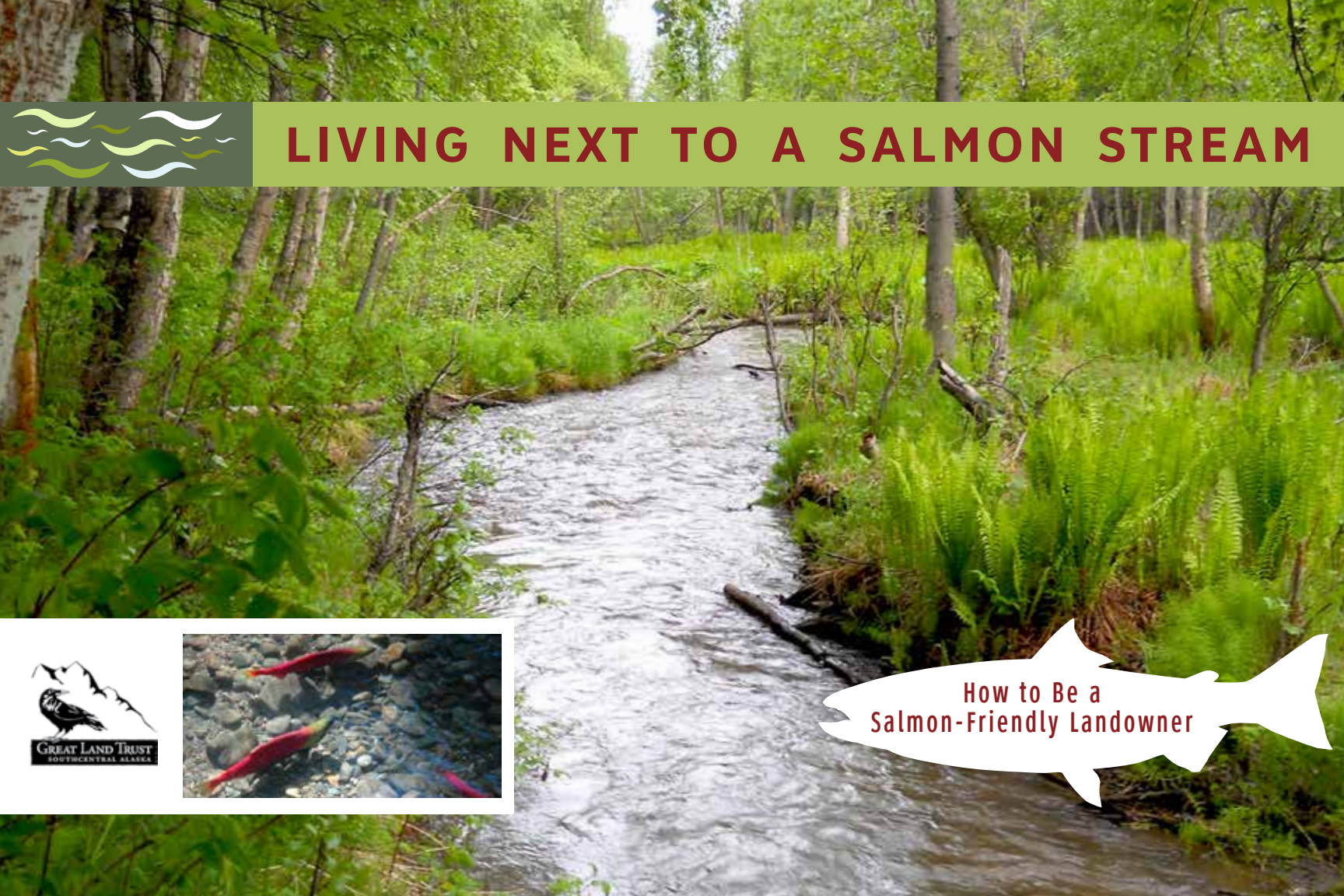
# LIVING NEXT TO A SALMON STREAM



## How to Be a Salmon-Friendly Landowner

GREAT LAND TRUST
SOUTHCENTRAL ALASKA

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# PROTECTING CLEAN WATER & SALMON HABITAT IN SOUTHCENTRAL ALASKA

Photo Credit: © Robin Song

**Thousands of salmon streams** flow throughout the Mat-Su Borough. For most residents, salmon are part of our regional identity and way of life. Salmon are also a strong economic driver supporting thousands of jobs throughout the region.

If you are reading this brochure, there is a good chance you live near a salmon stream. Streamside landowners in Southcentral Alaska play a critical role in ensuring our salmon populations are maintained by protecting and maintaining water quality and healthy shoreline habitats.

Being a salmon-friendly landowner means making choices that minimize impacts to our streams, rivers, wetlands, and lakes. The pay-offs for being salmon-friendly are clean drinking water, high quality habitat, and sustained populations of salmon and other resident fish like Dolly Varden and char.

This guide offers information, tips, and resources for landowners to help them understand how they can contribute to maintaining the health of salmon and Southcentral Alaska waterways.

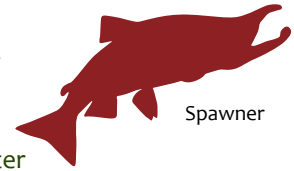
# YOUNG SALMON LIVE HERE

**Even in the winter, many streams, lakes, and wetlands provide habitat for salmon throughout the various stages of their life cycle.**

Photo Credit: Carl Johnson

**Most young salmon** spend many years in fresh water before migrating to the ocean.

- Young king salmon spend 1-2 years in fresh water
- Young silver salmon spend 1-5 years in fresh water
- Young sockeye salmon spend 1-3 years in fresh water
- Young pink/humpy salmon spend 6 months in fresh water

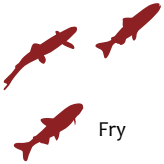


Spawner

When salmon hatch from their eggs they are less than an inch in size (hatchlings) and almost always have to swim away from their spawning grounds to find better rearing habitat. Young salmon may travel many miles throughout multiple watersheds to access these special areas.

Hatchlings

The wetlands and slow moving side channels in your backyard may act as nurseries for young salmon because they provide hiding places and protection from predators, are cooler in temperature, have slow moving currents, and are abundant in food supplies. Even in the winter, wetlands and riparian corridors can act as nurseries where water continues to flow beneath the frozen surface.



Fry

# WHAT MAKES A HEALTHY SALMON STREAM?

Photo credit Ron Niebrugge/wildnatureImages.com

# SALMON-FRIENDLY STREAM FEATURES


## 1 FLOODPLAIN

- Floodplains are relatively flat areas found alongside the stream channel that are prone to flooding. In the Mat-Su, floodplains can be forested and may contain wetlands.
- Floodplain plants help filter the water and reduce soil erosion and sediment loads that can damage the gills of young salmon.
- Plant roots and deadfall provide shelter for young & migrating salmon.
- Young salmon feed on insects that live in overhanging vegetation.
- Floodplains are nature's own disaster control. A one-acre floodplain can store 1.5 million gallons of floodwater.

## 2 STREAMSIDE PLANTS

Trees and shrubs that border streams moderate the temperature through shading. This directly benefits fish and aquatic insects and prevents excess algae growth. Leaves, twigs, needles, and whole trees that fall into water bodies provide nutrients to aquatic invertebrates, which in turn nourish fish.

## 3 FALLEN LOGS

Natural debris jams are generally not a barrier to salmon migration. Instead, they slow the current and help to create pool habitat that provides shelter for juvenile salmon (especially during flood events).

## 4 RIFFLES

Riffles are gravel beds with shallow, turbulent water that serve as spawning areas for salmon. Depending on the water temperature, the eggs will incubate in the riffle nest and hatch within 30 to 90 days.

Habitat means 'home'. A healthy home for salmon is a stream free of pollution where a variety of interconnected environments support all life stages of fish and the organisms they depend on for food.

Photo by: ©2012 Jim D. Barr / AlaskaStock.com

# WHAT SALMON NEED

**Salmon need** water with certain characteristics, including the right amount of dissolved oxygen to support aquatic life, correct pH (balance of hydrogen ions), nutrients and cool temperatures.

Salmon use different types of in-stream habitats during their life-cycle. When salmon are young they need safe, slow-moving places to hide from predators such as undercut stream banks or small pools. When it's time to head out to sea, young salmon need consistent passage as they make their way from the upper watershed, to the estuary, and out to the ocean.

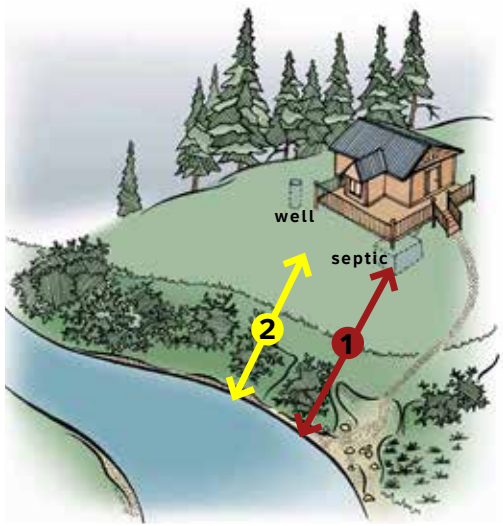
Adult salmon need gravel free of fine sediments to safe-keep their developing eggs. Habitat quality in our local streams can be degraded by activities that change or impact stream banks and stream flow.

Photo by: ©2012 Thomas C. Kline, Jr. / AlaskaStock.com

# LEGAL PROTECTIONS FOR SALMON

## THERE ARE LOCAL, STATE, AND FEDERAL REGULATIONS FOR DEVELOPING LAND NEAR SALMON STREAMS.

It is up to you to understand the regulations and permit requirements specific to your project.




**MAT-SU SALMON STREAM LEGAL SETBACKS:**

1. 100' Septic Setback
2. 75' Structural Setback

### Mat-Su Borough Regulations

*Mat-Su Borough permit center (907) 745-9822*

**Title 17.55.20 Setbacks for Shorelands-**
1) Structures must be cited at least 75 feet from waterways; and
2) Sub-surface septic systems must be located 100 feet from waterways.

### State Regulations

*Alaska Department of Fish and Game (ADF&G) (907) 746-6300*
*Alaska Department of Environmental Conservation (ADEC) (907) 269-6285*

**Anadromous Fish Act** (AS 16.05.871- .901) requires that an individual or government agency provide prior notification and obtain permit approval from ADF&G before altering or affecting "the natural flow or bed" of a an anadromous fish stream

**Fish Passage Act** (AS 16.05.841), requires that an individual or government agency notify and obtain authorization from ADF&G, for all activities within or across a stream used by fish.

**Waste Water Discharge** - You cannot discharge grey water, or water contaminated with human waste into a salmon stream without a permit (contact ADEC).

**Alaska State Division of Forestry** - [AS 41.17.118(a)(2)], Harvest of timber may not be undertaken within 100 feet immediately adjacent to an anadromous or high value resident fish water body;

### Federal Regulations

*US Army Corps of Engineers (USACE) (907) 753-2712*

Permits are required for waterfront projects, to discharge dredged fill material into the waters of the United States, and/or to disturb wetlands.

# WATER QUALITY IN THE MAT-SU

**Today,** the Mat-Su Borough has four listed impaired water bodies (303 D) and eleven high priority water bodies, based on Alaska Department of Environmental Conservation standards. Impaired status means that the water quality and fish habitat in these streams are degraded by garbage, sediment, fecal matter, and other pollutants.

These impairments are mostly due to development practices and human activities. Regional water quality impairment in Mat-Su has been directly linked to fisheries declines in salmon due to the species' sensitivity to water temperature, sedimentation, and changes in habitat.

When you choose to be salmon-friendly, you are actively working to improve our impaired waterbodies and to keep our salmon streams healthy. As the population of the region grows, individual and community efforts will be needed to keep salmon in our local streams for future generations.

2012 Mat-Su Water Body Status
Alaska Department of Environmental Conservation (ADEC)

**Impaired Water Bodies**

Big Lake
Cottonwood Creek
Lake Lucille
Matanuska River

**High Priority, Threatened Water Bodies**

Fish Creek
Jim Lake
Lake Louise
Little Susitna River
Meadow Creek
Jim Creek
Nancy Lake
Wasilla Lake
Wasilla Creek
Willow Creek
Montana Creek

As a landowner adjacent to a salmon stream, you can play a role in promoting healthy salmon populations. The suggestions that follow show specific actions you can take to make your property safer for salmon.

Photo by: ©2012 Thomas C. Kline, Jr. / AlaskaStock.com

# SALMON-FRIENDLY PRACTICES

Water quality in our local streams can be degraded by pollutants that enter into streams from homes, yards, and driveways. These pollutants include chemicals, fuels, oils, bacteria, sediment, and fertilizers.

## Your waterfront may be a nursery for juvenile salmon or a spawning bed. Here are ways you can help protect their habitat and water quality:

- Maintain naturally vegetated stream banks and avoid obstructing the flow of a stream or altering a stream channel.
- Minimize disturbances to the streambed (keep foot traffic, bikes, ATVs, and vehicles out of the stream). Incubating salmon eggs and young fry are highly vulnerable to siltation, vibration, and physical disturbances.
- Allow the natural accumulation of woody/natural debris in the stream channel (but do remove any trash or household debris).
- Store oil, grease, household chemicals, pesticides, and other potential contaminants in secure containers and dispose of them properly at the Mat-Su central landfill.
- Snow from driveways and streets can contain sediment, de-icing chemicals, oil, and other pollutants harmful to streams. Store snow away from the stream, preferably on grassy areas where pollutants are filtered from the melted water before it flows into a stream.
- Along your shoreline, focus access and outdoor amenities (e.g. gazebos, patios, docks) so that 75% or more of the shoreline edge is protected from foot traffic.
- Maintain as much of the native vegetated buffer along the shoreline and stream corridors as possible. This helps sediments stay rooted and keeps them out of the stream where they can damage salmon gills.

# GIVE SALMON AN EDGE

Riparian zones are areas where water and land meet, such as along stream banks and lake shores. As a landowner along a salmon stream, you can literally give salmon "an edge" in survival by retaining a fish-friendly riparian zone.

Photo Credit: © Ron Niebrugge/wildnatureimages.com

**Riparian zones** function in multiple ways, including providing cover for fish to avoid predators, stabilizing stream banks, filtering sediment, and supplying food and nutrients important for fish and other aquatic organisms.

Riparian buffers are corridors of limited use or development adjacent to streams. Creating a riparian buffer on your property will help maintain high quality salmon habitat and prevent streambank erosion by retaining vegetation that holds soil in place. In addition, a riparian buffer may provide added protection in the event of a flood. Structures that are located well outside the vegetated riparian buffer are not as vulnerable to rising water.

| Riparian Buffer Function | Effective Buffer Size |
|---|---|
| **Water Quality**<br>Intercept runoff, trap sediments, remove pollutants | 10' - 100' |
| **Habitat**<br>Food and shelter for diverse riparian and aquatic species | 100' - 1600' |
| **Stream stabilization**<br>Roots provide tensile strength to the soil matrix | 30' - 65' |
| **Flood Attenuation**<br>Provide floodplain storage, reduce flood peaks | 65' - 500' |

Source: US Army Engineer Research and Development Center, 2000. Publication # ERDC TN-EMRRP-SR-24.

# STREAM-SIDE PLANTS

**By leaving natural vegetation in place and being careful not to disturb it, or by planting native salmon-friendly vegetation, you give salmon the edge they need. When restoring vegetation, make sure you use only native plants.**

Photo Credit: USFWS/Katrina Mueller

**Native plants** occur naturally in a region and are not introduced by human activities. Once established, native plants require less maintenance than introduced or ornamental plants, and they mimic natural stream-side habitat.

Invasive, non-native plants have the ability to displace native species, and they mature early, grow fast, and spread hardy seeds that survive over time in the soil. Invasive examples include choke cherry, reed canary grass, and white sweet clover.*

Invasive plants can sometimes cross-pollinate with native plants and can also alter the soil composition. Their ability to out-compete native plants for water and nutrients can threaten local fish and wildlife habitat.

One of the primary ways invasive plants have been introduced into Alaska is by re-seeding along roads during construction projects, and through improper gardening and landscaping practices. As a landowner, you can help reduce the spread of invasive plants.

** for more information about unwanted invasive plants visit http://aknhp.uaa.alaska.edu/botany/akepic/alaskas-most-wanted-invasive-species/*

**Elodia is a highly invasive** non-native submersed aquatic plant. Elodea survives freezing, and can spread by tiny fragments. It's a popular aquarium plant in Alaska and can spread if released: boats, trailers, floatplanes, waders, and equipment can act as carriers.

***Elodea will cause serious, irreversible harm to fish and aquatic habitats in Alaska if allowed to spread unchecked.***

**IF YOU FIND ELODEA:** *1-877-INVASIV (877-468-2748)*

**Resources for landowners interested in revegetating streambanks with native non-invasive plants:**

**Alaska Plant Materials Center**
**(ask for a native plant expert)**
**5310 S. Bodenburg Spur Road**
**Palmer, Alaska 99645**
**(907) 745-4469**

# ENHANCING SHORELINE HABITAT FOR SALMON

If the shoreline on your property has been altered and does not contain adequate vegetation, it may no longer be functioning as healthy riparian habitat and may actually be harming salmon.

*The photo above shows a lake shoreline where the landowner cleared all the vegetation to the shoreline and is now trying to manage erosion.*

*The photo on the bottom left shows a creek shoreline that has been cleared of vegetation due to sport fishing.*

*The photo on the bottom right shows a group of volunteers restoring a shoreline.*

**Being a Salmon Friendly Landowner** means protecting existing vegetation or restoring your shoreline so that it can function as habitat for salmon and other aquatic species. If you are interested in having your shoreline assessed to ensure that it is salmon friendly, contact the Alaska Department of Fish and Game Habitat Restoration program at (907) 267-2403. **Cost share options may be available to assist landowners interested in enhancing their shoreline habitat.**

It's always better to protect healthy riparian habitat than it is to restore it.

# SALMON-FRIENDLY LAWN CARE

## "Slow it down, spread it out, and sink it in."

Rainfall and snowmelt make their way from the mountain peaks to residential neighborhoods and ultimately into Mat-Su streams and lakes.

**Rainwater and snowmelt** collect soil particles, organic debris, fertilizers, pesticides, gas, and oil as they make their way from higher elevations into our water bodies. If Mat-Su area residents make their land permeable, much of that water can be filtered harmlessly into the soil.

If you have a lawn or gardens, they can help trap and filter pollution and sediment before they get into our streams. High grasses, shrubs, and trees are better at slowing runoff. A few simple steps you can take to prevent pollution runoff into our salmon streams are:

- Allow your lawn to grow an inch or two higher than normal in between mowing.
- Put a rain barrel under gutter downspouts and re-use the rainwater or build a rain garden.* Creating a rain garden or landscaping with native plants can be very beautiful and is often less maintenance than a conventional flower garden.
- When washing your car, do it on a grassy surface rather than in your driveway.
- Choose gravel driveways or permeable paving.
- Use organic fertilizers and apply them sparingly because even chemical free varieties can leach nitrogen, phosphorous, and other nutrients into our streams and lakes.
- Minimize the size of your lawn, especially adjacent to water bodies, and locate your lawn away from a water body as much as possible.

For more information on building a rain garden see * http://www.matsugov.us/rain-gardens

# CULVERTS

**Providing salmon with safe passage is essential to ensuring sustainable salmon populations in the Mat-Su.**

*Examples of culverts that do not allow fish passage.*

**If you have a culvert** on your property and it resembles any of these photos, it is likely that it does not allow young or adult salmon to pass freely. All of the images show culverts that block fish passage and prevent salmon from accessing essential habitats.

Alaska Department of Fish and Game can come to your property and assess whether or not your culvert allows safe passage for salmon. **Funds from cost share programs like the Fish Passage Program at the US Fish and Wildlife Service may be available to assist landowners in replacing their culverts with fish friendly culverts.**

To have your culvert assessed contact the ADF&G Fish Passage Improvement Program Coordinator at (907) 267-2146 or the US Fish and Wildlife Service Fish Passage Program at (907) 271-2888.

Through the cooperative efforts of landowners like you, agencies including ADFG, US Fish and Wildlife Service, Mat-Su Salmon Habitat Partnership, and the Mat-Su Borough over 80 culverts have already been replaced with fish friendly culverts.

# YOUR SEPTIC SYSTEM

**Failed or inadequately maintained septic systems can cause serious pollution problems in salmon streams and may be a public health hazard.**

**Landowners** who are not on a public sewer system need to regularly maintain their septic system, according to Alaska Department of Environmental Conservation, Division of Water Quality. This means having your system inspected annually and pumping your septic tank regularly.

**Warning signs that a septic system is failing:**

- Grass over the drain field has patches which look abnormally healthy.
- There are soggy areas, surfacing grey water, or surfacing sewage.
- Grass above the drain field is unusually wet.
- Sinks, showers, and toilets drain more slowly.
- Sewage backs up in the toilet and drains.
- Your drain field is smelly!

Photo Credit: © Tim Remick

# SUSTAINABLE SALMON

Conserving, enhancing, and restoring healthy functioning salmon habitat is the key to ensuring future generations of Alaska residents get the privilege of living alongside salmon.

Photo credit ron neibrugge/wildnatureimages.com

## About Great Land Trust (GLT)

GLT is a non-profit land conservation organization whose mission is to work with willing landowners and other partners to conserve Southcentral Alaska's Lands and Waters.

Since 1995, we have worked with private landowners, local governments, and communities to permanently conserve over 9,000 acres of open space, wildlife habitat, important wetlands, forests, farmlands, recreational lands, and places of cultural and historical value.

We invite you to visit our website to learn more about our conservation projects, the programs we offer, and to meet our wonderful staff! **www.greatlandtrust.org**

GLT is a member-supported organization. By becoming a member, your donation contributes to the permanent conservation of special lands and waters throughout Southcentral Alaska.

## We offer landowners conservation options:

**Conservation Easements** are voluntary legal agreements between a landowner and the Land Trust that permanently limit development of the land in order to protect its conservation values, while keeping the land in private ownership and use.

**Donations of Land:** The trust accepts donations of land for conservation purposes by gift or through a bequest to guarantee that the property and its natural values will be protected forever.

**Trade Lands:** The trust accepts gifts of real estate without significant conservation value with the understanding that they may be sold and the proceeds used to protect lands in Southcentral Alaska that do have high conservation value.

**Land Acquisitions:** In special situations the Trust is able to raise grant funds to purchase property for conservation. This is only possible when a municipal or State partner is willing to hold title and manage the property as a public park or natural area.

GREAT LAND TRUST
SOUTHCENTRAL ALASKA

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**Suite 202**
**(907) 746-6406**

**Anchorage Office**
**1007 W 3rd Ave, Suite 302**
**(907) 278-4998**

**www.greatlandtrust.org**
**info@greatlandtrust.org**

*In partnership with willing landowners since 1995, GLT has conserved over 9000 acres in Southcentral Alaska including 4300 acres of wetlands and 35 miles of salmon streams. These areas will provide significant public benefits for generations.*

ACCREDITED LAND TRUST ACCREDITATION COMMISSION

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