



STATE OF ALASKA DEPARTMENT OF FISH AND GAME

Fish Resource Permit Application — Email Form —

A **FISH RESOURCE PERMIT** is required to take, possess, hold alive, or tag FISH AND THEIR EGGS (except goldfish and decorative tropical fish) FOR SCIENTIFIC OR EDUCATIONAL PURPOSES.

(in order to use this form over again as a "blank form" first re-name and save this as a new document)

Paul McLarnon	HDR Alaska, Inc.
(Name of Applicant)	(Organization or School)

2525 C Street, Ste. 305 Anchorage, Alaska 99503
(type in complete mailing address including City, State, and Zip Code)

907-644-2020	907-644-2022	paul.mclarnon@hdrinc.com
(your Telephone Number)	(Fax Number)	(Email Address)

Kenai Hydro LLC, 6921 Howard Ave. Anchorage, Alaska 99504
(type in the name and address of the organization with which you are under contract)

I am making application to capture fish of the following species and number for the specified disposition (example: identify and release, measure and release, genetic sample and release, tag and release, sacrifice, transport, hold alive, etc.):

Species Common Name	Species Scientific Name	Life Stage	Number	Disposition*
Coho salmon	Oncorhynchus kisutch	Juvenile		Identify, measure, release
Chinook salmon	Oncorhynchus tshawytscha	Juvenile		Identify, measure, release
Sockeye salmon	Oncorhynchus nerka	Juvenile		Identify, measure, release
Rainbow Trout	Oncorhynchus mykiss	Adult		Identify, tag, release
Rainbow Trout	Oncorhynchus mykiss	Juv/Adult		Identify, measure, release
Dolly Varden Char	Salvelinus malma	Juv/Adult		Identify, measure, release
Arctic grayling	Thymallus arcticus	Juv/Adult		Identify, measure, release
round whitefish	Prosopium cylindraceum	Juv/Adult		Identify, measure, release
slimy sculpin	Cottus cognatus	Juv/Adult		Identify, measure, release
threespine stickleback	Gasterosteus aculeatus	Juv/Adult		Identify, measure, release

*For multiple sample locations give detail of species and number and disposition in your study plan

I understand permits are only valid for dates within a calendar year; I am requesting this permit for the following period: (a new application is required each year)

2010	May 1	December 31
Year: (20__)	From: (month and day)	To: (month and day)

I wish to obtain the above fish [finfish, shellfish, amphibians] by means of:

Angling, minnow traps, backpack electrofisher, various nets
(Specify gear type(s): minnow traps, hoop traps, fyke nets, gillnets, dip nets, spat collectors, etc.)

from the following location(s):

Grant Creek 244-30-10010-2225-3004 (AWC); near Moose Pass on Kenai Peninsula.
(Specify location(s), i.e., X River at latitude/longitude, or ESE of Pt. Barrow, or on Kodiak Island, etc.)

The purpose of the activities for which a permit is being requested: (a brief purpose statement)

The purpose of the 2010 fish sampling is to continue baseline data collection of fish species composition, distribution, and use of habitats in Grant Creek.

(this area and other boxes will expand as you type)



NOTE: A STUDY PLAN or RESEARCH PROPOSAL explaining the purpose and need, the objectives, and the procedures you will use must be included in/with this permit application:

see attached.

(Study Plan)

Final disposition of collected specimens* not to be released live at the site of capture will be:

In the event of mortalities, fish will be returned to the stream or the lake, or collected and preserved for species verification.

*(specimens may not be consumed, sold, traded, or bartered, or used in any commercial manner)

The following people will participate in field collections under terms of this requested permit:

Erin Cunningham	Paul McLarnon	George Hoden
Scott Prevatte	Patrick Blair	Heidi Weigner
James Brady		Amanda Prevel-Ramos

(If applicant is representing a corporation or institution, a certification of affiliation may be required which must be notarized and attached to this application).

(completed application must be submitted to):

Email Address:

Freshwater and estuarine environment collections (Division of Sport Fish):\n robert.piorkowski@alaska.gov

Marine environment collections (Division of Commercial Fisheries):\n sara.conrad@alaska.gov

or

Mailing Address:

Freshwater & estuarine environment collections:

Alaska Department of Fish and Game
Attn: Bob Piorkowski
Division of Sport Fish-RTS/FR Permits
P.O. Box 115526
Juneau, AK 99811-5526

Marine environment collections and permits involving propagation. :

Alaska Department of Fish and Game
Division of Commercial Fisheries
Attn: Sara Conrad
P.O. Box 115526
Juneau, AK 99811-5526

To:	Bob Piorkowski (ADF&G): robert.piorkowski@alaska.gov Robert Begich (ADF&G): robert.begich@alaska.gov	Date:	April 16, 2010
From:	Erin Cunningham (HDR): erin.cunningham@hdrinc.com	Project:	Grant Lake/Grant Creek Project
Subject:	Study Plan/FRP Application Submittal for initial fisheries work in Grant Creek		

The intent of this memorandum is to provide an overview of proposed data collection activities in order to obtain a fish resource permit (FRP) in time for early spring sampling. The team is currently revising the overall sampling plan for the 2010 aquatic resources program. The final sampling plan for the 2010 aquatic resources program will be submitted to ADF&G upon completion (May). For sampling activities not included in this memorandum, a request for an additional FRP (or an addendum) will be submitted to ADF&G with the final study plan.

Background

Kenai Hydro, LLC (KHL) contracted with HDR Alaska, Inc. to conduct environmental baseline studies to support a Federal Energy Regulatory Commission (FERC) license application for a proposed hydroelectric project at Grant Lake near Moose Pass, Alaska. The project area includes Grant Lake and Grant Creek. Grant Creek is a short, high gradient stream that flows about one mile from Grant Lake to Middle Trail River. A series of waterfalls about 500 feet downstream from the lake outlet blocks fish passage. Downstream from the lower waterfall, Grant Creek flows through a canyon for roughly 0.3 mile. Below the canyon, Grant Creek flows for roughly 0.5 mile before draining into Middle Trail River.

The aquatic resources study program was initiated in 2009 to characterize fish species presence, distribution, and use of aquatic habitats. The field team conducted minnow trap, backpack electrofisher, angling, seine, gillnet, snorkel, and foot surveys. Results of the 2009 fish and aquatic resources study program were generally consistent with results of previous studies conducted in the Grant Creek drainage with respect to species presence¹ and distribution (USFWS 1961, AEIDC 1983, APA 1984, and Marcuson 1989). The 2009 sampling was completed under FRP SF2009-130. The final 2009 collection report was submitted to ADF&G on 5 February 2010; the completion report will be submitted by June 2010, per FRP requirements.

The 2010 study program will build upon the existing dataset using methods similar to those in 2009² and may incorporate additional methods. Since the 2010 study program requires early season sampling, we are submitting this memorandum as part of the initial FRP application.

The following tasks (described in more detail below) require early season sampling activities:

- Angling surveys to determine timing, distribution and relative abundance of spawning rainbow trout throughout Grant Creek; and
- Minnow trap and electrofish surveys to estimate distribution and abundance of juvenile fish by habitat type throughout Grant Creek with emphasis on areas not surveyed in 2009.

¹Fish species identified in Grant Creek during the 2009 surveys included Chinook (*Oncorhynchus tshawytscha*), sockeye (*O. nerka*), and coho salmon (*O. kisutch*); rainbow trout (*O. mykiss*); Dolly Varden (*Salvelinus malma*); Arctic grayling (*Thymallus arcticus*); sculpin (Cottidae); and three-spine stickleback (*Gasterosteus aculeatus*). Sculpin and threespine stickleback were the only species captured from Grant Lake.

² The 2009 fish and aquatic study plan was submitted to ADF&G with the 2009 FRP application.

Rainbow Trout Spawning and Distribution in Grant Creek

The primary objectives of this task are to:

- Assess the relative abundance of spawning rainbow trout in Grant Creek
- Describe fish movements based on tag recaptures, if applicable
- Identify spawning locations in Grant Creek

During the 2009 aquatic resources study program, hook and line sampling to assess rainbow trout abundance and distribution in Grant Creek did not begin until early June which was likely after, or near the end of, the rainbow trout spawning time period. The spawning condition of captured fish could not be determined with confidence during the 2009 angling surveys. Rainbow trout studies in 2010 will emphasize the likely spawning period to obtain important information regarding spawning use, spawner abundance, and spawning locations within Grant Creek.

Angling surveys for rainbow trout will be timed to coincide with the probable spawning time, which occurs after breakup in late spring. Rainbow trout spawning normally begins after water temperatures warm to about 4°C. Grant Creek water temperatures will be monitored after ice-out to determine when surveys should be initiated. Surveys will occur once per week during the probable spawning period and will continue until no additional reproductive information can be obtained, probably in mid-June. Tackle will include a variety of artificial lures and/or flies. Barbs will be filed off hooks to ease hook removal and minimize fish injury. Preserved sterilized salmon eggs may be used as bait if bait increases catch efficiency.

Angling sampling will initially occur at stations previously established in 2009 and sampling will continue using methods similar to those used in 2009. Eighteen angling stations were established in 2009 with four each in Reaches 1-4 and two in Reach 5. Each angling station will be fished for 30 minutes, using rod and reel methods in accordance with ADF&G Sport Fishing Regulations and the ADF&G FRP. However, if initial catches are large enough, the principal investigator will have the discretion to modify catch station locations and/or implement a special recapture period, which will require sampling at additional locations in order to randomize catch of marked fish for mark/recapture estimation purposes.

All fish captured will be immediately landed and netted. Fish will be marked with individually numbered Floy Tags³ as well as with a caudal fin clip (0.25 inch) in order to detect recaptures. Each fish will be measured, sexed (if possible), and its spawning condition described. After being captured, each fish will be walked down stream and released in a slow water area away from the angling station. Limited numbers of fish that are judged to have poor survival prospects because of hooking injuries may be sacrificed and dissected to determine reproductive condition. Data analysis will emphasize CPUE calculations. If the number of captures and recaptures is sufficiently high, then mark/recapture population estimates using either Peterson or Schnabel methods will be utilized. If population estimates are calculated, they will be accompanied by a thorough discussion of assumptions and possible errors, as well as statistical analysis as applicable.

³ Since ADF&G recently used green Floy Tags in a rainbow trout study, a different color will be used in 2010.

Juvenile Rearing and Resident Fish Species Composition and Distribution

The primary objectives of this task are to:

- Assess rearing anadromous and resident fish presence in the canyon reach and throughout lower Grant Creek
- Better define fish use of microhabitats and overall species composition and relative abundances in lower Grant Creek

During the 2009 aquatic resources study program, minnow traps were used to estimate relative abundance of rearing anadromous and resident fish in Grant Creek. Minnow traps were fished throughout the lower half mile of Grant Creek on a monthly basis from June through September. The team sampled the creek near the lake outlet once in June and again in August. A backpack electrofisher was used in areas around minnow traps to verify catch results, and during snorkel surveys for species verification.

Except for the lower few hundred feet, the canyon reach is largely inaccessible during the open water season. Unsafe access to the canyon reach precluded sampling during the 1980s and 2009 field efforts. Since information is lacking in this portion of Grant Creek, emphasis will be placed on collecting data in this reach in 2010. The team will establish access to the stream from the canyon rim using fixed-rope protection, harnesses, and appropriate climbing gear. Once fixed-rope access points are established, a variety of methods will be used to sample for fish presence. Methods will include angling, minnow traps, electrofishing, and underwater observation.

The team will record GPS locations and make photographs for each sample site. Habitat characteristics will also be recorded. Minnow traps baited with commercially processed salmon eggs will be set for up to 24 hours. Set and check times will be recorded for each trap. Fish captured will be identified to species level, measured to fork or total length (depending on species), and released alive near the point of capture. The team will not use the electrofisher in the presence of adult salmon, adult trout, or adult char. Sample events will be scheduled to target low flows prior to spring breakup (late May/early June); high summer flows (July); and lower flows in late summer (August/September). Additional sampling events may occur. A collection report with data collected throughout the 2010 season will be submitted to ADF&G, per FRP requirements.

References

- Alaska Power Authority (APA). 1984. *Grant Lake Hydroelectric Project Detailed Feasibility Analysis. Volume 2. Environmental Report*. Rep. from Ebasco Services Incorporated, Bellevue, Washington.
- Arctic Environmental Information and Data Center (AEIDC). 1983 *Summary of environmental knowledge of the proposed Grant Lake hydroelectric project area*. Final Report submitted to Ebasco Services, Inc., Redmond, Washington, University of Alaska, Anchorage, Alaska.
- Marcuson, P. 1989. *Coho salmon fry stocking in Grant Lake, Alaska*. Prepared for: U.S. Forest Service, Seward Ranger District, Chugach National Forest.
- U.S. Fish and Wildlife Service (USFWS). 1961. *Ptarmigan and Grant Lakes and Falls Creek, Kenai Peninsula, Alaska, progress report on the fish and wildlife resources*. Department of the Interior. Juneau, Alaska.