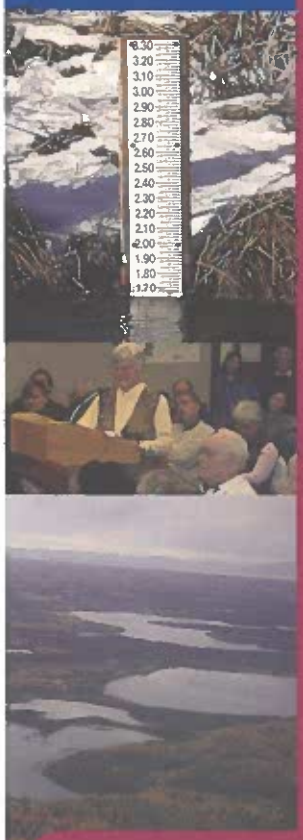
CURRENTS

Newsletter of the Kenai Watershed Forum • Late Fall 2005

Inside this Issue



MAPS and how we use them

Maps used to be simple paper documents, folded or rolled and kept cataloged in library drawers or map shelves. Not anymore! An entirely new category of geography has emerged in the last 20 years, in parallel with computer advances. Geographic Information Systems, or GIS is a relatively new tool used by almost every land management agency and planning department.

What is GIS? The computer keeps track of boundaries, lines and points in the traditional sense of mapping, but the computer makes the map interactive - you can turn a "layer" of information on and off and look for comparisons. For example, we are using our GIS to locate all roads that cross known salmon streams on the Kenai Peninsula. We then turn on a satellite image layer at each of these 330+ intersections and document the crossing type, bridge, or culvert, as relevant.

The above exercise would be relatively easy to do with traditional paper maps, but what we do next illustrates the real power of a GIS. The "layers" also keep track of a wealth of text and numerical data that simply wasn't possible with paper maps. For example, with a few mouse clicks, we know: What kinds of fish are documented to live in a given stream; How many miles of habitat are upstream of a road crossing; How many acres the stream drains, and how many of those are paved versus, how many are wetland; Who owns the road or land within 1 mile of the crossing, and which property owners need the crossing to access their land; Whether the crossing prevents fish migration, and on and on. We ask these types of questions everyday in our work and now we have the ability to answer them.

The number of acres of roads, driveways, houses, gravel pits, utilities and other human structures (our "footprint") needed to support the current population on the Kenai Peninsula all can be extracted from our GIS. This information, combined with our expected population growth, is the basis for the cumulative effects model we will be rolling out next spring (see story below).

Continue on page 4

ALCES Nears Completion

We've been working on the ALCES (Alaska Landscape Cumulative Effects Simulator) model for quite some time now. Creating this customized model specific to the peninsula is coming to completion and we can soon use it to help guide informed planning decisions. The model will be fully operational with results presented to the public in a meeting that KWF will host this spring. At that time we will also train individuals from agencies that signed onto the Memorandum of Understanding that initiated this effort.

The foundation of the model is a vegetation map for the entire peninsula. By layering the "footprints," or manmade features including roads, cities, and seismic lines, over the landcover vegetation map, we are able to define the existing composition of the peninsula. The model uses this information as well as a plethora of variables about population growth, fire return rates, flood event rates, and fishing catch, to name just a few, to provide insights on changes that might occur over the next 50 years.

Data entered into the model were gathered from a combination of GIS (Geographic Information Systems) analysis, input from expert working groups, and literature. We now have an extensive spatial data-

Continue on page 3

CONTACT US

Kenai Watershed Forum
PO Box 2937
Soldotna, AK 99669
(907) 260-5449
(907) 260-5412 - fax
robert@kenaiwatershed.org
www.kenaiwatershed.org

Holiday Open House

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

Please join us for a Holiday Open House. We urge folks to stop by for a visit and enjoy a cookie and refreshments with us. This is just another way of saying thanks for all of the support we've received this past year. 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.

Happy Holidays!

KWF works with Kaleidoscope 3rd Grade

This year as part of the Sponsor A School program KWF is working with Ms. Stroh's and Ms. Boersma's third grade classes at the Kaleidoscope School in Kenai. Once a month we walk the students down to Ch'k'ituk'nu Creek and test the turbidity level. We also tie what the children are learning in other areas into the science discussion. Look for the students' data in the Spring 2006 edition of *Currents*.

Caring for the Kenai ~ just around the corner!

It's that time of year when area students begin thinking about their Caring for the Kenai project! This is the 16th year the contest has been challenging students to invent or create something to better care for the environment on the Kenai Peninsula, or to improve the area's preparedness for a natural disaster. The contest is open to all Kenai Peninsula high school students.

Teaching environmental awareness and fostering stewardship is the key to encouraging the next generation to think of the environment as part of everything it does. The Kenai Watershed Forum is thrilled to be involved with the process. In the past we've helped students develop their ideas into winning entries. Our doors are always open to students who are eager to learn and need advice or assistance with their project.

Student Awards this year range from $1,500 to $150 in cash prizes, $10,000 will be distributed for School Awards, and many area businesses and organizations sponsor special prizes for their favorite entries. Applications can be picked up from our office, your science teacher, or Sikorski Consulting.

Good Luck!!!

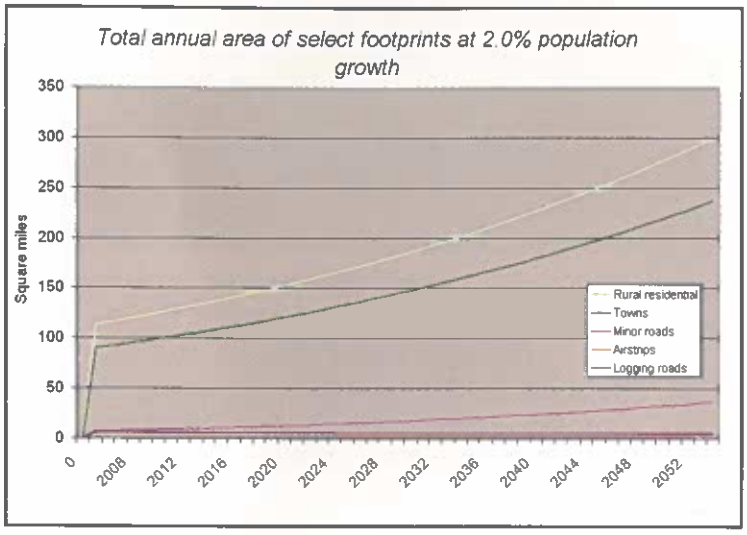
base for the Kenai Peninsula that helps us answer many of the questions in the model. Using GIS we were able to calculate variables such as the number and area of gravel pits, the size and dates of spruce bark beetle kill, the length and area of roads, and the areas eligible for logging based on land ownership, slope angle, and distances from roads and streams.

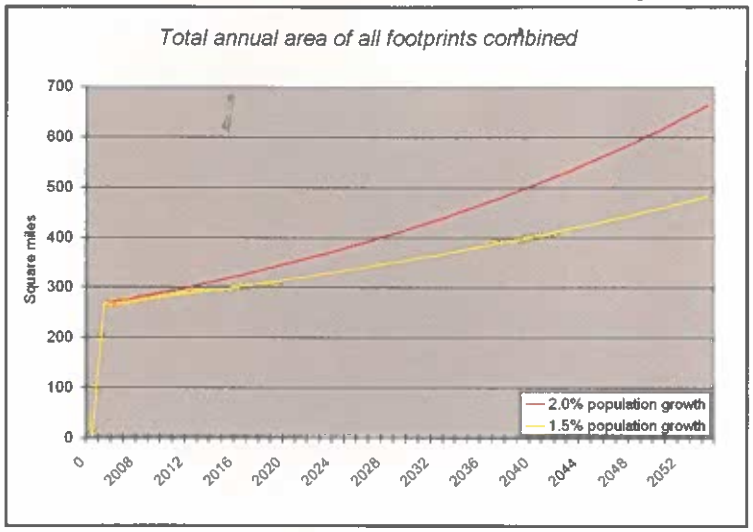
Working groups were formed to answer questions about land uses, natural disturbance, and other uses that play an important role on the peninsula. Collectively these groups include energy, forestry, population, transportation, tourism, fisheries, wildlife, and natural disturbance regimes. Input from experts on hydrology, plants, industry, coastal erosion, and gravel mining was also incorporated.

Finally, data from extensive literature was also used to populate the model. Numerous local, state, and federally funded studies, reports, and online data specific to the peninsula were extremely useful.

Preliminary runs of the model illustrate the probable increases in land use. For example, the rural residential footprint - parcels outside city limits classified as residential - currently comprise 113 square miles of the peninsula. At a 2.0% annual population growth rate, we will have nearly 300 square miles of rural residential footprint in 50 years. Looking at projecting the same rates to all footprints, which currently comprise 267 square miles, would give us a total of 482 square miles at 1.5% growth and 663 square miles at 2.0%

Continue on page 7





Winter Speaker Series

Welcome to the Kenai River Center Winter Speaker Series. This series brings scientists, storytellers, historians and other experts to the Kenai River Center each month for evening talks designed to entertain as well as educate. All of the programs are **FREE** and open to the public. Refreshments will be provided. Please call Jan Yaeger for more information 907-260-4882 ext. 238.

Ancient Voices, Future Vision
Jan. 10, 2005 • 7 pm
Bunny Swan Gease

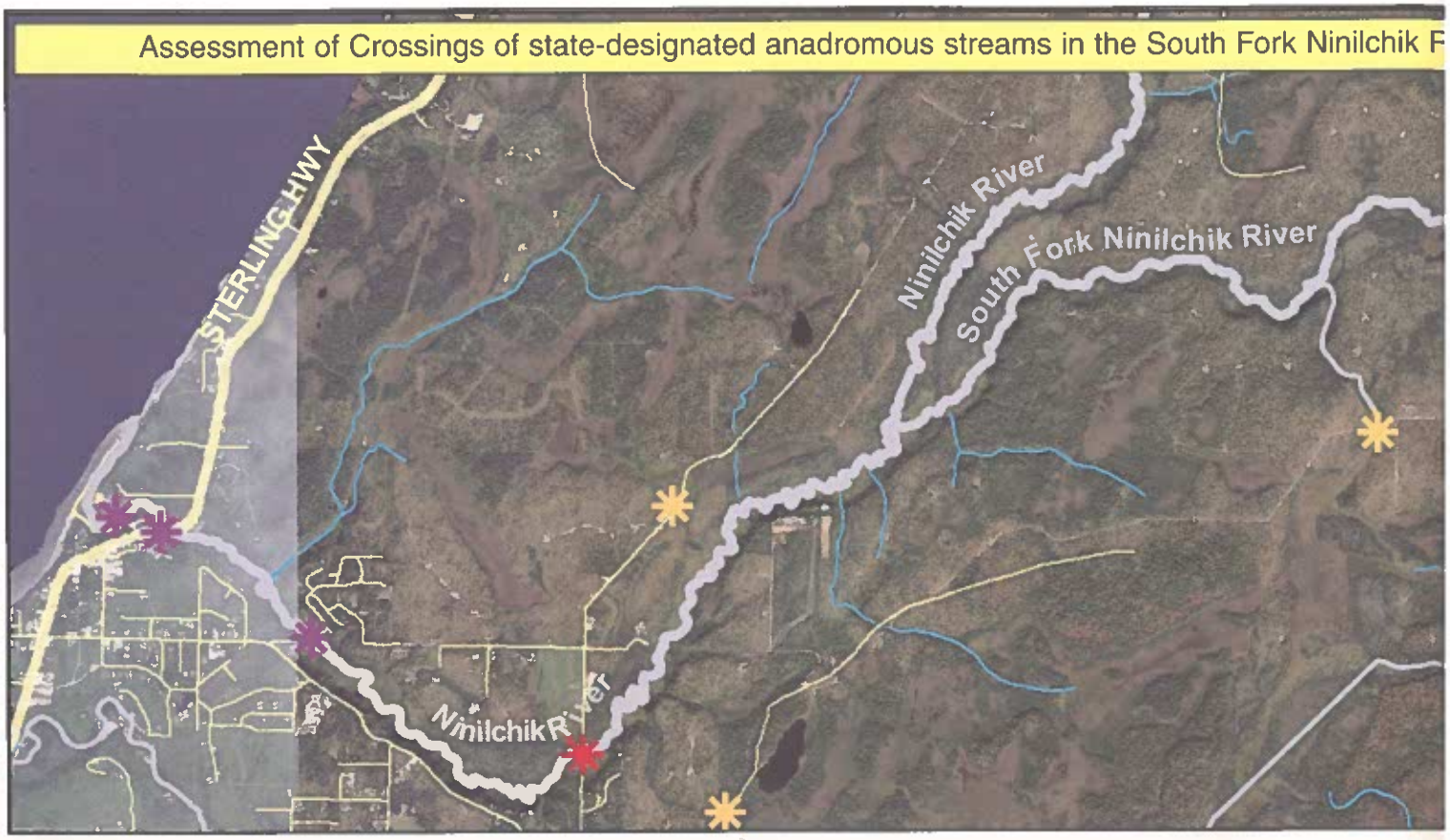
It's dark and snowy outside – what better time for an evening of stories and music at the Kenai River Center? Bunny Swan Gease offers some timeless tales for a winter evening, along with songs and Kenaitze history. Pour yourself a cup of cider and sit back for an enjoyable evening learning more about the culture of the Dena'ina Athabaskan people.

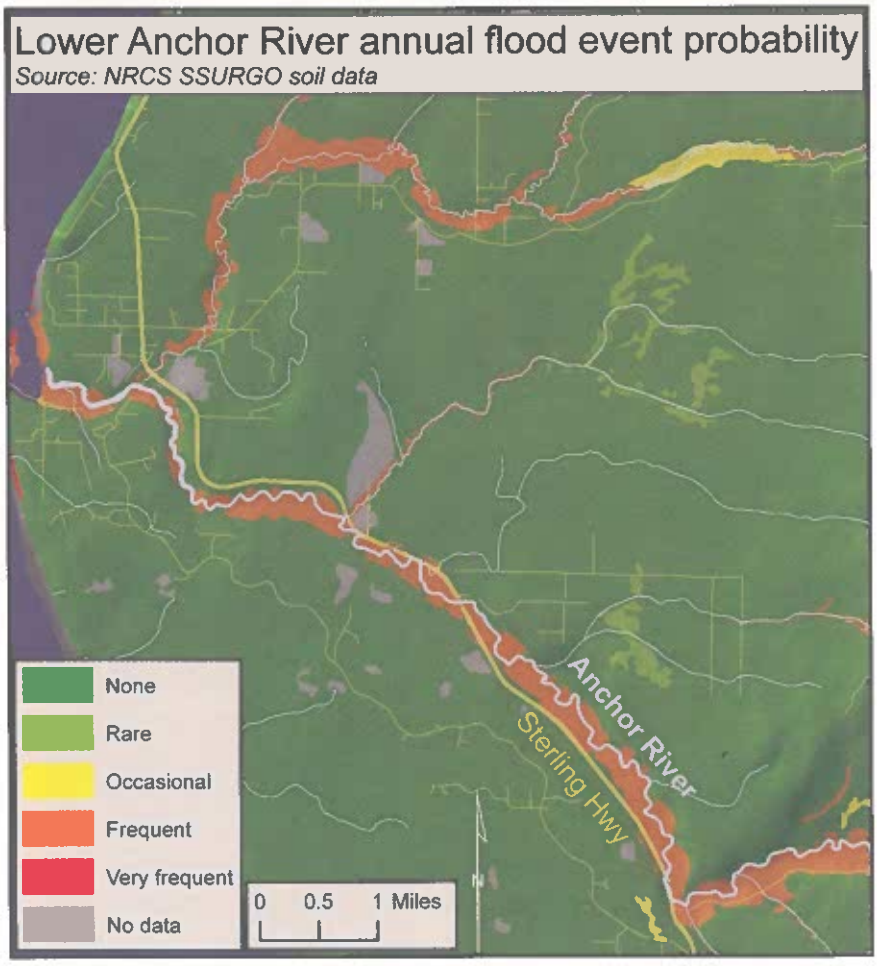
History of the Iditarod
Feb. 7, 2006 • 7 pm
Dan Seavey and Lee Poleske

Alaska's premier sporting event, the Iditarod, begins in less than a month. Several of Alaska's top mushers hail from the Kenai Peninsula, and the historic Iditarod Trail starts near the water's edge in Seward. Come learn more about the history of both the trail and the race from two of the men who know them best. As a bonus, we'll hear some first-hand mushing tales from the race's earliest years.

Nellie Juan Kayak Adventures
March 14, 2006 • 7 pm
Robert Ruffner

Come visit the high, remote reaches of the Kenai Peninsula. Robert Ruffner will take us on a photographic journey from Nellie Juan Lake down into Prince William Sound via Class Five rapids and some spectacular scenery few have seen.

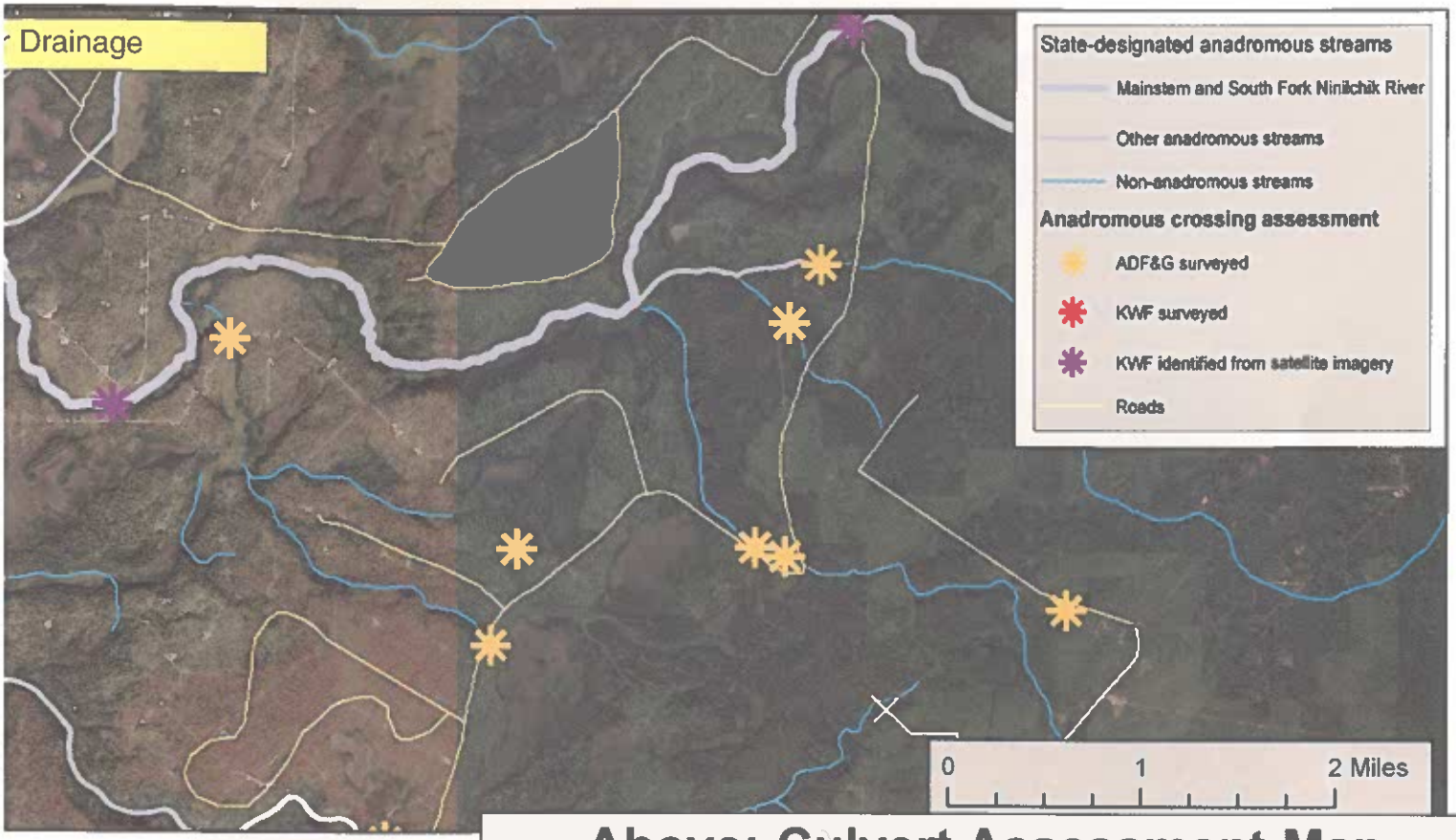




Continued from page 1

GIS also allows us to create new map "layers" to answer questions. One example we are currently working on is an Anchor River study to better understand how activity on the floodplain, combined with the floods from 2002, have changed the stream's channel, and how these changes may affect habitat. We scanned photographs into our GIS from the 1950s before the Sterling Highway was constructed and compared river position to photos from the 70s, 80s, 90s and 2003 to see how the channel has migrated and adjusted to flooding events. It has moved around a fair amount. We found no system wide trends to the river as a whole, but we documented several spots where the river is substantially altered in response to roads and a gravel pit on its floodplain. This work should be finished in a few months.

The new wetlands map available on the Kenai Peninsula Borough's website is an example of creating a map that previously didn't exist. If you have access to the internet, it is also your chance to try a GIS system. Follow the links in the Try it box and navigate to your home and see what is near you.



Above: Culvert Assessment Map

KWF has evaluated 43 crossings.
Preliminary evaluations indicate:
11 crossings were culverts:
1 (9.1%) is adequate
2 (18.2%) are marginal
8 (72.7%) are poor

ADF&G has evaluated 157 crossings.
Preliminary evaluations indicate:
13 (8.3 %) are adequate
34 (21.7%) are marginal
110 (70.0%) are poor

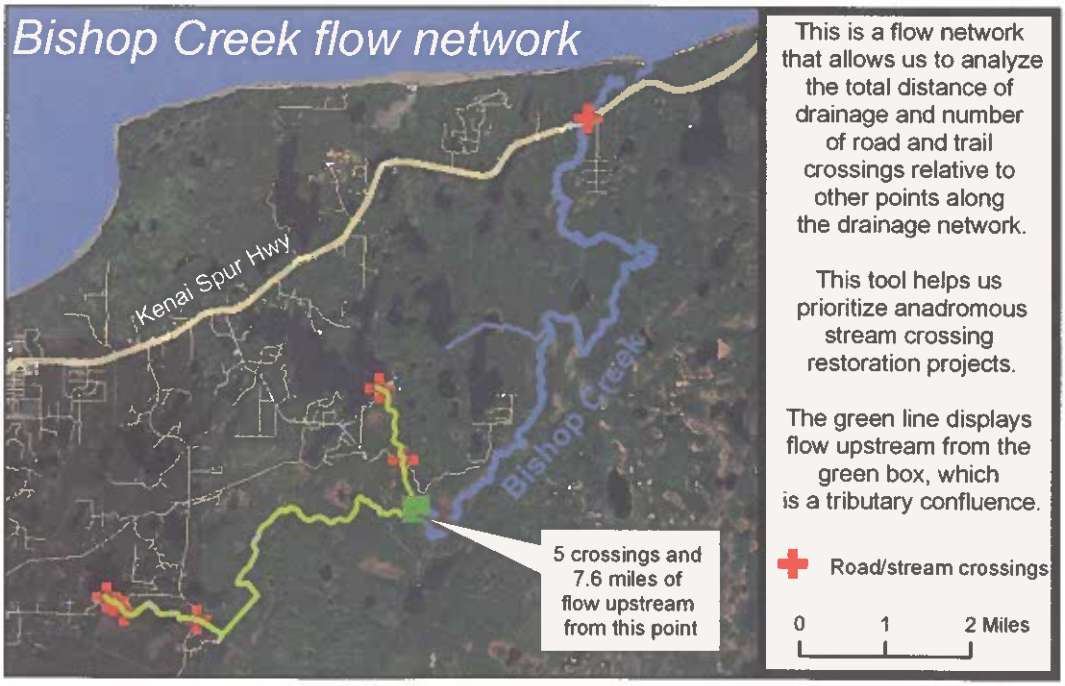
KWF has identified an additional 175 crossings visible on 2003 satellite imagery that need assessment.

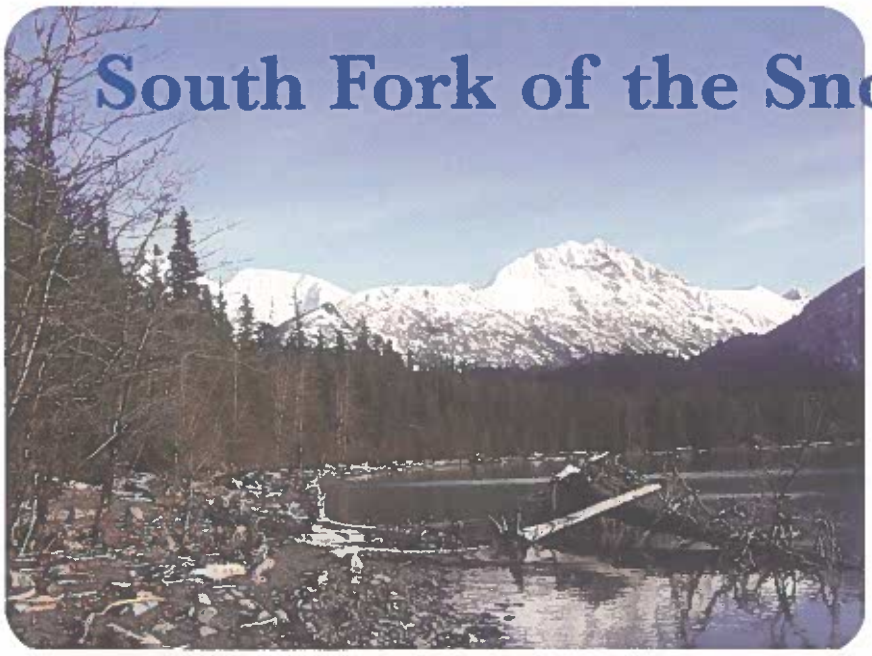
Try it:

The two links below take you to interactive GIS systems. We encourage you to give it a try. Find your own backyard and you will very quickly see how powerful these tools are.

http://www.borough.kenai.ak.us/gisdept/IMS/disclaimer.htm
This will take you to the KPB page where you can access satellite photos, property boundaries, ownership, voter districts, wetlands, and much more.

http://www.sf.adfg.state.ak.us/SARR/FishDistrib/FDD_ims.cfm
From this link, you can find the nearest salmon stream. Chances are salmon live closer to you than you think. Many nameless small streams have juvenile fish in them.





South Fork of the Snow River in Fall

by Jerry Dixon

"The South Fork of the Snow is a priceless heritage. It should be treated as such."

Looking down at the gorge near the headwaters of the South Fork of the Snow River put my heart in my throat. I banked the Cessna 182 that I'm flying with Jim Craig over the glacier that is the headwaters of the South Fork and the Nellie Juan drainage. After tumbling out of the glacier, the stream heads west and drops into a narrow gorge of waterfalls and logjams. The South Fork, a beautiful salmon stream, flows into the North Fork of the Snow River 15 miles north of Seward to form the headwaters of the Kenai River. All around, awesome glacier-draped peaks rise from the valley floor with names like Tiehacker, Eva and Goat Mountain.

The Iditarod trail runs several miles up the South Fork before turning south to cross a pass and drop down near Bear Lake near Seward. During the winter, the water in the stream is as clear as gin. What a wonderful place to ski. Seward High School used to hold ski races here. But in late summer, the river was running medium-high and opaque with glacier silt. Record temperatures kept the river high and the glaciers retreating most of the summer. For a month, I had been flying overhead, trying to gauge the best time to run this river. I have found no record of the South Fork being run before.

On August 23, 1968, a boy from Seward was lost in the lower South Fork after the raft he was on with his father and brother hit a sweeper. Jimmy Dec was knocked off the raft and drowned. Our journey down the South Fork is dedicated to him.

Finally, the time seems right. On September 9, 2005, Rich Taylor and I hike up the river carrying our Alpacka rafts, the same rafts I use in the Alaska Mountain Wilderness Classic. Rich is a river guide who worked in Jackson Hole and ran the Grand Canyon with friends and me last summer.

Brown bear tracks are everywhere. The bears have visited one section of riverbank enough to pound down a trail. Just two days ago we watched a brown bear and cub cross the Harding Ice Field to Skilak Glacier. Four brown bears were shot in the Seward area this past summer. We make lots of noise as we ford the river and push through the alders.

We hike up to within a mile of where the river narrows and becomes class III. Rich is young and near the wild heart of life; he wants to push higher. With a couple of shoulder dislocations fresh in my body's memory, I tell Rich that running the South Fork will be exciting enough with logs across the river and whole trees in the stream. I don't have the shoulder strength right now to do the more difficult sections up higher.

It is a magnificent float. Spectacular peaks like Sheep Mountain rise from the Snow River plain, reminding me that several years ago I traversed Sheep Mountain with friends and was surprised to find a glacier straddling the summit like a saddle. The climbing log on top showed just four summit parties in forty years. What magnificent, wild country so close to a road.

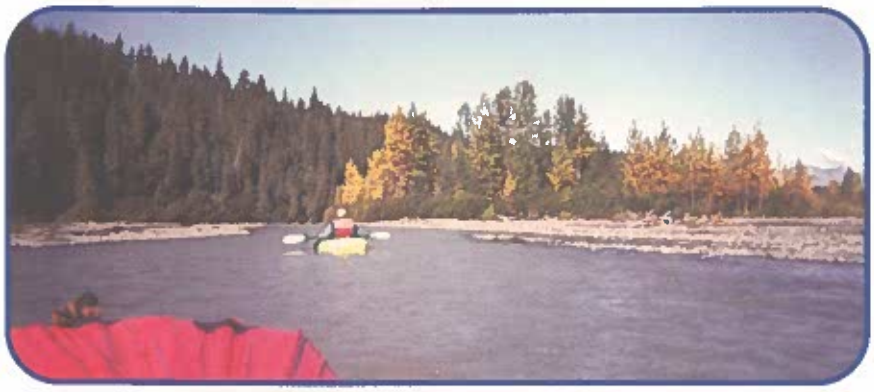
Coming around one river bend, we paddle vigorously to avoid what looks like a submerged tree. It turns out to be a

Abandoned car in Snow River

large metal bar – a piece of junk someone left behind. How sad. "Monster Truck" tire tracks crisscross the river. At the Mile 15 take-out along the Seward Highway, people have camped and partied and left their garbage. Farther downstream, junked cars with bull's-eyes painted on them form a makeshift rifle range. I can't help but imagine a stray bullet hitting a vehicle passing on the Seward Highway.

We finish the float accompanied by bald eagles soaring above and ubiquitous moose tracks. Unfortunately, I am reminded of the Mile 15 eyesore some time after our float. A recent jokulhaup – a burst of water released suddenly from beneath a glacier – washed one ton of garbage, including propane tanks, smashed TV sets, and hundreds of cans and bottles, into the Snow River and beautiful Kenai Lake. A group of Seward volunteers, who had spent two weekends picking up two tons of trash on the Resurrection River, had been scheduled to clean up this site. Now there is very little to clean. The garbage is in the Snow River, headed for the Kenai, one of the world's great salmon streams.

Old propane tank used as a shooting target in Snow River

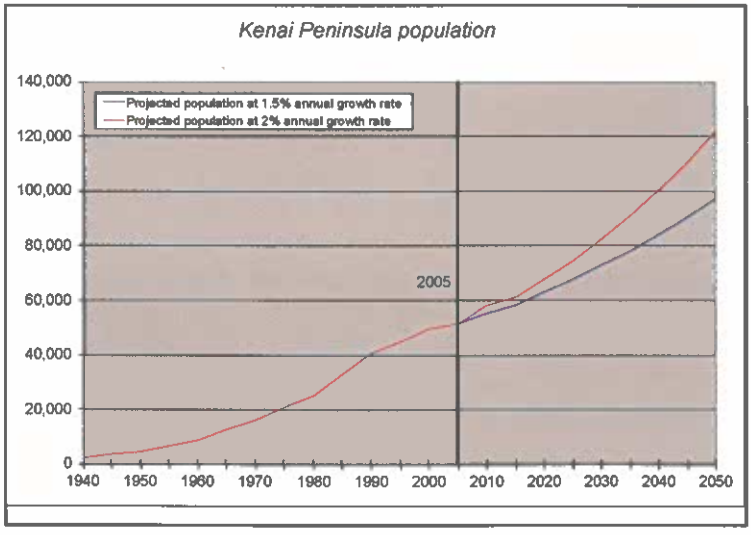


The South Fork of the Snow is a priceless heritage. It should be treated as such.

---

growth. Government expenditures to support an anticipated preferential growth in rural residential areas may have implications for future taxes that merit consideration. Since the entire Kenai Peninsula is nearly 9,400 square miles, the footprint could easily grow from its current 1.2% of the total area to 7.1% in the next 50 years!

ALCES also tracks human population. Historic population data from the US Census Bureau show population growth increasing at an average 6.6% annually from 2,497 people in 1940 to 49,498 people in 2000. At a projected annual increase of 2.0% from 2005, there could be 122,419 people on the peninsula by 2050. Imagine the peninsula with 2.5 times as many people as today. Keep in mind that roughly 86% of the peninsula is owned by state and federal entities. Things are going to be different, and this model gives us insights into how different, and how fast this change may occur.



Determining growth of footprints and population are just a few relatively simple outputs of ALCES. In addition to tracking footprints it is simultaneously tracking forest composition, which is important in determining the amount of moose and brown bear habitat, the magnitude and severity of future spruce bark beetle and wildfire outbreaks, and even the area and volume of forests eligible for logging. Incorporating changes in precipitation and temperature while footprints simultaneously increase allows us to foresee trends in diminishing coho salmon habitat, the expansion of invasive species, and changes in the amount of wetlands. Overall a better understanding of what the peninsula may look like will help us make better planning choices for the future. ALCES is another tool to help us with that endeavor.

KWF Membership

As of 11/17/2005

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

Benefactor - $500
Catherine Cassidy & Erik Huebsch
Great Alaska Adventure Lodge

River Protector - $250
Sanne Berrig

River Steward - $100
Peter & Bernadine Raiskums
Barb & Will Burke
Advantage Angling, Inc.
Chris Degernes & Bill Shuster
John Demske
Dominique Collet
Kenai CVB & Visitor's Center
Robert & Barb Valerious
Brenda Stoops & Paul Dale
Theo Lexmond & Janette Cadieux
Anglers Lodge
Curt Wilcox & Laura Sievert
Liz Schmidt & Bob Correia
Marion Nelson
David & Kathy Wartinbee
Dave Carey
Calvin & Jane Fair
Gina Whittenmore
Hardy's Alaskan Adventures
Todd Boling
Mike Navarre
Loretta Flanders & Dick Hahn
Bill Stockwell
Robert & Tara Ruffner
Ryan & Lauri Kapp

Chinook - $50
Benjamin Jackinsky
Marcus & Meg Mueller
Mary Bozza
Russ Maddox
Sue Mauger
Byron McCord
Ginny Litchfield
Pamela Houston
Jerry & Kathy Herring
Will Raemaeker
Tom & Lyn Hodel
Bill Nelson
Bill & Becky Hutchinson
Avery & Kimberly Hansen
Nathan Baily
Mike & Susie Howard
Mr. & Mrs. Sheldon Ruffner
Jim Clark
Gary & Colleen Sonnevil

Sockeye - $25
Pete Sprague
Bill & Rosie Reeder
Austin & Jean Terrell
Mark Luttrell
George McDowell
Ron Gravenhorst
Jean A. Romig
Glenn & Laraine Hanson
Paul Moses
Donna Engel-Woolen
Penelope Maize
Jim Fisher
Gretchen Graeff
Jerry Dixon
Kurt & Barbara Olson
Claire & John LeClair
In memory of Sue Wilson
Jeff King
Jim Bennett
Robin & Shannon West

Smolt - $10
Gerald Brookman
Harry Scholten

Additional Contributions
Cheri Edwards

Kenai Watershed Forum
PO Box 2937
Soldotna, AK 99669

Nonprofit Org.
US Postage
PAID
Anchorage, AK
Permit #537

Working together for healthy watersheds on the Kenai Peninsula.