

**SOULE RIVER HYDRO PROJECT  
MAY 2007 FIELD TRIP REPORT**

**To:** Paul Rusanowski, The Shipley Group  
Glen Martin, Alaska Power & Telephone

**From:** Brent Fenty, HDR Alaska, Inc.

**Date:** May 15, 2007

Field conditions prohibited completion of several of the tasks planned for the spring field event. These conditions included 6-10 feet of snow which created dangerous perched snow banks over the river and avalanche conditions on high gradient slopes which are common throughout the lower river. Safer routes were occasionally available through the trees adjacent to the river; however, snow conditions made travel through the trees very slow due to >5 feet deep tree wells.

Despite the conditions, we were able to accomplish several of the tasks planned for the spring event. The attached map illustrates all waypoints taken during the May 2007 field event. Below is a summary of completed work:

**Fish sampling effort**

Minnow traps were placed at the river delta below the lower canyon and falls (Waypoint 050), at a pool ~1/4 mile above the lower falls (Waypoint 052), and at another pool ~ 1.5 miles above the delta (Waypoint 057). Two baited minnow traps were placed at each site and recovered after 24 hours. No salmonids were captured or observed during field work. Two species of sculpin (*Cottus spp.*) were captured in the delta area (Photos 120-123). Please refer to field forms for additional information regarding minnow trapping efforts.

The lower two miles of the river is characterized by riffle habitat and boulder/cobble substrate. Small patches of backwater habitat were observed intermittently throughout the lower two miles of the river; however, only two discrete pools were documented in the main channel during the field event (Waypoints 052 and 057, Photos 110-111 and 084, respectively). A historic channel was documented immediately west of the main channel at waypoint 051 (Photos 075-076). This was the only off-channel habitat observed in the lower two miles of the river and no fish were observed in this area. The historic channel is likely active during high flow events.

The scarcity of pools and off-channel habitat in the lower two miles of the river suggest a lack of rearing habitat for juvenile salmonids. It is possible that a portion of the stream channel including some pools and off-channel habitat was covered in snow during this sampling event.

### **Characterization of fish barriers**

Characterization of fish barriers was not safe given current field conditions. An attempt was made to approach suspected fish barriers on the lower section of the river but efforts were abandoned due to unstable snow conditions on cliffs overlooking the potential fish barriers. Clinometer readings from above and below the falls suggest that stream gradient averages at least 7% in the lower ½ mile of the river. Stream gradient lessened to approximately 3-5% at approximately one mile above the river delta. These measurements coupled with velocity readings above the falls exceeding 10 ft/sec and field observations made in September 2006 suggest that fish passage of the lower falls is unlikely. Photos were taken both below (Photos 069-074) and above (Photos 077 and 119) the lower canyon.

### **Stream profiles and levellogger placement**

Access into the stream was available in only three locations (waypoints 052, 057, and 059). Stream crossing was not possible due to depth (3-4 ft), high flows (8-12 fps), and perched snow banks (6-10 ft) that would have prohibited emergency exit from the river. Stream flow measurements were taken at Waypoint 052 using a pygmy flow meter and AquaCalc unit at 3 ft increments at the 0.6 level. Although a full cross-section of the river was not completed due to field conditions, measurements should allow a rough estimate of total flow based on the assumption that the measurements represent approximately one-half the total discharge. Please refer to field forms for field data.

Substrate at the Waypoint 052 cross-section was composed of 25% boulder (>256 mm), 60% cobble (64-256 mm), and 15% gravel (2-64 mm). General observations suggest that substrate composition at this cross section is consistent with substrate composition throughout the lower two miles of the river. Because of the abundance of snow on-site, stream margins were frequently not visible during field efforts and therefore it is likely that substrate observations are biased against finer materials.

A levellogger and barologger were placed in the mainstem river approximately 1/2 mile above the river delta. The levellogger was placed in 2 feet of water (waypoint 060, photos 114-115) and the barologger was placed in a tree approximately 10 ft off the ground and 50 ft southwest of the levellogger (waypoint 061, photos 116-117). Both loggers were set at a sample rate of 2 hours.

### **Miscellaneous activities**

Approximately 75 lbs of gear was placed in a dry bag and tethered to the tree beneath the barologger at waypoint 061. The bag contains equipment that needed for the fall sampling event including:

- 7 4-ft fence posts
- 1 beach seine
- 2 small fyke nets
- 1 large foam buoy
- 2 cans of orange spray paint
- 1 roll of 400 lb cord

- 1 roll of yellow duct tape
- 2 7-lb cannonball weights
- 1 4-lb hammer
- 1 Nalgene bottle filled with gear ID tags
- 1 roll of flagging tape
- 2 pipe cases for levelloggers

The tripod, stadia rod, and wading rod which were packaged in a blue tarp and remaining gear was packed into three action packer totes. This equipment was returned to Alaska Power and Telephone in Ketchikan for shipment to The Shipley Group office in Utah.

### **CD Contents**

Digital copies of field notes, field forms, maps, and photos are available on the enclosed “Soule\_River\_May07\_Field\_Work” CD. Below is a listing of folder contents:

- **Report** folder includes the May 2007 Field Report and a map of the study area depicting GPS waypoints referred to in the Field Report.
- **GIS** folder includes a “Waypoints” shapefile, an ArcGIS project file used to create field maps, and a series of field maps in pdf format.
- **Field Forms** folder includes scanned copies of completed stream profile and minnow trap field forms in pdf format.
- **Field Notes** folder includes scanned copies of all field notes taken during the May 2007 sampling event and the final field report.
- **Photos** folder includes copies of photos taken during the May 2007 sampling event.