



SUSITNA-WATANA HYDRO

Meeting Notes

Instream Flow, Riparian Instream Flow and Groundwater Resources Technical Workgroup Meeting 12/03/2013

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

SUBJECT: 2013 Q3 Update

Goal To provide an update on IFS Program (Fish and Aquatics, Riparian, and Groundwater) activities during Q3 2013 and activities planned for Q4 2013.

Attendees: Marie Steele DNR, Eric Rothwell NMFS, Steve Padula McMillen, Dudley Reiser R2, Michael Lilly GW Scientific, Marty Bozeman AEA, Doug Ott AEA, MaryLouise Keefe R2, Kathryn Peltier McMillen, Matt Love VNF, Justin Crowther AEA, Betsy McCracken USFWS, Joe Klein ADF&G, Wayne Dyok AEA, Bill Fullerton Tetra Tech, Melissa Hill DNR, Julie Anderson AEA, Matt LaCroix EPA, Cary Feldmann HDR

On Phone: Dara Glass CIRI, Bob Henszey USFWS, Greg Aubel USGS, Chris Holmquist-Johnson USGS, Leanne Hansen USGS, Steve Ertman HDR, John Hamrick Tetra Tech, Iris Vandenharm Denali Nordic Ski Club, Matt Cutlip FERC, Jan Konigsberg AK Hydro, Colin Kikuchi USGS, Dominique Glass Environ, Mike Sondergard BLM, Terry Schwarz DNR, Susan Walker USFWS, Kevin FetherstonR2, Mike Harvey Tetra Tech, Stormy Haught ADF&G, Lyle Zevenbergen Tetra Tech, Woohee Choi FERC, Laura Arendall R2, Kasey Clipperton Golder, Sarah O’Neal Trout Unlimited, Jon Zufelt HDR, Bill Miller Miller Eco, Kim Sager DNR, Gerald George R2, Chiska Derr NOAA, Kate Legner, Kate Knox R2, Jim Vohden DNR, Jerome Ryan, Whitney Wolff, Richard Leal CSDA, Ken Hogan FERC, Phil Hilgert R2, Mike Gagner R2, Alice Shelly R2, Kirby Gilbert MWH, Clair Yoder R2, Alan Olson R2

This was the fourth 2013 quarterly instream flow, riparian instream flow and groundwater resources Technical Work Group (TWG) meeting. The quarterly TWG meetings are intended to provide status on study plan progress, communication, and discussion regarding any study plan variances that may be required given actual field conditions, and planned next steps.

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.

After introductions, Steve Padula presented a brief overview of upcoming FERC-related study milestones. These details are in the Study Plan Implementation Presentation.

ALL DATA PRESENTED ARE PRELIMINARY AND SUBJECT TO CHANGE DURING THE QA/QC PROCESS.

Instream Flow Presentation – Dudley Reiser

Dudley Reiser provided an update of the IFS program and schedule and reviewed various tasks.

Open Water Flow Routing Model, Slides 11-18 (Clair Yoder)

- Variances are shown on slide 18.
- All 13 gage sites shown on slide 18 remain active. The 8 gages indicated as being priority for maintenance refer to the pressure transducers which require additional maintenance.
- Two gaging stations were removed in November '13 due to land access constraints. AEA is planning to reinstall these in April '14 if access is granted.

Tributary Flow Gaging, Slides 19-26 (Clair Yoder)

- Slide 24 - The hydraulic control on Gash Creek consisted of a culvert mouth on the left bank. Because the substrate where the pressure transducer was installed was loose gravel, the data were influenced by animal/pedestrian traffic. More data will be collected at this site.
- The 5 additional sites listed on slide 26 are dependent on ANCSA land access in 2014.
- Pressure transducers will be installed over the winter in 3 Focus Areas. The usefulness of these data will be determined once the information is collected. Many factors, such as ice, can affect the data.
- Winter stage and discharge measurements will be coordinated with USGS.

Representative Years, Slides 27- 40 – (Clair Yoder)

The ISR will provide details regarding the determination of representative years. The representative years may be different for different resources. This is a topic still being addressed through communication between resource leads.

- When modeling the river, representative years will be chosen as input for the models. These years will be determined by excluding the extreme years or extreme events, depending on the scenario. An example would be if a major flood event occurred in a historic dry year, this flood event would not be included.
- The operations model is using all 61 years of historic data when modeling the reservoir fill.
- Geomorphology modeling will be considering the 50 most complete years of recorded data (including extreme events).
- Joe Klein supports evaluating Pacific Decadal Oscillation (PDO), and he said that flow may not be the proper metric to use in all cases. An example of this would be the speed of freeze up and break up.
- Jack Erickson commented that impact assessment might need to factor in extreme events as they can be important for habitat and habitat use. There could be a need for different analyses depending on the resource questions that need to be addressed; for example with ice conditions may require a secondary analysis.
- It was noted that AEA had not yet consulted with the TWG on selection of representative years and TWG members asked if AEA could consult with the TWG prior to the ISR about representative years. A teleconference will be scheduled to discuss the approach AEA will take in determining the representative years.

Biological Cues, Slides 41-50 (Dudley Reiser, Alan Olson, and Alice Shelly)

After discussions with ADF&G, the Taku and Stikine Rivers in Southeast Alaska were evaluated to identify environmental/hydrologic cues relative to Chinook salmon runs. Both rivers have extensive hydrologic and escapement data sets. Preliminary results are presented in slides 41-49, and variances are on slide 50. More details will be provided in the ISR.

- “BY” in the table on slide 44 stands for brood year.
- The life history periods chosen were selected because they contribute to the overall productivity of the fish.
- Times were chosen that seemed most limiting to production.
- Seven-day flow durations were chosen because they are also used in the Index of Hydrologic Alteration (IHA) analysis and tend to “smooth out” variability in flow data sets.
-
- Betsy McCracken asked what proportion of the runs of these systems are considered hatchery fish. Joe Klein said that Philip Richards would know for sure, but he suspects that hatchery fish have little influence.
- Sue Walker said that she didn’t believe the Taku and Stikine Rivers to be good surrogates for the Susitna River.
- Joe Klein explained that the Copper River is a lake dominated system with poor escapement data. Data on the Yentna is very limited. Flow data for the Deshka River is unable to be synthesized.
- Jan Konigsburg asked if one could correlate variability in flow to migration duration as an indicator for future returns. Alice Shelly said that it may be possible but would require further evaluation.
-

HSC/HSI Curve Development, Slides 51-64 (Mike Gagner)

Mike Gagner updated the TWG with past, current and planned activities related to the HSC/HSI component of IFS. Variances are on slide 73, and next steps are on slide 74.

- Slide 53 provides an overview of activities conducted in Q4 of 2013. The first 4 bullets will be included in the ISR however little actual analysis will be presented.
- Colin Kikuchi reminded Mike Gagner that vertical hydraulic gradient (VHG) is unitless. Mike agreed and said he may not be using the numerical observation in analyses because the data were not intended to be used for more than groundwater detection. He said that the values may be changed to negative, positive, or neutral. Colin agreed with this. He added that if numerical values are to be used that a column on the field forms needs to be added to document the depth of the mini piezometer.
- Sue Walker requested that the HSC information by macrohabitat type presented in slide 63 be broken down by Focus Area in the ISR. Betsy McCracken asked if HSC data could be displayed by mesohabitat type. Marylou replied yes, although there could be some constraints due to limited access.
- As depicted in the top graph on slide 64, depth is historically considered a non-limiting factor. The current HSC study may consider depth limiting. Matt LaCroix asked if there were detection limits due to sampling methods in deep water. Mike Gagner said that limitations occur when water is too deep/swift to wade in, and this will be considered.

- Once the mesohabitat mapping is complete for the Focus Areas, the HSC data will be defined to the associated mesohabitat. Mapping will hopefully be completed in time for the associated ISR, but the HSC data will not be refined until after the ISR.
- Matt Cutlip said that, according to the study plan determination, preliminary findings should be included in the ISR. This includes data from other resources that is necessary to guide the field efforts in 2014.
- TWG consultation will be scheduled for early 2014 to discuss in detail the generation of habitat suitability curves.

Winter Studies, Slides 65-74 (Dudley Reiser and Mike Gagner)

- Eric Rothwell said he was concerned in regards to understanding juvenile overwintering habitat since the winter modeling will be at a coarser resolution than the size of critical overwintering habitat. He requested AEA communicate how longitudinal temperature and other water quality data will be linked into the modeling efforts to predict changes at the microscale.
- Because the ISR will be distributed before 2013-14 winter field efforts are complete, AEA will prepare a TM describing the results of the 2012-13 winter pilot study and the 2013-14 winter study. This will allow for TWG input prior to the 2014-15 winter field efforts.

Lower River Studies, Slides 75-79

Kasey Cliperton provided an update of the instream flow study efforts in the Lower River.

Riparian Instream Flow Presentation – Kevin Fetherston

An overview of the status, schedule and current activities regarding each task of the Riparian Instream Flow Study are on slides 2-5. This study is integrated with the riparian botanical, groundwater, and ice studies. A technical team meeting may be scheduled in January '14 to discuss results and methods in further detail.

- Throughout the study area are different willow (*Salix*) species. 2014 seed dispersal study field efforts will try to identify *Salix alaxensis* at each study site for measurement.
- Slide 8 presents data for cottonwood seed dispersal.
- Slide 10 shows the seedling counts before and after the August 2013 flood event.
- Tree ice scars were mapped throughout the Middle River using an offset laser from a boat every 0.2 miles. Additional tree ice scar surveying will be conducted in 2014.
- Matt LaCroix asked if the study looked at areas where there were no tree scars but there was other evidence of ice effects and Bob Hensey commented that the flood plain community should be characterized for more than just trees. Kevin responded that ABR was conducting the broader vegetation work of all vegetation types, including herbaceous types. Results of ABR's riparian vegetation surveys are integrated with the RIFS effort.
- Greg Aubel requested that AEA consider scaling up the sap flow measurements to calculate a volume of water transpired. This way the Project effects could be calculated with transpiration rate as a metric. Kevin said this is the transpiration scaling design and that it is planned to develop preliminary calculations before the 2014 field season.

Groundwater Presentation – Michael Lilly

Groundwater activities for Q4 2013 and those planned for Q1 2014 are outlined in slides 2-8. Variances are provided on slide 33.

- Overall, 67 wells were installed throughout the summer of 2013. Four of those were just for the riparian studies. Wells were generally 50-70 feet deep and all in alluvium.
- Colin Kikuchi requested that the ISR include a list of all wells and their associated depth, lithological data, and instrumentation. Bob Henszey requested a map be provided of all wells in the ISR.
- An annotated bibliography will be provided as a result of the literature review. These references will be used throughout groundwater documents and provided to ARLIS.
- Bob Henszey said that he was concerned with the ability to capture groundwater's influence on the riparian community with a single transect within each Riparian Focus Area. His issue involves sufficient replication and concern that the transects do not capture all riparian domains. Michael Lilly explained that observations are being documented throughout the Focus Area and not at a single transect and that he believes that there will be sufficient data to support modeling.
- Collin suggested that AEA test the adequacy of the transect and other data to support modeling. Michael Lilly responded that if the current approach seems inadequate after preliminary analyses, modifications would be applied to ensure objectives are met.
- Spot measurements will be taken throughout the winter studies because some nested piezometers will likely be destroyed by ice.
- Eric asked if the modeling would allow prediction of changes in other water quality parameters (such as temperature) due to the project. Michael responded that the analysis would include modeling results, other data and other analyses.
- Matt LaCroix asked if the study is considering the dam's interruption in sub channel flow. Michael Lilly suspected that this would not cause significant changes, but it is being considered. Bob Henszey added that Devils Canyon acts as a hydrologic control, possibly masking dam effects.
- Melissa Hill asked if the geology program wells will be instrumented. Michael Lilly will follow up with Mike Bruen. Dara Glass added that the geologic wells on ANCSA lands were removed and will be replaced once permits are granted.
-
- Melissa Hill asked if isotopes will be used as a water source tracer. Michael Lilly said that this is under discussion.

Other Topics

- Matt Cutlip suggests that variances be explained in the ISR to the maximum extent possible. This included sites not being sampled due to lack of permitted access.
- Eric Rothwell said that he was concerned with the timing of the Proof of Concept discussions. Because it is scheduled after the ISR filing, there will not be time for licensing participants to suggest changes to the modeling and model integration scheduled within the formal FERC ILP process.