



SUSITNA-WATANA HYDRO

Meeting Notes

Initial Study Report (ISR) Meetings

Economics (Study 15.5), Socioeconomics (Study 15.6), Air Quality (Study 15.9), Transportation (Study 15.7), Health Impact Assessment (Study 15.8), Recreation Resources (Studies 12.5), Aesthetics (Study 12.6), and Recreation River Flow (Study 12.7), Geology and Soils (Study 4.5), Probable Maximum Flood (Study 16.5), Site-Specific Seismic Hazard Study (Study 16.6), Subsistence (Study 14.5), Cultural Resources (Study 13.5) and Paleontology (Study 13.6)

March 30, 2016

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

TIME: 8:30 am to 4:30 pm AKDT

SUBJECT: ISR Meetings

Goal Describe the status of Study Plan Implementation and explain any variances and proposed modifications to ongoing studies for completion of the Study Plans.

Attendees: **Betsy McGregor** AEA, **Dan Smith** AEA, **Doug Ott** AEA **Kathryn Peltier** McMillen Jacobs Associates, **Wayne Dyok** H2O EcoPower, **Sydney Hamilton** Accu Type Depositions, **Kirby Gilbert** MWH, **Chuck Sensiba** Van Ness Feldman, **Maryellen Tutell** DOWL, **Burr Neely** NLURA, **Tracie Krauthoefer** Corvus Culture, **Donna Logan** McDowell Group
Alan Mitchnick FERC, **Tyler Rychener** Louis Berger,
Brian Davis ADF&G, **Joe Klein** ADF&G, **Mark Fink** ADF&G, **Sarah Yoder** ADHSS, **Tom Gillispie** SHPO
Jesse Hankins BLM, **Cassie Thomas** NPS,

On Phone: **Tim Kramer** AECOM, **Nikolas Griffith** DOWL, **Monte Alves** ERM, **Michael Bruen** MWH, **Marci Balge** Newfields, **Phil DeVita** HMMH, **John Gangemi** ERM, **Jonathan King** Northern Economics, **Louise Kling** AECOM, **John Haapala** MWH, **Jon Zufelt** HDR,
Ken Wilcox FERC, **Karl Swanson** FERC, **Suzanne Novak** FERC, **Paul Makowski** FERC, **Frank Winchell** FERC, **Jay Stallman** Stillwater, **Alison MacDougall** Louis Berger,
Heidi Lingenfelter AHTNA, **Corinne Smith** The Nature Conservancy, **Becky Long** SRC, **Whitney Wolff** Talkeetna Community Council

Introduction

As part of the Federal Energy Regulatory Commission's (FERC) Integrated Licensing Process (ILP), Alaska Energy Authority (AEA) is required to hold meetings with licensing participants and FERC to discuss the study results and

AEA's plans to modify the Study Plan as outlined in the Initial Study Report (ISR). The ISR Parts A, B, and C for each study were filed with the FERC on June 3, 2014. For many studies, additional information was filed in technical memoranda September through December 2014. In the fall of 2015, Study Implementation Reports (SIR) and Study Completion Reports (SCR) were filed with FERC to report on the status or in some cases completion of studies since the previous ISR filings. ISR Part D, filed on November 6, 2015, provided a "roadmap" of the various components of each study, updates to the study progress, variances, modifications, and steps to complete the study. The ISR Meetings were held in Anchorage over five days, March 22, 23, 25, 29 and 30, 2016, covering the 58 FERC-approved Study Plans for the Susitna-Watana Project.

The following meeting notes are for the March 30, 2016 meeting and 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 presentations are available under the "previous meetings" tab (link provided under the meetings tab) on the Project website.

After introductions Kirby Gilbert, MWH, presented a brief overview of the history of major filings and milestones of the Project and an updated FERC schedule. AEA will file the ISR Meeting Summary April 24, 2016. Licensing participants file requests for modifications to the existing Study Plan or requests for new studies June 23, 2016. Kirby reviewed the regulatory requirements for requesting a study plan modification to an existing study or a new study, and made reference to the poster boards in the room. AEA and other licensing participants file responses to the requests August 22, 2016. FERC will make its study plan determination on the meeting summaries and any disagreements or recommendations for modified or new studies by October 21, 2016. These details are in the "Introduction to ISR Meetings" presentation.

Becky Long, SRC, mentioned that she had filed comments addressing the June 2014 ISR and subsequent October 2014 ISR meetings. She asked if there is a need to refile these comments and if so, if it is easiest to file one document for multiple studies or separate documents for each study being commented on. Alan Mitchnick, FERC, said that the comments are already on record if they were filed with FERC, but he suggests either refiling by referencing the originally filed comment document if filing updated comments prior to June 23, 2016. Chuck Sensiba, VNF, said it is helpful for AEA if 2014 meeting comments which are still relevant are filed prior to June 23, 2016, as an attachment or included in any updated comments.

Betsy McGregor, AEA, stated that proposed modifications are being documented in the summaries and any agreements will be documented as well. It is however in the licensing participants' best interest to file with FERC any requests for modifications to existing study plans or requests for new studies as well as their reasoning for the requests. Alan Mitchnick, FERC, agreed with Betsy's statement and added that FERC prefers to see agreements when available and the rationale for any request is important to include.

15.5 Regional Economic Evaluation Study

Jonathan King, Northern Economics, provided an overview of the objectives, components, variances, proposed modification, and a summary of the results; as explained in the June 2014 ISR. There have been no variances to the Study Plan.

Although ISR Part D, Section 7 indicated that AEA planned no modifications to the methods for the study, AEA has since proposed one modification to the Study Plan (Slide 7), as discussed during the meeting. AEA proposes to utilize the IMPLAN model instead of the REMI model for this study. Jonathan King elaborated on the proposed modification

of using the IMPLAN model instead of the REMI model. A critical component of the REMI model is having a reasonable assumption of the economic future. Because oil prices have drastically dropped since the Study Plan was approved and the economic future of Alaska is too uncertain, a static model such as the IMPLAN is more applicable. Separate IMPLAN models will be built to reflect the with-Project and without Project scenarios. The IMPLAN model is standard practice for economic modeling with less specificity than REMI. The REMI model is able to be run at a later date if required.

Corinne Smith, The Nature Conservancy, asked if the IMPLAN model determines effects on fisheries and other economic resources. Johnathan King, Northern Economics, stated that it does in a general sense, but these aspects will be looked at in further detail for Study 15.6.

Corinne Smith, The Nature Conservancy asked how the new model will show changes at the borough level. Jonathan King, Northern Economics, stated that some detail will be less specific in the IMPLAN model than the REMI model so many aspects will not be shown at the community level.

Becky Long, SRC, commented on two AEA reports (Susitna Cost Benefit Analysis, Engineering Feasibility Report) that are not part of the FERC-approved Study Program and are beyond the scope of the ISR Meeting. Becky was concerned the analyses for the cost of power did not fully consider costs such as: finance costs, additional storage, helicopter use for transmission line installation, the replacement of the railroad bridge, fish passage, contingency, land use payments to native corporations, and dam decommissioning.

Whitney Wolff, SRC, asked if Railbelt grid independent service operators and transmission line owners are being considered. Wayne Dyok, H₂O EcoPower, stated that the modeling to date had the assumption that some independent operators would be present.

15.6 Social Conditions and Public Goods Study

Jonathan King, Northern Economics, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June 2014 ISR.

Although ISR Part D, Section 7 indicated that AEA planned no modifications to the methods for the study, AEA has since proposed two modifications to the Study Plan (Slide 8), as discussed during the meeting. Both the RUM modeling and the Quality of Life survey require information from studies which have yet to be completed and policy decisions regarding the level of public access. As such, AEA proposes moving these analyses from the Updated Study Report to the license application. The second modification is consistent with AEA's proposed modification for Study 15.5 of using IMPLAN instead using REMI (described above); AEA proposes using the IMPLAN results for the analysis in Study 15.6 instead of REMI results.

Cassie Thomas, NPS, asked if the study will quantify recreation and compare it to the neighboring areas. She also asked if the study will be providing a head count or recreation value for recreation experiences. Johnathan King said that the study is collecting more than a head count. The survey asked details so one could appropriately transfer recreation activities. The RUM model has the capability to appropriate and quantify loss.

Johnathan King, Northern Economics, stated that the third bullet on Slide 10 (the Quality of Life Survey) is proposed to be deferred until the Draft License Application (DLA). Becky Long, SRC, asked for an explanation of the Quality of

Life survey and why it is being deferred. Jonathan King explained that it is a sequencing issue and that the survey should be delayed until there is a better understanding of the Project and related impacts.

Cassie Thomas, NPS, asked if it will be possible for any of the studies that have impact assessment as part of the objectives to complete that portion prior to the USR. Betsy McGregor, AEA, said that some studies will be requesting a modification to defer that objective to the DLA, but some resources are not as sensitive from the Project operations so the impact assessment can be completed.

Becky Long, SRC, stated that the Quality of Life survey is baseline. Jonathan King, Northern Economics, clarified that the quality of life survey is more impact related than baseline.

Whitney Wolff, Talkeetna Community Council, asked how the biophysical attributes of the river system will be characterized if the survey is deferred. Jonathan King, Northern Economics, explained that the RUM model will be covering this.

Whitney Wolff, Talkeetna Community Council, asked how the study will be evaluating unincorporated communities with the new model in Study 15.5. Jonathan King, Northern Economics, explained that population data is being included for unincorporated communities but financial and structure is only available on a town level for incorporated communities; unincorporated communities will be evaluated at the borough level.

Whitney Wolff, Talkeetna Community Council, asked why Houston was added to the analysis. Jonathan King, Northern Economics, said it is because Houston is on the road system and on the railroad. Whitney Wolff voiced concern that Willow is not added as well. Becky Long, SRC, proposed the modification to add Willow. Betsy McGregor, AEA, suggested that, although her request will be captured in the meeting summary, Becky Long, SRC, should file formal requests with FERC. Whitney Wolff said that the Talkeetna Community Council will be requesting Willow to be added to the study communities.

Corinne Smith, The Nature Conservancy, asked if the RUM model will be available prior to the DLA. Jonathan King, Northern Economics, said that the USR will have the baseline RUM model, but the input for the model will not be complete until after the USR.

Corinne Smith, The Nature Conservancy, noted that the Quality of Life modification was not presented in ISR Part D and asked how licensing participants can know if there are additional modifications without attending these ISR meetings. Betsy McGregor, AEA, stated that she believes this is the only resource area with modifications proposed after ISR Part D was filed. She noted that the ISR Meeting presentations are fully comprehensive of all proposed modifications for each study and will be captured in AEA's ISR Meeting Summary to be filed with FERC.

15.9 Air Quality Study

Phil DeVita, Harris, Miller, Miller and Hanson, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Completion Report was filed with FERC on November 4, 2015. This study is complete. As such, AEA proposes no modifications to the FERC-approved Study Plan.

Suzanne Novak, FERC, asked when the quantitative analysis on operations and maintenance activities as well as construction activities will be available. Kirby Gilbert, MWH, said that the DLA will include this information.

Becky Long, SRC, stated that she had previously filed comments on this study regarding the changing of environmental conditions due to climate change. She will file these comments again.

15.7 Transportation Resources Study

Maryellen Tuttell, DOWL, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015.

AEA proposes two modifications to the Study Plan in addition to carrying forward the variances reported in the ISR: 1) forecasts for existing highway facilities were documented from existing traffic demand models or developed using historic growth rates. Aviation forecasts were documented using published aviation data. Forecasts for various modes may be updated if new data is available. River use forecasts will be qualitatively evaluated based on data obtained through interviews with knowledgeable persons and 2) Project effects on all transportation modes will be qualitatively evaluated based on the level of Project information available, professional judgment, and interviews with knowledgeable individuals. This differs from RSP Section 15.7.4.5, which implied that effects would be quantified for highway and rail modes.

Cassie Thomas, NPS, asked if when interviewing non-recreation transportation users, the study looked at the rural railroad users. Maryellen Tuttell, DOWL, said that they discussed rail capacity with the railroad and they did not believe that the additional rail traffic demand would result in adverse impacts to existing rail traffic.

Whitney Wolff, Talkeetna Community Council, asked when the study instrument for surveys on river and trail use would be available. Maryellen Tuttell, DOWL, said it would be completed prior to the USR. She is currently looking at other studies to ensure no duplication of efforts.

Whitney Wolff, Talkeetna Community Council, commented that the report indicates that the airport will be affected and asked where the supporting data is presented. Maryellen Tuttell, DOWL, responded that, at this time, the determination is qualitative. Workers are expected to be flown in, which would increase traffic at some airports, but which airports would be used for worker transport and to what extent is not known at this point in time. The increased traffic will be quantified when the construction and operation needs for transporting people and supplies are better defined, known. Maryellen stated that the data in the USR will be qualitative and the DLA will present the quantitative data.

Whitney Wolff, Talkeetna Community Council, asked if bridge modifications necessary to transport Project equipment has been economically quantified. Maryellen Tuttell, DOWL, said that the study only identifies the need for changes such as these and how the current transportation infrastructure will be affected.

Whitney Wolff, Talkeetna Community Council, urged the study to consider the barge activity on the Susitna based out of Willow. She added that this activity is mostly non-recreational.

15.8 Health Impact Assessment

Marci Balge, Newfields, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June 2014 ISR. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015.

AEA proposes two modifications to the Study Plan. These include: 1) the HIA analysis to be provided in the Updated Study Report (USR) will not serve as a final HIA for the Project. The analysis included in the USR will serve as a template that can be updated and included in the FERC License Application once the AEA Project proposal is finalized. The USR, therefore, will not describe specific impacts or include a ranking and rating, but will include a high-level overview of potential impact mechanisms and effects; and 2) AEA will update baseline health data to the most current available to perform the HIA.

Whitney Wolff, Talkeetna Community Council, asked when the HIA will be presented. Marci Balge, Newfields, said that the USR will provide the completed template and identify potential impact mechanisms. The DLA will include the analysis which depends on final information from multiple studies.

Whitney Wolff, Talkeetna Community Council, asked if work for this study will be conducted in 2016. Betsy McGregor, AEA, said that there is no anticipated work in 2016 and updated schedules to complete studies are not yet available. The FERC Study Plan Determination and funding availability must be known before scheduling future work.

Whitney Wolff, Talkeetna Community Council, asked if this study will be utilizing the updated economic model (IMPLAN) rather than the REMI. Marci Balge, Newfields, said that Study 15.8 will utilize whatever product is available from Study 15.5.

12.5 Recreation Resources Study

Tim Kramer, AECOM, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015. There was a decision point in the Study Plan regarding the extension of the study area in to the Lower Susitna River. Based on current recreational use and the potential Project impacts to those uses from changes to instream flow, ice processes, geomorphology, and aesthetics, it was determined to not extend the recreation study any further downstream. Executive interviews with user groups and informal consultations have indicated low levels of flow dependent recreation use between the Parks Highway Bridge (PRM 88.9) and Susitna Landing. Summer users and operators cited the lack of access, safety considerations, cost, and availability of fish and game resources as reasons for low levels of flow-based recreation. Log books provided by Susitna Landing managers indicate that winter recreation users (primarily snowmachiners) were crossing the Susitna River to travel to lands west of the river. Winter trails that cross the Lower Susitna River include: Rabideaux Trail (MP 89), Trapper Lake Trail (MP 82.5), Dshka-Su Trail (MP 82.5).

The modifications described in ISR Part D, Section 7.1 were implemented as variances. AEA proposes no additional modifications of the methods for this study.

Cassie Thomas, NPS, asked for clarification regarding a completion of trail classification; page 1 of the fall 2015 TM states that the classification is not complete and page 15 of the SIR states that it is. Tim Kramer, AECOM, said that trail classification has been completed and that page 1 must have been a mistake overlooked.

Cassie Thomas, NPS, said that she will be requesting a modification for the study to extend the study to the Lower River based on the uncertainty in geomorphology changes downstream of PRM 29.9. Becky Long, SRC, agrees with the request. Betsy McGregor, AEA, clarified that there is not uncertainty regarding the potential geomorphology impacts downstream of PRM 29.9; an analysis has been completed and it has been determined that the potential for Project effects downstream of PRM 29.9 does not warrant modeling. The analysis for this decision point is described

in the Study 6.6 tech memo filed in September 2014. Studies such as eulachon (Study 9.16) and beluga whale (Study 9.17) will still be studied downstream of PRM 29.9.

Whitney Wolff, Talkeetna Community Council, asked why no level 5 trails were identified in the study. Tim Kramer, AECOM, explained that level 5 trails are the most highly developed trail possible and they do not exist in the study area which is mostly rural with less developed trails.

Cassie Thomas, NPS, said that she found some errors in trail descriptions and will file her corrections in writing. She also said that she is glad the study considered non-registered voters and that Willow should be included in the study. Donna Logan, McDowell Group, explained how non-registered voters were considered in the analysis and demand modeling of the mail survey data. Because non-registered voters were not informed in the mail survey sample, there was potential bias in the data toward registered voters. To inform how (or if) to adjust for this bias, phone surveys were conducted at random and those surveyed were asked if they were registered or not registered to vote. Cell phone numbers were also included in the phone sample but were limited to cell phone numbers issued in Alaska. The telephone sample did not include Alaska residents with out-of-state cell phones who did not have an Alaska landline.

Whitney Wolff, Talkeetna Community Council, asked where the final Project effects on recreation will be presented. Tim Kramer, AECOM, said the USR will capture effects to the extent it can based on the details of the Project at that time. The final impact assessment will be provided in the license application.

12.7 River Recreation Flow and Access Study

John Gangemi, Environmental Resources Management, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June ISR. In addition to the June ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015. There was a decision point in the Study Plan regarding the extension of the study area in to the Lower Susitna River. Based on current recreational use and the potential Project impacts to those uses from changes to instream flow, ice processes, geomorphology, and aesthetics, it was determined to not extend the recreation study any further downstream. Executive interviews with user groups and informal consultations have indicated low levels of flow dependent recreation use between the Parks Highway Bridge (PRM 88.9) and Susitna Landing. Summer users and operators cited the lack of access, safety considerations, cost, and availability of fish and game resources as reasons for low levels of flow-based recreation. Log books provided by Susitna Landing managers indicate that winter recreation users (primarily snowmachiners) were crossing the Susitna River to travel to Trapper Lake, Neil Lake, Lisa Lake, and Florine Lake.

AEA is not requesting any modifications to the Study Plan.

Jesse Hankins, Bureau of Land Management, asked if the sample size is adequate to represent the recreation in the river. John Gangemi clarified that there are a total of 207 total survey responses split between the reaches.

Cassie Thomas, NPS, asked if there were any confidence intervals for the histogram showing responses by people. John Gangemi, Environmental Resources Management, said that he will consider how to calculate confidence intervals on the data.

Cassie Thomas, NPS, said that the box and whiskers diagrams on slide 31 show a range of flows with activity and asked whether flow preference was a factor for recreation. John Gangemi, Environmental Resources Management, said that the data indicates there is a broad range of flows used by river recreation participants. Recreation was observed across a wide range of flows and this may be a reflection of the river channel shape being broad and able to absorb a wide range of flows without substantial changes to the recreation opportunity.

Cassie Thomas, NPS, said that Devils Canyon may be a portion of the river where recreation shows more of a flow preference. John Gangemi, Environmental Resources Management, said that if this information exists, he hopes to find it during the planned focus groups discussions.

Whitney Wolff, Talkeetna Community Council, asked how the online poll worded the question asking if users would like to “improve conditions”. John Gangemi, Environmental Resources Management, said he would have to look into it.

Whitney Wolff asked if commercial recreators were included. John Gangemi said that the study conducted executive interviews with commercial outfitters, both motorized and non-motorized. The box and whisker plots represent responses to the online survey; it cannot be distinguished if the online respondent was a commercial outfitter that completed the online survey or an individual on a commercial trip. ISR Part A includes the executive interview notes.

Whitney Wolff, Talkeetna Community Council, asked if the study integrated with the Transportation Study 15.7. John Gangemi, Talkeetna Community Council, confirmed that the studies were integrated and that the information would be presented in the USR. Ken Wilcox, FERC, asked if the transportation study team will be present in the focus groups for study 12.7. Betsy McGregor, AEA, said that this is a good suggestion although the two studies focus on different uses of the river. She added that focus group meetings are also part of the transportation study. John Gangemi said he can make sure that each study has input during the focus groups or the focus group meetings may be integrated if possible.

12.6 Aesthetic Resources Study

Louis Kling, AECOM, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015. There have been no variances from the FERC-approved Study Plan. There was a decision point in the Study Plan regarding the extension of the study area in to the Lower Susitna River. As described in the June 2014 ISR, it was determined to not extend the Aesthetic Resources study area down river below Talkeetna. Though changes to river flow, stage, sediment load, and ice cover in the Lower River Segment would occur with the project, they are considered to be within the normal range of variability. The Lower River Segment is expected to remain a wide, low-gradient, braided, and turbid river. Since river uses are not expected to change there would be no shift in predominant viewer groups.

No modifications to the Study Plan methods are needed to complete the study and meet the Study Plan objectives. However, the study area has changed from that described in the RSP (Section 12.6.3): AEA removed the Chulitna Corridor (ISR Part D Overview Section 1.3) and added the alternative Denali East Option (access road and transmission line corridor) to the study area.

Whitney Wolff, Talkeetna Community Council, asked how the interdisciplinary studies are coordinating with the recreation study. Louis Kling, AECOM, said that Study 12.6 has been working closely to coordinate throughout study implementation. Baseline data collected through this study will feed into potential changes in recreation.

Donna Logan, McDowell Group, clarified that surveys did capture noise disturbances and potential landscape attributes and will be reported in the USR.

Cassie Thomas, NPS, thanked AEA and their consultants for the in depth and well done recreation and aesthetics baseline studies.

4.5 Geology and Soils Characterization Study

Michael Bruen, MWH, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015.

No modifications to the Study Plan methods are needed to complete the study and meet Study Plan objectives. The Chulitna Corridor was eliminated from the study area (ISR Part D Overview, Section 1.3) in 2014 and the Denali East Corridor Option was added to the study area as an additional, alternative north-south corridor alignment for transmission line and road access from the dam site to the Denali Highway (ISR Part C, Section 7.1.2).

Joe Klein, ADF&G, asked about the permafrost being affected by the reservoir being filled, specifically the left abutment by the dam site. Michael Bruen, MWH, stated that instrumentation monitoring shows that permafrost is present in the left abutment at the dam site to a depth of approximately 200-250 ft. The permafrost in bedrock causes ground water in the fractures to freeze, thus many of the fractures are ice-filled in this zone. During construction and following impoundment of the reservoir, the abutment is expected to thaw resulting in the melting of the ice. As with all major dams, a grout curtain will be installed in the dam foundation to control underseepage. In constructing the grout curtain, the open fractures in bedrock will be filled with cement grout. Just upstream of the dam site on the upper left abutment slopes, there is evidence of melting permafrost where near surface debris flows have occurred on the north-facing slopes.

Becky Long, SRC, asked if a separate report will be drafted to characterize permafrost in the area. Michael Bruen, MWH, said that permafrost is mentioned in several reports. Study 4.5 investigated ground temperature and groundwater conditions at the dam site. In addition, there is evidence of discontinuous permafrost from surficial debris flows, along the upper slopes of the Susitna River upstream of the dam site. Many of the shallow slumps are a function of melting permafrost.

Whitney Wolff, Talkeetna Community Council, asked what contributes to the current sloughing of the banks east of the dam site at the Watana Creek area. Michael Bruen, MWH, responded that the bank sloughing can be seen on both sides of the river valley upstream of the dam, and particularly in the Watana Creek area. The shallow debris flows on the banks along the river and the slope stability features observed in Watana Creek are evidence of melting permafrost of the ice-rich fine grained soils that overlie bedrock in these areas.

16.5 Probable Maximum Flood (PMF) Study

John Haapala, MWH, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June ISR. In addition to the June ISR and associated Part D, a 2014 Study

Completion Report was filed with FERC on November 4, 2015. The most significant variance from the Study Plan was to increase the number of calibration and verification floods from the standard three to six floods. As the PMF study progressed, it became clear that floods resulting from two different dominant sources (rainfall and snowmelt) must be considered. Choosing three floods of each type doubled the need for historic meteorological data development and flood calibration and verification, but ensured the accuracy of the ultimate controlling PMF hydrograph. This study has been completed. As such, AEA proposes no modifications to the FERC-approved Study Plan.

Becky Long, SRC, mentioned that the October 1986 and September 2012 floods were both in the fall time and asked why the PMF is anticipated to occur in June. John Haapala, MWH, explained that the study looked at floods every half month from April through October and July/August was not determined the most critical time because there is no snow pack aside from the glaciers to contribute. He added that the PMF is three times the flows of the highest readings documented at the Gold Creek gage.

Bryan Carey, AEA, explained that the AEA Board of Consultants were consulted with early in the process and the PMF will influence the dam design so that the flood flow can be safely routed and passed over the dam spillway.

Whitney Wolff, Talkeetna Community Council, asked if the parapet walls in the design presented in ISR Part C were for additional storage if needed. John Haapala, MWH, explained that the maximum normal level for the reservoir remains to be 2050 ft. and with the PMF it would reach approximately 2064 ft. The parapet wall is designed to protect the structure from overtopping by wind waves on the reservoir during a PMF event.

16.6 Site-Specific Seismic Hazard Study

Michael Bruen, MWH, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Completion Report was filed with FERC on November 4, 2015. There were no variances from the FERC-approved Study Plan. This study has been completed. As such, AEA proposes no modifications to the FERC-approved Study Plan.

Becky Long, SRC, asked if the Talkeetna Fault is at Watana Creek or not. Michael Bruen, MWH, said that the Talkeetna Fault crosses the Susitna River at Watana Creek. Studies found no evidence of activity along this feature in the last 12,000 to 15,000 years. The fault may be a series of segmented features rather than a single trace.

Becky Long, SRC, asked if the dam engineering studies used this data to design the dam to withstand a magnitude 8 (M8) earthquake. She also asked about the Denali earthquake. Michael Bruen, MWH, confirmed that the seismic hazard data and information from the studies was used in design development of the dam. He confirmed that the 2002 earthquake, the Denali earthquake, was a M7.9 event that occurred at a considerable distance (86 km) from the Watana Dam site.

14.5 Subsistence Resources Study Presentation

Tracie Krauthoefer, Corvus-Culture, and Brian Davis, Alaska Department of Fish and Game, provided an overview of the objectives, components, variances, modifications, and a summary of the results. In addition to the June 2014 ISR and associated Part D, a 2014 Study Implementation Report was filed with FERC on November 4, 2015.

As indicated in the ISR Part C, Section 7.1.2, AEA proposes a modification to the Study Plan to add the Knik Tribe, a federally recognized tribe with ties to the Susitna River watershed, to the Traditional and Local Knowledge interviews. During the ISR Meeting, Brian Davis, ADF&G Subsistence Program Manager, requested household harvest

surveys to be conducted in two additional communities with a nexus to the Project, Chickaloon and Susitna North (the area east of Parks Highway between Willow Creek and the Talkeetna Access Road), as the last surveys were conducted in 1984. As a modification to the Study Plan, AEA agrees to consider these two communities. If the household harvest surveys are conducted for a project other than the Susitna-Watana Hydro Project, AEA will include that data in the impact assessment. If household surveys are not conducted for some other purpose, AEA will gather the necessary baseline data at these two communities.

Jesse Hankins, BLM, asked why a 10-year recall period is used for the subsistence mapping methods. Tracie Krauthoefer, Corvus-Culture, explained that it is the standard recall period for long-term subsistence mapping studies and has been used in recent, similar projects such as the Trans Alaska Pipeline Project.

13.5 Cultural Resources Study

Burr Neely, Northern Land Use Research Alaska, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June 2014 ISR and the November 2015 ISR Part D. The only variances that have occurred to this study have been schedule-related.

AEA's proposed modifications to Study 13.5 (ISR Part D, Section 7) include elimination of the Chulitna Corridor from the study area (ISR Part D Overview, Section 1.3) and the addition of the Denali East Corridor Option to the study area as an additional, alternative north-south corridor alignment for transmission line and road access from the dam site to the Denali Highway (ISR Part C, Section 7.1.2). Adding the Denali East Option could affect the sequence of Phase I inventory and Phase II NRHP evaluation within some parts of the study area. Some sites may be inventoried and evaluated at the same time, rather than seasonal phasing outlined in the Study Plan.

Tom Gillespie, State Historic Preservation Office, said that he had worked on the Susitna Watana APA Project in the 1980s and believes that the work produced by AEA's team is exemplary and has advanced much since the 1980s. Tom will route his comments through Judy Bittner at SHPO.

Action Item:

13.5-1. AEA will file reports for the two Study 13.5 components that have been completed, the Ahtna ethnogeography study and the paleoenvironmental analysis for licensing participants' comments and consideration in FERC's October 2016 Study Plan Determination.

13.6 Paleontological Resources Study Presentation

Burr Neely, Northern Land Use Research Alaska, provided an overview of the objectives, components, variances, modifications, and a summary of the results; as explained in the June ISR. No additional work has been conducted on this study since 2013. The only variances that have occurred are schedule-related.

AEA proposes the following modification to Study Plan (Slide 9): the Chulitna Corridor was eliminated from the study area (ISR Part D Overview, Section 1.3) and the Denali East Corridor Option was added to the study area as an additional, alternative north-south corridor alignment for transmission line and road access from the dam site to the Denali Highway (ISR Part C, Section 7.1.2)

Whitney Wolff, Talkeetna Community Council, asked what method is used to assess Project impacts to paleontological findings. Burr Neely, Northern Land Use Research Alaska, explained that generally one looks at if the

project activities pose a risk to known resources. However, according to the Paleontology Report prepared by Tom Bundzen, none of the currently known sites are of critical scientific importance so mitigation may not be necessary. Chuck Sensiba, VNF, explained that historic property management plans do not typically address paleontological resources and cautioned not to confuse evaluating the significance of historic/prehistoric sites with the evaluation of paleontological sites. These are distinct processes. The BLM provides some guidance on creating standards for addressing paleontological sites on its property, but the land owners usually have the final decision.