



Memorandum

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Date:	June 20, 2017	Project Manager:	Jay Chennault <i>JWC</i>
To:	Don Beard Tetra Tech, Inc.	Principal in Charge:	Charles Lindsay <i>CSL</i>
Address:	230 South Franklin, Suite 212 Juneau, Alaska 99801	Project Name:	Yakutat Regional Aquaculture Association
Subject:	Puget Cove Springs Assessment – Field Data Collection		

Background

It is our understanding that the Yakutat Regional Aquaculture Association (YRAA) in Yakutat, Alaska is considering developing a new hatchery location that would support the incubation of 10- to 40-million chum and/or pink salmon eggs. To achieve these goals a consistent water source capable of approximately 200 to 800 gallons per minute (gpm) is necessary from the time period of approximately August 1st – March 15th each year. We also understand that a consistent power supply is unlikely in and around the town of Yakutat so a gravity fed water source is important.

Associated Earth Sciences, Inc. (AESI) previously assisted the YRAA in evaluating the potential water availability in sites at Redfield Cove, the West Addition Hydrant, and Broken Oar/Sawmill Cove in 2013. The YRAA is now considering a potential site at Puget Cove. Mr. Don Beard of Tetra Tech, Inc. recently visited Puget Cove and noted approximately 23 flowing seeps and springs along the shoreline into Puget Cove, and has asked AESI to help develop a field data collection program to further characterize the springs, and the potential to develop the springs as a water source to support a hatchery.

Puget Cove

Puget Cove is located approximately 1.75 miles west of Broken Oar/Sawmill Cove. In our previous evaluation of Broken Oar/Sawmill Cove we estimated the cumulative discharge from three concentrated springs was in excess of 700 gpm. Although smaller in size, Puget Cove has similar characteristics to Broken Oar/Sawmill Cove, including topography, orientation and surficial geology. In that sense, it is not surprising that abundant springs were observed along Puget Cove. However, uncertainties in the location, elevation, discharge, and seasonal fluctuation of the springs need to be evaluated to understand if the location is suitable for the YRAA's needs.

Field Data Collection Program

To evaluate these uncertainties, AESI recommends a field data collection program that includes the following elements:

1. Locate the headwaters of 2-3 of the largest spring discharges entering Puget Cove. Mark with a survey flag or stake with the date observed.
2. Establish a discharge monitoring point near the headwaters of each spring. Attempt to modify the channel to concentrate the discharge to a point where the cross section (width and depth) and velocity can be estimated to estimate discharge. Measure temperature of spring discharge.
3. Install a drive point piezometer approximately 10 feet upslope from each spring discharge. Use an inertial pump (foot valve) to develop the piezometer screen and remove fine grained material from the drive point. Measure depth down to ground water inside the piezometer.
4. Install a data logging pressure transducer in each piezometer to record the daily water level.
5. Use a rod and level to measure the elevations of each spring monitoring point, spring headwaters and top of piezometer standpipe to a common point (e.g. potential location of hatchery facility).
6. Revisit the monitoring points monthly to download the dataloggers, measure depth to ground water in the piezometers, estimate spring discharges, and mark the spring headwater location with a survey flag or stake with the date observed. Note changes in the spring headwater elevation from the previous visits.

If you have any questions, please contact Jay Chennault at (425) 250-0347.