Meeting Summary
Susitna-Watana Hydroelectric Project Licensing
Aquatic and Water Resources Workgroup Meetings
March 1, 2012
AEA Project Offices, First Floor Conference Room
411 W 4th Avenue, Anchorage, AK

Attendees:

Organization	Name
AEA	Betsy McGregor
AEA	Wayne Dyok
AEA	Bruce Tiedeman
USFWS	Mike Buntjer
USFWS	Betsy McCracken (by phone)
USFWS	Bob Henszey
USFWS	Jennifer Spegun
NMFS	Susan Walker
NMFS	Eric Rothwell
NMFS	Mandy Migura
NMFS/University of Alaska	Kate Wynne (by phone)
BLM	Tim Sundlov
NPS	Cassie Thomas (by phone)
ADF&G	Joe Klein
ADF&G	Ron Benkert
ADF&G	Jack Erickson
ADF&G	Richard Yanusz
ADF&G	Kimberley Sager
ADNR	Courtney Smith
ADNR	Krissy Plett
ADNR	Kim Sager
FERC	David Turner (by phone)
Natural Heritage Institute/Hydropower Reform Coalition	Jan Konigsberg
MWH	John Haapala (by phone)
Long View Associates	Steve Padula
Long View Associates	Randall Filbert
Cardno-ENTRIX	Craig Addley
Cardno-ENTRIX	Woody Trihey
Cardno-ENTRIX	Lynn Noel
HDR	James Brady
HDR	Robin Beebee
HDR	Heidi Weigner
HDR	Keri Lestyk
HDR	Scott Prevatte

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Organization	Name
HDR	Erin Cunningham
URS	Paul Dworian
R2 Resource Consultants	Dudley Reiser
R2 Resource Consultants	MaryLouise Keefe (by phone)
R2 Resource Consultants	Stuart Beck (by phone)
Tetra Tech	Bill Fullerton (by phone)
Tetra Tech	Rob Plotnikoff (by phone)
E-Terra	Lars Gleitsmann
GW Scientific	Michael Lilly
Brailey Hydro	David Brailey
LGL	Michael Link
LGL	Sean Burril
Aquacoustics	Don Degan
ARRI	Jeff Davis (by phone)
Susitna River Advisory Committee	Bruce Knowles
Alaska Ratepayers	Scott Crowther
Citizen	Jim Ferguson

Presentations

- Lynn Noel (Cardno-ENTRIX): Table of Preliminary 2013 - 2014 Formal ILP Studies – Beluga Whale
- Craig Addley (Cardno-ENTRIX): Table of Preliminary 2013 - 2014 Formal ILP Studies – Water Resources
- Craig Addley (Cardno-ENTRIX): Table of Preliminary 2013 - 2014 Formal ILP Studies – Geomorphology
- Craig Addley (Cardno-ENTRIX): Table of Preliminary 2013 - 2014 Formal ILP Studies – Fish and Aquatic Resources

Introduction

Steve Padula (LVA) began by summarizing licensing progress to date. Steve (LVA) noted that FERC had issued its Scoping Document 1 (SD1) on February 23, 2012 and that scoping meetings would be held by FERC March 27-30, 2012.

Betsy McGregor (AEA) explained that AEA had hired its technical consultants for the period ending March 2013. Steve (LVA) stated that the technical consultants would be assisting AEA in finalizing 2012 study plans and preparing formal 2013-2014 study plans. The consultants would also be assisting AEA in preparing 2013-2014 study request documents and that it was AEA's intent that stakeholders could adopt these study requests as their own, revising or augmenting them as necessary. Steve (LVA) stated that this would result in a less onerous task for stakeholders, who could focus their effort on any study elements they thought to be missing,

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rather than having to invest energy writing requests for studies AEA is already planning to conduct. Betsy (AEA) stated that both the final 2012 study plans and the draft study request documents would be provided to stakeholders by March 23, 2012. Betsy (AEA) then identified the study areas awarded to each of the technical consultant teams. Steve (LVA) stated that if stakeholders had comments on the content of the day's presentations (i.e., study summary tables); AEA would appreciate receiving that input soon.

Steve (LVA) stated that the goal of the April 2012 meetings would be to discuss revised 2012 study plans and 2013-2014 study tables. Craig Addley (Cardno-ENTRIX) explained that the 2013-2014 study tables would be revised to further clarify study objectives, refine general methods descriptions, and delineate approximate study areas. Craig (Cardno-ENTRIX) noted that specific study sites, sample sizes, and more detailed method descriptions would be defined later in the licensing process, prior to the filing of AEA's Proposed Study Proposal (PSP) with FERC.

Joe Klein (ADF&G) asked if 2012 study plans submitted to stakeholders on March 23 would identify specific tasks and include details related to methods, timing, study site locations, equipment to be used, QA/QC and procedures. Betsy (AEA) replied that the 2012 plans released on March 23 would include the elements identified by Joe (ADF&G).

Eric Rothwell (NMFS) expressed concern that stakeholders would be submitting 2013-2014 study requests to FERC on April 27, 2012, well before the results of 2012 studies would be available. Eric (NMFS) suggested that this arrangement could result in a situation where new information may warrant additional studies or study objectives and there would be no mechanism by which agencies could request them. Betsy (AEA) replied that the ILP process is iterative, with study objectives being refined and expanded as needed through the filing of the Revised Study Plan (in September 2012). Craig (Cardno-ENTRIX) added that FERC requires the assessment of findings after the first field season's results become available to determine whether studies need to be revised for the second year's fieldwork. Craig (Cardno-ENTRIX) noted that wherever there are uncertainties, study plans would be developed with contingencies, providing alternative paths forward depending on what is learned as study results become available.

Sue Walker (NMFS) stated that not enough information was available yet to preclude the need for fish passage at the proposed Project, so NMFS would likely file a request for a fish passage study.

Joe (ADF&G) stated that the agencies would benefit from a table or Gantt chart showing the major Project milestones, including a timeline depicting schedules for fieldwork, technical memoranda, reports, FERC filings, and interaction with stakeholders. Joe (ADF&G) added that the timeline should show approximately when output from various studies and modeling efforts would be integrated into other studies and modeling so that tools are ready on time to conduct impact analysis. AEA agreed to produce a Gantt chart showing the timeline showing Project licensing milestones and scheduling.

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Sue (NMFS) stated that being notified by AEA regarding the availability of materials was helpful but would prefer if AEA could attach materials to email messages. Betsy (AEA) stated that AEA was working on a more efficient system to communicate and share materials with stakeholders.

Ron Benkert (ADF&G) stated that if AEA and its technical contractors planned to install any structures in the Susitna River or its tributaries, it would be necessary to secure permits from ADNR to do so. Ron (ADF&G) encouraged filing for permits as soon as possible, as ADNR was receiving a high volume of permit requests. Craig Addley (Cardno-ENTRIX) suggested that it might be most efficient for AEA to consolidate its permitting needs, to the extent possible, into a single application. Ron (ADF&G) agreed that a more programmatic approach would streamline the process.

2013 - 2014 Formal ILP Studies – Cook Inlet Beluga Whale Study

Lynn Noel (Cardno-ENTRIX) noted that one of the objectives of the Cook Inlet beluga whale study was to summarize the life history, run timing, abundance, distribution, and habitat of beluga whale prey species, i.e. eulachon and salmon, in the Susitna River. Concern had previously been expressed regarding whether lamprey should also be considered a beluga whale prey species. Mandy Migura (NMFS) replied that she was aware of no information indicating that beluga prey on lamprey. She added that although Cook Inlet beluga occur in the Susitna River delta area year round, NMFS has not collected whale stomach contents data during winter. Stomach contents have not shown that beluga consume lamprey, although without winter data, it is impossible to be certain. Mandy (NMFS) said AEA should direct its initial efforts toward assessing impacts on salmon and eulachon. If information arises to indicate that lamprey may be important as prey, study goals could be reassessed at that time.

Betsy McCracken (USFWS) stated that Pacific lamprey is a prey buffer species in the lower river, and USFWS considers them important. Betsy (AEA) stated that AEA would be studying lamprey as part of its Non-Salmon Anadromous Fish Study, so the species would not be overlooked. Stakeholders asked what the uppermost extent of lamprey distribution is in the Susitna River. Jeff Davis (ARRI) stated that the northernmost tributaries in which lamprey have been found are Trapper, Clear, and Whiskers creeks.

Mike Buntjer (USFWS) noted that one of the study's objectives was to summarize the distribution of Cook Inlet beluga whales relative to the availability of four of the five salmon species and asked why pink salmon had not been included. Betsy (AEA) stated that NMFS had only identified Chinook, coho, chum, and sockeye salmon as primary constituent elements (PCEs) for belugas.

Mandy (NMFS) noted that beluga require high prey densities to feed effectively and that study objectives should be revised to explicitly call for assessment of potential Project effects on the densities of salmon and eulachon in the section of river used by the whales. AEA agreed to

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revise the objectives of the Cook Inlet Beluga Whale Study to explicitly state that salmon and eulachon densities would be estimated in the section of river used by the whales, so that potential effects of the Project could be assessed.

Mandy (NMFS) stated that in addition to evaluating run timing of salmon and eulachon, the study would need to address run duration. AEA agreed to revise the objectives of the Cook Inlet Beluga Whale Study to include run duration as well as run timing for salmon and eulachon. She also asked if fieldwork was included in the Cook Inlet Beluga Whale Study and Betsy (AEA) confirmed that fieldwork in 2013-14 and modeling would be conducted to assess the proposed Project's impacts on Cook Inlet beluga whale foraging and habitat.

The workgroup discussed the availability and value of acoustics data used to document whale use of the Susitna River delta. Workgroup members agreed that May through June was the period when whale use of the delta area is greatest and that additional tracking of whales would be unlikely to provide any information beyond what is known from existing studies.

2013 - 2014 Formal ILP Studies – Water Resources, River Routing Study

Craig (Cardno-ENTRIX) reviewed the objectives and potential study methods for the proposed River Routing Study, noting that an existing hydraulic routing model was being used to inform Project planning, but that the approach to routing used in the overall study program might need to be refined to provide the basis for the suite of models used to assess Project impacts. Craig (Cardno-ENTRIX) stated that it was possible that two routing models could be used, i.e., one for the ice-free period and one to simulate hydraulics when ice is present in the river.

Joe (ADF&G) noted that the routing model would be used to simulate stage-flow relationships longitudinally in the mainstem but asked how Project effects would be simulated in sloughs and side channels. Craig (Cardno-ENTRIX) replied that empirical data would be used to establish relationships between mainstem and slough/side channel conditions, i.e., associating side channel flows, breaching of side sloughs, etc. along the river with stage estimates provided by the routing model. This would allow for assessment of habitat effects and side-channel/slough access over a range of flows.

Joe (ADF&G) asked what time-step would be selected for output from the routing model. Craig (Cardno-ENTRIX) replied that typically a 1-hour time-step is considered sufficient, but a shorter interval could be selected if there is justification to do so. He noted, however, that a shorter time-step would result in a shorter simulation period.

Joe (ADF&G) asked how long the period of record would be for modeling. Craig (Cardno-ENTRIX) replied that modeling would be based on a 48-year period of record based on basin flow data obtained from the US Geological Survey (USGS).

Joe (ADF&G) asked where routing model transects would be located, and Craig (Cardno-ENTRIX) replied that the 2012 study plan included a map of potential transect locations, adding

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that the routing model would be based to some extent on transect locations established as part of the 1980s studies but that some additional/different transects would also be established. Michael Lilly (GW Scientific) stated that coordination with other technical consultants and stakeholders regarding transect locations would be conducted prior to distribution of the revised 2012 study plan on March 23. Michael (GWS) stated that some new transect locations would be needed to account for channel changes that have occurred over the past 30 years. David Brailey (Brailey Hydro) added that velocities and depths at each routing model transect would be measured using acoustic Doppler current profiling (ADCP), which would provide a highly accurate basis for developing simulations.

Bob Henszey (USFWS) asked what had been the basis for selecting transects used in the 1980s studies. Craig (Cardno-ENTRIX) replied that transects had been established to account for variability in channel conditions and to represent the overall channel throughout the river downstream of the proposed Project, so that simulations produced by the routing model were accurate.

Eric (NMFS) stated that rating curves for specific locations could change seasonally, particularly given the role played by ice in the Susitna River. Eric (NMFS) stated that channel roughness could vary as a function of flow, especially in winter, over the potential range of daily discharges proposed for the Project (i.e., 3,000 - 10,000 cfs). He noted that flow models are predicated on the assumption that channel conditions are static over the range of conditions being simulated. However, channel conditions following construction of the Project would change relative to existing conditions, which could compromise the reliability of model output.

Craig (Cardno-ENTRIX) replied that AEA's technical consultants would use all available information, including what has been learned during studies of other similar river systems, to validate the assumptions of models being used, and would be aware of any potential violations of assumptions as well as the implications of those violations. Robin Beebee (HDR) stated that potential effects of ice on the routing model would be assessed to some degree by empirical observation of ice dynamics beginning in 2012. Robin (HDR) added that the underside of surface ice tends to smooth out over the winter so that roughness can be greater early in the season and then decline.

2013 - 2014 Formal ILP Studies – Geomorphology and Ice Processes Studies

Ice Processes Study

Robin (HDR) stated that HDR planned to measure ice thickness prior to breakup in 2012, noting that breakup could occur as early as April so it would be important to initiate fieldwork as soon as possible. Robin (HDR) would coordinate with AEA, its other technical consultants, and stakeholders to select representative measurement locations that would produce results useful as input to other study efforts, for example, locations such as entrances to side sloughs where ice dynamics could affect fish habitat. HDR would also seek input regarding the placement of cameras, which would be used to detect the onset of ice breakup in a number of key locations.

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Eric (NMFS) asked how many flights would be undertaken in 2012 to observe ice breakup, adding that whatever is done in 2012 should be repeated in subsequent years to develop a more complete account of what occurs. Robin (HDR) replied that it was difficult to specify the number of flights that would be conducted, given that weather conditions will dictate whether and when flights are possible.

Eric (NMFS) asked if breakup conditions vary among tributaries at the three rivers confluence (i.e., among the Susitna, Chulitna, and Talkeetna rivers). Jeff Davis (ARRI) replied that breakup conditions in the three rivers vary a great deal among years, adding that in some years, sections of river open up and are then frozen over again following the formation of ice jams.

Joe (ADF&G) asked what the diameter of ice borings used to measure ice thickness would be, and Robin (HDR) replied a 4-inch-diameter auger would be used. Ice thickness will be measured along a transect of the channel at each measurement location to account for lateral variability in thickness.

Krissy Plett (ADNR) stated that at some parcels along the lower river, land owners are issued permits by ADNR to thicken ice bridges over which they transfer heavy equipment, such as agricultural machinery. Krissy (ADNR) said that the ice bridges are often the only way in which landowners can access the opposite side of the river and that AEA would need to evaluate the Project's potential effects on the ability of these landowners to use these ice bridges.

Geomorphology Studies

Joe (ADF&G) stated that when sampling sediment and bedload, it would be desirable to obtain as long-term a data series as possible. Joe (ADF&G) stated that the USGS had recommended the use of hydrophones to measure bedload, where feasible. Craig (Cardno-ENTRIX) stated that hydrophones are useful for identifying the flows at which bedload movement is initiated but questioned whether they could be used to develop bedload estimates. Joe (ADF&G) stated that based on his interaction with USGS personnel, hydrophones can be used to assess particle sizes being transported.

Eric (NMFS) stated that geomorphology work conducted in 2012 must be sound to set the stage for an accurate assessment of Project effects. Paul Dworian (URS) stated that an initial task would be the analysis of aerial photos to detect the extent of channel changes that have occurred over recent decades, which would help focus assessment on those areas where Project operations are most likely to affect channel structure and processes. Craig (Cardno-ENTRIX) added that AEA intended to assess the entire river downstream of the Project and that potential Project effects would be based on data and modeling, not speculation as to whether a certain reach, e.g., the lower river, is likely to be affected by the Project. Bill Fullerton (Tetra Tech) emphasized that work conducted in 2012 would not be aimed at trying to determine which reaches would or would not be affected by Project operations, but rather to develop the tools necessary to assess potential Project effects in 2014 and 2015.

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Bob Henszey (USFWS) stated that it would not only be important to assess Project effects on lateral changes in channel morphology but also vertical changes. Bill (Tetra Tech) agreed, noting that modeling would be designed to estimate potential Project-related channel aggradation and degradation.

Jan Konigsberg (NHI/HRC) asked if the objectives of the geomorphology study included assessing the Project's effects on long-term channel degradation. Bill (Tetra Tech) stated that assessing long-term effects would be critical, because not all changes would occur rapidly. Craig (Cardno-ENTRIX) reiterated that AEA would be using a 46-year flow record to simulate potential Project impacts.

Tim Sundlov (BLM) asked how AEA intended to assess potential impacts at locations where planned access roads cross would cross tributaries. Craig (Cardno-ENTRIX) replied that assessing existing conditions along proposed access road corridors, as well as estimated impacts, would be an element of the study program, adding that geomorphology, water quality, and fish habitat impacts would all be addressed. Bill (Tetra Tech) added that study results would not only be used to assess impacts but also to make decisions about the siting and design of road crossings, to minimize or prevent impacts where possible.

Paul (URS) and Bill (Tetra Tech) stated that the team studying geomorphology would benefit from observations made by other crews while they are conducting fieldwork and asked that leads for other study efforts request that their field crews record incidental observations of geomorphic phenomena, such as large wood transport, locations of mass wasting, etc.

Betsy (AEA) instructed Bill (Tetra Tech) to coordinate with Lars Gleitsmann (E-Terra) to obtain all available aerial images useful for assessing channel conditions in the Susitna River. It was noted that Dave Meyer (USGS, Alaska Science Center) would be the appropriate contact at USGS. Betsy (AEA) added that AEA would provide technical contractors with a list of Project-related contacts during the week of March 5, 2012.

2013 - 2014 Formal ILP Studies – Fish and Aquatic Resources Studies

Craig (Cardno-ENTRIX) reviewed examples of historic aquatic resources study results from the 1980s, explaining the potential applicability of these data to the current study effort. Sue (NMFS) asked whether relevant historic data were available to stakeholders. Workgroup meeting materials are available online at Susitna-watanahydro.org. Although current information includes only a small sample of the overall dataset, a more comprehensive and targeted review and synthesis of useful historical data will be conducted by the technical contractors as a preliminary element of their respective studies.

Craig (Cardno-ENTRIX) and Dudley Reiser (R2 Resource Consultants) stated that development of habitat suitability criteria (HSC) for some fish species and life stages represented a good example of where historic data could be used, i.e., conducting limited fieldwork to validate the previously developed HSC curves, which would improve the efficiency of the current instream flow modeling effort.

Jack Erikson (ADF&G) reminded the technical contractors that Alaska regulations preclude the use of felt-soled waders and that all members of field crews should be alerted to this before any fieldwork is conducted.

River Productivity Study

Referring to Objective 4 of the River Productivity Study (see Table of Preliminary 2013 - 2014 Formal ILP Studies – Fish and Aquatic Resources), MaryLou Keefe (R2 Resource Consultants) noted that the intent was to select for a river with physical conditions similar to those expected for the Susitna River with the proposed Project/operating regime in place. MaryLou (R2) asked if the river selected for the basis of any inferences was to be a system affected by a hydropower project. Craig (Cardno-ENTRIX) said that the intent was to find a river located at comparable latitude with physical conditions–mostly turbidity and temperature, but also flow–similar to those expected for the Susitna River under the with-Project alternative. If a regulated analog could be found, it could be used as the basis of comparison, but if not, an unregulated system would likely suffice for providing an idea of how productivity might change in the Susitna River. Craig (Cardno-ENTRIX) noted that if a suitable analog river could not be found, then Objective 4 would not go forward.

MaryLou (R2) stated that it would be important to control for other variables before assuming that turbidity was the primary factor accounting for any potential differences in productivity between the existing and with-Project conditions. Rob Plotnikoff (Tetra Tech) stated that it should be possible to model benthic macroinvertebrate and periphyton production, or at least abundance, against a turbidity gradient. Jack (ADF&G) stated that a number of recent studies had been conducted to document the relationship between turbidity and the ability of fish to feed on invertebrate drift, and results from these studies could be useful when assessing potential Project effects.

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Betsy McCracken (USFWS) asked if the study would focus on tributary mouths, which are likely to be productivity hotspots. MaryLou (R2) replied that it would be important to select study sites to address all habitats likely to be affected by the Project, adding that areas to be studied would be determined collaboratively with stakeholders during the development of the study plans.

Jan (NHI/HRC) acknowledged that increased light penetration due to decreases in turbidity could increase productivity but questioned whether potential reductions in nutrient input resulting from a dampening of high flows could offset such increases. Craig (Cardno-ENTRIX) stated that baseline nutrient level would be measured as part of the water quality study, and based on this information, nutrient levels under a range of potential with-Project operational scenarios would be modeled.

Referring to Objective 5 in the studies table, Sue (NMFS) asked if the bioenergetics model used to estimate with-Project juvenile salmonid growth would be calibrated based on actual site-specific fish growth data measured in the field. Craig (Carndo-ENTRIX) replied that empirical fish growth data from the Susitna River would be collected (or derived from existing information) for calibration of the model.

Reservoir Fish Habitat and Entrainment Risk Study

Referring to Objective 5, i.e., characterizing the reservoir fishery, Jack (ADF&G) stated that it would also be important to characterize the potential tailwater fishery. Mike (USFWS) asked if AEA intended to propose a management strategy for the reservoir. Wayne Dyok (AEA) stated that AEA would work with ADF&G and other relevant agencies to develop information needed to make decisions about the future management of the reservoir fishery but that the agencies were the only entities with the authority to propose a management strategy.

Mike (USFWS) noted that Objective 6 involved conducting a desktop analysis to evaluate entrainment risk for resident fish in the reservoir and asked if AEA would also be proposing measures to reduce the potential for entrainment. Wayne (AEA) stated that as part of Project engineering, AEA's engineering contractor would assess measures for reducing fish entrainment into the powerhouse intakes.

Fish Passage Study

Mike (USFWS) asked if the Fish Passage Study involved assessment of fish habitat in tributaries to the middle Susitna River or potential barriers to tributary access following construction of the proposed Project. Craig (Cardno-ENTRIX) replied that the passage study would address potential passage barriers in tributaries in and above the Devils Canyon reach. Craig noted that the Upper River Fish and Habitat Study would involve mapping tributary habitat in the proposed inundation zone below elevation 2,000 feet.

Upper River Fish and Habitat Study

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Sue (NMFS) asked why identification of fish passage barriers would be conducted up to an elevation of 3,000 feet. Betsy (AEA) replied that 3,000 feet is the highest elevation at which Chinook have been observed in the Susitna River basin.

Referring to Objective 6, Jack (ADF&G) noted that AEA proposed to collect genetic samples from juvenile Chinook salmon to back-calculate the number of Chinook spawners that produced the juveniles. Jack (ADF&G) asked which technical consultant would be tasked with collecting the genetic samples. Craig (Cardno-ENTRIX) replied that HDR would be collecting the samples. Jack (ADF&G) stated that HDR would need to coordinate with ADF&G to ensure that sample sizes and methods are appropriate and consistent with ADF&G's overall Chinook genetics study program. The genetics lab might be capable of identifying tributary-specific lineages, depending on how fish samples are collected.

Adult Salmon Distribution and Habitat Utilization Study

Craig (Cardno-ENTRIX) pointed out that in the Relevant 2012 Components Column of the proposed studies table, the text stated, "ADF&G anticipates radio tagging and monitoring approximately 400 coho, 400 chum, 400 pink, 100 sockeye, and 500 Chinook adult salmon at Flathorn in 2012." Craig (Cardno-ENTRIX) stated that this was inaccurate, and the text would be changed to reflect the actual numbers to be tagged by ADF&G, i.e., 200 coho, 200 chum, 200 pink, 200 sockeye, and 400 Chinook.

Referring to Objective 4, Craig (Cardno-ENTRIX) stated that those managing field crews would need to coordinate with Dudley (R2) to ensure that fish habitat use data are properly collected for the development of HSC for spawning salmon. Dudley (R2) stated that it would also be necessary to develop HSC for adult salmon holding habitat.

MaryLou (R2) said that it would be necessary to ensure that data are collected to develop salmonid incubation HSC, or to verify existing incubation criteria. Wayne (AEA) stated that NMFS conducted a salmonid incubation study in the 1980s, which would provide valuable information, and Woody Trihey (Cardno-ENTRIX) noted that in the 1980s he had installed Vibert boxes in redds and fyke nets at the downstream ends of sloughs in an attempt to document chum and coho salmon fry emergence; fyke nets placed in sloughs with similar habitat characteristics, including groundwater upwelling, had shown that fry emergence varied among habitats with apparently similar conditions. Wayne (AEA) stated that these results underline the need to understand the mechanisms driving fish habitat use in the Susitna River basin so that Project effects could be predicted.

Tim Sundlov (BLM) stated that juvenile salmonids associate strongly with the interface of clear water and turbid water and that these areas of interface vary spatially as a function of flow. It's important to model, or estimate in some other way, the relationship between Project flows and the availability and locations of areas where clear water and turbid water come in contact.

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Mike (USFWS) stated that it would be critical to estimate fry stranding under proposed Project operations. Dudley (R2) agreed that fry stranding was a critical issue and stated that potential stranding under different operational scenarios would be estimated using a combination of data including bank slope, magnitude of flow change, and ramp rates, particularly downramping rates. Wayne (AEA) added that it would be important to develop a Project flow regime that would prevent or minimize redd construction in areas that would later be dewatered, thereby preventing desiccation of redds.

Juvenile Salmon Study

Eric (NMFS) asked whether HSC for juvenile salmonids were to be based on existing habitat use information or if field data were to be collected during 2012-14. Dudley (R2) replied that AEA would begin with the available data, determine where data may be lacking, and augment the data as needed to ensure that representative, site-specific HSC are available for modeling. Eric added that when developing and/or validating macrohabitat and microhabitat HSC for juvenile salmon, it would be critical to develop criteria that represent habitat use throughout the year, especially during winter.

Mike (USFWS) noted that Study Objective 2 involved characterizing juvenile salmon relative abundance in the middle and lower river reaches and asked if the intent was to measure fish densities in various habitats. Craig (Cardno-ENTRIX) confirmed that fish densities would be measured by field crews, wherever possible, given site-specific conditions and sampling methods. MaryLou (R2) stated that density estimates would only be possible in open-water environments, adding that during winter, when ice is present, relative abundance estimates may be all that is feasible.

Jan (NHI/HRC) stated that when conducting fieldwork, especially in the lower river, it would be important to differentiate between fish produced in the Susitna River and its major tributaries. In this way AEA could account for potential Project effects not only on fish production within the Susitna River but also on production in larger tributaries, for example the Yentna River. Jan (NHI/HRC) stated that without this differentiation, there would be no ability to detect whether the Project is affecting fish production in important tributaries.

Resident and Invasive Fish Study

Jack (ADF&G) stated that ADF&G would evaluate this study's objectives and make recommendations to AEA as to which species should be addressed and how they should be studied. Woody (Cardno-ENTRIX) stated that arctic grayling and rainbow trout had been the two primary resident species studied during the 1980s.

Wayne (AEA) asked whether ADF&G thought the Project could be operated to reduce the suitability of the river for northern pike. Jack (ADF&G) replied that there is no way to know what the future distribution and abundance of pike will be without the Project in place, making it difficult to speculate as to how the Project might affect pike.

Joe (ADF&G) asked if AEA planned to develop HSC for northern pike and use them to simulate potential Project-related changes in pike abundance and distribution. Craig (Cardno-ENTRIX) stated that Objective 5 of the study involved review of existing information and collection of limited new data to assess Project effects on northern pike distribution and abundance, but the plan was not to model northern pike habitat suitability.

Jack (ADF&G) stated that a new technique being used to detect invasive species involved collecting water samples and analyzing them to detect the presence of invasive species' DNA. He suggested that this approach could be useful in the Susitna River.

Non-Salmon Anadromous Fish Study

Betsy McCracken (USFWS) noted that Pacific lamprey ammocoetes remain in the river's substrate for up to six years, and because very little is known about their distribution in the Susitna River basin, it would be necessary to sample adequately to predict the Project's effects on this species. Craig (Cardno-ENTRIX) stated that AEA was aware of the work needed to formulate study methods and acknowledged that in some cases it would likely be necessary to develop species-specific approaches to study objectives. MaryLou (R2) noted that sampling approaches would vary not only by species but also by life stage, adding that unlike many other fish species, lamprey are not susceptible to electrofishing, so other sampling methods would be required.

Sue (NMFS) noted that the study called for sampling using a variety of methods in the middle and lower river mainstem, side channels, sloughs, and tributary mouths and questioned whether the spatial scope was too ambitious for the time allotted for study. Craig (Cardno-ENTRIX) replied that spatial and temporal scopes had not yet been defined and MaryLou (R2) added that AEA and its contractors would work with the resource agencies to collectively determine what information needs are critical and what constitutes an achievable scope. MaryLouise stated that an outline would be available soon, which would include a proposed approach to assessing the fish assemblage and the distribution, population structure, and abundance of the species of interest, noting that estimating abundance would be the most difficult objective to address.

Access Alignment, Construction Area, and Transmission Alignment Aquatic Investigation Study

Wayne (AEA) stated that AEA would work with the Alaska Department of Transportation (ADOT) to identify the best access road alignments and bridge crossings from the standpoint of structural longevity, transportation efficiency and safety. Following identification of a corridor based on these considerations, AEA would make adjustments in an iterative fashion, modifying the alignment based on the results of natural resource studies to minimize road-related impacts and then reevaluate the new alignment to assess its impacts. Wayne (AEA) noted that the US Army Corps of Engineers would require AEA to develop and evaluate at least two corridor alignment alternatives. Betsy (AEA) stated that the eventual goal would be to construct two

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transmission line corridors and one access road, with one transmission line co-located with the access road.

Action Items

- AEA requested that stakeholders provide comments on the 2013-14 study summary tables (presented at the March 1 and 2, 2012 workgroup meetings) as soon as possible (i.e., by March 19).
- AEA agreed to revise the objectives of the Cook Inlet Beluga Whale Study to explicitly state that salmon and eulachon densities would be estimated in the section of river used by the whales, so that potential effects of the Project could be assessed.
- AEA agreed to revise the objectives of the Cook Inlet Beluga Whale Study to include run duration as well as run timing for salmon and eulachon.
- AEA instructed Bill Fullerton (Tetra Tech) to coordinate with Lars Gleitsmann (E-Terra) to obtain all available aerial images useful for assessing channel conditions in the Susitna River.
- AEA agreed to provide technical contractors with a list of Project-related contacts by March 9, 2012.
- AEA agreed to produce a Gantt chart showing the major Project milestones, including a timeline outlining the schedule for fieldwork, technical memoranda, reports, FERC filings, and interaction with stakeholders.

Agreement and Decisions

- Aquatic Resources Workgroup members agreed that May through June was the period when beluga whale use was heaviest in the Susitna River delta and that additional tracking of whales would be unlikely to provide any information beyond what is already known from existing studies.

MWH