Grant Lake Hydroelectric Project (FERC No. 13212)
Grant Lake Project Operations Workshop
Aspen Suites Hotel, 100 E. Tudor Rd., Anchorage, AK
July 7, 2014, 9:00 am to 5:00 pm

In Attendance

Andre Ball, McMillen
Mort McMillen, McMillen
John Stevenson, BioAnalysts
John Blum, McMillen
Mike Salzetti, Kenai Hydro, LLC (KHL)
Jeff Anderson, U.S. Fish and Wildlife Service (USFWS)
Hal Shepherd, Center for Water Rights Advocacy (CWRA) *[via phone]*
Angela Coleman, U.S. Forest Service (USFS) *[via phone]*
Patti Berkhahn, (USFWS) *[via phone]*
Mark Miller, BioAnalysts *[via phone]*
Cassie Thomas, National Park Service
Jason Mouw, Alaska Department of Fish and Wildlife (ADF&G)
Betsy McCraken, USFWS *[via phone]*
Lesli Schick, Alaska Department of Natural Resources (ADNR) *[via phone]*
Audrey Alstrom, Alaska Energy Authority (AEA)
Robert Stovall, USFS *[via phone]*
Monte Miller, ADF&G
Dara Glass, CIRI *[via phone]*
Cory Warnock, McMillen

Meeting Summary

Introductions and Agenda

Cory Warnock (McMillen) opened the meeting by welcoming everyone and thanking them for their attendance. He then conducted a quick run-through of the agenda. Cory stated that a bulk of KHL's time since the last Stakeholder meeting in March had been spent integrating natural resource study results with engineering specifics to more adequately assess impacts (positive and negative) and developing an operational regime that meets the needs for both the natural environment and the project itself. Cory went on to state that this particular proceeding was intended to be more of a workshop where hopefully substantive discussion and collaborative discourse could result in fundamental agreements on priority aspects of the project in advance of the development of the FERC Draft License Application (DLA). While not a required step, Cory stated that KHL believed this collaborative effort would result in a better product, and would hopefully eliminate any surprises by the Stakeholders when they conducted their formal review of the DLA.

Mike Salzetti (KHL) stated how encouraged he was by the results of the natural resource studies and the engineering/operations progress that had been made. Mike stated that KHL believes the collaborative process that has been developed along with the results from the assessments will result in the development of a quality DLA.

Cory stated that there would be two presentations; the first on Instream Flow, and the second concerning a description of the Operational Scenario. The intent of the agenda was to spend a majority of the morning discussing the instream flows and then the afternoon would be spent addressing KHL's preferred operational scenario.

Project Aquatic and Operations Analysis

John Blum (McMillen) presented the instream flow proposal and potential instream enhancement opportunities.

- *Comment:* Monte Miller stated that July 31st (Slide 6) seemed a little late to continue with 5 cfs in the bypass reach.
- *Response:* John Blum stated that it would be a talking point at the end of the presentation.

- *Comment:* Monte Miller requested clarification that the project would not be operated as run of river.
- *Response:* Mort McMillen stated that that was correct, and that for periods of the year (spring, fall and winter), the lake would be used for storage. He went on to note that a modification to the infrastructural design had been made and that there would be no diversion. However, KHL would like to draw the lake down an additional 2 ft. to accommodate additional storage.

- *Comment:* Jeff Anderson (USFWS) commented that the Technical Memo stated only 5 fish were seen in Reach 5 in 2014, yet the presentation stated that those were actually redds.
- *Response:* John Blum acknowledged the error in the tech memo and that the presentation was correct.

- *Comment:* Betsy McCraken (USFWS) asked what proportion of the various anadromous salmonid redds were documented in the respective reaches.
- *Response:* John Stevenson noted that sockeye redds were most prevalent in Reach 1, coho in Reach 3 and Chinook in Reach 1.

- *Comment:* With regard to the proposed enhancement opportunity in the Reach 1 (Slide 22) Distributary, Monte noted that gravel supplementation may also assist in providing additional habitat if some flow is routed that way.

- *Comment:* Monte asked if the 12-20 cfs flow identified as being optimal for habitat in the distributary took depth into consideration.
- *Response:* John Blum stated that it did.

- *Comment:* Jeff Anderson asked what the natural flows in the table (Slide 23) represented.
- *Response:* Andre Ball (McMillen) stated that they were mean daily flows from the 66 year 'composite' Grant Creek streamflow record. (Composite record includes observed Grant Creek streamflow and extended record streamflow based on Kenai River at Cooper Landing record.)

- *Comment:* Monte Miller inquired as to why Chinook were the driver for the flow proposal increase in August and September if none were observed in Reach 5.
- *Response:* John Blum stated that it was to allow for the potential of Chinook presence in subsequent years.

- *Comment:* Betsy McCracken asked if the idea behind the Reach 1 Distributary enhancement was to provide additional habitat in this area to make up for losses in other sections of the stream.
- *Response:* Cory Warnock stated that as opposed to the Reach 1 enhancement being mitigation for losses in other areas, KHL looked at it as a potential addition to existing habitat availability in the system, given that project operations along with a small amount of wood removal (at the confluence of the distributary with the mainstem of Grant Creek) would facilitate an opening of additional quality habitat for Grant Creek. Monte expanded on this by explaining to Betsy that Reach 1 as a whole contained a high level of rearing potential and that the distributary had "tons" of habitat if it could get water. He stated that this opportunity wasn't really to make up for something lost elsewhere; rather, it was an enhancement opportunity. John Stevenson stated that the distributary was also in close proximity to a high amount of spawning activity and opening it up might facilitate additional spawning. Monte stated that both the rearing and spawning potential would primarily be an opportunity for Chinook and coho salmon, Dolly Varden char and rainbow trout.

- *Comment:* Monte stated that he noticed the tailrace configuration and entry point had been moved upstream to the Reach 4/5 break and that it reduced his concerns related to fish impacts in that area.

- *Comment:* Monte reiterated his thought on the potential for gravel supplementation in the Reach 1 Distributary.
- *Response:* Cory stated that he could envision an adaptive management approach over the first few years of the license to determine whether additional gravel was needed and if so, how much. Monte agreed that it could be an iterative process and commented that the Reach 1 Distributary enhancement also made good sense to the relative ease of getting equipment to the area as opposed to needing to do something further upstream.

- *Comment:* Jeff Anderson asked about the potential for the new instream flow regime to limit sediment transport out of Reach 5 and downstream to the rest of the system.
- *Response:* Cory Warnock stated that per the Geomorphology Report, Reach 5 geology dictates that very limited sediment transport occurs and its frequency is episodic. When those infrequent major episodes do occur, the sediment that is transported is very angular, slate-type material with very low quality as it relates to spawning for the species that utilize Grant Creek. Mort McMillen noted that on a periodic basis, the natural outlet to Grant Lake would still overtop during high runoff events, resulting in some amount of channel maintenance flows. Mike Salzetti added that as opposed to conducting channel maintenance flows, KHL would like to explore the possibility of doing gravel augmentation near the powerhouse to supplement existing conditions in Reaches 1-4, the primary quality habitat areas.

- *Comment:* Jeff Anderson asked if the peaks in the hydrograph on Grant Creek were associated with high rainfall events.
- *Response:* Andre Ball stated that they were associated with both snow runoff and high rainfall events, the latter being primarily in the fall.

- *Comment:* Monte noted that 2012 was a very high runoff year. Jason Mouw (ADF&G) confirmed and stated he was on Grant Creek when 2,000 cfs was running down the channel.

- *Comment:* Jeff Anderson asked if any Chinook were observed in Reach 5.
- *Response:* John Stevenson stated that he didn't recall any observations of Chinook in Reach 5.

- *Comment:* Monte inquired about the amount of drawdown in Grant Lake and asked if waterfowl nesting would be impacted.
- *Response:* Mike Salzetti stated that KHL has always intended to have an 11-13 foot drawdown and that the only thing that has changed is that the proposal would draw the lake down an additional two feet, as opposed to putting a two foot diversion structure in place to raise the lake. Based on the studies that were done, this option looks like a better alternative from a natural resources perspective. Monte commented that this type of scenario could actually have a positive impact on the waterfowl nesting by not flooding things out.

- *Comment:* Cassie Thomas (NPS) inquired about how stable ice formation would continue to be facilitated on Grant Lake with the project in place. Would the operations be tweaked annually to allow for this?
- *Response:* Mort McMillen stated that ice formation was being looked at and there are limitations to what can be done, but KHL wants to have a predictable tool in place. Mike stated that there was precedent for other local projects to deal with the issue.
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- *Comment:* Monte Miller asked Cassie if she was concerned about ice formation as it related to recreation.
- *Response:* Cassie said yes. Mike Salzetti asked how Cooper Lake or Bradley Lake dealt with this issue and Cassie stated that it wasn't much of an issue there but KHL should talk with Chugach Electric.

- *Comment:* Jeff Anderson asked if Grant Creek iced over in the winter and how ice will potentially impact the creek during the winter.
- *Response:* John Stevenson stated that he was out there during a significant section of the cold period and that the creek does not ice over completely. Some shelf ice will form on the margins. John Blum stated that the creek was free of all ice in April. John Stevenson stated that ice was still present through a good portion of April. Monte added that temperature monitors from the 2009/2010 studies were recovered so winter data was available and documented.

- *Comment:* Jeff Anderson asked if increased flows in the side channels would prevent icing in the side channels.
- *Response:* John Blum stated that with the doubling of the flows in the winter, he would think that the primary side channels would stay unfrozen. Monte added that the increase in flow would reduce stranding potential in the side channels. Jeff stated that if they stayed frozen, the weighted usable area (WUA) numbers presented would likely be lower. Monte stated that the side channels were relatively channelized and steep on the margins so decreases to WUA may be minimal if frozen.

- *Comment:* Jason Mouw made the statement that main leads in the main channel of Grant Creek likely never freeze because of turbulence. He said that he would share Jeff's concern related to freezing if there was a lot of flow fluctuation with winter operations but it appeared that flows would remain relatively stable.

- *Comment:* Jeff Anderson asked if there was more rearing in the side channels or the mainstem.
- *Response:* John Stevenson stated that based on density (CPUE), the side channels have more rearing habitat than the mainstem.

- *Comment:* Jeff Anderson asked if there were a high number of fish seen during snorkel surveys in the mainstem.
- *Response:* John Stevenson stated that isolated pockets of rearing fish were observed in the margins of the mainstem and that rearing fish were observed in higher numbers in the side channels.

- *Comment:* Jeff Anderson asked how much rearing currently occurred in the side channels during the winter.
- *Response:* John Stevenson stated that under current (natural) conditions, none due to the side channels freezing over. John Blum stated that the largest side channel was frozen on the surface but had flowing water underneath. With the project in place, there would likely be quite a bit of rearing since the primary side channels would stay open.

- *Comment:* Betsy McCraken inquired about the locations of the thermologgers in the creek.
- *Response:* Cory Warnock stated that a thermologger was located in each reach of the creek as well as in selected redds. Mike Salzetti stated that there was also a thermistor string located in Grant Lake. Mort noted that there was a period in the fall just prior to ice formation when KHL would have to pull water from near the surface to match temperatures in the lake. A variable depth intake structure was being evaluated and, based on similar type projects elsewhere, he is confident in its application to Grant Creek.

- *Comment:* Hal Shepherd (CWRA) stated that it appeared that with the project in place, flows would only be increasing and asked if there would be any decreases.

- *Response:* John Blum stated that increases and decreases would be occurring, depending upon the season.

- *Comment:* Hal Shepherd asked how flow increases were going to be able to be consistent, given maintenance of ramping rates and how the project will deliver to the grid.
- *Response:* Mort McMillen stated that the intent in the winter was to operate at a base level and occasionally peak but not go down quickly from those levels. He continued by saying that in the winter, the lake would be drawn down to develop a base and then peaking would occasionally occur depending on demand, but KHL would never go below that base. In the spring, the goal will be to store as much as possible in the lake so that everything above the 385 cfs capacity of the project could be utilized at a later time.

- *Comment:* Monte Miller stated that ramping rates may be impacted by the ability of the detention pond to attenuate and limit the amount of ramping the creek actually experiences.

- *Comment:* Cory Warnock asked if it would help if Hal Shepherd heard about KHL's operational intent with the project.
- *Response:* Hal stated that it would and turned the floor over to Mike Salzetti, who summarized KHL's intent with the project to have a renewable resource in their portfolio that would be a small piece of their overall generation puzzle but could still assist in meeting the needs of their participants. Mike stated that this project was viewed by KHL as a win/win due to the fact that they could provide some very cost-effective long-term power while, based on the studies, also benefit habitat by providing a flow scenario and enhancement package that increases habitat during critical times.

- *Comment:* Jeff Anderson requested clarification that the creek would only be operated in a run of river fashion at certain times of the year below Reach 5.
- *Response:* Cory Warnock stated that was correct.

- *Comment:* Jason Mouw asked when the 50% emergence timing for sockeye was based upon the temperature analysis that was conducted.
- *Response:* John Blum stated that emergence took place from March – May with the bulk occurring in May.

- *Comment:* Jeff Anderson commented that there were differences in timing of escapement between Grant Creek and fish acquired by the Trail Lakes Hatchery and cautioned about comparing the two stocks.

- *Comment:* Jeff Anderson asked if taking the peaks off of the high flows down Grant Creek could impact smolt outmigration.
- *Response:* John Stevenson stated that the cue to migrate would still be present; however, the high flow would just be lower. Andre Ball added that flows would be increasing during that time as power production picked up.

- *Comment:* Jeff Anderson stated that spawning coho salmon would be moving into Grant Creek in Sept./Oct. and asked if any peaks in flow would still be occurring during this time frame.
- *Response:* Mort stated that the project would be run of river during this time frame, so there would be no change over natural conditions.

- *Comment:* Jeff Anderson asked if the rain events during Sept./Oct. would be captured in the lake.
- *Response:* Mort stated that the lake will likely be full during this period so spill would likely occur if the event was significant enough. John Stevenson added that in 2013, coho salmon returned from September 8 – October 26th during the run of river period.

- *Comment:* Jeff Anderson asked if there were any isolated events related to fish migration type movements.
- *Response:* John Stevenson stated that he would go back to the data and assess. As conversation continued, John reviewed the report and his figures and showed Jeff that there was nothing to suggest that migration was correlated to specific flow events. Jeff stated that that answered his question.

- *Comment:* Betsy McCracken asked what the periodicity related to fish movement looked like.
- *Response:* Cory Warnock stated that all that information was in the study reports, inquired if she had reviewed them and committed to getting her the reports.

- *Comment:* Cassie Thomas asked if winter ice had been monitored over multiple seasons.
- *Response:* Cory Warnock stated that it had not. Mort McMillen stated that reviewing how the other local projects dealt with ice formation would likely prove more valuable than assessing ice conditions over multiple years.

- *Comment:* Jeff Anderson asked what the most important reach for overwintering in the mainstem was.
- *Response:* Mark Miller (BioAnalysts) stated that Reach 3 was likely the most important. Some pools in Reach 4 and backwaters in Reach 2 were also key.

- *Comment:* Jeff Anderson asked if these key overwintering areas would be the same habitat type at higher flows.
- *Response:* John Blum stated that based on the analysis, habitat types would remain the same and the weighted usable area actually increases with flow. John Stevenson agreed.

- *Comment:* Jeff Anderson asked if there were any thoughts on other near shore habitats and what would happen with flows increasing in winter.
- *Response:* John Blum used T-220 as an example and stated that weighted usable area peaked at 100 cfs and held steady until around 200 cfs.

- *Comment:* Jeff Anderson asked if data documenting overwintering weighted usable area could be put in a table.
- *Response:* John Blum stated that that could be done for the next instream flow call.

<<LUNCH BREAK>>

Grant Lake Infrastructure and Operations

Andre Ball (McMillen) presented the Grant Lake Infrastructure and Operations presentation.

- *Comment:* Andre provided some general clarification to the charts provided on slides 13 and 14.

- *Comment:* Angela Coleman (USFWS) inquired about how sediment mobility would be impacted as a result of the highest flows being in the summer.
- *Response:* Cory Warnock and Mike Salzetti gave a brief summary of the findings related to Grant Creek being a sediment-starved system and suggested Angela review the Geomorphology Report for further detail. Monte Miller supplemented this response by stating that periodic overtopping events were likely from the lake, which would facilitate flushing flows to some degree.

- *Comment:* Angela Coleman stated that the Grant Creek historic gauge record took place during the cold PDO and wondered how the hydrograph would be impacted during warmer periods.
- *Response:* Andre Ball stated that this was the primary reason for supplementing the gauge record with the Kenai River data. Monte added to this by stating that the Stakeholders had requested this supplemental work, KHL did it, it correlated very well with the Kenai River gage at Cooper Landing and that they are satisfied.

- *Comment:* Jeff Anderson asked about the outliers on the chart associated with the correlation between Kenai River data and the Grant Creek data.
- *Response:* Andre suggested that the outliers could be the result of local glacial outbursts but that they were rare. Despite the outliers, the correlation between the two gages was still excellent considering that there is approximately a factor of 10 between the flows in Grant Creek and the Kenai River.

- *Comment:* Jason stated that on Slide 13 it appeared that the project was ramping and asked for additional daily specifics for the winter period.
- *Response:* Andre Ball stated that the generation model is currently modeling a daily timestep. The apparent 'ramping' Jason referred to was just the difference between daily energy productions based on the change in daily flows and the efficiency curve assumptions.

- *Comment:* Jeff Anderson asked what the shift in March on Slide 14 was related to.

- *Response:* Andre Ball stated that that was the time when the reservoir was finished drafting (based on an initial Rule Curve assumption). After March 1st the streamflows dropped and corresponded to the natural lake outflow.

- *Comment:* Based on the prior response, Jeff Anderson asked if the reduction in flows during the March storage would impact eggs in the gravel of Grant Creek.
- *Response:* Mort McMillen state that since March, the upper limit for plant flow related to generation had been defined as 385 cfs and that was the right number. That number and the associated operational regime was then integrated into the natural resource data and they took average daily flows and used them to create the operational model. The next step is to refine the model based on discussions with the Stakeholders.

- *Comment:* Jason Mouw stated that he was concerned in how significant the drop-off in stream flows would be during the March period and how eggs and emergence might be impacted.
- *Response:* Mort stated that there was a good amount of flexibility from an operational standpoint now that this type of dialogue had occurred. Winter time has the most flexibility and refinements can take place.

- *Comment:* Monte Miller asked how certain everyone was that the instream flows proposed for Reach 5 would provide connectivity.
- *Response:* John Blum stated that based upon the analysis, trout were afforded connectivity at 5 cfs, 10 cfs for coho and sockeye salmon and 25 – 30 cfs cfs for Chinook.

- *Comment:* Monte Miller asked why the transmission line didn't more closely follow the access road.
- *Response:* Mort stated that the figure was old and that the actual T-line would likely follow the road much more closely. Mike Salzetti added that KHL was still evaluating the practicality of burying the T-line vs. running it overhead. He added that KHL was currently leaning toward taking 24 KV to the highway, then to the Lawing substation.

- *Comment:* Monte Miller asked if the detention pond would be screened.
- *Response:* Mort McMillen stated that was up to the work group; the primary focus had been on integrating with natural resources, developing the generation model, developing the geotech and generation tech memos and mapping the powerhouse location. Now that this dialogue has taken place, the next steps will be to optimize the tunnel alignment (shallow vs. deep), develop the intake structure and tower plans, develop the powerhouse footprint, look at transmission line routing and establish the plans for tailrace barrier and the detention pond exclusion.

- *Comment:* Monte Miller stated that some management plans would be needed to address avian species issues and that ADF&G would be deferring to the USFWS plans.
- *Response:* Cory Warnock stated that KHL understood that a series of management plans would be required and that they would be detailed/developed as part of the DLA.

- *Comment:* Mike Salzetti asked how much infrastructural detail the Stakeholders would like to see in the DLA.
- *Response:* Monte Miller stated that the more detail provided the better, and if it came in advance of the DLA, it would be appreciated.

- *Comment:* Cory Warnock asked if it would be helpful to have a call to discuss infrastructural refinements once KHL has things further developed.
- *Response:* Monte Miller said it would be helpful and that the finalized plans are what the Stakeholders need to evaluate.

- *Comment:* Monte stated that it would be helpful to have a meeting approximately 30 days prior to the DLA submittal to go over the infrastructure and discuss all refinements.

- *Comment:* Jeff Anderson asked what the water temperature issue at the lake was.
- *Response:* Cory Warnock displayed the water resources slides from the March study report meetings and stated that between January and April there was a discrepancy in lake and creek temperatures. Mort explained that technology has advanced now to a point where with variable ports, withdrawing water from the necessary depth was possible and could be developed for this project. He used a project on the Willamette River as an example of something with a much larger operational range that was using a similar intake as the one planned for Grant Lake.

- *Comment:* Monte Miller stated that he would like to see the remainder of the water temperature data from the winter period in the lake.
- *Response:* Mike Salzetti committed to getting him that data.

- *Comment:* Betsy McCracken asked if there would be a temperature monitoring plan submitted as part of the DLA.
- *Response:* Mort McMillen stated that temperature would be tracked at the intake and a plan for tracking would be included in the operational plan. Mike Salzetti stated that he was excited to see what could be done with the intake to match creek temperatures during the priority period and that he thought a good option could be developed.

- *Comment:* Monte Miller asked whether the intake would be multi-port or variable.
- *Response:* Mort McMillen stated that the plan was still being refined but the system will be flexible and able to withdraw water from a variety of depths. The Plan will be refined over the next two to three months.

- *Comment:* Cassie Thomas asked if there were current examples of moveable systems that work.
- *Response:* Mort stated that there were and the relatively minimal lake fluctuation of 13ft. was helpful.

- *Comment:* Robert Stovall (USFS) asked for a general definition of the need for the detention pond.

- *Response:* Mike Salzetti explained the definition of spin and why KHL would prefer to be able to provide supplemental power if another project tripped offline.

- *Comment:* Mike Salzetti stated that it would be great if a detention pond could be part of the infrastructure of the overall project but not if it was to its financial detriment. KHL needs to run the economics prior to determining if it will be incorporated.

- *Comment:* Robert Stovall asked if the tunnel from the intake went through any wetlands.
- *Response:* Cory Warnock stated that it would not.

- *Comment:* Cory Warnock describe KHL's next proposed steps;

    - Instream flow call to finalize remaining analysis
    - Engineering to refine infrastructure/operations and hold meeting
    - Management plans to be itemized and developed
    - DLA
    - Iditarod National Historic Trail Re-route to continue progression
    - Public meeting to be held

- *Comment:* Cory Warnock asked if Robert Stovall remained the best USFS contact going forward.
- *Response:* Robert Stovall stated that he was.

- *Comment:* Cassie Thomas asked if recreational aspects of the project would be discussed in the DLA.
- *Response:* Cory Warnock stated that it would.

- *Comment:* Dara Glass (CIRI) asked for Cory Warnock to call her.
- *Response:* Cory committed to doing so.

<<ADJOURN 3:00PM>>

Attachments

Attachments will be available on the July 7, 2014 Natural Resources Study Report Meetings page at www.kenaihydro.com.

Attachment 1: Meeting Agenda
Attachment 2: Grant Lake Aquatic and Operational Analysis presentation
Attachment 3: Grant Lake Infrastructure and Operations presentation