



SUSITNA-WATANA HYDRO

Meeting Notes Fisheries Technical Meeting 03/19/2014

LOCATION: Alaska Energy Authority – Board Room
813 West Northern Lights Blvd.
Anchorage, AK 99503

TIME: 1:00 p.m. – 4:30 p.m. (AKST)

SUBJECT: Study 9.12 - Fish Barriers Study

Goal Collaboration on topics as identified in the Study Plan

ATTENDEES: Kathryn Peltier McMillen, Scott Crowther Ratepayers, MaryLouise Keefe R2, Betsy McGregor AEA, Lori Verbrugge USFWS, Phil Hilgert R2, Bill Fullerton Tetra Tech, Kevin Petrone R2

ON PHONE: Betsy McCracken USFWS, Matt Cutlip FERC, Nick Jayjack FERC, Matt Love VNF, Sharon Kramer CIRI fisheries consultant, Stormy Haught ADF&G, Kai Steimle R2, Dara Glass CIRI Joe Klein ADF&G, Sue Walker NMFS (part of meeting), David Pizzi Tetra Tech

The purpose of this meeting was to collaborate with licensing participants on topics identified in the Study Plan and during the December 2013 TWG meetings. Through this collaboration, AEA hopes to include input from licensing participants into the final ISR section 7 (plans for completing the study). Comments and suggestions are welcomed by AEA and can be provided by contacting Betsy McGregor (BMcGregor@aidea.org).

The following meeting notes are intended to capture any significant discussion/information in addition to the materials provided on the Project website (<http://www.susitna-watanahydro.org/>). The meeting agenda and materials are available under the “previous meetings” tab (link provided under the meetings tab) on the Project website.

Study 9.12 Fish Passage Barriers Presentation - Kevin Petrone

Betsy McCracken said that the USFWS will be submitting formal suggestions/comments to the final ISR.

Target/Priority Species - Based on the criteria explained in slide 4, slide 5 indicates the proposed target species for the Fish Passage Barrier Study. Some of these species can be targeted for specific reaches since their presence has not been documented throughout all reaches of the study area.

- Stormy Haught suggested that humpback whitefish be considered for Lower River reaches.
- Betsy McCracken suggested considering eulachon in the Lower River reaches. Stormy Haught indicated that eulachon would be limited to the mainstem and would not be entering tributaries.

- Betsy McCracken explained that arctic lamprey require unique passage requirements and should be approached with methods specific to the species. Stormy Haught agreed with this suggestion. MaryLouise Keefe indicated that AEA will be in contact Betsy McCracken regarding lamprey details.
- Betsy McCracken suggested focusing some efforts on predicting the reduction of passage for northern pike. Stormy Haught confirmed that northern pike are mostly sedentary, but move throughout systems on occasion; not yet above ~ River Mile 60. Phil Hilgert suggested that once potential Project- induced passage barrier changes are evaluated, tributaries impassable for northern pike could be identified. Stormy later added that northern pike are not good swimmers and will be restricted by velocity barriers which may not restrict other species.
- Betsy McCracken suggested targeting Bering cisco in the Lower River, although she is unsure if they access tributaries.
- Scott Crowther said that he has caught rainbow trout in Susitna Lake and Lake Louise (near the headwaters of the Susitna River). MaryLouise Keefe explained that thus far, those populations do not show signs of entering the study area and seem to be isolated. The study area's upper extent ends just upstream of the inundation zone near the confluence of the Oshetna River.

Kevin Petrone explained that the study is currently focused on Middle and Upper River segments. Based on information from the open water flow routing model (expected in time for the Proof of Concept meeting this spring), the Lower River may be included in this study. If the Lower River were to be added, suggestions related to Lower River species would be considered.

Species-specific Passage Criteria – Slides 6-22 explain the passage criteria which will be determined for each target species. Details are provided in the fish passage feasibility draft ISR (Study 9.11).

- Slide 8 does not include burbot which have a prolonged speed of 1 foot per second (fps) and burst speed of 1-4 fps.
- Kevin Petrone proposed that burst speeds be used as criteria to determine movement in evaluating velocity barriers. In response to MaryLouise, Kevin will look into the literature to see if velocity barrier lengths are a factor. Sharon Kramer mentioned that fish are able to take “breaks” in low velocity pockets. Bill Fullerton explained that the model resolution is approximately 2 meters at slough mouths within Focus Areas. This will not identify things such as a 1-foot boulder with a small eddy with a low velocity pocket.
- Matt Cutlip asked if models will be verifying the “Gradients or channel constrictions at entrances to sloughs and side channels not sufficient to create velocity barriers for adult or juvenile fish” component of the study. Kevin explained that models will be evaluating this, but other criteria are expected to play a larger role in increasing/decreasing barriers.
- Based on the information in slide 11, the study is considering a 12-foot elevation difference a definitive barrier (1 foot over the max. leap height).
- MaryLouise Keefe mentioned that there were no leaping criteria found for some species and asked if Betsy McCracken knew of any surrogates used. Most criteria were determined for culverts and the criteria may be different for natural systems. Stormy Haught said that steelhead may be used as a surrogate for rainbow trout. MaryLouise added that juvenile steelhead would be comparable in size to adult rainbow.
- Betsy McCracken and Sharon Kramer will look to see if they can provide suggestions for surrogates.
- Depth criteria are from the ADF&G/DOT culvert document and are presented on slide 16.
- Data provided on slides 19-20 are only from the Fish Distribution and Abundance in the Middle and Lower River Study (Study 9.6). Juvenile screw trap counts and Salmon Escapement (Study 9.7) data will be added to

these tables and reposted. Otolith analyses for humpback whitefish and Dolly Varden are not yet available to determine the upper extent of species anadromy.

- Data for the studies are provided in the respective draft ISR. Summaries are in the draft ISR text or appendices with more detailed data provided on GINA (link in draft ISR).
- MaryLouise explained that lamprey were found throughout the river and since most were juvenile fish they were unable to be identified to species. Very few Bering cisco, less than 10 total, were found in the Lower River late in the summer.
- Periodicity on slide 22 reflects data from the 1980s. This table will be updated with current data throughout the study.

Application of Passage Criteria – Slides 23-27 present the proposed application of the passage criteria. The approach is being proposed, and details will be refined as data is available.

- The figures on slides 25-27 are from the 1980s studies. The dotted line on slides 25-26 should be located at 0.41 feet on the Y axis.
- The 1980s used chum as a surrogate for all salmon species because they have a deep body and are weak swimmers; assuming that if chum could pass, other salmonids could pass. Sue Walker said that there is no need to limit analyses to one surrogate and that more specific analyses per habitat is needed.
- Kevin Petrone explained that the details of the approach will be discussed when sediment model results are available (not expected for a while).
- Phil Hilgert said that it is important to determine the timing/duration below a minimum passage depth to accurately influence operations.

Geomorphological Assessment and Modeling – Bill Fullerton presented slides 28 – 38 to discuss the geomorphology studies (Study 6.6) in relation to fish passage. Data provided in slides 31, 34, and 37 do not include escapement data. These data will be added to the presentation tables and the online presentation will be updated.

In slide 31, the fish species acronyms follow ADF&G standards and are defined as follows:

SCK – Chinook salmon; GBR – Burbot; CDV – Dolly Varden; WRN – Round whitefish; GRA – Arctic grayling

- Lori Verbrugge asked what variables are being considered when selecting tributaries (as indicated in green on slides 31, 34, and 37). Bill Fullerton said that the presence of fish is the primary factor. The red highlighted tributaries are not proposed for studies of delta formation and potential barrier impacts mostly because the drainage areas are small (thus low potential to produce the quantity of sediment to form deltas) or existing barriers at elevations above the reservoir pool will limit access to habitat. Tributaries without highlighting (white) do not have a clear basis for recommending further study, so the licensing participants were asked for input. Note that all tributaries in Focus Areas will have sediment modeling applied.
- Unnamed tributary 115.4 on slide 37 has a pseudo-lake at the mouth so it is not considered a significant contributor of sediment. Also, Whiskers Creek’s sediment influence is masked by Whiskers Slough.

Action Items	Responsibility
If the Lower River is added to Fish Passage Barriers Study Area: Consider the following target species: <ul style="list-style-type: none"> • humpback whitefish 	AEA

<ul style="list-style-type: none"> eulachon (mainstem) Bering cisco; <p>Identify tributaries where accessibility by northern pike may change.</p>	
Add lamprey to the target species lists for Middle and Upper River as applicable based on fish distribution data.	AEA
Determine if velocity barrier length is a needed factor for fish passage criteria.	R2
Coordinate with Betsy McCracken regarding potential need and criteria for lamprey.	R2
Identify surrogate species and their passage criteria that can be used in this study.	Licensing participants
Add 2013 rotary screw trap and fish escapement data to the presentation and repost to website.	AEA

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