

# CITY & BOROUGH OF JUNEAU

**Brief History:** In 1880 Chief Kowee of the Auk Tribe led two prospectors to Gold Creek, which was originally a fish camp. These two prospectors, Joe Juneau and Richard Harris, found gold deposits upstream, staked off 160 acres, and named the area Harrisburg. The area was later renamed and the City of Juneau formed in 1900. Six years later it was named the capital of Alaska. When gold deposits in streams started running out, the then booming town shifted to large-scale hard-rock mining. After opening its doors in Douglas in 1882, the Treadwell Mine had produced \$66 million in gold before a cave-in and flood shut it down in 1917. Across the channel, the Alaska-Juneau mine opened in 1916 and was the largest operation of its kind in the world. In 1944 it closed after producing a total of over \$80 million in gold. Juneau is now the third largest city of Alaska and is home to the largest silver mine in North America, the Kennecott Green's Creek Mine, which produces gold, silver, lead, and zinc.



Photo by: Jackie Brock

<b>Pronunciation:</b>	(JOO-noh)
<b>Population (2007):</b>	30,427
<b>Shoreline:</b>	685 miles
<b>Coastal Area:</b>	1,812 square miles
<b>Annual Precipitation:</b>	92"
<b>Annual Snowfall:</b>	101"
<b>Hours of Daylight Summer:</b>	18 hours, 18 min
<b>Hours of Daylight Winter:</b>	6 hours, 26 min
<b>Regional Native Corporation:</b>	Sealaska Corporation
<b>Legislative District:</b>	3, 4, B

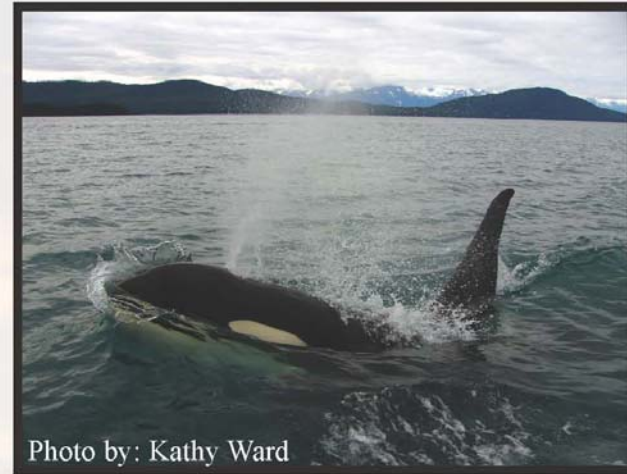


Photo by: Kathy Ward



Photo by: Stacy Stout

Division of Coastal & Ocean Management



**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**CITY AND BOROUGH OF JUNEAU**

The Borough will be conducting this project as a legislatively named CIAP recipient  
on behalf of the State of Alaska

**PROJECT TITLE: Habitat Mapping and Analysis Project**

**PROJECT CONTACT**

Contact Name: Teri Camery, Planner  
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**PROJECT LOCATION**

The project will map salmon streams and wetlands within the boundaries of the City and Borough of Juneau (CBJ). The entire CBJ is located within the coastal zone according to the standards of the Alaska Coastal Management Program.

**PROJECT DURATION**

The project will last the maximum of 3.5 years.

**ESTIMATED COST:**

<b>Spending Estimate (\$) Total 1,636,000</b>				
<b>TOTAL</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 3.5</b>
\$1,628,164	\$450,000	\$450,000	\$450,000	\$278,164

<b>Funding per Allocation Year of CIAP (\$)</b>				
<b>TOTAL</b>	<b>FY 07</b>	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>
\$1,628,164				\$1,628,164

**PROJECT DESCRIPTION:**

The Habitat Mapping and Analysis Project will benefit Juneau's natural coastal environment through two project components: 1) The development of accurate stream maps will allow the City and Borough of Juneau (CBJ) to accurately enforce the 50-foot no-development setback from salmon streams. 2) The development of accurate wetland maps will enable the CBJ, as well as state and federal agencies that will use the information, to determine exactly where wetland impacts may occur from proposed development. Agencies can then require specific project conditions during permit reviews to minimize and/or prohibit wetland fill. This directly results in the protection and conservation of wetland areas.

**Background**

The City and Borough of Juneau is larger than the state of Rhode Island and contains hundreds of extremely productive salmon-bearing streams and associated wetlands. As the community grows, the municipality needs to minimize damage to salmon habitat and wetlands while allowing appropriate development. Current habitat maps are outdated and inaccurate, which results in permit review delays and unintentional habitat damage. Reliable digital maps are critical for addressing this problem. The Habitat Mapping and Analysis Project will map streams and wetlands adjacent to proposed development within the CBJ, with an emphasis on properties near the road system and remote areas with planned renewable energy and mineral projects. This application will discuss the problems with current wetland mapping and stream mapping separately, and then explain how the proposed project will address both of these problems.

**Stream Mapping—Current Status and the Problem**

The CBJ has approximately 500 salmon streams. Salmon streams have formal protection in the CBJ Land Use Code with a 50-foot no-development setback on both sides of the stream to protect water quality and habitat. CBJ has enforcement authority over the no-development setback. This is a strictly local ordinance which goes beyond state and federal laws to offer additional protection for streams; it is enforced only by CBJ. However the Alaska Department of Fish and Game (ADF&G) has the expertise to determine which streams are salmon-bearing. The CBJ and ADF&G have developed different stream maps over time, and in many cases these maps show the streams in different locations. Neither set of maps document stream locations at a level of precision to determine whether the stream is located on a specific property. The problem is that without accurate maps, the CBJ cannot properly enforce the 50-foot no development setback. Stream habitat and water quality suffer as a result.

**Wetland Mapping—Current Status and the Problem**

Juneau is located in a temperate rainforest and receives approximately 120 inches of rain each year. Because of heavy rainfall and soil characteristics, Juneau has a high percentage of wetlands, and wetland impacts are a major factor in many project reviews. Wetlands play a critical role in controlling erosion, filtering contaminants, and protecting water quality for salmon streams. CBJ conducted wetland analysis and mapping in the mid 1980s, which resulted in adoption of the Juneau Wetlands Management Plan in 1992. The plan identified high value (Category A and B) and low value (Category C and D) wetlands within the developing area of CBJ at that time. The plan has been used continuously for nearly 20 years, and identifies 250 individual wetland units. (An additional 54 wetlands units were identified in a small 2006 study.) Each wetland unit has a separate, detailed scientific analysis of wetland functions to support the high or low value wetland category. Local regulations strictly control development of high value wetlands while allowing development of low value wetlands with appropriate restrictions. This plan has been highly successful as a tool for scientifically supported protection and development.

The scientific information supporting the Wetlands Management Plan is now 25 years old, and the CBJ has changed substantially in that time period due to development and natural factors. The CBJ is one of few areas on the planet where the land is rising because of the retreat of the glaciers from climate change. This is known as glacial uplift. Because of glacial uplift, the land has been rising .5 inches per year, and has risen approximately 12.5 inches since the original wetland studies were done. New development and infrastructure has also altered drainage

patterns and changed wetland boundaries. As a result, the Juneau Wetlands Management Plan is now inaccurate in many areas. The developing area of the CBJ has also expanded far beyond the boundaries of the original plan. In short, the problem is that the plan is sorely outdated because of development and natural factors. Wetland protection efforts have suffered as a result.

**Methodology and How the Project Will Address Wetland and Stream Mapping Problems**  
**In Phase One**, the CBJ will acquire natural color and infrared aerial photography to map streams and wetlands in areas with the highest potential for development. A combination of color and infrared aerial photography is the most efficient way to acquire information on wetlands and streams over large areas, and to map these areas at the level of individual property boundaries. Aerial photography directly addresses the problem of inaccurate maps by acquiring the highest quality images available and integrating those images into our existing digitized GIS (Geographic Information System) mapping system.

**In Phase Two**, the wetland and stream mapping efforts will utilize separate methods to address the specific issues associated with each habitat type.

Stream mapping. For the stream mapping effort, CBJ staff will work closely with the Alaska Department of Fish and Game (ADF&G) to mark the salmon-bearing limits of these streams to determine exactly where the 50-foot no-development setback applies. ADF&G has formally supported this project. If time and funding allows within the grant period, the CBJ will work through the formal approval process with the local Planning Commission and Assembly to adopt these new maps into the CBJ Land Use Code. This is an essential step to ensure that the stream maps may be legally used for enforcement of the setback. If formal adoption of the stream maps in code cannot be completed within the grant period, the CBJ will ensure adoption at a later date. This effort may be done with either a consultant or with CBJ GIS staff.

Wetland mapping. For the wetland mapping effort, CBJ, in cooperation with an inter-agency task force, will first determine the most appropriate methodology for wetland scientific analysis. This is an important step because in order for the project to be acceptable to permitting agencies it must be valid according to current science. After the methodology is determined, CBJ will hire a consultant to do extensive, “on-the-ground” field analysis of the wetland parcels identified through aerial photography to determine the specific functions of identified wetland units. This functional analysis will be used to rank high-value (Category A and B) and low-value (Category C and D) wetlands. This follows the highly-regarded categorization approach used in the original 1992 management plan. CBJ will then work through the formal approval process with the Planning Commission and Assembly to adopt these wetland maps with categories and supporting functional analysis into the CBJ Land Use Code, as with the stream maps. If formal adoption of the maps cannot be completed within the grant period, the CBJ will ensure adoption at a later date.

### **Coordination Efforts**

CBJ staff will coordinate with the Alaska Department of Fish and Game (ADF&G) on stream mapping and to document the salmon-bearing streams to determine where the 50-foot no-development setback applies. ADF&G has formally supported this project. CBJ staff will also develop a task force comprised of local, state, and federal agencies to guide our update of the Juneau Wetlands Management Plan as well as our stream mapping efforts. Specifically, this task

force is likely to include representatives from the following agencies: U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; NOAA National Marine Fisheries Service; the Alaska Department of Fish and Game; the Alaska Coastal Management Program; and the Alaska Department of Environmental Conservation.

### **Key Milestones According to Project Year**

#### **Project Year 1**

- Assemble a formal Juneau Wetland Management Plan Update task force comprised of local, state, and federal agency representatives to guide the wetland project
- With consultation from the agency task force, determine wetland methodology
- Obtain aerial photography imagery of stream and wetland areas
- Obtain landowner permission for wetland field analysis on private property
- Complete the first third of the project area for the wetland field analysis (Note: wetland field analysis is only possible from May through September due to weather conditions and U.S. Army Corps of Engineers wetland delineation requirements.)

#### **Project Year 2**

- Obtain additional aerial photography as needed, if weather conditions prohibited a complete survey in Year 1
- Complete the second third of the project area for the wetland field analysis
- Digitize stream maps in the CBJ GIS database
- Work with the Alaska Department of Fish and Game to determine which streams are salmon-bearing; digitize this information in the CBJ GIS database

#### **Project Year 3**

- Finalize stream maps and initiate the public process of adoption into the Land Use Code
- Complete the final third of the project area for the wetland field analysis
- Begin final compilation of wetland maps and functional analysis to determine wetland categories with supporting scientific evidence

#### **Project Year 3.5**

- Continue and complete the adoption of the stream maps into the Land Use Code, as time and funding allows
- Complete a draft update of a revised (2014?) Juneau Wetlands Management Plan with digitized maps, and scientifically documented wetland categories and analysis; begin the public process for adoption into the Land Use Code if time and funding allows

### **MEASURABLE GOALS AND OBJECTIVES:**

#### **Project Year 1**

- Aerial photography images of most or all of the project area, as weather allows
- A documented wetland methodology to guide wetland analysis and classification

#### **Project Year 2**

- Complete aerial photography images of the designated project area

#### **Project Year 3**

- Digitized stream maps which document salmon streams

#### **Project Year 3.5**

- A draft (2014?) Juneau Wetlands Management Plan with wetland maps, wetland categories and supporting scientific documentation

### **PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:**

The Habitat Mapping Project is consistent with Authorized Use Number One, “Projects and activities for the conservation, protection, or restoration of coastal areas, including wetland.” Wetland and stream mapping efforts will be reviewed separately for consistency with this use.

Stream Mapping. According to the legal boundaries established in the Alaska Coastal Management Program, the entire City and Borough of Juneau is located within the coastal zone, so the proposed stream mapping falls entirely within the coastal area. Developing accurate maps of streams will allow the CBJ to accurately enforce the 50-foot no-development setback from salmon streams. As noted earlier, this no-development setback is strictly a local ordinance which exceeds the protection requirements of state and federal agencies. It is enforceable only by CBJ. The 50-foot habitat setback allows vegetation, from shrubs to tall trees, to grow near the stream. This vegetation provides nutrients to the stream and directly provides food for the salmon because the leaves with insects fall into the stream. The vegetation also provides shading to keep stream temperatures cool on warm summer days and to provide places for juvenile salmon to hide from predators. The 50-foot setback area protects water quality by providing vegetated land that filters contaminants, such as hydrocarbon runoff from streets and pesticide runoff from residential lawns. By promoting complete and accurate enforcement of this setback, stream mapping will promote the conservation and protection of salmon streams in the areas of the borough which have the highest risk of serious impacts from development.

Wetland Mapping. As noted above, wetland mapping as well as stream mapping falls entirely within the coastal area. Developing accurate wetland maps will enable the CBJ, as well as state and federal agencies that will use the information, to determine exactly where wetland impacts may occur from proposed development. Agencies can then require specific project conditions during permit reviews to minimize and/or prohibit wetland fill. This directly results in the protection and conservation of wetland areas. An additional element of the wetland mapping effort involves completing on-the-ground field work and scientific analysis to determine wetland functions in specific wetland units. For example, a wetland unit may be especially important because it is near a salmon stream, or because it is near a major road or industrial development and thus plays a critical role in filtering hydrocarbons, de-icing chemicals, or other contaminants. Other wetland functions that may be considered are flood control, erosion control, or recharging groundwater. This information will be gathered from one wetland unit at a time to determine whether the wetland is high value (Category A or B) or low value (Category C or D). This information will be formally implemented through existing regulations in the CBJ Land Use Code which protect high-value wetlands and allow restricted development on low-value wetlands as appropriate. This directly results in the conservation and protection of wetlands, in accordance with Authorized Use Number One.

### **COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

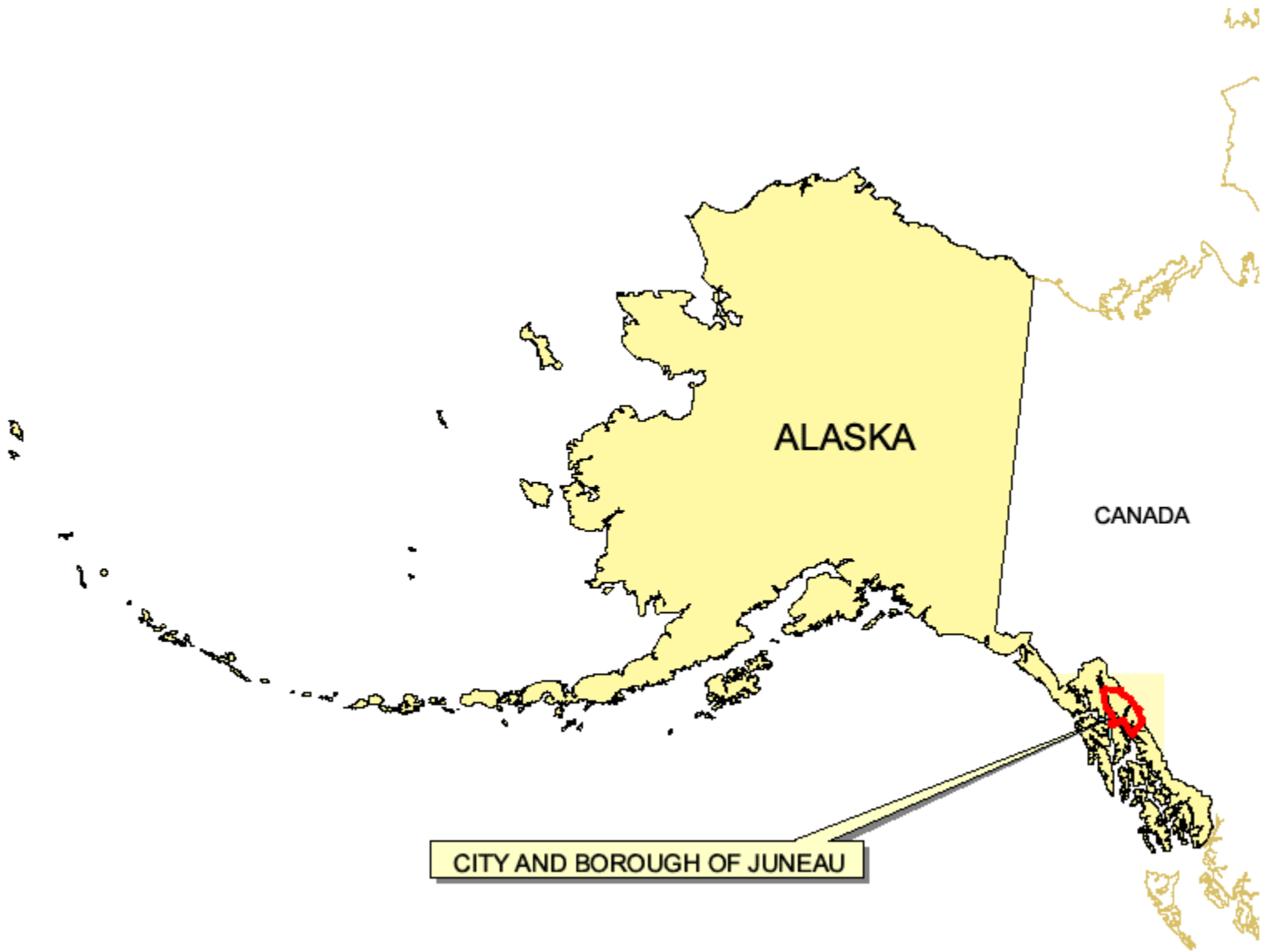
CBJ staff will develop a task force comprised of local, state, and federal agencies to guide wetland and stream mapping efforts. Specifically, this task force is likely to include

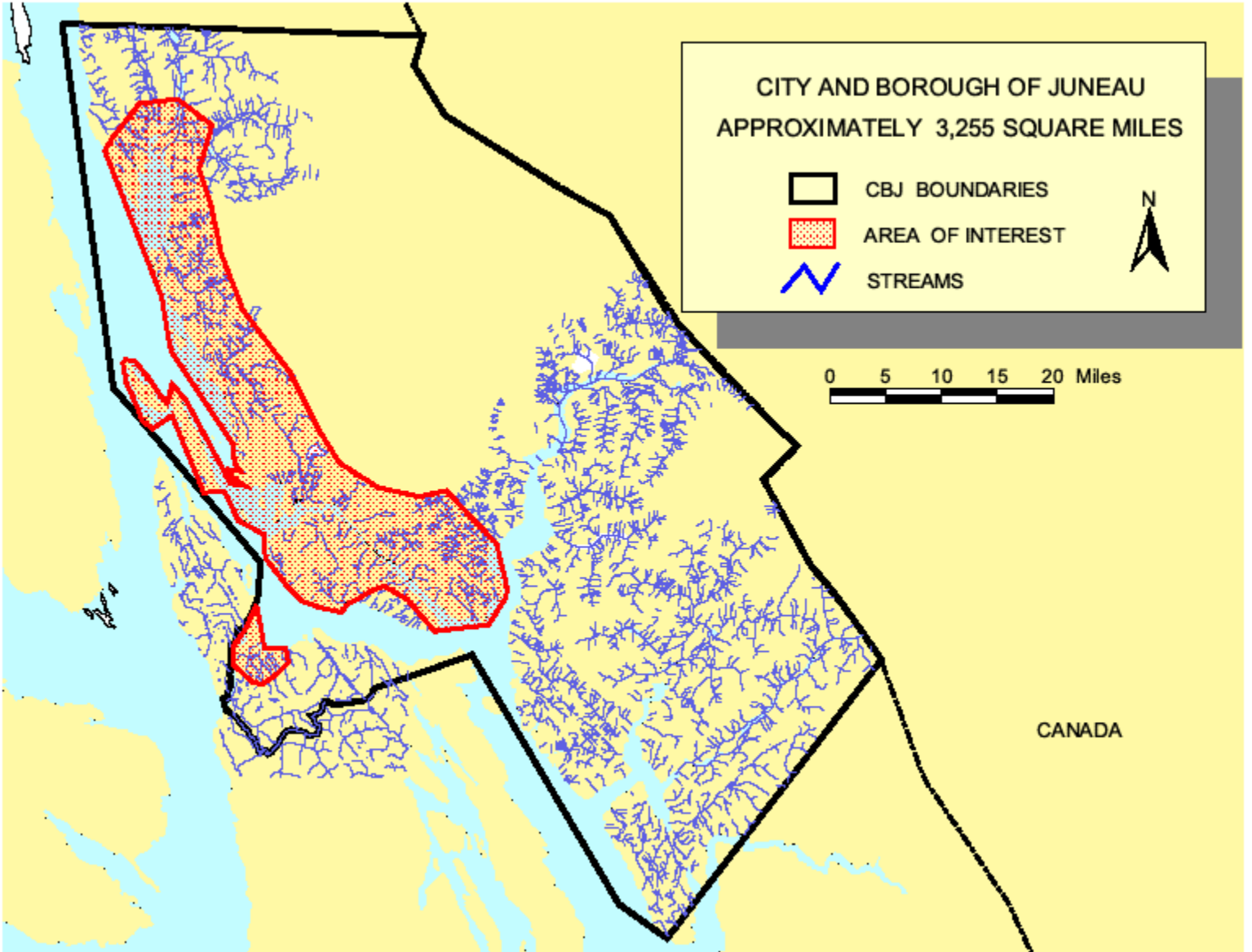
representatives from the following agencies: U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; NOAA National Marine Fisheries Service; the Alaska Department of Fish and Game; the Alaska Coastal Management Program; and the Alaska Department of Environmental Conservation.

**COST SHARING OR MATCHING OF FUNDS:**

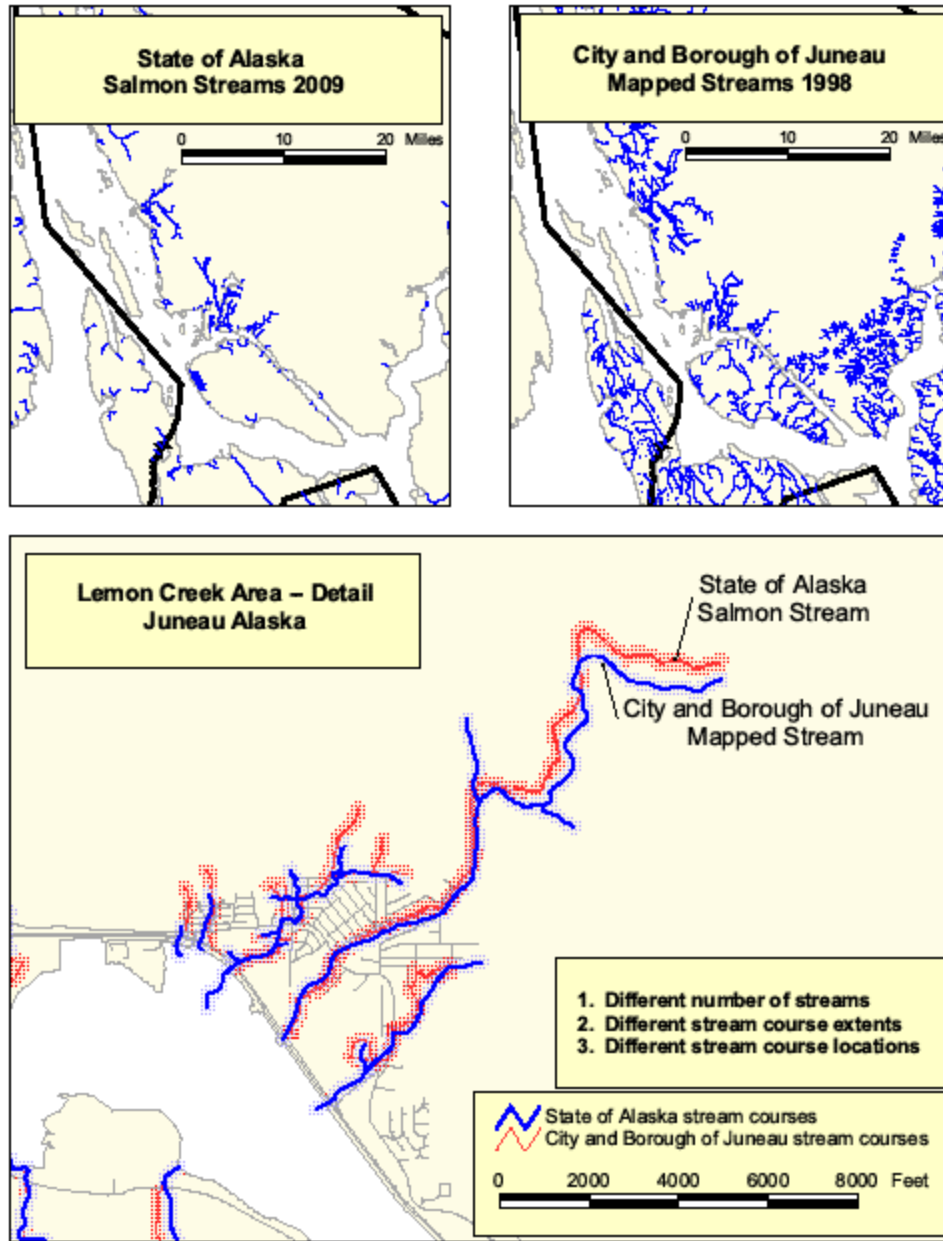
CIAP funds will not be used for cost-sharing or matching purposes.







## Representative Discrepancies between State of Alaska Salmon Stream Mapping and City and Borough of Juneau Stream Mapping



# STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

SEAN PARNELL, GOVERNOR

Douglas Island Center Building  
802 W. 3<sup>rd</sup> Street, Douglas  
P.O. BOX 110024  
JUNEAU, AK 99811-0024  
PHONE: (907) 465-4100  
FAX: (907) 465-4758

April 5, 2010

Sally Russell Cox  
Program Manager  
Community Coastal Impact Assistance Program  
550 West 7<sup>th</sup> Avenue, Suite 1770  
Anchorage, AK 99501-3510

**Subject: City and Borough of Juneau CCIAP Grant Support**

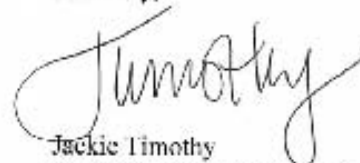
Dear Ms. Cox,

I would like to express support, on behalf of the Alaska Department of Fish and Game (ADF&G) Division of Habitat (Habitat), for the City and Borough of Juneau's (CBJ) Stream Mapping Project.

Habitat supports the mapping and imaging of the streams within the Juneau Borough as a tool to support the accurate evaluation of CBJ stream habitat setbacks. Current maps of the Juneau stream systems are often incorrect. Many of them have been digitized from outdated USGS quad maps which in many cases misrepresent the current landscape and associated stream courses. Habitat is working on a similar project which involves tracking and trapping the anadromous stream bodies off the Juneau road system during the summer of 2010. Habitat's work mapping the anadromous streams in the Juneau area to fish passage barriers will be complemented by the project proposed by the CBJ. The CBJ Stream Mapping Project will document stream courses above fish passage barriers through infrared imaging. It is our hope that CBJ will receive the support it needs to further develop and implement this project.

If you have any questions please feel free to contact Katie Eaton at (907) 465-6160 or email [katie.eaton@alaska.gov](mailto:katie.eaton@alaska.gov).

Sincerely,



Jackie Timothy  
Southeast Regional Supervisor