**Nuyakuk River Hydroelectric Project (FERC No. 14873)**
**Initial Study Report Meeting Summary**

**December 5, 2023**
**6:00 PM – 9:00 PM (AK Time)**
**Hosted in-person in Nushagak Cooperative's**
**Boardroom and Virtually via Microsoft Teams**

*Table 1. Initial Study Report Meeting Agenda.*

| TIME | TOPIC |
|---|---|
| 6:00 – 6:10 | Introduction of Meeting Participants, Logistics, Meeting Intent, etc. |
| 6:10 – 6:30 | Reminder of Current Project Status, Setting the Stage Open Discussion |
| 6:30 – 8:30 | 2023 Nuyakuk Project Feasibility Studies Presentation |
| 8:30 – 9:00 | Global Questions, Next Steps, Opportunity to Comment, Wrap-up |
| 9:00 | Adjourn |

## Initial Study Report Meeting Summary Attachments

| | |
|---|---|
| Attachment A | ISR Meeting Participant Lists (Sign-in Sheet and Virtual Attendees) |
| Attachment B: | Initial Study Report Meeting Presentation |
| Attachment C: | Federal Energy Regulatory Commission Presentation |

# Welcome, Introductions, Meeting Logistics, and Meeting Intent

At 6:00pm Alaska Time, Mr. Cory Warnock (McMillen) welcomed the meeting participants to the Nuyakuk River Hydroelectric Project (Project) to the evening Initial Study Report (ISR) Meeting.

## Participant Introductions

The Project team members in attendance at the meeting are listed in Table 2. ISR Meeting attendees are listed in Attachment A.

*Table 2. Nuyakuk River Hydroelectric Project Team Members in Attendance.*

| Name | Agency/Organization | Attendance Type |
|---|---|---|
| Will Chaney | Nushagak Electric & Telephone Cooperative (Cooperative) | In-person |
| Cory Warnock | McMillen, Inc. (McMillen) | In-person |
| Laura Johnson | McMillen | In-person |
| Chuck Sauvageau | McMillen | In-person |
| Dr. Mary Louise Keefe | Kleinschmidt Associates | In-person |
| Dr. Kevin Nebiolo | Kleinschmidt Associates | In-person |
| Audrey Thompson | Kleinschmidt Associates | In-person |
| Sean Ellenson | McMillen | Virtual |
| Noble Hendrix | QEDA Consulting | Virtual |
| Dave Jones | SLR Consulting | Virtual |
| Taryn Oleson-Yelle | R&M Alaska | Virtual |
| Maria Lewis | MLP&A | Virtual |
| Lindsey Kendall | MLP&A | Virtual |
| Cam Wobus | CK Blueshift | Virtual |
| Mike Yarborough | CRC Alaska | Virtual |

## Meeting Logistics and Meeting Intent

The presentation shown during the meeting is provided in Attachment B.

Mr. Matt Cutlip (Federal Energy Regulatory Commission; FERC) spoke to the participants regarding the purpose of the ISR meeting and next steps following the ISR meeting. Mr. Cutlip introduced himself as a fish biologist and Project Coordinator for FERC. He stated that the ISR is an interim report that summarizes data collection to date and should also discuss any variances from the study plan. Mr. Cutlip discussed the comment period and purpose of commenting, including modifications to the study program or requests for new studies. Per the approved process plan that issued by FERC last year, the Cooperative is required to file a meeting summary by December 31, 2023. Comments on the meeting summary, requested modifications to existing studies, or requests for new studies are due to FERC no later than January 30, 2024. Mr. Cutlip stated that the Cooperative is not required to re-file the ISR with edits or clarifications. FERC will only be responding to requests for new studies or study modifications. Mr. Cutlip provided

supplemental documentation following the meeting to the Cooperative, which is provided in Attachment C.

A meeting attendee asked what or who is FERC. Mr. Matt Cutlip (FERC) responded that FERC is the Federal Energy Regulatory Commission, which is the federal agency tasked with regulating all non-federal hydropower projects, including the Cooperative's proposed Project. Mr. Cory Warnock (McMillen) added that FERC will be the lead agency for evaluating the Project's license application, if one is prepared and filed following feasibility studies.

Sarah O'Neal (Trout Unlimited) requested the study criteria from FERC. Mr. Matt Cutlip (FERC) stated that he will provide slides with the information. The Cooperative will email them to the Project contact list and post them to the website. The slides are also provided in Attachment C.

Mr. Cory Warnock (McMillen) provided guidance regarding the flow of the meeting, including the time designated for asking questions following the conclusion of the presentations on each of the natural resource study areas portion of the presentation. Mr. Warnock also documented the Cooperative's approach to presenting the plans for continuing the study program in 2024 and the formation of several Technical Working Groups later in the meeting.

Mr. Will Chaney (Nushagak Cooperative) welcomed the meeting participants. Mr. Chaney gave a brief overview of the Project and Project location, highlighting the fact that the Project design, which is a river diversion that does not include a dam. Mr. Chaney displayed a map of the proposed Project area and conceptual location of the transmission line, including the proximity of Dillingham and the four outlying villages (Koliganek, Ekwok, Levelock, and Stuyahok) that would receive electricity from the proposed Project. No roads are proposed as part of Project development. The Project site has been accessed by float plane, helicopter, and boat to date. The highest annual flows of the Nuyakuk River coincide with the peak of the generation needs for fish processing. Mr. Chaney discussed the need for the proposed Project, with respect to almost completely eliminating the need for fossil fuel. Mr. Chaney summarized other projects that have been evaluated by the Cooperative to date, and the reason why those projects were not pursued further. Thus far, the Nuyakuk Project has appeared more feasible for development and as a result, the Cooperative is continuing to advance the assessment of the proposed Project.

Mr. Will Chaney (Nushagak Cooperative) gave a description of the proposed Project site and Project facilities, including the limited footprint and short bypass reach. No dam is proposed as part of the Project, and instead natural flows will be utilized for generation. A groin, if needed, would be constructed out of rock from the Project site and would be used to control the water level near the intake when river flows are low.

Mr. Cory Warnock (McMillen) provided a summary of the Project efforts completed in 2023, including continued collaboration and meeting of the Aquatic Resources Working Group (ARWG), geotechnical investigation, establishment of the study camp at the Project site, permits acquired, development of several models including the Life Cycle Model and economic models and the completion of the 2023 portion of the study program. The 2023 study season had no safety incidents.

Mr. Will Chaney (Nushagak Cooperative) provided an overview of the Project goals, with respect to evaluating proposed Project feasibility and collaboration with the Bristol Bay community, Tribal

entities, and individuals. The Cooperative is using the best possible science and regional experts to assess the feasibility of the proposed Project. If deemed feasible, licensed and ultimately constructed, the Project would provide a long-term, renewable power source for region, provide lower electricity rates over time, significantly reduce or eliminate the reliance on fossil fuels for electricity generation, and create short- and long-term employment opportunities in the region. A series of Sustainable Energy Meetings are planned in Dillingham and the outlying villages beginning next week and the Cooperative will be participating in those forums to continue the discussion regarding the proposed Project and anticipated benefits.

Ms. Sarah O'Neal (Trout Unlimited) asked how long it would take to get transmission lines to the villages once the Project is underway. Mr. Will Chaney (Nushagak Cooperative) stated that the transmission lines would be installed in a linear manner, not in phases, but the timeline for installation is uncertain.

Ms. Sarah O'Neal (Trout Unlimited) asked if the Project will reduce diesel transport at all, given the need for 100% redundancy in generation. Mr. Will Chaney (Nushagak Cooperative) replied that the hydropower project would displace the need for diesel (transport less, store less). Likewise, the outlying villages would require less diesel fuel storage. Ms. O'Neal replied that that would be a huge benefit and thanked Mr. Chaney for his answer.

Ms. Kay Andrews (Aleknagik) asked how many meetings have been held in each of the communities and stated that each of the Project meetings should be held in each of the communities. Mr. Will Chaney (Nushagak Cooperative) stated that upcoming meetings are scheduled in Aleknagik and thanked Ms. Andrews for her comment.

## Natural Resource Study Program and 2023 Study Results

Mr. Cory Warnock (McMillen) displayed a list of the studies being conducted as part of the Project's natural resource study program, per the Revised Study Plan (RSP). Study leads then presented information about the studies conducted and preliminary results, as currently available.

### Fish and Aquatic Resource Studies

Ms. Audrey Thompson (Kleinschmidt Associates) provided an overview of the Fish Community and Behavior Near the Project Area study results. The study utilized water surface elevation monitoring, United States Geologic Service (USGS) and Project site gage data, radio telemetry, sockeye tagging, Sonar, predator tagging, and fish community sampling. Ms. Thompson described the radio telemetry array that was established at the Project site and the zones that were evaluated using the array. The preliminary results include evaluation of the telemetry detection success. Thus far, results indicate that 96% Sockeye salmon tagged below Nuyakuk Falls were detected passing through the Falls and exiting the study area. The next component of the Fish Community study will include development of the 2-Dimensional (2D) hydraulic model. The 2D model will include field data, the stage-discharge relationship, and water surface elevation. A rating curve will be developed, and the 2D model will incorporate (Light Detection and Ranging) LiDAR data collected at the proposed Project site. Ms. Thompson displayed a preliminary 2D model output of the river flow at high flow (18,000 cfs) and low flow (7,500 cfs).

Dr. Kevin Nebiolo (Kleinschmidt Associates) described the Agent-Based Model (ABM) that's been developed and is being refined for the Project. Each agent represents an individual fish and simulates fish behavior. The ABM will assist with understanding sockeye salmon passage through Nuyakuk Falls. The proof-of-concept of the ABM is complete and is currently undergoing refactoring to support vectorized operation. Validation of the model using site-specific telemetry data and expert opinion is planned for quarter 1 of 2024. Dr. Nebiolo provided initial results from the ABM, including imagery of passage routes, plots of agent movements, and agent (fish) lengths that were used in the model. Dr. Nebiolo displayed model output in the form of a video of agent movement through the Falls.

Dr. Kevin Nebiolo (Kleinschmidt Associates) provided an overview of the Fish Entrainment and Impingement Study, which will be conducted in 2024 and will utilize results from Year 1 of the Fish Community and Fish Passage studies. Dr. Nebiolo also presented an overview of Tailrace False Attraction Study, which will also be conducted in 2024 and will utilize Year 1 of the Fish Community and Fish Passage studies.

Dr. Noble Hendrix (QEDA Consulting) introduced himself and described the Chinook and Sockeye Life Cycle Model (LCM) that is currently being developed for the proposed Project. The purpose of the LCM is to provide a method for assessing proposed Project effects on different life cycles of Chinook and Sockeye salmon over multiple generations. Additionally, the LCM will allow for evaluation of proposed Project effects under different climate change and/or operational scenarios. The LCM relies on both local, site-specific data as well as long-term datasets from other regional systems. An initial "straw man" LCM has been developed and will be refined during 2024. Data from other sources/river system is being reviewed for potential inclusion in the LCM. Site-specific data collected in 2023 and 2024 will be utilized in the LCM. The next steps for the LCM include further data collection and acquiring existing datasets, data analysis, integration of other Project models (climate and water flow scenarios) and continued calibration of the model.

Dr. Kevin Nebiolo presented the Integrated Risk Assessment (IRA) of Fish Populations. The IRA is proposed to evaluate potential Project impacts to fisheries resources at the fish population/community level. A strawman list of management objectives, risk sources, their elements, and receptors (species at risk) has been developed. A risk calculation spreadsheet for a single receptor with example risk matrix was displayed. A workshop is being hosted by the Cooperative on December 6th, 2023 to further develop the management objectives and risk sources.

## Fish and Aquatic Resource Studies Questions and Discussion

Ms. Audrey Thompson (Kleinschmidt Associates) stated that smolt outmigration data collection was collected from mid-May through mid-July. Currently, the fisheries team is working to evaluate the spatial and temporal distribution of outmigrating smolts.

Mr. Robert Heyano (Native Village of Ekuk) asked if the smolt assessment is being done by species. Ms. Audrey Thompson (Kleinschmidt Associate) stated that it's very difficult to discern the species in the smolt data. The Project team is working on data collection methods for 2024 to gather corroborating data that will provide more information about which species are moving through the Project area at different times. Mr. Heyano stated that he thought it was important to understand king salmon outmigration. Mr. Bryan Nass (Bristol Bay Science and Research Institute (BBSRI)) confirmed that Mr. Heyano was interested in data for all 5 species. Mr. Nass responded that during study planning, Sockeye and Chinook were identified as being the most important to

people. Dr. MaryLouise Keefe (Kleinschmidt Associates) stated that during study planning, these species were chosen for LCM evaluation. The other species will require more of a qualitative assessment via the IRA.

Mr. Tim Sands (ADF&G) emphasized the importance of looking at fish with different life histories. Ms. Audrey Thompson responded that the sonar system captures the collective group of outmigrating smolts, even though the individual species can't be differentiated, so all species are represented. Dr. MaryLouise Keefe (Kleinschmidt Associates) added that the sonar system was supposed to be installed earlier in the season, but winter conditions continued late in the season which affected fish sampling and sonar system installation. Ms. Ali Eskelin (ADNR) asked if sonar transducers could be maintained later in the season to document a longer period of the outmigration as Dr. Daniel Schindler (University of Washington) suggested in the afternoon ISR Meeting. Ms. Audrey Thompson (Kleinschmidt Associates) responded that once the sonar system is installed, it doesn't take a lot of effort to maintain it. The other consideration is how to select and analyze data, because of the dataset size generated. Ms. Mary Kate Swenarton (United States Fish and Wildlife Service (USFWS)) asked whether more data from 2023 would be released in order to inform study plan modifications. Mr. Cory Warnock (McMillen) added that the Cooperative is willing to conduct additional meetings to update the public as needed.

Ms. Leah Ellis (ADF&G) asked if the data sources used in the Updated Study Report (USR) will be provided. Dr. Kevin Nebiolo (Kleinschmidt Associates) responded that the data sources and inputs would be listed and described in the USR.

Mr. Robert Heyano (Native Village of Ekuk) asked if different flow conditions would be evaluated. Dr. MaryLouise Keefe (Kleinschmidt Associates) described how the 2D model will be used to assess different flow conditions.

Mr. Bryan Nass (BBSRI) added that the stretch of the river (the Falls) is one of the most productive stretches of the river in terms of primary production (algae), secondary production (invertebrates), tertiary production (fish). Thus, the Falls reach has high value to the overall system.

Sarah O'Neal (Trout Unlimited) asked if based on Mr. Nass's comment, some more expansive food web studies might be warranted. Mr. Bryan Nass (BBSRI) responded that food web studies are not included in the study plan, but if the Project team finds results that are concerning, some of these elements may be added to the investigation.

Mr. Monty Rogers (UTBB) asked about the plan to include indigenous knowledge in the study program. Mr. Cory Warnock (McMillen) stated that the Aquatic Resources Working Group (ARWG) included representatives from Tribal entities, and the intent is that these representatives provide indigenous knowledge for use in the studies.

## Water Resources Studies

Mr. Chuck Sauvageau (McMillen) described the Water Quality study, which evaluated dissolved oxygen (DO) and water temperature in the Nuyakuk River. Mr. Sauvageau described the dissolved oxygen and water temperature data collection methods and results, compared to Alaska Department of Environmental Conservation (ADEC) water quality criteria. The Cooperative collected water temperature data from 2018-2021, and again from June 1-September 30, 2022. DO

met ADEC criteria during the monitoring period. Overall, DO concentrations upstream and downstream of the Falls were similar overall with more fluctuation seen upstream of the falls. Water temperature was nearly always below 20 degrees C, with the exception of one exceedance in 2019 between July 5-11. In 2024, at ADF&G's request, DO monitoring will occur for 3-5 days during the period when large schools of adult sockeye salmon are staging at the base of Nuyakuk Falls.

Mr. Chuck Sauvageau (McMillen) described the Flow Duration Curve Assessment. A Project-specific gage was installed and will be used to more accurately define flow volumes used to generate flow duration curves at the Project site. The Project site gage at Nuyakuk Falls provides an excellent correlation with the USGS gage located at the outlet of Tikchik Lake into Nuyakuk River, 4.6 miles upstream of the Project site. The gage was installed when the Nuyakuk River was flowing at approximately 20,000 cfs, which resulted in a lack of data collection at low flows/water levels during the winter. However, USGS gage data at the lake outlet is available during this time. A follow-up effort was made toward the end of the field season to retrofit the gage by lowering the stilling well to enable data collection at lower flows and water levels. The non-stationarity detection tool developed by the U.S. Army Corps of Engineers will be used in 2024 to determine which time periods are most appropriate for developing flow duration curves for the Project-site.

Mr. Cam Wobus (CK Blueshift) provided an overview of the Future Flows Study. The Future Flows Study utilized a Global Change Model (GCM), made as site-specific as possible. Mr. Wobus presented a summary of MikeShe/Mike Hydro software package results. The model produces a flexible, integrated water-groundwater model with a choice of spatial and temporal scales and simple to complex solutions. The climate change model produced results showing decreased winter snowpack because more precipitation is projected to fall as rain, which leads to increased winter flows and decreased summer runoff by 2040, with more potential change by late century, depending on emissions scenarios.

Mr. Chuck Sauvageau (McMillen) presented an overview of the Ice Processes Assessment that is being conducted for the Project at the National Marine Fisheries Service's (NMFS's) request. The initial assessment includes a review of available imagery provided by NMFS, information gathering from a nearby hydroelectric project (Tazimina Falls) that has ice mitigation strategies, and collection of site-specific imagery near the proposed Project intake to assess frazil ice formation and ice breakup conditions at the Project site. The cameras failed to collect site-specific ice imagery during the winter of 2022/2023, likely due to harsh winter conditions at the Project site or a programming error. Additional, more weather-resistant cameras are now in place to capture ice conditions during the winter of 2023/2024. The Cooperative has had preliminary meetings with George Hornberger, the General Manager of the Iliamna Newhalen Nondalton Electric Cooperative (INNEC), which owns and operates the Tazimina Falls Project that has been in service since 1998. Mr. Sauvageau showed some photographs of the Tazimina Falls Project, which include heated intake grates to minimize shutdowns from river icing. Mr. Will Chaney (Nushagak Cooperative) provided a summary of his conversations with Mr. Hornberger regarding the operations of Tazimina, where they have greatly reduced their diesel generation needs because they can produce electricity during periods of river icing due to the heated intake grates.

## Water Resources Studies Questions and Discussion

Mr. Robert Heyano (Native Village of Ekuk) asked if ADF&G has a water right on the Nuyakuk River. Ms. Leah Ellis (ADF&G) stated that the ADF&G flow reservation varies by month and can be negotiated as necessary for projects. Mr. Heyano asked if the ADF&G water right is more than the 30% flow reservation listed in Senate Bill 91. The Project team responded that additional information regarding the specific flow reservation amounts can be provided as a follow-up.

Dr. Daniel Schindler (University of Washington) commented that in 50 years, peak river flows may be lowest at the time of peak power demand, and what percentage of river flow would need to be diverted for generation. Mr. Cory Warnock (McMillen) responded that a primary reason that the climate change model was front-loaded in the study program in 2023 is so that it could be used in the other studies and Project design. Mr. Will Chaney (Nushagak Cooperative) added that in 50 years, additional renewable generation options may be available to the Cooperative to meet energy needs, such as solar energy.

## Terrestrial Resources Studies

Ms. Maria Lewis (MLP&A) presented the Wetlands and Botanical Study that was conducted for the Project. Ms. Lewis described the area studied and the data collected. The wetland delineation resulted in approximately 5 acres of wetlands within the nearly 90-acre study area. No non-native or invasive species were identified. One rare plant (*Primula spp.*) was potentially located in the Project study area, but the species identification was not certain and will be confirmed in 2024.

Ms. Lindsey Kendall (MLP&A) described the Caribou Population Evaluation that was conducted in 2023 to evaluate potential impacts to the Mulchatna Caribou Herd (MCH) in the proposed Project area. The study included a desktop literature review and analysis of survey & inventory (S&I) data collected by ADF&G. The study found that the Project may result in a small loss of habitat area, but it does not overlap current calving areas. A Terrestrial Resources Technical Working Group is being formed, and additional discussion regarding potential impacts to MCH will occur within that Technical Working Group.

### Terrestrial Resources Studies Questions and Discussion

A meeting attendee stated that the caribou maps were informative and inquired as to whether there will be similar maps produced for moose. Mr. Cory Warnock (McMillen) stated that the comment is appreciated and requested that the meeting attendee please file the comment with FERC.

## Cultural Resources Studies

Mr. Will Chaney (Nushagak Cooperative) provided an update regarding the implementation of the Subsistence Study. The Cooperative will utilize existing ADF&G data to assess current subsistence use and document potential impacts associated with the Project. The Cooperative has begun initial planning for the Subsistence Study including identifying the appropriate specialists to conduct the study, and the bulk of the study will be conducted in 2024.

Mr. Mike Yarborough (CRC Alaska) provided an overview of the Section 106 Evaluation that was conducted in 2023. A field investigation was conducted in a 90-acre study area similar to the study area used by the Wetlands and Botanical Study. The survey and shovel testing identified several cultural resources, including the Nuyakuk portage trail, a pre-contact archaeological site, and two

possible cache pits The Project as currently proposed would likely not adversely affect either of the two potentially significant sites. Recent radiocarbon dating results of the artifacts at the Portage Trail site showed that the site likely dates back 3477 years. Mr. Yarborough stated that it's unlikely that any further field work needs to be conducted, but a significant amount of consultation will occur in 2024. A set of letters initiating cultural resources consultation was distributed in 2023 but limited response.

## Cultural Resources Studies Questions/Discussion

Mr. Monty Rogers (UTBB) asked how the Section 106 study report could be accessed and commented on by interested parties. Mr. Cory Warnock (McMillen) responded that a Privileged version of the Section 106 Evaluation was filed with FERC. Mr. Mike Yarborough (CRC Alaska) responded that he plans to redouble his efforts to initiate consultation with Tribal entities over the winter, after not getting much response to the set of letters mailed out in summer 2023. Interested parties are requested to join the Cultural Resources Technical Working Group (TWG).

Ms. Alannah Hurley (UTBB) asked for confirmation that the Subsistence Study has not been done, and a consultant has not been identified. Mr. Will Chaney (Nushagak Cooperative) confirmed that the Subsistence Study was planned for 2023 but couldn't be implemented as planned in 2023. The Subsistence Study will be conducted in 2024.

Ms. Alannah Hurley (UTBB) asked for confirmation that the Section 106 Evaluation was done without consulting Tribes and appropriate contacts. Mr. Mike Yarborough (CRC Alaska) confirmed that a series of letters was distributed in early summer 2023. Mr. Will Chaney (Nushagak Cooperative) stated that the Cooperative definitely wants to reach out to the community in the best way possible. Mr. Yarborough stated that the Section 106 Evaluation started with the field work that we knew we would need to do for the Project. Ms. Hurley responded that on multiple occasions, UTBB has offered to assist with outreach efforts to ensure that the appropriate contact lists and approach are utilized and cautioned the Cooperative not to draw conclusions from limited information or consultation efforts. Mr. Chaney responded that over 20 letters were sent out, and that the Cooperative will work to adjust approach and contact lists as needed to obtain effective input from the community.

Ms. Shelley Cotton (UTBB) commented about the value of information provided by community and Tribal members and that people should be compensated for their contributions. She stated that compensation may increase participation. Ms. Cotton asked whether cultural resources work along the transmission line will be able to be conducted in 2024. She stated that there are a lot of camps in the area for duck, caribou, moose, etc. and it seems like a lot of work to survey all of these locations. Mr. Will Chaney (Nushagak Cooperative) responded that the assessment can add a lot of regional data to existing datasets, and that he is not aware of many camps along the potential transmission line route. Mr. Chaney stated that he is hopeful that the Cooperative can grow meaningful datasets for the region which bring great value, similar to the 3400-year-old date from the radiocarbon dating analysis conducted at the Portage Trail.

## Recreation and Aesthetic Studies

Mr. Dave Jones (SLR Consulting) presented the Noise Study. The study measured ambient sound levels at four locations near the proposed Project, modeled future sound levels, and investigated

potential noise impacts from the Project including construction and operations. The study results show that the proposed Project is expected to have increased sound levels during the daytime only, near the Project site. No change in noise level is expected at the Royal Coachman Lodge. The study also evaluated the construction blasting noise and the aircraft operations associated with the proposed Project. Noise impacts due to blasting are anticipated to be infrequent and during daytime hours. Noise impacts due to aircraft operations will be significantly lower at the Royal Coachman Lodge compared to existing activities. The noise impacts due to long-term operations is expected to be extremely minimal.

Ms. Taryn Oleson-Yelle (R&M Alaska) provided a summary of the Recreation Inventory that was conducted during 2023. Recreation and intercept surveys were conducted in 2023. In 2024, study efforts will focus on resident surveys, based on paper and online surveys, as well as community visits to conduct in-person interviews in Spring 2024. Recreational business operator surveys will also be conducted in 2024.

### Recreation and Aesthetic Studies Questions and Discussion

Ms. Delores Larson (UTBB) asked how the recreational studies and the subsistence studies will be differentiated. Ms. Larson stated that most people in the region that engage in subsistence activities consider subsistence activities recreational activities as well. Ms. Taryn Oleson-Yelle (R&M Alaska) stated that she's interested in input from the community regarding how to accomplish this differentiation. Mr. Will Chaney (Nushagak Cooperative) suggested that he, Ms. Larson, and Ms. Oleson-Yelle have a follow-up meeting to discuss this topic.

## Conceptual Project Design and Operations

Mr. Sean Ellenson (McMillen) described two alternatives that have been evaluated for design of the proposed Project. Alternative 1 will utilize 30% of the flow in the Falls for generation purposes (estimated at 9 MW peak), and Alternative 2 is based on projected future regional power needs (estimated at 14 MW peak). Mr Chaney and Mr. Ellenson emphasized that these scenarios were conducted to accurately document potential and were in no way meant to imply that the Cooperative was not cognizant of and adhering to the current Senate Bill 91 flow allowance. Mr. Ellenson showed summary graphs showing the potential power output of each alternative and flow remaining in the Falls in an average year. Mr. Ellenson also presented the variation in flow between dry, average, and wet years.

### Conceptual Project Design and Operations Questions and Discussion

Mr. Robert Heyano (UTBB) asked if diverting 30% of the river flow would result in a 9 MW project, and Mr. Sean Ellenson (McMillen) confirmed that was correct. Mr. Heyano asked how much flow a 14 MW project would utilize. Mr. Ellenson responded that more than 30% of flow would be required during some portions of the year. Mr. Heyano asked if the slides showing flow were included in the ISR. Mr. Cory Warnock (McMillen) stated that they were not but will be available via the Cooperative's website and as part of the ISR Meeting Summary. Mr. Heyano stated that he sees similarities between this Project and Pebble Mine. Mr. Will Chaney (Nushagak Cooperative) responded that he appreciates Mr. Heyano's comment.

Dr. Daniel Schindler (University of Washington) asked how much water is left in the river if Mr.

Cam Wobus's (CK Blueshift) climate change model is used to evaluate the operations of a 14 MW project in 50 years. Dr. Schindler stated that this potential Project configuration would use much of the water in the river. Mr. Chaney responded that the Cooperative is committed to scoping out the 9 MW project (Alternative 1), limited to 30% of flows. Dr. Schindler stated that there are progressive risks to development if a Project is constructed and later retrofitted to meet demand. Dr. Schindler stated that the last decade has had record numbers of Sockeye salmon, and the upper lakes in the system could be the breadbasket for sustaining those populations. Mr. Chaney thanked Dr. Schindler for his comments.

Ms. Ali Eskelin (ADNR) inquired about the anticipated lifespan of the Project relative to the anticipated maturity of the Project. Mr. Will Chaney (Nushagak Cooperative) responded that a FERC project license period is 30-50 years and the typical life span of hydropower projects can be more than 100 years.

Ms. Alannah Hurley (UTBB) asked how the TWGs will share information and integrate with the ARWG. Mr. Cory Warnock (McMillen) stated that cross-resource discussions will be identified during the process for integration across TWGs, and subsets of experts can meet as needed to work through particular resource issues or analyses.

## Meeting Conclusion

Mr. Cory Warnock (McMillen) stated that Technical Working Groups for Terrestrial, Cultural, and Recreation resources will be started shortly, and people that are interested in these resources should sign the sheets in the entryway (if attending in-person) or email ljohnson@mcmillen.com (if attending virtually) to be included in the respective TWGs.

Mr. Cory Warnock (McMillen) provided an overview of the ILP timeline and milestones. Mr. Warnock described the FERC comment period associated with the ISR and ISR meeting, and also the ability to file comments about the Project at any time. Mr. Warnock described the community survey that the Cooperative has launched to gather additional input on the proposed Project. Mr. Will Chaney (Nushagak Cooperative) provided a conclusion statement to the meeting participants, including the need for the proposed Project and the cost and risks to Cooperative members of continuing to use diesel generation.

Ms. Sarah O'Neal (Trout Unlimited) stated that she appreciates the licensing process approach, and that she hopes the Project team evaluating the full scope of both risks and benefits of the Project. Mr. Will Chaney (Nushagak Cooperative) thanked Ms. O'Neal for the comment and agreed that there are both risks and benefits of the Project, and that the Cooperative is seeking to provide a beneficial resource for the region.

Ms. Alannah Hurley (UTBB) stated that the comment period is short and she would like the Cooperative to support a FERC extension of time. Ms. Hurley stated that cultural resource interest letters were sent out in June which is during fishing season and that was why there was little response. Ms. Hurley stated that in the future, meetings in the villages should be considered. She stated that in the community, there is a rushed feeling with respect to the process. Mr. Cory Warnock (McMillen) responded that the Cooperative worked to avoid the community's important seasons for study reporting and will try to avoid them in the future.

The meeting adjourned at 10:07pm Alaska Time.

# Attachment A
# ISR Meeting Participant Lists (Sign-in Sheet and Virtual Attendees)

Nushagak COOPERATIVE

**Nuyakuk River Hydroelectric Project (FERC No. 14873)**
**Interim Study Report Meeting Sign-in Sheet**
**December 5, 2023**
**6:00 PM – 9:00 PM (AK Time)**
**Cooperative Boardroom**

| Name | Affiliation (if applicable) | Phone Number | Email Address |
|---|---|---|---|
| Robert Heyano | SELF | 907-843-0839 | rheyano@gmail.com |
| Leah Ellis | ADF+G | 267-2404 | leah.ellis@alaska.gov |
| Gordon Isaacs | SELF | 843-0474 | gordon.isaacs@gmail.com |
| Cory Warnock | McMillen | 360-739-0187 | warnock@mcmillen.com |
| Sue Gaare | self | 843-0413 | bobbinfo@gmail.com |
| Tim Sands | ADF+G | 842 5227 | |
| Ted Krieg | self | 843-1613 | tmkrieg@gmail.com |

1. Summary

| | |
|---|---|
| Meeting title | Nuyakuk River Hydroelectric Project Initial Study Report Meeting (Evening) |
| Attended participants | 36 |
| Start time | 12/05/23, 6:58:10 PM |
| End time | 12/05/23, 11:09:56 PM |
| Meeting duration | 4h 11m 46s |
| Average attendance time | 2h 42m 18s |

2. Participants

| Name | First Join | Last Leave | In-Meeting Duration | Email | Participant ID (UPN) | Role |
|---|---|---|---|---|---|---|
| Alannah Hurley- UTBB | 12/05/23, 7:15:12 PM | 12/05/23, 11:07:04 PM | 3h 51m 51s | | | Presenter |
| Cam Wobus | 12/05/23, 7:31:40 PM | 12/05/23, 9:30:21 PM | 1h 30m 20s | cwobus@ckblueshift.com | cwobus@ckblueshift.com | Presenter |
| Daniel Schindler FRI | 12/05/23, 8:59:53 PM | 12/05/23, 11:07:33 PM | 2h 7m 40s | | | Presenter |
| Dave Bendinger | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:30 PM | 4h 3m 9s | Dave.Bendinger@obiseafoods | Dave.Bendinger@obiseafoods | Presenter |
| David M. Jones | 12/05/23, 7:08:10 PM | 12/05/23, 10:46:59 PM | 3h 38m 49s | dmjones@slrconsulting.com | dmjones@slrconsulting.com | Presenter |
| Ellenson, Sean | 12/05/23, 7:05:18 PM | 12/05/23, 11:07:36 PM | 4h 2m 17s | ellenson@mcmillen.com | ellenson@mcmillen.com | Presenter |
| Eskelin, Alison M (DNR) | 12/05/23, 9:38:57 PM | 12/05/23, 11:07:28 PM | 1h 28m 31s | alison.eskelin@alaska.gov | alison.eskelin@alaska.gov | Presenter |
| Felipe Farley | 12/05/23, 7:10:33 PM | 12/05/23, 7:13:05 PM | 2m 32s | felipe.farley@bbna.com | felipe.farley@bbna.com | Presenter |
| Fritz Johnson | 12/05/23, 7:31:41 PM | 12/05/23, 11:07:04 PM | 3h 35m 23s | | | Presenter |
| Isha Deo | 12/05/23, 7:06:50 PM | 12/05/23, 8:49:27 PM | 1h 42m 36s | Isha.Deo@Kleinschmidtgroup. | Isha.Deo@KleinschmidtGroup | Presenter |
| John & Sonja Marx | 12/05/23, 7:29:29 PM | 12/05/23, 8:54:25 PM | 1h 24m 55s | | | Presenter |
| Johnson, Laura | 12/05/23, 7:00:20 PM | 12/05/23, 11:07:27 PM | 4h 7m 6s | ljohnson@mcmillen.com | ljohnson@mcmillen.com | Organizer |
| Maria Lewis | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:16 PM | 4h 2m 55s | | | Presenter |
| Matt Cutlip | 12/05/23, 7:00:34 PM | 12/05/23, 11:01:24 PM | 4h 49s | Matt.Cutlip@ferc.gov | matt.cutlip@ferc.gov | Presenter |
| Mike Yarborough (Guest) | 12/05/23, 7:09:01 PM | 12/05/23, 11:07:03 PM | 3h 58m 2s | | | Presenter |
| Monty Rogers | 12/05/23, 7:00:34 PM | 12/05/23, 8:52:03 PM | 1h 51m 28s | | | Presenter |
| Monty Rogers | 12/05/23, 8:54:39 PM | 12/05/23, 11:07:38 PM | 2h 12m 59s | | | Presenter |
| Noble Hendrix | 12/05/23, 7:08:10 PM | 12/05/23, 11:07:28 PM | 3h 59m 17s | noble@qedaconsulting.com | noble@qedaconsulting.com | Presenter |
| Peter Schnurr - Cultural Alaska | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:29 PM | 4h 3m 8s | | | Presenter |
| Rokos, Jay M (DNR) | 12/05/23, 7:00:34 PM | 12/05/23, 9:19:00 PM | 2h 18m 26s | jay.rokos@alaska.gov | jay.rokos@alaska.gov | Presenter |
| Sarah O'Neal | 12/05/23, 7:43:17 PM | 12/05/23, 11:07:04 PM | 3h 23m 47s | | | Presenter |
| sarahlouiseoneal@gmail.com | 12/05/23, 7:13:50 PM | 12/05/23, 7:46:10 PM | 32m 19s | | | Presenter |
| sarahlouiseoneal@gmail.com | 12/05/23, 8:27:00 PM | 12/05/23, 8:50:06 PM | 23m 6s | | | Presenter |
| Sauvageau, Charles | 12/05/23, 7:19:16 PM | 12/05/23, 11:06:58 PM | 3h 47m 41s | Sauvageau@mcmillen.com | Sauvageau@mcmillen.com | Presenter |
| Shelley Cotton | 12/05/23, 7:04:22 PM | 12/05/23, 11:07:19 PM | 4h 2m 57s | scotton@UnitedTribesofBristo | scotton@UnitedTribesofBristo | Presenter |
| Taryn Oleson-Yelle | 12/05/23, 7:12:05 PM | 12/05/23, 10:42:27 PM | 3h 30m 21s | TOleson@rmconsult.com | TOleson@rmconsult.com | Presenter |
| Tiffany Phelan | 12/05/23, 7:39:32 PM | 12/05/23, 9:50:16 PM | 2h 10m 44s | | | Presenter |
| Warnock, Cory | 12/05/23, 7:08:06 PM | 12/05/23, 11:07:17 PM | 3h 59m 11s | Warnock@mcmillen.com | Warnock@mcmillen.com | Presenter |
| Wilcox, Chance A (DFG) | 12/05/23, 7:04:21 PM | 12/05/23, 9:44:04 PM | 2h 39m 42s | chance.wilcox@alaska.gov | chance.wilcox@alaska.gov | Presenter |
| | 19078433393 | 12/05/23, 7:00:38 PM | 12/05/23, 11:09:56 PM | 3h 34m 27s | | Attendee |
| | 19078431693 | 12/05/23, 7:04:24 PM | 12/05/23, 8:27:56 PM | 1h 23m 31s | | Attendee |
| | 19078431464 | 12/05/23, 7:04:25 PM | 12/05/23, 8:38:02 PM | 1h 29m 9s | | Attendee |
| | 19078431732 | 12/05/23, 7:06:54 PM | 12/05/23, 9:08:01 PM | 2h 1m 6s | | Attendee |
| | 19072992376 | 12/05/23, 7:18:23 PM | 12/05/23, 10:37:15 PM | 3h 18m 52s | | Attendee |
| | 19078431905 | 12/05/23, 7:24:40 PM | 12/05/23, 7:48:45 PM | 24m 5s | | Attendee |
| | 19075966018 | 12/05/23, 7:57:38 PM | 12/05/23, 10:38:19 PM | 2h 39m 22s | | Attendee |

3. In-Meeting Activities

| Name | Join Time | Leave Time | Duration | Email | Role | |
|---|---|---|---|---|---|---|
| Johnson, Laura | 12/05/23, 7:00:20 PM | 12/05/23, 11:07:27 PM | 4h 7m 6s | ljohnson@mcmillen.com | Organizer | |
| Matt Cutlip | 12/05/23, 7:00:34 PM | 12/05/23, 11:01:24 PM | 4h 49s | Matt.Cutlip@ferc.gov | Presenter | |
| Monty Rogers | 12/05/23, 7:00:34 PM | 12/05/23, 8:52:03 PM | 1h 51m 28s | | Presenter | |
| Rokos, Jay M (DNR) | 12/05/23, 7:00:34 PM | 12/05/23, 9:19:00 PM | 2h 18m 26s | jay.rokos@alaska.gov | Presenter | |
| | 19078433393 | 12/05/23, 7:00:38 PM | 12/05/23, 7:03:39 PM | 3m 1s | | Attendee |
| | 19078433393 | 12/05/23, 7:36:14 PM | 12/05/23, 10:33:56 PM | 2h 57m 41s | | Attendee |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 19078433393 | 12/05/23, 10:36:11 PM | 12/05/23, 11:09:56 PM | 33m 45s | | Attendee |
| Peter Schnurr - Cultural Alaska | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:29 PM | 4h 3m 8s | | Presenter | |
| Wilcox, Chance A (DFG) | 12/05/23, 7:04:21 PM | 12/05/23, 9:44:04 PM | 2h 39m 42s | chance.wilcox@alaska.gov | Presenter | |
| Maria Lewis | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:16 PM | 4h 2m 55s | | Presenter | |
| Dave Bendinger | 12/05/23, 7:04:21 PM | 12/05/23, 11:07:30 PM | 4h 3m 9s | Dave.Bendinger@obiseafoods | Presenter | |
| Shelley Cotton | 12/05/23, 7:04:22 PM | 12/05/23, 11:07:19 PM | 4h 2m 57s | scotton@UnitedTribesofBristo | Presenter | |
| | 19078431693 | 12/05/23, 7:04:24 PM | 12/05/23, 8:27:56 PM | 1h 23m 31s | | Attendee |
| | 19078431464 | 12/05/23, 7:04:25 PM | 12/05/23, 7:38:51 PM | 34m 26s | | Attendee |
| | 19078431464 | 12/05/23, 7:43:19 PM | 12/05/23, 8:38:02 PM | 54m 43s | | Attendee |
| Ellenson, Sean | 12/05/23, 7:05:18 PM | 12/05/23, 11:07:36 PM | 4h 2m 17s | ellenson@mcmillen.com | Presenter | |
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| Fritz Johnson | 12/05/23, 7:31:41 PM | 12/05/23, 11:07:04 PM | 3h 35m 23s | | Presenter | |
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| | 19075966018 | 12/05/23, 8:33:57 PM | 12/05/23, 10:38:19 PM | 2h 4m 21s | | Attendee |
| sarahlouiseoneal@gmail.com | 12/05/23, 8:27:00 PM | 12/05/23, 8:50:06 PM | 23m 6s | | Presenter | |
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| Eskelin, Alison M (DNR) | 12/05/23, 9:38:57 PM | 12/05/23, 11:07:28 PM | 1h 28m 31s | alison.eskelin@alaska.gov | Presenter | |

# Attachment B
# Initial Study Report Meeting Presentation

# Nuyakuk River Hydroelectric Project (P-14873)

## Initial Study Report (ISR) Meeting

December 5, 2023

Nushagak COOPERATIVE

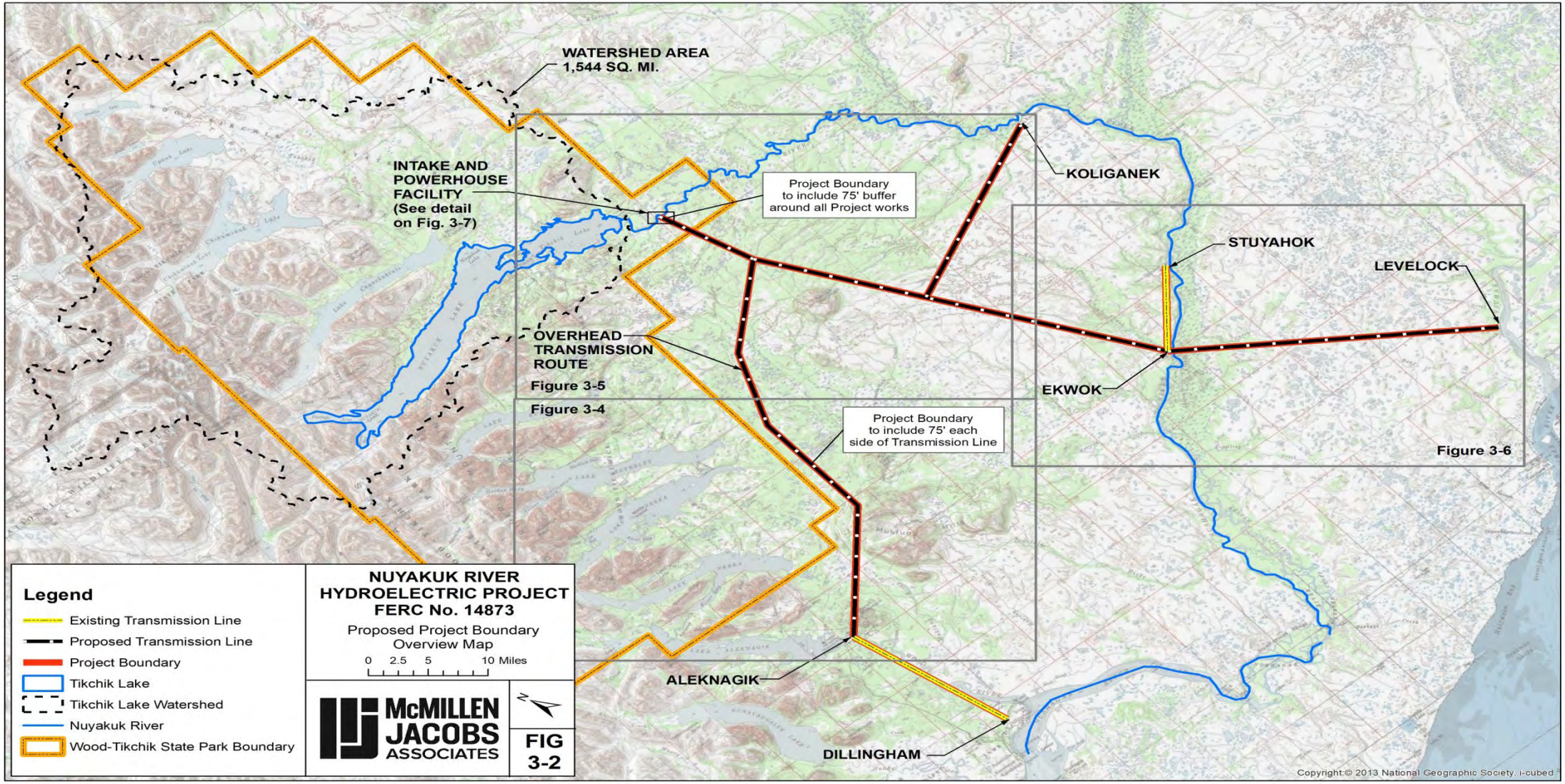
# LOGISTICS

- Refreshments
- Bathrooms
- Meeting Recording
- Sign-in Sheet
- RWG Sign-up Sheets

# MEETING INTENT

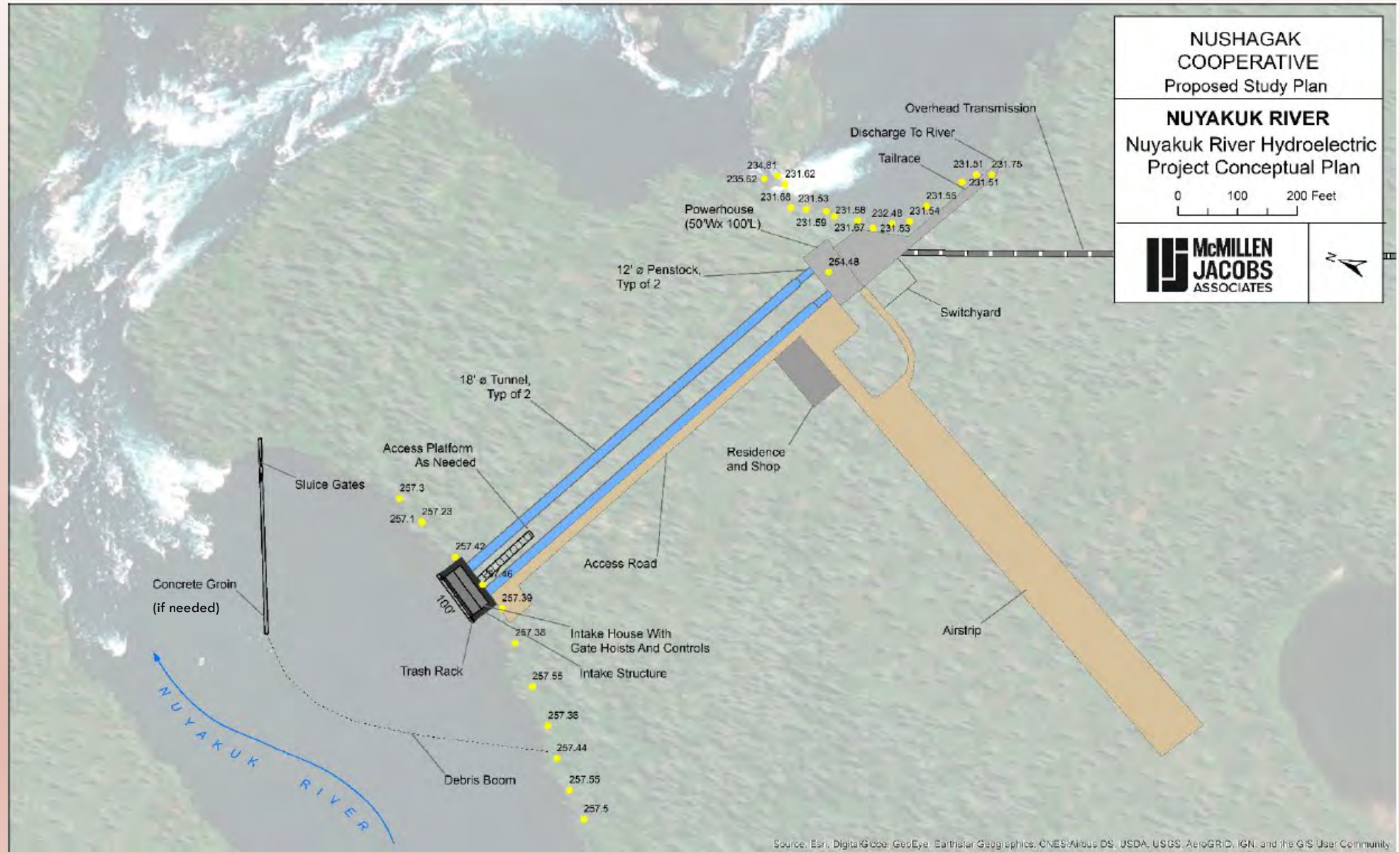
- FERC input – Matt Cutlip
- Describe results from all studies conducted in 2023
  - Prelude to your respective reviews
- Intent of ISR
- Reminder of current Project concept
- Questions and comments on work conducted and results
  - State your name
- Describe plans for 2024
- Formation of additional technical working groups
- Lay out the remainder of the FERC process
  - Key milestones into the future
- Discuss upcoming future meetings, communications w/FERC, opportunities for informal input
- Global questions and comments

# PROJECT AREA



# KEY PROJECT FEATURES

- Currently proposed between 10-14MW
- No dam – utilization of existing natural control
- Limited footprint and short bypass reach through limited aquatic habitat zone
- No lengthy access roads necessary – Air or via river
- Highest annual flows coincide with peak run timing for key salmonid species, renewable hydro generation would allow for power production for 100% of the fish processing effort
- As currently conceptualized, would take Dillingham/Aleknagik and four remote villages almost completely off fossil fuel generation annually
- Based on analysis, most appealing renewable option in the region. Multiple options have been analyzed over the past 10 years


NUSHAGAK
COOPERATIVE
Proposed Study Plan
NUYAKUK RIVER
Nuyakuk River Hydroelectric
Project Conceptual Plan
0
100
200 Feet
McMILLEN
JACOBS
ASSOCIATES
Overhead Transmission
Discharge To River
Tailrace
234.81
235.62
231.62
231.68
231.53
231.58
232.48
231.54
231.59
231.67
231.53
231.51
231.75
231.51
231.55
Powerhouse
(50'Wx 100'L)
254.48
12' ø Penstock,
Typ of 2
Switchyard
18' ø Tunnel,
Typ of 2
Access Platform
As Needed
Residence
and Shop
Sluice Gates
257.3
257.23
257.1
257.42
257.46
Access Road
Concrete Groin
(if needed)
100'
257.39
257.38
Intake House With
Gate Hoists And Controls
Airstrip
Trash Rack
257.55
Intake Structure
257.36
257.44
NUYAKUK RIVER
Debris Boom
257.55
257.5
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# KEY DEVELOPMENTS OVER THE PAST YEAR

- Collaborative ARWG and public involvement related to technical study plan improvements (collective development, review and commenting)
  - Bi-monthly ARWG meetings
  - Website updates and emails to contact list throughout process
  - Review/comment period associated with the RSP
- Geotechnical analysis
- Biological study camp established
- All requisite natural resource permit applications submitted
  - ADNR Land-use Permit
  - ADFG Fish Habitat Permit
  - ADFG Fish Resource Permit
- 2023 Study season completed
- Development of life cycle and economic models
- Cooperative agreements reached with BBSRI, BBNA and NMFS related to certain study elements
- Multiple ARWG and public meetings along with presentation at relevant regional conferences

# PROJECT GOALS

- Respect the environment and all local/regional interests

- At the current phase – Assess the feasibility of the Project via:
  - Natural resource studies
  - Geotechnical evaluations
  - Preliminary design concepts
  - Dialogue with the local and regional stakeholders

- Use the best possible science and regional experts to assess feasibility

- If deemed environmentally feasible, the Project will
  - Significantly reduce (if not eliminate) current reliance on fossil fuel resources for electricity
  - Represent a long-term, renewable power source for the region
  - Lower power rates, over time
  - Provide short and long-term employment opportunities for the region

- Consistently collaborate with, inform and involve all interested regional individuals, Tribal entities, and public interest groups throughout the process

# 2023 STUDY RESULTS

# NATURAL RESOURCE STUDY PROGRAM

- Fisheries/Aquatics
  - Fish Community and Behavior Near the Project Area
  - Falls Fish Passage Study
  - Entrainment and Impingement Study
  - Tailrace False Attraction Evaluation
  - Chinook and Sockeye Life Cycle Modeling
  - Integrated Risk Assessment of Fish Populations
- Water Resources
  - Dissolved Oxygen and Water Temperature Focus
  - Flow Duration Curve/Stationarity Assessment*
  - Future Flows Study*
  - Ice Processes Assessment
- Terrestrial
  - Botanical Impact Assessment
  - Wetlands Impact Assessment
  - Caribou Population Evaluation
- Cultural
  - Subsistence Study
  - Section 106 Evaluation
- Recreation and Aesthetics
  - Noise Study
  - Recreation Inventory

**Voluntary study, not required by FERC*

# FISHERIES/AQUATICS

# FISH COMMUNITY AND BEHAVIOR NEAR THE PROJECT AREA

## Methods

- Underwater Video
- Snorkel Surveys (stage dependent)
- Net/ trap sampling
- Predator Angling
- Observation Tower [BBSRI]
- Sonar Smolt Monitoring

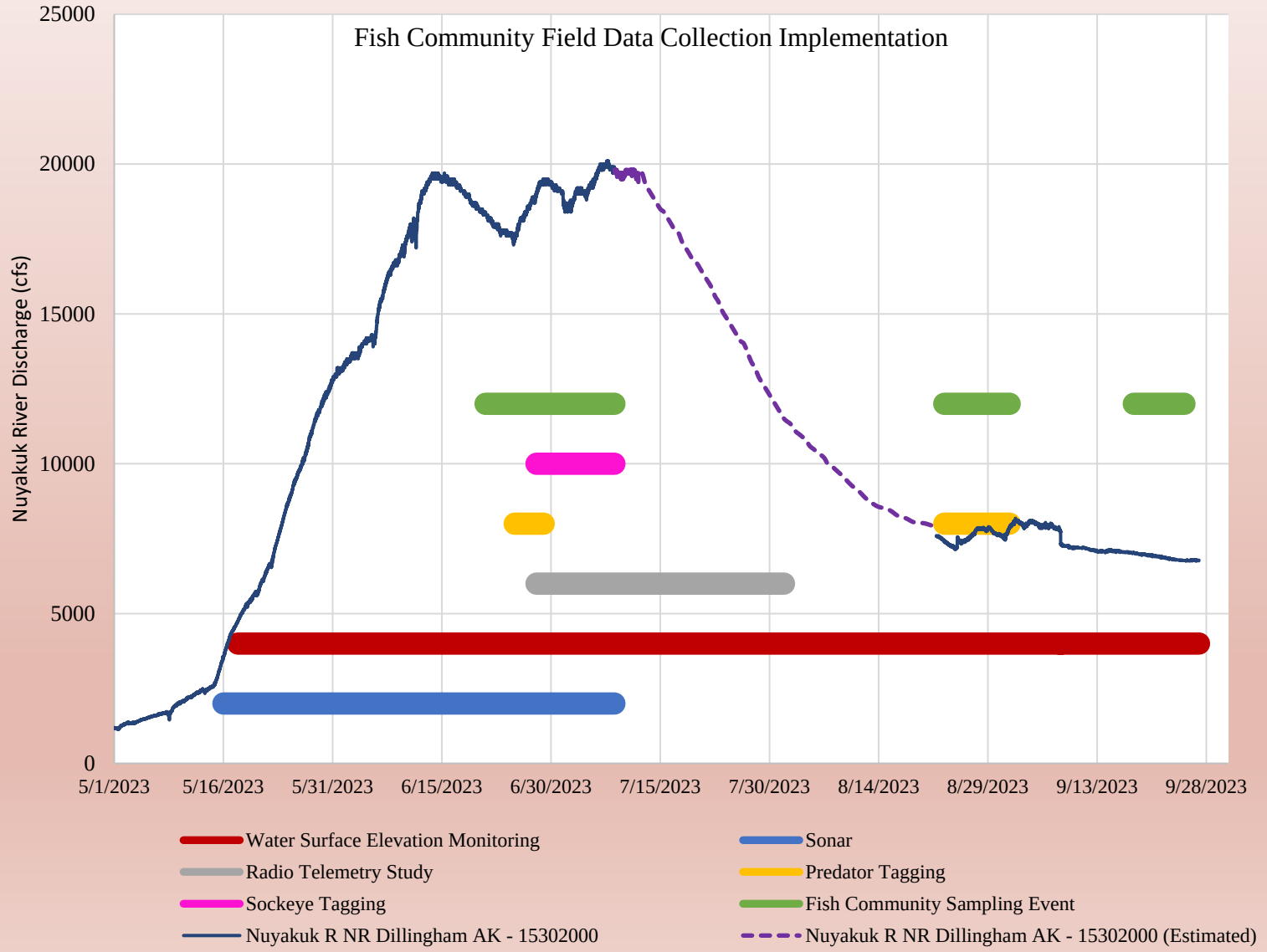
# FISH COMMUNITY AND BEHAVIOR NEAR THE PROJECT AREA

## Results

| Common Name | Species Name | Life Stage | Project Zone | Encounter Method | Observation Period |
|---|---|---|---|---|---|
| Chinook Salmon | *Oncorhynchus tshawytscha* | fry | 1 | SE, VO | June 15-July 16 |
| | | smolt | 1, 2, 3 | SE, VO | June 15-Aug 15 |
| | | adult | 2 | VO | July 2 |
| Sockeye Salmon | *Oncorhynchus nerka* | fry | 1, 2, 3 | SE, VO, MT | May 15-Sept 30 |
| | | smolt | 1, 2, 3 | SE, VO, MT | May 15-Sept 30 |
| | | adult | 1, 2, 3 | GN, AN, VO | June 15-Aug 30 |
| Grayling | *Thymallus thymallus* | adult | 1, 2, 3 | AN, VO | June 15-Aug 30 |
| | | juvenile | 1, 3 | VO | Aug 28-Sept 1 |
| | | smolt | 1 | SE | Aug 26 |
| Pink Salmon | *Oncorhynchus gorbuscha* | fry | 1, 3 | SE, VO | June 15-July 15 |
| Coho Salmon | *Oncorhynchus kisutch* | fry | 1, 3 | MT, SE | June 24 |
| | | smolt | 1, 3 | SE | June 25-Aug 15 |
| Arctic Lamprey | *Lampetra camtschatica* | smolt | 1 | MT | June 24 |
| Chum Salmon | *Oncorhynchus keta* | adult | 1 | VO | July 4 |
| Pike | *Esox lucius* | adult | 3 | VO | June 15-Sept 30 |
| | | juvenile | 1 | SE | Aug 26 |
| Humpback Whitefish | *Coregonus pidschian* | juvenile | 1 | SE | June 25 |
| Pygmy Whitefish | *Prosopium coulterii* | juvenile | 1, 3 | SE | June 30-Sept 30 |
| Burbot | *Lota coulter* | | 3 | MT | Aug 23 |
| Sculpin[3] | *Cottoidea* | juvenile | 1, 3 | SE | June 25 |
| | | adult | 1, 3 | MT | June 30-Sept 30 |
| Lake Trout | *Salvelinus namaycush* | adult | 2 | AN | Aug 25 |
| Rainbow Trout | *Oncorhynchus mykiss* | adult | 1, 2, 3 | AN | May 15-Sept 30 |
| 3 Spined Stickleback | *Gasterosteus aculeatus* | adult | 1, 2, 3 | SE | May 15-Sept 30 |
| 9 Spined Stickleback | *Pungitius pungitius* | adult | 1, 2, 3 | SE | May 15-Sept 30 |

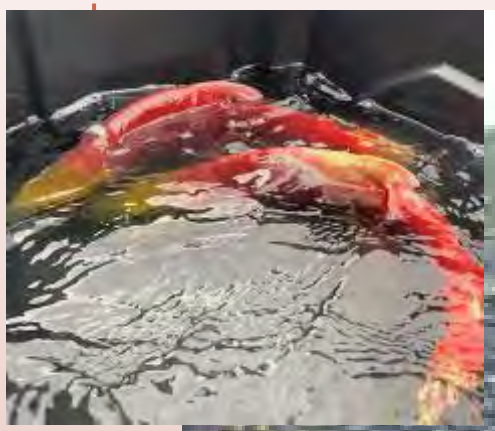
# FISH COMMUNITY AND BEHAVIOR NEAR THE PROJECT AREA

## Results



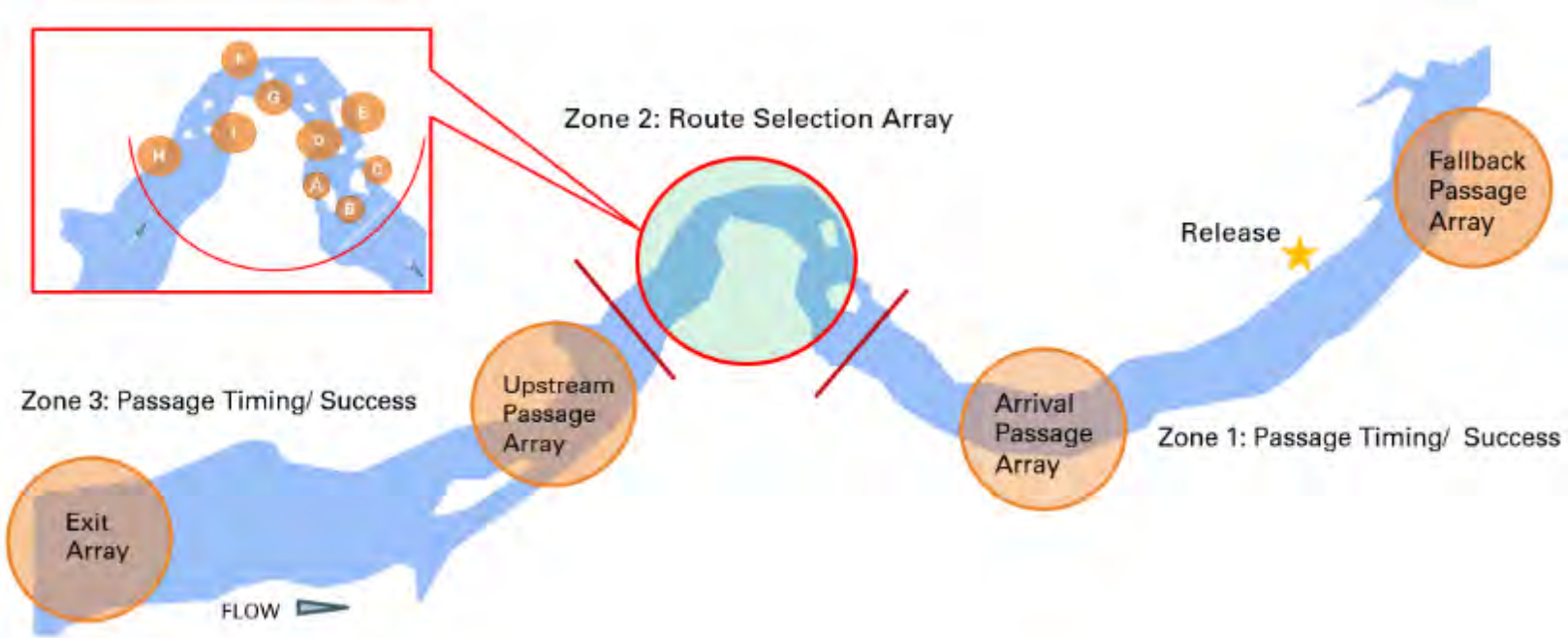
# FISH COMMUNITY AND BEHAVIOR NEAR THE PROJECT AREA


# FISH COMMUNITY AND BEHAVIOR NEAR THE PROJECT AREA



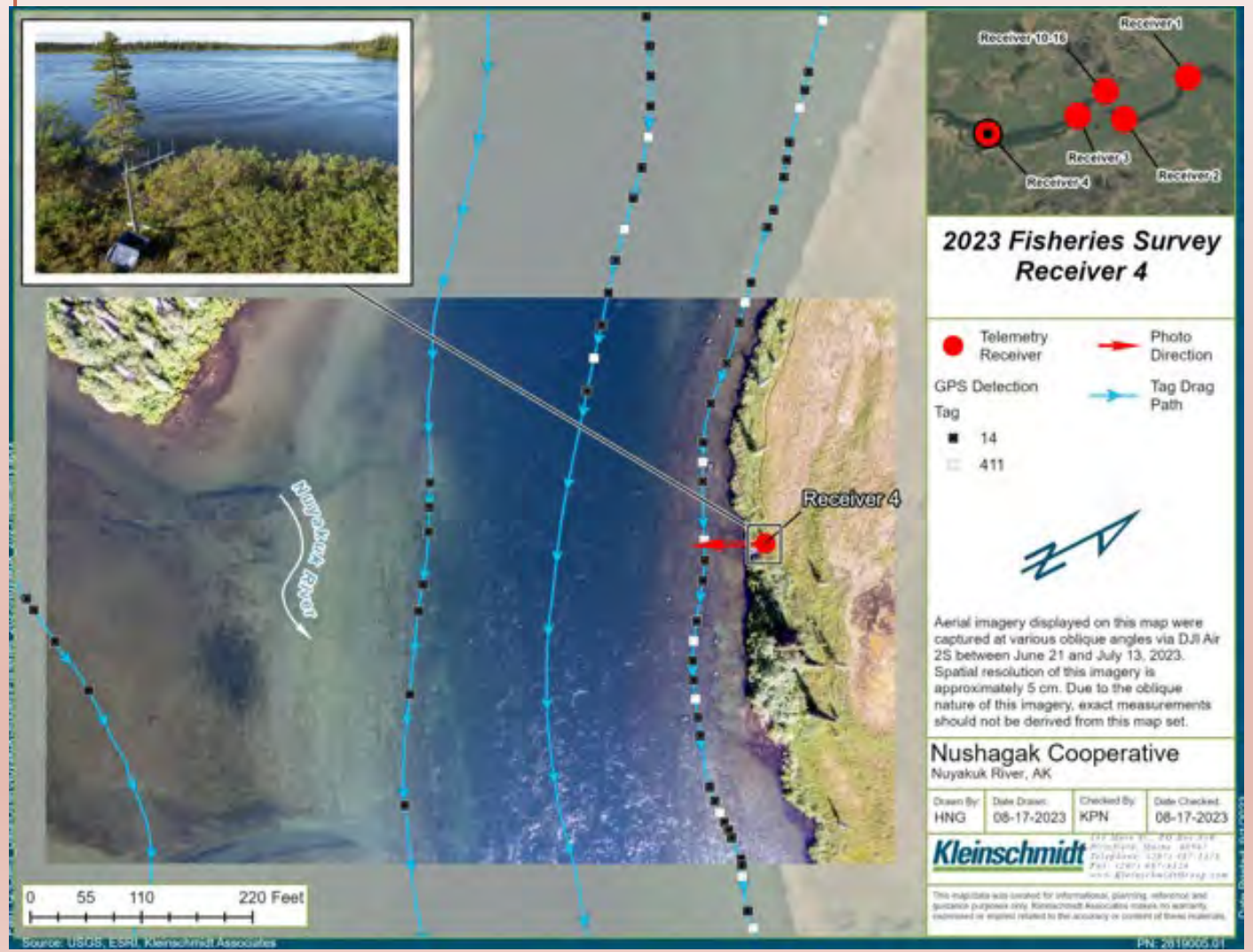
# FALLS FISH PASSAGE STUDY

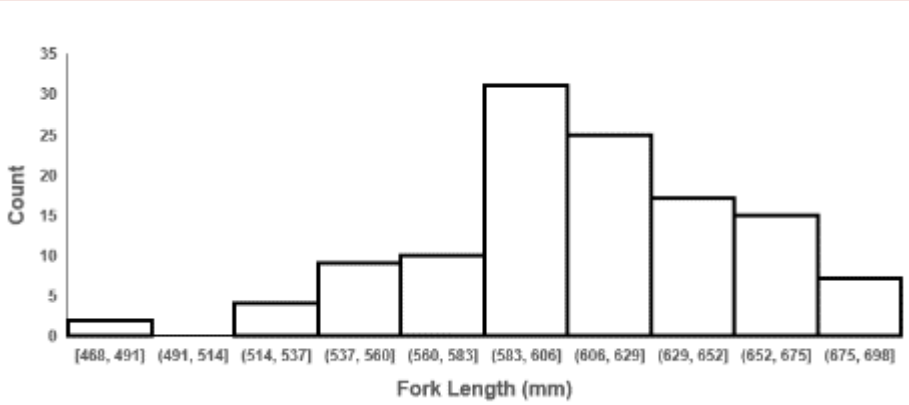
## Telemetry Field Methods




# FALLS FISH PASSAGE STUDY

## Telemetry Field Results




Preliminary results indicate that 96% of Sockeye tagged in Zone 1 successfully passed through the Falls Reach in Zone 2 and exited the study area past receivers located in Zone 3.

Preliminary results indicate that passage rate through the Falls Reach was related to flow.

# FALLS FISH PASSAGE STUDY

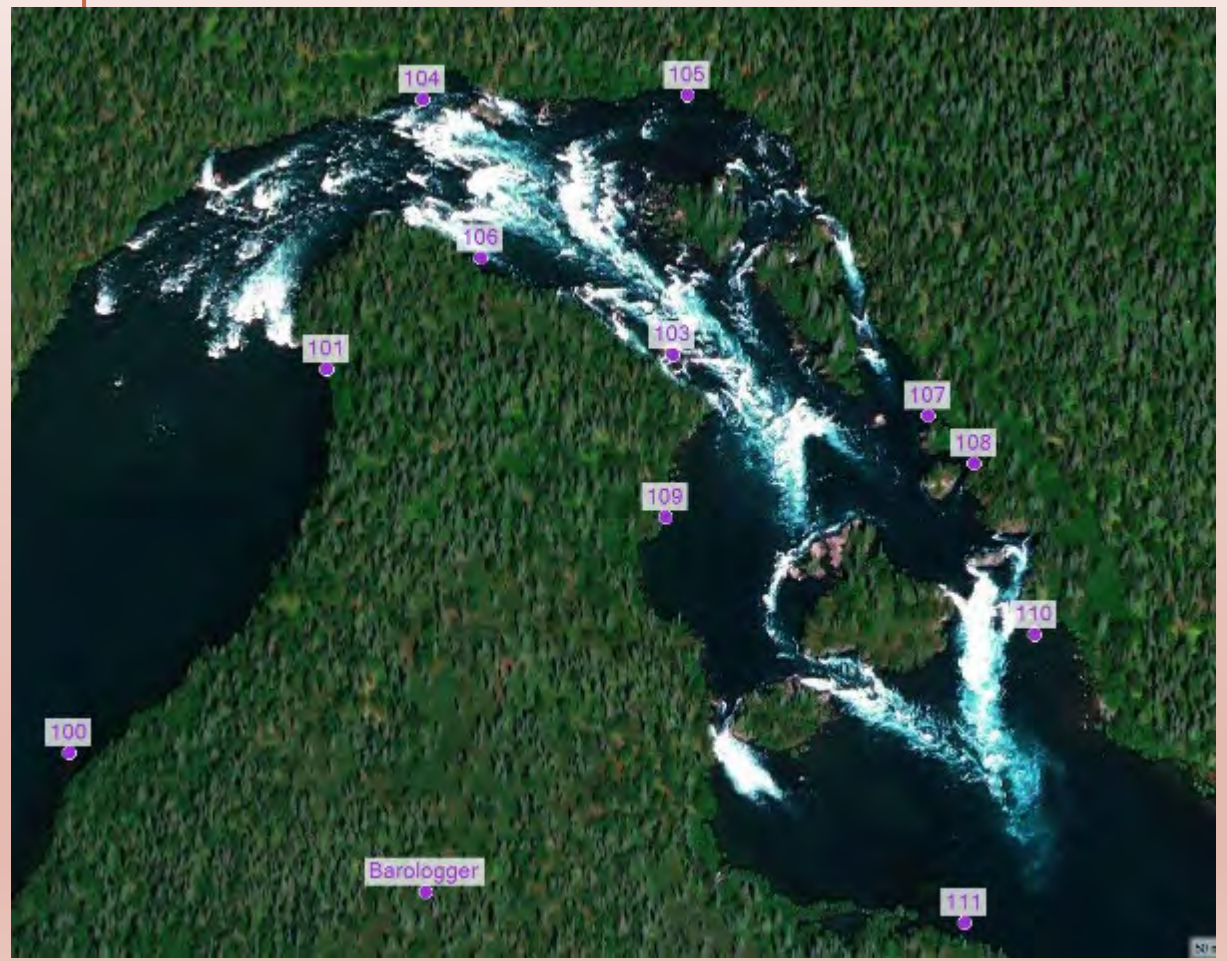
## 2D Hydraulic [Habitat] Modeling Methods

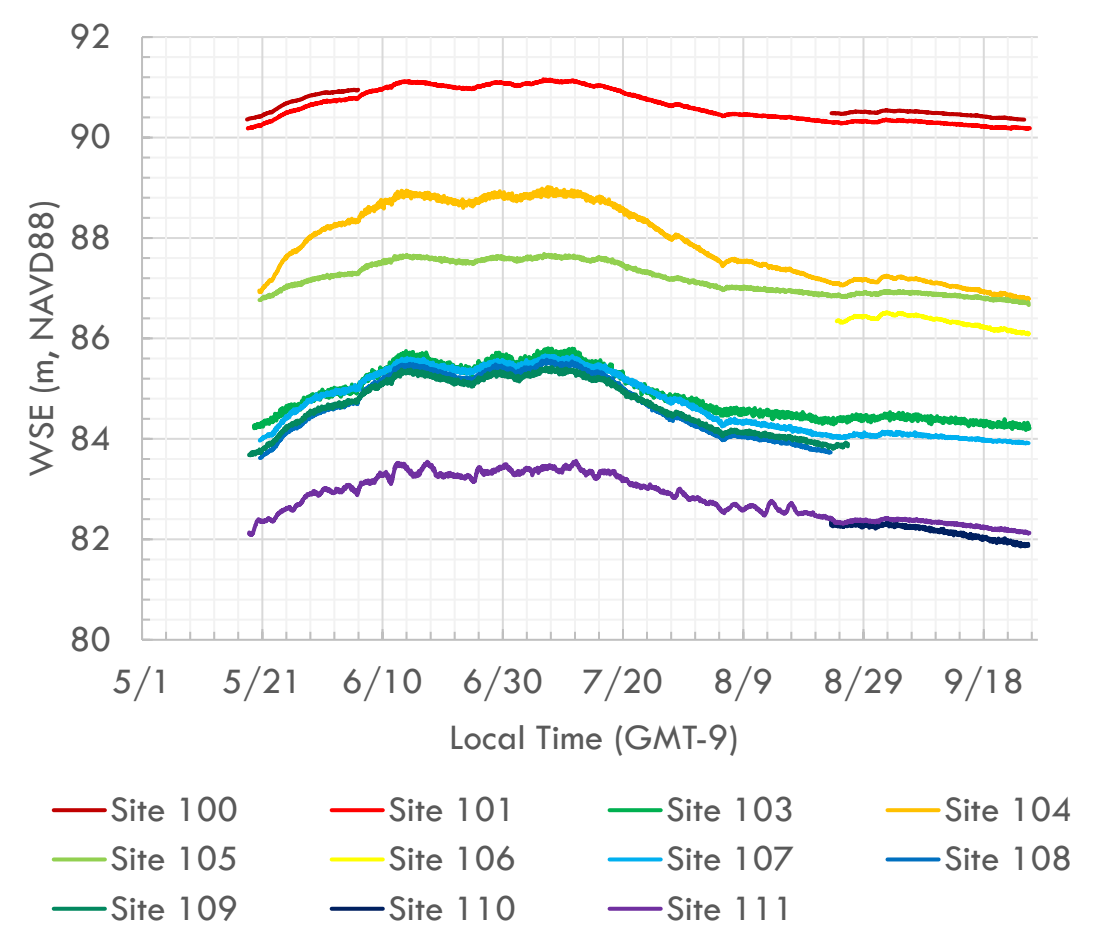
Methods: Fish passage habitat model

- 1. Establish boundary conditions
- 2. Update fish species periodicity
- 3. Construct 2 dimensional model
    - Feld data on flow, stage-discharge relationship, and water surface elevation
    - Develop a rating curve
    - Incorporate LiDAR

# FALLS FISH PASSAGE STUDY

## Preliminary 2D Hydraulic [Habitat] Modeling Results



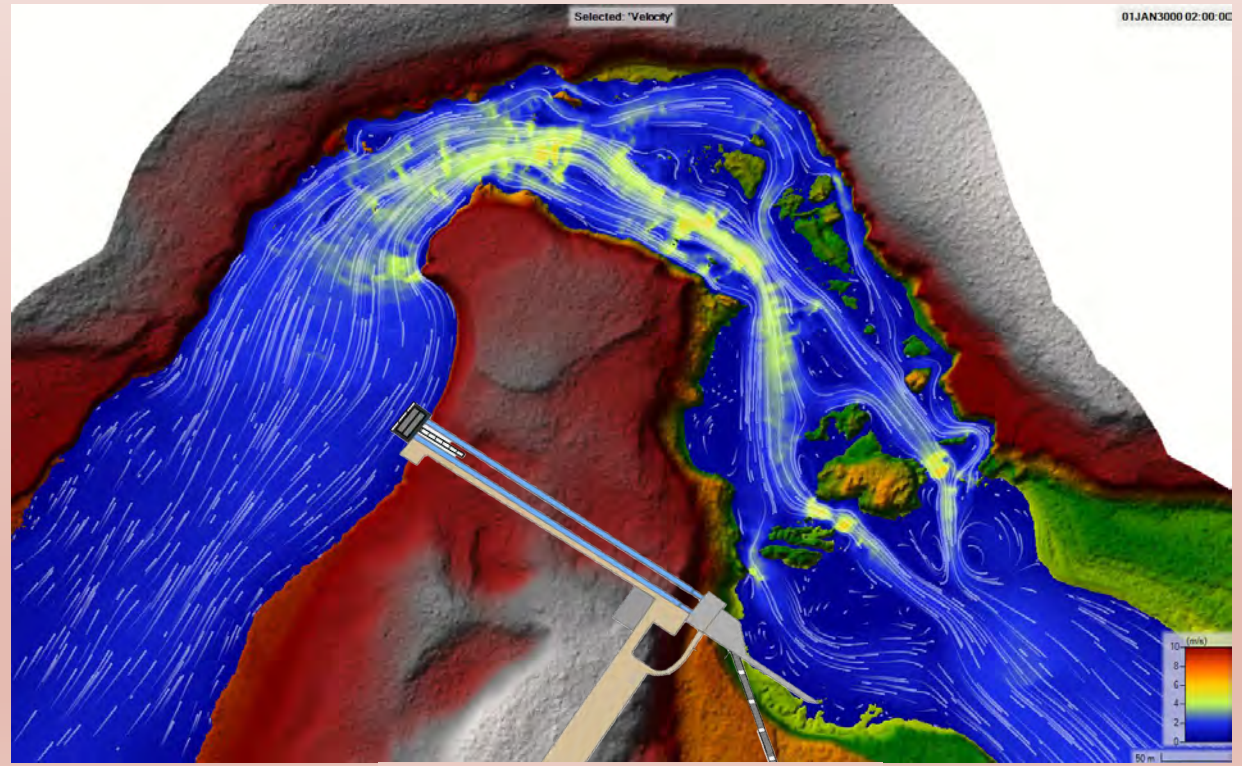




Water surface elevation calibration field data collection results

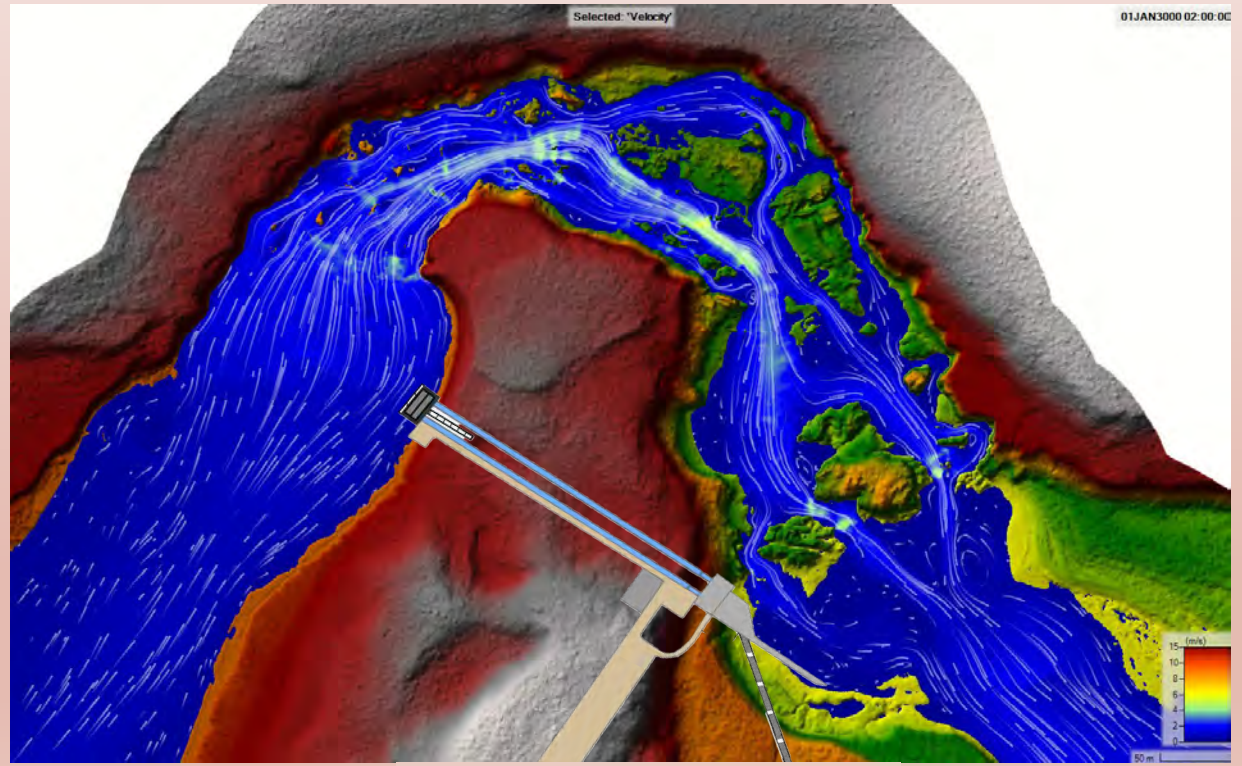
# FALLS FISH PASSAGE STUDY

## Preliminary 2D Hydraulic [Habitat] Modeling Results

HIGH FLOW




LOW FLOW



# FALLS FISH PASSAGE STUDY

## ABM Modeling Methods

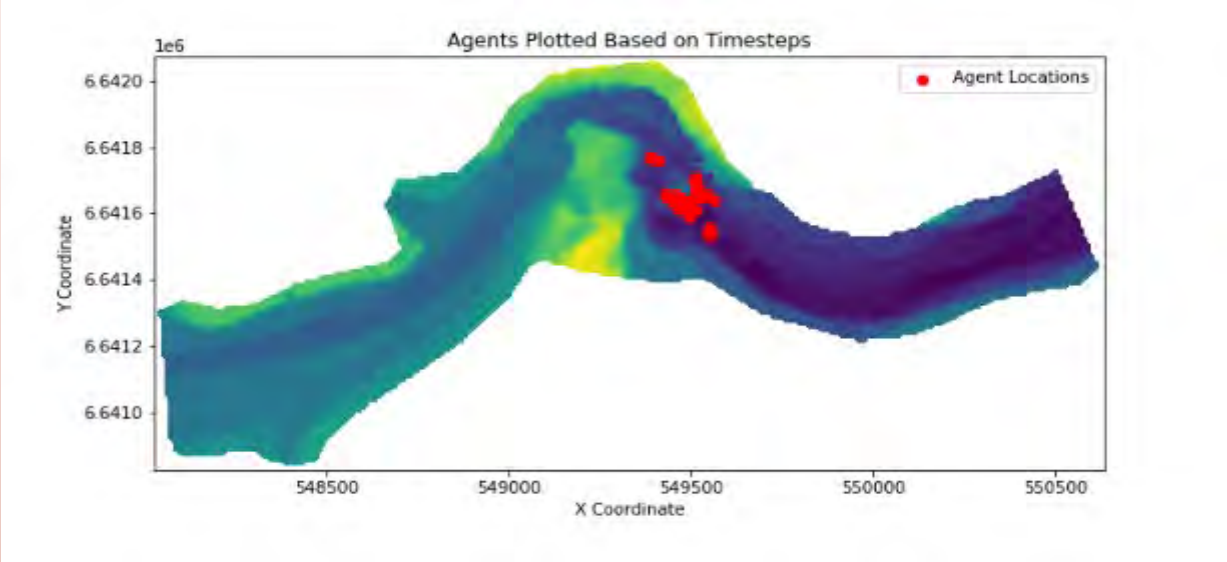
- Developed ELAM-type Agent-Based-Model to understand Sockeye Salmon passage over cascade reach
  - Written in Python 3.9.x and licensed open source
  - Incorporates models and parameters from literature with preference given to species specific and regional citations
  - Goal is to validate model with telemetry data and expert opinion

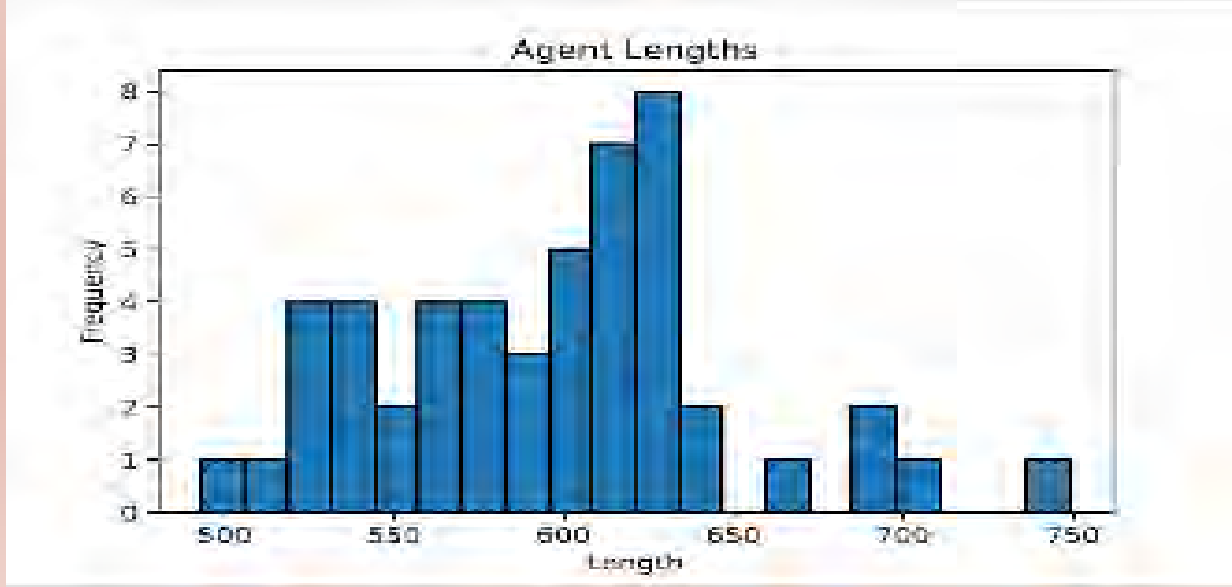
# FALLS FISH PASSAGE STUDY

## ABM Modeling Results

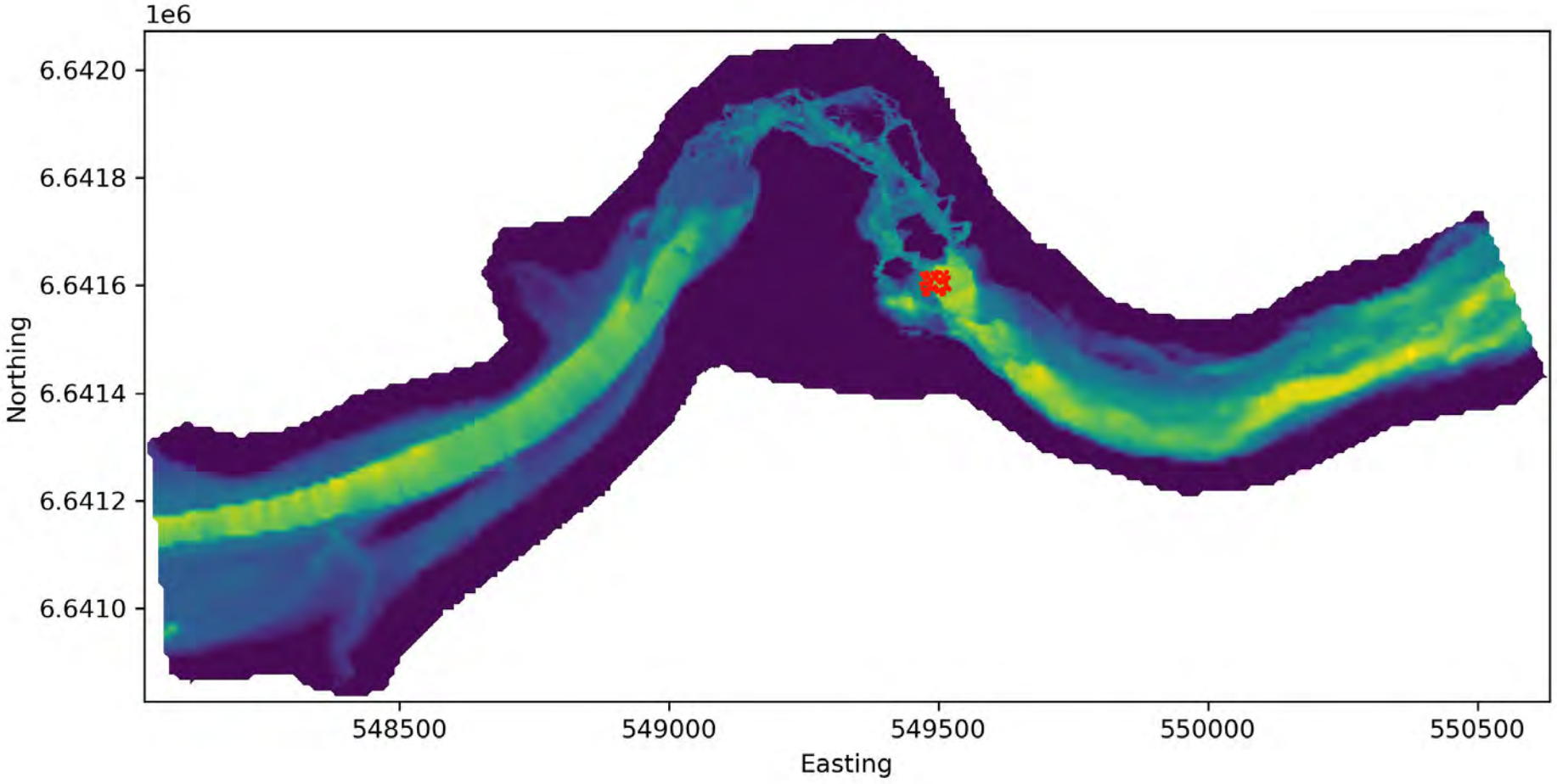
- Proof of concept complete, however too slow for models with sufficient number of agents. (unit tests complete)
- Refactoring to Structure-of-Arrays architecture to support vectorized operations and potentially GPU processing (unit tests and debugging ongoing)
- Summary functions complete, able to:
  - Calculate passage success, survival, rates
  - Identify passage routes
  - Identify areas of refuge, etc.
- On going:
  - Debugging & QC identified need for PID controller to modulate thrust
  - Validation pushed back to Q1 ’24

# FALLS FISH PASSAGE STUDY



# FALLS FISH PASSAGE STUDY



# ENTRAINMENT AND IMPINGEMENT STUDY

## Methods

1. Conduct a literature review of hydroelectric diversion projects to inform the risk of and ability to avoid fish injury and mortality.
2. Use 2D model output to evaluate approach velocities at the intake and flowlines resulting from groin alternatives.
3. Conduct an analysis of potential injury and mortality that may be associated with entrainment or impingement at the Project or passage through the Falls under altered flow conditions.

This study will make use of Year 1 (2023) study results from Fish Community and Fish Passage studies including operational and bypass flow projections, fish distributions, and the updated fish periodicity

# ENTRAINMENT AND IMPINGEMENT STUDY

## Results

- As this study relies on results from Year 1 studies, only literature review has been initiated and there are no results to present at this time.

# TAILRACE FALSE ATTRACTION EVALUATION

## Methods

Study steps.

1. Conduct a review of available information on existing tailrace designs to minimize potential for false attraction.
2. Conduct a brainstorming session with the ARWG to select 2 or 3 conceptual design alternatives.
3. Use the 2D flow model to evaluate feasibility and compare alternatives.
4. Conduct the preliminary design of tailrace exclusion refinements as needed after alternative analysis.

➢This study will make use of Year 1 (2023) study results from Fish Community and Fish Passage studies including operational and bypass flow projections, fish distributions, and the updated fish periodicity.

# TAILRACE FALSE ATTRACTION EVALUATION

## Results

- As this study relies on results from Year 1 studies, there are no results to present at this time.

# CHINOOK AND SOCKEYE LIFE CYCLE MODELING

## Methods

- 2023
  - Collaboration with the ARWG on key inputs and necessary results
  - Literature review
  - Data assessments from other regional systems
  - Development of “straw man” LCM for refinement during the remainder of the study and feasibility period, based on site-specific fisheries data collection

# CHINOOK AND SOCKEYE LIFE CYCLE MODELING

## Results

- Straw man constructed
- Current version of the model
  - Reviews and summary of existing data from other sources
    - Chignik
    - Afognak
    - Kvichak
  - Harvest of returning salmon
  - Escapement estimates
  - 30-year outlook currently, but will be modified to reflect longer time periods as site-specific data is input and analysis are conducted in 2024
  - Placeholders for the data collected this year and 2024

# CHINOOK AND SOCKEYE LIFE CYCLE MODELING

## Next Steps

- Per the RSP and based on the utilization of site-specific fisheries data collected in 2023 and 2024
  - Further data acquisition and input into model
  - Continued model calibration
  - Development of expected Project effects
  - Incorporate future climate and water flow scenarios
  - Evaluate Project effects

# INTEGRATED RISK ASSESSMENT OF FISH POPULATIONS

## Methods

- IRA proposed to evaluate potential project impacts to fisheries resources at the fish population/community level
- Intent is to integrate accumulated knowledge and anecdotal observations from regional experts to members of the community
- At the very least the framework accounts for uncertainty by estimating the likelihood and magnitude of risks
- Final analytical framework determined from management objectives – hierarchical, system impacts, etc.

# INTEGRATED RISK ASSESSMENT OF FISH POPULATIONS

## Results

- Put forth a strawman list of management objectives, risk sources, their elements, and receptors (species at risk).
- Put forth an example risk calculation spreadsheet for a single receptor with example risk matrix
- Management objective workshop (December 06, 2023)
  - Identify management objectives, and possibly receptors and stressors
- From this workshop, develop an objective function (optimization), and advise on an analytical approach

# INTEGRATED RISK ASSESSMENT OF FISH POPULATIONS

## Results

| Risk Source: | | | |
|---|---|---|---|
| | | | Cor |
| | Passage Efficiency Objective (1) | | |
| | Objective Scores | | -13 |
| **Risk Element** | **Magnitude** | **Likelihood of Occurrence** | **Risk Score** |
| False attraction | Minor Negative | Likely | -4 |
| Quantity of Suitable Upstream Passage Habitat | Minor Negative | Likely | -4 |
| Quality of Suitable Upstream Passage Habitat | Major Positive | Likely | 8 |
| Change in relative abundance of spawners upstream of the project | Major Negative | Possible | -6 |
| Change in adult delayed mortality through the project | Minor Negative | Possible | -3 |
| Quantity of Suitable Downstream Passage Habitat | Minor Negative | Likely | -4 |

**Risk Matrix**

| | | Maintain a similar or better upstream and downstream passage efficiency (survival, success, time to passage) for returning adult Sockeye salmon and out-migrating juvenile Sockeye. Nexus 1,4. | Maintain a similar or better quantity and quality of upstream migratory, downstream migratory, and juvenile rearing, and spawning habitat for sockeye. Nexus 1,2,3,4. |
|---|---|---|---|
| **Risk Sources** | Construction and Operation of a hydroelectric project | -13 | -4 |
| | Fishing Pressure (Recreational and Commercial) | 0 | 0 |
| | Climate Change - direct and indirect effects | 0 | 0 |

Note: the classifications made of magnitude and likelihood of occurrence are for illustrative purposes only and are intended to demonstrate how the end user can update classifications and how their choices affect the risk matrix.

# QUESTIONS?

# WATER RESOURCES

# DISSOLVED OXYGEN AND WATER TEMPERATURE

## Study Goals and Objectives

- Collect baseline, continuous dissolved oxygen(DO) data during periods of peak water temperatures (July – August) for a minimum of 72 hours. Determine if DO concentrations are substantially different above and below Nuyakuk Falls.
- Collect baseline, continuous water temperature data for a minimum of one calendar year (January – December).
- Compare the study results to DO and water temperature criteria established by the Alaska Department of Environmental Conservation (ADEC).

## Methods

- Deployed calibrated U26-001 DO and U22-001 ProV2 water temperature loggers above and below Nuyakuk Falls.
- DO calibration and field procedures followed manufacturers specifications while water temperature loggers adhered to techniques described in Ward (2011).

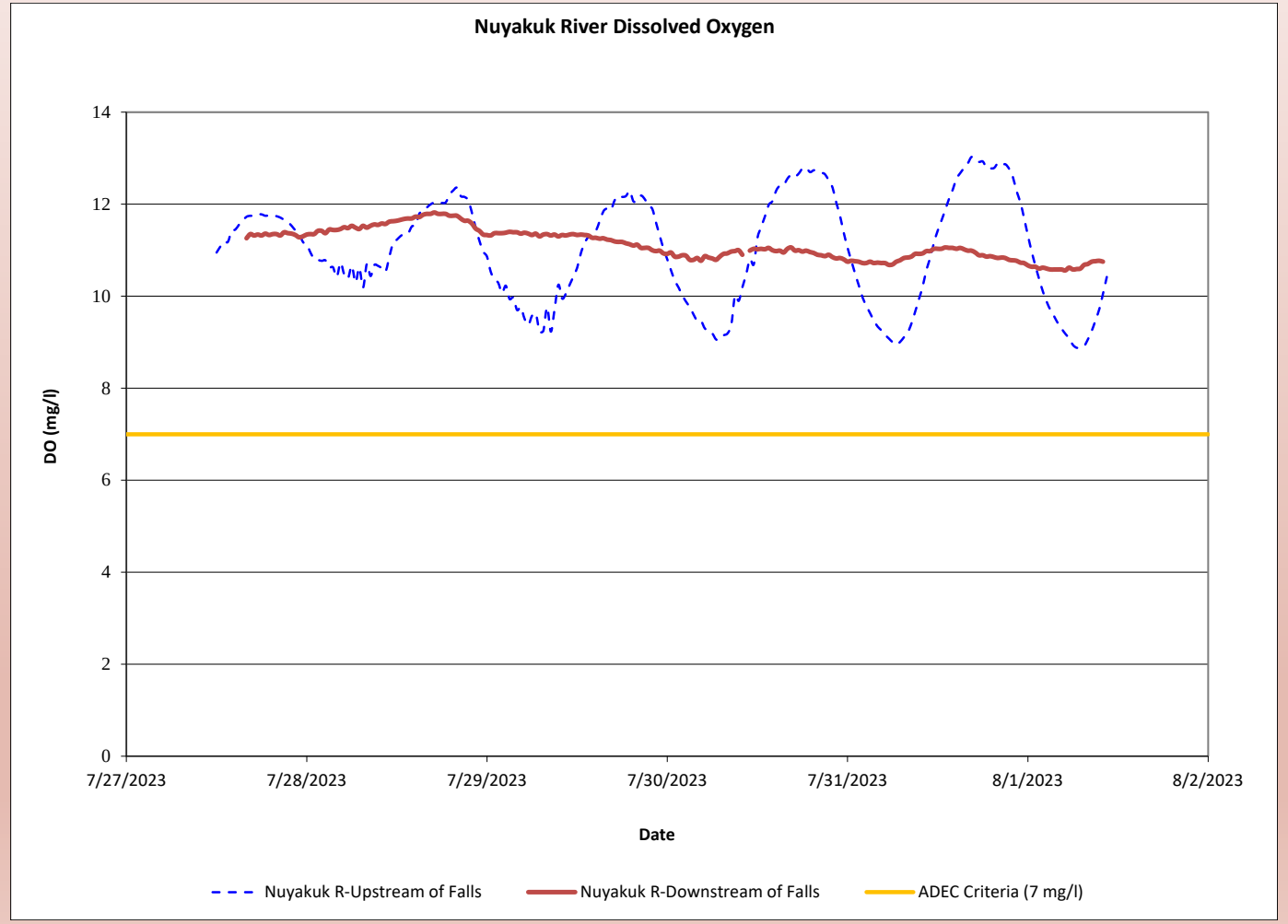
# DISSOLVED OXYGEN AND WATER TEMPERATURE

## Results – Dissolved Oxygen

ADEC criteria for water use category (C)*

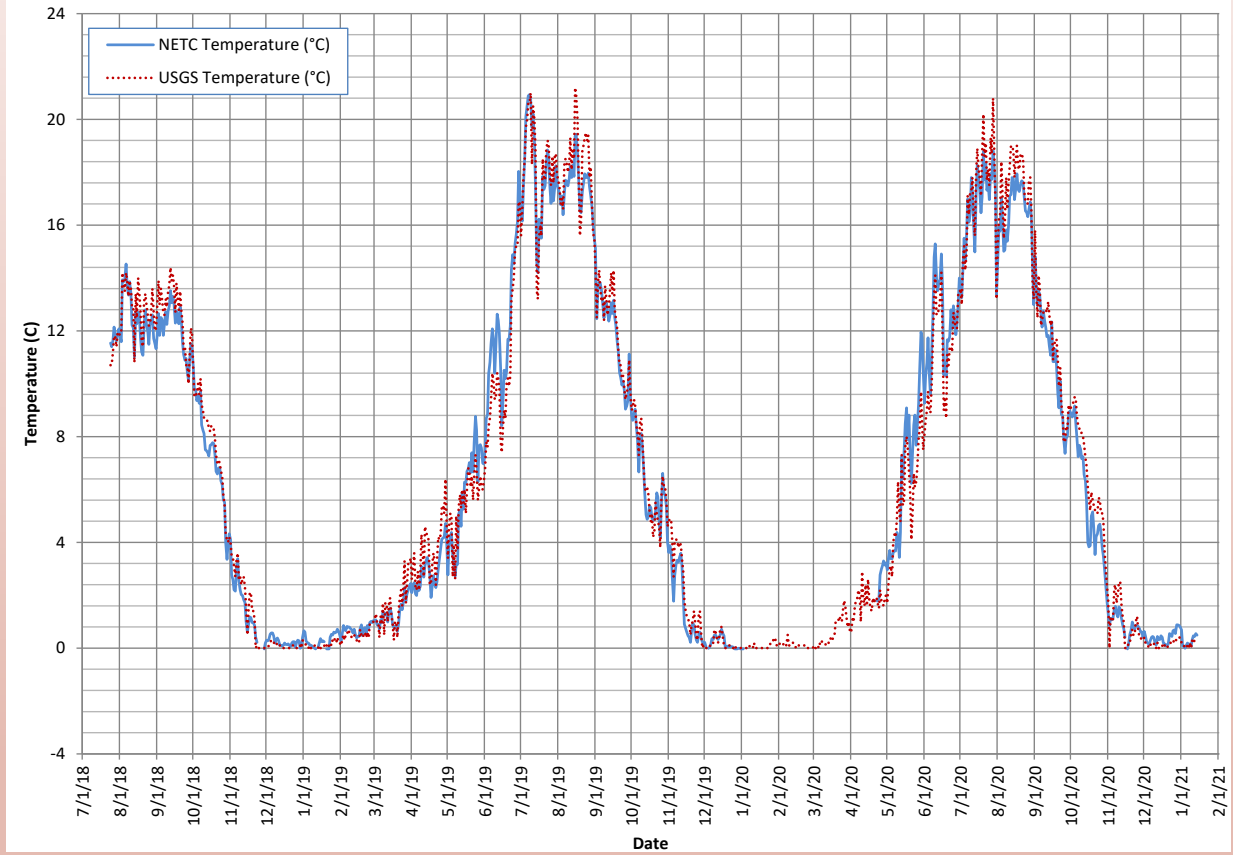
| Parameter | Criteria |
|---|---|
| **Dissolved Oxygen** | greater than 7 mg/l |
| **Temperature** | May not exceed 20°C at any time. The following maximum temperatures may not be exceeded, where applicable:<br>Migration routes 15°C<br>Spawning areas 13°C<br>Rearing areas 15°C<br>Egg & fry incubation 13°C |

**growth and propagation of fish, shellfish, other aquatic life and wildlife.*

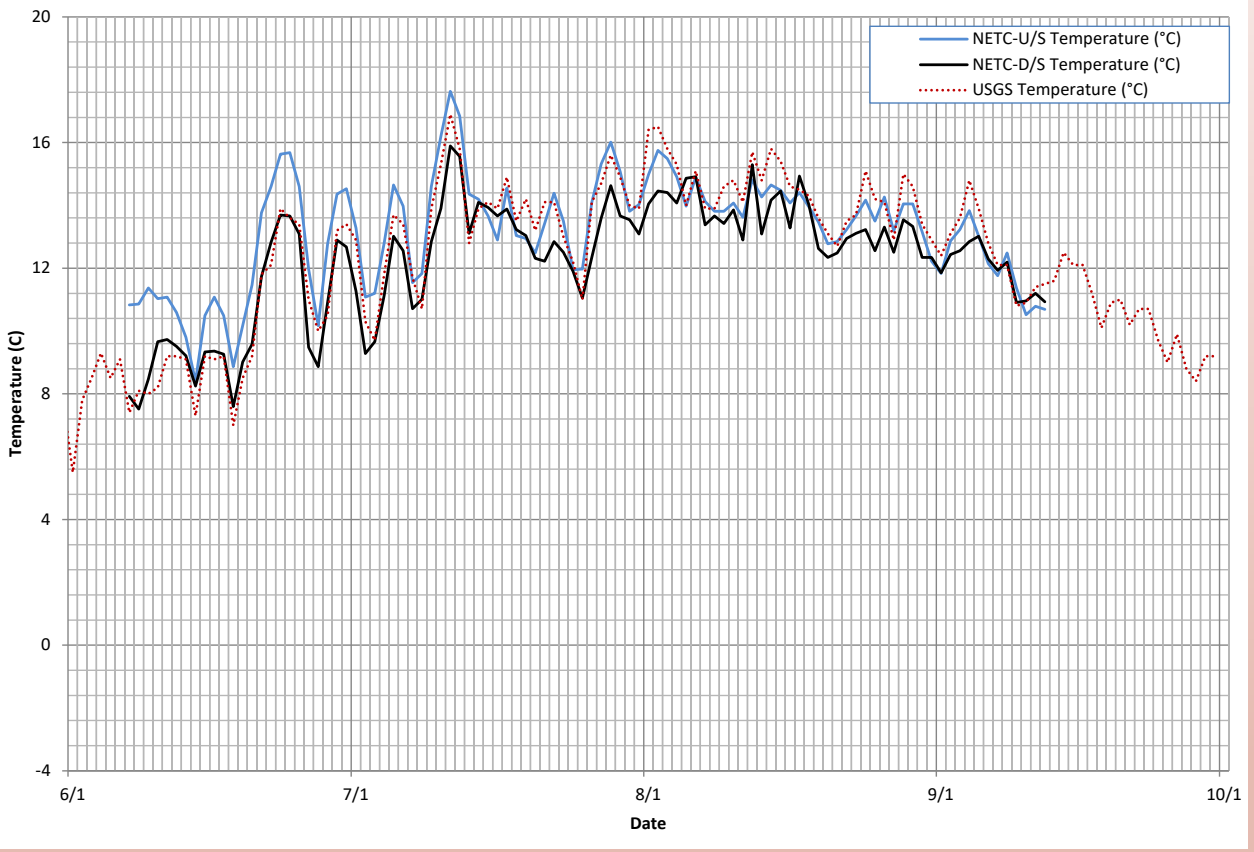


# DISSOLVED OXYGEN AND WATER TEMPERATURE

## Results-Water Temperature




**Nuyakuk River Daily Maximum Water Temperatures (July 24, 2018 – January 4, 2021)**




**Nuyakuk River Daily Maximum Water Temperatures (June 1 – September 30, 2022)**

# DISSOLVED OXYGEN AND WATER TEMPERATURE

## Year 1 Study Summary

- DO concentrations met ADEC criteria of 7 mg/L.
- Intra-daily DO levels fluctuated upstream of the Falls but mean daily DO concentrations were nearly identical above and below Nuyakuk Falls.
- Water temperatures met the 20°C daily maximum criteria in 2018 and 2022
- One exceedance of 20°C was noted in 2019 from July 5-11.

## Year 2 Study Efforts

- At the request of Alaska Department of Fish and Game, continuous DO monitoring for 3-5 days will occur a during period when large schools of sockeye are staging at base of Nuyakuk Falls (typically late June to mid-July).
- Continue water temperature monitoring through the fall of 2024.

# FLOW DURATION CURVE/STATIONARITY ASSESSMENT

## Study Goals and Objectives

- Evaluate changes in the flow duration curve for the Nuyakuk River that have happened during the United States Geological Survey (USGS) gage 15302000 record which spans 70 years (1953-2023).
- Develop a discharge record at the Project site so that all flow duration curves, as well as additional hydrologic and hydraulic data assessments (e.g., 2-D model) are based on accurate flow volumes.

## Methods

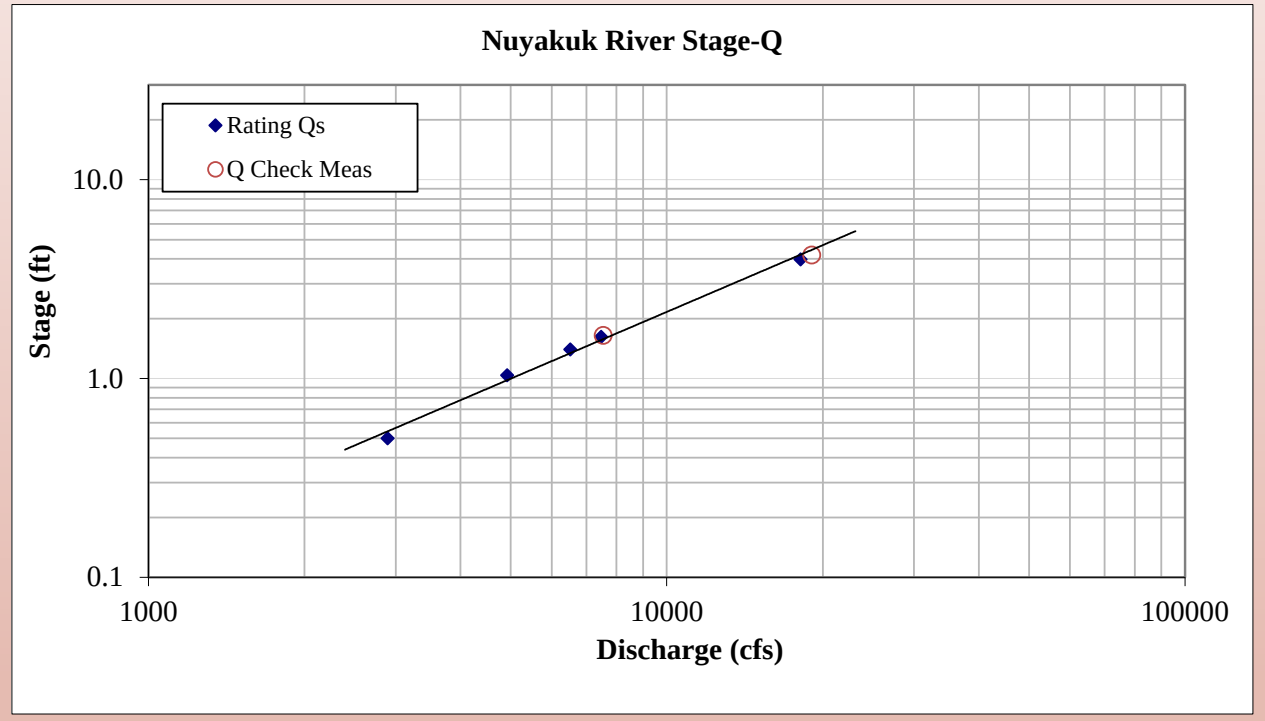
- Installed, maintained, and calibrated a stream gage utilizing standard USGS stream gaging techniques (Rantz, et al, 1982).

# FLOW DURATION CURVE/STATIONARITY ASSESSMENT

## Results

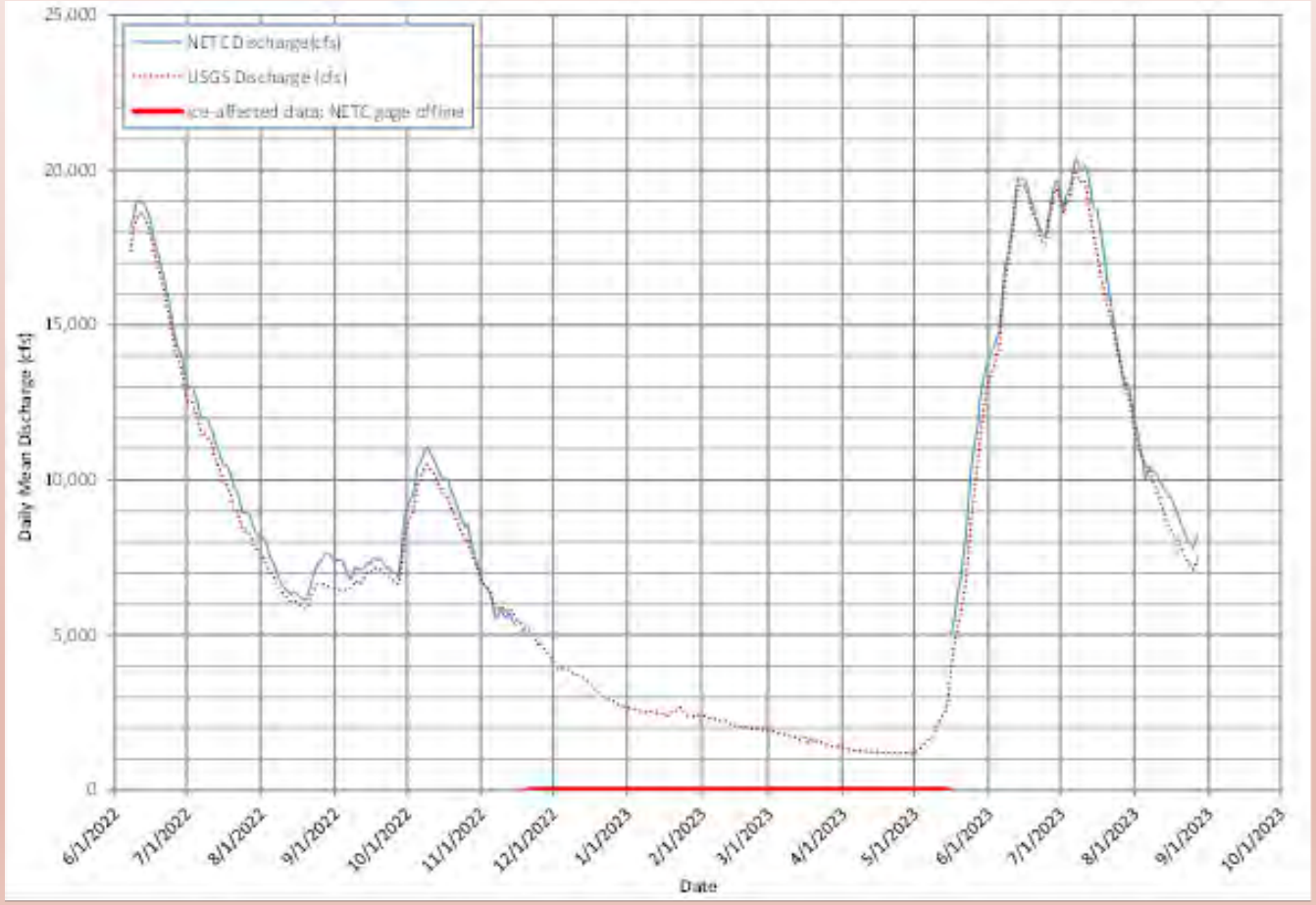
Discharge Summary Table at the Nuyakuk River Project Site.

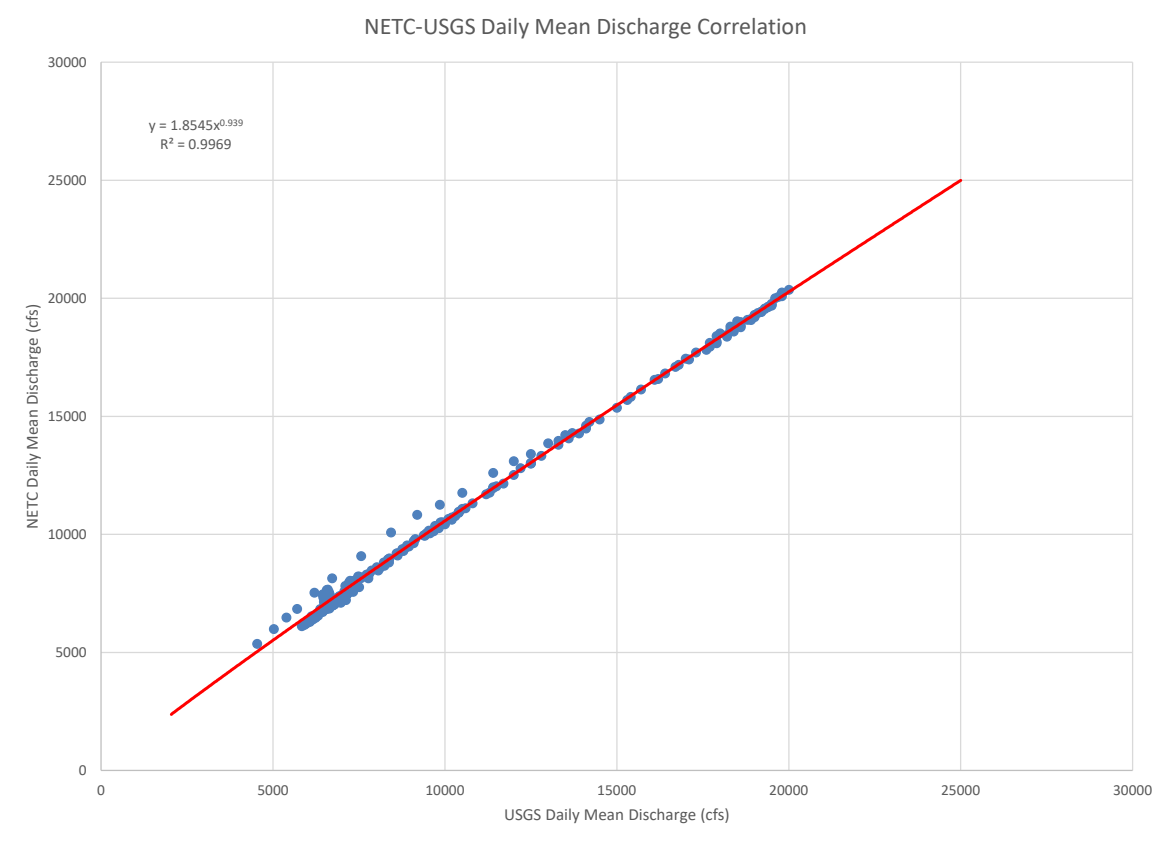
| Meas. No. | Date | Stage (ft) | Measured Discharge (cfs) | Rated Discharge (cfs) | Percent Difference |
|---|---|---|---|---|---|
| 1 | 5/12/2023 | 0.50 | 2,893 | 2,882 | 0.4% |
| 2 | 5/16/2023 | 1.04 | 4,921 | 4,997 | -1.5% |
| 3 | 5/19/2023 | 1.40 | 6,510 | 6,480 | 0.5% |
| 4 | 5/21/2023 | 1.62 | 7,476 | 7,410 | 0.9% |
| 5 | 6/21/2023 | 3.98 | 18,124 | 18,160 | -0.2% |
| 6 | 7/3/2023 | 4.19 | 19,041 | 19,169 | -0.7% |
| 7 | 8/24/2023 | 1.65 | 7,537 | 7,538 | 0.0% |
| Rating 1: Flow = 3338.63*(Stage + 0.38)^1.1502 (based on meas. No. 1-5) | | | | | |



# FLOW DURATION CURVE/STATIONARITY ASSESSMENT

## Results



# FLOW DURATION CURVE/STATIONARITY ASSESSMENT

## Year 1 Study Summary

- The installation of a stream gage at the Project site in June of 2022 was successful, providing an excellent correlation to USGS gaging station 15302000 during periods of ice-free operation (R2 of 0.9969).
- Accretion (i.e., flow increases) from the USGS station downstream to the Project ranged from 97.1 cfs to 1650 cfs with an average of 509 cfs.

## Year 2 Study Efforts

- Continued operation of the Project site stream gage to develop a winter discharge record and build on the ice-free dataset.
- Run the non-stationarity detection tool with the model provided by the United States Army Corps of Engineers (Version 1.1, January 2016)
- Provide flow duration curve summaries based non-stationarity outputs (i.e. periods of similar hydrologic data)

# FUTURE FLOWS STUDY

## Study Objectives

- Evaluate changes in hydrology in the Nuyakuk watershed under future climate conditions
  - Snow accumulation and melt
  - Magnitude and timing of hydrograph peak
  - Changes in monthly flows and flow duration

- Provide data to inform Nuyakuk Falls Hydropower evaluation
  - Implications for fish habitat
  - Implications for hydropower generation

# FUTURE FLOWS STUDY

## Methods

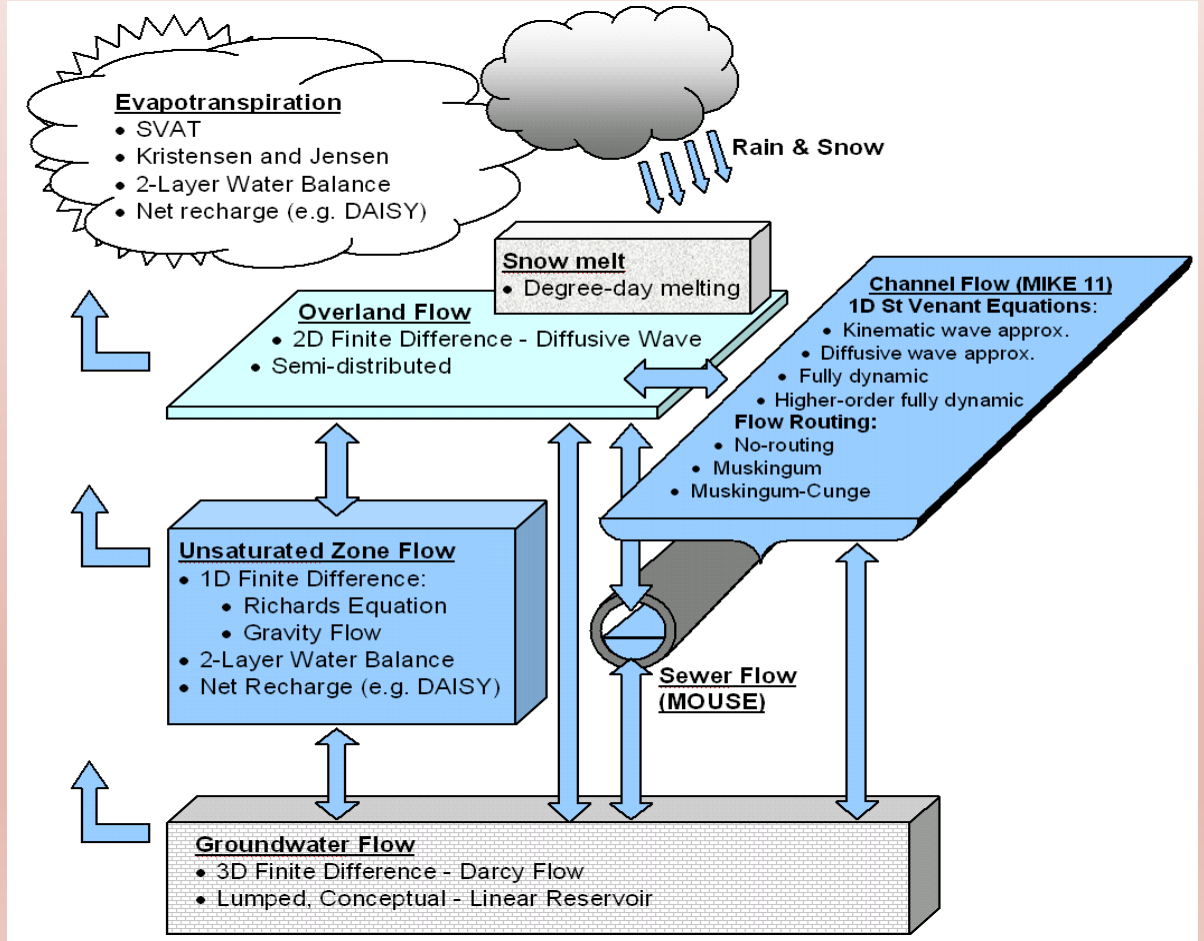
- Use of appropriate components from the GCM dataset
  - Made as site-specific as possible

- Hydrologic Modeling
  - MIKE/SHE model utilized
  - Compatibility
    - BBNC and BBRSD funded a Nushagak watershed model using the MIKE/SHE system

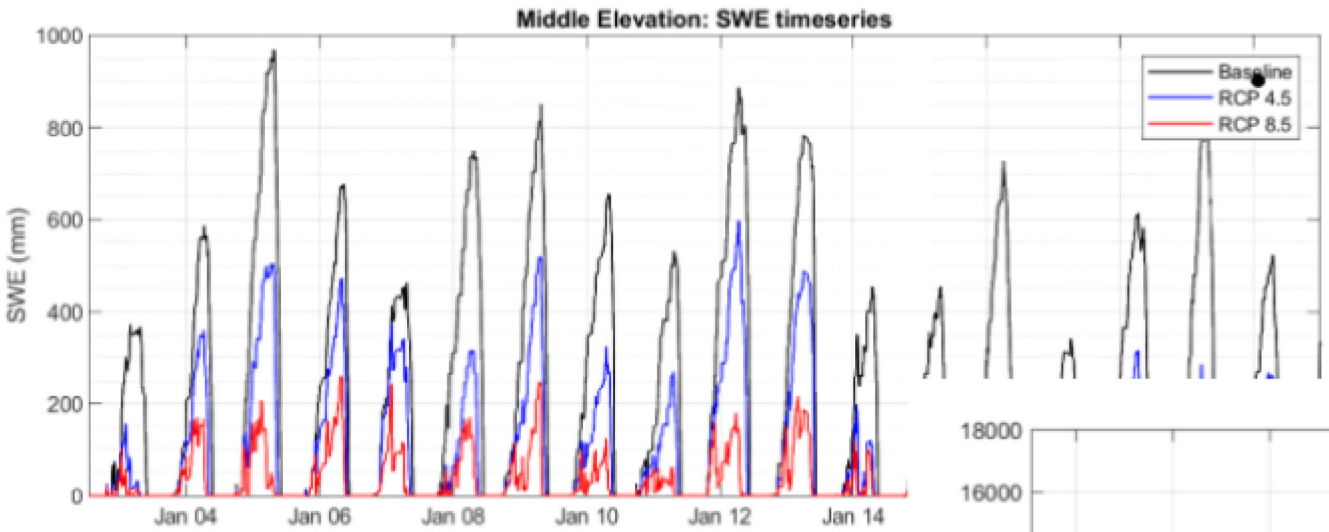
- Technical Memo
  - Summarizing potential climate change effects in the Project area
  - Potential impacts to long-term Project operational capabilities
  - Incorporated into the USR and the overall Project feasibility assessment

# FUTURE FLOWS STUDY
# (MODEL: MIKESHE/MIKE HYDRO)

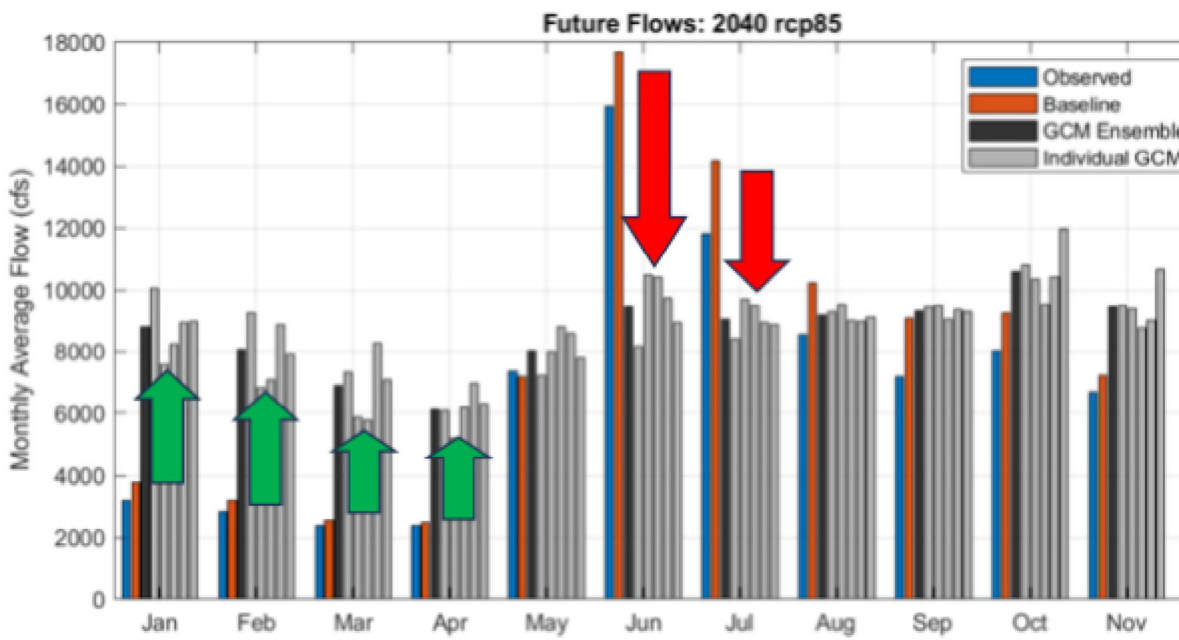
- Flexible, integrated surface water-groundwater model
- Groundwater flow – similar to MODFLOW.
- FEMA-approved surface water hydraulic model (MIKE Hydro)
- Choice of spatial and temporal scales (depends on processes)
- Simple to complex solution options



# Initial Results – Snow and Flow




Projected warming REDUCE winter snowpack since more storms now fall as rain…




…leading to INCREASED winter flows and DECREASED summer runoff

# FUTURE FLOWS STUDY

## Next Steps

- Site-specific results from relevant hydrologic studies in 2023 and 2024 will be utilized
- Run natural future flow scenarios
- Run project-related future flow scenarios
- Comprehensive results and climate change impact assessments will be provided in the USR

# ICE PROCESSES ASSESSMENT

## Study Goals and Objectives

- Desktop assessments of satellite imagery to evaluate historical icing conditions near the proposed Project intake.
- Information gathering from nearby hydroelectric projects (e.g., Tazimina Falls Project P-11316) on how they mitigate for icing conditions that could impact operations and infrastructure.
- Collect site-specific imagery near the proposed intake to assess frazil ice formation and ice breakup conditions.

## Year 1 Study Summary

- Deployed cameras in 2022 failed to log photos over the winter.
- Preliminary meetings with George Hornberger, General Manager of the Iliamna Newhalen Nondalton Electric Cooperative (INNEC) occurred on October 23, 2023. INNEC owns and operates the Tazimina Falls Project.

# ICE PROCESSES ASSESSMENT

## Year 2 Study Efforts

- Updated and re-deployed cameras in the fall of 2023 at two locations viewing the Project intake.
- Additional meetings with INNEC to discuss design options and operational techniques to operate over the winter during intermittent icing events.
- Summarize and log historical satellite imagery available from https://www.sentinel-hub.com/ (example image provided below).
- All study efforts to be summarized and presented in the USR (December of 2024).


**Satellite Imagery of Nuyakuk River Falls on April 18, 2023**


2016/12/21


2018/03/19

# QUESTIONS?

# TERRESTRIAL

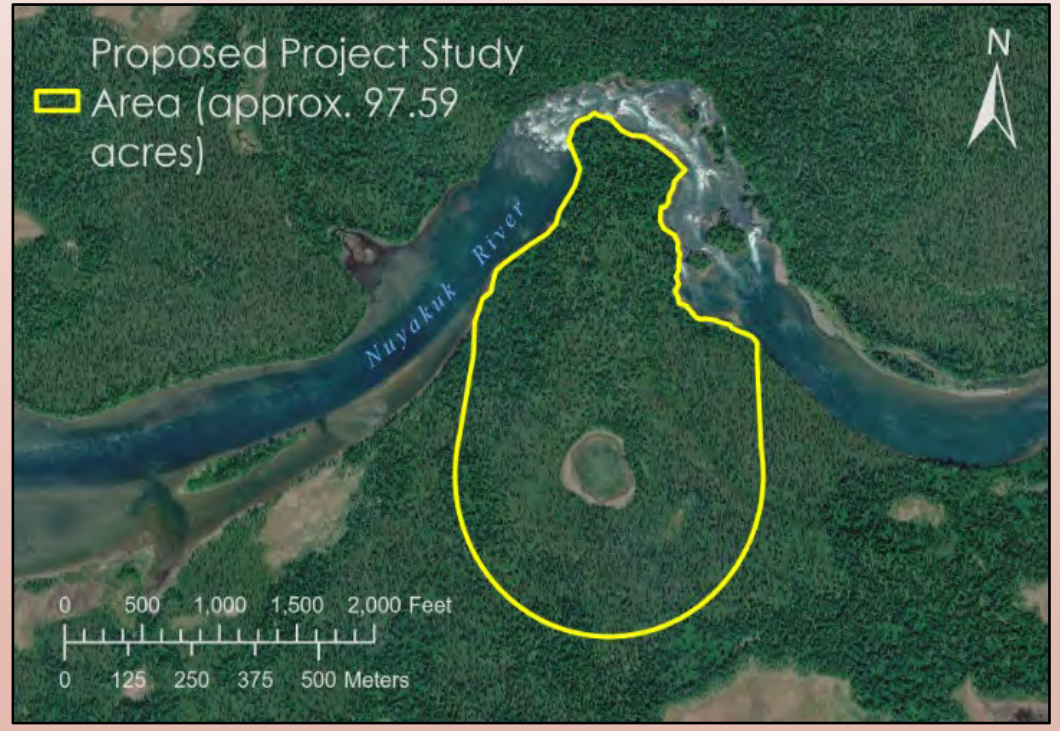
# BOTANICAL IMPACT ASSESSMENT

## Objective

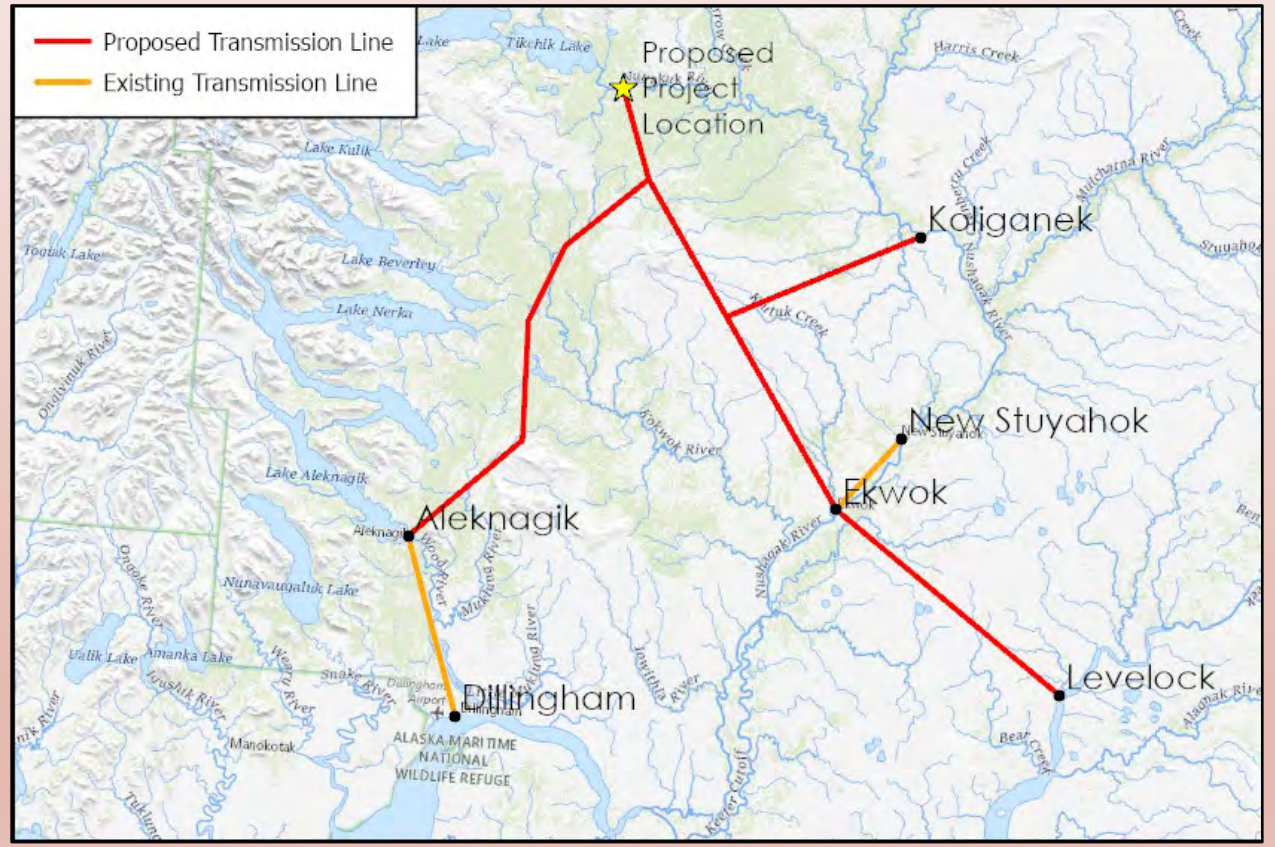
- Classify and prepare maps in the proposed Project boundary.
  - Desktop study of vegetation mapping
  - Wetlands and waters of the US (WOTUS)
  - Special status and invasive plants

# BOTANICAL IMPACT ASSESSMENT

## Study Areas




Project Facility Study Area




Transmission Line Study Area

# BOTANICAL IMPACT ASSESSMENT

## Methods

- Preliminary mapping of botanical and wetland areas using available data
  - i.e., federal and state resources
- No USFWS National Wetland Inventory coverage
- Alaska Center for Conservation Science
  - Sphagnum moss
  - Sedge
- U.S. Geological Survey
  - Hydrology
  - Satellite-derived contours
- Adjusted map selection after field survey of Project facility study area.

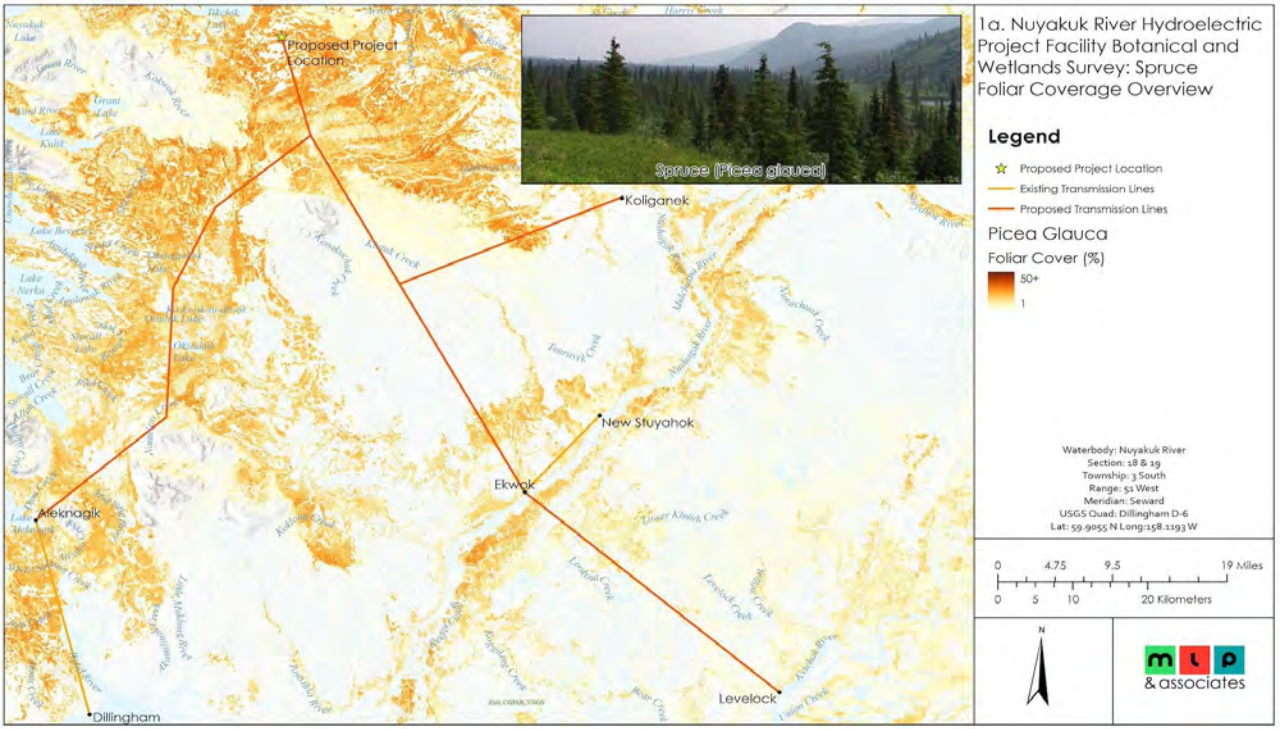
Mapped Plant Species

| Scientific Name | Common Name |
|---|---|
| *Picea glauca* | white spruce |
| *Alnus spp.* | alder shrubs |
| *Rhododendron spp.* | Labrador teas |
| *Empetrum nigrum* | crowberry |
| *Sedge spp.* | sedges |

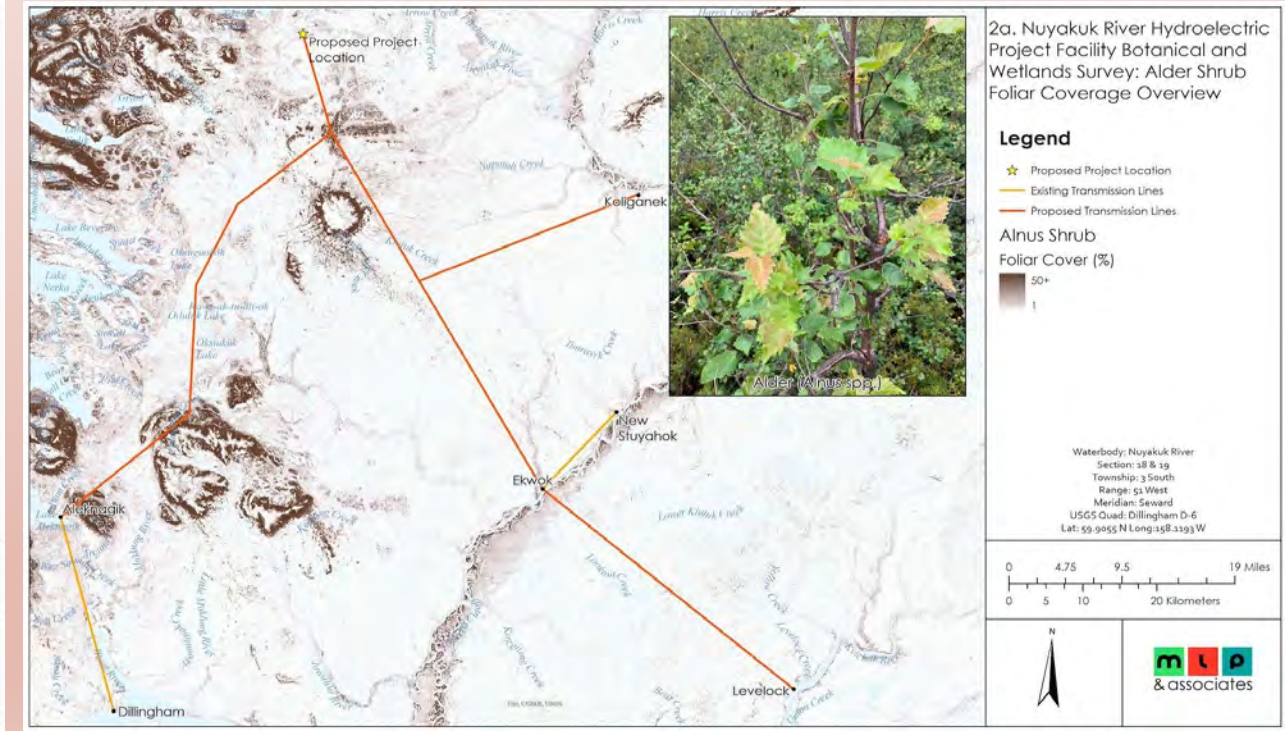
# BOTANICAL IMPACT ASSESSMENT

## Results

- Lower probability of wetlands in areas of high white spruce and alder likelihood
- Poor correlation between other species mapping and wetlands (widespread and adaptable)




White spruce




Alder species

# BOTANICAL IMPACT ASSESSMENT

Results

- Good correlation between sedge mapping and field-verified emergent wetlands (but not scrub-shrub wetlands)

# WETLANDS IMPACT ASSESSMENT

## Objective

- Wetlands delineation in the Project Facility Study Area
- Identify BLM Alaska Special Status plant species
- Identify Non-native plants

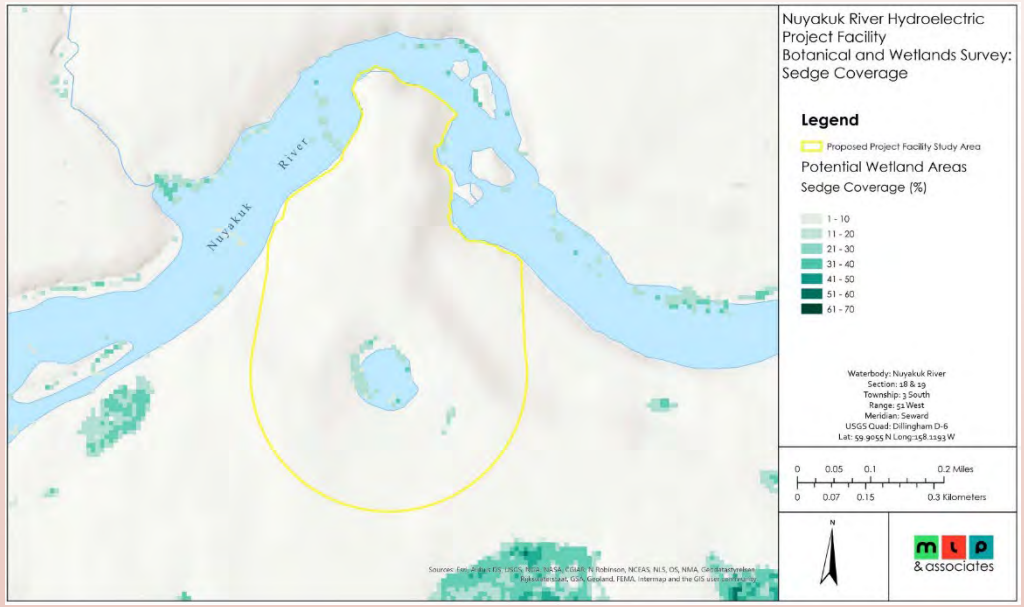
# WETLANDS IMPACT ASSESSMENT

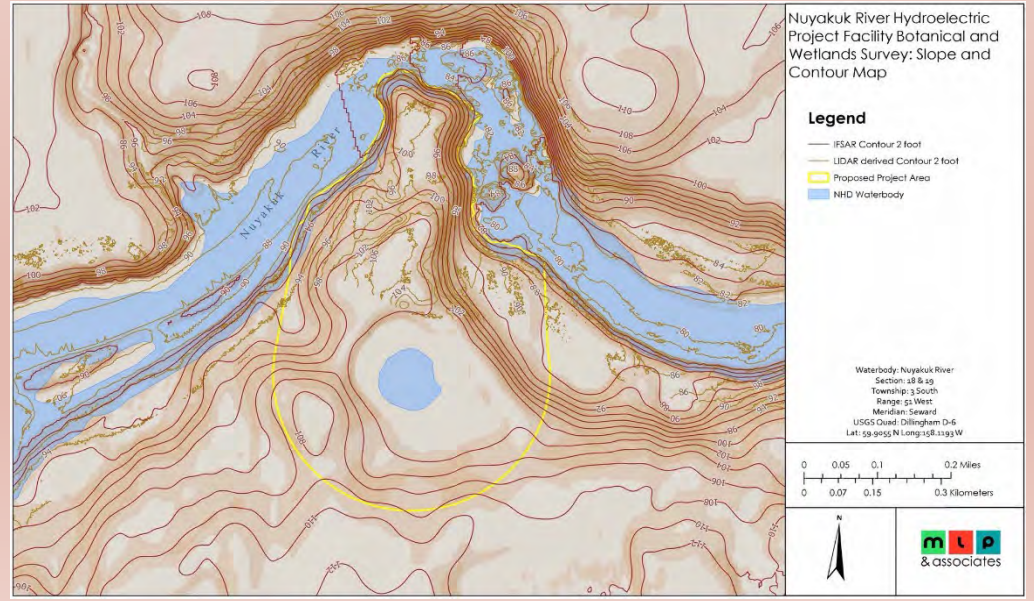
## Project Facility Study Area

# WETLANDS IMPACT ASSESSMENT

## Methods

- Desktop study of available data in the Project Facility Study Area
  - ACCS Sphagnum moss
  - ACCS Sedges
  - USGS Hydrology
  - USGS Satellite-derived contours
- Revised map selection after field survey



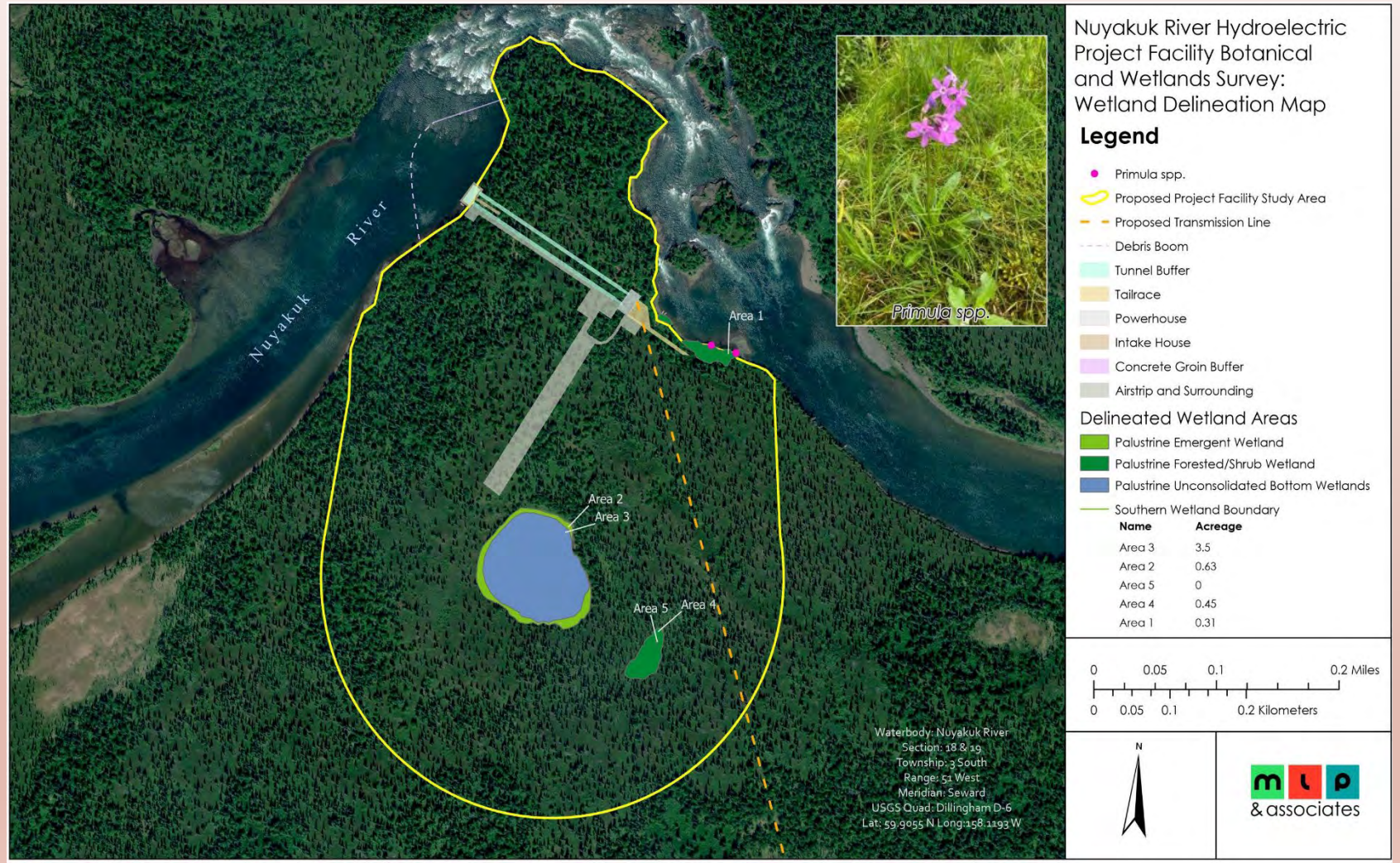
# WETLANDS IMPACT ASSESSMENT

## Wetland Delineation – Field Survey

# WETLANDS IMPACT ASSESSMENT

## Results

- 5 wetland areas
- 3 wetland types
  - Palustrine Emergent (PEM)
  - Palustrine Scrub-Shrub (PSS)
  - Palustrine Unconsolidated Bottom (PUB)
- Rare Plants
  - *Primula spp.*
  - *P. tschuktschorum or P. pumila*
- Non-native Plants
  - None observed



# CARIBOU POPULATION EVALUATION

## Objective

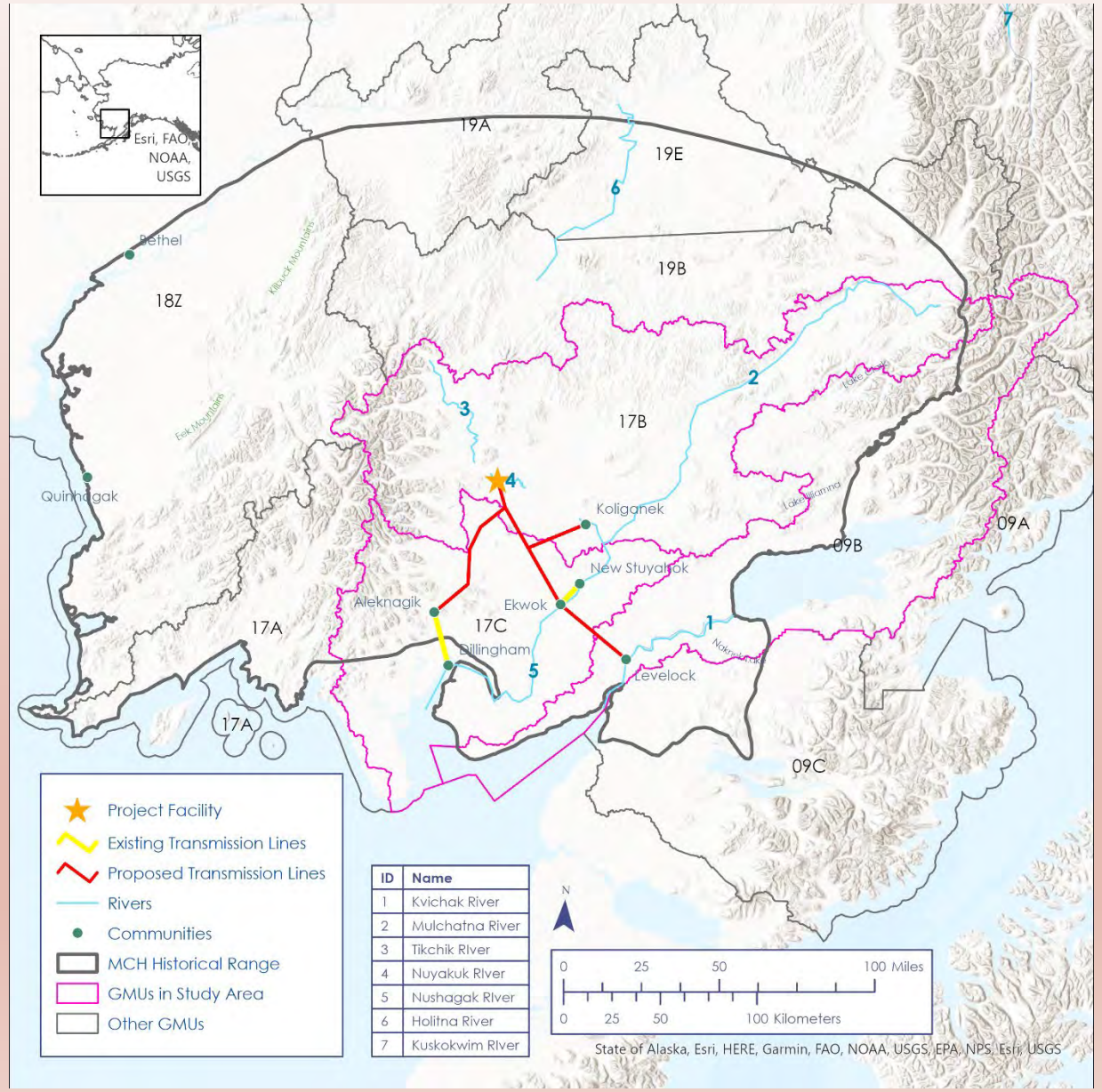
Evaluate potential impacts of the proposed Project development on the Mulchatna Caribou Herd (MCH) within the study area.

# CARIBOU POPULATION EVALUATION

## Study Area

- State Game Management Units
  - 17B – Project Facility
  - 17C – Transmission Line
  - 9B – Transmission Line

- Study Area
  - ~63,500 $km^2$
  - ~24,500 $mi^2$



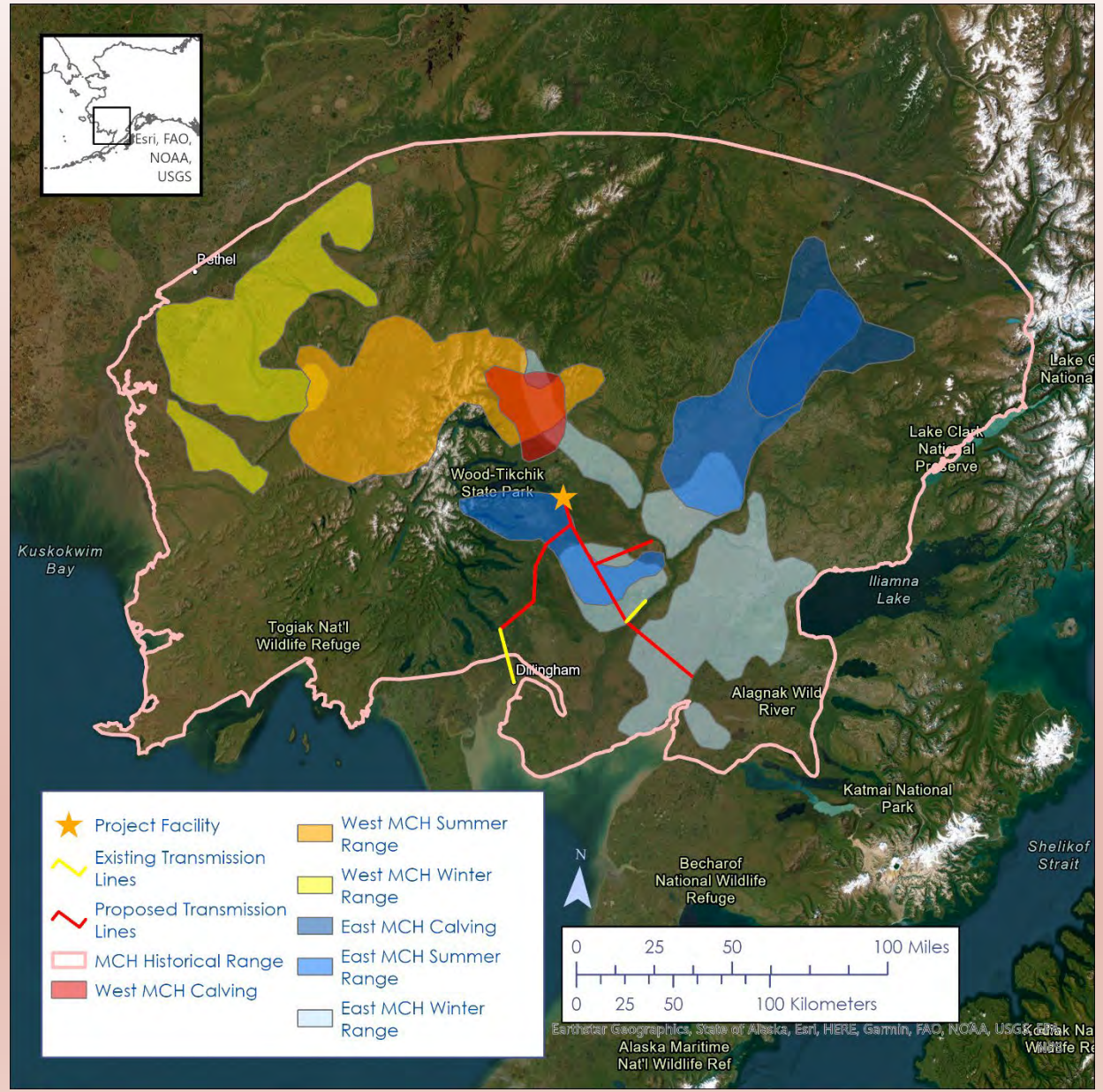
# CARIBOU POPULATION EVALUATION

## Methods

- Literature Review
  - Peer reviewed and gray literature

- ADFG Reports-Survey and Inventory (S&I) Program
  - Extracted data from ADFG reports
  - Overlaid historical and seasonal distribution data (shapefiles) with the study area

# CARIBOU POPULATION EVALUATION




## Results

- Direct habitat loss (Project footprint)
  - ~1% of MCH habitat
  - West Segment
  - Does not transect
- East Segment
  - Transects summer and winter range
- Does not overlap current calving areas

## Moving Forward

- Form a working group
- Continue to evaluate impacts
- Potential limited impacts may include:
  1. Habitat fragmentation/loss
  2. Behavior Responses
  3. Physiological Responses
  4. Increased Predation
  5. Increased Anthropogenic Activities

# CULTURAL

# SUBSISTENCE STUDY

## Goals and Objectives

### Goal

- Document traditional and contemporary subsistence harvest and use in the Project area

### Objectives

- Utilize existing ADFG data to assess current subsistence use and document any potential impacts associated with Project development
- Comprehensive efforts to communicate with the public in Dillingham, New Stuyahok and Koliganek
  - In-person meetings/workshops
  - Proactive communication to all locations will occur to ensure as much participation as possible

# SUBSISTENCE STUDY

## Results/Next Steps

- Proactive efforts in 2023 to identify appropriate specialist and define methods
- As planned initially, study to be completed in 2024
- Results and analysis to be incorporated into the USR

# SECTION 106 EVALUATION

## Methods

- The goal of the study was to: 1.) Identify historic properties that could be eligible for the National Register of Historic Places and 2.) Assess potential effects of the Project on any such properties.
- Prior to fieldwork, the desktop study identified high probability areas using topography, aerial imagery, previously reported sites, and ethnographic and historic data.
- The field study included pedestrian survey and shovel testing within a 90-acre area. Shovel testing focused on high probability areas but also sampled other zones.

# SECTION 106 EVALUATION

<u>Results</u>

- The survey and shovel testing identified a portage trail (DIL-00272), a pre-contact archaeological site (DIL-00271), and two possible cache pits (DIL-00270 and DIL-00273).
- The Nuyakuk Falls Portage Trail (DIL-00272) and archaeological site DIL-00271 are likely significant enough to be eligible for the National Register.
- DIL-00271 radiocarbon dates as old as 3477 BP (1527 BCE)

# SECTION 106 EVALUATION

<u>Results</u>

- Constructing the Project as currently proposed would likely not constitute an adverse effect on either potentially significant site.
- Consultation will occur over the winter of 2023 and into 2024 to identify any intangible cultural resources such as traditional cultural properties and cultural landscapes.

# SECTION 106 EVALUATION

- Possible cache pit (DIL-00273)

# SECTION 106 EVALUATION

- Portage trail (DIL-00272)
- Archaeological site (DIL-00271)


# QUESTIONS?

# RECREATION AND AESTHETICS

# NOISE STUDY

## Methods

- Measure overnight sound levels at 4 locations:
  - 1: Project Site
  - 2: 11,000 feet west of Project
  - 3&4: Royal Coachman Lodge (RCL)

- Model future sound levels
  - General construction
  - Construction blasting
  - Air traffic
  - Operations
- Evaluate the potential impact / change in sound level

# NOISE STUDY

## Measurement Locations





Loc.1 Project Site

# NOISE STUDY

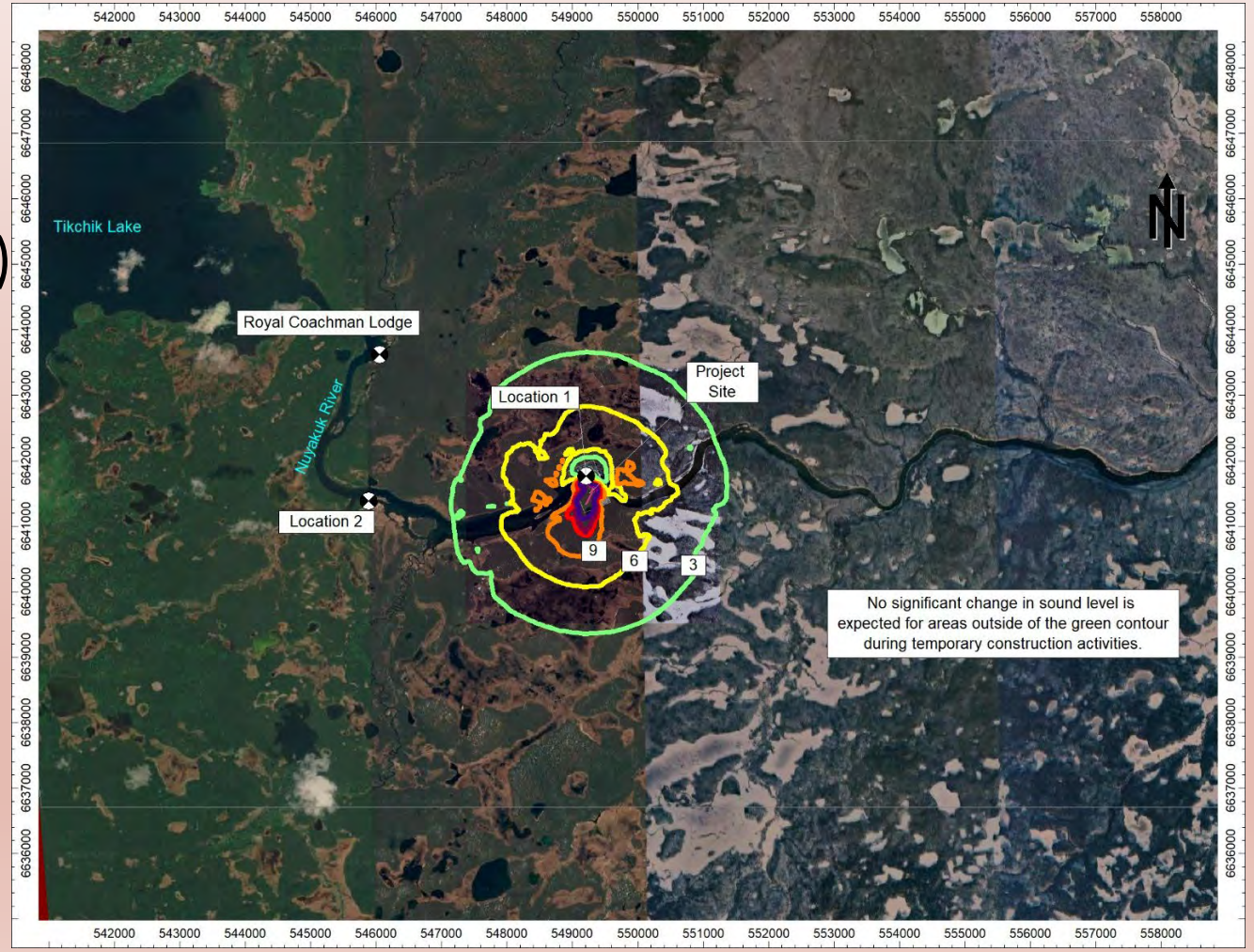
## Impact Assessment – General Construction (Temporary)

- Daytime only
- 5 dBA increase (noticeable) at edge of project area
- 1.1 dBA increase (imperceptible) at 11,000 feet
- No increase at Royal Coachman Lodge

3 dBA (barely perceptible),

6 dBA (noticeable), and

9 dBA (twice as loud) impact contours are shown ⇨



# NOISE STUDY

## Impact Assessment – Construction Blasting and Aircraft (Short-term)

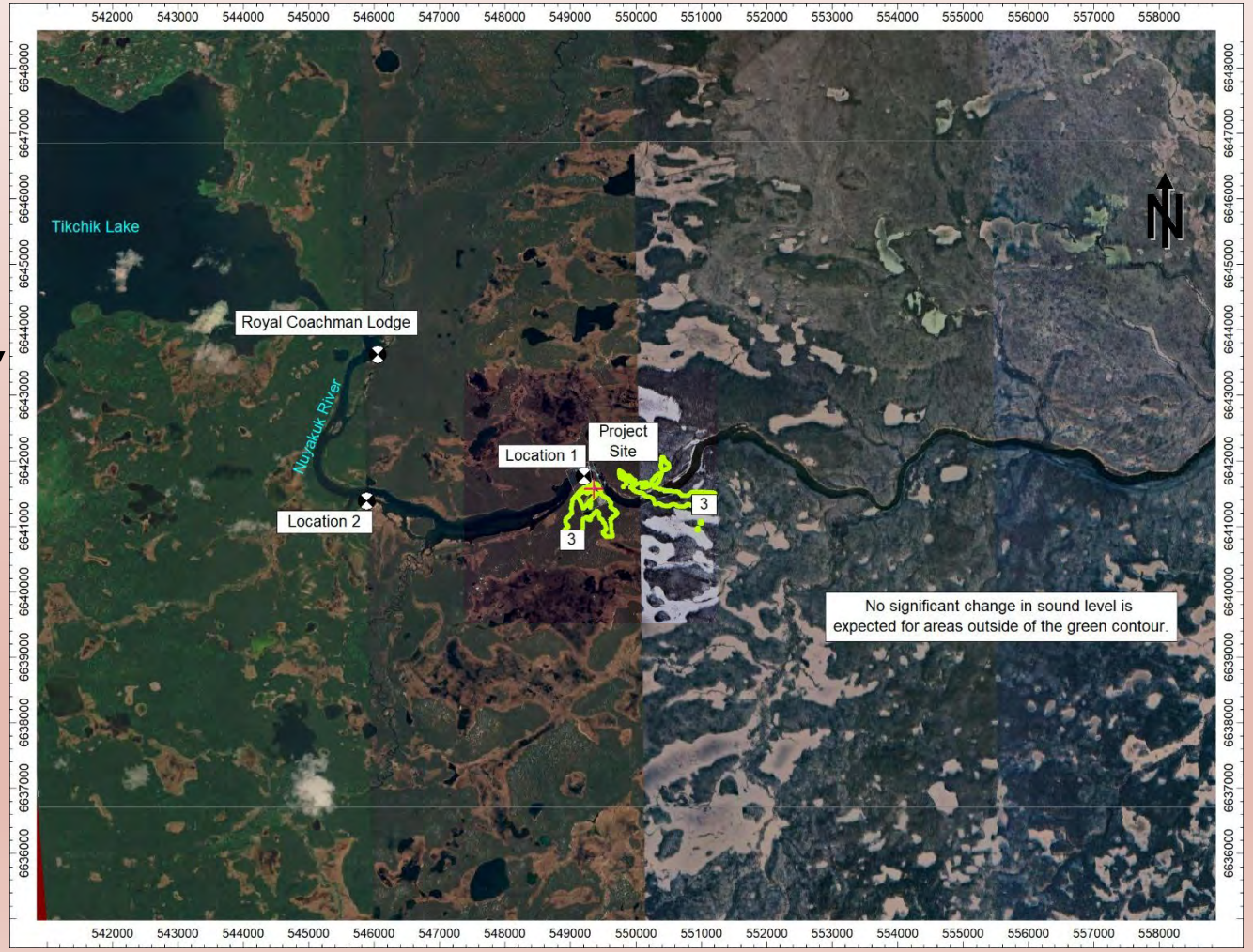
- Blasting during construction
  - No specific blasting plan has been developed given feasibility stage
  - Blasting will be infrequent and during daytime hours
  - Depending on the criteria selected, charge weights will be selected to ensure that the criteria sound levels are met

- Aircraft Operations
  - Typical aircraft will be used
  - At the RCL, aircraft sound levels will be significantly lower than existing aircraft operations due to distance (36 dBA Project vs. 80 dBA existing)

# NOISE STUDY

## Impact Assessment – Operations (Permanent)

- Only significant noise sources are the power-house ventilation fans
- Only a very small area would see a greater than 3 dBA (barely perceptible) increase
- 3 dBA increase area is shown inside the green contour ⇨



# RECREATION INVENTORY

## Methods - 2023

- On Site Field Observation & Intercept Surveys at Nuyakuk River Falls
  - July 14th -19th, 2023

- Engagement with Tikchik Narrows Lodge and Royal Coachman Lodge

# RECREATION INVENTORY

## Results

- Activities observed in the study area occurred at the Lower Falls:
  - Fishing/Angling
  - Scenic Viewing
  - Motorized Boating
    - One instance of rafting & camping was observed by non-rec study staff in August
  - Photography

- 38 total visits, 27 unique client-visitors observed
  - Visits by guided fishing groups are regular, almost daily

- All observed recreators on land or in the water were part of a guided fishing experience with Tikchik Narrows Lodge or Royal Coachman Lodge
  - Tikchik Narrows Lodge accesses the lower falls via float plan & staged motorized boat downriver
  - Royal Coachman Lodge boats downriver to above the falls, hikes Portage Trail to lower falls

# RECREATION INVENTORY

## Results

- 8 Intercept Survey Responses:
  - Primary recreational activity and purpose was sport fishing/angling
  - All males over 55 years of age
  - Expected to visit the falls only once during their entire trip (ranging from 9 to14 day durations)
  - Experiences rated as "important" or "very important" *(as rated on a 5-point scale where 1="not at all important" and 5="very important")*:
    - Experiencing new and different things (mean = 4.57)
    - Enjoying the sights and smells of nature (mean = 4.25)
    - Being with friends, getting away from the usual demands of life, and being away from crowds (mean = 4.125)

# RECREATION INVENTORY

## 2024 Methods

- Resident Surveys
  - Paper & online surveys will be developed & distributed in the communities of Dillingham, Aleknagik, Ekwok, New Stuyahok, Levelock, & Koliganek
  - Community Visits in Spring to conduct surveys & in Fall to report results

- Recreational Business Operator Data Collection & Analysis
  - Data collection form will be distributed to collect at a minimum 2023-2024 data, with a request for information from 2018-2024

# RECREATION INVENTORY

# QUESTIONS?

# CONCEPTUAL DESIGN/POTENTIAL OPERATIONS

# PROJECT SIZING

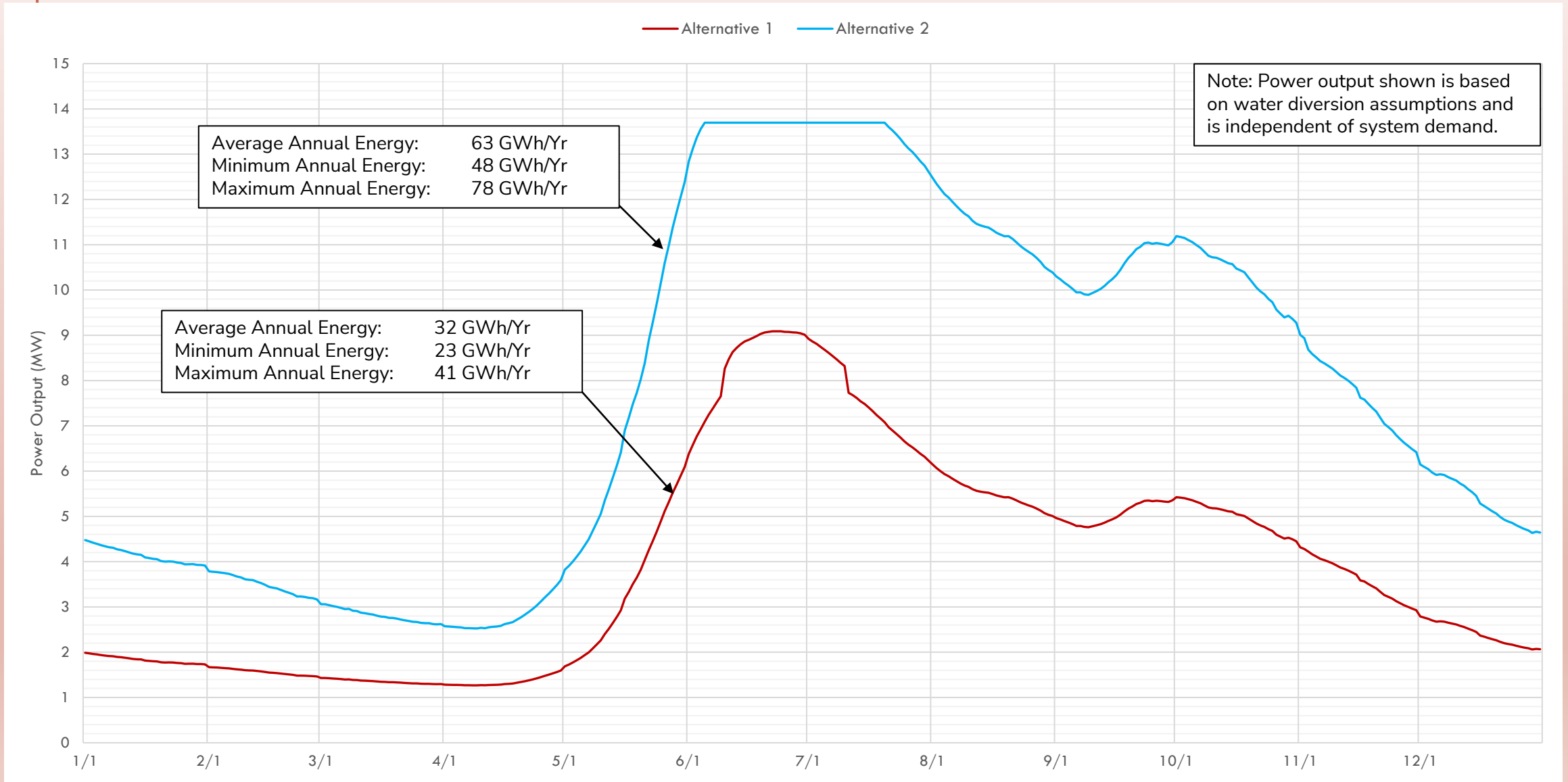
**Alternative 1:**

- Sized to utilize 30% of the flow in the falls for generation purposes (est. 9 MW Peak)

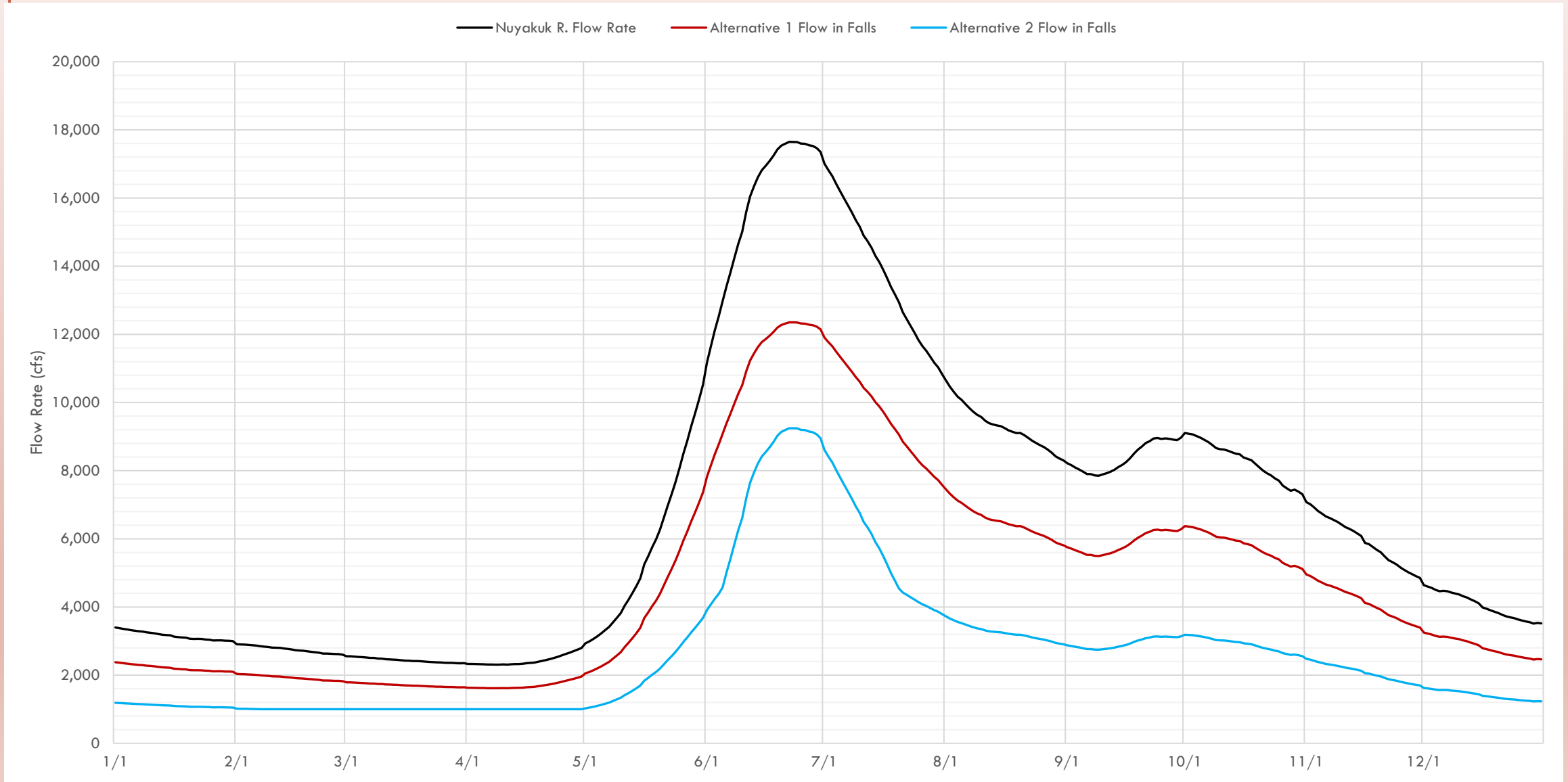
**Alternative 2:**

- Sized based on projected future regional power needs (Est. 14 MW Peak)
- Investigated to better understand water diversions based on maximum seasonal demand

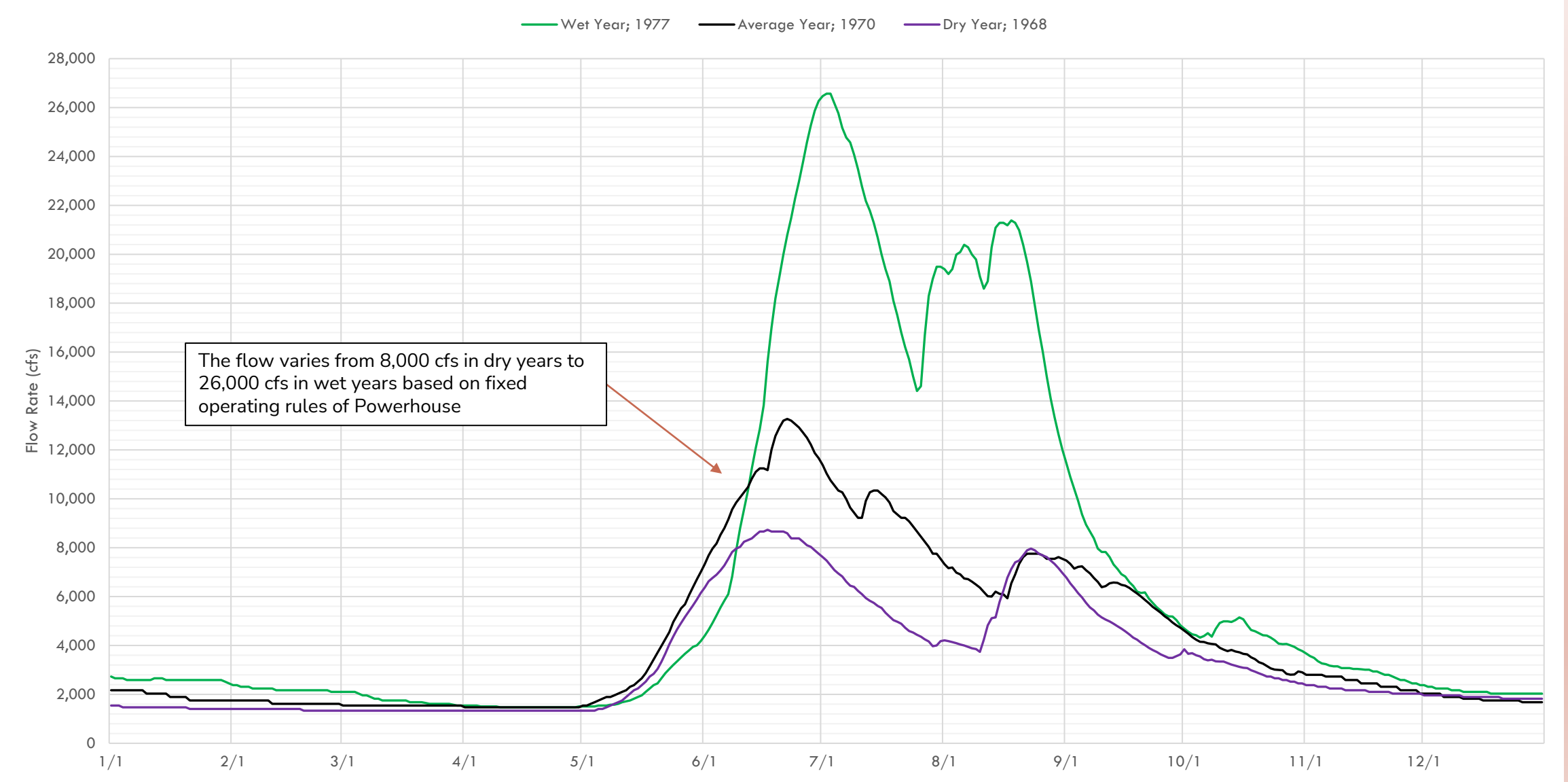
# SEASONAL POWER OUTPUT – AVERAGE YEAR



# FLOW REMAINING IN FALLS – AVERAGE YEAR



# FLOW REMAINING IN FALLS – DRY / AVERAGE/ WET YEAR



# QUESTIONS?

# TECHNICAL WORKING GROUPS

- Cooperative forming 3 additional Technical Working Groups (TWG)
  - Terrestrial
  - Cultural (formation in process)
  - Recreation

- Assess 2023 results relative to overall study program and discuss need for any methodological modifications currently defined in the RSP

- Provide consistent status reports on study implementation, results and respective impact assessments

- Bi-monthly meetings (virtual) during 2024

- Sign-up sheets for in-person attendees and ljohnson@mcmillen.com or meeting chat, for those attending virtually

# OVERALL PROJECT LICENSING SCHEDULE

## Key FERC Milestones*

- Comprehensive Study Seasons – 2023 and 2024
- Study Reporting – 2023 and 2024
- Study Reporting Meetings – 2023 and 2024
- Ongoing Infrastructural and Site Analysis and Design – 2023-2024
- Further Geotechnical Analysis –2024
- Preliminary Licensing Proposal – 2024/early 2025
- PLP Comment Period – 2024/early 2025
- Final License Application – 2025
- FERC input – Matt Cutlip

**Both mandated and informal commenting periods will be available throughout.*

# ISR COMMENTS AND COMMUNITY INPUT

## ISR Comments

- Comments on ISR due to FERC on/before January 30th (Tuesday)
  - e-Filing encouraged, any questions, reach out

- If questions arise during review, reach out to the Cooperative via:
  - ljohnson@mcmillen.com

## General Community Input on Potential Project Benefits and Concerns

- As communicated in mid-November and per request, survey created to receive input on the Project
- Not required by FERC process (separate), Cooperative is genuinely interested in public input
- https://form.jotform.com/233195473949066
- Responses may be left anonymously or with contact information
- Great objective input received thus far, thank you!

# IN CLOSING, THE WHY

**Documents, Plans and Reports**

Alaska Fuel Price Report: Current Community Conditions

Bristol Bay Energy Policy and Energy Crisis Recovery Plan

Implementation Strategies for the Bristol Bay Energy Policy and Energy Recovery Plan May 6, 2008

A Winter Energy Saver Tip!

Bristol Bay Energy Policy & Implementation Strategies -Status Report–Update–2014

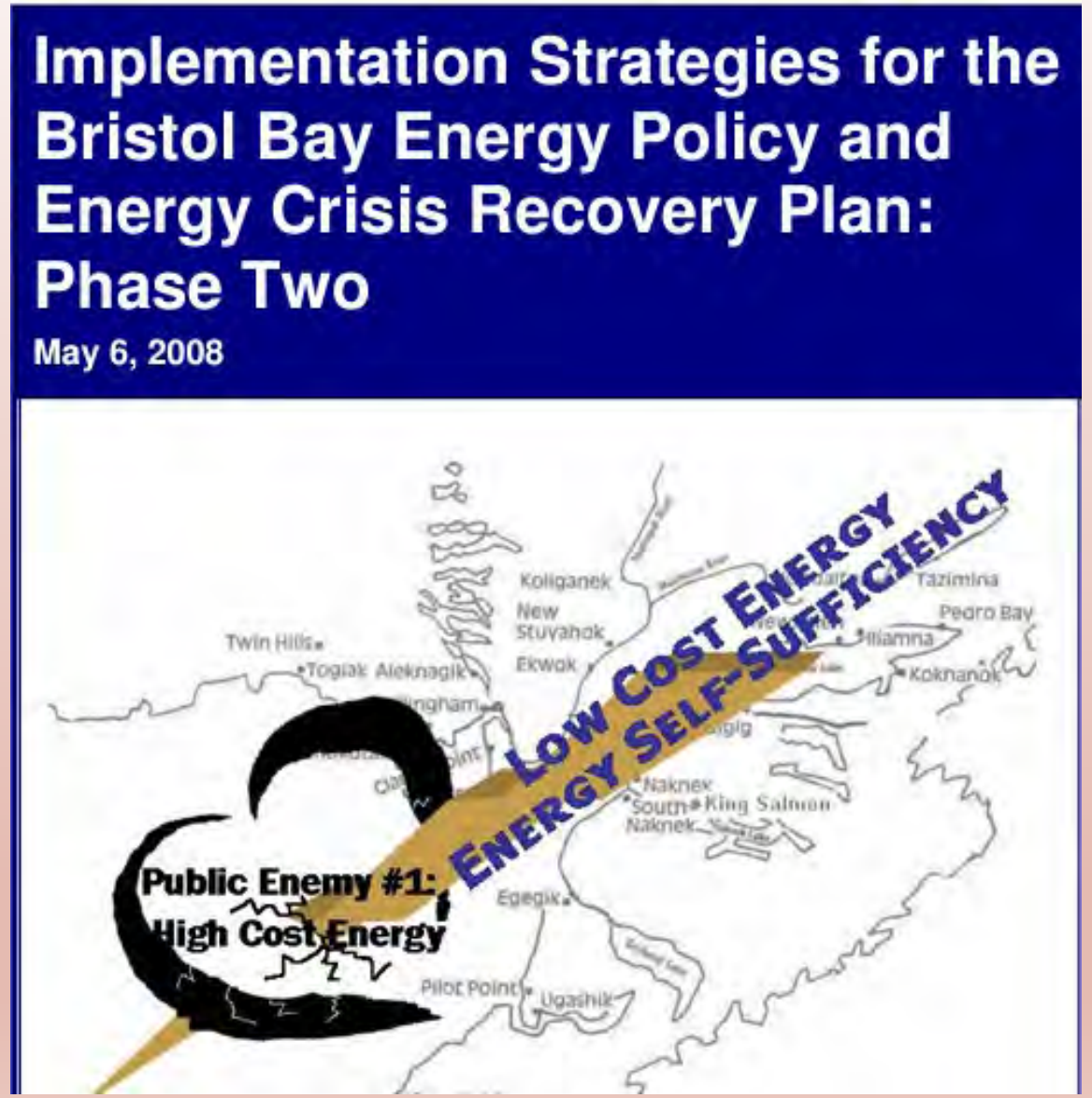
Alaska Strategic Energy Plan & Planning Handbook August 2013

Alaska Fuel Price Report – January 2015

**Bristol Bay Regional Energy Plan**

Phase I Resource Inventory Report November 2013

Phase II Stakeholder Engagement September 2015

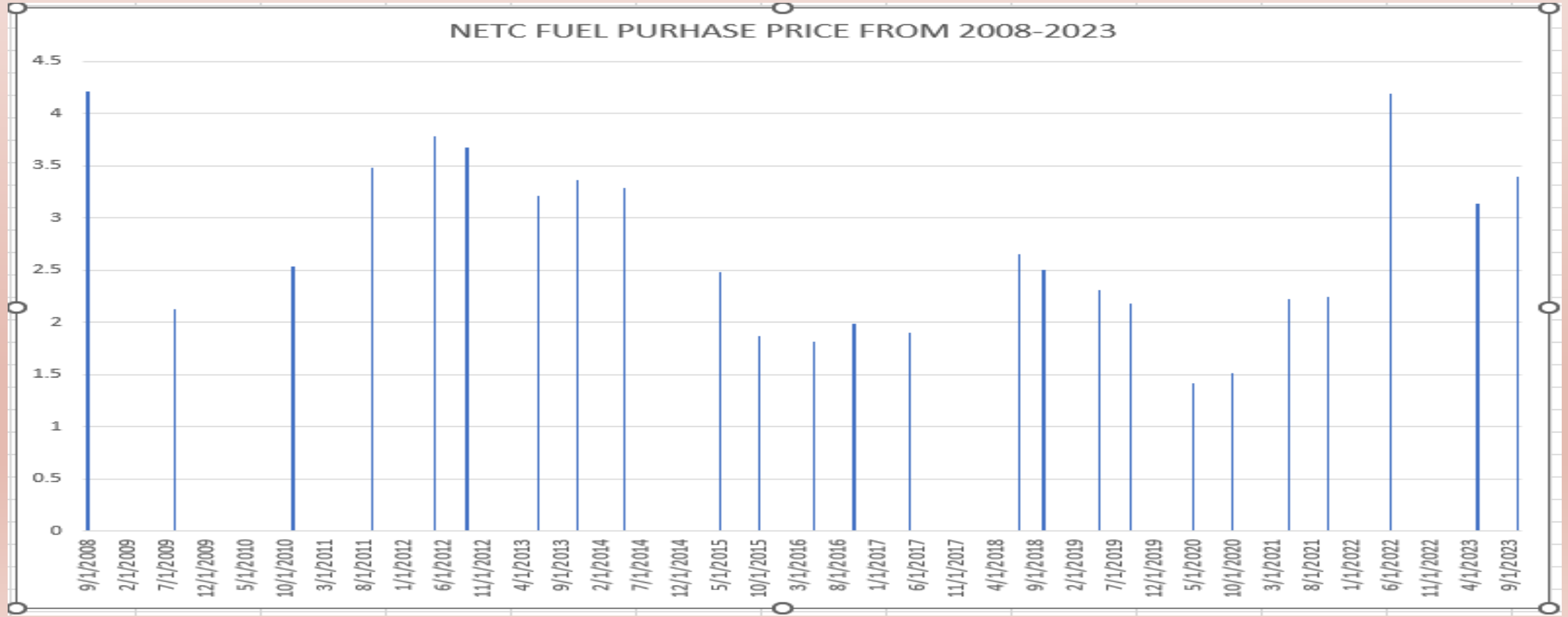


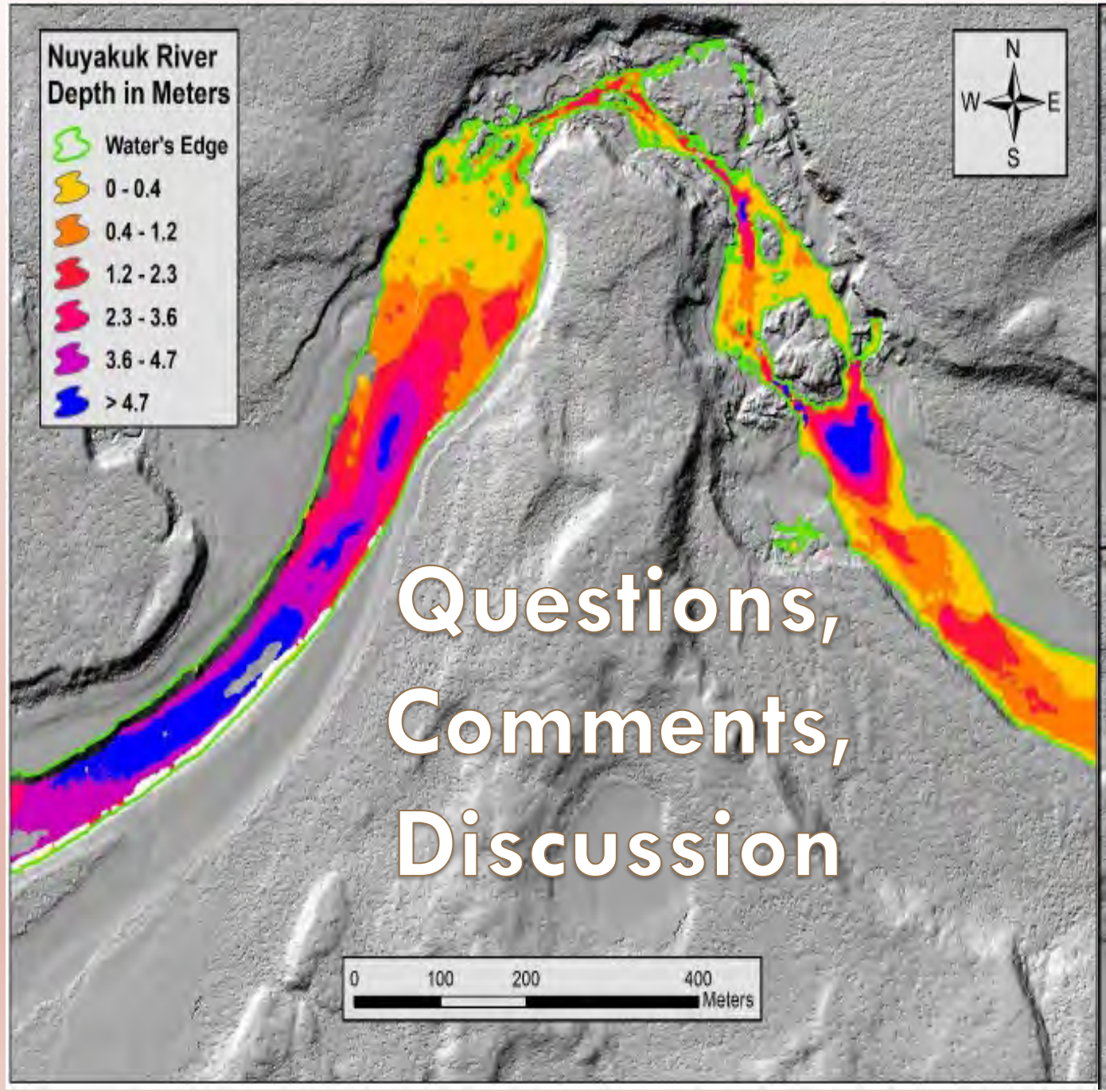
# OPERATING COSTS

Annual maintenance on the diesels and fuel systems approximately $400,000

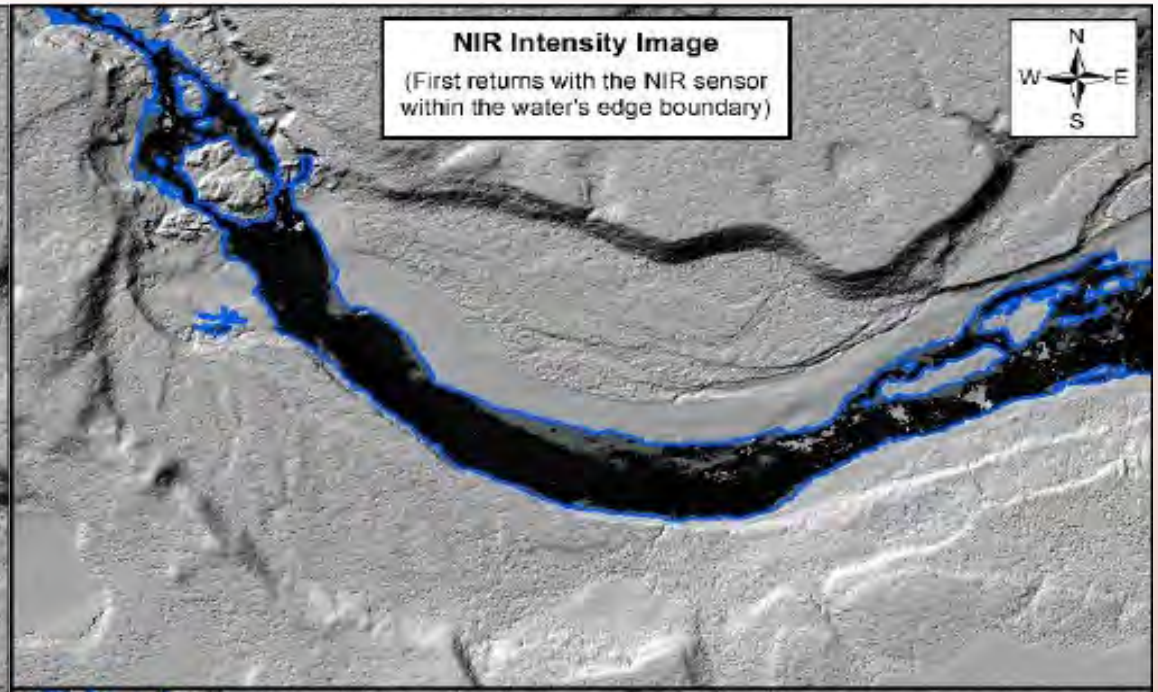
Consulting ,source testing, and spill plan compliance approximately $300,000.

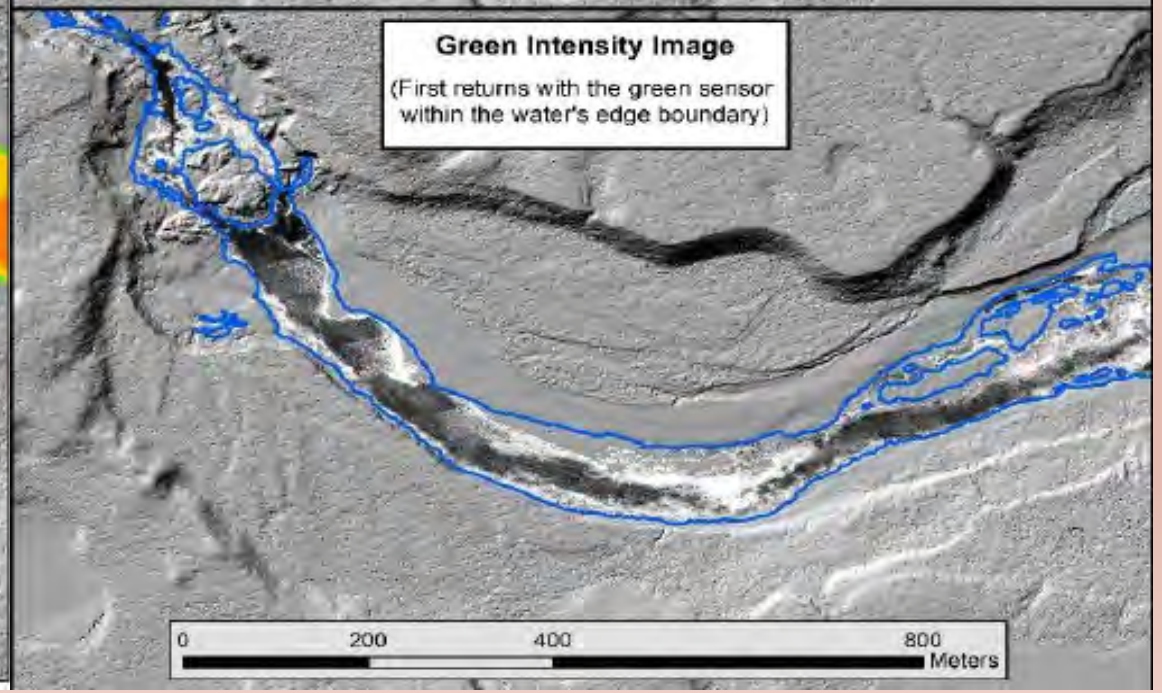
During the peak of Salmon processing we can use up to 5,000 gallons daily.






# Questions, Comments, Discussion



# Attachment C
# Federal Energy Regulatory Commission Presentation

# Initial Study Report

- The purpose of the meeting is to discuss the Initial Study Report (ISR) for the Nuyakuk Hydroelectric Project FERC No. 14873-001.

- The ISR is a progress report summarizing the Cooperative's overall progress in implementing the study plan to date. The ISR should also include:
  - Variances from approved study plan
  - Any applicant proposals to modify or implement new studies

# ISR Meetings

- Goals:
  - Discuss the study results.
  - Discuss the Cooperative's and any other participant's proposals to modify the study plan or develop new studies based on the data collected during the first study season.
  - If any agreements are reached, they would be documented in the Cooperative's ISR meeting summary.

# Comments on ISR

- Stakeholder comment period on ISR is intended to specifically focus on disagreements about the need to modify the study plan moving forward.
- No requirement for the Cooperative to formally respond to or edit and refile the ISR.
- FERC will only act on requests to modify the study plan or new studies.

# ISR Comment Period and Schedule

- Per the approved process plan that was last updated on Feb. 15, 2023, the Cooperative must file a meeting summary by December 31, 2023.
- Stakeholder disagreements or other requests to modify the study plan or develop new studies are due within 30 days of the ISR meeting summary due date [by January 30, 2024].
- Reply comments from any stakeholder due 30 days later [February 29, 2024].
- FERC study modification determination to follow 30 days after, if necessary [March 30, 2024].

# Study Plan Modification

- Study Modification Requests – 18 CFR 5.15(d)(1)-(2)
- Must be accompanied by showing of good cause why the modification should be approved, and demonstrate:
  - Study was not conducted as approved; or
  - Study was conducted under anomalous environmental conditions.

# New Study Requests

- New Study Requests – 18 CFR 5.15(e)
- Must Explain:
- **(1)** Any material changes in the law or regulations applicable to the information request;
- **(2)** Why the goals and objectives of any approved study could not be met with the approved study methodology;
- **(3)** Why the request was not made earlier;
- **(4)** Significant changes in the project proposal or that significant new information material to the study objectives has become available; and
- **(5)** Why the new study request satisfies the study criteria in § 5.9(b) (e.g., project nexus, study need, accepted scientific practices)

# Questions?

Matt Cutlip, FERC, Office of Energy Projects, Division of Hydropower Licensing

Nuyakuk Project Licensing Coordinator

503.552.2762

matt.cutlip@ferc.gov