

# ALEUTIANS WEST CRSA

**Brief History:** The Aleutians West Coastal Resource Service Area (CRSA) encompasses most of the islands of the Aleutian Chain from Unalaska Island west to Attu Island, a distance of approximately 1,000 miles. The CRSA contains almost 200 named islands. It is believed that the first people to the Aleutians crossed the Bering Land Bridge some 10,000 to 15,000 years ago from Asia to North America. They called themselves Unangan or Unangas, meaning "people of the places." When the Russians later arrived they called the native population Aleuts. Russian fur traders were drawn to the rich waters of the area but were known to treat local Unangan people badly. Violence escalated and within the first 75 years of contact the Native population was down to an estimated 20 percent of its original size. The military buildup in the Aleutians began in 1940. At the height of the campaign there were in excess of 150,000 troops in the Aleutians. With the Bering Sea to the north and Pacific Ocean to the south, commercial fishing, processing, and industry support are the backbone of the economy of the Western Aleutians.



Photo by: UCSD

State of Alaska

<b>Pronunciation:</b>	(uh-Loo-shuns)
<b>Population (2007):</b>	4,757
<b>Shoreline:</b>	3,700 miles
<b>Coastal Area:</b>	15,927 square miles
<b>Annual Precipitation:</b>	64"
<b>Annual Snowfall:</b>	100"
<b>Hours of Daylight Summer:</b>	17 hours, 8 min
<b>Hours of Daylight Winter:</b>	7 hours, 27 min
<b>Regional Native Corporation:</b>	The Aleut Corp.
<b>Legislative District:</b>	37 S



Division of Coastal & Ocean Management





**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

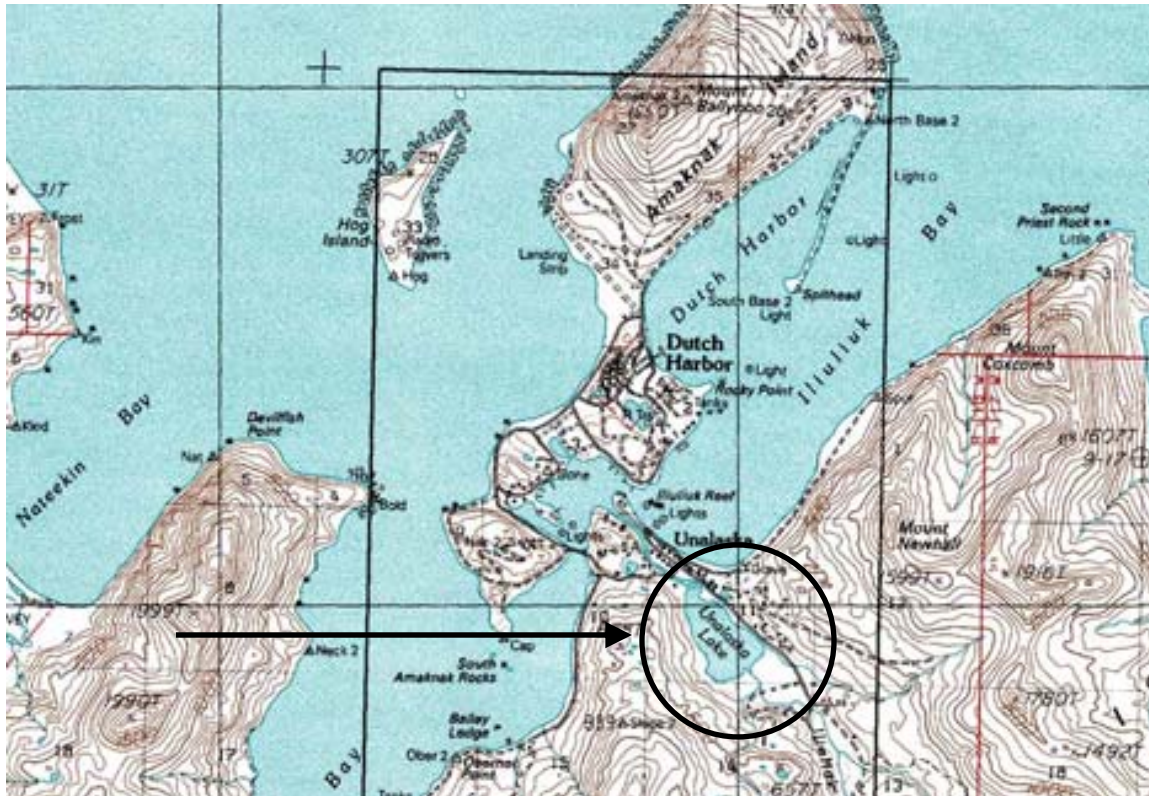
**PROJECT TITLE: Unalaska Lake Restoration**

**PROJECT CONTACT**

Contact Name: **Karol Kolehmainen**  
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**PROJECT LOCATION**

The proposed project is located within Alaska's coastal zone. Unalaska Lake is located within the City of Unalaska, near the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain. The Unalaska Lake watershed encompasses approximately 72,000 acres and is located to the southeast of the city center (refer to Figures 1 - 3).



**Figure 1. Location Map**



Figure 2. Unalaska Lake Watershed





Figure 3. Unalaska Lake, April 2009

**PROJECT DURATION**

The Unalaska Lake Restoration project is expected to take 3 years.

**ESTIMATED COST:**

Spending Estimate (\$)				
TOTAL	Year 1	Year 2	Year 3	Year 4
\$626,657	\$100,000	\$75,000	\$451,657	#

Funding per Allocation Year of CIAP (\$)				
TOTAL	FY 07	FY 08	FY 09	FY 10
\$626,657				\$626,657

**PROJECT DESCRIPTION:**

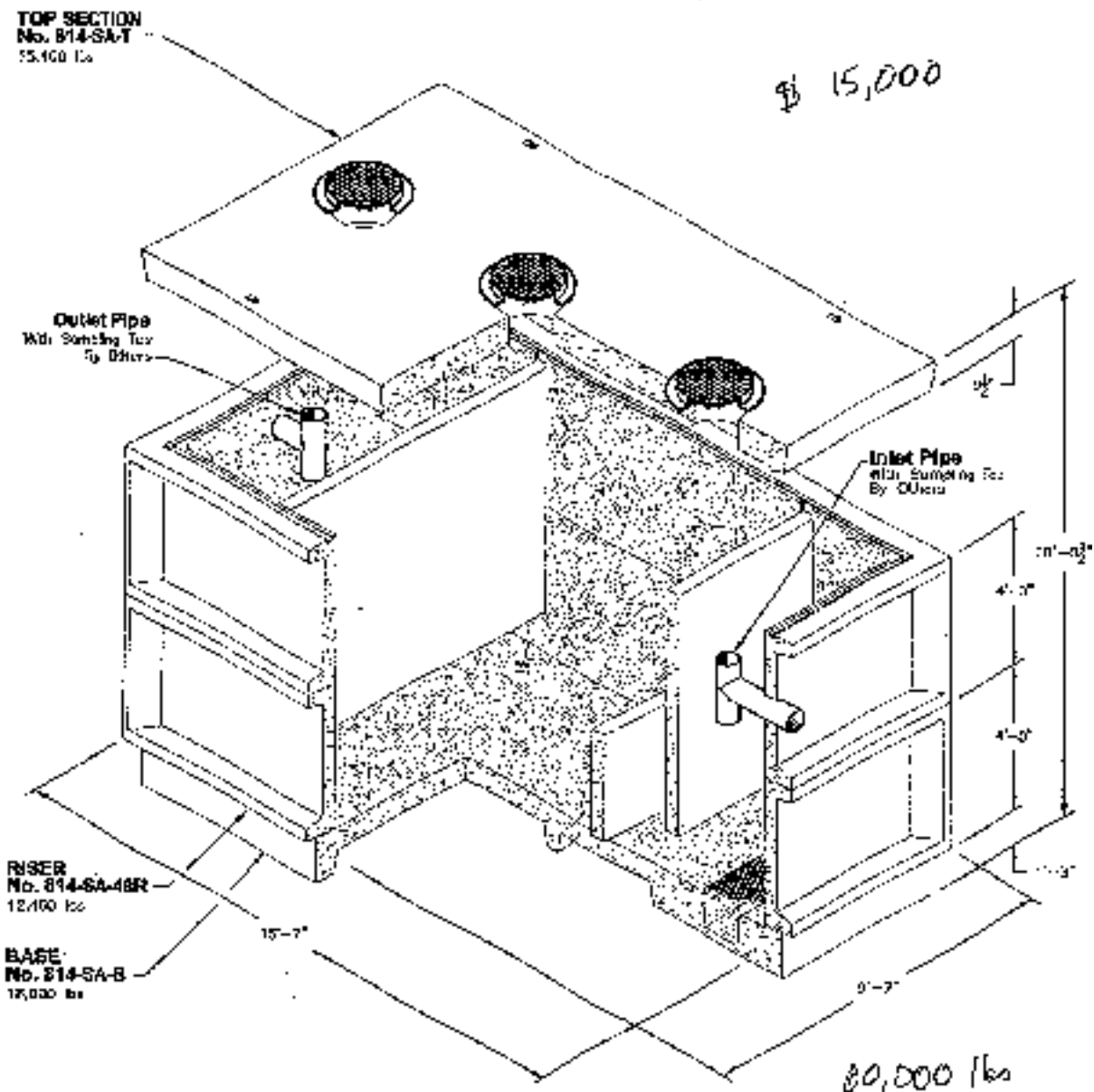
The Unalaska Lake Restoration Project will implement a component of the Aleutians West Coastal Resource Service Area Coastal Management Plan through the restoration of Unalaska Lake. This project benefits the natural coastal environment through the identification of measures to reduce sediment entering Unalaska Lake, the development of a stormwater management plan for the Unalaska Lake watershed, the development of implementation measures to reduce sediment entering Unalaska Lake, and through the design, permitting and installation of sediment traps, separators (Figures 4-6) and lift stations. Sediment and its associated contaminants can contribute to the long-term degradation of water quality and fish and wildlife habitat. The reduction of sediment entering Unalaska Lake will benefit the natural coastal environment of the Unalaska Lake watershed, as well as its fish and wildlife resources.

**Background**

Currently, the watershed most impacted from human development in the entire Aleutians West Coastal Resource Service Area is the Unalaska Lake watershed. The ability of the Unalaska Lake system to produce fish, particularly sockeye salmon, has been substantially degraded. Annual sockeye escapement ranges from 100 to 400 since 1970. Comparing Unalaska Lake to similar systems in this part of the state, Alaska Department of Fish and Game (ADF&G) Fisheries Biologists estimate that a lake of this size could have escapement of at least 2000 to 3000 sockeye.

The most substantial development in the Unalaska Lake watershed affecting water quality and fish habitat is road design, construction and maintenance. The area road systems were first constructed during World War II and have been significantly expanded in recent decades to support residential and commercial development. Since the 1940's portions of the lake have been filled, a section of the lake has been cut off by a road, inlet stream channels have been diverted, and much of the lakeshore sockeye spawning areas have been silted in. Suspended silt in the lake's water column can reduce sunlight penetration and thereby decrease survival of salmon fry by limiting plankton productions and the ability of rearing salmon fry to feed in the lake. Silt may also injure the salmon fry's gills and increase incidence of disease.

The steep coastal topography, geology and soils, high rainfall, and sparse vegetation are conducive to rapid runoff and siltation. Under these conditions, silt and pollutants from



**Figure 4. Sediment Separator Schematic**

residential and industrial development and associated transportation infrastructure adversely impact water quality and fish habitat. Reducing silt flow and other pollutants into the lake and its tributaries is vital to the well being of the lake's biological resources.

The City of Unalaska has made progress in reducing sedimentation of the lake through the paving of Broadway Avenue, installation of curbs and gutters, installation of catchment basins on storm drains, grass hydro seeding, and ditching to control runoff. In 2010, with funding from

the Alaska Department of Environmental Conservation, the City will be installing three “Advanced Drainage Systems” sediment separators (refer to schematics Figures 4-6) in the

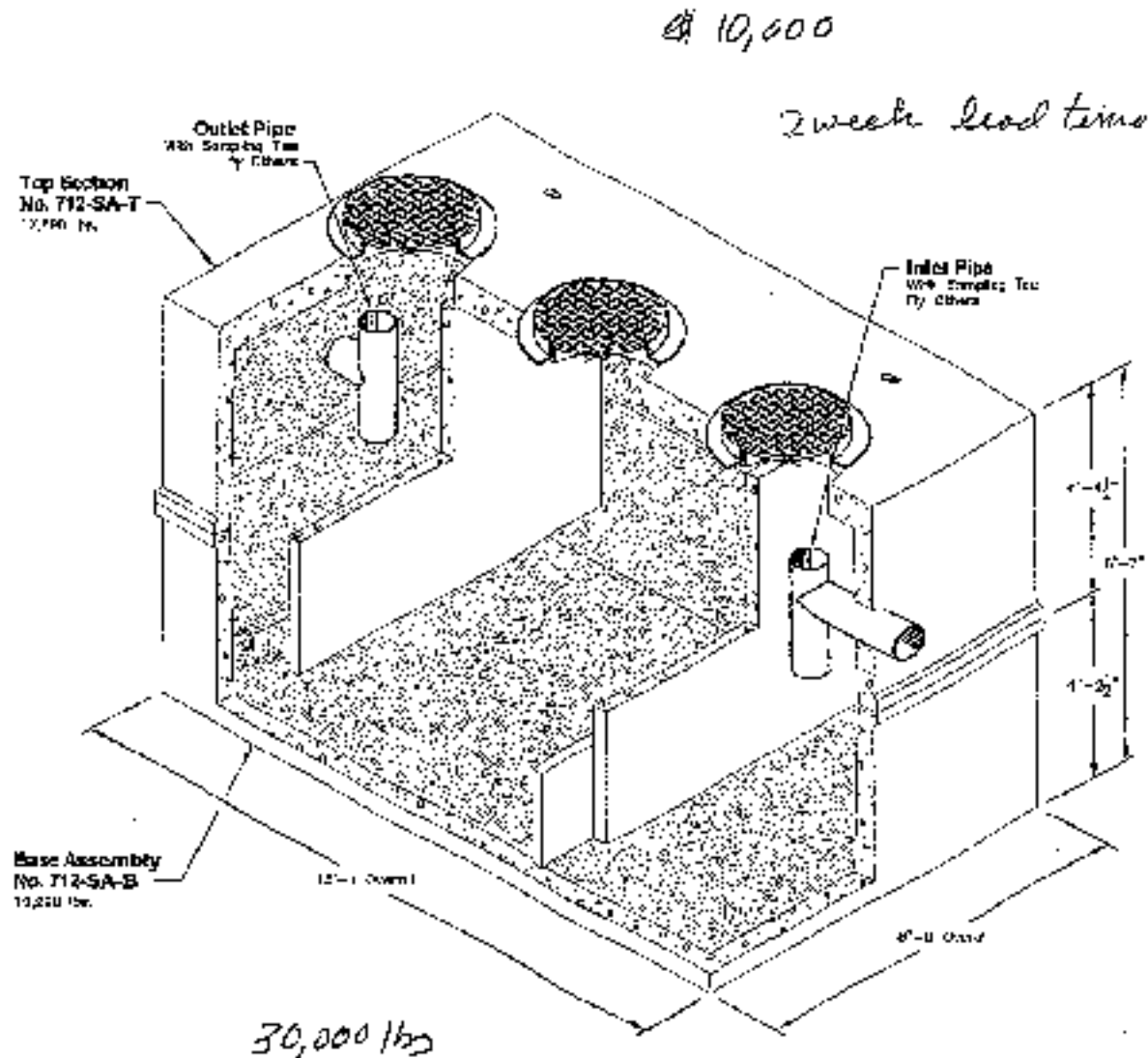
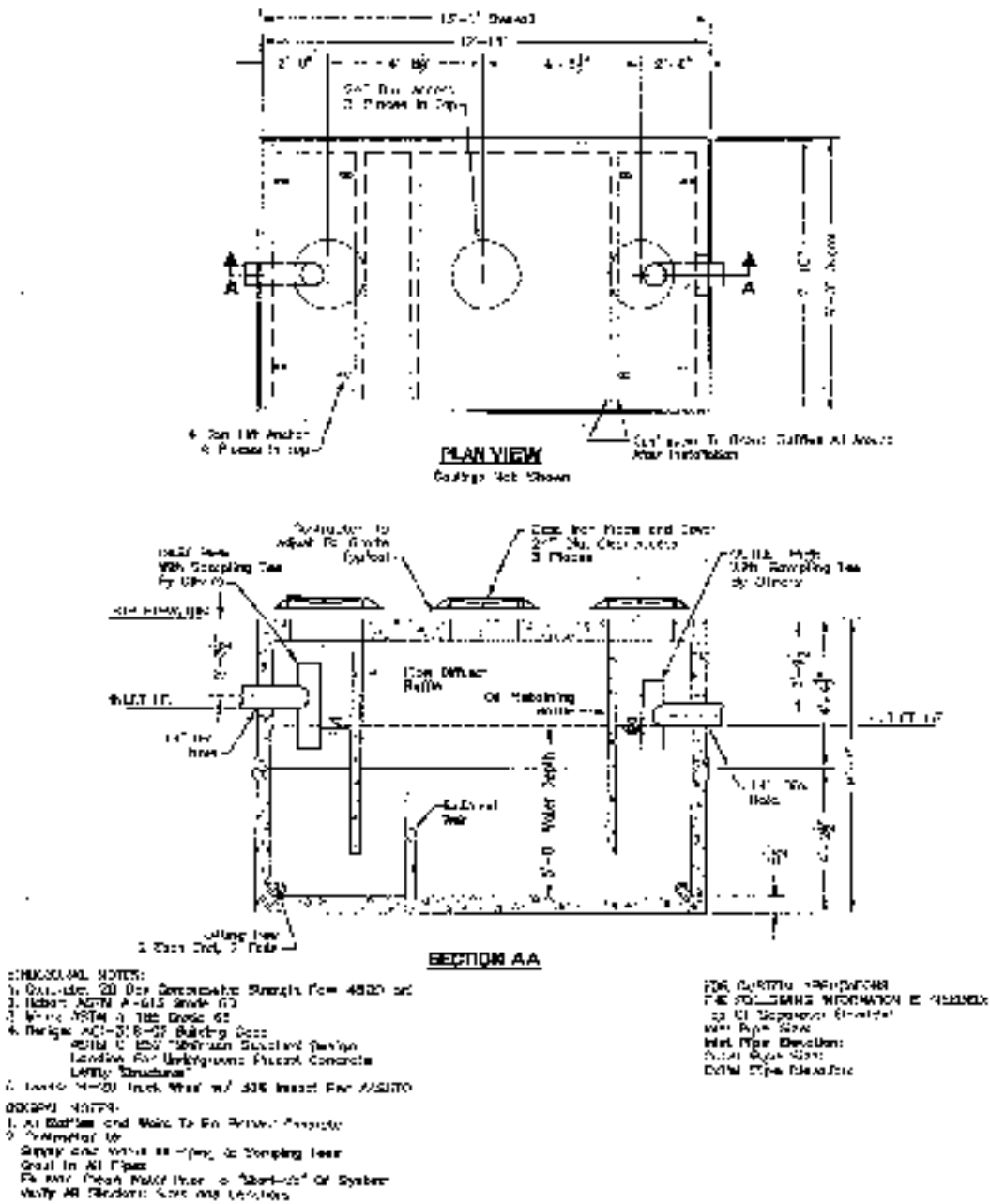


Figure 5. Sediment Separator Schematic

stormwater collection system. While this action is expected to reduce sediment entering the lake, additional actions are needed and thus CIAP funds are being directed to this end.

The Unalaska Lake watershed is the most trouble drainage in the region. A comprehensive stormwater management plan involving a full range of management measures and implementation strategies is needed to restore Unalaska Lake. In year-1, a stormwater management plan would be developed for the Unalaska Lake watershed. In year-2 and year-3 key recommendations of the plan would be implemented (e.g. sedimentation control, Stormwater retrofits). It is anticipated that, at a minimum, additional sediment separators will be installed at locations identified in the stormwater management plan.





### Figure 6. Sediment Separator Schematic

The Unalaska Lake Restoration project will be coordinated closely with the City of Unalaska, Department of Public Works. The City of Unalaska, Department of Public Works is expected to be a partner in both plan development and implementation.

### MEASUREABLE GOALS AND OBJECTIVES:

Year-1 Goal: Identify measures to reduce sediment entering Unalaska Lake.

Year-1 Objectives: Develop a stormwater management plan for the approximately 72,000 acre watershed.

Year-2 Goal: Begin to implement measures to reduce sediment entering Unalaska Lake.

Year-2 Objectives: design and permit three (3) to four (4) sediment traps, separators, lift stations, low impact development measures and/or other measures as recommended in the stormwater management plan.

Year- 3 Goal: Implement measures to reduce sediment entering Unalaska Lake.

Year- 3 Objectives: Install three (3) to four (4) sediment traps, separators, lift stations, low impact development measures and/or other measures as recommended in the stormwater management plan.

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

The proposed project is consistent with number 4: “Implementation of a federally approved marine, coastal, or comprehensive conservation management plan”. Specifically, the restoration of Unalaska Lake is identified as: “Project 7. Unalaska Lake Restoration” on pages C19- in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*. This element of the Aleutians West Coastal Resource Service Area Coastal Management Plan was approved by the National Oceanographic and Atmospheric Administration, Office of Ocean and Coastal Resource Management on January 13, 2009.

This project benefits the natural coastal environment through the identification of measures to reduce sediment entering Unalaska Lake, the development of a stormwater management plan for the Unalaska Lake watershed, the development of implementation measures to reduce sediment entering Unalaska Lake, and through the design, permitting and installation of sediment traps, separators and lift stations. Sediment and its associated contaminants can contribute to the long-term degradation of water quality and fish and wildlife habitat. The reduction of sediment entering Unalaska Lake will benefit the natural coastal environment of the Unalaska Lake watershed, as well as its fish and wildlife resources.

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

The Unalaska Lake Restoration project is consistent with and supplements federal Stormwater management programs.

#### **COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.

**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

**PROJECT TITLE: Lower Iliuliuk River Restoration**

**PROJECT CONTACT**

Contact Name: Karol Kolehmainen  
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**PROJECT LOCATION**

The proposed project is located within Alaska's coastal zone. The Iliuliuk River runs through the City of Unalaska, near the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain. The Iliuliuk River runs from Unalaska Lake, approximately 3,000 feet to Iliuliuk Harbor (refer to Figure 1).

**PROJECT DURATION**

The Iliuliuk River project is expected to take 3 years to complete.

**ESTIMATED COST**

<b>Spending Estimate (\$)</b>				
<b>TOTAL</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 3.5</b>
\$351,657	\$100,000	\$100,000	\$151,657	#

**All of the funding will be with FY 10 funding.**

<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>
\$351,657				\$351,657

**PROJECT DESCRIPTION**

The Lower Iliuliuk River Restoration Project will implement a component of the Aleutians West Coastal Resource Service Area Coastal Management Plan through the restoration of Lower Iliuliuk River. This project benefits the natural coastal environment through the restoration of riverbank and riparian habitat, the construction of light penetrating stairs and/or ramps for access to fishing and moored boats, the design and installation of improved small boat/skiff moorage, and the installation of a fish weir will be near the small island in the lower river. The benefits of the restoration of Lower Iliuliuk River will result in improved aquatic and riparian habitats.



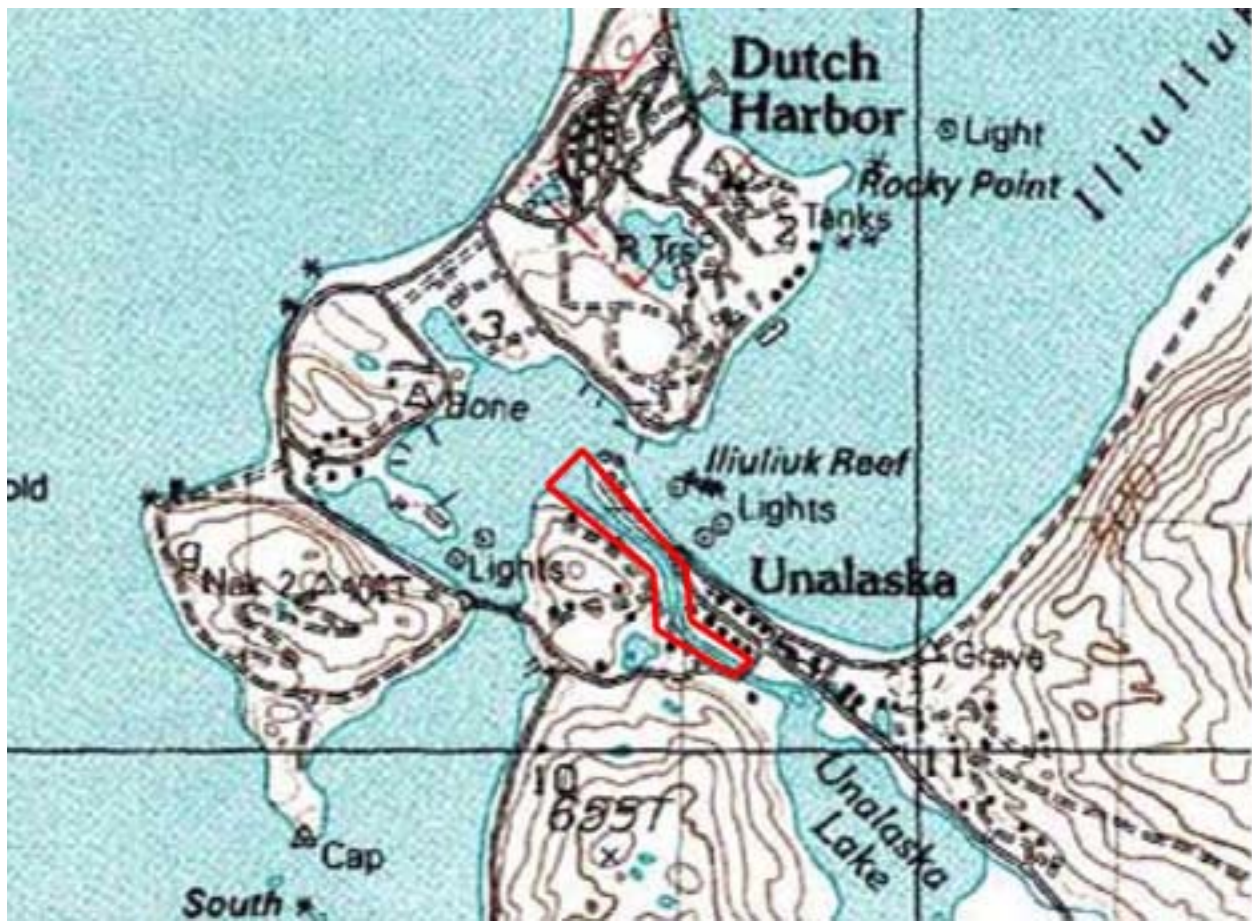


Figure 7. Location Map

#### Statement of the Problem

The lower Iliuliuk riverbank has been impacted by snow removal practices and trampling by recreational and subsistence fishers without riparian management. The closest and most convenient access points have suffered severe bank damage. The bank is eroding such that high quality fish habitat has been lost along this important anadromous fish system (ADFG No. 302-31-10500). Skiffs are beached and moored at the mouth of the Iliuliuk River. Beaching, launching and storing boats here has damaged aquatic vegetation and damaged nearshore habitat used by juvenile salmon and other fish (Figures 2-4). The lack of sufficient guard rail along the road encourages the plowing of snow to the upper stream bank. This snow contains gravel and other road debris that travels to the riverbank as snow melts thereby contributing to the habitat degradation (Figures 5-6).

#### Methodology

The project will restore riverbank and riparian habitat along the affected area. Light penetrating stairs and/or ramps will be constructed for access to fishing and moored boats. Improved small boat/skiff moorage will be designed and installed to minimize impacts associated with beaching, launching and storage. A fish weir will be installed near the small island in the lower river.



**Figure 8. Lower Iliuliuk River**

Specifically, the AWCRSA proposes to restore approximately 1,500 feet of the damaged area by installing coir log at the water's edge and native vegetation in the adjacent upland to restore the degraded and trampled area. The restoration will occur according to technical standards described in the *Streambank Revegetation and Protection, A Guide for Alaska, 2005 revised edition*.



**Figure 9. Lower-middle Iliuliuk River**





Figure 10. Middle Iliuliuk River, Location of Proposed Weir



Figure 11. Middle Iliuliuk River, Location of Proposed Weir





**Figure 12. Middle-upper Iliuliuk River, Location of Snow Removal**

The project will install approximately 125 feet of light penetrating aluminum stairs and/or ramps and small vessel floating docks. A broad-based community process will identify locations which will enable anglers to access the river without trampling vegetation. The project will also install guardrail or implement other appropriate techniques to control snow removal thereby minimizing further damage to riparian vegetation and water quality.

Year 1 – Community Outreach

Year 2 – Design and permitting

### Year 3 – Construction

#### Coordination Efforts with State or Local Entities

The Iliuliuk River Restoration project is identified as: “Project 6 on pages C-15 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*”. Extensive coordination and consultation with State and local entities occurred during the development of the list of projects that were included in that document.

In addition, the AWCRSA will partner with the City of Unalaska and the ADF&G to design and implement the project.

### **MEASUREABLE GOALS AND OBJECTIVES**

Year 1 goal: Develop a cohesive process to unify property owners and customary user groups to manage the Iliuliuk River riparian area.

Year 1 objective: Develop a management plan for the Iliuliuk River riparian area along the lower half mile of the river.

Year 2 goal: Obtain necessary permits to restore approximately 1,500 feet of riverbank and riparian habitat and install a fish weir.

Year 2 objective: Design riverbank restoration, guardrail or alternative measures and approximately 125 feet of light penetrating aluminum stairs and/or ramps and small vessel floating docks and a fish weir.

Year 3 goal: Restore approximately 1,500 feet of riverbank and riparian habitat.

Year 3 objective: Install coir log, native vegetation, guardrail or alternative measures, approximately 125 feet of light penetrating aluminum stairs and/or ramps and small vessel floating docks and a fish weir.

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

The proposed project is consistent with number 4: “Implementation of a federally approved marine, coastal, or comprehensive conservation management plan”. Specifically, the Iliuliuk River Restoration project is identified as: “Project 6 on pages C-15 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*.” This element of the Aleutians West Coastal Resource Service Area Coastal Management Plan was approved by the National Oceanographic and Atmospheric Administration, Office of Ocean and Coastal Resource Management on January 13, 2009.

The proposed project will benefit the natural coastal environment by restoring riparian habitat and water quality in an anadromous stream of Alaska’s coastal area (“Coastal area” has the meaning given “coastal zone” in AS 46.40.210: the coastal water including land within and under

that water, and adjacent shoreland, including the water within and under that shoreland, within the boundaries approved by the former Alaska Coastal Policy Council and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465 (Coastal Zone Management Act of 1972, as amended). "Coastal zone" includes areas added as a result of any boundary changes approved by the (DNR) and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465; except that "coastal area" includes federally owned land and water within the coastal zone.) The proposed project is located on city-owned property.

**COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

The Iliuliuk River Restoration project is identified as: "Project 6 on pages C-15 in Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008". Coordination and consultation with federal agencies occurred during the development of the list of projects that were included in that document.

**COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.



**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

**PROJECT TITLE: Artificial Benthic Reef**

**PROJECT CONTACT**

Contact Name: Karol Kolehmainen  
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Fax Number: (907) 745-6711  
Email Address: awcrsa@gci.net

**PROJECT LOCATION**

The proposed project is located within Alaska's coastal zone. The artificial reef is proposed for a location to be determined within Unalaska Bay near the City of Unalaska and the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain. The artificial reef will be located on city-owned tidelands (Figures 1-2).

**PROJECT DURATION**

The artificial reef project is expected to take 3 years to complete.

**ESTIMATED COST**

<b>Spending Estimate (\$)</b>				
<b>TOTAL</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 3.5</b>
\$500,000	\$50,000	\$400,000	\$50,000	#

<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>
\$500,000				\$500,000

**PROJECT DESCRIPTION**

The Artificial Benthic Reef Project will benefit the natural coastal environment by creating benthic reef habitat in Alaska's coastal area. This project will also implement a project identified in the Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008."

2



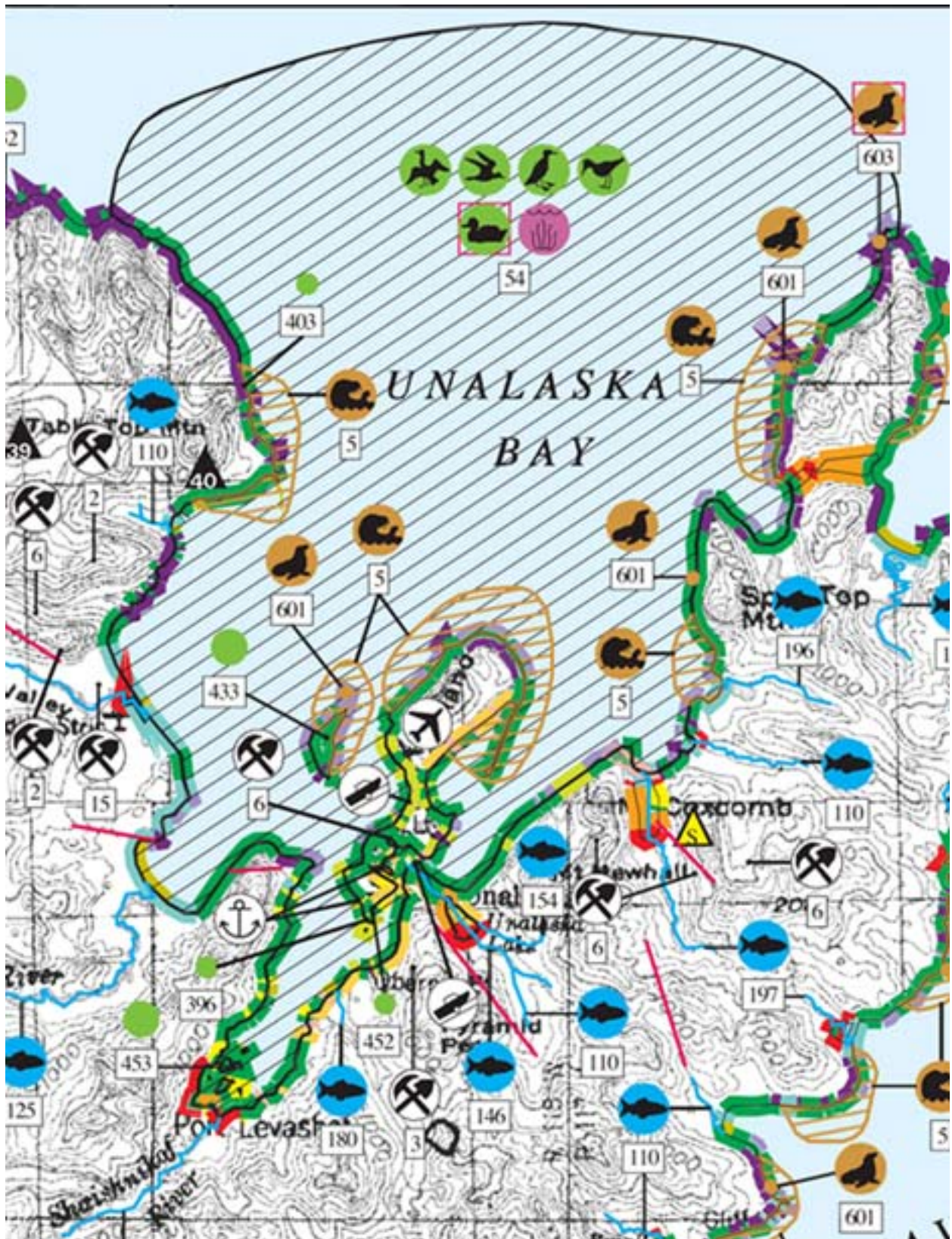


Figure 14. Coastal Resource Inventory of Unalaska Bay

Artificial reefs are commonly deployed in sub-tropical and tropical marine waters for the purpose of enhancing fish abundance or restoring habitat following the degradation or loss of



natural structure to anthropogenic or acute natural events (Miller 2002; Powers et al. 2005). Seaman (2000) defines artificial reefs (AR) as natural or man-made objects deployed on the seafloor with the effect of influencing biological and physical parameters in the marine environment. Modern AR applications use pre-planned reef designs that integrate biology and engineering to create specific features that mimic natural habitat. These artificial structures encourage settlement of plants and benthic invertebrates and provide both shelter and a forage base for fish (Hixon and Beets 1993; Fabi et al. 2006). The addition of artificial structure increases habitat heterogeneity and available refuge for fish and mobile invertebrates by adding vertical relief and structural complexity (Jordan et al. 2005). These components have been demonstrated as important habitat parameters for demersal fish assemblages and are correlated with increased species richness and abundance (Perkol et al. 2006).

Until recently, the use of AR for either compensatory habitat restoration or fish habitat enhancement has had limited use in Alaska's coastal waters<sup>1</sup>. In May 2006, the National Marine Fisheries Service (NMFS) installed an artificial reef in the marine waters of western Prince William Sound. The AWCRSA proposes to site, design, deploy and monitor an artificial reef in Unalaska Bay.

#### Statement of the Problem

Availability of nearshore subtidal reef habitat is a limiting factor for many species that use vertical structures. Nearshore reef habitats in Unalaska Bay are critical for many fish species including lingcod (*Ophiodon elongatus*), Pacific cod (*Gadus macrocephalus*), Pacific halibut (*Hippoglossus stenolepis*), Pacific herring (*Clupea pallasii*), and several species of rockfish (*Sebastes* spp.) Economic growth and development in coastal areas has increased localized pressures on coastal marine habitats. Shoreline habitat has been altered by activities such as harbor expansion, new harbor development, and sheet-pile dock construction. These activities have resulted in the degradation or loss of nearshore habitat primarily by the alteration or removal of structure and aquatic vegetation in Unalaska Bay.

#### Methodology

In May 2006, the NMFS deployed an artificial reef near the port city of Whittier. The AWCRSA will contract the services of experts in the field to site, design and deploy an artificial reef in Unalaska Bay using knowledge gained from the Whittier project. Unlike the Whittier project, habitat would be constructed using rock from a local source. The AWCRSA will also research any available documentation or local knowledge of the Hog Island reef so that any lessons learned from that project may also be incorporated.

The artificial reef will create 0.5 hectares of benthic habitat approximately 1 to 2 meters high. The reef would be deployed on a declining slope providing reef habitat situated at approximately 14, 18, and 20 m depths. Construction of 0.5 hectare reef will require 5,000 cubic meters of material for every meter added to bottom elevation, thus the total estimate volume would be less than 10,000 cubic meters.

Because limited data is available on the function of artificial reefs in sub-arctic marine environments, the AWCRSA proposes to include a post deployment monitoring component to

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<sup>1</sup> One AWCSA Board member reported that boulders were placed off Hog Island in Unalaska Bay as project mitigation and that there was a post-deployment dive transect conducted to verify colonization, but the author could not locate any references for this reef project.

document use and colonization. Monitoring will be accomplished through a combination of scuba dive transects, stationary video camera, hook and line surveys and fish trap surveys.

Placing 10,000 cubic meters of rock to create .5 hectare of benthic habitat would cost about \$400,000. Establishing baseline conditions before construction, plans, specifications and permitting, and monitoring colonization after construction could be accomplished for an additional \$100,000

Year 1 – Site selection, reef design and permitting

Year 2 – Establish baseline conditions, deployment and monitoring

Year 3 – Monitoring

#### Coordination Efforts with State or Local Entities

The artificial benthic reef project is identified as: “Project 12 on pages C-25 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008.*” Extensive coordination and consultation with State and local entities occurred during the development of the list of projects that are included in that document. Additionally, the AWCRSA will coordinate with ADF&G for all phases of the artificial reef project

### **MEASUREABLE GOALS AND OBJECTIVES**

Year-1 Goal: Create habitat diversity for important fish species including lingcod, Pacific cod, Pacific halibut, Pacific herring, and several species of rockfish.

Year-1 Objective: Select site, design reef and obtain permits for an artificial reef approximately 100 lineal meters.

Year-2 Goal: Create habitat diversity for important fish species including lingcod, Pacific cod, Pacific halibut, Pacific herring, and several species of rockfish.

Year-2 Objective: Install approximately 100 lineal meters of artificial reef.

Year-3 Goal: Contribute to the body of knowledge available on the function of artificial reefs in sub-arctic marine environments.

Year-3 Objective: Conduct post-deployment monitoring to document use and colonization of the reef through a combination of scuba dive transects, stationary video camera, hook and line surveys and fish trap surveys.

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

The proposed project is consistent with Number 4: “Implementation of a federally approved marine, coastal, or comprehensive conservation management plan”. Specifically, the Artificial Benthic Reef project is identified as: “Project 12 on pages C-25 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008.*” This element of the Aleutians West Coastal Resource

Service Area Coastal Management Plan was approved by the National Oceanographic and Atmospheric Administration, Office of Ocean and Coastal Resource Management on January 13, 2009.

The proposed project will benefit the natural coastal environment by creating benthic reef habitat in Alaska's coastal area ("Coastal area" has the meaning given "coastal zone" in AS 46.40.210: the coastal water including land within and under that water, and adjacent shoreland, including the water within and under that shoreland, within the boundaries approved by the former Alaska Coastal Policy Council and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465 (Coastal Zone Management Act of 1972, as amended). "Coastal zone" includes areas added as a result of any boundary changes approved by the (DNR) and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465; except that "coastal area" includes federally owned land and water within the coastal zone.) The proposed project is located on city-owned tidelands. Refer to the attached maps for project location.

**COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

In May 2006, the National Marine Fisheries Service deployed Alaska's first artificial reef near the port city of Whittier. The AWCRSA will coordinate with NMFS to ensure that the AWCRSA project builds on work done by NMFS.

**COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.

**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

**PROJECT TITLE: Fish Passage Restoration - Morris Cove**

**PROJECT CONTACT**

Contact Name: Karol Kolehmainen  
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**PROJECT LOCATION**

The proposed project is located within Alaska's coastal zone. Morris Cove is located in the Summer Bay area. It is approximately 5km from the City of Unalaska, near the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain. The reach of stream being proposed for restoration originates in a small (15-hectare) lake and empties into Morris Cove.



**Figure 15 Project Location**

The tidelands in Morris cove are owned by the City of Unalaska (ATS 1458, Plat number 94-12 AIRD). The stream (ADFG 302-31-100010) and lake below Ordinary High Water (OHW) are owned by the State of Alaska. The land above OHW is a Native Allotment (USS 8369).

Unalaska overlooks Iliuliuk Bay and Dutch Harbor on Unalaska Island in the Aleutian Chain. It lies 800 air miles from Anchorage, a two- to three-hour flight, and 1,700 miles northwest of Seattle. The name Dutch Harbor is often applied to the portion of the city on Amaknak Island,

which is connected to Unalaska Island by bridge. Dutch Harbor is actually within the boundaries of the City of Unalaska. The community lies at approximately 53.873610° North Latitude and - 166.536670° West Longitude. (Sec. 11, T073S, R118W, Seward Meridian.)

### PROJECT DURATION

The Morris Cove project is expected to take 3 years to complete.

### ESTIMATED COST

Spending Estimate (\$)				
TOTAL	Year 1	Year 2	Year 3	Year 3.5
\$350,000	\$100,000	\$100,000	\$150,000	#

All of the funding will be with FY 10 funding.

Funding per Allocation Year of CIAP (\$)				
TOTAL	FY 07	FY 08	FY 09	FY 10
\$350,000				\$350,000

### PROJECT DESCRIPTION

#### Statement of the Problem

Morris Cove has been a popular site for both subsistence and recreational fishing since at least World War II. There is a small channelized the stream (ADFG 302-31-100010) that originates in a 15-hectare lake. The stream and lake system have historically provided spawning and rearing habitat for pink, coho and sockeye salmon. There are several rusted drums and other metal and wood debris littering the streambed and riparian area. Other debris is used as a make-shift stream crossing. Debris and improperly placed stream crossings degrade the habitat and physically impair fish passage.<sup>2</sup>



Figure 16 Location of debris in stream and riparian area

<sup>2</sup> Morris Cove Creek is intermittently closed to returning salmon because a berm that keeps them from entering the creek sometimes forms on the beach at its mouth. This project would not stop the natural formation of berms at the stream mouth or the loss of anadromous fish returns caused in some years by those berms.





**Figure 17 Location of debris in stream and riparian area**



**Figure 18 Location of debris in stream and riparian area**

### Methodology

The project proposes to remove existing anthropogenic impairments to fish passage and minimize future degradation. Wood and metal debris will be removed and a metal or concrete footbridge will be installed to improve fish passage while still providing access for subsistence and recreation users.

### **Year 1 – Landowner negotiations and preliminary design**

During year-1 the AWCRSA will conduct landowner negotiations. Implementation of this project would require access to land belonging to the Hope Native Allotment (USS 8369) and the surrounding Ounalashka Corporation.<sup>3</sup>

<sup>3</sup> Preliminary and informal conversations with an Ounalashka Corporation representative knowledgeable of the Hope Allotment suggest that the project would be well received.

The AWCRSA would contract professional services to develop designs to 30% for the footbridge.

### **Year 2 – Final design and permitting**

During year-2 the designs for the footbridge would be fully completed and permits would be obtained.

### **Year 3 – Debris removal and footbridge construction**

During year-3 the debris would be removed and the footbridge constructed. The debris removal is timed to coincide with the installation of the footbridge so that equipment needed for transportation to and from the site, placement of the bridge and removal of the debris could serve dual purposes and take advantage of reduce costs associated with mobilization and demobilization. Debris will be salvaged or disposed of at the Unalaska landfill as appropriate.

#### Coordination Efforts with State or Local Entities

The Morris Cove Creek Restoration project is identified as: “Project 13 on pages C-25 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*. Extensive coordination and consultation with State and local entities occurred during the development of the list of projects that were included in that document.

In addition, the AWCRSA will coordinate with ADF&G to design and implement the project.

### **MEASUREABLE GOALS AND OBJECTIVES**

Goal: Restore the functional value along approximately 2,000’ of the small stream (ADFG 302-31-100010) that drains Morris Cove Lake. The functions include access for anadromous fish to spawning and rearing habitat.

Objectives: Remove existing anthropogenic impairments to fish passage and riparian function by removing 6-10 pieces of large wood and metal scrap.

Minimize future degradation to fish passage and riparian function by installing a metal or concrete footbridge.

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

The proposed project is consistent with number 4: “Implementation of a federally approved marine, coastal, or comprehensive conservation management plan”. Specifically, the Morris Cove project is identified as: “Project 13 on pages C-25 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*. This element of the Aleutians West Coastal Resource Service Area Coastal Management Plan was approved by the National Oceanographic and Atmospheric Administration, Office of Ocean and Coastal Resource Management on January 13, 2009.

The proposed project will benefit the natural coastal environment by restoring riparian habitat and an anadromous stream of Alaska's coastal area ("Coastal area" has the meaning given "coastal zone" in AS 46.40.210: the coastal water including land within and under that water, and adjacent shoreland, including the water within and under that shoreland, within the boundaries approved by the former Alaska Coastal Policy Council and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465 (Coastal Zone Management Act of 1972, as amended); "coastal zone" includes areas added as a result of any boundary changes approved by the (DNR) and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465; except that "coastal area" includes federally owned land and water within the coastal zone.)

**COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

The Morris Cove Creek Restoration project is identified as: "Project 13 on pages C-25 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*. Coordination and consultation with federal agencies occurred during the development of the list of projects that were included in that document.

**COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.

**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

**PROJECT TITLE: Areawide Educational Signage**

**PROJECT CONTACT**

Contact Name: **Karol Kolehmainen**  
Address: PO Box 1074, Palmer, Alaska 99642  
Telephone Number: (907) 745-6700  
Fax Number: (907) 745-6711  
Email Address: awcrsa@gci.net

**PROJECT LOCATION**

The proposed project is located within Alaska's coastal zone. The Areawide Educational Signage project is located throughout the City of Unalaska, near the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain. (Refer to maps and photographs pages 2 and 3).

Unalaska overlooks Iliuliuk Bay and Dutch Harbor on Unalaska Island in the Aleutian Chain. It lies 800 air miles from Anchorage, a two- to three-hour flight, and 1,700 miles northwest of Seattle. The community lies at approximately 53.873610° North Latitude and -166.536670° West Longitude. (Sec. 11, T073S, R118W, Seward Meridian.)

**PROJECT DURATION**

The Areawide Educational Signage project is expected to take 2 years.

**ESTIMATED COST:**

<b>Spending Estimate (\$)</b>				
<b>TOTAL</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
\$75,000	\$30,000	\$45,000		#

<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>
\$75,000				\$75,000





Figure 19 Vicinity Map





Figure 20 Site map - Unalaska City Center

## PROJECT DESCRIPTION:

The AWCRSA will design and install signs and develop a walking tour map that illustrates the statewide standards for coastal development. The environmental benefit will be to promote stewardship and understanding of Unalaska coastal resources. The signs and map will benefit the environment by reaching a broad audience. Furthermore, public involvement in the sign design and development process will foster stewardship of coastal resources and local commitment to the coastal management within the community.

Numerous sites exist in Unalaska to interpret the coastal uses and activities, and resources and habitats including coastal development, natural hazards, coastal access, energy facilities, utility routes and facilities, sand and gravel extraction, subsistence, transportation routes and facilities, habitats, air, land, and water quality and historic, prehistoric, and archeological resources. By placing well-designed, thematically consistent signs in key locations throughout the community the AWCRSA aims to educate visitors and residents about the rich and unique coastal resources of the region. The project will have a community involvement component in the development phase that is targeted to foster stewardship and build “ownership” in managing coastal resources. Working with the schools to develop the concept for each sign, the project will tailor the message of coastal uses and activities to Unalaska. The AWCRSA will contract the services of a professional graphic designer for sign design.

#### **Year 1 – planning, designing and permitting**

In year-1 an areawide signage plan, including locations, content and design themes would be developed.

#### **Year 2 – production and installation**

In year-2 the signs would be fabricated and installed and the walking tour map produced.

The Areawide Educational Signage project will be coordinated closely with the City of Unalaska, Department of Public Works. The City of Unalaska, Department of Public Works is concurrently developing a marine trail/walkway system for funding under the federal Scenic Byways Program. The educational signage will be integrated into the trail/walkway project.

#### **MEASUREABLE GOALS AND OBJECTIVES:**

Year-1 Goal: Foster stewardship in managing coastal resources through community involvement.

Year-1 Objectives: Develop areawide signage plan that identifies content and locations.

Year-2 Goal: Educate 500 visitors and approximately 4,000 residents about the rich and unique coastal resources of the region.

Year-2 Objectives: Install 10 to 12 signs and produce a walking tour map.

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

The proposed project is consistent with authorized use 1:

“Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands”, which allows for indirect benefits to the coastal environment through education.

The project indirectly benefits the environment through education by promoting stewardship and understanding of Unalaska coastal resources. The signs and map will reach a broad audience. Furthermore, public involvement in the sign design and development process will foster stewardship of coastal resources and local commitment to the coastal management within the community.

**COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

The Areawide Educational Signage project compliments the City of Unalaska Scenic Byways project. The National Scenic Byways Program is part of the U.S. Department of Transportation, Federal Highway Administration

**COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.



**STATE OF ALASKA  
COASTAL IMPACT ASSISTANCE PROGRAM**

**ALEUTIANS WEST COASTAL RESOURCE SERVICE AREA (AWCRSA)**

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

**PROJECT TITLE: Derelict Vessel Removal in Captains Bay (Columbia Barge)**

**PROJECT CONTACT**

Contact Name: **Karol Kolehmainen**  
Address: PO Box 1074, Palmer, Alaska 99642  
Telephone Number: (907) 745-6700  
Fax Number: (907) 745-6711  
Email Address: awcrsa@gci.net

**PROJECT LOCATION**

The derelict vessel proposed for removal is located within Alaska's coastal zone on city-owned tidelands in Captains Bay, near the shipping port of Dutch Harbor, on the island of Unalaska in the Aleutian chain (refer to maps and photographs on pages 2-3).

Unalaska overlooks Iliuliuk Bay and Dutch Harbor on Unalaska Island in the Aleutian Chain. It lies 800 air miles from Anchorage, a two- to three-hour flight, and 1,700 miles northwest of Seattle. The name Dutch Harbor is often applied to the portion of the city on Amaknak Island, which is connected to Unalaska Island by bridge. Dutch Harbor is actually within the boundaries of the City of Unalaska. The community lies at approximately 53.873610° North Latitude and - 166.536670° West Longitude. (Sec. 11, T073S, R118W, Seward Meridian.)

**PROJECT DURATION**

The derelict vessel removal project in Captains Bay is expected to take 2 years to complete.

**ESTIMATED COST:**

<b>Spending Estimate (\$)</b>				
<b>TOTAL</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
\$550,000	\$150,000	\$400,000	\$	#

<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>
\$550,000				\$550,000



Figure 1. Vicinity Map with Location of Columbia Barge - USGS Unalaska C-2 Quadrangle



**PROJECT DESCRIPTION:**

The AWCRSA proposes to remove one abandoned and derelict vessel from Captains Bay and remove junk and scrap metal from an adjacent vessel. Both vessels are located on city-owned tidelands in approximately 6 – 10 feet of water.

The vessel that is proposed for removal is a 150-foot modern steel barge upon which is stacked a 115-foot derelict landing craft (the Columbia) and various pieces of heavy equipment (dump truck, mobile crane, light mobile crane). Because the landing craft is stacked on the barge, the barge itself is known locally as the “Columbia”. The barge was abandoned in the late 1980’s and has been surveyed by a local contractor for the purposes of removal as recently as 2005.



**Figure 2. Columbia Barge**

The adjacent barge is a much smaller and older wooden structure. The age of this barge is estimated to be 60-70 years and it is approximately 80 by 20 feet. On deck there are fuel storage tanks that are reported to be empty and several cod pots. There is apparently no survey for this vessel.



**Figure 3. Wood Barge**

### Statement of the Problem

Although cleared of fuel and chemicals, the steel barge and junk associated with the older wooden barge pose a threat to the nearshore intertidal habitat of Captains Bay through physical destruction of habitats, leachate from iron, and potential dispersion of gear and other materials. If allowed to remain in place, the larger steel barge and the equipment on it will corrode and deteriorate into a mass of rusted iron and debris that will disperse into the surrounding intertidal and subtidal environment. Particles and pieces of rusted steel and other debris will alter substrate material size, chemistry, and suitability as benthic habitat. The deteriorating barge would cause long-term damage to the site and the surrounding intertidal and near subtidal environment.

Availability of nearshore intertidal habitat is a limiting factor for many species. The head of Captains Bay is home to horned puffin and pigeon guillemot from April through September. Crab and bivalve concentrations are present in the tideflats. Coho, Pink and Chum salmon are found in the nearby Shaishnikof River. Seals occur throughout the nearshore waters of Unalaska Bay. Sea otters are present all year along the Aleutian Islands (refer to appendix for Environmental Sensitivity and Coastal Zone maps).

Derelict and abandoned vessels pose significant threats to the nearshore environment by releasing pollutants and by causing algal blooms through iron deposition. Materials of concern include but are not limited to: oil and fuel, asbestos, polychlorinated biphenyls (PCBs), paint, solids/debris/floatables, and other materials of environmental concern. They also can provide locations for illegal oil & hazardous material dumps.

Physical damage far exceeds the footprint of the vessels themselves and includes areas shaded at various angles of the sun, areas scoured from current turbulence, areas dragged by sweeping anchor chain and other appurtenances, and associated debris fields. Grounded and abandoned vessels can crush, smother, shade & scour nearshore benthic habitat and entrap wildlife.

### Methodology

The AWCRSA proposes to contract the services of a licensed and bonded contractor with expertise in salvage operations and site remediation in the marine environment of Western Alaska.

#### **Year 1 – Alternatives Analysis, Project Design and Permitting**

During Year 1 of the project the removal, disposal and site restoration alternatives would be considered. Although project planning has been done for the “Columbia” barge, with each year, increased deterioration of the vessel may render a previous alternative non-viable. A 2004 inspection indicated that it could be repaired and floated off the beach. However, it is rapidly deteriorating and will soon be degraded to a condition that will not allow it to be moved without dismantling it. Thus an updated survey would need to be conducted and the selected alternative re-confirmed or revised. The wooden barge has deteriorated to the point that it cannot be moved as a unit, but crab pots, fuel tanks, and other materials presenting hazards to wildlife could be removed.

Habitat and site characterization would be completed and local concerns would be addressed as part of the alternatives analysis. Based on the preferred alternative, the project design would be



refined and all necessary permits including permits for scuttling and site remediation and restoration would be obtained. Other vessels have been scuttled at a site north of Amaknak Island in water approximately 2,000 meters deep. If the “Columbia” barge could be towed to the scuttling site, it could be used to create habitat in another deep-water location where its structure would be a benefit to crabs and fish that use vertical structures. The project design will follow the U.S. Environmental Protection Agency and U.S. Maritime Administration National Guidance: *Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs*, May 2006.

## **Year 2 – Project Implementation and Post-project Surveys**

In Year 2, if previously documented conditions are still present, the following would be the proposed workplan. Using a crane and clamshell, transfer junk and metal scraps from the wood barge to the deck of the Columbia for salvage and/or disposal at the Unalaska land fill as appropriate. The "Columbia" barge would be cut up and hauled away to an approved scuttle sight. The scuttling would be accomplished under Army Corps of Engineers (ACOE) Nationwide Permit 22 and a general permit from EPA for ocean dumping as long as standard conditions could be met. As part of this process, the United States Coast Guard would inspect the vessel/scrap material to verify that it has been cleaned and prepared for scuttling. The project site would be surveyed for any necessary site remediation or restoration following vessel removal. The substrate would be contoured to pre-grounding conditions to facilitate recolonization by native species. It is anticipated that an ACOE section 404 permit would be required for this last task.

## **COORDINATION EFFORTS WITH STATE OR LOCAL ENTITIES:**

The removal of derelict vessels in Captains Bay is identified as: “Project 22. Derelict Vessel Removal - Captains Bay” on pages C-37 in Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008. Extensive coordination and consultation with State and local entities occurred during the development of the list of projects that were included in that document.

## **MEASUREABLE GOALS AND OBJECTIVES:**

### Issue

The steel barge occupies a relatively small area of near-shore habitat, about 450 square meters, but as the barge and its deck load deteriorate, it will likely be spread over a larger area. If the pieces of the barge and effects of ferrous material on sediment composition and chemistry spread only 10 meters in all directions around the barge, then it would eventually impact about 1,800 square meters of intertidal and near-shore subtidal habitat in an area rich in mussels and other benthic invertebrates and important to wintering waterfowl.

### Goal

Restore, in accordance with project design and survey, and prevent from further impact an estimated 1,800 square meters of intertidal and near-shore subtidal habitat in Captains Bay.

### Objective 1

Remove the “Columbia” barge from Captains Bay, along with junk and metal scraps from the wooden barge, and salvage and scuttle as appropriate.

Objective 2

Improve substrate for recolonization.

**PROJECT CONSISTENCY WITH CIAP AUTHORIZED USE:**

The proposed project is consistent with Number 4: “Implementation of a federally approved marine, coastal, or comprehensive conservation management plan”. Specifically, the removal of derelict vessels in Captains Bay is identified as: “Project 22. Derelict Vessel Removal - Captains Bay” on pages C-37 in *Aleutians West Coastal Resource Service Area Coastal Management Plan, Volume II - Appendix C, Mitigation Opportunities in Unalaska, June 2008*. This element of the Aleutians West Coastal Resource Service Area Coastal Management Plan was approved by the National Oceanographic and Atmospheric Administration, Office of Ocean and Coastal Resource Management on January 13, 2009.

The proposed project will benefit the natural coastal environment by restoring tideland habitats of Alaska’s coastal area ("Coastal area" has the meaning given "coastal zone" in AS 46.40.210: the coastal water including land within and under that water, and adjacent shoreland, including the water within and under that shoreland, within the boundaries approved by the former Alaska Coastal Policy Council and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465 (Coastal Zone Management Act of 1972, as amended); “coastal zone” includes areas added as a result of any boundary changes approved by the (DNR) and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465; except that "coastal area" includes federally owned land and water within the coastal zone.) The proposed project is located on city-owned tidelands. Refer to the attached maps for project location.

**COORDINATION WITH FEDERAL RESOURCES OR PROGRAMS:**

It is estimated that over 800 abandoned barges litter the inland and coastal waters of the US. The National Oceanographic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration has taken the lead for the removal of derelict vessels. To date most the work has focused on removal of vessels from coral reef habitat. The proposed project compliments the efforts of NOAA by building on and employing the expertise developed in other areas. Thus there is a synergistic relationship rather than duplication of efforts.

**COST SHARING OR MATCHING OF FUNDS:**

CIAP funds are not being considered for matching purposes.