), which segregates study results instead of creating a holistic picture of knowledge and potential effects. This silo effect is a major flaw in the project's studies to date.	Comment noted.
300	UTBB	National Historic Preservation Act Section 106 Process	**e. Yup'ik Place Names** UTBB appreciates that Attachment N discusses places with Yup'ik names. However, the Cooperative did not study places with Yup'ik names to the same level as the places with a State assigned Alaska Heritage Resources Survey (AHRS) number. This discrepancy is unacceptable and results in an incomplete study. Places with Yup'ik names and significance should be studied with the same rigor and attention given to places assigned an AHRS number.	Clearly places with Yup'ik names are and were important places for local Indigenous people. There may or may not be material cultural remains associated with these places, and some could certainly be Traditional Cultural Places. The Cooperative would like to reiterate that the Section 106 process is ongoing. We appreciate the level of effort UTBB has invested in ensuring the cultural resources study is carried out correctly.
301	UTBB	National Historic Preservation Act Section 106 Process	In the discussion of previously identified sites, Attachment N states "[t]here are seven previously identified sites within about five miles of Nuyakuk Falls."[96] This is incorrect. There are seven documented sites with AHRS numbers within five miles of the project site in addition to multiple places with Yup'ik names within five miles of the project site including but not limited to Neqcaq, Taryaqvagtuliar, Qasqernaq, Tuqunarliq, Cuukvak, Curugvik Creek, Cururvik, Qaqerluaq, Tuqunerliq, Putiilekaaq, Qaqerluaq, and Qakiyartuliar.[97] None of the locations with Yup'ik names are assessed for National Register eligibility in Attachment N unless these places also have an AHRS number. The USR's failure to assess these places resulted in a flawed and incomplete analysis.	Please see response to comment #300. There is ample opportunity to consider the issues raised by UTBB if the project moves forward and is determined to be feasible.
302	UTBB	Recreation Study	UTBB is also concerned that the Cooperative did not follow the approved study plan or its commitments to Tribal governments in implementing the recreation surveys. In the Revised Study Plan, the Cooperative committed to multiple forms of outreach, including four in-person recreation surveys in communities beginning in July 2023. In a letter to one Tribe, Recreation Study staff explicitly wrote that they "intent[sic] to revisit each community to present the draft results to Councils and community members."[98]	The intent to revisit the communities was genuine, however not ultimately necessary for either the collection of recreation-related data or sharing the study report. Rationale is further discussed in USR Attachment P Chapter 7. As mentioned multiple times in these responses, despite the amount of proactive and consistent outreach to villages, receiving responses related to approval and timing of visits proved very difficult. The recreation workshops were conducted with respect for the villages and their populations and within the temporal and access constraints therein.
303	UTBB	Recreation Study	The Cooperative conducted only one survey in communities in 2024 and has still not shared any results or draft report with communities. In the USR, the Cooperative asserts that these decisions were based on discussions with the ADF&G and Recreation Study staff.[99] The Cooperative does not mention any communications about these changes to the potentially impacted communities. The USR asserts that the	The survey of local communities was one of multiple methods of collecting information about recreational use within the study area, as approved in the study plan. The December 2023 ISR, available to and presented to the public, including nearby communities, contained

[95] Nushagak Cooperative, *Nuyakuk River Hydroelectric Project USR, Attachment P: Recreation Inventory by Season*, 28 (Dec. 2, 2024) [hereinafter *USR Attachment P*].
[96] *USR Attachment N* at 13.
[97] *GIS web map of Bristol Bay*, BRISTOL BAY ONLINE! NATIVE PLACE NAMES PROJECT, https://bbonline.bbnc.net/explore/ (last visited Mar. 20, 2025).
[98] *USR Attachment P*, app'x. 4, 37
[99] *Id.* at 43.

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			variance was "discussed with the TWG."[100] However, a Recreation Resources Technical Working Group did not form until 2024, after two recreation surveys should have already been completed. The USR clarifies that summaries of the study have yet to be provided to Tribes for review.[101] The Cooperative's failure to follow the approved study plan and communicate variances with communities affects the ability to collect accurate data and indicates that additional study seasons are necessary.	rationale for a variance from the study to reduce the total numbers of visits required by the study team and the amount of effort required of local residents to participate. Rationale is also discussed in USR Attachment P Chapter 7. Outcomes of the recreation study also did not indicate the need for additional surveys in the communities. The Recreation Resources TWG (RTWG) was formed based on feedback after the December 2023 ISR presentations. The RTWG met four times between 1/24/2024 and 5/16/2024 and discussed these modifications to the study plan at their first meeting (see Appendix P-4 pp. 2-5). RTWG meeting discussions preceded and informed the methods and questionnaire content for the local communities recreation surveys and visits (visits: 4/22-27/2024; online survey open 5/8/2024-6/9/2024) and the commercial operator survey (7/8/2024-8/9/2024). The decision to vary from the initial approved study methods by adding the transmission line area to the geographic scope was based on feedback from the RTWG and incorporated directly into the local recreation and the commercial operator questionnaires. There was no failure to communicate this change. Furthermore, as this study variance was additive, it increased the amount and types of data collected. The ability to collect accurate data was not compromised by this or other variances. The USR, including the recreation study report, was made available to the public, including local communities, for review and comment from December 2, 2024 to March 21, 2025. Links to the document on FERC's elibrary were available on webpages hosted by FERC, the Nuyakuk Hydro project, Nushagak Cooperative, United Tribes of Bristol Bay, Bristol Bay Regional Seafood Development Association, KDLG 670AM, and elsewhere. The review and comment period included two full-day presentations and question-and-answer opportunities on January 15 and 16, 2025, hosted in-person Dillingham and virtually online. Meeting summaries and recordings were also made available.
304	UTBB	Environmental Justice Communities	UTBB is also concerned that the Cooperative improperly conducted its environmental justice analysis. Specifically, Attachment Q failed to identify an appropriate "comparison group" in its determination that no community will experience disproportionately high and adverse impacts from the Project.	Per recent federal guidelines, While FERC is still required to consider environmental justice impacts associated with potential project development and presumably, will use the data collected and documented, environmental justice assessments are no longer a required by applicants.
305	UTBB	Environmental Justice Communities	For environmental justice analyses, the population used to identify the existence of minority communities may be different than the population used to assess disproportionate impacts. Both Attachment Q and past FERC decisions cite to the same guidance document on the appropriate methods for environmental justice assessments, which specifies that delineating a "reference community" is used to determine the existence of a minority population.[102] However, the guide also clarifies that "[a]gencies may wish to identify a relevant	Per recent federal guidelines, While FERC is still required to consider environmental justice impacts associated with potential project development and presumably, will use the data collected and documented, environmental justice assessments are no longer a required by applicants.

[100] *Id.*
[101] *Id.* at 44.
[102] Federal Interagency Working Group for Environmental Justice and NEPA Committee, *Promising Practices for EJ Methodologies in NEPA Reviews* at 38 (2016), https://www.epa.gov/sites/production/files/2016 08/documents/nepa_promising_practices_document_2016.pdf; Nushagak Cooperative, *Nuyakuk River Hydroelectric Project USR, Attachment Q: Environmental Justice Communities*, 1 (Dec. 2, 2024); *Rio Grande LNG, LLC Rio Bravo Pipeline Co., LLC,* 170 FERC ¶ 61,046, 61,350 n. 214 (2020).

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			and appropriate comparison group when evaluating the impact of the proposed federal action on minority populations and low income populations . . . comparison group is distinct from a reference community." [103]	
306	UTBB	Environmental Justice Communities	FERC addressed this distinction between a "reference community" and a "comparison group" when ruling on the Rio Grande LNG Terminal. There, all the communities affected by the project were minority or low-income populations. FERC noted that in these scenarios, a "broader 'comparison group' can inform . . . whether a project's impacts to minority and low-income communities will be disproportionately high and adverse."[104] FERC further explained that impacts could be "disproportionately high and adverse if amplified by factors unique to that population like inter-related ecological, aesthetic, historical, cultural, economic, social, or health factors."[105]	Per recent federal guidelines, While FERC is still required to consider environmental justice impacts associated with potential project development and presumably, will use the data collected and documented, environmental justice assessments are no longer a required by applicants.
307	UTBB	Environmental Justice Communities	In a separate ruling on a gasline project in Alaska, FERC specified that subsistence practices should be addressed in an environmental justice analysis. FERC wrote that an evaluation should include "consideration of populations that rely on subsistence consumption of fish and wildlife for a principal portion of their diet. Where an agency action may affect fish, vegetation, or wildlife subsistence patterns of consumption, the analysis should address the potential for disproportionately high and adverse impacts."[106] The project used the population of the State of Alaska as its "comparison group."	Per recent federal guidelines, While FERC is still required to consider environmental justice impacts associated with potential project development and presumably, will use the data collected and documented, environmental justice assessments are no longer a required by applicants.
308	UTBB	Environmental Justice Communities	Here, the Cooperative failed to identify a relevant "comparison group" and failed to evaluate relevant factors for making a disproportionate impacts determination. Every community in the Project area relies on subsistence, cultural, and ecological resources that relate to their health, history, and economic status. Failure to compare the communities to an appropriate "comparison group" improperly minimized any potential impacts.	Per recent federal guidelines, While FERC is still required to consider environmental justice impacts associated with potential project development and presumably, will use the data collected and documented, environmental justice assessments are no longer a required by applicants.
309	UTBB	Subsistence Study	UTBB is concerned that the Subsistence Study lacks adequate analysis given the current stage of the FERC licensing process. The Cooperative dramatically changed the Subsistence Study methods from the approved study plan, which diminished the effectiveness of the analysis and results to assess impacts for this project. The Cooperative made these changes unilaterally without a public comment process or FERC approval.	Along with this comment response matrix, the Cooperative has filed a comprehensive consultation record of all communications, meetings, etc. that led to the modifications to the Subsistence Study. This same consultation package was requested by ADFG and UTBB (and provided by the Cooperative) in early 2025. Consistent with our communication with ADFG in late 2024 preceding the distribution, our original intent was to utilize ADFG for the subsistence study as it would have represented a mutually beneficial opportunity. ADFG had an internal desire to update their regional subsistence information and the Cooperative's proposed subsistence study area was included in ADFG's much larger area or regional interest. When discussions related to the scope and associated cost of ADFG's efforts occurred, it became clear that the overall financial obligation to the Cooperative related to the holistic study was cost prohibitive. As a result, the Cooperative elected to focus their study one the much smaller potential area of impact associated with the proposed project as opposed to the more regional effort needed for ADFG.
310	UTBB	Subsistence Study	**a. Variances from the Revised Study Plan** **i. Communities included in the study**	Consistent with our communication with ADFG in late 2024 preceding the distribution of the subsistence consultation record, our original intent was to utilize ADFG for the subsistence study as it would have represented a mutually beneficial opportunity. ADFG had an internal desire to update their regional subsistence information and the

[103] *Promising Practices for EJ Methodologies in NEPA Reviews* at 38.
[104] *Rio Grande LNG, LLC Rio Bravo Pipeline Co., LLC,* 170 FERC at 61,350.
[105] *Id.* at 61,350-51.
[106] *Alaska Gasline Dev. Corp.*, 171 FERC ¶ 61,134, 61,861 (2020).

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			The Cooperative did not conduct subsistence harvest surveys in all the communities indicated in the approved study plan. The approved study plan noted that, "subsistence harvest surveys for the communities of Koliganek, New Stuyahok, Ekwok, Levelock and Aleknagik would provide the necessary information to determine potential effects of the proposed Project."[107] However the Cooperative chose to only conduct subsistence workshops in two of those communities. Additionally, the Cooperative held a workshop in Dillingham.	Cooperative's proposed subsistence study area was included in ADFG's much larger area or regional interest. When discussions related to the scope and associated cost of ADFG's efforts occurred, it became clear that the overall financial obligation to the Cooperative related to the holistic study was cost prohibitive. As a result, the Cooperative elected to focus their study one the much smaller potential area of impact associated with the proposed project as opposed to the more regional effort needed for ADFG.
311	UTBB	Subsistence Study	UTBB questions the validity of conclusions drawn by consultants based on two people who live in Aleknagik participating in the workshop held in Dillingham. The Subsistence Study Report is written as if a workshop was conducted in Aleknagik, even though this is not the case. Although two Aleknagik residents attended the Dillingham workshop, the Subsistence Study Report provides no indication that the Cooperative communicated with Aleknagik about the workshop. This is contrary to the Revised Study Plan which commits to research principles that "stress community approval of research designs."[108]	As conveyed by both the Cooperative and participants in the planning process, there was a concern related to unnecessary visits and temporal hurdles associated with workshops given all of the other key events taking place in the communities. In the interest of efficiency and given the proximity/access of Dillingham and Aleknagik, the Cooperative elected to and proactively communicated a joint workshop for the two communities.
312	UTBB	Subsistence Study	The Subsistence Study Report acknowledges that the project may impact subsistence resources for six communities: Koliganek, New Stuyahok, Ekwok, Dillingham, Aleknagik, and Levelock.[109] These impacts may result from transmission corridors or from the Nuyakuk Falls being upstream of a community's "core subsistence harvesting area."[110] The Cooperative should have followed the approved study plan and conducted subsistence harvest surveys in all the communities that may experience impacts to subsistence.	See the privileged consultation records incorporated into this filing for further detail regarding all consultation associated with deviations to the original study plan.
313	UTBB	Subsistence Study	**ii. Change from household surveys to subsistence workshops** The Cooperative changed their research methods from in-depth household surveys to perfunctory community workshops. The workshops conducted by the Cooperative do not gather the same information as household surveys. The Cooperative claimed that the changed study methods would enable more community members to participate. Results were to the contrary with only four participants attending the Dillingham workshop and seven participants attending the New Stuyahok workshop. It is difficult to rationalize how to draw accurate conclusions from two of the 218 people in Aleknagik (0.9% of the population), two of the 2,118 people in Dillingham (0.09% of the population), and seven of the 465 people in New Stuyahok (1.5% of the population).[111]	While household surveys provide comprehensive updated baseline data on community-level harvest amounts and household use patterns, community-level household harvests surveys are not always feasible, and do not collect information to directly inform an assessment of Project specific impacts and mitigation. While it is important to have updated baseline data prior to a development project so that future changes in harvest amounts and use areas can be measured, updated data are not always necessary to analyze the types and nature of impacts that may arise from a proposed project, particularly if targeted workshops identify potential changes since previous surveys. Workshops provide an alternative to more comprehensive surveys by focusing on project-specific information (which would not be documented in a typical household harvest survey) and by asking participants to identify whether existing subsistence information accurately captures current uses. For this project, workshop participants responses regarding more recent changes to subsistence harvests, use areas, and timing are provided alongside descriptions of existing subsistence data. While surveys are more useful for providing accurate community-level harvest data, workshops can have advantages over individual surveys by providing the opportunity for residents to corroborate personal observations, and facilitate recall through participant interactions. The workshops were not meant to collect data from a representative sample that could be extrapolated to the entire community, as would be

[107] Nushagak Cooperative, *Revised Study Plan Filing for the Nuyakuk River Hydroelectric Project (P-14783)*, 136 (Aug. 1, 2022) [hereinafter *Revised Study Plan*].
[108] *Id.*
[109] Nushagak Cooperative, *Updated Study Report Addendum for the Nuyakuk River Hydroelectric Project (P-14873), Attachment M: Subsistence Study*, 83 (Feb. 18, 2025) [hereinafter *USR Attachment M*].
[110] *Id.* at 76, 83.
[111] Alaska Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs, *Welcome to DCRA Open Data*, https://dcra-cdo dcced.opendata.arcgis.com/ (last visited Mar, 20, 2025).

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				required in a household harvest survey; instead, the workshops were meant to collect information from interested individuals with particular knowledge of the potentially affected area. As such, participation in these workshops increased as we got closer to communities who more regularly use the project area. The study team also incorporated existing subsistence information from all of the study communities, including a household survey from 2021 for Dillingham.
314	UTBB	Subsistence Study	Part of the Subsistence Use Areas methods appears to have been copied from another report and do not reflect the methods used by the Cooperative. The Report describes "systematically interviewing multiple active harvesters in a community" followed by a "'snowballing' method of informant selection."[112] There were no "systematic interviews" or "snowballing" for the workshops. This description provides some context for historical subsistence studies, but Cooperative chose different methods for the subsistence workshops.	The report incorporates both the results of the subsistence literature review and the subsistence workshops. The text being referenced is in the section "Subsistence Use Areas" under "Subsistence Literature Review" which provides a description of the different types of use area data which can be found during a literature review, and not a description of the methods used in the workshops for this project. The methods for the subsistence workshops are provided in the following section ("Subsistence Workshops").
315	UTBB	Subsistence Study	Attachment M should include a detailed explanation of the reasoning behind the abandonment of methods approved by FERC. The Subsistence Study Report provides no discussion about whether the change in methods generates comparable results to household surveys, nor does it discuss whether the workshop results reliably reflect Tribes' current subsistence activities.	See the privileged consultation record associated with this filling along with responses to ADFG comments on subsistence in this matrix and the deviations section of the report itself.
316	UTBB	Subsistence Study	**iii. Community review of subsistence data** The Cooperative did not return to communities to review the data and conclusions from the workshops. The Revised Study Plan assured that "a public community review meeting in each study community will be held to present draft study results at and create an opportunity for residents to provide feedback to be incorporated into the final report."[113] These community review meetings did not occur. Failing to conduct community review meetings is contrary to the Revised Study Plan and the data sovereignty resolutions passed by multiple Tribes.[114]	As displayed in the subsistence consultation provided as part of this filing, despite the timely outreach and consultation regarding the Cooperative's desire to hold workshops in the identified communities, there were significant hurdles related to wait time for responses from the villages and minimal dates identified by the villages as being suitable to hold the forums. Given this, by the time agreements were reached with respective villages on the temporal component, urgency existed to get the workshops completed and data analyzed and reported on, commensurate with the USR schedule, making any follow-up meetings not possible. The report, in draft form, was provided to the villages for review. As FERC is aware, the Subsistence Study was a primary reason for the need for the USR addendum.
317	UTBB	Subsistence Study	**iv. Local research assistants** The Cooperative did not hire local research assistants. The Revised Study Plan notes that hiring local research assistants "is very important for the community."[115] The Subsistence Study Report does not provide a reason why the Cooperative decided against hiring local research assistants.	As displayed in the subsistence consultation provided as part of this filing, despite the timely outreach and consultation regarding the Cooperative's desire to hold workshops in the identified communities, there were significant hurdles related to wait time for responses from the villages and minimal dates identified by the villages as being suitable to hold the forums. Given this, by the time agreements were reached with respective villages on the temporal component, urgency existed to get the workshops completed and data analyzed and reported on, commensurate with the USR schedule, making any follow-up meetings not possible. The report, in draft form, was provided to the villages for review. As FERC is aware, the Subsistence Study was a primary reason for the need for the USR addendum. The time-consuming process of getting the workshops scheduled and the need to adhere, as closely as possible, to the USR timeline precluded our desired ability to utilize local resources. That said, a significant amount

[112] *USR Attachment M* at 8-9.
[113] *Revised Study Plan* at 137.
[114] *See e.g., USR Attachment P,* app'x 4, 25.
[115] *Revised Study Plan* at 137.

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				of time was spent with community members to scehduel and coordinate the proceedings.
318	UTBB	Subsistence Study	**b. Unilateral Decision to Change Research Methods** The Cooperative did not engage impacted communities when deciding to change the subsistence study methods. UTBB is troubled by the process the Cooperative used to make decisions about deviating from the approved study plan. The Initial Study Report from 2023 assured that "the Subsistence Study, as specified in the [Revised Study Plan], will be implemented in 2024."[116] However, the Cooperative unilaterally decided to change the Subsistence Study methods sometime between the February 7, 2024 Cultural Resources TWG meeting and the March 12, 2024 meeting. Stephen R. Braund & Associates joined the March meeting and stated, "they had not included the powerlines in their study proposal, but that the literature review and community workshops would consider the broader powerline area."[117] This was the first indication that the Cooperative was significantly deviating from the methods FERC approved in the Revised Study Plan.	See the consultation record filed as part of this filing for further detail regarding all consultation associated with deviations to the original study plan.
319	UTBB	Subsistence Study	There is no record in the documents provided by the Cooperative of a discussion about changing the subsistence study methods from household surveys to workshops. The Subsistence Study Report asserts that the Cooperative included the Cultural Resources TWG in the decisions to deviate from the approved study plan. At UTBB's request, the Cooperative provided consultation record documents relating to the subsistence study, and these documents included summaries of Cultural Resources TWG Meetings. The summaries begin in 2024, after completion of the first study season when the Cooperative did not initiate the subsistence study. From the available record, it appears Tribes were not consulted regarding this decision-making process. At the Cultural Resources TWG meeting on April 11, 2024, representatives from UTBB highlighted that they are not representatives of individual Tribal governments and advised the Cooperative to reach out to Tribal governments directly. The project proponent acknowledged that cost was a major consideration in changing the Subsistence Study.[118] However, cost alone is not an adequate justification for deviating from the approved study plan and using outdated subsistence data.	See the consultation record filed as part of this filing for further detail regarding all consultation associated with deviations to the original study plan.
320	UTBB	Subsistence Study	**c. Mischaracterization of Transmission Line Alternatives** The Subsistence Study analysis of potential impacts only looks at overhead transmission line alternatives and minimizes potential right-of-way clearing when assessing impacts to user access.[119] The Cooperative is still considering an underground transmission line alternative. Many of the other study attachments address this alternative in their impacts analyses. The Subsistence Study Report must consider the impacts of an underground transmission line alternative. The Protocols and Forms do not clarify whether the consultants informed workshop participants about the underground transmission line alternative. If the consultants informed workshop attendees of only the above ground alternatives, this creates a significant data gap in the Subsistence Study Report.	As mentioned multiple times, the project design is currently in the conceptually development stage consistent with the current phase of the overall project. If the project moves forward, all parties currently involved in the collaborative process will continue to have the opportunity to be involved in decision making and approval of relevant design phases.
321	UTBB	Subsistence Study	**d. The Silo Effect** The Cooperative did not incorporate information gathered from the subsistence workshops into other sections of the study report. Quotes from workshop participants in the Subsistence Study Report highlight significant concerns about risk that should have been incorporated into risk assessments. For example, participants expressed concern about injuries to smolt from the turbines,[120] impacts to commercial	The Cooperative strongly disagrees with this comment. Aside from the general and unfounded statement that this comprehensive study program was not synergistic, the specific example cited that injuries to smolt going through the turbines and/or access considerations were not considered is clearly false.

[116] Nushagak Cooperative, *Initial Study Report Filing for the Nuyakuk River Hydroelectric Project (P-14873)*, 17 (Dec. 01, 2023).
[117] Nushagak Cooperative, *Cultural Resources TWG Meeting Summary*, 2 (March 12, 2024).
[118] *USR Attachment M* at 112.
[119] *See, e.g., USR Attachment M* at 84, 86.
[120] *USR Attachment M* at 101.

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			fishing,[121] and enabling easier access to communities.[122] Participants also shared information during the subsistence workshops that should have been shared with the cultural resources consultants. This silo effect is persistent throughout the USR.	
322	UTBB	Subsistence Study	**e. Reliance on Historical Data** Relying on historical subsistence data (i.e., subsistence data 10 years old or more) to identify impacts to current subsistence practices does not meet the needs for evaluating this project and raises scientific accuracy concerns. As the Revised Study Plan confirms, "[s]ubsistence surveys were carried out in the vicinity of the Project in 2005. That data is now fifteen years old and should be updated to more accurately reflect contemporary subsistence harvest and use patterns."[123] The inadequacy of the subsistence study for this project is a considerable data gap.	See the consultation record filed as part of this filing for further detail regarding all consultation associated with deviations to the original study plan.
323	UTBB	Subsistence Study	**f. Delayed Subsistence Study** UTBB is disappointed that the Subsistence Study Report included in the USR suggests that the delay in providing the Subsistence Study Report is a result of difficulty in scheduling with communities.[124] UTBB recognizes the challenges of scheduling and travel in rural Alaska and supports the Cooperative's efforts to respond to Tribes' requests to conduct workshops at times that avoid key subsistence seasons. However, shifting blame to communities does not account for the delays resulting from the Cooperative's failure to initiate the subsistence study during the first study season, as outlined in the approved study plan. The project proponent's failure to initiate the subsistence study in the first study season limited the study to a single season. Starting the Subsistence Study in the first study season could have avoided this delayed study report and would have provided time for more in-depth analysis.	To be clear, the Cooperative never committed to conducting the subsistence workshops in 2023. We did, in 2022/early 2023 indicate a proactive desire to complete the subsistence work in 2023, if possible. Due to modifications in the appropriate technical specialists to utilize, financial considerations, and the amount of other technical studies being conducted in other areas (fish, water quality, terrestrial, cultural and recreation) during 2023, a decision was made to conduct the subsistence analysis in 2024, during Year 2 of the study program (see consultation record filed with this package). Further, as opposed to UTBB's perspective and/or preferred narrative, the intent in citing temporal constraints associated with respective villages response times was not to pass "blame" on anyone. Rather, it was to provide accurate context as to the study planning process and the specific circumstances that occurred during planning. It is a bit disturbing, given the Cooperative's consistent conveyance of genuine intent and objectivity, that UTBB would attempt to portray this effort as anything other than a sincere effort to potentially provide a long-term benefit to the region.
324	UTBB	Conclusion	**a. Need for Additional Study Seasons** UTBB has significant concerns that the two-year study period did not provide sufficient time to analyze the potential risks to the river, watershed, and our Tribal communities. Our review of the USR only further underscores these concerns. Given the exceptional resource at issue—the Nuyakuk River—and the critical research which must be conducted during this phase of the licensing process, including the potential impacts on our subsistence ways of life, it is essential to undertake a comprehensive and holistic study of the benefits and risks of the proposed Project. Further, there needs to be sufficient time for the Cooperative's contractors, Tribes, and community members to fully digest the data generated from the field studies to provide the most comprehensive risk assessment possible. Though the Cooperative completed the second of two planned study seasons, there is insufficient information available to understand the potential impacts of the proposed Project and assess risks. For example, deficiencies described in this comment on the Section 106 evaluation and the subsistence study illustrate the necessity of additional study seasons. Additionally, field studies occurred during two years with relatively high water flows thereby preventing a comprehensive assessment of how the project might affect fish passage in warmer seasons where river flows would be substantially lower. Furthermore, the timeline	Comment noted. The Cooperative appreciates all of the regional and local technical experts, Tribal entities and public that participated in this collaborative process in a genuine and objective manner. We stand by the robust and comprehensive nature of the study program, and it's results.

[121] *Id.* at 106.
[122] *Id.* 104.
[123] *Revised Study Plan* at 136.
[124] Nushagak Cooperative, *Nuyakuk River Hydroelectric Project USR, Subsistence Study Report, Attachment M*, 1-2 (Dec. 2, 2024).

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			was inadequate to solicit and incorporate input from Tribes and community members, including input on the delayed risk assessment, life cycle model, and subsistence study. It is crucial to undertake a proper risk assessment and it should not be reduced to a box-checking exercise to meet the current study schedule.	
325	Helen Aderman, submitted via UTBB	General Comment	I am a lifelong Alaska Native and took over my late mom's Naomi 'Amagsulle' Chythlook's Matriarch's responsibilities when she passed on October 1991. I grew up with older Yup'ik Eskimo parents, late dad Tom 'Tseigtluk' Chythlook born in 1900, and my late mom born in 1914. We grew up with our traditional Yup'ik way of life. My late dad Tom and older brothers livelihood was seasonal fur bearing trapping which was in the Tikchik's from late Fall to early December. Our family also shared the Nushagak-Mulchatna caribou herd hunting. Especially if the Caribou and moose was scarce in Aleknagik and up Wood Tikchik lake system, they travelled to hunt for terrestrial animals, as there was no grocery stores growing up. Part of the Yup'ik Eskimo tradition custom is to not disturb the freshwater rivers,streams, creeks and tributaries connecting to Lake Tikchik and Noyukak area. All salmon species, including fresh water fish habitat use area need 5 year research. As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, the Cooperative and the Federal Energy Regulatory Commission need to engage Nushagak River communities input. I do not Support the proposed Noyukak hydrodam project. The dam will disturb the fish habitat areas. The small fish fry smolts population will be affected. The Updated Study Report is not easily digested by many community members who are not versed in western science, yet will most directly experience the impacts of the proposed project. Given this, I expect the Cooperative to provide accessible materials, and engage in person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, I am first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process. The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Archeological and Historic places should be a priority with upriver Nushagak Tribes in gathering local Knowledge. Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding between Upriver Nushagsk Tribes that totally rely on food resources including Noyukak area. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project. Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. The failure to incorporate Traditional knowledge is a departure from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. Meaningful Tribal consultation and community engagement, more comprehensive analysis of potential impacts and risks, and long-term planning, are necessary before the project should move forward in the licensing process.	Comment noted.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
326	Johnathon Corbett, Delores Larson, Andrew Larson; Submitted via UTBB	General Comment	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, I am thankful the Cooperative and the Federal Energy Regulatory Commission will hear public input throughout the licensing process. Reviewing publicly available materials makes clear the ongoing Integrated Licensing Process and associated studies are inherently technical. The Updated Study Report is not easily digested by many community members who are not versed in western science, yet will most directly experience the impacts of the proposed project. Given this, I expect the Cooperative to provide accessible materials, and engage in person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, I am first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process. The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Historic places should inform the design and selection of the route alternatives. Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding of the risks of this project. I support Nushagak Cooperative's attempt to transition Bristol Bay communities toward sustainable energy. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project. Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. The failure to incorporate Traditional knowledge is a departure from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. Meaningful Tribal consultation and community engagement, more comprehensive analysis of potential impacts and risks, and long-term planning, are necessary before the project should move forward in the licensing process.	Comment noted. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a lack of opportunity to participate in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.
327	Lucy Weedman, New Stuyahok Village	General Comment	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, I am thankful the Cooperative and the Federal Energy Regulatory Commission will hear public input throughout the licensing process. Reviewing publicly available materials makes clear the ongoing Integrated Licensing Process and associated studies are inherently technical. The Updated Study Report is not easily digested by many community members who are not versed in western science, yet will most directly experience the impacts of the proposed project. Given this, I expect the Cooperative to provide accessible materials, and engage in person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, I am first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process.	Comment noted. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a lack of opportunity to participate in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.

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			The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Historic places should inform the design and selection of the route alternatives. Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding of the risks of this project. New Stuyahok Village support Nushagak Cooperative's attempt to transition Bristol Bay communities toward sustainable energy. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project. Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. The failure to incorporate Traditional knowledge is a departure from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. Meaningful Tribal consultation and community engagement, more comprehensive analysis of potential impacts and risks, and long-term planning, are necessary before the project should move forward in the licensing process. New Stuyahok Village Council believes that the consultation period for the 1300 page documents is not enough sufficient time because: 1. It would need to be translated into laymen terms because of the high level of technical language. 2. It would then need to be translated/explained in our indigenous language for the elders to understand. 3. Our community still practices traditional laws, cultural laws and elder/religious practices and we would need to have a community consultation/discussion privately.	
328	Paaraq Nelson	General Comment	Hello, my name is Paaraq Nelson but everyone calls me Bobo. I am a young Yup'ik man who is blessed to have grown up around strong, powerful speaking people. For these people are my mom Frances Nelson, and grandfather Herman Nelson Sr. They are for the people's best interest, they are for the people not for themselves. They have grown up with strong traditional and religious values. I watched, listened and blessed for them to teach me these values. Though I am young I think much like them, I see that I could speak and represent my people. For we the Yup'ik people of the Nushagak river, live a simple life. We live from what the land, water, and air offers to us, for some this is all they have known. They pass on that tradition to their kids, grandkids, as we have done for thousands of years. This proposed Hydro-Electric dam at the Nuyakuk Falls puts our tradition, our way of life in danger of being lost. The people who propose this project want what is best for themselves, not a thought of any lasting effects on the people, land, water, and air. For our land is fragile, if this were to come to pass, our way of life would be gone forever.	Comment noted.
329	Brianna Nelson	General Comments	My name is Brianna Nelson and I'm writing to you in opposition of the Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project. I'm an Alaskan Native from the small Yup'ik village of Koliganek, located on the Nushagak River.	Comment noted. Please see many other responses in this matrix that discuss the discreet elements included in your comment.

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			The proposed project would be located on the Nuyakuk River as said in the project title. Where the waters run from the Tikchik Lakes, into Nuyakuk, then into the Nushagak River, which then runs into Bristol Bay. These waters are a part of a major watershed that supports millions of salmon that have been harvested for over 130 years and is known as the leading source of wild salmon on the planet. The watershed also greatly supports big and small game, trout, plants, and berries. Koliganek or 'Qalirneq' which means last or upper community on the Nushagak River, is also the closest village to the Nuyakuk River with the following villages in order down the river; New Stuyahok, Ekwok, Portage Creek, and then Dillingham. These waters are home to the Yup'ik people/tribes who have lived here for longer than we know and have thrived because of its' pristine, untouched environment. The proposed project threatens the health of the headwaters of Bristol Bay, fresh and saltwater fish, big and small game, plants, and the people who live here. The Nushagak River, Nuyakuk River, and Bristol Bay waters are a major lifeline to the health and survival of the people, animals, and plants. Nushagak Cooperative's reports, studies and tests are insufficient, inadequate and incomplete regarding their Nuyakuk Hydroelectric Project. Their 2-year assessment on salmon is not enough due to a salmon's life cycle being at least 5 years. They have not assessed or included any other animal, plant, or the surrounding rivers and waters in their studies or tests that the project can directly affect. They have not acknowledged or included the sustainable Yup'ik traditions, knowledge, and values of the land, waters, and animals in the area. They have not provided proper engagement for the surrounding tribes and communities throughout their licensing process, leaving little to no opportunity for review or feedback. They planned for a two-year subsistence study but only submitted a report of a single study season. There are much more needed tests and studies of the land, water and animals along with more knowledge and engagement from the surrounding Yup'ik tribes that need to take place before even considering or continuing the process of the Hydroelectric Project. There are much higher priorities that the people and communities of the surrounding area need that Nushagak Electric Cooperative cannot provide or assist with their Hydroelectric Project. The proposed project presents a lot of critical risks that could substantially affect everything in the area. The lands and waters must remain untouched so that the people, animals and plants can continue to thrive for many more generations to come. Thank you for your time and consideration. I hope that FERC and their commissioners address my concerns regarding the incomplete, inadequate, and insufficient Nuyakuk Hydro Project Study Report and that more studies, tests, and risks are assessed before they can continue.	
330	New Koliganek Village Council Gust Tunguing Jr., Tribal President	General Comments	The New Koliganek Village Council (The Council) is thankful for the opportunity to provide input on the Nuyakuk Hydroelectric Project proposed by Nushagak Cooperative. The New Koliganek Village Council would like to express its strong opposition to the project, which stands to have significant negative impacts to the subsistence resources the community relies on to sustain our active lifestyles. The New Koliganek Village Council adopted a Tribal resolution (24-07) regarding data sovereignty and how studies should be conducted in our community. The resolution states that our Tribe will own any data and maps collected on subsistence resources. The resolution also requires that any draft interview transcripts or maps must have our government approval before they are finalized. Furthermore, the resolution requires that the project proponent and their consultants come back to us with their draft report before including it in the final updated study report. That did not happen. Until our Tribe has the chance to review it, the subsistence report and recreation survey are incomplete drafts. The two years of studies does not adequately capture the risks to salmon and salmon habitat. Baseline studies should include, at a minimum, the full life cycle of the salmon which is 4 to 5 years. The studies	Comment noted. Please see many other responses in this matrix that discuss the discreet elements included in your comment. Given that this specific comment is coming directly from the Village Council, the Cooperative would like to utilize this specific response to further define its position. We have seen multiple filings from both the Koliganek Village Council and prominent members of that community regarding their opposition to the project. The Cooperative respects every objective comment and perspective that has been conveyed during this process. If deemed viable to move the licensing process forward by the Cooperative Board and if a license is issued to develop the project, the Cooperative will do so with a design that does not include a connection to Koliganek, per the communities preferred approach. Our goal with this project, if developed, has always been to provide our region with a much longer-

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			must capture both the out migration of smolts and fry and the return of adult spawning salmon at the project site located at the headwaters of the Nuyakuk River, including the proposed transmission lines from the Falls to Dillingham, to fully understand the risks of the project. The surrounding communities, including Koliagenk are especially concerned about the lack of studies done on chinook salmon. In recent years, the return of chinook have declined significantly and are now considered a stock of concern. Our people heavily rely on chinook salmon to sustain our diet. The project should not move forward until thorough studies on chinook have been completed. The studies conducted to date do not fully capture the high and low flow water years. Over the past two years (2023-2024) the river has been high, which may have produced favorable results for the two years of studies. In contrast, in 2019, the entire area experienced an extremely low flow year along both the Nushagak and Nuyakuk River. Both rivers were extremely low causing many of the creeks and streams to dry up. Our people were literally walking up creeks to go hunt for moose in the fall. More recently, this winter (2025), we've had no snow pack, which we know will affect flow this coming spring, summer and fall. Additional studies need to be conducted to capture the high and low flow trends to fully access the risks of the proposed project. The Nuyakuk River supplies the Nushagak with cold clean, clear, oxygenated water. Even a slight decrease in the flow at the headwaters of the Nuyakuk will have effects on temperature and dissolved oxygen, both of which are crucial to the survival of salmon and all life that rely on salmon to survive. Furthermore, cumulative and climate change impacts need to be analyzed more thoroughly. Over the past 20 years or more, we have seen a lot of changes in the river channels, freeze-up and break-up cycles, high and low river flow trends stated above, all of which significantly impact our way of life along the river system. The timing of river freeze-up and break-up are very unpredictable these days. This is the first winter the river did not completely freeze up. We were not able to utilize the river at all this winter, and our people are hurting because of it. Almost everyone has depleted their dry wood for heating our homes and lighting our steambathes. We will not be able to ice fish for pike and white fish. Our trappers are having a very difficult time trapping small game along the river. These changes may not seem like a big deal but it is to our people. It's how we live and survive the long cold winters. Over the past 20 years or more, the river channels have dramatically changed. There are certain areas that we can no longer access due to channel changes or lower river flow. In the future, it is expected that climate change will have dramatic changes to the overall ecosystem in the region, which will have a negative impact on salmon and salmon habitat. It is very upsetting that the Cooperative did not meaningfully include Traditional Ecological Knowledge (TEK) in all aspects of the studies. Our people are the real experts of this area when it comes to our lands and waters. We observe the changes in flow, snow pack, rain fall, river channel changes, etc. on a daily and yearly basis. Our knowledge of fish behavior, low and high river flows, fish spawning and rearing sites, moose and caribou migration routes and timing, climate change impacts, etc. is invaluable in understanding the risks related to the project. The meetings held by the Cooperative do not constitute gathering TEK from local culture bearers, elders, and stakeholders. The communities along the Nushagak River are primarily subsistence users. For thousands of years our people have lived off the lands and waters to sustain our diet. While salmon, moose, geese, ducks, and berries make up the majority of our diets, we subsist on a whole range of other fresh water fish species, wild plants, wildlife, and birds. We are concerned that no studies were conducted on freshwater fish species such as northern pike, white fish, lake and rainbow trout, dolly varden, and grayling; migratory birds such as geese, ducks, ptarmigan, swans; wild plants and berries such as fiddlehead ferns, beach plants, salmonberries, blueberries, blackberries, cranberries, wild raspberries, huckleberries; small game such as	term, more reliable and cost-effective option for energy well into the future while at the same time, making sure that that option does not adversely impact our way of life. To that end, if it truly is the community's global decision to oppose the project's development, if/when it occurs, the Cooperative will design the project so that Koliganek Natives Limited lands are not affected.

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			porcupine, beaver, fox, minx, wolverine, wolves, martin, otter, and rabbit. We either subsist off of these wildlife or trap fur to supplement our diet and income. Studies should be done all year round to fully understand our subsistence way of life. The one-day subsistence workshop did not capture the scientific and TEK data on all the fish and wildlife species stated above. Nor did it document individual household studies. While our people are all lifelong subsistence users, we will all be affected in different ways by the proposed project. Some of us are only subsistence users, some commercial fish, and others are sport fish users, or a combination of all three. The uses are similar among the different communities along the Nushagak but also have their differences in location, terrain, climate, and other factors. To better understand the impacts to our subsistence resources, studies should have been conducted in all six service communities. The workshops were only held in three communities: Dillingham, New Stuyahok, and Koliganek. One of our Tribe's biggest concerns with the proposed project design is with the transmission lines, airport, and the turbines. Our elders have passed down their wisdom, knowledge, and beliefs. They knew how important the lake system is to the entire region, especially to salmon habitat. They told us we must watch out for developers and to protect the Lakes at all costs. Many of us do not have college degrees but we are the experts of this particular area. It doesn't take a degree to comprehend the decrease in flow at the headwaters of the Nuyakuk River will have impacts on the entire ecosystem from the Falls, to the Nushagak River, and ultimately to the Bay. We may not see these changes in our lifetime, but in fifty years or so when the damage has already been done. From the data collected, the 30% diversion of the flow at the falls to generate electricity will have impacts to the outmigration of smolts and juvenile salmon. Reduced flows will affect adult passage upstream, as well as increased predation on juvenile salmon. The false attraction at the tailrace may cause additional injury to stunned fish going downstream that become disoriented hitting this downstream barrier, and smolts may be impinged if blocked by debris. Lastly, we live in an area that is virtually untouched by large scale development projects. Which we know is vital in supporting the largest wild salmon fishery left on this planet. The proposed transmission lines and airport would open up this area to the world, providing easy access and a safety net for those who aren't familiar with the area. The transmission lines will create run-off trails all along the river from Dillingham to the Falls. The construction of such a project will be expensive. Does the Cooperative have enough funding to build a private airport runway? If not, is it going to fall on the State to fund and construct? If so, the Cooperative will have no control over the use of the airport runway, opening access to the world. Not to mention the maintenance of the transmission lines. The Cooperative stated that no roads will be built to maintain the lines. But how is that feasible? We all know that helicopters are not cheap and are limited in use due to bad weather conditions. Our entire community opposes the proposed Nuyakuk Hydroelectric Project. The New Koliganek Village Council has been heavily involved in the project studies because we want to ensure our vital resources and habitat will be protected now and into the future. The Falls is a magical place, God's country, that must be protected at all costs.	
331	Herman F. Nelson Sr.	General Comments	I am writing in opposition of Nushagak Electric Cooperative's proposed Nuyakuk River Hydroelectric Project. Nushagak Electric Coopertive's 2 years of studies are insufficient. More work needs to be done before FERC can even consider their application for development. I am concerned that Nushagak Cooperative took a lot of shortcuts and that their studies do not include Traditional Ecological Knowledge from the people that live along the Nushagak River. They have not done any studies up Main River, Mulchanta River and Kokwok River either. Nushagak Cooperative's main focus is on salmon, but 2 years of studying salmon is not sufficient. Mainly because the life cycle of the salmon is 5 years. I am concerned not only for salmon, but I am also concerned	Comment noted. Please see many other responses in this matrix that discuss the discreet elements included in your comment.

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			about moose and moose habitat, the caribou and the caribou migration, freshwater fish such as pike, white fish, grayling rainbow trout and lake trout, small game like beaver, porcupine, fox, otter, muskrat and rabbit, other wild game like lynx, coyote, and wolves, and lastly water fowl like geese, ducks, spruce chicken and ptarmigan. The Nushagak/Mulchatna River System is a healthy, pristine ecosystem, virtually untouched and is home to an abundance of wildlife, fish, plants and berries. Nushagak Electic Cooperative's studies do not include a lot of fish, wildlife, plants and berries that me and my family depend on. I live a subsistence way of life hunting, fishing and gathering to support me and my family. I'd also like Nushagak Electric Cooperative to study water flow, water levels and how the changing climate is affecting the entire Nushagak/Mulchatna Watershed. They need to do studies up Main River, Mulchatna River and Kokwok River. No studies have been done on any of those rivers and this proposed project is at the Falls where water flows from Tikchik Lake into Nuyakak River, which is the headwaters of the entire Nushagak/Mulchatna Watershed. Nushagak Electric Cooperative did not do any household studies. They obtained their information through 1 Day workshops and looked at past studies. That is completely insufficient! We are the people that live alongside all the fish, wildlife, plants and berries and we harvest from the land and water every year. We are the specialists concerning fish, wildlife, plants and berries, the ecosystem and environment in and around our villages and throughout the entire watershed. Nushagak Electic Cooperative has had very little public engagement with the villages and people along the Nushagak River. Their interest and concern is mainly for their own community of Dillingham. More work has to be done before FERC can even consider Nushagak Electric Coopertive's application. At least the full life cycle of the salmon needs to be studied, maybe 2 life cycles. Big game like moose and caribou needs to be studied. Other wild game like lynx, coyote, wolves, beaver, porcupine, fox, otter, muskrat, and rabbit needs to be studied and also water fowl like geese, ducks, spruce chicken and ptarmigan. Also, more thorough studies need to be done for households in all the communities in regards to annual harvest of fish, wildlife, plants and berries. They need to include Traditional Ecological Knowledge of the people that live and harvest within the entire Nushagak/Mulchatna Watershed. This must be an in depth study since all the communities rely so much on fish, wildlife, plants and berries to provide for ourselves, our families and our communities. It is important that all my concerns are addressed regarding Nushagak Electric Cooperative's Nuyakuk River Hydroelectric Project application. I also would appreciate it if FERC and Nushagak Electric Cooperative would have more public engagement with the villages along the Nushagak River and throughout the Bristol Bay Region. Be more transparent, not just focus on Nushagak Electric Coopertive and Dillingham, Alaska. I appreciate your time and consideration on these important and critical issues. My hope is that all my concerns regarding the Nuyakuk River Hydroelectric Project are addressed and in depth studies are done on fish, wildlife, plants, berries, household subsistence harvest, studies on water flow, water levels and also on our changing climate in the entire Nushagak/Mulchatna Watershed. Thank you.	
332	New Koliganek Village Council (NKVC) Gust Tunguing Jr.	General Comments	The Native Village of Koliganek is the closest community to the proposed Nuyakuk Hydroelectric Project located at the headwaters of the Nuyakuk River. New Koliganek Village Council (NKVC) is deeply concerned about the proposed Nuyakuk Hydroelectric Project and would like to provide FERC with a resolution the New Koliganek Village Council adopted at their respective Tribal council meeting on January 16, 2025 as part of the official record. NKVC has reviewed the existing data and believes the Nuyakuk Hydroelectric project is not in the best interests of the Tribe. NKVC believes this project will profoundly impact our subsistence way of life. NKVC strongly opposes the Nuyakuk Hydroelectric project and hopes	Comment noted.

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			that FERC will seriously consider how the people who live closest to the project feel about how it will negatively impact our subsistence way of life.	
333	Ekwok Village Council Luki Akelkok Sr. / Sophie Kaleak	General Comments	WHEREAS, the Ekwok Village Council is a subsistence gathering Tribe and utilizes the Nushagak River to gather subsistence foods, and; WHEREAS, to the Constitution of the Native Village of Ekwok, has the authority to establish relationships for the benefit and well being of the Tribe, and; WHEREAS, the Ekwok Village Council, acting as the duly recognized governing body pursuant the Ekwok Village Council is stating that the Nuyakuk River Hydroelectric Project threatens our ancestral land and our subsistence way of life of all Tribes which live on the Nushagak River, and; WHEREAS, the Ekwok Village Council has reviewed existing information and believe the Nuyakuk River Hydroelectric Project is not in Ekwok Village Council's best interest, and; Now therefore be it resolved, that the Ekwok Village Council opposes the development of Nushagak Cooperatives Nuyakuk River Hydroelectric Project.	
334	Aleknagik Traditional Council Gusty Ilutsik, Jr., President	General Comments	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, the Aleknagik Traditional Council is thankful the Cooperative and the Federal Energy Regulatory Commission will hear public input throughout the licensing process. Reviewing publicly available materials makes clear the ongoing Integrated Licensing Process and associated studies are inherently technical. The Updated Study Report is not easily digested by many community members who are not versed in western science, yet will most directly experience the impacts of the proposed project. Given this, the Aleknagik Traditioanal Council expects the Cooperative to provide accessible materials, and engage in-person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, the Aleknagik Traditioanal Council is first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process. Additionally, our Tribe is disappointed by the delayed Subsistence and Integrated Risk Assessment study reports and the incomplete Cultural Resources Study Report. These report elements are critical to local understanding of the proposed project's impacts. Allowing 30 days to review the delayed reports and provide comment is insufficient as these critical studies directly relate to our subsistence ways of life. The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, the cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process. Historic places should inform the design and selection of the route alternatives. Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding of the risks of this project.	Comment noted. Please see many other responses in this matrix that discuss the discreet elements included in your comment. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a lack of opportunity to participate in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
			The Aleknagik Traditioanal Council support Nushagak Cooperative's attempt to transition Bristol Bay communities toward sustainable energy. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project. Shortcomings in the Updated Study Report reflect inadequate consideration at this stage, and cast doubt upon the completeness of the review. Specifically, the delay of the subsistence and integrated risk assessment study reports and the failure to incorporate Traditional knowledge are both departures from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. As a Bristol Bay Tribal government, the Aleknagik Traditioanal Council strongly encourages the Cooperative and FERC to provide meaningful Tribal consultation and community engagement. More comprehensive analysis of potential impacts and risks, and long-term planning is necessary before the project should move forward in the licensing process.	
335	Traditional Council of Togiak Jonathon Forsling, Tribal Admin.	General Comments	As Nushagak Cooperative's proposed Nuyakuk River Hydroelectric Project stands to have significant potential impacts on local resources and our communities, Traditional Council of Togiak is thankful the Cooperative and the Federal Energy Regulatory Commission will hear public input throughout the licensing process. Reviewing publicly available materials makes clear the ongoing Integrated Licensing Process and associated studies are inherently technical. The Updated Study Report is not easily digested by many community members who are not versed in western science yet will most directly experience the impacts of the proposed project. Given this, the Traditional Council of Togiak expects the Cooperative to provide accessible materials and engage in-person with all impacted communities in the region so that everyone can understand the potential impacts and risks of the proposed project. With respect to the specifics of the Updated Study Report, Traditional Council of Togiak is first disappointed by the obstacles for meaningful Tribal and public engagement in the licensing process. Additionally, our Tribe is disappointed by the delayed Subsistence and Integrated Risk Assessment study reports and the incomplete Cultural Resources Study Report. These report elements are critical to local understanding of the proposed project's impacts. Allowing 30 days to review the delayed reports and provide comments is insufficient as these critical studies directly relate to our subsistence ways of life. The lack of Tribal consultation and public engagement is evidenced repeatedly in the report. First, the studies insufficiently incorporate Traditional Knowledge. Mainly relying on western science is not a holistic approach, which is necessary for adequate review of this proposal. Moreover, cultural research is overly focused on archaeology and largely ignores Traditional Cultural Places that require Tribes' knowledge to identify, document, and evaluate. Similarly, finalizing a transmission line route before working to identify historic and culturally significant places is a backwards process, Historic places should inform the design and selection of alternative routes. Finally, Chinook salmon are missing from the life-cycle model as data isn't available. Chinook populations are already struggling so the impact to this important species requires careful study and risk assessment. The life-cycle model shows a potential impact to Sockeye salmon if precautions are not taken to ensure sufficient flow through the falls. How the Cooperative will address these impacts is unclear from the USR but would enable improved understanding of the risks of this project. The Traditional Council of Togiak supports Nushagak Cooperative's attempt to transition Bristol Bay communities toward sustainable energy. However, it is imperative that the Nushagak Cooperative and FERC ensure that no negative impact on the lifeblood of our region, salmon and their habitat, would occur as a result of this proposed project.	Comment noted. Please see many other responses in this matrix that discuss the discreet elements included in your comment. The Cooperative has encouraged and solicited regional participation at all levels throughout the entirety of the licensing process, via a variety of means. Whether it be in-person, via phone calls, virtual, project website, resource-specific technical working groups and/or 120+ meetings/presentations related to the project viability assessment, the Cooperative has documented the level of consistent effort they've put in to request objective input. We patently reject that there was a lack of opportunity to participate in the process and are confident that the comprehensive consultation record that we have kept throughout the process will document all of our attempts to bring all perspectives to the table.

Comment No.	Agency/Organization/Individual	Topic	Comment	Cooperative's Response
			Shortcomings in the Updated Study Report reflect inadequate consideration at this stage and cast doubt upon the completeness of the review. Specifically, the delay of the subsistence and integrated risk assessment study reports and the failure to inet3T5Srate Traditional knowledge are both departures from the approved Study Plan and FERC's recommendations provided after the Initial Study Report. As a Bristol Bay Tribal government, Traditional Council of Togiak strongly encourages the Cooperative and FERC to provide meaningful Tribal consultation and community engagement. More comprehensive analysis of potential impacts and risks, and longterm planning is necessary before the project should move forward in the licensing process.	

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