

CURRENTS



Newsletter of the Kenai Watershed Forum

Spring 2008



What is KWF doing to address road concerns?

Over the past few years, we have partnered with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service to better understand the scale of the problem regarding roads and salmon streams. Our assessments are nearly complete and available to everyone online at <http://www.kenaiwatershed.org/culverts.html>. Through our research we have learned how many culverts need repaired. We began a focused restoration program that has invested well over one million dollars of actual construction work fixing these bad culverts by replacing them with better, more fish-friendly designs. Now that we have a few years of experience under our belt, we are ready to help our local government develop policies that will reduce the need for these expensive repairs.

in this issue...

- Economics of Roads
- Building Future Roads
- Proposed Borough Roads Ordinance
- Fixing Problem Culverts
- Membership
- Education Update

In November of 2007, we encouraged several of our key partners and supporters from all user (Continue on page 6)

Why did the salmon cross the road?

To get to the other tide.

But seriously, what happens when roads prevent salmon from migrating? Poorly built roads and culverts can prevent adult salmon from reaching ideal spawning areas and prevent young salmon from moving around to find food and shelter. Less habitat and resources will eventually contribute to lower salmon populations, which means less salmon in our bellies and bad news for our local economy.

In our three seasons of culvert assessments, KWF has discovered many culverts that prevent salmon passage. Although bad culverts can be found on roads ranging from highways to trails, there is no reason to continue installing bad culverts under new roads. The potential impacts on the environment and (Continue on page 7)



Above: A crossing of Leaf Creek, north of Nikiski. It is hard to imagine salmon trying to navigate through this mess. KWF replaced this crossing with a bridge in 2007.

**Working together
for
healthy watersheds
on the
Kenai Peninsula.**

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A Home for KWF

There has been much discussion recently about an agreement between KWF and the City of Soldotna regarding a lease of the house that sits in Soldotna Creek Park. After going back and forth several times regarding the terms of the lease, KWF and the Soldotna City Council and management sat down at a meeting on Feb. 27 to discuss the direction of negotiations. KWF's top priority heading into the meeting was to maintain good relations with the city regardless of the outcome. We must say that the meeting was by all accounts a success. KWF stressed the concept of a shared vision for the community and the river and incorporating this vision into an education and research facility. Terms of the lease are still to be worked out, but we are headed in the right direction.



Caring for the Kenai

Caring for the Kenai (CFK) is an environmental contest that challenges local high school students to tackle a local environmental or natural disaster preparedness issue. This contest has been around for over 18 years and has touched generations of students on the Kenai Peninsula. The title sponsors are Agrium and Chevron.

Beginning in 2003, Kenai Watershed Forum became the Contest Administrator and began managing all financial aspects of the contest. Since then, our involvement has expanded and we now help with CFK website development and management, the judging process, marketing, and the Semi-Finalist Awards Program, among other things. We believe it is a worthwhile educational tool and fits into our mission well. We are working hard to bring our expertise to the contest with the hopes of continuing to raise the quality of entries.

This year's contest deadline is March 10. We are expecting nearly 450 entries. The first phase of judging begins March 11 and the finalist judging will take place on March 19. The top 12 contestants will present their projects at the Oral presentation on April 17 at the Kenai Little Theatre.

We encourage you to view the CFK website at www.caringforthekenai.com to learn more about the contest.

KWF Grows Again...

Welcome Rhonda Orth! Rhonda Orth is the new Accounting Manager at the KWF. She comes to the Kenai Watershed Forum after serving as the Business Manager at Cook Inlet Academy for the past seven years.

Rhonda is local girl though and through. She moved to the Kenai Peninsula in the late 1970's as a child with her family to a home on the Kenai River. She attended Sterling Elementary, Soldotna Elementary, Soldotna Jr. High and is a 1986 graduate of Soldotna High School. She received her Bachelor's of Education with a minor in Math from the University of Alaska after completing her student teaching at Tustumena Elementary.

Rhonda has made her home, with her daughter Madison and mini-dachshund Oscar, in the Soldotna area. She enjoys quilting, reading, Sudoku, jigsaw puzzles and time with friends and family.

We are excited to bring Rhonda on board!

Winter Wonders for Adopt-A-Stream Students

An optimist would say that the glass is half full while a pessimist would say it is half empty, so it's up to you to decide if Alaskan winters have short days or long nights. Regardless of length of day or night, the Kenai Watershed Forum's Adopt-A-Stream program continues throughout the school year with many brave, dedicated students donning their warmest layers and immersing themselves (figuratively) into their studies of local streams.

The Kenai Watershed Forum is working with ten different classes in five different schools on the Kenai Peninsula to educate and inspire future stewards of our environment. Each month, KWF staff visits these classrooms to teach lessons ranging from stream ecology to insect anatomy to the all important cold weather safety. Lessons in cold weather safety are important because the classes travel to their adopted stream sites once a month, even during the winter, for water quality monitoring. To ensure safety of the students, teachers make sure that anyone going to the stream is properly dressed, and no trips occur on days when recess is indoors (usually under -10 Fahrenheit).



As the seasons change, the trips to the streams change as well. What once was a pleasant autumn stroll to the stream becomes an epic arctic journey full of many dramatic wipeouts into snow banks along the trail. Instead of having direct access to open water, holes are drilled or buckets are rigged with rope and "chucked" into the stream and dragged across the ice to the shore. Groups start their water testing activities by "stomping out" a work area and then testing water samples from a bucket rather than directly from the stream. Many students that journey down to the stream for monitoring will readily tell you what a neutral pH is or how much dissolved oxygen juvenile salmon need to survive, but one of the most common observations during the winter months is "it's cold".

So we at the Kenai Watershed Forum salute our brave streamkeepers and their dedication to monitoring their adopted streams. At least we know that whether the glass is half full or half empty, the students involved in the Adopt-A-Stream program can tell you whether or not the water in the glass is healthy. And that keeps us optimistic for the health of our watersheds in the future.



Living With Bears at Winter Speaker Series

Tuesday, Mar. 11, 2008 7 pm

Larry Lewis, Alaska Department of Fish & Game

People and bears can best live together by learning to keep a safe distance from each other. Come hear some bear stories and, more importantly, learn how to be a good neighbor to our large, furry fellow residents. They'll be waking up soon!

Larry Lewis is a wildlife technician

for the Alaska Department of Fish and Game. He is one of the creators of the Wildlife Conservation Communities Program, an innovative program to reduce human-wildlife conflicts within residential areas.

Come join us for the Kenai River Center Winter Speaker Series, sponsored by the Kenai River Center and the Kenai Watershed Forum. This series of monthly evening talks brings scientists, storytellers, historians and other experts to the Kenai River Center for events designed to entertain as well as educate. Presentations focus on the natural and cultural history of our Kenai Peninsula. All of the programs are free and open to the public, and refreshments are provided. Come to the Kenai River Center for an evening of enjoyment and learning!



The High (or low) Price of Access

One of the arguments often used against requiring roads to be built to the Kenai Peninsula Borough's roads standards is that it is too expensive: smaller developers can't afford the up-front costs, and lower-income families are priced out of purchasing property when the additional expense of a higher-quality road is added on to the price of the land.

But which is really more expensive? Building roads right the first time, or absorbing the ongoing maintenance and repair costs of poorly-built roads, many of which must eventually be rebuilt to meet standards?

People who live on bad roads have more wear and tear on their vehicles. They take on the expense for plowing, maintaining and repairing the road, and if they decide they want the road upgraded and included in the borough's maintenance system, they must absorb much of the expense of making the improvements. So savings in the short term often turn into costs over the long term.

There are also quality of life issues to consider. Sub-standard roads are hard to keep repaired, and can make travel unpleasant and difficult. In extreme cases, school buses and emergency vehicles may not be able to get to people's homes. Where these roads cross streams, they are more vulnerable to flooding and failing, which can leave residents stranded. If the roads are not part of a public maintenance system, the residents are left with the entire cost of repair.

Substandard roads also create costs for the general public. If fish can't get through a badly-built or poorly-maintained culvert, they can be cut off from miles of habitat. This is obviously a bad thing for the Kenai Peninsula's salmon-centered economy.

Poor roads through a subdivision can act as a barrier to development of neighboring areas if the substandard, non-maintained road is the only connection to a main road. Good roads, on the other hand, can encourage the development of new subdivisions. Property values are increased by good access, and these homes will be easier to sell and bring better prices when people are ready to relocate. A



Above: This photograph was taken shortly after a road/culvert failure on Silver Salmon Creek. Access to several homes and recreational cabins in the Caribou Hills was cut off for several days before a temporary fix was installed. Shortly after, KWF replaced the culvert and restored the stream. This is a perfect example of what can happen when roads and stream crossings are build sub-standard.

healthy real estate market benefits the area's economy as a whole.

In some cases, the borough must take on the responsibility for bringing roads up to standards and adding them to the maintenance system. This often costs more than building the roads from scratch would, because it involves basically taking the roads apart and doing them over. Substandard roads often contain materials, such as tree stumps and mud, that don't hold up over time and must be removed entirely. Many times roads have been built outside the designated right-of-way, and must be relocated, the old road removed, and the old roadbed restored. Frequently utilities must be moved, and traffic must be rerouted during construction, which may require building a temporary road at additional taxpayer expense.

Although costs range widely, it is almost always more expensive to bring a substandard road up to borough requirements than it is to simply build the road right the first time.

Location, Location, Location

One of the requirements of the recently proposed road ordinances is that roads in new subdivisions be built before the final plat for the subdivision is approved. A subdivision plat is the official subdivision map, drawn to scale, that shows lot lines, rights of way for roads, utility corridors, and so on. Basically, it is a subdivision's blueprint. Once a final plat is approved, land in the subdivision can be offered for sale, and changes are very difficult to make.

Building roads is not cheap, and building all the roads in a subdivision before final plat requires developers to spend a large sum of money up front. Why, then, did the writers of the ordinances put in this requirement? There are two important parts to the answer. The first is insurance: By not allowing the developer to sell any lots until the roads are built to borough standards, the borough is assured that the roads actually get built properly. Landowners benefit because the borough then assumes responsibility for maintaining these roads.

The second reason to require roads to be built before final plat approval is that old real estate saying: location, location, location. Requiring a developer to actually build roads, rather than just designating a location for them on the map, ensures that roads are laid out in a way that makes sense on the actual landscape.

Although responsible developers will take features of the landscape into account when they design their subdivision, not all developers do so. Because the borough officials who approve the subdivision are looking at a map that doesn't show topo-

graphical features, they sometimes approve final plat designs that are a poor fit for the land in question. Road rights-of-way have been platted directly up steep slopes, across wetlands, and in extreme cases even across open bodies of water.

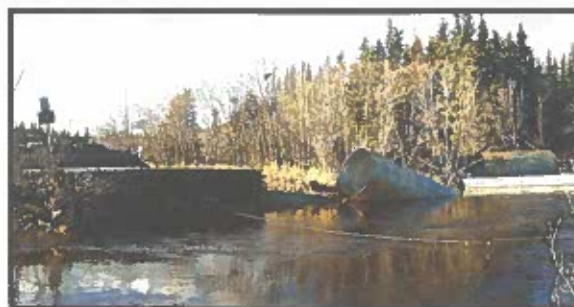
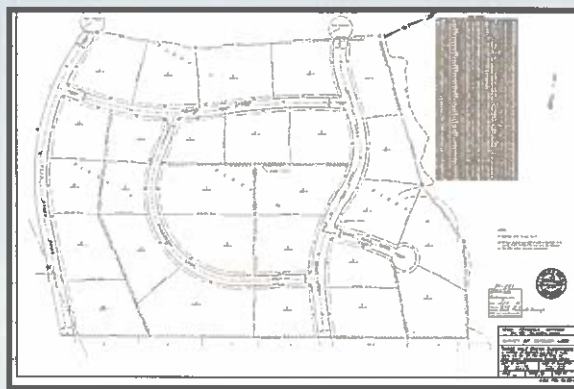
Purchasers of property with poorly designed plats run into problems when they are ready to build their roads. Building across streams and wetlands is difficult and expensive, and requires permits from natural resource management agencies. Building up steep slopes may not be possible at all, at least in the designated right-of-way. The best answer from a practical standpoint is often to relocate the road, but this requires changing the plat, which can be expensive and time-consuming. It also assumes that the property has a good alternative location for the road.

By locating rights-of-way with the landscape in mind, we can minimize the expense to build and maintain roads. At the same time, we can lessen the ecological impact that roads have, by avoiding wetlands, staying away from steep slopes and crossing salmon streams only when necessary.

Photo Top: Here is an image of a plat within the Kenai Peninsula Borough. As you can see, a plat would best be described as a blue print for roads and development.

Photo Middle: KWF intern, Jennifer Toy, surveying a road and culvert crossing near Kenai.

Photo Bottom: Another perfect example of what can happen when a stream crossing is designed poorly.



groups to attend a Kenai Peninsula Borough Assembly meeting and speak about the need to keep pathways open from the ocean to the salmon fry nurseries because bad roads are clearly blocking salmon from getting to where they need to go. Hearing the concerns of nearly 20 well-spoken salmon advocates, the Kenai Peninsula Mayor's Office put forward a very good ordinance that would help reduce the number of poor road crossings of salmon streams.

Ordinance 2008-03 will be up for a public hearing on April 1st. Contained within this ordinance are key provisions that will help fish while also helping people have better, longer lasting roads. This ordinance will provide a defined standard so that roads in the Borough will no longer be designed and constructed with no standards, even if the roads department is not asked to maintain the road. The defining standard is based on the probability of a complete road failure for any given year due to flooding; as currently written, the standard will be for a 1% chance. This is more commonly referred to as designing for a 100-year flood event. This standard is consistent with many other areas of the country, even in places where fish are not nearly as important to the economy. Using this standard can be justified and supported on road economics alone - again what is good for the fish is good for the road and ultimately good for keeping our tax base low!

While we don't know how amendments might change the ordinance, KWF will continue to work with the road builders to refine the language, with an eye to keeping construction costs down. One possible refinement that could be a win-win for everyone is to develop a simple set of guidelines that would allow a developer the option of designing the stream crossing by taking key clues from the stream itself. This approach has been termed a stream simulation design and could be complementary to the 100-year flood design, but might require less engineering and design costs. The general concept here is to make sure the culvert or bridge is 20 to 30% larger than the stream's natural channel. Culverts would need to follow the same slope as the natural channel and be filled with the same size gravel, salt, or mud as naturally occurs in the stream. KWF has typically used this stream simulation approach for the restoration projects we have undertaken.

This is an excellent opportunity for anyone who has followed our work and wants to help ensure healthy watersheds and viable salmon for future generations. You can help by making sure members of the Assembly know that it is important to take steps toward better road standards when it comes to crossing known salmon bearing streams.

Photos at Right: These photos illustrate the devastation floods can cause when they meet a road that has not been built to 100-year flood design.



(Continued from page 1) economy warrant the application of standards to our roads and culverts.

To build a road and culvert across a salmon stream, several standards should be met. Generally, a good culvert will mimic the stream:

- The culvert width should match the average stream width
- The gradient or steepness of the culvert should be consistent with the streambed
- The bottom of the culvert and gravel inside should be flush with the bottom of the stream to avoid waterfalls

In addition, roads should not be built across wetlands because it's expensive, thanks to constant sinking, and because it destroys salmon habitat.

Holding roads and culverts to standards that enforce these basic guidelines will have many benefits for both salmon and people in the area. Good culverts will promote access to habitat for spawning, food foraging, and shelter. Building a road and its culverts up to appropriate standards will ensure that the road does not wash away due to flooding. Rebuilding a road after a flood and replacing culverts so salmon may pass is very expensive, so it is more cost effective to implement standards so things are done right the first time around.

All in all, better road and culvert standards will maintain healthy salmon populations, bring in money to the community, and give fisherfolk improved odds for catching "the big one."

Photo Top Right: This is a shot of a culvert under a driveway. As you can see, it is not up to Borough Standards and is preventing fish from reaching critical habitat.



Steps taken to complete a fish passage project

1. Identify priority sites and secure project funding
2. Measure stream width, depth, and slope
3. Analyze stream sediment
4. Work with engineering firm to design plans that simulate the stream width, depth, and slope
5. Get permits from multiple agencies
6. Hire construction contractors and order pipe or other structure
7. Divert stream around existing culvert
8. Remove old culvert
9. Replace with new culvert as per permits
10. Fill ~20% of the new culvert with gravel/sand mixture similar to the natural stream
11. Close diversion and return water to designed channel in new culvert
12. Stabilize the road slope with rock and native vegetation
13. Monitor the results over time

Thank You! The following people have recently contributed to the Kenai Watershed Forum.

\$1000

Ron and Karen Martinelli

Frederica Billingslea

David & Kathy Wartinbee

Bob McCard & Pam Hays

David & Patricia Peach

Peter & Bernadine Raiskums

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