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Project Name: Grant Creek Hydroelectric Project - Hydrology

Task: Hydrology

Tech Memo Title: 2009 Grant Creek Hydrology scope change

To: Grant Creek Technical Working Group

From: HDR Alaska, Inc.

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Date: 05/06/2009

The Grant Creek hydrology program is designed to support the Instream Flow Study by providing baseline hydrology and stream water temperature data. At the April 21, 2009 meeting in Kenai, the Technical Working Group (TWG) discussed how many and at what locations continuously recording water depth data loggers should be installed in Grant Creek with a goal of determining if Grant Creek gains or loses water between the outlet of Grant Lake and the USGS gauging location, and to determine the tributary contribution to Grant Creek flow. This discussion resulted in the decision to install two continuous data loggers in Grant Creek; one continuous data logger at the old USGS gauging station, and one continuous data logger at the outlet of Grant Lake. It was also decided that instantaneous discharge measurements would be collected at the approximate location of the proposed powerhouse on Grant Creek, and in the small left bank tributary just upstream of the old USGS gauging station.

After further consideration and discussions with Gary Prokosch, Alaska Department of Natural Resources (ADNR), and Kenai Hydro LLC, HDR recommends that for the 2009 hydrology field season, only one continuously recording water depth data logger be installed in Grant Creek at the old USGS gauging station, and that no data logger be installed at the Lake outlet. Instantaneous discharge measurements will be made at the Lake outlet. This recommendation is based on the following factors:

- Grant Creek is only one mile long.
- It flows through a bed rock gorge for much of its course.
- There appears to be no suitable location for a gauging station at the outlet to Grant Lake.
- The precision of the data loggers make it unlikely that we will be able to detect flow accumulation or loss between each gauge.
- Instantaneous discharge measurements at four locations on Grant Creek and the tributary should reveal any flow loss or accumulation.

All of the hydrologic information gathered in 2009 will be assessed with the TWG to determine if the data collected sufficiently meets the goal of the study. Any potential changes to the hydrology study can be further considered by the TWG prior to the 2010 data collection effort.