

Alaska Sustainable Salmon Fund Statement of Work

I. Project Title: Hetta and Eek Lake Habitat Mapping

II. Project Number: 45980 **PCSRF Objective:** HP&R

III. Principal Investigator

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IV. Project Period: 4/5/12 – 2/1/13

V. Project Description

1. Synopsis

This project will map baseline salmon distribution and habitat conditions in the Hetta and Eek Lake watersheds in Southeast Alaska. These productive sockeye salmon systems support the primary subsistence fishery for the community of Hydaburg on southern Prince of Wales Island. The information collected will be used to update Alaska's *Catalog of Waters Important for the Spawning, Rearing, and Migration of Anadromous Fishes* (AWC) and will be useful for improved habitat conservation in the region.

2. Introduction

The community of Hydaburg is located in close proximity to the Hetta and Eek Lake watersheds, and local reliance on the sockeye salmon runs dates back to the late 17th century. The importance of the sockeye runs continues today with community surveys indicating that 100% of Hydaburg families rely on salmon resources for subsistence, 82% of which is specifically sockeye salmon. Salmon from the Hetta and Eek Lake watersheds are also utilized by Haida people who no longer live in Hydaburg, but continue to participate in cultural and subsistence traditions. Intensive cannery exploitation of the runs occurred during the late 1800s and early 1900s with yearly harvest records indicating more than 2.5 million sockeye salmon were taken annually from the general Hetta Inlet to Cordova Bay area, nearly

decimating the stocks. Hatchery efforts to supplement runs in the early 20th century were largely ineffective, and the runs remained depressed for many decades. In recent years, a series of weir projects led by the U.S. Fish and Wildlife Service (USFWS), ADF&G, and the Hydaburg Cooperative Association have documented a slow recovery with escapement levels of approximately 5,000 in the early 1980s to current escapements of 25,000 for the Hetta and Eek Lake watersheds combined.

Hetta Lake watershed is under consideration for timber development in the near future, and the community is concerned about the impact of logging activities on the long-term health of the subsistence fishery. The future vulnerability of Hetta Lake sockeye could be reduced if better baseline information is collected prior to timber development. For example, Klawock Lake sockeye runs on central Prince of Wales Island were also exploited by early canneries. Timber development activities, many occurring prior to passage of the Alaska State Forest Resource Practices Act of 1990 (FRPA), further decreased the productivity of the fishery due to inadequate habitat protections. Subsequent studies in the Klawock Lake watershed have shown that logging activities caused landslides, stream channel modifications, excessive bank erosion, reductions in water quality, and reductions in large woody debris. Hetta Lake watershed is characterized by an inherently vulnerable geology with a history of slides, slope failures, and erosion. Given the inherent vulnerability of this watershed and the critical importance to subsistence fisheries that have received a customary and traditional finding by the Alaska Board of Fish, a thorough and accurate inventory of anadromous water bodies and baseline salmon habitat information is needed. Eek Lake watershed is increasingly important to the community of Hydaburg when sockeye runs in Hetta Lake watershed are low or late in returning; Eek Lake watershed is relatively intact, and should additional development occur in the Hetta Lake watershed, Eek could provide a “control” or model watershed for future restoration efforts.

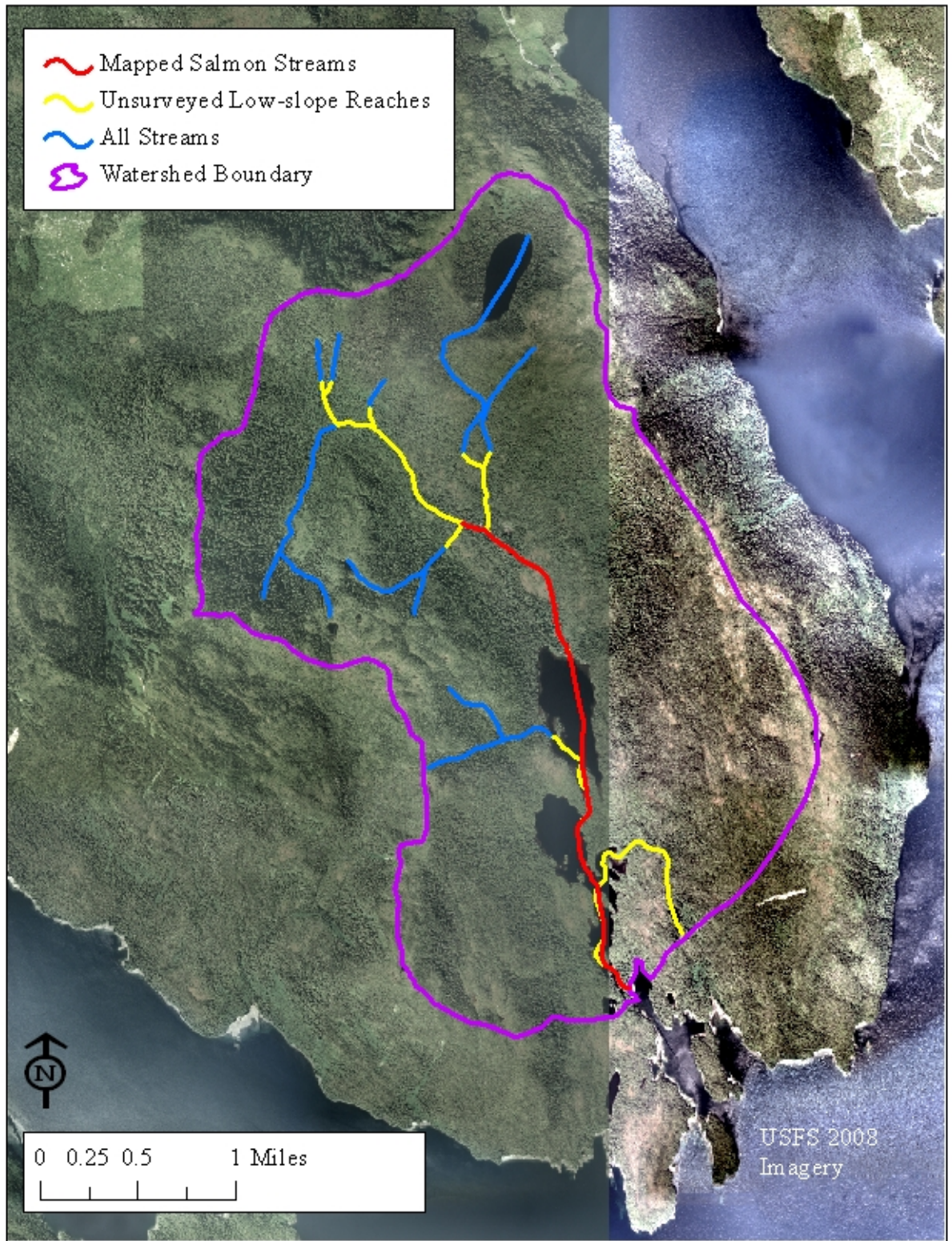
This project will use standard field survey methods developed in AKSSF project 45967, *Anadromous Catalog Inventories in Southeast Alaska*. Applying this approach will result in an updated and refined AWC dataset to ensure fish passage as well as adequate riparian buffers on salmon spawning and rearing habitat. Important information on habitat characteristics such as stream channel type, pools, and the presence of large woody debris will also be documented as baseline conditions for future conservation.

Prior to this funding, TNC conducted a prioritization process looking specifically at Hetta and Eek Lake streams to identify high probability salmon habitat; the Geographic Information System (GIS) maps produced for each watershed for illustrative purposes are shown below. In summary, the most up-to-date stream data layer for each watershed was compared to the existing AWC dataset to indicate discrepancies in mapped stream channels. Next, a slope model was developed to identify low-slope reaches that have the highest likelihood of salmon presence that have not been surveyed. This project will focus on surveys of high-probability stream reaches, highlighted in yellow in the maps below.

Hetta Lake Watershed: Mapping Baseline Conditions



Eek Lake Watershed: Mapping Baseline Conditions



3. Location
Latitude: 55.176392 N Longitude: 132.544434 W
4. AKSSF Objective
Southeast: 1A-2

VI. Objectives

1. Project Objectives
 - Conduct AWC surveys in the Hetta and Eek Lake watersheds
 - Document riparian habitat condition characteristics in the Hetta and Eek Lake watersheds
 - Submit field survey information packets for AWC nominations
 - Submit riparian habitat information to the Southeast Alaska GIS Library
2. Methods

This project will be completed using standard instream survey methods developed by ADF&G. The methods for the stream surveys can be broken down into the following four components:

 - Map the stream course
 - Map habitat features encountered along the stream
 - Collect information describing stream reaches and side channels
 - Collect other data, including fish observations, discharge, and temperature regimes

Two field crews of two people each will be trained on survey methods in Hydaburg prior to field work by Cathy Needham of Kai Environmental Consulting Services. One field crew will be led by a Kai Environmental employee; the other will be led by a Hydaburg Cooperative Association employee. Field technicians will be local hires from Hydaburg. After training, the field crews will split and mobilize to the Hetta Lake and Eek Lake watersheds. Each crew will begin the stream habitat surveys at the mouth of each outlet creek of their respective systems and work systematically into the upper watershed. The lower portion of each watershed will be accessed by skiff and the upper watersheds will be accessed by float plane. Field crews will camp near the survey sites for most of the field season.

Field crews will map the course of each stream within each watershed, providing the spatial data necessary for delineating watered channels and their connectivity with tributaries, side channels, and lakes/ponds. GPS waypoints will be collected every 15-30 m (depending on complexity of stream) as the crews follow the stream course, and digital photographs will be taken at these locations. Stream discharge will be measured for each stream that reaches the lake system and each outlet creek. Up to five Hobo temperature data loggers will be installed in the four largest water contributors and in the outlet creek in each watershed system. Data loggers will remain instream from the start of the stream habitat surveys until retrieval in the fall during foot surveys. The temperature and discharge regimes collected will provide baseline information for the watershed and will be included in subsequent reports as additional data.

If the field crew encounters a feature of interest while mapping the stream course, additional data will be taken. Such features include natural and artificial disturbance including, among other things, culverts, fish passage barriers, riparian disturbance, erosion, and restoration. Waypoints will identify the spatial location, and field measurements and photographs will document the feature site.

Individual stream reaches will be characterized by classifying geomorphic channel type and stream class using U.S. Forest Service (USFS) and ADF&G Stream Habitat Assessment protocols. Upper and lower waypoints for each stream reach will be collected along with data used for geomorphic channel typing. Measurements include the following:

- Average stream gradient collected at the bottom, mid-point, and top of reach
- Bank full width (m) collected at the mid-point of reach
- Channel incision depth (m) recorded at the mid-point of reach
- Stream bank composition (dominate substrate forming the stream banks)
- Dominate substrate class forming the stream channel (i.e., organics, sand/silt, gravel, cobble, boulder, bedrock) Channel pattern (i.e., singular, multiple-braids)
- Channel type classification (each individual reach is identified by its unique channel type)
- Stream class (each individual reach is classified on its aquatic habitat potential as identified in the working protocol for improving stream class designations)

Fish observation points will be collected along each stream reach including additional points above and below features thought to be the extent of fish habitat along each stream within each watershed system. Minnow trapping will be the primary data collection method used for nominations to the AWC. At selected sites (determined on the ground during stream habitat surveys), baited minnow traps will be used to quantify smolt and fry life stages of all fish within each stream.

At the end of the 2012 field season, all data collected will be synthesized into AWC nomination packages in accordance to the cited guidelines. Nominations packets for this study will be submitted by December 31, 2012.

Upon completion, surveys for all stream reaches containing anadromous fish and fish habitat will be submitted for incorporation to the joint USFS/ADF&G hydrography layer available to the public through the Southeast Alaska GIS Library (<http://seakgis.alaska.edu/>).

VII. Benefits

This project will develop an effective baseline inventory of important salmon habitat and help ensure that the Hetta and Eek Lake watersheds receive the conservation measures and protections required by law for anadromous waters. Protection of these watersheds will help sustain a subsistence sockeye salmon food resource and tradition for the Haida people of Hydaburg, as well as Haida people who no longer live in Hydaburg but nonetheless participate in customary and traditional use of these resources.

VIII. Products, Milestones, and Timelines

- April 2012: Obtain required permits; plan training and field logistics
- June 1 – July 31, 2012: Conduct training, stream habitat surveys, and minnow trapping
- August 1 – September 30, 2012: Assist weir crews with foot surveys
- October 1 – November 30, 2012: Compile data; prepare AWC nominations
- December 31, 2012: Submit AWC nominations
- February 1, 2013: Submit stream habitat survey information to the Southeast Alaska GIS library

IX. Partners

City of Hydaburg

X. Budget

TNC	Total
100 Personnel	\$0
200 Travel	\$0
300 Contractual	\$50,490
400 Supplies	\$0
500 Equipment	\$0
Subtotal	\$50,490
600 Indirect @ 22.55%	\$11,385
Total	\$61,875

Budget Narrative:

Line 300: Contractual

TNC will contract with Kai Environmental Consulting Services, LLC, for field survey work; costs include survey method training in Hydaburg, a project leader (Cathy Needham), a field crew leader, two field technicians, project related travel (Juneau-Hydaburg), subcontracted services (e.g., skiff rental with operator, float plane charters), and supplies: \$50,490

Line 600: Indirect

The Nature Conservancy's federally negotiated indirect rate through June 30, 2012, is 22.55% on total direct costs including subawards regardless of dollar amount and excluding external transfers, land sales, and some equipment costs.

XI. Match Budget

Summary (33%)	Total
100 Personnel	\$15,262
200 Travel	\$1,974
300 Contractual	\$0
400 Supplies	\$0
500 Equipment	\$0

Subtotal	\$17,236
600 Indirect	\$3,183
Total	\$20,419

TNC Match Budget

TNC	Total
100 Personnel	\$6,829
200 Travel	\$1,474
300 Contractual	\$0
400 Supplies	\$0
500 Equipment	\$0
Subtotal	\$8,303
600 Indirect @ 22.55%	\$1,872
Total	\$10,175

TNC Match Budget Narrative:

Line 100: Personnel

- Norman Cohen will be responsible for overall project management, contracting, and project reporting: .44 months @ \$7,798/month = \$3,431.
- Colin Shanley will be responsible for quality control on deliverables to be incorporated into the AWC and the Southeast Alaska GIS Library: .6 months @ \$5,663/month = \$3,398.

Total Personnel: \$6,829

Line 200: Travel

Norman Cohen and Colin Shanley will travel from Juneau to Hyدابurg and from Hyدابurg to remote work sites for project oversight and quality control:

- Airfare: 2 trips @ \$550/trip = \$1,100
- Lodging: 2 nights @ \$115/night = \$230
- Per diem: 4 days @ \$36/day = \$144

Total Travel: \$1,474

Line 600: Indirect

The Nature Conservancy's federally negotiated indirect rate through June 30, 2012, is 22.55% on total direct costs including subawards regardless of dollar amount, and excluding external transfers, land sales, and some equipment costs.

Hyدابurg Community Association Match Budget

Hyدابurg Community Association	Total
100 Personnel	\$8,433
200 Travel	\$500
300 Contractual	\$0
400 Supplies	\$0

500 Equipment	\$0
Subtotal	\$8,933
600 Indirect @ 14.68%	\$1,311
Total	\$10,244

Hydaburg Community Association Match Budget Narrative:

Line 100: Personnel

A field crew technician (TBD) will participate in field survey work and serve as liaison between TNC, Hydaburg Cooperative Association, and Kai Environmental:

2.6 months @ \$3,243/month = \$8,433.

Line 200: Travel

Travel from Hydaburg to remote work sites (skiff rental with operator and float plane charters, as required): \$500

Line 600: Indirect

Hydaburg Community Association's federally negotiated indirect rate through December 31, 2011, is 14.68% on total direct funds less capital expenditures and passthrough funds.