Susitna-Watana Hydroelectric Project Document
ARLIS Uniform Cover Page

Title: Letter from James W. Balsiger to Wayne Dyok, September 22, 2014, providing National Marine Fisheries Service's comments on the Initial Study Report for the Susitna-Watana Hydroelectric Project *[Title devised by cataloger.]*	**SuWa 305**

Author(s) – Personal: James W. Balsiger (writer of cover letter)	
Author(s) – Corporate: National Marine Fisheries Service. Alaska Regional Office	
AEA-identified category, if specified:	
AEA-identified series, if specified:	

Series (ARLIS-assigned report number): Susitna-Watana Hydroelectric Project document number 305	**Existing numbers on document:** 20140923-5026 (FERC posting)
Published by: National Marine Fisheries Service. Alaska Regional Office	**Date published:** September 22, 2014
Published for: Wayne Dyok, Alaska Energy Authority	**Date or date range of report:**
Volume and/or Part numbers:	**Final or Draft status, as indicated:**
Document type: Letter with enclosures	**Pagination:** 17 pages
Related work(s): Comments to: Initial Study Report. (SuWa 223)	**Pages added/changed by ARLIS:**

Notes: Distributed also as a posting of FERC eSubscription to Docket 14241. The enclosures contain detailed information that supplements the comments in the letter.

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September 22, 2014

Wayne Dyok
Susitna Project Manager
Alaska Energy Authority
813 W. Northern Light Boulevard
Anchorage, AK 99503

RE: FERC Project P-14241, Proposed Susitna-Watana Hydropower Project

Dear Mr. Dyok:

The Alaska Energy Authority (AEA) has requested that the National Marine Fisheries Service (NMFS) comment on portions of the Initial Study Report for the proposed Susitna-Watana Hydropower project (June 3, 2014). We also include here comments previously submitted on the 2014 Fish Genetics Implementation Plan and on the pilot 2014 Cook Inlet beluga whale and eulachon studies (May 12 and May 14, 2014). We expect that the Alaska Energy Authority (AEA) will address these issues at the upcoming meeting on the Initial Study Report in October 2014.

Briefly, our enclosed comments on the Initial Study Report's fish studies (9.5 Upper River Fish Distribution and Abundance, 9.6 Lower and Middle River Fish Distribution and Abundance, and 9.7 Salmon Escapement) identify issues with the integrity of data, the ability to effectively integrate modeled studies, and the progress and detail of the decision support systems. Model integration is a key concern, especially for assessing baselines and project impacts on the Susitna River.

NMFS recommends that the data issues be resolved as soon as possible. For NMFS to effectively review this project, the studies must accurately identify fish species, develop accurate habitat models, and use the best available science to understand anadromous fish distribution and habitat associations. Moreover, the studies require accurate data to calibrate and validate proposed models and to integrate these models without inadvertently amplifying errors. Given the current issues with the data, it is not plausible that the data for predictive modeling be used to describe baseline conditions or to predict potential impacts. Modifications, additions, and new study requests for the second year of studies cannot be developed given the current issues with the data; these issues must be resolved prior to conducting additional field studies.

In regards to the 2014 Studies and the Final Study Plan, NMFS requests that the AEA adhere to the schedule the Federal Energy Regulatory Commission (FERC) established for the Integrated

Licensing Process (ILP) for this project in their January 28, 2014 determination. In that determination, FERC ordered the AEA to submit the final Initial Study Report on June 3, 2014 and to hold a meeting in October to present the results of the Initial Study Report and discuss any proposed changes. Although the AEA has just released reports of the studies it conducted in 2014 and intends to discuss those studies at the October meeting, NMFS is not prepared to step outside the FERC-ordered process and consider those studies at this time. The limited time allocated would be more effectively spent addressing problems with the 2013 study implementation and discussing study modifications or new studies.

Any studies that the AEA conducted in 2014 cannot be construed as "Year 2 ILP Studies," because the Initial Study Report was not yet complete at the time the studies were conducted. Conducting the studies before completing the Initial Study Report precluded participants from recommending any changes to the study or making new study requests based a review of a completed Initial Study Report. As noted by FERC in an May 6, 2014 e-mail on the Implementation Plan for the Genetic Baseline Study for Selected Fish Species in the Susitna River, Alaska:

> ...to clarify, we just reviewed our Study Determination letter and confirmed that the genetics operational plans are due by April 30 of 'each year of study implementation.' Because our January 2014 letter granted AEA's request, in part, for second season studies to be conducted in 2015 rather than 2014... it follows that the genetics operational plan for the second study season is due by April 30, 2015, and not by April 30, 2014.
> (Nicholas Jayjack, March 6, 2014 email to Susan Walker)

Although NMFS provided courtesy reviews and comments to the AEA on 2014 studies for fish genetics (Enclosure 2) and the Cook Inlet beluga whales/eulachon pilot study (Enclosure 3) by mid-May of 2014, NMFS does not consider any 2014 study to be the second year of study under the ILP process.

We consider these concerns significant and in need of resolution for NMFS to fulfill its statutory responsibilities. In the context of this project, we construe those responsibilities as follows:
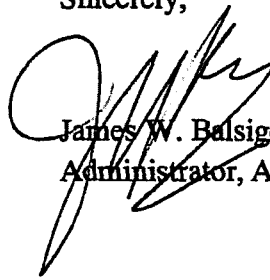
1) to identify study data gaps;

2) to make recommendations for the second year of studies (and beyond);

3) to understand the project's ability to quantify baseline and proposed project operational impacts to fish and wildlife resources;

4) to support recommendations for the protection, mitigation, and enhancement measures associated with the project; and

5) to make informed decisions pursuant to our Section 18 Fishway Prescription authority under Federal Power Act.

The ILP schedule for this project has been altered and now affords the AEA an opportunity to make necessary changes to studies for this project prior to entering the second year of study. This will allow for development and implementation of a more accurate, effective, and cost-effective plan of study for this important project.

In our November 30, 2014, FERC filing we will provide detailed recommendations to address specific concerns related to the individual Initial Study Reports of June 3, 2014. If you have questions regarding this letter, please contact Susan Walker at (907) 586-7646 or Susan.Walker@noaa.gov).

Sincerely,

James W. Balsiger, Ph.D.
Administrator, Alaska Region

Enclosures (3)

cc:
e-filed under FERC docket P-14241 as distribution to all Susitna licensing participants
Sarah Goad, AIDEA
Betsy McGregor, AEA
Nicholas Jayjack, FERC
Joe Klein, ADFG
Soch Lor, USFWS
Mike Bethe, ADFG

Enclosure 1: Details regarding Data Integrity, Model Integration/Proof-of-Concept and Decision Support Systems.

<u>DATA ISSUES:</u>

Data Collection: Quality Assurance and Quality Control, and Methodologies

NMFS is concerned with the current status and implementation of aquatic studies and believes that, unless these issues are addressed, many study objectives will not be met. Our primary concerns are as follows:

1) Habitat classification has not been completed;
2) Fish passage criteria have not been developed;
3) Fish sampling study plans were not followed; sampling units were inappropriately subsampled;
4) Fish sampling locations did not incorporate FERC recommendations;
5) Because the fish sampling did not follow the sampling plan, this resulted in an inability to estimate relative fish abundance;
6) Fish seem to have been identified incorrectly;
7) Data were collected and reported at inappropriate mesohabitat scales;
8) Sampling sites among studies were not co-located;
9) Tagging goals were not met;
10) Fish targets for HSC sampling were not met;
11) The mainstem upper river migrant fish trap was not installed;
12) A fish wheel was not installed, and fish were not tagged near the entrance to Devils Canyon;
13) Additional problems associated with late installation and operation of migrant traps were likely influenced by environmental conditions associated with late breakup; and
14) Juvenile salmon distribution and abundance in 2013 were likely affected by the record fall floods in 2012.

We are providing some additional clarification on some of these concerns.

The actual implementation of the abundance sampling program did not follow the statistical models used to select sampling units. In particular, subareas (mesohabitats) within selected areas were 'randomly' selected for subsampling, and sampling was not consistent between sampling events (different gears, different effort, different order of gears, different total area sampled, etc). Sampling error in the fish distribution and relative abundance studies needs to be accounted for in order for these studies to accurately estimate fish distribution and abundance. Estimates of numbers of Chinook salmon that migrate above Devils Canyon need to include the assumptions, standard error, and resulting statistical confidence intervals associated with that estimate. Better descriptions of (and statistical accounting for) both sampling and non-sampling errors need to be provided. The data used to describe fish-habitat association

preferences and the standard errors associated with those species and life-stage habitat correlations need to be validated, as this analysis proposes to describe macrohabitat relationships for fish. These relationships will be used to evaluate project effects, to validate instream flow habitat model predictions, and to extrapolate results from focus areas to geomorphic reaches and river segments. Ultimately these data will be used to develop protection and mitigation measures and to serve as a basis for post-project monitoring.

Data collection and analysis

Data collection methods need improvement. For example, detection and recovery of PIT (Passive Integrated Transponder) tags need to be improved to yield useful data to meet study goals and objectives. Location of the detection arrays did not cover the entire channel and was biased toward fish migrating down channel. Also, because too few tags were recovered, efficiency estimates could not be made.

Misidentification of juvenile fish by species induces significant error, and application of this erroneous data would result in inaccurate conclusions. Our review of the Initial Study Report finds that a very high percentage of the juvenile salmonids were misidentified. We also question the accuracy of all juvenile fish sampling data because of the following details:

- large numbers of unidentified salmonid juveniles (some of which were PIT tagged);
- anomalous length distributions and habitat associations (e.g., juvenile Chinook 150 mm fork-length;
- the large abundance of juvenile Chinook in beaver ponds;
- the absence of pink salmon in any samples; and
- the disappearance of sockeye salmon from Indian River between the February draft Initial Study Report and the June draft Initial Study Report).

Considering the length distributions and habitat associations reported, we have reservations also about the identification of these juvenile fish and conclude that many juvenile salmonids identified as Chinook salmon were coho salmon.

There is an absence of quantitative analysis of habitat sampling, fish distribution and relative abundance, and early life history data collected to date. Deviations from the Revised Study Plan (RSP) and FERC staff recommendations make developing estimates from these data difficult or even impossible. These data are the basis of the fish and habitat sampling design and must be collected appropriately for the study to yield useful information. Without better integration of historical data into assessment of current results (e.g., the data from studies collected in 2012, which used different methodology and locations), these data should not be used to assess habitat associations for salmon by species and life stage. Much of the data on species distribution, relative abundance, and habitat associations appears anomalous in comparison to available

science on these species and their life stages as known through data previously collected and past studies conducted in the Susitna River and environs.

One of the main objectives of radio-tagging was locating spawning locations. The proposed activity of circling over a tag that remained in the same location for a period of time was not done (mainly for salmon). For non-salmon species, it was proposed to tag some species after their spawning season and monitor the tag in the following year to locate spawning locations. It remains to be seen if this actually worked. If not, the objective of locating spawning locations was not met

Scale

We do not believe that data has been collected among individual related studies at an appropriate scale to allow fish/habitat associations to be made and extrapolated. A related concern is that fish and habitat data have not been collected at a biologically relevant scale.

To assess project-caused impacts to fisheries resources (for example), the sampling effort must be at a scale relevant to Susitna River fish species and life stages and must adequately quantify baseline conditions for accurate extrapolation. In some instances, the *spatial* scale of data collection implemented varies inappropriately within and among studies, resulting in a mismatch between the data collected and the purpose of its collection. Additionally, the *temporal* scale of data collection needs improvement. The Initial Study Report indicates that winter fish sampling did not occur in all focus areas as proposed. Early spring sampling occurred only in three focus areas due to record late breakup. Initial sampling following breakup and installation of migrant traps did not occur until the middle of June (after juvenile outmigration had begun), and spring sampling for fish distribution and abundance was not conducted. Improvements need to be made to capture the full seasonality of fish life history strategies which vary considerably within a single season. (Fish move around, and the extent of that movement must be captured through sampling. A single-day of sampling is insufficient to understand the habitat associations of many different and mobile species and life-stages of fish.)

The error inherent in the inappropriate scale of data collection would be compounded by the proposal to extrapolate study results throughout the river; this would perpetuate and increase sampling errors across the entire length and width of the river and its habitats. Resource agencies are particularly concerned about this proposal to "scale up," and requested rationale for its implementation (Riverine Modeling Integration Meeting, November 2013). The ability to "scale up" is only valid when the initial sampling has been conducted accurately and at a scale relevant to resource concerns, which is not the case with studies conducted thus far.

Co-location of sampling sites

Review of the Initial Study Report reveals that sampling sites for the various study disciplines have not been consistently and thoroughly co-located, as laid out in the RSP as modified by

FERC staff recommendations, to provide an assessment of baseline conditions of habitats relative to fish use and preference. For example, invertebrate sampling locations (River Productivity 9.8) were not co-located with fish sampling locations. Rather than addressing this issue, or NMFS's previous concerns about the number of middle river sampling locations, AEA is proposing a study modification to sample in tributaries above the dam inundation zone. At some locations, sampling of variables such as depth and velocity was appropriately co-located, but other variables that should also be co-located such as groundwater exchange were not. NMFS recommends that at Focus Areas data collection for the full suite of interdependent variables should be co-located.

The cumulative effects of deficiently implemented sampling methods, failure to co-locate sampling sites, lack of integrative links, and discrepancies in data collection scales are magnified because these data are proposed for inputs to models. Model calibration, validation and decision making processes will then be used to assess potential impacts to resources.

NMFS recommends that the data issues be resolved as soon as possible. Accurate data is required to calibrate and validate proposed models; and quality data from individual studies is necessary to integrate models without amplifying errors unknowingly. Given these concerns about the data, it is not plausible to use the data for the predictive modeling that is proposed to describe baseline conditions or to predict potential project impacts.

These issues of data integrity and data collection are based in part on studies being conducted with significant differences from the FERC-modified RSP. These issues must be resolved prior to conducting additional field studies. NMFS cannot develop appropriate recommendations for study modifications or make new study requests for the second year of study given the current issues with the studies and the data.

MODEL INTEGRATION/PROOF-OF-CONCEPT:

Biological relevance

During the Riverine Modeling Integration Meeting (November 2013), 25- and 50-year scenarios for predicting project impacts to the physical river channel and habitats were proposed. While those timelines are consistent with the study plan and may present a manageable timeframe for the modeling work (B. Fullerton, POC meeting, November 2013), they may not answer questions related to assessing impacts on important biological resources in a biologically meaningful timeframe. Models need to be sensitive enough to detect changes that are biologically meaningful to the species and habitats likely to be affected by project operations. As currently planned, this is not the case.

NMFS has identified a need to develop and incorporate biological input and output parameters and evaluate these under an appropriate range of operational scenarios (e.g., base load, ecological flows, load-following, run-of-river). The temporal scales (i.e., 25- and 50-year scales)

that are needed must have biological relevance. For example, 5-, 10- and 15-year operational scenarios should be considered to demonstrate the model's ability to detect generational impacts to fish populations and habitat persistence (e.g., Susitna River Chinook salmon, 5-7 years; or 2-4 years for eulachon). NMFS is concerned that the present model cannot answer the biological questions it proposes to answer.

Some study plan data collection efforts do not provide the information needed for the integrated modeling efforts. For example, during the November 2013 Riverine Modelling Integration meeting, it was revealed that the Water Quality Modeling study would require data on the spatial distribution of groundwater discharge to surface water bodies. Analytical or numerical groundwater flow simulation would be one way to satisfy this input requirement. However, the Groundwater Study in the Initial Study Report does not explicitly state that analytical or numerical groundwater flow simulations would be undertaken in support of the other physical process models.

Model integration is at this point largely an *ad hoc* exercise. A stand-alone model integration study is required to allow stakeholders to develop confidence in the models, understand inputs and outputs, and have the conceptual linkages demonstrated via an interactive riverine working model. Many questions remain about the predictive capabilities of the models, particularly under integration and model assumptions. Sensitivity and uncertainty analyses need to be conducted to contribute to understanding of model limitations. The full extent of mismatch of purported integration of models is currently unknown, even to the project proponent, much less to stakeholders reviewing study results.

DECISION SUPPORT SYSTEMS:

Decision Support Systems (DSS) are critical for evaluating potential impacts of the project. We believe that their development should be expedited to the extent possible without excluding input from stakeholders.

The RSP (Instream Flow Study 8.5 RSP) includes the use of conceptual ecological models as the DSS to assess the project's impacts on a free flowing river and its resources. Also, the Fish Passage study includes use of a DSS to assess the feasibility and effectiveness of different fish passage options. It is our understanding that AEA intends to develop the conceptual ecological model DSS using manual matrices by early 2015 (FERC 2013) and to use a modified existing DSS for fish passage (currently past due). Considering the potential of these DSSs to support critical assessments of impacts from the project, development of the DSS should be a collaborative process with mutual development of, and agreement about fundamental objectives, assumptions, critical inputs, weighting methods, and other parts of the models. Formulation of the fundamental objectives for the DSS may reveal important, time-sensitive data gaps that require modifications to existing studies or perhaps development of new studies. An example for the fish passage DSS is reservoir ice studies: we expect to be used to design tributary collectors for outmigrating juvenile fish but don't know if the model will provide that information. An

example for the conceptual ecological model is the groundwater studies which we expect will allow estimation of project impacts to areas of upwelling, but project effects to upwelling are not one of the goals of that study. Therefore, we request that the schedule for DSS development be accelerated so potential data needs not currently covered in the existing study plans can be identified and added to the study plan.

Enclosure 2: NMFS Comments on the 2014 Fish Genetics Implementation Plan

<u>SUMMARY:</u>

NMFS Fisheries geneticists; Dr. Jeff Guyon, Supervisory Research Geneticist and the Fisheries Genetics Program Manager at the Ted Stevens Marine Research Laboratory of NOAA's Alaska Fisheries Science Center and Dr. Robin Waples, Senior Scientist at NOAA's Northwest Fisheries Science Center, reviewed the "Implementation Plan for the Genetic Baseline Study for Selected Fish Species in the Susitna River, Alaska." NMFS appreciates that AEA and the Alaska Department of Fish & Game (ADF&G) incorporated most of the comments and suggestions provided to AEA in our review, and included the topics discussed with ADF&G, U.S. Fish and Wildife Service and NMFS at the technical meeting in March in the final 2014 implementation plan.

<u>COMMENTS PROVIDED TO AEA:</u>

This report reflects a carefully thought-out approach to sampling from natural populations to provide baseline data prior to a proposed hydroelectric project. As proposed, the project would no doubt produce a great deal of very useful information. Comments below are intended to help improve certain aspects of the experimental design and/or data analysis.

Hypotheses for Chinook salmon:

Page 3: NMFS agrees that departures from HWE [Hardy-Weinberg Equilibrium] could support hypothesis 1b (fish above Devils Canyon are derived from spawners above and below), but only if the departures are in the direction of a deficit of heterozygotes, as expected under the Wahlund effect (population mixture). However, Hypothesis 2 would not necessarily produce any such departures if all the fish above the canyon were derived from a single lower population.

Page 3: "On the other hand, low genetic divergence between fish spawning above Devils Canyon and fish spawning in aggregates below the canyon would indicate that a large proportion of the fish ascending Devils Canyon are strays or colonizers, and have not established a self-sustaining population (support for Hypothesis 2)." This conclusion cannot be supported simply from failing to find a difference. It would be necessary to conduct a power analysis to determine how large a difference (e.g., Fst value) could exist and not be detected as statistically significant. Then, it would be necessary to translate the genetic data into estimates of gene flow to evaluate what levels of connectivity are consistent with the observed data.

Sampling design:

NMFS concurs that that samples from multiple years are essential to be able to make sense of the relative magnitude of spatial and temporal differences. Three years of samples may be inadequate for this purpose, especially considering that Chinook and perhaps some of the other species have generation lengths much longer than three years.

The required sample sizes depend on the particular objective, as well as the (unknown) differences among populations. In general the numbers proposed seem reasonable. However, the logic for requiring larger samples for msat [microsatellite] analyses is inadequately explained. This may be based on the idea that larger samples are required to provide precise estimates of all the low frequency alleles involved with msats. However, that is not the objective; the objective is to use all the data to draw biological conclusions about the species of interest. From this perspective, each msat locus is worth several SNP [single nucleotide polymorphism] loci in terms of information content, as a large number of empirical studies have demonstrated.

Analyses:

Page 12-13: NMFS strongly recommends that the PIs [primary investigators] not remove putative siblings as proposed. Siblings, in fact, contribute part of the signal in genetic analyses that provides insights into biological processes. Purging them from the sample universe scrubs the data of this biological signal, particularly for small populations where siblings are common. The effects that this has on subsequent analyses cannot be easily determined, but could be substantial. This purging makes the remaining individuals more similar to what would be expected from populations that are infinite in size and hence have no relatives. Purging of a particular sample might be justified, if the sample has been collected non-randomly (that is, if it is thought to represent progeny from only a few families). However, in that case the proper amount of purging could only be determined if one knows exactly how non-random the collection is. But this will seldom if ever be known in practice. Furthermore, even if this was known and relatives were removed, the result still would not be a representative collection from the population as a whole. Therefore, the solution to non-random sampling is not purging relatives but to going back into the field and collecting a representative sample.

Page 13: "We will exclude juvenile collections from the baseline if they show significant allele frequency differences from adult collections or show deviations from HWE when pooled with adult collections." We note that age structure creates mini-Wahlund effects that could cause HW departures even in mixed-age adult samples. Likewise the same thing could happen if you combine juveniles and adults produced by different cohorts. That does not mean that combining them won't produce a more robust overall estimate of population allele frequencies.

NMFS does not agree with using the Bonferroni correction for HWE tests; there are too many overall tests and thus the criterion become too conservative. Bonferroni correction controls the probability of false positives only and the correction ordinarily comes at the cost of increasing the probability of producing false negatives, consequently reducing the statistical power of the HWE tests. Instead, we suggest starting with unadjusted tests and evaluating what fraction are significant for each locus (across all pops) and for each pop (across all loci). If the resulting proportions do not deviate much from the expected proportion (dictated by the significance level

of the test), there is no reason to reject HWE. Loci or pops that are outliers can be singled out for more detailed analysis, perhaps using Bonferroni or FDR [false discovery rate].

Minor comments:

Page 1: The project "will modify the flow, thermal, and sediment regimes of the Susitna River. . . ." The project will also affect migration and fish passage, among a host of other important effects. The description of project effects should be written to comprehensively describe all major project effects.

Page 1: "If breeding isolation (lack of migration) among populations occurs over sufficient time and population sizes are small enough, genetic drift will result in variation in allele frequencies at neutral loci (loci not under natural selection) among populations." Genetic drift will *always* result in some differences unless there is complete panmixia.

Analyses of genetic distance: it is fine to use Fst as an index of genetic distance, but it must include a correction for sample size (like W&C theta). Otherwise, small samples will tend to look like outliers.

Page 6: "For mixed stock collections, sample sizes of 200 fish or 100 fish per collection are adequate to provide stock composition estimates that are within 7% or 10% of the true estimate 95% of the time, respectively (Thompson 1987)." That might have been true for the particular study cited, but how large a sample is required will depend on the number of markers and the magnitude of divergence among populations, so this general statement is not valid.

Page 8, the numbering is off under "Sample Collection Targets."

Page 9, under "Sample Collection Targets" item #9, we understand the issues regarding sample numbers, but an adequate adult Chinook salmon sample set from above the proposed dam is needed at the end of the study to make the necessary conclusions. What happens if the goal of 100 adult Chinook salmon is not realized? This should be addressed in advance.

Page 10, Section 4.2.4.1, identifies a sample target of 200 juvenile Chinook salmon from 4 systems in or above Devils Canyon, but later in the report under section 4.5 "Data Retrieval and Quality Control" it mentions that software will be used to identify siblings and exclude all but one individual in the baseline for every set of siblings identified. As such, given the likely small population sizes above the proposed dam site, 200 juveniles from each system is unlikely to be sufficient.

Page 16, Section 4.6.5, where it says "Collections will be pooled when tests indicate no difference between collections (P>0.01)." While we agree that it is difficult to prove there is no difference between collections, we recommend though using a p value greater than 0.05 as more appropriate to reject the null hypothesis.

Appendix A Section 2.2 Regarding the radio telemetry studies, the potential impacts of the tag on the migration pattern of the salmon, especially for a stock that has to migrate the farthest and through a 7-mile long Class 5+ canyon must be considered and discussed. Also please address whether the tags let you know where the fish spawned (or if they spawned) or just indicate where they were when relocated, including noting the spatial accuracy of the tag signal recoveries.

Appendix B - page 1, for the Black River: Were the Chinook that were sampled two juveniles which were collected in 2013? Please confirm and identify them as juveniles if that's true.

Table B5, Is there an overall HWE test for all markers for each population?

Enclosure 3: NMFS Initial Comments to AEA regarding the 2014 Pilot Study for Cook Inlet Beluga Whales and Eulachon

SUMMARY:

Beginning in early May 2014, NMFS staff were contacted and asked to meet with AEA and their contractors (hereinafter referred to collectively as AEA) to discuss AEA's plans to modify the [RSP as modified by FERC's determination] for the Cook Inlet Beluga Whale Study (Study 9.17). AEA informed NMFS staff of their intent to conduct a boat-based pilot study involving both a Cook Inlet beluga whale research effort and a eulachon research effort. Despite the very short notice from the intended start date of the research activities, NMFS agreed to provide some initial comments and preliminary recommendations to AEA. These initial comments were primarily provided to help reduce the high harassment and harm potential this pilot project could have on the endangered Cook Inlet beluga whales, and to help AEA avoid violating both the Marine Mammal Protection Act and the Endangered Species Act. These comments were not an endorsement of the pilot study, nor an acknowledgement that the pilot study would constitute the second year of the required FERC-approved study plans. These comments were sent to AEA by email on May 14, 2014, and are reproduced in Enclosure 3. As a result of these NMFS comments, AEA did make modifications to the pilot study in an effort to reduce the harassment potential to Cook Inlet beluga whales. NMFS has had multiple meetings with AEA to discuss the progress and status of the 2014 pilot study since early May. During several meetings, AEA has provided inconsistent information regarding their plans for 2015 Cook Inlet beluga studies. At this time, it is unclear which aspects of the FERC-approved study plans for Cook Inlet beluga whales AEA intends to implement in 2015, if any. Additionally, AEA has a pattern of providing information to NMFS immediately prior to a meeting (e.g., one hour in advance) or after the meeting, but has an expectation that NMFS will provide official comments during the meeting. This process has substantially limited the ability of NMFS to provide meaningful comments to AEA. Finally, while the focus of Study 9.17 is on Cook Inlet beluga whales, NMFS reiterates that the Marine Mammal Protection Act pertains to all marine mammals, regardless of any additional protections under the Endangered Species Act. Thus, harassment of any marine mammal resulting from AEA's activities is prohibited.

COMMENTS PROVIDED TO AEA:

These initial comments are intended to provide early guidance and preliminary recommendations regarding this pilot study. NMFS intends to submit formal comments on this study proposal to FERC.

NMFS received a draft copy of the AEA's "Pilot Study of Cook Inlet Beluga Whale and Prey Species in the Susitna River Delta" on Monday May 12, 2014. AEA and their contractors intend to implement the pilot study beginning the week after NMFS received the draft study plan for review, and continue through all of June. The pilot study is submitted in lieu of the FERC-approved beluga studies (aerial surveys, video cameras, still cameras, and water surface

elevation model) for 2014. Although NMFS agreed to try and get these preliminary comments back to AEA prior to implementation of the pilot study, NMFS advises that these are not official comments, and as such do not indicate NMFS's support for or rejection of the pilot study. Furthermore, NMFS does not consider any 2014 study to be the second year of study under the ILP process. This is because the Initial Study Report is not complete, and licensing participants have not been able to recommend any changes to the study or make new study requests based on a review of the completed Initial Study Report. Our initial comments regarding the draft pilot study after an abbreviated review period are as follows:

We understand neither AEA nor its contractors will be obtaining authorizations under the federal Marine Mammal Protection Act (MMPA) for the unintentional take by harassment of marine mammals. Thus no harassment or take of any marine mammal under NMFS' jurisdiction is authorized under either the MMPA or the Endangered Species Act (ESA) and AEA and/or its contractors would be responsible for any violation of these federal laws.

The draft pilot study references LGL Alaska Research, Inc.'s ongoing boat-based surveys for Cook Inlet belugas as good documentation of Cook Inlet belugas as a result of closer proximity and longer encounter durations with the whales than by aerial surveys. While we agree that a boat survey has the potential to get closer to and spend more time with a group of marine mammals than an airplane, we do note that the referenced LGL studies have a NMFS-issued MMPA research permit and ESA authorization to allow harassment and close approaches. The level of information collected by these two different boat-based studies will not be comparable. Furthermore, we note that the LGL researchers associated with the NMFS permitted photo-identification study are not indicated as participating in this pilot study.

The pilot study has the potential to disturb or harass marine mammals due to the presence of the boat and operation of the split-beam sonar. The pilot study does suggest the implementation of the "Marine Mammal Viewing Guidelines and Regulations" as found on our website (http://alaskafisheries.noaa.gov/protectedresources/mmv/guide.htm) as an effort to reduce the potential for harassment or take. We note that many of the steps of the viewing guidelines are stated in the "2014 Pilot Study Methods" section of the draft pilot study, but add that whales should not be encircled or trapped between boats or boats and shore, and that the study needs to ensure that when approaching the whales the boat stays fully clear of whales' path of travel (i.e., the boat doesn't approach belugas "head-on"). These guidelines are intended to reduce the likelihood that marine mammals would be affected by this study, but do not guarantee no harassment or take will occur. This is a directed research project targeting Cook Inlet beluga whales, and a research permit may be necessary if the project may result in take or harassment of this endangered species or other marine mammals.

The pilot study is designed for repeated approaches to Cook Inlet beluga whales, albeit theoretically no less than 100m away. This study design increases the potential for harassment, including behavioral modifications or displacement that may not be evident from the boat, despite one of the pilot study's goals being to not cause any disturbance to the whales themselves. Given the repeated approaches, and potential for belugas or other marine mammals to not be visible below the water, implementation of the Marine Mammal Viewing Guidelines may be insufficient for preventing harassment or take. This potential for disturbance or harassment is of concern to NMFS, not only in general, but specifically during the first two weeks of June when we will be conducting our aerial surveys to assess official population abundance and distribution. Any disturbance or behavioral modification of the beluga whales associated with the pilot study may result in a reduction of our ability to accurately conduct our aerial surveys. The Susitna delta area is an important foraging area to the Cook Inlet belugas in late spring/early summer, after limited food during the winter. Any disturbance to the whales may result in reduced foraging success, and thus have population-level adverse effects.

The draft pilot study plan indicates that "if whales move away from the area where they were initially detected, an attempt will be made to obtain a depth reading and prey information at that location", but there is no information regarding how much time must pass without a beluga sighting before the survey crew moves to that location to attempt to obtain depth and prey information. There are confirmed reports that some stressed, chased, or harassed Cook Inlet beluga whales do not swim away, but rather submerge and remain on the bottom of the seafloor, which can be very shallow in Cook Inlet. If the observers do not wait a sufficient length of time, the potential exists for a beluga exhibiting this behavior to be struck by the vessel or propellers as the boat approaches the area where belugas were observed.

Given the topography and mudflats surrounding the Susitna Delta, as well as the potential that belugas will be traveling and not staying still, it is unclear how accurately or consistently the fine-scale surveys could be implemented. Should the belugas be traveling, it is possible the boat may inadvertently chase the whales group while trying to accomplish the fine scale sampling scheme as depicted in Figure 3. This could result in increased stress or harassment to the belugas or other marine mammals (i.e., seals) in the vicinity.

The draft pilot study does not provide much detail about the acoustic component of the split-beam sonar, but we understand some split-beam sonars have the potential for operating at multiple frequencies. Frequencies below 200 kHz are within the hearing range of Cook Inlet belugas, and thus noises associated with the sonar with frequencies below 200 kHz have the potential to harass belugas and other marine mammals. Noise has been identified as one of the highest threats to Cook Inlet belugas. Based on the information in the draft pilot study plan, it appears there may only be a single frequency during operation, at 206 kHz. It is unclear whether the split-beam sonar will be operated when conducting the "fine-scale sampling" triggered by

Cook Inlet beluga sightings or if it will only be operated when no belugas are sighted, or if it will be in constant operation.

In general, the pilot study plan is unclear about the primary goal of the study; is this a beluga study that has a fish component or a fish study that will record beluga sightings? The study plan states that data on prey and belugas will be "collected simultaneously", however, fish data can only be recorded after the whales leave the area, and the split-beam sonar is unlikely to be able to collect adequate fish data from over 100 m away (the minimum distance the boat will stay from the belugas and other marine mammals). Overall, while it appears this pilot study attempts to combine information regarding the distribution of beluga whales and their prey, we do have initial concerns about the harassment potential to the belugas. Although there is information on the data collection protocol sheets and software, there is no information regarding protocols should the vessel be closer to 100m of the Cook Inlet beluga whales, or if the presence of the boat or use of the split-beam sonar results in a change of behavior, disturbance, or displacement of the whales. These are indications of harassment and take, and are currently not authorized by NMFS. NMFS requests to be provided a survey schedule in advance of the first survey.