CURRENTS

Newsletter of the Kenai Watershed Forum Fall 2007

Stormwater Mapping in Kenai

In the past several years, No Name Creek in Kenai has shown a trend of elevated hydrocarbon levels. So where exactly is all that oil and gas coming from? To answer that question, KWF employees have been walking the streets of Kenai to establish where water travels during a rainy day. As one astute observer pointed out, water flows downhill. Indeed, Kenai does not have any pumping stations, so all stormwater travels by gravity to the outlets. However, the stormwater system was implemented in pieces so stormwater sometimes follows more of a hydro-illogical pattern, depending on the construction of roads rather than natural topography.

Where does all the water go?

To find out the path of stormwater and the pollutants it can carry, a GPS is used to determine the coordinates of culverts, manhole covers, storm drain inlets, and outlets. A level and observations on rainy days are utilized to clarify which direction stormwater travels through ditches and gutters that eventually drain into No Name Creek.

Lara Olson, senior at KCHS, has been working with KWF for several weeks on various projects including stormwater mapping.

Once the series of storm drains and gutters have been mapped out we will use this data to build a drainage network in a GIS or Geographic Information System. This digital drainage network will give us a better understanding how the different areas of Kenai are linked to No Name Creek. We will then place monitoring equipment where the surface water connects to the stream and water samples will also be collected. Using the GIS, monitoring equipment, and water quality collection in unison will help narrow down potential sources of hydrocarbons that are being flushed into No Name Creek and harming salmon habitat.

KWF in negotiations with City of Soldotna

KWF and the City of Soldotna have begun discussions regarding the house that sits on city property in Soldotna Creek Park. The city has little use for this building and has approached KWF about moving our offices into it. This is a very exciting opportunity and we will keep you up to date on the progress!

in this issue...

Working together for healthy watersheds on the Kenai Peninsula.

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Spotlight on KWF Staff Dan Pascucci

What a fantastic year for the KWF education team! Almost 9,000 student contact days were logged last school year, including the Adopt-A-Stream program, new watershed education activities, creek clean-ups, storm drain stenciling, first successful "River Week", and much more. There is no doubt that this was all possible because of the teaching talent and enthusiasm of our very own Dan Pascucci!

We were fortunate enough to bring Dan on as an education specialist last year. Since then Dan has inspired students across the Kenai Peninsula.

Dan grew up in New Hampshire and received a B.S. degree from Boston University. Shortly after graduation, Dan migrated north to Alaska and landed on the Kenai Peninsula. For several years following, Dan ran the Adopt-A-Stream program for the US Fish & Wildlife Service at several local schools. Dan continued his unique and energetic teaching style as one of the lead naturalists at the nationally renowned San Mateo Outdoor Education program in California. Last summer and again this summer, Dan worked as a naturalist for the Center for Alaskan Coastal Studies in Peterson Bay across from Homer.

In addition to Dan's magnificent presence in front of the students, he takes his talents to the stage. You might have seen him perform with his guitar at Veronica's, Already Read, and even at the folk music festival in Juneau.

We thank Dan for all his good work and look forward to another great year!

Student Volunteer Joins KWF

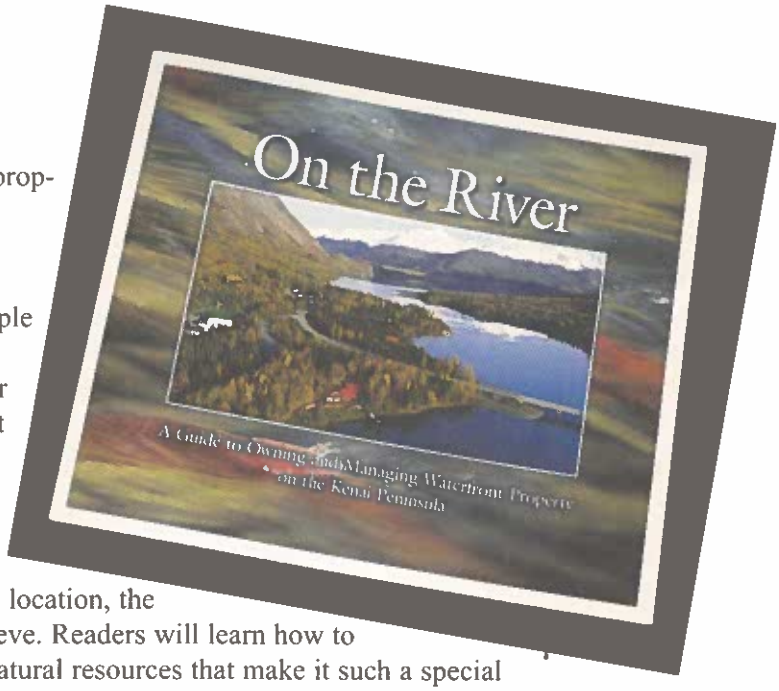
Bethany McMilin has been working with us since May as a student volunteer. A number of family friends and her parents' co-workers told her about KWF and encouraged her to contact us. The rest is history; Bethany began volunteering immediately. For the remainder of the school year, all the way through summer, Bethany volunteered twice a week for about 2 hours. Some weeks she worked longer hours, other times not as much, depending on what was happening at the times. Bethany has worked on everything from membership mailings to field-testing to data sorting and compiling - and much more.

Since school has started, we see Bethany every other week for about 3 hours. Now in her senior year at Skyview High School, Bethany plans to attend the University of Alaska Fairbanks to study Wildlife Biology after graduation.

We enjoy Bethany's enthusiasm and eagerness to learn. She has been a delight in the office and we hope she'll stick around for many more months.

Thank you, Bethany!

New Book Available at Kenai River center



On the River, a new guide to owning and managing waterfront property is available from the Kenai River Center.

The Kenai River Center and the Kenai Watershed Forum have teamed up to publish a new book developed specifically for people who own, or are considering purchasing, waterfront property on the Kenai Peninsula. *On the River* addresses the issues particular to life on the Kenai Peninsula - everything from life on the coast to protecting riverbanks to living with Alaska's wildlife.

The full-color book provides an introduction to waterfront property management. It guides property owners through the basics of developing a plan for their property, taking into consideration location, the planned level of use and the goals property owners hope to achieve. Readers will learn how to manage their property to protect both their investment and the natural resources that make it such a special place.

The book is divided into three sections. "The Nature of Water" describes aquatic systems on the Kenai Peninsula and how they function. "Protecting Your Investment" guides property owners through the process of selecting, developing and protecting their property. "Laws That Property Owners Should Know" explains some of the most common property laws and property rights that landowners deal with. The book is also full of color photographs and illustrations, all of them Kenai-specific.

"We were aware of a number of books like this, but none of them were written for life in Alaska," said John Czarnezki, one of the book's authors. "The Kenai Peninsula is a unique place, and it deserves its own book."

The Kenai River Center has other items available as well. A 26-minute DVD provides a general introduction to waterfront living, and a CD-ROM explains common riverbank protection and restoration methods.

On the River, the DVD and the CD-ROM are available free of charge to river, lake and coastal property owners and others who would like to learn more about living responsibly along the waters of the Kenai Peninsula. To request a copy, call the Kenai River Center at (907) 260-4882 or visit their website at www.kenairivercenter.org.

KWF Holiday Open House

Wednesday, December 12
KWF Office in the Blazy Mall
5:00pm - 7:00pm

The KWF Board of Directors would like to invite you to join us for a casual celebration of past accomplishments and exciting projects ahead in the New Year. Please stop by and enjoy a cookie and cider with us, there will be plenty of goodies. This is open to all and we look forward to seeing you. Please call Josselyn if you have any questions or need further directions (907) 260-5449.

good cheer • holiday cookies • warm apple cider • great company

Four Restorations near Swanson River
Mink Creek, Dog

Even though our field season is nearing an end, we've still managed to squeeze in four restoration projects near Swanson River Road. We're replacing perched culverts on Mink Creek, Doghouse Creek, and Merganser Creek. Additionally, we're trying a "new-to-us" technique using step pools to fix a perch on Breeze Creek. Several of the restoration projects were undertaken and supported by our partnerships with the **AK Department of Fish & Game**, **Kenai Peninsula Economic Development District**, **U.S. Fish and Wildlife Service**, **Chevron**, and **Peak Oilfield Service Company**.

Mink Creek – This culvert had a waterfall or perch of over 7 inches and served as a barrier to juvenile salmon trying to reach habitat upstream. Additionally, the culvert was too narrow so the stream was backing up into an unnatural sediment-filled wetland. To fix this barrier, we installed a culvert four times as large as the original and placed the new culvert at a lower elevation to eliminate the perch.

Far left: Culvert looking upstream before restoration

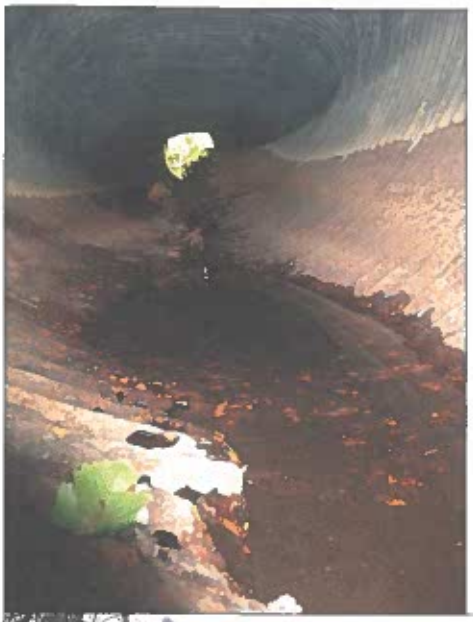
Left: New culvert in place after first snowfall of the season

Breeze Creek – At this crossing, we tried a new technique to fix a perch of 11 inches. Since juvenile salmon can only jump around 4 inches high, we created a series of smaller perches with rocks in the streambed. We imitated the natural steps and pools of the creek by placing small boulders, cobbles, and sand in the creek bed to create something like widely spaced stairs up to the culvert.

Typically, a culvert restoration involves hiring a construction company to remove and replace the culvert with heavy equipment, closing the road, and a significant amount of funding. However, with elbow grease from Dean, Mike, and Mac, help from Peak Oilfield Services and Chevron, we were able to significantly decrease the perch in a single day without closing the road or spending $25K-$30K. The real test of this new technique will be whether or not our "rock stairs" hold up during a flooding event. However, if the step pools are successful, this type of restoration will allow us to fix perches at crossings of major highways where costs and road closures have previously been prohibitive.

Far left: Putting the finishing touches on the step pools
Left: Previous perch at Breeze Creek

Road
ouse Creek, Breeze Creek and Merganser Creek



Doghouse Creek

– The two culverts on Doghouse Creek had major structural problems. They were severely rusted, one was completely collapsed, and water was running underneath rather than through them. Since the stream was running underneath the culverts, juvenile salmon may have been able to get by; however, the probability of adults making it through an almost dry culvert was very low. In fact, nearly 400 adult salmon were observed spawning in Doghouse Creek in 1988, but none have been observed more recently. This crossing was different from our typical restoration projects because we normally fix culverts to allow for juvenile salmon passage, but this time we focused on improving access to adult spawning habitat.

Above left: Taken looking upstream in the old culvert. **Below left:** Doghouse restoration in progress **Below right:** Completed restoration looking upstream

Merganser Creek

– The culvert at this crossing had a slope of over 4% and a perch of nearly 1 foot, both of which impede juvenile salmon access to upstream areas. Now complete, Little Merganser Lake will provide excellent habitat for sockeye, and the additional length of stream bed will contribute to rearing areas for juvenile coho.

Above: As you can see, there was nearly a 1 foot perch below the culvert.
Right: A much larger culvert was placed properly in the streambed to allow fish to pass.

State Anadromous Stream Catalog Clean-up

The State of Alaska's Department of Fish and Game maintains a database called the Fish Distribution Database (http://www.sf.adfg.state.ak.us/SARR/FishDistrib/anadcat.cfm) that contains all of the streams in the state found to support salmon spawning, rearing, and migration. They use this information to determine which waterbodies are protected by state law when making permitting and regulation decisions.

This information is stored in a GIS or a Geographic Information System, which digitally links geographic features with tabular information. This database is represented as a stream layer that exists within a GIS. The actual positions of many of the streams represented in this database are inaccurate because early data were available only at a coarse scale. Better tools now exist to help us correct the positions of these streams, so KWF is adding detail to the data to help protect more salmon habitat.

Some very good GIS data now exist for the Kenai Peninsula. Some of these data sets include high resolution satellite imagery that displays images on the ground as small as a person, LiDAR digital elevation data that give us the elevation of every 3 square-foot surface on the ground and clearly depict stream channels, and recently mapped wetlands. We analyze these data in the office to determine where the streams most likely flow. We then use GPS, image interpretation, and observations in the field to verify and more accurately map the stream positions, especially where crossings like bridges and culverts occur.

KWF is using this advanced technology to move the lines in the GIS that depict streams to their accurate locations. Correcting the stream positions in the area shown on the map above resulted in identifying 12 new crossings, many of which were barriers to salmon in this area alone! We concluded that most of these crossings were bad since adult pinks were abundant on the downstream side and nowhere to be found on the upstream side. By correcting the positions of these streams, we are not only significantly protecting salmon habitat through regulatory protection, but we are also identifying and surveying more stream crossings that can and often do pose potential barriers to salmon migration.

In addition to the GIS, another technique is being used to clean up the catalog... fish mapping. While most major streams are already listed in the catalog, in many instances, smaller tributaries or headwaters have not yet been identified as salmon streams. In the uncataloged streams, we place minnow traps filled with delicious, treated salmon eggs to attract juvenile fish. After four to six hours, we examine and photograph our catch of dolly varden, coho, rainbow trout, chinook, and/or sockeye, and then the fish are released. Back in the office, we use the GIS to trace the path of the new salmon stream from our trap location downstream to the next cataloged water body, and these data are submitted to the Department of Fish and Game for addition to the Fish Distribution Database.

CULVERT 911
Leaf Creek

What: Leaf Creek Restoration

Where: 150°55'9.55"W 60°50'30.86"N, North of Captain Cook State Park

Why: To open 3+ miles of salmon habitat previously blocked

When: March/April 2007

Cost: $140,000+

Who: Kenai Watershed Forum, US Fish & Wildlife Service, Natural Resource Conservation Service, McLane Consulting, ConocoPhillips, Kenai Peninsula Borough, Coastal America Foundation, and L&J Enterprises Excavating

Status: COMPLETE

North of Nikiski, one hits the end of the road at Captain Cook State Park. Two remote subdivisions without road service are reached by ATVs traveling along a shared pipeline and right-of-way easement. This access route crosses several salmon bearing streams, the first of which is Leaf Creek, about 4 miles out. A flattened culvert completely blocked the stream during low water. In the early fall of 2005, several hundred adult salmon returning to spawn were blocked by the culvert. KWF removed the culvert and replaced it with a bridge earlier this spring.

The two photographs on the top left were taken before the restoration began. As you can see, the culvert was smashed, preventing fish passage. The next photo down is the culvert that was removed.

The photos below are of the new bridge being put in place and the completed project. This year salmon won't have this barrier and will be able to continue upstream to spawn!

RESTORATION COMPLETE

KWF Membership

As of 11/7/07

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

$500
Kenaitze Indian Tribe, I.R.A.
Dennis Fox

$300
Lance Trasky

$150
Tom Seggerman

$100 River Steward
Chris Degernes & Bill Shuster
Jay Parker & Peggie Bensch
Ed Berg
Kebra & Curt Shuy
Ken & Judy Marlow
Mayor Dave Carey
Mr. & Mrs. Sheldon Ruffner
Larry & Carol Ford
Russell & Irma Peterson
Dennis & Kathryn Gease
Evertt & Kristy McCullough
Glenda & John Landua
Bill & Cheryl Stockwell
Russell Peterson
Warren & Betty Hoflich
Peter & Erin Micciche

$75
William & Lois Nelson

$50 Chinook
Tom Martin
Joe & Billie Hardy
Sharon Di Waisanen
Jerrold Matthews
Betty & Chuck Obendorf
ACE Fishing Adventures
Marcus & Meg Mueller
Bob Shavelson
Ricky Gease & Bunny Swan
Gease
Peter & Bernadine Raiskums
Byron McCord
Kurt & Barbara Olson
Mike & Judy Blair
Dominique Collet
Norman Baily
Dorothy Gray
Barbara Jewell
Mike & Susie Howard
Bob McCard
Ole Andersson & Jane Handy
Kimberly & Avery Hansen
Ancel Johnson
The Morton Family

$35
Matt Gray & Ami Wright

$25 Sockeye
George McDowell
Jim Bennett
Jean A. Romig
Robin West
Mary Price
Marge Hays
Ike Morgan
Ron Gravenhorst
Benjamin Jackinsky
Jim Richardson
Mark Luttrell
Robin Veluce-Tanguy
Carol Griswold
Steve Ucha & Carol Copper
Kathryn Zerbe
Catherine Olsen
Don & Trish Roderick

$20 Humpy
Jan Yaeger
Connie & Ken Tarbox

$10 Smolt
Gerald Brookman
Jessica Moore
Rick Dukowitz
Joe Moore
Keith Raikam
Craig Phillips
Pat Patterson - Kenai River
Hideway B&B
H.L. Scholten
H. Eastcott
Alfred & Suzanne Launer
Bruce Rife
Jonathan Allen
Lois Vlich
Mika Morton
Lee McKinley

Additional Contributions
Cheri Edwards

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