



**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)

Matt Nemeth	LGL Alaska Research Associates, Inc.
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(Name of Applicant)

(Organization or School)

1101 E 76 <sup>th</sup> Ave, Suite B, Anchorage, AK 99518
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(type in complete mailing address including City, State, and Zip Code)

907-562-3339	907-562-7223	<a href="mailto:mnemeth@lgl.com">mnemeth@lgl.com</a>
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(your Telephone Number)

(Fax Number)

(Email Address)

PacRim Coal, L.P., 1007 3 <sup>rd</sup> Avenue, Suite 304, Anchorage, AK, 99501
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(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	<i>Oncorhynchus kisutch</i>	Juvenile	estimated 50,000+	Temporary caudal clips or permanent pelvic fin clips given to juveniles that appear to be age-1 or -2; weights and scales will be taken from subsamples of all juvenile coho; all fish released in direction of travel, except for ~100 retained over course of season and sacrificed for lab-based confirmation of species and smolting status. Estimate of 50,000 is based on best estimate of the number of fish produced in 2 tributary streams, plus enough for a mark-recapture study in mainstem. It is possible that the number of juvenile salmon captured could be substantially more or less than the estimate.
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Juvenile	estimated 15,000+	Temporary caudal clips or permanent pelvic fin clips given to juveniles that appear to be age-1 or -2; weights and scales will be taken from subsamples of all juvenile Chinook salmon; all fish released in direction of travel, except for ~100 retained over course of season and sacrificed for lab-based confirmation of species and smolting status. Estimate of 15,000 is based on best estimate of the number of fish produced in 2 tributary streams, plus enough for a mark-recapture study in mainstem. It is possible that the number of juvenile salmon captured could be substantially

				more or less than the estimate.
Dolly Varden	<i>Salvelinus malma</i>	All	1,000	Identified, counted, and released in direction of travel; subsamples of length taken from all fish, of scales taken from salmonids. This species list is from catch data from 2008 and from other parts of the system; the exact species composition and relative population sizes in the study reaches may vary. Up to 10 individuals of species besides adult salmon may be retained for laboratory confirmation of species ID. It is possible that the number of fish (of each species) captured could be substantially more or less than the estimate.
Coastrange sculpin	<i>Cottus aleuticus</i>	All	1,000	
Slimy sculpin	<i>Cottus cognatus</i>	All	1,000	
Arctic lamprey	<i>Lampetra japonica</i> )	All	1,500	
Pacific lamprey	<i>L. tridentate</i>	All	500	
Longnose sucker	<i>Catostomus catostomus</i>	All	Unknown	
Ninespine stickleback	<i>Pungitius pungitius</i>	All	500	
Threespine stickleback	<i>Gasterosteus aculeatus</i>	All	500	
Rainbow trout	<i>O. mykiss</i>	All	10,000	
Pink salmon	<i>O. gorbuscha</i>	All	500	
Chum salmon	<i>O. keta</i>	All	500	
Sockeye salmon	<i>O. nerka</i>	All	500	
Coho salmon	<i>O. kisutch</i>	Adult	500	
Chinook salmon	<i>O. tshawytscha</i>	Adult	500	
Other	spp.	All	Unknown	Any fish species not mentioned above will be identified, counted, and released in direction of travel. Unusual/rare specimens may be kept for lab-based confirmation (up to 3).

\*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)**

2009	April 20	September 30
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**Year:** (20\_\_)

**From:** (month and day)

**To:** (month and day)

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

- On tributaries 2003 and 2004 – smolt weirs, backed up by fyke nets and minnow traps in case of flooding and hook and line for capture of adult salmon for any baseline genetic samples required by ADF&G.
- On the mainstem Chuit River – 2 sites, consisting of a rotary screw trap, backed up by one fyke net, minnow traps, or an inclined plane trap.

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

**from the following location(s):**

The Chuit River watershed, on the northwest side of Upper Cook Inlet, near the community of Beluga and village of Tyonek.

Smolt weir locations:

- Approximately 1.9 km upstream from the confluence of stream 247-20-10010-2030 (Stream 2003) with the Chuit River – N 61.12908 W 151.32979 (WGS84 datum).
- Approximately 1.7 km upstream from the confluence of stream 247-20-10010-2040 (stream 2004) with the Chuit River – N 61.15707 W 151.44278 (WGS84 datum).

Fyke net or modified smolt weir location:

- Stream 247-20-10010-2040-3009 enters stream 247-20-10010-2040 (Stream 2004) approximately 0.5 km upstream from the confluence with the Chuit River – N 61.15186 W 151.44899 (WGS84 datum).

Rotary screw trap and/or incline plane trap locations:

- Lower mainstem Chuit River (247-20-10010) – N 61.10175 W 151.19365 and N 61.10188 W 151.18002 (WGS84 datum).

(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 overall purpose is to provide information needed to evaluate the potential effects of development upstream in Stream 2003 on fish species in the Chuit River. The specific information to be generated from the collections requested here are:

1. The abundance of Chinook and coho salmon smolts relative to the Chuit River watershed, and in each of tributaries 2003 and 2004;
2. Timing and magnitude of fish movements into and out of the tributary streams;
3. Basic biological characteristics of the fish species collected; and
4. Indicators of which species and life stages likely overwinter in the tributaries.

(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:

## **Background**

A fish monitoring study started in 2008 will be continued in 2009 in the Chuit River watershed to acquire data needed for permitting under the Alaska Surface Coal Mining Control and Reclamation Act for the predevelopment monitoring period. The study plan resulting has been developed in cooperation with state and federal agencies to address many of the regulatory requirements needed to permit this development. Smolt weirs will be installed to capture fish in tributaries 2003 and 2004 within the Chuit River watershed. Additionally, we may wish to monitor fish on the mainstem and have thus requested permission to collect fish at two sites in the mainstem river.

## **Introduction and Objectives**

Baseline information related to freshwater fish in the Chuitna has been acquired by a series of studies from 1982 through 1984 (e.g., ERT 1984), again from 2005 through 2008 (e.g., Oasis 2008; Oasis 2009; Nemeth et al. 2009). These studies have provided baseline information needed to write a Supplemental Environmental Impact Statement (SEIS), which will update the original EIS developed in 1990 (EPA 1990). Information is still needed for the predevelopment monitoring period (2008-2011).

The overall objectives in 2009 are to describe the timing and magnitude of fish movements into and out of the tributary streams, the effects of development on the production of Chinook and coho salmon smolts.

## **Study Design**

### *Methods*

Smolt weirs will be installed in the lower reaches of streams 2003 (stream 247-20-10010-2030) and 2004 (stream 247-20-10010-2040) in the spring of 2009, approximately 1.7 to 1.9 km upstream of the confluence with the Chuit River (stream 247-20-10010), and as soon after ice-out as possible. Weirs will have a diagonal configuration (either V- or W-shaped) to allow capture or counting of both upstream and downstream migrants. We will identify and count upstream-moving fish using video monitoring through an open gate in the weir. Fish moving downstream will be captured and held in live pens, which will be checked twice per day or more frequently if catches require. Fyke nets and minnow traps will be available as ancillary gear types for downstream-moving fish in case of weir failure. Hook and line fishing techniques may be used to capture adult salmon for any baseline genetic samples required by ADF&G.

In the lower Chuit River, two rotary screw traps (RST) will be operated to catch Chinook and coho salmon smolts emigrating to sea. Other species will be identified, counted, and subsampled for length, but will not be targeted by the traps. The traps will be backed up by a fyke net and minnow traps that will be deployed if it provides a better catch method. Inclined plane traps may also be used.

All sites will be operated 7 days per week from installation through July 31, then up to 7 days per week through September 30. All fish captured will be identified to species and counted; subsamples will be weighed and measured, and scale samples will be taken from juvenile coho salmon, Chinook salmon, and other salmonids. This monitoring will indicate when different size classes of each species move in to and out of the two tributaries, through the open water season up until October.

All traps and weirs will be checked twice daily and fish will be released in their direction of travel. Chinook and coho salmon juveniles caught at the weirs will be given temporary caudal fin clips or permanent pelvic fin clips as the mark portion of the mark-recapture study. Juvenile Chinook and coho salmon caught in the mainstem river will also be given temporary caudal fin clips. Subsamples of juvenile coho and Chinook salmon will be sacrificed for voucher specimens to verify species ID, and potentially for laboratory analysis to verify smolt status. At all sampling sites, we will count all other fish, which we expect to include: sockeye, pink, and chum salmon, Dolly Varden, rainbow trout, coastrange sculpin, slimy sculpin, Arctic lamprey, Pacific lamprey, longnose sucker, threespine stickleback, and ninespine stickleback (Oasis 2006 and 2008; Nemeth et al. 2009).

### *Time period*

The weirs on streams 2003, and 2004 will be operated from approximately April 20 through at least July 31, 2009. The traps on the mainstem Chuit River will be operated from approximately April 20 through July 31. Some of this sampling may continue through September 30, 2009 and be repeated in 2010.

*Results*

This monitoring will indicate when species move in to and out of the two tributaries, the size and age structures present, abundance estimates, biological characteristics, and provide indicators of which species and life stages likely overwinter in the tributaries.

**Literature Cited**

Environmental Research and Technology, Inc (ERT). 1984. Diamond Chuitna Project aquatic biology baseline studies report. Volume 1: Text. Final Report, Ft. Collins, Colorado.

Environmental Protection Agency (EPA). 1990. Diamond Chuitna Project final environmental impact statement. Environmental Protection Agency, Seattle, Washington. February 1990.

Nemeth, M.J., B.C. Williams, A.M. Baker, C.C. Kaplan, M.R. Link, S.W. Raborn and J.T. Priest. 2009. Movement and abundance of freshwater fish in the Chuit River drainage, Alaska, May through September 2008. Final report by LGL Alaska Research Associates, Inc., Anchorage, Alaska for PacRim Coal, L.P. 159 p.

Oasis Environmental. 2008. Chuitna Coal Project – 2007 freshwater aquatic biology study program. Final report prepared for DRven Corporation, Anchorage, Alaska.

Oasis Environmental. 2009. Chuitna Coal Project – winter freshwater fish habitat baseline report. Final report prepared for PacRim Coal LP, Anchorage, Alaska.

**(Study Plan)**

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

Voucher specimens for laboratory species identification, possible testing of gill Na<sup>+</sup>,K<sup>+</sup>-ATPase activity for verification of smolt status

*\*(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:**

Matthew Nemeth	Benjamin Williams	Justin Priest
Michael Link	Chris Kaplan	LGL Field Technicians (TBD)
Katie Christie	Amy Baker	


*(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):

[robert.piorkowski@alaska.gov](mailto:robert.piorkowski@alaska.gov)

Marine environment collections (Division of Commercial Fisheries):

[sara.larsen@alaska.gov](mailto:sara.larsen@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 Larsen  
P.O. Box 115526  
Juneau, AK 99811-5526**