

Meeting Summary
Susitna-Watana Hydroelectric Project Licensing
ILP Formal Study Plan Meeting for Terrestrial Resources
August 9, 2012, 8:30 a.m. – 4:00 p.m.
AEA Project Offices, First Floor Conference Room
411 W 4th Avenue, Anchorage, AK

Attendees:

Organization	Name
ADF&G Wildlife Conservation	Mark Burch
ADF&G Wildlife Conservation	Kimberly King
Aquatic Restoration and Research Institute (ARRI)	Gay Davis
BLM-Glennallen Field Office	Sarah Bullock (by phone)
BLM-Glennallen Field Office	Ben Seifert (joined later by phone)
Office of Project Management and Permitting	Marie Steele
Natural Heritage Institute (NHI)	Jan Konigsberg
USFWS	Catherine Berg
USFWS	Jennifer Spegon (by phone)
USFWS	Bob Henszey (by phone)
USFWS	Maureen de Zeeuw
FERC	David Turner
AEA	Betsy McGregor
AEA	Wayne Dyok
ABR, Inc.	Brian Lawhead
ABR, Inc.	Terry Schick
LVA	Steve Padula (by phone)
MWH	Kirby Gilbert
Solstice AK	Robin Reich

Presentations

Kirby Gilbert (MWH)

- Overview of AEA Proposed Study Plan

Brian Lawhead (ABR, Inc.)

- Wildlife Proposed Study Plans
 - Surveys of Eagles and Other Raptors
 - Waterbird Migration, Breeding, and Habitat Use
 - Breeding Surveys of Landbirds and Shorebirds
 - Wood Frog Distribution and Habitat Use
 - Moose Distribution, Abundance, Movements, Productivity, and Survival
 - Caribou Distribution, Abundance, Movements, and Productivity
 - Distribution, Abundance, and Habitat Use of Large Carnivores

- Dall's Sheep Distribution, Abundance, and Habitat Use
- Wolverine Distribution and Abundance
- Terrestrial Furbearer Abundance and Habitat Use
- Aquatic Furbearer Abundance and Habitat Use
- Population Ecology of Willow Ptarmigan in Game Management Unit 13
- Evaluation of Wildlife Habitat Use
- Wildlife Harvest Analysis
- Little Brown Bat Distribution and Habitat Use
- Small Mammal Species Composition and Habitat Use

Terry Schick (ABR, Inc.):

- Botanical Proposed Study Plans
 - Vegetation and Wildlife Habitat Mapping
 - Wetland Mapping Study
 - Riparian Study
 - Rare Plant Study
 - Invasive Plant Study

Introduction/Overview of AEA Proposed Study Plan

After introductions, Kirby Gilbert (MWH) gave an overview of the Proposed Study Plan (PSP). He said that there are 16 study plans to cover wildlife resources and 5 study plans to cover botanical resources. There will be topical meetings through next week to present all the plans in the PSP. These meetings are the formal PSP meetings in the Federal Energy Regulatory Commission (FERC) Integrated Licensing Process (ILP) process. The PSP is about 1,300 pages long and includes 58 separate study plans. The PSP was filed with FERC on July 16, 2012.

Kirby said that Sections 1 and 2 of the PSP are the introduction. He said that Section 3 of the PSP discusses studies not proposed. The PSP's Sections 4 through 14 include study plans organized by 11 resource areas. Each section has appendices that record consultation with agencies.

Kirby said that there are 2012 field studies currently occurring which will inform the 2013/14 study plan development. Some of the 2012 studies will continue in 2013/14.

Kirby said that the Alaska Energy Authority (AEA) and/or FERC received 52 formal study requests and 150 comments on the PAD that helped develop the PSP. A few studies proposed in the PSP did not have a study request. He said that FERC issued the Scoping Document II, which is being used to input the study planning process. The Study Plan should be finalized by

November 14, 2012. Comments on the PSP are due by October 15, 2012. Kirby said that FERC will make the study plan determination about one month after the study plan is submitted.

Kirby said that the goal of this terrestrial working group meeting is to develop a plan to gather agency comments, so that AEA can address them. This meeting should help to coordinate smaller group meetings. He said that today each terrestrial study would be presented and questions and comments would be gathered and discussed. He said that ABR would also report on the 2012 fieldwork. He said that if follow-up is needed, the Team will try to determine dates for additional topical meetings. He said that the group should focus on action items and areas of concern.

Jenny Spagon (USFWS) asked when and where the notes from this meeting would be posted. Kirby said that the notes would be posted on the Project website within a week or so. Betsy McGregor (AEA) said that the notes and presentations would be posted on the page where the meeting is advertised (<http://www.susitna-watanahydro.org/meetings/>).

Catherine Berg (USFWS) said that the U.S. Fish and Wildlife Service (USFWS) team has started going through the PSP; however, these meetings are a bit premature. Catherine said that the USFWS will not be able to get all their comments in during these meetings. She said that she hoped that this meeting is the start of a process. Kirby said that he agreed and that this meeting was more of a clearinghouse effort. He said that written comments should be sent to Wayne Dyok at AEA when they are ready. Wayne said that the Team is listening to comments today, but that this is an ongoing process.

David Turner (FERC) said that agencies need to be cognizant of the FERC timeline. He said that we need to get moving on gathering comments on the PSP so that the Revised Study Plan addresses all the issues when it is submitted November 2012.

Wildlife Proposed Study Plans

Brian Lawhead (ABR) said that his presentation would give an overview of the wildlife study plans. He said that the Team was interested in agency feedback to identify areas needing more attention.

Survey of Eagles and Other Raptors

Brian summarized the eagle and other raptor study objectives. He said that the survey of eagles and raptors is important because of the concern with eagle nest take under the Bald and Golden Eagle Protection Act. He said that there could be eagle and raptor issues with transmission lines. He said that eagle nest aerial surveys were occurring in 2012 and would continue in future years. These surveys would also record other raptors. He said that aerial

surveys were also gathering data on nesting eagles, falcons, and other raptors, as well as fall and winter concentration areas (communal roosts and foraging sites).

Brian said that the proposed study area for the eagle and other raptor survey is a 3-mile buffer around the transportation and intertie corridors and a 10-mile buffer around the impoundment area, as requested by USFWS.

Mark Burch (ADF&G) asked which transportation corridors were being proposed and which were not being considered. Brian said that there are three corridors under investigation. Kirby said that the corridors shown on the map are still under study and it hasn't been determined which corridors would be carried forward for further study. Wayne said that AEA would like to look at two transmission corridors, which would include one corridor co-located with the intertie and the other transportation corridor separate from the intertie corridor. Wayne said that the Alaska Department of Transportation and Public Facilities (ADOT&PF) completed a high-level analysis of the access corridors. Comments on the corridor document are due by the end of August 2012. He said that the ADOT&PF document is non-decisional and gives an overview, schedule, and costs of corridor alternatives. Betsy confirmed that the corridors to the northeast of the reservoir have been dismissed and are not being studied. Wayne said that the corridor selection is a process depending on avoidance measures. Betsy said that the transmission and access corridors bifurcate at times due to wetlands avoidance for the access route and icing issues for the transmission lines.

Brian said that the 10-mile buffer will be a much larger area than was surveyed in 2012 and there are concerns about whether the entire area can be covered during the nesting period because it is so big.

Brian summarized the eagle and raptor survey study methods used in 2012 and proposed for continuation in the PSP. He said that additional work may be needed to better estimate what might be missed on the nesting surveys (sightability assessment). He said that the Team may need more discussion with USFWS regarding small raptor species and cavity-nesting owls because they are difficult to study. He said that one component of the raptor study would be to review information on food habits and diets for use in the mercury bioaccumulation study.

Brian summarized the expected results of the eagle and raptor study. He said that migratory flight activity and potential for collision risk would be estimated from the information collected. He said that the Team would need time to examine habitats to figure out nest detectability in the study area.

Brian summarized the relationship of the eagle and raptor study to other studies. He said that the Team may propose sampling unhatched eggs and feathers to provide baseline data on mercury levels before project development.

Brian summarized the results of the 2012 study. He said that many nests were found. He said that not all of the nests found were occupied and not all occupied nests were successful. Catherine asked whether the surveys were only conducted in the 10-mile buffer. Brian said that they surveyed a 2-mile buffer around the Project area in 2012. Betsy added that ABR also surveyed the river corridor downstream all the way to Gold Creek.

Brian said that it is difficult to compare the results of the 2012 survey with previous studies because the search area in the 1980s surveys was not clearly defined in the reports. He said that there were significantly more Peregrine Falcons, which shows that they are continuing to recover. He said that no large owl nests or raven nests were observed.

Brian summarized the eagle and raptor discussion points. He said that the design of the eagle and raptor study methods was based on conversations with USFWS and in consideration of eagle take. He said that the study area will be expanded around the proposed reservoir impoundment. He said that the Team understands that more discussion regarding the survey area and survey methods for other species of raptors is needed.

Brian said that suitable habitat mapping would be done within a very large area (5-mile buffer around the Project area) and would be drawn from wildlife surveys and vegetation mapping. He said that mapping suitable cliff habitat must be done in the field because a GIS modeling effort cannot reliably identify all potential nesting habitats. He said surveys of small raptors, including cavity-nesting owls, involve logistics and safety concerns that need to be discussed further with USFWS. He said that BLM also had concerns about transmission corridors becoming nesting and perching sites, which might have effects on raptor prey species. Brian said that the project design would employ Best Management Practices (BMP) to help avoid raptor electrocution. He said that towers would need to be designed to keep them from becoming nesting or perching sites for ravens and raptors.

Maureen de Zeeuw (USFWS) asked when the results of the 2012 survey would be available. Brian said that a technical memorandum summarizing the information would be completed by the end of August 2012. Maureen said that there was good information provided on this in the PSP, but that there are other species that need to be discussed and that a nest productivity assessment and mapping needs to be discussed. Brian and Maureen will plan a meeting, hopefully by early September, with Jordan Muir, who issues USFWS eagle take permits. Maureen confirmed that the items that Brian presented were the primary issues. Brian said that a second helicopter survey group may need to be added to survey the entire 2013/14 study area. Betsy said that the enlarged survey area (10-mile buffer around the reservoir) is just for the eagles. Brian said that the team could pick up other large stick nesters even though the large survey area is for eagles. Brian said that in the Lake Louise flats there are more bald eagles. Mark Burch said that ADF&G is interested in all species and may have more comments

on the raptor survey methods. Mark said that he would like to be aware of the discussion. Sarah Bullock (BLM) said that BLM was interested in hearing the outcome of the eagle and raptor meetings. Catherine asked whether there was a small raptor or owl expert at ADF&G, and Mark said not really.

Brian said that there are some practical considerations that need to be considered with study methodology. He said that winter night ground surveys would be needed to find owl cavity nesters, which would be difficult. Maureen said that there are many oddball birds that can't be studied by typical survey methods. She asked what analysis would best to get a handle on those species. Brian said that the best way to determine their locations would be good wildlife habitat maps.

Maureen said that she was confused about the habitat mapping effort and how it would be done. She said that there are other factors that should be considered when mapping habitat but the study plan doesn't provide enough details. Brian said that the maps would recognize the vegetation, landscape position, and soils, which are factors that might affect habitat use by bird species.

Maureen and Catherine confirmed that the USFWS would be able to review the PSP before meeting with Brian and the ABR Team.

Brian said that there are 50 to 55 species of birds in the project area that are of concern in the USFWS/FERC Memorandum of Understanding (MOU) and methods for study differ among species.

Waterbird Migration, Breeding, and Habitat Use

Brian summarized the objectives of the waterbird study, which included determining breeding and migration locations, especially related to the locations of project components. He said that the waterbird study would review data on food habits and diets, which will also inform the mercury study.

Brian summarized the waterbird study area. He said that the study area is a 3-mile buffer that would be expanded in some areas to incorporate additional waterbodies, as needed. He said that more discussion is needed with USFWS regarding the study area size. Brian said that the study area corresponds with 1980s study area. He said that because of elevation and ice, there are areas that would not be as heavily used in spring as in fall, and these areas would not be highly used as a migration corridor.

Brian summarized the waterbird study methods.

Catherine asked the reason for doing 4 surveys instead of 8 surveys as requested by USFWS. Brian said that this needs to be discussed. He said that there is a lot of ice in the spring that could limit survey numbers.

Catherine asked why the survey spacing in the study plan is 800 meters while the requested study methodology has 400 meters spacing. Brian said that the protocols could be modified. Catherine said that the spacing should be closer in lowland lake areas. Brian said that generally transects don't work in this type of variable terrain. He said that spacing needs to be looked at and discussed in more detail.

Brian said that Harlequin Ducks are a species of concern and need to be looked at in more detail. He said that night migration is not detectable without using methods such as radar. He said that we need to agree on how to study these species because the methods are difficult and the terrain may limit radar study effectiveness.

Brian summarized the expected results. He said that brood surveys will help determine how successful species are over the season.

Brian summarized the discussion points. He said that the main difference between USFWS requests and the PSP is survey timing based on what is thought to be appropriate. He said that the USFWS requested a 15-mile radius around the project components, and the PSP proposes a smaller buffer. He said that the Team has questions about how the USFWS buffer was derived and whether it was needed, considering the project nexus. David Turner said that FERC wants to understand the relevance of the 15-mile buffer. Maureen said that the recommended 15-mile buffer came from the 1980s studies, and there is room to discuss the distance.

Brian said that the 800-meter transect spacing that USFWS requested versus the 400-meter transect spacing proposed in the PSP needs to be worked out.

Brian said that ADF&G's request for a helicopter survey of seaduck broods needs to be discussed, since ground surveys of waterbird broods are proposed, which should provide equivalent information. He said that the 1980s study concluded that the project area was not a major migration corridor. He said that the Team needs to figure out study methods and suitability of study methods. He said that BMPs to avoid impacts, for example moving the intertie corridor toward topographic features that would discourage crossings by migrating birds, may help to avoid collisions.

David Turner asked whether there are any prohibitions on using radar because the Air Force uses the area. Brian said that there is no real concern because the radars work on different frequencies.

Maureen said that USFWS was interested in density information, which wasn't included in the PSP. She said that it was not clear how that information would be determined. She said that it is important to the USFWS to get actual numbers of individuals. She said that they were interested in breeding species in the suitable habitat in the Project area. Maureen said that she was also interested in estimation of long-term effects of the Project on waterbird productivity. She said that the buffer area was requested so that it could be compared to the 1980s findings. She said that the buffer might only be relevant in a few areas; however, it needs further discussion. She said that the intensity of the migration survey needs further discussion to make sure the study is not missing migration peaks. She said that the transect spacing distance needs to be discussed further.

Maureen said that the migration surveys to determine strike risks are most important in specific areas and that the USFWS doesn't expect migration surveys to be conducted in all areas. She said that even though the 1980s data didn't show a big migration corridor, it doesn't mean it isn't important. She said that the 1980s study may have been looking at use not birds flying over, which is a different question. Maureen said that if the project didn't include lighting of facilities that attracts birds, then expensive studies would not be needed. She said that the Project needs an operational plan, but on other projects she has seen BMPs proposed that weren't implemented. She said that further discussion of radar surveys is needed to figure out where the Project risk to birds might be the greatest. She said that waterfowl experts could be involved in the meetings, but they are out in the field in August.

Kirby said that we will need a series of several meetings and that it would be good to schedule them as soon as possible.

Catherine said that the reporting and deliverables outlined in the PSP need to be more detailed so that USFWS can understand what will be in a study report. She said the USFWS needs the requested information so that they can determine project impacts.

David Turner asked whether the information requested by ADF&G for seaduck species was different than for other waterbird species. Catherine said that ADF&G comments may have been related to migration timing. She said that dabbling ducks migrate at different times than diving ducks and may require a different study period. Catherine said that seaducks should be covered by the study timing presented in the PSP.

Breeding Surveys of Landbirds and Shorebirds

Brian summarized the objectives of the landbird and shorebird breeding survey. He said that not all the species would be detected by the point-count methodology, which would be the primary method used. He said that the study would focus on areas of high interest, including the inundation area.

Brian summarized the study area for landbirds and shorebirds. He said that the area includes a 5-mile buffer around the Project area, which corresponds to the wildlife habitat mapping area. He said the study area is proposed to understand the relative abundance and locations of rare, high-value habitats. He said that the area has been mapped in the past, but would be much more specific this time. He said that the work would be tied to the wildlife habitat evaluation study.

Brian summarized the landbird and shorebird study methods. He said that they would conduct stratified sampling depending on habitat abundance. Maureen asked whether the study would provide density estimates. Brian said that the intent would be to determine density by correlating information from the point-count data. Maureen said that the project needs to determine landbird and shorebird densities, even though it is difficult to do.

Brian said that additional point counts would be done apart from the habitat-based sites in areas that are important for nesting of fluvial and riverine species, for example, clear water habitats in tributaries. Catherine asked how the sites would be selected without bias. Brian said that site selection needs to be discussed further because it may be biased because fluvial habitats would be selected specifically to address USFWS concerns for those species.

Brian said that the Team is proposing to do surveys over broad area. Maureen said that the methodology wasn't clear about the number of plots, transects, or whether there would be plots with several points. She said it is not clear how plots would be distributed. Brian said that the study would generally try to cluster plots so that they would not have to do a lot of helicopter flying. He said that the number of plots depends on what the crew can accomplish and the number of habitats that can be reached by clustered points. Maureen said that the methodology needs to be explained more fully.

Maureen asked whether habitat data would be collected at the same time as point counts. She said that trying to do both simultaneously is not an effective way to do this type of study. She said that the study would have to have extremely simple habitat parameters, which is not recommended. Brian said that when the bird surveys start, the wildlife habitat map would not yet be done to determine which points to examine, so the 1980s vegetation mapping would need to be used. Maureen said that focusing on birds and collecting habitat data at the same time is a difficult effort and could make a huge difference to the study. Maureen said that she understands that, at some point, they need to look at the big picture and concentrate on some species more than others. Brian said that this would be a valuable discussion.

Brian summarized the landbird and shorebird study discussion points. He said that the study-area buffer size needs to be discussed. He said that the USFWS rationale for locating "study

plots” in Denali National Park and the Copper River Basin needs to be discussed in detail. He inferred that those study plots may be aimed at trying to figure out rare species detectability. Maureen said that this might be a more cost-effective way to get answers, but that it would need more discussion.

Brian said there needs to be a discussion about surveys of “overwintering” birds and spring surveys of resident breeding species. He asked whether “overwintering” birds means resident species. He said that the Team needs to determine how to study these species, acknowledging that some overwintering birds are hard to detect and that winter survey methods are difficult.

Brian said that the request for mist netting should be discussed, because it is a big effort with risks to birds. Maureen agreed that mist netting should be discussed.

Maureen said that we need to figure out how to study landbird light attraction and the potential for collisions. She said that USFWS is concerned about facility lighting and its impact on migrating birds. She said that during low visibility or at night the Project facilities could pose a collision risk. Maureen asked whether the dam would be lit on top. Wayne said that it hasn’t been determined, but that safety is paramount. Maureen said that there are numerous reports of disoriented birds circling and being attracted by lighting. She said that she understood that the lighting plan is important for human and bird safety.

David asked whether the lit area of the Project would be within the migration corridor. He asked whether the radar study would help to determine the migration corridor. Maureen said that USFWS was not proposing to sample the entire corridor. She said that topography and Project components would help to determine the survey location. Wayne said that the project airstrip would have lights. Maureen said that it would be good to find out where the Project risks to birds would be located.

Maureen said that random plots across prominent habitat types are a good idea. She said that kingfisher and dipper methods need to be discussed because they are only mentioned within the PSP as an additional set of point-count surveys. She said that point-count surveys along the river might not work because of water flow noise. She said that density estimates are important but the estimates can’t just be done based on habitat use. She said that basing the study on habitat use information from the Lower ’48 is not a good idea, but it might be the only way since we don’t have good data for Alaska. She asked how we can figure out specific habitat being used by the birds and collect the habitat information at the same time. She said that mapping methods, including how many categories of habitats would be mapped and what parameters would be used, need to be discussed in more detail.

Maureen said that understanding the Project’s likelihood to injury to birds would help with study design. She said that Table 8-98 in the PSP indicating abundance isn’t enough to

understand the number of birds that might be impacted by the Project and more details are needed there. She asked what approximately 400 point-count samples meant and whether it was points or clusters. She asked how many habitat types would be represented under this methodology. Maureen said that first-light protocol should be related to the local sunrise.

Maureen said that Page 8-95 of the PSP states that density estimates are not proposed. She said that the USFWS doesn't accept this because we don't know what species would be using each habitat type. She said that she would like to bring Dave Tessler at ADF&G into the small group meetings.

Maureen said that they would like to discuss what classifications would be used for habitat mapping and to what scale.

David said that, unless we related the study to the management area or to the population as a whole, it will be difficult to figure out the significance of effects. Maureen guessed as much as 30,000 to 40,000 pairs of landbirds could be lost by the impoundment zone. Brian said that not all would be dead and that they may move elsewhere. Maureen said that the USFWS would need something to show that they would go elsewhere. She said that the bird season is short and that the displaced birds would not have enough time to find another location to nest. She said that a very low percentage of birds would go somewhere else to nest.

Wayne said that it would take two to three years to fill the reservoir. Kirby said that there are some strategies to help minimize damage to birds. David said that he wanted to know how the data would be used in the impacts analysis. Maureen said that the relative abundance would not give you the information needed. She said that they need to figure out the significance of impacts. Betsy said that impacts could be mitigated and added that not all birds would be lost and that many would be displaced. Betsy asked if the USFWS expected AEA to recreate the same amount of territories that would be lost due to the Project.

Maureen said that she was not prepared to discuss mitigation. Kirby said that lost habitat could be replaced by other habitat types. Maureen said it would not be replaced if it is water. She said that we need the right data to figure out mitigation.

Terry Schick (ABR) said that, based on comments from ADF&G and the recent literature they cited, that density estimates from point count data are likely to be quite variable. He said widely variable distance estimates to birds detected only by songs and calls can result in unreliable density estimates. Maureen agreed with Terry Schick in saying that using range finders does not solve the problem of getting accurate distance estimates to birds detected only by sound. Terry said the study team would collect the data needed to do the distance analyses, and then the decision would be whether or not to conduct those analyses. He said that that distance analyses might give better density estimates for common species (with larger

sample sizes) and less reliable density estimates for less common species (which often are the species of most concern). Maureen said that this is a bigger issue than can be discussed today. Terry said that if enough plots were surveyed and enough habitats were sampled, density measurements could be determined, but those densities still would have large error margins surrounding them (i.e., the estimates of the number of birds affected by the Project would be widely variable). Maureen said that they could use ranges of numbers affected.

Maureen said that she wanted to reiterate that virtually the entire population of one subspecies of Rock Sandpipers overwinter in upper Cook Inlet and feeds primarily on *Macoma balthica*, a small clam that lives in intertidal sediments. She said that the clam is a critical resource for Rock Sandpipers in upper Cook Inlet, including the area around the mouth of the Susitna River. She said that the presence of the clam and Rock Sandpipers is understood, but how the operations of the Project could affect *Macoma* is not understood. She said that they do not need more study of the sandpipers, but instead need to know how their food resource would be affected. Betsy said that the river productivity study team looked into the issue and determined that *Macoma* is a strictly marine species. Betsy said that the study team will look into how clams could be impacted through potential Project-induced changes to their environment through sediment modeling, water quality modeling, and geomorphology studies. Maureen said that a connection needs to be made between clams and sandpipers. Wayne said that the river study team was looking at the issue through the water quality, modeling, and sediment-transport studies. He said that AEA would have to think about how to address the topic in the RSP. Maureen said that they have looked at this issue on the Columbia River.

Wood Frog Distribution and Habitat Use

Brian said that the Susitna Hydroelectric Project Studies didn't survey for frogs in the past.

Brian summarized the frog study area, which includes the area that could be affected directly by the Project footprint, including the reservoir impoundment.

Brian summarized the study methods and the expected results. He said that detectability estimates using an occupancy survey protocol are proposed. He said that the timing of calling males would be assessed from other studies to try to schedule the surveys during the peak calling period. He said that they would survey suitable habitats including waterbodies and wetlands where frogs are likely to breed. Habitats where frogs move after breeding would be evaluated in the habitat evaluation study.

Brian summarized the wood frog discussion points. He said that the study team would evaluate the chytrid fungus concern and the possibility of collecting frogs/tissue for bioassays in conjunction with the survey; however, the study team would need more information on how to properly collect samples. He said that there are standard methods for assaying for the fungus

but that there were questions about whether there was a realistic relationship between the proposed Project activities and the spread of the fungus. He said that it was not clear how widespread the fungus is or whether it could be related to Project activities.

Catherine said that there may be effects on frog breeding ponds due to the Project's gravel roads and dust. She said that USFWS would evaluate the frog work on the Kenai. She said that there are results from the Kenai area for the last few years. She said that impacts to frogs have to do with dust, temperatures, contaminants, and predator interactions from the road. She said that a gravel roadway is more of an issue than a paved roadway.

Betsy said that the study area would need to be assessed also. She said that it might not make sense to study the transmission line corridors because there would be no gravel roads or pads in those areas. Wayne said that the air quality study could provide information on how far dust would travel.

Wildlife Resources Studies

Brian summarized the objectives of the moose study. He said that the moose study focuses on numbers and movements of animals in the Project area. He said that the study would help to develop mitigation measures for the Project.

Kimberly (Kim) King (ADF&G) said that ADF&G was hoping to do work this November (2012) and looked at logistics and ran some numbers. She said that surveying the areas below and above the dam at the same time would be preferable to looking at them at different times. The data would be collected for application of ADF&G's geospatial population estimator (GSPE) method, which uses intensive sampling of smaller quadrat areas. She said that they could input numbers into the system and get moose estimates below and above the dam. She said that they would need the weather to cooperate for seven consecutive days. She said that the moose population composition surveys would be going on at the same time, so they may have difficulty getting enough pilots and airplanes to conduct this survey. She said that they would do fixed-wing surveys of random plots, dividing the area up into 6-square-kilometer sample units. She said that they would be looking at 200 sample units.

Brian summarized the caribou study objectives. He said that ADF&G would be recollaring animals known to use the Project area. He said that they would also use individuals that are already marked.

Brian summarized the objectives of the large carnivore study (bears and wolves). He said that, according to ADF&G, not a lot of new field work would be needed. He said that the study would rely largely on existing information. He said that the bear study would look at bear use

of anadromous fish spawning streams in the Susitna drainage below the proposed dam to understand changes in use of the streams.

Brian summarized the moose study area. He said that it was based on moose management subunits. He said that the purple areas on east (see slide) are where long-term trend counts have been done, located both south and north of the Project reservoir.

Brian summarized the caribou study area. He said that the study area is designed to look at specific movements of the Delta and Nelchina herds and where they overlap. He said that it is divided up into game management units. He said that the study area is complicated because two caribou herds and several subherds potentially occur in the study area. He said that herds are defined on the basis of their fidelity to calving grounds. He said that the Nelchina Herd uses the area in the eastern Talkeetna foothills in Game Management Unit 13A. He said that the Delta Herd calves in an area off the map, north of the Alaska Range.

Brian summarized the large carnivore study area. He said that they would do an analysis of existing data. He said that they needed to revise the study area map (see slide in presentation) because not all areas were shown.

Brian summarized the moose and caribou study methods. He said that a combination of the monitoring of GPS/satellite and VHF radio collars would give good information on movements in relation to the Project area.

Brian summarized the large carnivore study methods.

Brian summarized the expected results of the moose, caribou, and large carnivore studies.

Brian summarized the 2012 study activity. He said that the late-winter moose survey was completed in 2012 because of the high snowfall. He said that wolf and wolverine telemetry data from the 1980s studies were not available. Betsy said that the data might be in Juneau.

David asked whether the existing wolf and bear data would be good enough for the agencies, and Brian confirmed that it was.

Mark said that ADF&G put out satellite GPS collars on bull moose.

Brian summarized the moose, caribou, and large carnivore discussion points. He said that BLM asked whether there were plans to validate the moose carrying-capacity study done in the 1980s. He said that the work wasn't planned because the current studies of moose browse removal would use a different method and model. Sarah said that this is acceptable to BLM.

Kim said that ADF&G had started doing telemetry on 170 caribou with satellite and VHF on collared bulls. She said that it was taking longer to track all of the animals than they originally thought it would. She said that they flew the study area last week. She said that the half of the study area (the northern and western portions) took 8 hours to fly on Sunday and 6 hours to fly on Monday. She said that the valleys make it hard to cycle through all the collar frequencies. She said that their goal is to survey all frequencies and to locate all of the collared animals every time they fly. She said that because it takes so long, they are going to fly every two weeks instead of flying the study area weekly. She said that ADF&G thinks that this sampling period would be good enough because they also have satellite data. She said that in November 2012 ADF&G would be putting satellite collars on some cows. She said that they could use the VHF transmitters on the satellite collars to find the animals even if the satellite transmitters had problems. Kim said that she did not remember how often the satellite data were collected, but that the ARGOS data provided on CD is taken half as often to save battery life. She said that until collars are removed they are unable get GPS data, which is stored on board the collars for downloading after retrieval.

Kim said that right now ADF&G was only planning on biweekly flights. Mark said that in September 2012 they would increase to weekly survey flights during migration periods.

Jan Konigsberg (NHI) asked what the problems were with relying on satellites instead of flying. Kim said that VHF collars have a longer battery life and cost 3 to 4 times less than satellite collars. Jan asked whether GPS data could be stored on the collar. Brian said that it depends on the collar's duty cycle. He said that the most complete data is collected on the GPS collars. Brian said that there is a new technology that might be able to be used to kick up the frequency of data collection when collared animals come near a specifically defined geographic area.

Mark said that BLM had comments related to putting collars on the right caribou during the right season. He said that the Nelchina Herd is important. He said that there are few times when they can effectively collar because of weather, climate, and the hunting season timing. He said that ADF&G does have success on identifying and distributing collars on various herds. Sarah said that BLM just needed to understand this better and that the agency accepted the information that was being provided. Kim said that October is the best time to figure out whether individual moose are resident or moving through and that is why ADF&G selected October to sample. She said that once the data are returned, ADF&G will adjust the collared caribou if they figure out that one group is oversampled.

Sarah said that in the 1980 studies caribou were captured during calving. She said that the Project needs to figure out who would be going across the inundation zone. Mark said that ADF&G would be putting more collars on the Nelchina Herd to understand this. He said that the Delta Herd isn't expected to cross the inundation zone. He said that they have 10 satellite collars on Nelchina bulls and will deploy 10 more in November 2012. They have 5 satellite

collars on Delta bulls and will deploy 5 more in October 2012. He said that they have 80 Nelchina females collared and 40 Delta females collared. He said that the numbers are in the newest version of the PSP and should address BLM's comments.

Mark said that ADF&G has been issuing more hunting permits for the Nelchina herd because ADF&G is concerned about the population getting too large.

Kim said that they started marking bulls with collars equipped with orange color and numbers. She encouraged other field crews to report back if they are seeing collared moose.

Mark said that he had talked with the ADF&G biometrician and he thinks that they may be able to use bear transect data to estimate population size using a new model just developed. He said that this would be worth discussing more with Earl Becker (ADF&G) to figure out what the existing data can do for the Project. He said that there may be other density modeling by habitat type that could be done using the existing transect data and reanalyzing the data.

Sarah said that she had not looked over the updated study plan, but most of BLM's questions were related to study details and transparency. She said that she would not mind going over BLM's questions with ADF&G. She said that she would like to look over the PSP before planning a meeting. Mark said that the methods have changed a bit. Sarah said that overall she did not have any big issues.

Wayne said that the adjustments to the study plans sound sensible and that the Project Team would try to pass this information on so that it is understood. David said that the ILP addresses changes to study plans. He said that the risk is that agencies might not agree with the changes; however, the end of year reports could reconcile differences.

Brian asked whether there were questions or concerns on the DNA and stable isotope study for bears downstream. Mark said that he thought that ADF&G and AEA were on the same page on the study methods.

Jan asked whether the surveys of bear population downstream would go up the tributaries. Brian said that the intent is to go upstream to look for bears in all stream drainages that are known to be anadromous fish spawning streams.

Dall's Sheep Distribution, Abundance, and Habitat Use

Brian summarized the objectives for the Dall's sheep study. He said that the primary concern was acquiring adequate information on sheep numbers and summer range use north and south of the reservoir. He said that there was no indication that sheep are crossing the river in the area of the proposed inundation zone, but that the potential effects of the Project on mineral

lick use by sheep and increases in human harvest would be issues. There are mineral licks near Jay Creek (just above the proposed reservoir level) and upper Watana Creek (away from the reservoir zone). He said that the potential for increased predation by coyotes may become another issue affecting the sheep population, which is one area of focus for the terrestrial furbearer study.

Brian summarized the study area. He said that the map in the PSP needs to be revised to not go as far south and to include areas near access corridors north of the Susitna. Mark said that it makes sense to include the access corridors. Kim said that ADF&G does not survey for sheep, but that they could.

Brian summarized the Dall's sheep study methods. He said that there was a newer survey method that the National Park Service uses, but there are flight safety issues with that method, so the aerial survey method traditionally used by ADF&G will be used.

Brian summarized the expected results of the Dall's sheep study and the activities that would be completed in 2012, which include analysis of existing data from ADF&G and a site visit to the mineral licks to inform study planning for 2013/14.

Brian summarized the Dall's sheep discussion points. David asked whether ADF&G was satisfied with the methods. Mark said that ADF&G wants to look at the study plan more closely. Brian said that the study area map needs to be updated.

Wolverine Distribution and Abundance/Terrestrial Furbearer Abundance and Habitat Use/ Aquatic Furbearer Abundance and Habitat Use

Brian summarized the wolverine study methods. He said that the wolverine, terrestrial furbearer, and aquatic furbearer studies all rely on track surveys in the winter to various extents.

Brian summarized the terrestrial furbearer study objectives. He said that the study would be conducted on the ground using DNA sampling of scats and hair samples and capture-mark-recapture methods.

Brian summarized the aquatic furbearers study objectives. He said that beavers are important to understand because of their impacts on riparian, lacustrine, and fish habitats. He said that surveys would be conducted downstream to Talkeetna to determine use of the middle and upper river reaches. He said that they might be able to gather river otter information during the winter from low-altitude helicopter surveys. He said that they would be comparing furbearer populations in the Susitna mainstem to the tributaries to provide background information for the study of potential bioaccumulation of mercury in fish. He said that review

of information on the food habits and diets of aquatic furbearers would inform the mercury study.

Brian summarized the wolverine study area. He said that quadrats would be sampled to look for tracks as part of the sample-unit probability estimator (SUPE) survey technique.

Brian summarized the terrestrial furbearers study area as a 6.2 mile buffer around the Project area.

Brian summarized the aquatic furbearers study area. He said that it would target streams and waterbodies in Project area footprint, as well as riparian areas downstream.

Brian summarized the methods, expected results, and study interrelationships of the wolverine and terrestrial and aquatic furbearer studies.

Brian summarized the discussion points of the wolverine and terrestrial and aquatic furbearer studies. He said that the SUPE survey approach was dropped for wolves but would be used for the wolverine survey. He said that the ADF&G comments were addressed. He said that the most discussion is needed on the aquatic furbearer study plan because USFWS requested the study.

Mark said that he talked with Howard Golden at ADF&G about aquatic furbearers. He said that they were concerned with how muskrats and mink would be surveyed. He described a survey method (used by Herrington, Herrington, and McDonald) that employs floating structures on water to record tracks of mink. He said that this might be a better method for surveying aquatic furbearers. Mark said that he would forward the scientific journal article to Brian.

Mark said that Howard Golden has spent a lot of time studying river otters. He said that just surveying latrine sites (also called spraints) should give a good indication of the number of otters in the area. Mark said that the Team would need to select the creek and then survey latrine sites. He said that hair snares employing roughened wire cables and DNA analysis would give the Project a way to estimate the baseline population without collecting animals.

David asked whether there was a need to do the mercury analysis (which is the subject of another study to be discussed separately on Friday, August 17). Mark said that ADF&G understands USFWS's concerns about mercury. He said ADF&G had not thought about it in the beginning, but now they agree with conducting a risk assessment for mercury bioaccumulation. Mark said that ADF&G is also interested in abundance information to determine impacts. Brian said that they previously discussed where surveys should be conducted. Brian asked whether they needed a population estimate. Mark said it might not be needed.

Mark said that ADF&G had comments on the wolverine study. He said that the Region 4 biologist consulted with Howard Golden and Todd Rinaldi to determine how the study could address the winter distribution of wolverines. He said that ADF&G questioned whether the study would be able to determine winter habitat without more survey work. He said that just because an animal is passing through an area doesn't mean it is winter habitat. Mark asked whether determining winter habitat was needed.

Mark said that the study plan says sampling would be done in 25 square mile blocks, but it should be 25 square kilometers instead. He said that there might not be wolverines in the mountainous area in the winter. He said each of the blocks should be 25 square kilometers and that the Team might want to change the study area boundaries to reduce the potential error from boundary effects caused by wolverines moving out of survey blocks and entering others. He said that some areas should be added to square up the study area. Mark said that the Team might want to talk with Earl Becker (ADF&G biometrician) to figure out how to deal with animals leaving and entering the study area. He said that ADF&G would be willing to consult on this in more detail.

David said that he thought there were more comments related to terrestrial furbearers. Mark said that ADF&G had not been able to get back into it and that it may still have issues. Brian said that they would talk with ADF&G about additional comments.

David said that BLM requested additional spring surveys of beavers to assess overwinter survival. Brian said that the study plan accommodated BLM's comments, but that calculating exact population estimates would not be possible. Mark said that Howard Golden did not think that you could figure out exact population numbers for survival estimates, but that the survival of individual colony locations could be assessed.

Population Ecology of Willow Ptarmigan

Brian summarized the objectives of the Willow Ptarmigan study. He said that ptarmigan were the primary small game bird in the Project area and surrounding region.

Brian summarized the ptarmigan study area and described the capture sites and alternative capture sites that have been proposed by ADF&G.

Brian summarized the ptarmigan study methods, expected results, and the 2012 study activities.

Brian summarized the Willow Ptarmigan discussion points. He said that most comments on the study were from BLM, and some generic Department of Interior comments were received. He

said that BLM comments were on the study request. Terry said that the Migratory Bird Treaty Act applies to resident and migratory birds but not to invasives.

In response to BLM questions on the study request, Mark said that ADF&G would determine age and sex of the animals captured. He said that they did start an effort in 2011 and have 192 wings from birds taken in Game Management Unit 13. He said the question is whether the Project area is serving as a refugium for ptarmigan and whether increased access would affect the bird population by improving hunter access. He said that right now the Project is looking at 3 capture sites north and 3 capture sites south of the impoundment zone. He said that deploying additional radio transmitters to increase sample size could be a problem because of the number of radio transmitters already operating on the frequencies that would need to be used. He said that the question of using different pulse patterns to differentiate radio-tag frequencies is difficult because it has never been done with ptarmigan and could be risky for getting the study done. He said that they would have to shorten the life cycle of the collars if sample sizes were increased further. He said that if BLM has questions on the analytical models proposed for use, then perhaps Mark Lindberg at UAF could discuss those in more detail. Kirby said that we need to get with ADF&G to determine whether study area changes are needed and with BLM to see whether their comments have been addressed. Mark said that there is doubt that there is ptarmigan habitat in some of the access corridors. He said that ADF&G has a lot of management interest in ptarmigan.

Brian said that this is a remote area and that there could be secondary effects with increased access to the Project area. Wayne said that this is a State issue to be worked out with DOT&PF, ADF&G, and other State entities.

Wildlife Habitat Evaluation Study

Brian summarized the goals of the wildlife habitat-evaluation study. He said that AEA would be collecting information on habitat use for all the wildlife species observed. He said it is likely, based on other work in Alaska, that there would be at least two dozen habitat types. He said that a matrix would be generated indicating the categorical rankings for each wildlife species or group and each mapped habitat type. He said that they might not have project-specific information for every species (e.g., some mammals are rarely observed), but the study would use the best available data. The protocol would be to use project-specific habitat-use data first and then seek habitat-use information in the scientific literature (published and unpublished) for those species for which there are few observations. He said then they would use the wildlife habitat mapping to depict geographically the high-value habitats for various species in different seasons in the Project area. He said that the habitat evaluation study would facilitate a determination of which habitats would be affected by the Project and how many acres of each would be affected.

Brian indicated that the study area for the wildlife habitat evaluation was a 5-mile buffer around the Project area. This is the same study area to be used in the wildlife habitat mapping study (see below).

Brian summarized the methods that would be used to evaluate wildlife habitat use. He said that they would select for analysis: bird species of conservation concern (based on the MOU between FERC and USFWS), birds and mammals that are of concern for subsistence and sport hunting in Alaska, species of management concern in the state, and species that play important ecological roles.

Brian summarized the expected results of the wildlife habitat evaluation study.

Brian summarized the 2012 activities for wildlife surveys (which would serve as data sources for the habitat evaluation study). He said that the historical (1980s) vegetation mapping had been acquired from ADF&G and had been pulled into GIS. This mapping would be used to help allocate study plots for some wildlife studies by habitat type. He said some fieldwork had been initiated (e.g., raptor surveys).

Brian summarized the discussion points for the wildlife habitat evaluation. He said, following up on comments by ADF&G, that the study team would investigate the Alaska Gap Analysis Project (GAP) as a source of data on habitat use for the Project area.

David said that quantifying impacts on a habitat basis could help with understanding the significance of the Project impacts in a regional context. He said that the GAP data might be able to help. Terry said it is likely they study team could use the Alaska GAP data to do assess affects at a regional or statewide scale, but probably would have to rely on finer scale local mapping from the vegetation and wildlife habitat mapping study (see below) to assess local-scale impacts. David asked about the State's management concern. Terry said that it varies by species.

Catherine asked why the Project was waiting until 2013 for determine which species to analyze in the evaluation. Terry said that it was likely just scheduled to coincide with the point at which the study team would have a fair amount of habitat mapping completed. He said that the species could be selected before 2013. Catherine said that USFWS would like the species selection completed early enough to understand what habitat types are important to map. She said species should be selected soon and identified in the study plan so that something isn't missed. Mark said that game species were left out because they are managed separately. Brian said that they needed to determine which species have bag limits. Catherine said that if species could not be identified, it would be good to understand what group of species would be analyzed. Brian said that the FERC/USFWS MOU for birds would provide some direction. Mark said that ADF&G would need to come up with priority species.

Wildlife Harvest Analysis

Brian summarized the objectives of the wildlife harvest analysis. He said that the work would be based on information provided to the State by hunters and trappers in harvest reports; however, there are big holes in the data. He said that there are concerns about the completeness of the data. He said that the data would be fed into the recreation study and potentially into the subsistence study for the Project. He said that analysis of harvest data will help to identify potential changes in harvest after construction.

Brian summarized the study area. He said that it was primarily Game Management Area 13E but also includes surrounding management units. Jan asked whether the data shows where the animal was harvested. Brian said that it isn't always reported.

Brian summarized the expected results of the wildlife harvest analysis. Catherine asked whether information on ptarmigan was provided. Mark said that there isn't much information on ptarmigan harvest. He said that there is some from the last season, but not many details. Brian said that information is related to the species harvested, the level of hunting effort, and the success of the effort.

Brian summarized the discussion points of the Wildlife Harvest Analysis.

Little Brown Bat Distribution and Habitat Use and Small Mammal Species Composition and Habitat Use

Brian summarized the objectives of the little brown bat study and the small mammals study. He said that studying the bat was of interest because of white-nose syndrome, a fungal infection that has affected the little brown bat population in the northeastern United States. He said that the study would generally look at forested areas because the bat isn't a tundra species. He said that they can roost in caves and rock crevices. He said that the cultural resource survey might help to determine roosting areas in human dwellings.

Brian summarized the bat and small mammal study area, which would include the reservoir zone and Project infrastructure area.

Brian summarized the bat study methodology, which can detect other bat species if they are present in the study area. He said that the area would be surveyed between May and October. He said that they would attempt to locate hibernacula, but they might have to infer this because these areas have not been found in Alaska. He said that, in addition to the more common species of rodents and shrews, the small mammal survey would be looking for the

Alaska tiny shrew, which is a species of concern for BLM, to get a better handle on whether this species would be directly impacted by the Project.

Brian summarized the expected results of the bat and small mammal studies.

Brian summarized the 2012 activities, which are limited to estimation of snowshoe hare and vole population indices, beginning in August 2012 for the terrestrial furbearer study.

Brian summarized the bat and small mammal studies discussion points. He said that the Project team needed to consult with Dave Tessler at ADF&G to make sure that he is comfortable with methods.

Brian said that they had tried to address BLM comments regarding the access and transmission corridors by proposing to study those areas, but that the collision risk for bats at transmission lines is slight. Sarah said that she would get back with Brian to make sure that BLM's issues were addressed.

Botanical Proposed Study Plans

Vegetation and Wildlife Habitat Mapping

Terry summarized the vegetation and wildlife habitat mapping goals and objectives. He said that the mapping data will facilitate quantitative assessments of impacts on vegetation and habitats for a set of bird and mammal species of concern.

Catherine asked whether operational impacts would be addressed. Terry said that operational impacts would be addressed through analyses of potential habitat alterations in areas adjacent to project infrastructure, but that most of the operational impacts would occur downstream of the dam, and those impacts would be addressed in the riparian successional vegetation study. He said that it would be difficult to use the 1980s vegetation map polygons in the current mapping of vegetation and habitats (because the 1980s map polygons are based on old imagery), but the study team would try to determine the usefulness of the previous mapping in facilitating the current mapping study.

Terry summarized the vegetation and wildlife habitat mapping methods. He said that the study team would identify the aerial photo signatures on current high-resolution imagery by collecting ground reference data for each photosignature. He said that variability in photosignatures would be addressed by collecting field data at multiple plots in each photosignature type and by collecting field data throughout the mapping area.

David asked whether the work would consider age and percent cover. Terry said that they would first map everything to Veireck level IV vegetation type, which entails collecting data on percent cover. Data on forest age would be obtained in the timber volume work, which is likely to be a separate study (see below).

Bob Henszey (USFWS) asked whether soils and hydrology information would be collected at each site. Terry said that soils and hydrology information would be collected at each field ground-reference plot because the field effort the wetlands mapping study (which requires field data on soils and hydrology) is being combined with the field effort for the vegetation and habitat mapping study.

Terry summarized the study area. He said that it would be a 5 mile buffer around the proposed Project components. He said that this is a big area that goes way beyond the Project effects. Kirby asked whether the study area needed to be that large. Wayne said that this is typical for FERC Projects. David said that he could not remember seeing a mapping study area this large. David said that it was good, however, because there would be comparable data to use for all wildlife topics. Wayne said that AEA wants to do the right thing and use common sense and that the study area could change as more information is collected in the field. Terry said that the larger study area would help in placing the impacts to vegetation and wildlife habitats in a regional context.

Terry summarized the 2012 activities. He said that approximately 250 ground-reference plots had been surveyed and some additional vegetation verification plots as well. He said that some mapping would be completed this fall and winter.

Terry summarized the discussion points for the vegetation and wildlife habitat mapping study plan. He said that the timber volume determination (for areas to be cleared of vegetation during construction) was not included in the proposed study plan and may need to be a separate study. Wayne asked who and why there was interest in a timber volume assessment. Terry said that it was a Department of Interior and BLM study plan comment. Betsy said that there is a big area of BLM land in the inundation zone. Sarah said that she would provide more information.

Ben Seifert (BLM) said that BLM requires a timber volume assessment to determine compensation to BLM for timber take on their lands. Wayne asked whether a separate study was needed. Terry said it is likely that a study of timber volume would need to be separate from the study of vegetation and wildlife habitats because a timber volume study would require intensive field data to be collected only in forested habitats. In contrast, the field studies for vegetation and habitat mapping are focused on surveying all habitat types, forested or not, and that collecting detailed data in forest habitats would slow down the study of

vegetation and habitats. Ben said that he would like to be involved in the discussion of the forest volume study plan.

Terry said that the USFWS requested a comparative analysis of changes in vegetation (1980s to current). He said that it could be done, but the scale of the analysis would need to be changed (likely made broader with more generalized vegetation types) to make valid comparison to the 1980s mapping, and there would be comparison concerns given the differences in the vegetation classifications used. He said that there needs to be more discussion with USFWS to determine whether a change analysis is feasible and to determine the rationale for that analysis. Bob said that he thought that the analysis was requested to determine the rate of change in plant communities. Bob said that he would look at the comment because it wasn't meant to be burdensome.

Jan asked how is AEA was going to make a decision about whether the inundation zone would be cleared, inundated, or both without doing studies. Wayne said that AEA was not sure that timber harvesting would be economical. He said that AEA would need to do a cost-benefit analysis as well as a study of the effect of decay in the inundation zone to determine what would be done. He said that there would be more discussion about the inundation zone. Jan asked whether there would there be a separate study to make the decision. Wayne said that AEA would use information from a variety of studies. Wayne said that the engineers don't think that they need to clear the reservoir area, but AEA would be looking at other projects in northern areas to determine the best method.

David asked about USFWS's comment regarding minimum mapping sizes. Bob said that he didn't remember that detail, but he thought that waterbodies were to be mapped to 0.5 acres and other vegetation types to 1.0 acre. [The numbers in the study plan are 0.25 acres for waterbodies and 1.0 acre for other vegetation types.] Terry said that they typically map wetlands at a finer scale in areas where there would be direct impacts (e.g., in the inundation zone and areas where fill or physical disturbance would occur).

Wetland Mapping Study

Terry summarized the wetland mapping study's goals and objectives. He said that in the area downstream of the proposed dam, wetlands would be mapped (in the riparian study, see below), but that wetlands determinations would not be completed. He said this approach was agreed to in meetings with ABR, AEA, USFWS, Environmental Protection Agency (EPA), and U.S. Army Corps of Engineers (USACE). He noted that a series of meetings with these agencies had been conducted to determine the wetlands mapping and functional assessment methods to be used for the Project.

Terry said that they would be using a method that combines several wetland assessment elements including the Cook Inlet basin wetland methodology. He said that the wetland functions to be assessed would be specific to the region and the remote and relatively undisturbed environment.

Terry summarized the wetland study area, which would be a two-mile buffer around the Project components. Catherine asked whether the study area would be two miles outside the 100-year flood limits. Terry said that the study area buffer for wetlands would be around the Project components including the inundation zone. Terry said not all areas to be mapped were within the active floodplain. The 100-year flood limit applies to the riparian study area (see below).

Jan asked why the wetland mapping ended at Gold Creek. Terry said that there was overlap between the wetlands mapping effort and the riparian vegetation mapping effort. Wetlands would be mapped (in the riparian study, see below) downstream of Gold Creek, but the wetland mapping study is focused on those wetlands that would be affected by fill, disturbance, or inundation by the reservoir. He said that the USACE stated that they only need to see wetlands mapped in the area where direct fill is proposed.

Terry summarized the 2012 wetland mapping activities, which involved both field surveys and GIS work in the office. As noted above, Terry said that approximately 250 ground-reference plots had been surveyed (field data for vegetation, wildlife habitats, and wetlands are collected simultaneously) and some additional vegetation verification plots were surveyed as well. He said that some wetlands mapping would be completed this fall and winter.

Terry summarized the wetland mapping discussion topics. David said that FERC would like to see all the issues that are listed addressed in the final Revised Study Plan. Specifically, a final decision must be made on the wetland functions to be assessed.

Riparian Vegetation Study

Terry summarized the goals and objectives of the riparian vegetation study. He said that data on riparian vegetation and wildlife habitats downstream of the dam site would be collected in the field. He said that the study team would first map riparian ecotypes, wetlands, and wildlife habitats, and then determine possible changes in these resources with changes in stream flow, ice processes, and fluvial geomorphology.

Mark said that ADF&G had some questions related to aquatic furbearers and changes water flow. Mark said spring flooding could result in suitable habitat. He said that if furbearers lose that habitat because of project operations (reduced spring flows), the species could be affected

and those potential impacts would need to be understood. Brian said that the instream flow study and the riparian habitat study would help answer the aquatic furbearer habitat question.

Bob asked how much overlap there would be between the riparian vegetation data collection and the instream flow study. He said that he wanted to make sure that the two teams worked together to collect all the needed information. Terry said that the instream flow and riparian vegetation team leads were in the field together this year (sampling simultaneously), and that they have been coordinating closely throughout the study plan phase, so the needed data should be acquired for both studies.

Terry summarized the riparian study's relationship to other studies.

Terry summarized the riparian mapping methods. He said that the proposed methods were similar to the wildlife habitats mapping methods. He said that successional vegetation information would be collected to determine riparian ecotypes at a finer scale than would be used for the mapping of wildlife habitats.

Terry summarized the riparian study area. He said that they estimate that mapping will be completed downstream of the dam to mouth of the Susitna River; however, the study area length depends on the findings of the instream flow study. He said that they needed to work with the instream flow researchers to make a determination of where flow effects of the Project would be overridden by the tides or flow from other tributaries.

Terry summarized the riparian study's 2012 activities, which involved both field surveys and GIS work in the office.

Terry summarized the riparian study's discussion points. He said that the width of the riparian study was originally proposed as the 100-year flood limit plus a buffer. He said that buffer size had not been determined and the issue should be discussed. Bob suggested an elevational distance in some areas, particularly in the canyon areas. Terry said an elevational buffer could be used and that made more sense than a horizontal distance buffer. He noted that the other issue to solve is whether to use the 100-year or 50-year flood limits. Bob said that it might be better to look in the field to determine the area. David said that the geomorphology information could help determine the study area. Betsy added that the ice processes should be considered. Terry said that AEA knows this is a big issue and that they selected the 100-year limit because it would provide the widest study area in which flooding can occur currently (the Project would result in reduced flooding with concomitant changes in riparian vegetation). Wayne said that there was a flood on Gold Creek in 2012 that could help to determine the study area.

David asked when the length of the study area downstream would be determined. Terry said that the riparian vegetation team and the botanical lead need to meet with the instream flow and fluvial geomorphology teams to determine the appropriate length for the riparian study area using data collected in 2012.

Betsy said that the study area might be changed after the 2013 field effort. David said that a phased approach could be used to determine the study area. He said that the phased approach or path would just need to be defined and documented in the study plan for FERC to accept it.

Wayne said that AEA would be doing a climate change study to the dam site as a part of the agreement that they have with DGGs and UAF. He strongly discouraged using climate change as a driver (e.g., there might be larger 100-year floods with climate warming) to determine the study area size for the riparian study. He said that the climate change study would be independent study.

Rare Plant Study

Terry summarized the goals and objectives of the rare plant study. He said that the study team would be looking for species tracked by the Alaska Natural Heritage Program. He said that the surveys would be focused in areas that would be directly affected by the Project (e.g., fill for roads and pads, disturbance in areas adjacent to Project infrastructure, and the reservoir area).

Terry summarized the rare plant study area, methods, and expected results.

Invasive Plant Study

Terry summarized the goal and objectives of the invasive plant study. He said that the study team would survey disturbed sites within the Project area and would survey also along highways and other disturbed sites near the Project area, which could serve as sources of invasive plant seeds or propagules.

Terry summarized invasive plant study methods and expected results. Bob said that the study team should not discount the lack of comments on the invasive species study because USFWS is very interested in the invasive plant study. He said that he thought that the study covers USFWS's interest well, and that AEA and USFWS are close to agreement there.

Bob said that other nonnative species (which may not be invasive) should also be recorded in the study. Terry said that the study team planned to record all nonnative species, whether invasive or not.

Follow-up and Study Plan Revisions

Terry said that the key element to coming to agreement on the wildlife and botanical study plans is to schedule additional small-group meetings in September 2012 to resolve the set of concerns that need further discussion. He said that focused meetings with key people from key agencies will be important and that with small groups the meetings can be more productive. Betsy said that they might need to Doodle-poll key agency staff to determine availability, and then announce the meeting time to everyone that might want to participate so as to not leave any licensing participants out of the process.

David said that FERC wants to get all the wildlife and botanical issues resolved soon so that there would not be a need for any additional comments on the RSP in October 2012.

Action Items

1. Eagles and Raptors Study needs further discussion with USFWS regarding small raptor species and cavity-nesting owls regarding the survey area and survey methods for other species of raptors is needed; Brian and Maureen to plan a meeting, hopefully by early September, with Jordan Muir, who issues USFWS eagle take permits.
2. Waterbird study needs further discussion with USFWS regarding spacing of transects and the 15 mile buffer recommendation, along with intensity of the migration survey (and timing for seaducks) needs further discussion to make sure the study is not missing migration peaks
3. Landbird and Shorebirds study needs further discussion regarding rationale for locating “study plots” in Denali National Park and the Copper River Basin needs to be discussed in detail along with overwintering bird methods and appropriateness of mist netting.
4. Caribou study needs further discussion with Earl Becker (ADF&G) to figure out what the existing data can do for the Project, there may be other density modeling techniques to use.
5. Dahl Sheep study map needs updating.
6. For aquatic furbearer study follow up with Mark Burch on idea of using floating structures on water to record tracks of mink.
7. Wolverine study needs follow up with Earl Becker (ADF&G biometrician) to figure out how to deal with animals leaving and entering the study area.
8. For little brown bat and small mammal studies, follow up with Dave Tessler at ADF&G to make sure that he is comfortable with methods.
9. Wetlands Mapping Study needs follow up consultation to make a final decision on the wetland functions to be assessed.

10. Riparian study needs to outline any phased approaches with regard to expanding the study area in the future.