SUSITNA-WATANA HYDRO

Meeting Notes
Instream Flow, Riparian Instream Flow, and Groundwater Resources
Technical Workgroup Meeting
March 27, 2013

LOCATION: **Alaska Energy Authority – Board Room**
813 W. Northern Lights BLVD.
Anchorage AK

TIME: **9:00 am – 4:00 pm (AKST)**

SUBJECT: **2013 Q1 update**

GOAL: **To provide an update on IFS Program (Fish and Aquatics, Riparian, and Groundwater) activities during first quarter of 2013**

ATTENDEES: **Steve Padula** McMillen, **Kathryn Peltier** McMillen, **Joe Klein** ADF&G, **Jeff Davis** ARRI, **Dudley Reiser** R2, **Mike Gagner** R2, **Jan Konigsberg** AK Hydro Reform, **Scott Crowther** Ratepayers, **Betsy McGregor** AEA **, Justin Crowther** AEA, **Michael Lilly** GWS, **James Brady** HDR

ON PHONE: **Alan Olson** R2, **Alice Shelly** R2, **Bob Henszey** USFWS, **Chris Holmquist-Johnson** USGS, **Chuck Sensiba** VNF, **Dana Glass** CIRI, **Michael Buntjer** USFWS, **Stormy Haught** ADF&G, **Sue Walker** NMFS, **Dana Schmidt** Golder, **Casey Krip** Golder, **Kevin Fetherston** R2, **Leanne Hanson** USGS, **Phil Hilgert** R2, **Lyle Zevenbergen** Tetra Tech, **Mike Sondergaard** BLM**, Greg Aubel** USGS, **Dominique Glass** Environ, **Kim Sager** DNR, **Colin ? (unknown)**

AEA has committed to a series of quarterly meetings for the next two years of study. These meetings are to provide an updated status of the study program. Today is the second of three meetings (March 26-28, 2013) which are the first set of quarterly meetings in regards to water related resources. The following meeting notes are to capture any significant discussion/information in addition to the materials provided on the Project website (http://www.susitna-watanahydro.org/). The meeting agenda and materials are available under the "previous meetings" tab (link provided under the meetings tab) on the Project website.

To receive regular updates of new materials posted on the Project website, one can be added to the List Serve emailing list. Please contact Justin Crowther at jcrowther@aidea.org or subscribe using the link provided on the Project website home page.

Fish and Aquatics Instream Flow Presentation– D. Reiser/P. Hilgert/M. Gagner

The Fish and Aquatics Instream Flow presentation, available on the Project website, includes a brief overview of the technical memorandums regarding 2012 efforts. These TMs are available on the Project website Documents tab as a 2012 Environmental Studies report.

Hydrology and Open Water Flow Routing Model TM (Slides 5-7)

- The Lower River cross sections for the open flow routing model do not necessarily overlap with those of the fish studies, although many do. Each resource determined their Lower River sites independently.

Middle Segment Focus Area Discussion (Slide 8)

- Eric Rothwell requested that movement of Focus Areas be considered if AEA finds it acceptable, regardless of FERC's determination. Dudley Reiser explained that the movement of Focus Areas may have cascading effects due to the intense interdependency of studies. This will be discussed further at a later date.

Instream Flow Study Compendium TM (Slide 9)

- Hyperlinks at the end of the TM provide the direct link to the referenced document in ARLIS' database.

River Stratification and Study Site Selection Process TM (Slide 10)

- Study sites can be adjusted if sufficient justification is provided.

Summary of Fish Distribution and Abundance TM (Slide 11)

Selection of Target Species and Development of Species Periodicity TM (Slide 12)

Habitat Suitability Curves and Habitat Utilization Information TM (Slide 13)

Habitat Modeling Methods TM (Slide 14)

- Bed movement is anticipated to be insignificant in the Middle River. After recent floods, the Susitna River above the Three Rivers Confluence showed little change.
- Groundwater modeling will be conducted using MODFLOW in side habitats. This can be applied in combination with surface water modeling to understand the interaction between groundwater and surface water to understand intergravel flow.

Biologically Relevant and Flow Dependent Physical Processes TM (Slide 15)

Update on Habitat Suitability Criteria (HSC) Development (Slide 16)

- Turbidity and/or Secchi Disk Transparency is being collected at all HSC sites to be used as a parameter.
- The 1980s studies' structural habitat index is being used as a general framework for current studies. Further consultation will determine the categories used in current studies.
- Jeff Davis mentioned that duration of time and frequency of turbidity levels as well as particle size, shape, and ratio of organic/inorganic particles may influence HSC. Dudley Reiser explained that it may be difficult to capture that level of detail and is unsure of the influence this data would have on Project operations.

Winter Pilot Studies (Slide 17-21)

- Photos show the extreme conditions that may limit winter field efforts. Helicopter travel is also a significant limiting factor in the winter.
- HSC data collection was only possible during the most recent field trip (March 2013).
- Jeff Davis asked if results are being skewed by only sampling in open leads. Mike Gagner explained that the open water leads are in locations that may freeze over at times (not always being an open water lead location). Also, the equipment has limited capabilities, and most spawning occurs in locations that have some open water leads in the winter.
- Intragravel thermistors at each location are placed 1) close to the surface 2) about 15-20 cm below the surface and 3) 20-25 cm below the surface.
- Intragravel thermistors will be retrieved in the April field trip.
- It is difficult to detect fish presence under the ice shelf due to restricted visibility. Infrared video is being considered in the future.
- PIT tag arrays were tested under the ice and seemed to be successful.

Instream Flow Study Schedule (Slides 22-28)

- Microhabitat parameters will be decided on with input from the TWG.
- Smaller technical meetings are necessary to concentrate on limited number of specific topics. For these meetings, formal protocol may not be followed.

Update on Habitat Suitability Criteria Development Presentation – M. Ganger

- Details regarding HSC and HSI will be determined at a smaller TWG meeting.
- HSC results are used to define microhabitat utilization/preference for use in habitat modeling efforts.
- Jeff Davis suggested considering macrohabitats in periodicity charts.
- Electrofishing proved most efficient in the 1980s studies. A permit was not allowed for current studies outside of winter sampling due to the presence of adult salmonids. Future efforts will be made to obtain electrofishing permits for summer efforts.
- The finest level of HSC data possible will be collected and that level of detail may change when creating the HSC curves. Gaps may be filled with outside sources, such as 1980s data, professional opinion, and literature reviews.
- Slide 23 presents proposed HSC curve development priority by species. The species with the most known sensitivity to change has been given high priority.
- Agency representatives suggested prioritizing species, habitat and seasons to ensure that critical species are collected to develop HSC Curves. Dudley Reiser explained that maximum efforts are being taken and known data is being applied to capture critical data.
- Mike Gagner mentioned that "distance to water's edge" may be a new parameter to collect in the field.
- Spawning confirmation in turbid water is difficult. It has been proposed to return to a suspected spawning site when the water is clear to confirm egg presence. Mike Gagner explained that the clear water period is so short and can be present at times of impossible travel (ice).
- 2012 data is consistent with 1980s data when comparing observation within 1980s HSC curves.

2013 HSC Sampling (Slides 43-53)

- DIDSON was employed by LGL in March, but the results are not yet available.
- Jeff Davis asked that macrohabitats are sampled and depth, substrate, and velocity be collected.
- The border between what is classified as a tributary and tributary mouth was determined by the tree line in aerial photos. The zone of influence is determined by the 1.5 year return flow level.

Results of the 2012 Upper Susitna River Fish Distribution and Abundance Study – James Brady (in 3/26/13 meeting section on the website)

Aerial Spawning Surveys (Slides 4-7)

- Four 2012 surveys were performed during known peak Chinook spawning periods with about 5 days separating each survey.
- Each tributary was surveyed to 3000' elevation or a permanent impassable fish passage barrier.
- No other salmon species were observed.
- The results were consistent with LGL's 2012 radio telemetry results.
- No assumptions are made regarding the origin or spawning location for the observed salmon.

Fish Distribution Study (Slides 8-16)

- The "Salmonid-unspecified" label was assigned to individuals unable to be identified, mainly due to their small size.
- 35 of the 37 Chinook salmon sampled were located in Cheechako Creek. The remaining two were located in the downstream portion of a tributary located between Fog Creek and the dam site.
- Site selection will be finalized after discussion in a smaller TWG.

Riparian IFS Presentation– K. Fetherston/A. Wells

Review of Q1 Riparian IFS Tasks (Slides 3-6)

Focus Area Selection Process & Results (Slides 7-25)

- If new riparian process domains are determined, satellite sample sites will be located.
- Slides 19 and 20 contain bar graphs that currently reference Herbaceous Level II. A correction was voiced that they should read Herbaceous Level III.
- 2013 efforts will not be extended to tidally influenced waters. This will be reevaluated before the 2014 field season.
- A small TWG will be scheduled to discuss well locations and to confirm Riparian Focus Area locations.
- In the Lower River, transects will run from valley to valley, causing some transects to be over two miles long.

Riparian Groundwater / Surface Water Field Design (Slides 26-38)

- Stable isotopes will be analyzed to determine the water source of plant communities.
- The leaf area component of the Penman/Monteith approach is measured by the aerial surface area of the plant.
- Ground penetrating radar to determine the root zone was suggested.

Groundwater Presentation – M. Lilly

- Ground truthing of thermal imagery is being planned, but may be difficult since the detection possibility of groundwater may change in different seasons.
- Some wells from the 1980s studies have been located. Instruments will be applied to these and additional wells will be created. With the instruments in place, winter effects can be observed.
- Wells have been located to calibrate modeling and to represent riparian communities.

General Discussion

Jeff Davis mentioned agency sampling efforts that may coincide with SuWa's current effort. He proposed, if possible, that the agency field crew could visit SuWa's field crew to observe sampling.

Jeff Davis said that the agencies' Susitna field studies data will be available in a report before the 2013 summer. It may be possible to provide AEA with data prior to finalizing their report. Betsy McGregor asked if they could provide their field schedule so efforts could be coordinated to ensure that data collection efforts from one study was not infringing upon the success of the other study, and that the efforts could potentially be consolidated.

Unrestricted data from AEA's studies will be available at the end of the studies in whichever format it was used in AEA's analysis. Datasets including privileged information (e.g., cultural resources, specific animal locations) will not be released to the public.

Jeff Davis requested that habitat mapping be discussed as soon as possible, because changes in the mapping (due to agency requests) may create changes in the studies that base their site selection on the mapping results.

Topics to be discussed at future TWG
FERC's SPD Recommendation – shift of MR-2 Focus Area to MR-7
HSC - site selection; microhabitat parameters to be collected
Habitat Classification - distinction between tributary mouth, plume and stream
Linking of models from the studies

Action Items	Date	Responsible Party
Determine if the agency studies' data is available for AEA prior to the final report. If so, Jeff will provide to AEA.	April	Jeff Davis
Schedule a small technical meeting to discuss specific IFS topics.	Early April	Dudley Reiser
Add "distance to water's edge" as a parameter to be collected during HSC efforts	Immediately	Mike Ganger
Post 2/21/13 RIFS meeting notes on website	Once final	AEA
Schedule a smaller technical meeting to discuss riparian study details	Early April	Kevin Fetherston