



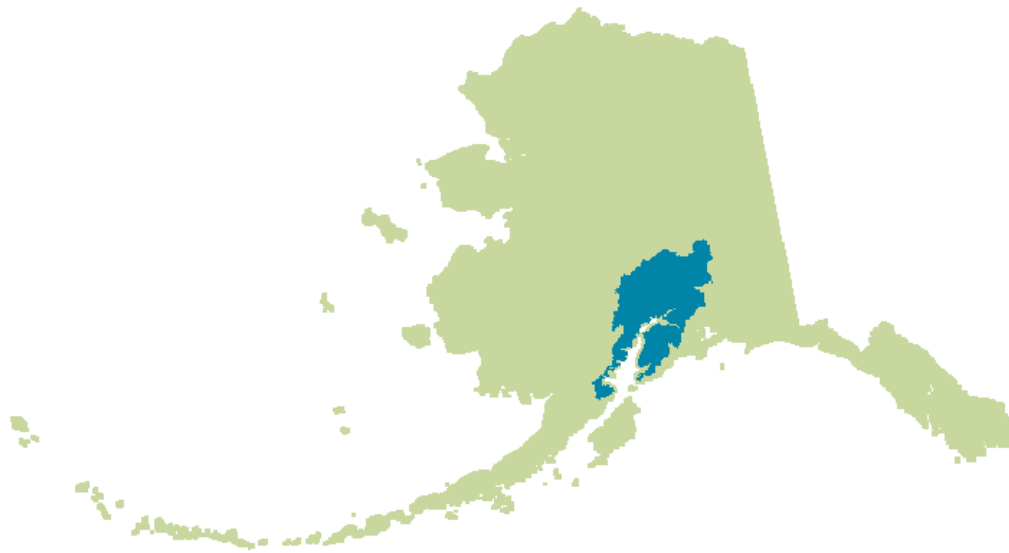
# Southern Kenai Peninsula BEACH Monitoring FY 2012 Final Report



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Cook Inletkeeper is a community-based nonprofit organization that combines advocacy, outreach, and science toward its mission to protect Alaska's Cook Inlet watershed and the life it sustains.

Report prepared by:

SKP BEACH Program

FY12 Final Report

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Rachel Lord  
Outreach & Monitoring Coordinator  
Cook Inletkeeper  
3734 Ben Walters Ln. Suite 201  
Homer, AK 99603  
(907) 235-4068  
[www.inletkeeper.org](http://www.inletkeeper.org)

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*Beaches on the Southern Kenai Peninsula (SKP) are highly valued for the abundant marine life and beautiful views. They are utilized year-round by visitors and residents a host of recreational activities.*

# INTRODUCTION

Beaches are a valuable recreational resource in Alaska. They provide access to coastal recreation waters for swimming, surfing, fishing, playing, and many other water-contact activities. Alaskans do not limit their recreational activities to sandy beaches - gravelly, rocky, or mud-covered beaches are commonly used for recreation. Even in Alaska, recreational activities involving water contact could make them sick if the water is contaminated with human or animal waste (e.g., sewage or other sources of fecal pollution).

On the Southern Kenai Peninsula (SKP), coastal beaches are a major tourist attraction as well as an integral resource for local residents. Beaches around Homer, Alaska are increasingly popular



Figure 1. Kitesurfers enjoy the afternoon wind at Mariner Park in Homer, May 2011.

destinations for sports such as surfing, kitesurfing, and Stand Up Paddleboarding (see Figure 2). Kitefest 2011 was held over Memorial Day weekend. This annual kitesurfing festival, held on the beach and in the water at Mariner Park, drew over 100 people last year. Throughout the year, visitors and local residents enjoy shore-based fishing, tidepooling, walking, bird-watching, horseback riding, and running their

dogs along Homer's beaches. In and around Anchor Point, beaches are used as launch points for boats entering Cook Inlet, and many beaches serve as shellfish harvest areas.

Bacterial contamination of coastal waters can originate from sources such as shoreline development, wastewater collection and treatment facilities, septic tanks, urban and stormwater runoff, disposal of human waste from boats, commercial and domestic animals and natural animal sources such as wildlife. Pathogenic bacteria in contaminated water can cause people who are exposed to it to experience stomach aches, diarrhea, and eye or skin infections. People who swim and recreate in waters contaminated with such bacterial pollution are at an increased risk of becoming ill. Water quality monitoring at beaches near potential sources of fecal contamination and where beaches are recreationally used can reveal conditions that indicate an elevated risk of becoming ill from water contact.

## BEACH: Nationwide & Alaska

Authorized by the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000, the Environmental Protection Agency (EPA) provides grant funding nationwide to eligible states, tribes, and territories to establish monitoring and notification programs for fecal contamination at recreational beaches. According to the National Resources Defense Council's report *Testing the Waters* (published in 2011), in 2010 the EPA allocated \$9.8 million for BEACH monitoring in coastal and Great Lakes states around the country. There was a 29% increase in the number of beach closures and advisories from 2009 – the second-highest number of closures or advisories in the 21 years of the NRCD's reporting. The Alaska Department of Environmental Conservation (ADEC) administers the



Figure 2. Stand Up Paddleboarding is an increasingly popular in-water activity at Bishop's Beach. Picture by Surf Alaska.

BEACH program in Alaska, and sampling is done by ADEC and by Grantees under the Alaska Clean Water Action (ACWA) grant program around the state.

During 2011 in Alaska, there were 28 exceedences of water quality standards. One exceedence occurred in Haines at Portage Cove, while the remaining were from beaches on the Kenai River. Sampled beaches on the Kenai River include North Kenai Beach, South Kenai Beach, and the Warren Ames Bridge. No exceedences came from the Warren Ames Bridge sampling site. All sampling events on the Kenai took place between July 6 and October 2, 2011. There were 14 days of sampling during this time, during which time 28 exceedences of state and/or federal water quality standards for bacteria were found. There were no exceedences in 2011 from sampled beaches in Homer or Juneau.

### BEACH Monitoring on the Southern Kenai Peninsula

In 2007, the City of Homer and Cook Inletkeeper

partnered with the Alaska Department of Environmental Conservation to develop a local beach monitoring program. The goals of the Homer BEACH Program are to ensure public health and protect beach users from potential exposure to bacterial pathogens. Since 2007, the Homer BEACH Program has received support from the ADEC in the form of training, funding for transporting and analysis of water samples, and staff time for local oversight of the BEACH program. Inletkeeper staff and local volunteers began monitoring beaches in the City of Homer for bacteria on July 22, 2008. Beginning in July 2011, Cook Inletkeeper's BEACH program expanded to include two beaches in the Anchor Point area. From July through August 2011, samples were taken at Bishop's Beach and Whiskey Gulch. Be-

Table 1. Number of sampling events by location since the beginning of sampling through the Homer BEACH Program in Fiscal Year 2009.

SKP BEACH Sampling Location	FY09	FY10	FY11	FY12	Total
Bishop's Beach	0	0	17	16	33
Mariner Park	8	9	16	0	33
Land's End	5	9	16	0	30
Whiskey Gulch	0	0	0	8	8
Anchor Point beach	0	0	0	8	8
<b>Total</b>	<b>13</b>	<b>18</b>	<b>49</b>	<b>32</b>	<b>112</b>

ginning in late-April and running through June, samples were collected at Bishop's Beach and near the mouth of the Anchor River. Samples are taken weekly at these beaches (see BEACH Monitoring Locations, below) from April through August each year. The Fiscal Year (FY) 2012 sampling occurred from July 5 – August 24, 2011 and from April 25 – June 13, 2012. Table 1 shows the number of samples taken each year of Cook Inletkeeper's BEACH Program, through our final sampling event on June 13, 2012.

# METHODS

## SKP BEACH Monitoring Locations

In February 2008, the 'Monitoring Plan for Kachemak Bay DEC-Priority Beaches' was submitted and approved by ADEC. The Homer Spit was the only area included on the list of ADEC Recreational Beaches in the Homer area, and as such the development of Inletkeeper's BEACH monitoring plan was restricted to sampling sites located along the Homer Spit. A sampling schedule was designed to include alternate sampling at Mariner Park (a popular summer camping location and public access point to the beaches along the Spit) and Land's End (just beyond the State Ferry Terminal, the Homer Harbor, the Fish Factory and Auction Block processing plants, and a location where many people fish from shore during the summer months). Starting in FY11, Bish-

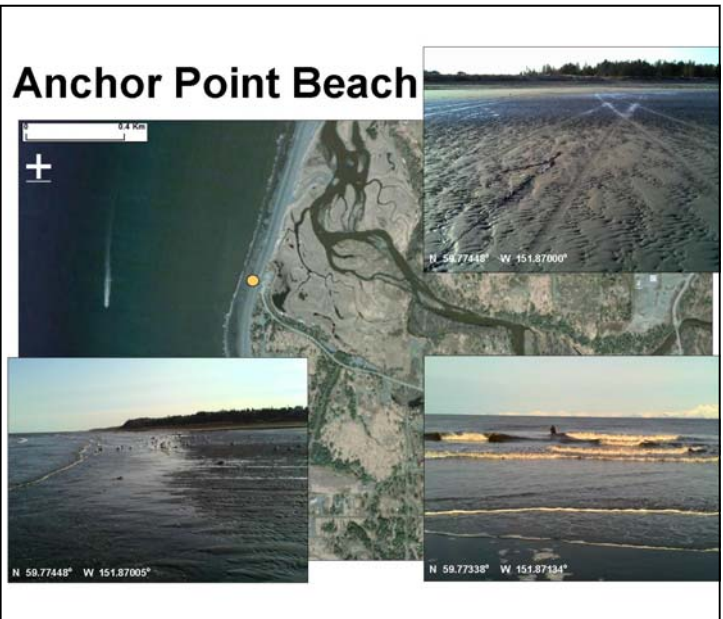


Figure 4. BEACH sampling locations in the Anchor Point-area during FY12 include Whiskey Gulch and Anchor Point beach.



Figure 3. BEACH sampling locations in Homer during FY11 include Bishop's Beach, Mariner Park, and Land's End.

op's Beach was included as a sampling location and weekly sampling during that fiscal year included all 3 Homer beach locations. Bishop's Beach is a popular beach-walking and tide-pooling location in the heart of Old Town Homer. The Homer Wastewater Treatment

plant is nearby, and the outflow pipe from the plant is located 2,000+ feet offshore from Bishop's Beach. Figure 3 shows the locations of the original Homer BEACH sites, and Figure 4 shows the additional 2 sites during FY12. Beginning in July 2012, Cook Inletkeeper obtained ADEC funding to expand BEACH monitoring to two locations north of Homer, in the Anchor

Point area. These two beaches, Whiskey Gulch and Anchor Point beach, had been identified previously as locations where people recreate. Whiskey Gulch beach is often used during low tides in the summer months as a popular shellfish harvesting area, primarily for razor clams. At the mouth of the Anchor River, there is a heavily utilized tractor-launching service for boaters to access Cook Inlet. There is tent and RV camping at both beaches, with heavy usage of the Anchor River, just upstream of the Anchor River beach, for sport salmon fishing. Cook Inletkeeper staff and volunteers monitored Whiskey Gulch beach during the first half of FY12 (July – August 2011) and then monitored Anchor Point beach during the second half (April – June 2012). Figure 3 shows the location of these two Anchor Point-area BEACH monitoring sites.

### **BEACH Monitoring Parameters**

Two types of bacteria are used as indicators of potential fecal contamination in marine waters: fecal coliforms (*Escherichia coli* or *E. coli*) and enterococci. Both groups of bacteria are found in the feces of birds and humans; however, the EPA recommends enterococci as an indicator of contamination in marine waters given the poor survivability of *E. coli* in salt water. The State of Alaska has water quality criteria for both fecal coliforms and enterococci, and the Homer BEACH Program monitors for both types of bacteria (see Table 3 for the water quality standards).

### **FY12 BEACH Methods**

Monitoring for bacteria began on July 6, 2011 and ended for the summer season on August 24, 2011. Spring sampling began April 25, 2012 and finished on June 13, 2012. Beach sampling occurred for a total of 16 weeks at Homer beaches.

Samples were collected once per week at Bishop's Beach throughout the season. From July 6 – August 24, 2011, samples were also collected at Whiskey Gulch. This second beach then switched to the Anchor Point beach from April 25 – June 13. All protocols from the BEACH QAPP, the Homer BEACH Handbook, and the Alaska BEACH Standard Operating Procedures (SOPs) were followed for sample collection and handling, and all samples were collected by Cook Inletkeeper staff and/or trained volunteers. Information on beach conditions was recorded at each location during sampling on the Beach Field Form. Recreation and other beach usage activities were noted, as well as the presence of wildlife, or other potential sources of pollution. Tide and weather data were collected at each site.

Water samples were kept cool (1 – 10 °C) in a sealed cooler and sent via Grant Aviation to Analytica Laboratories, a State-certified laboratory. The lab enumerated the bacteria colonies following EPA-approved methods. All samples have an 8-hour hold time between sampling and analysis, with Inletkeeper required to get samples to the lab within 6 hours of sampling. Final lab results were reported via email to the Homer BEACH Program Beach Monitor (Rachel Lord, Cook Inletkeeper), Brock Tabor (ADEC BEACH Project Manager), and Cindy Gilder (ADEC BEACH Quality Assurance Officer) within 36 hours of sample collection.

Field data were entered into an MS Excel spreadsheet, and field forms are scanned and sent via email to the ADEC Project Manager. Upon receipt of the lab results, lab results and quality control measures (field blanks, duplicate samples) were checked for adherence to the approved QAPP and lab data were entered into an Excel template provided by ADEC.

# RESULTS

Bishop's Beach was monitored 16 times in FY12, with samples for fecal coliform and enterococci analysis taken during each sampling event. Whiskey Gulch was sampled 8 times between July and August 2011, and Anchor Point beach was sampled 8 times between April and June 2012. Each was sampled 8 times during FY12, also for both parameters each time (see Table 2).

At Bishop's Beach, fecal coliform bacteria colonies were detected during 75% of sampling events, and Enterococci were detected at 6% of sampling events. Fecal coliform, when detected, ranged from 1 CFU/100mL (CFU = Colony Forming Unit) to 34 CFU/100mL on May 9, 2012. The one sample with detectable levels of Enterococci indicated 10 MPN/100mL (MPN = Most Probable Number), and occurred on May 15, 2012.

At Whiskey Gulch, fecal coliform bacteria colonies were detected during 88% of sampling events, and Enterococci were detected at 38% of sampling events. Fecal coliform, when detected, ranged from 1 CFU/100mL to 18 CFU/100mL on July 6, 2011. Enterococci, when detected, ranged from 10 MPN/100mL to 20 MPN/100mL on July 25, 2011.

At Anchor Point beach (see picture on facing

page), fecal coliform bacteria colonies were detected during 50% of sampling events, and Enterococci were detected at 63% of sampling events. Fecal coliform, when detected, ranged from 9 CFU/100mL to 32 CFU/100mL on May 29, 2012. Enterococci, when detected, ranged from 10 MPN/100mL to 30 MPN/100mL on May 23, 2012.

All replicate samples, one per parameter collected during each sampling event, met precision goals (relative percent difference of less than 60%) with the exception of two. On May 9 and May 23, replicates had a relative percent difference of greater than 60%. This may have been due to field training and new volunteers during each of these dates. Following these sampling events, protocols were reviewed and field technique was checked to ensure the complete integrity of BEACH samples. Field blanks were collected and analyzed for fecal coliforms during 25% of the sampling events. All field blanks met Quality Assurance goals of no detectable limits of either fecal coliform or Enterococci during the FY12 sampling season.

## Exceedence Response

There were no exceedences of state or federal water quality standards during the FY12 SKP-BEACH Monitoring program.

Table 2. Summary of sampling efforts during FY12 for enterococci and fecal coliform bacteria at three local recreational beaches monitored as part of the SKP BEACH Monitoring Program.

SKP BEACH Sampling Location	Enterococci (MPN/100mL)				Fecal Coliform (CFU/100mL)			
	# Samples	Max	Date	# Non Detects	# Samples	Max	Date	# Non Detects
Bishop's Beach	16	10	5/15/2012	15	16	34	5/9/2012	4
Whiskey Gulch	8	20	7/25/2011	5	8	18	7/6/2011	1
Anchor Point beach	8	30	5/12/2012	3	8	32	5/29/2012	4



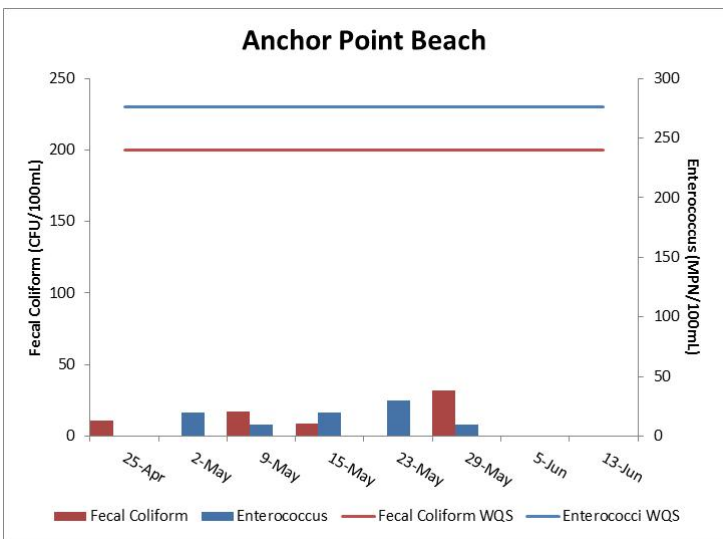
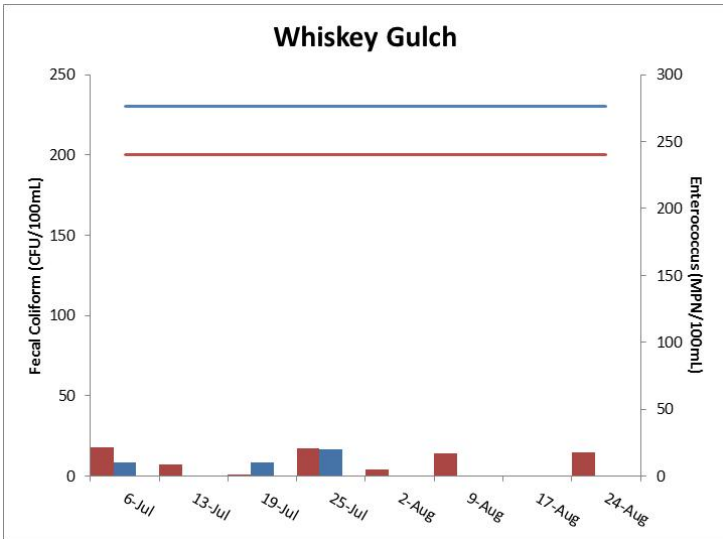
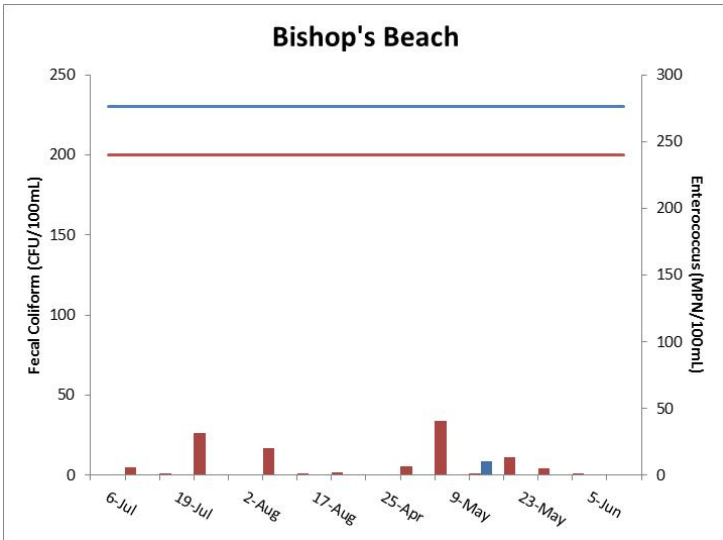


Figure 5. Left: Results from FY12 BEACH sampling on the Southern Kenai Peninsula. Red bars show fecal coliform results (on the left axis), and blue bars show enterococci results. The blue and red lines represent the water quality standards for each parameter, respectively. Fecal coliform is quantified as the number of colony forming units (CFU) per 100 mL, and is shown on the left (primary) y-axis. Enterococci is quantified as the most probably number (MPN) of bacteria per 100 mL, and is shown on the right (secondary) y-axis.



Table 3. State and Federal bacteria water quality standards for marine recreation. Through the BEACH Program, Cook Inletkeeper collects samples to test for both parameters.

Fecal Coliform Water Quality Standard (Alaska Department of Environmental Conservation)	
Single-sample	200 fecal coliforms per 100 mL
Geometric mean (average) of 5 samples within 30 days	100 fecal coliforms per 100 mL
Enterococci Water Quality Standard (Environmental Protection Agency)	
Single-sample	276 enterococci per 100 mL
Geometric mean (average) of 5 samples within 30 days	35 enterococci per 100 mL

# COMMUNITY OUTREACH

## Volunteers

Ten community volunteers donated 78 hours of their time to the Homer BEACH Program in FY12. Each field sampling volunteer was given a 2-hour training that included a background on the national BEACH Program through EPA, the role of ADEC, and an overview of the history of the Homer BEACH Program. Following this introduction, volunteers were trained on sampling procedures, quality control measures, and data recording following the Homer BEACH Handbook, the sample collection SOP, and the most recent BEACH QAPP. Volunteers were initially accompanied in the field by trained Inletkeeper staff who assisted in taking samples and data recording. Through including community members in BEACH monitoring, Cook Inletkeeper has expanded the impact of this program to educate more beach users in the potential risks and need for monitoring for fecal contamination in recreational waters.



Figure 6. Summer Intern Kelly Barber collects water samples at Bishop's Beach on a sunny summer morning in June 2012.

**INLETKEEPER**  
...PROTECTING THE COOK INLET WATERSHED & THE LIFE IT SUSTAINS

www.inletkeeper.org Helmer: (907) 535-6068 Anchorage: (907) 929-8571 Summer 2012

**Oil & Gas at Your Door? Know Your Property Rights!**

Oil & gas companies are undertaking an aggressive new round of seismic exploration around Cook Inlet to better understand hydrocarbon potential. These activities can entail land clearing, road building, detonations, noise, dust and other impacts to private property. Cook Inletkeeper has fielded numerous calls from concerned property owners who have been asked by industry to sign a consent form to conduct seismic exploration on the landowner's property.

Under Alaska law, surface and subsurface property ownership are separate rights (called "estates" in property law). This is the law of "split estate." The surface estate is what we typically understand to be property ownership—i.e., the corners of your property and everything within them. The subsurface rights occur beneath the surface estate, and they're often called mineral rights. Not many people in Alaska own both the surface and subsurface rights to their property, but if you do, you have considerable legal authority

**Why Cook Inletkeeper Needs You**

Jack-up rigs, coal mines, tsunami debris, waste water dumping, boomtoggles, coal mines, threats to fisheries. The list grows and grows. Our Alaskan way of life is under siege. Projects and issues pile up as the resources we depend on to power our homes and our cars, to move food into grocery stores and make the products we buy become more and more scarce and more and more valuable.

By living off a finite resource base, we can expect the political and physical conflicts over these resources will only continue to increase in frequency and intensity. Often we are asked: When corporations are considered people and seem to be immune from the law, when governments ignore the will of the people they are supposed to serve, and outsiders make billions of dollars on the broken backs of regular Alaskans, why bother fighting?

The answer is simple. We all love this place.

Face the facts. You have to want to live

in Alaska. Life here is not easy. The cold dark months are replaced by long days with not enough sleep. Food and fuel are expensive—it costs more to ship a child's toy than the cost of

Figure 7. Inletkeeper's bi-annual newsletter is published in May and December. Every issue includes information on Cook Inletkeeper's BEACH Program. The Inletkeeper is directly distributed to over 400 people in the Cook Inlet watershed, and distributed at events throughout the year.

## Newsletter

In order to communicate with the public about the Homer BEACH Program under the ADEC ACWA BEACH grant, Cook Inletkeeper published regular articles on the Homer BEACH Program in *INLETKEEPER*, Cook Inletkeeper's biannual newsletter (see Figure 4). The *INLETKEEPER* is printed at a quantity of approximately 1,000 copies in the spring and fall, with electronic versions distributed via email and on Cook Inletkeeper's website: <http://www.inletkeeper.org>. Print copies are distributed

to Cook Inletkeeper's membership, funders, and the general public at major events such as Ocean Fest, the Renewable Energy Fair, and other major environmental events. This outreach effort creates an opportunity for public input and also acts as tool for volunteer recruitment in the Homer area.

### **Homer Rotary Health Fair**

Cook Inletkeeper presented results and information about the Homer BEACH Program at the Homer Rotary Club Health Fair every November. This annual event draws nearly 1,000 community members out and provides a great opportunity for Inletkeeper to share information and answer questions about beach monitoring efforts.

In the spring of 2009, Inletkeeper created a brochure that outlines the Homer BEACH Program. This informational brochure includes concerns with and potential causes of fecal contamination, the general monitoring protocols, an overview of our risk communication plan, Frequently Asked Questions, and a list of resources for more information. As in past years, copies of the Homer BEACH brochure were distributed during FY12 at the Homer Rotary Health Fair in November.



*Figure 8. Cook Inletkeeper's Rachel Lord, the Homer BEACH Monitor, talks to area residents during the Homer Rotary Health Fair. BEACH results and brochures are on display in the background.*

## DISCUSSION

Between 2008 and 2012, Cook Inletkeeper successfully developed and implemented the Homer BEACH Program. This program was smoothly incorporated as an integrated component of its overarching monitoring program. By including volunteers into the Homer BEACH Program, we not only monitored for fecal contamination at local beaches, but also encouraged community-wide stewardship of Alaska's coastal resources.

Monitoring results from FY12 continue to suggest that there are generally low levels of fecal bacteria at Bishop's Beach, one of Homer's primary recreational beaches. Initial testing results from the two targeted Anchor Point-area beaches (Whiskey Gulch and Anchor Point beach) indicated no exceedences of federal or state water quality standards for fecal bacteria.

With 3 years of consistently low bacteria levels at Mariner Park and Land's End, and 2 years with one preliminary exceedence at Bishop's Beach, ADEC has discontinued funding for sampling at all of these locations. While some funding remains available for continued sampling at the Anchor Point-region beaches, Cook Inletkeeper will end its BEACH monitoring program with the conclusion of the FY12 sampling season. We believe through this program we have collected valuable baseline data on fecal bacteria levels at important recreational beaches on the Southern Kenai Peninsula, assisted the state and other organizations around Alaska develop similarly successful community monitoring programs, and engaged community members in this important public health initiative.



*Top to bottom: Bishop's Beach, Whiskey Gulch, and Anchor Point beaches.*

## ACKNOWLEDGEMENTS

Cook Inletkeeper appreciates the support of the City of Homer to ensure the safety of Homer's beaches and to increase public awareness of the risks of bacteria contamination on public beaches. We thank Brock Tabor from ADEC for his enthusiastic help and encouragement in the development and successful implementation of this program. We also thank our wonderful volunteers and summer interns who assisted with this project during FY12. Eric Grazia, Kira Olsen, Kelly Barber, Greg Goforth, Ben Gibson, Dorothy Melambiankis, Adam Keeley, and Kelly Snow all assisted with field sampling. Kelly and Eric helped to run the program during the spring 2012 and summer 2011 sampling seasons, respectively. We thank everyone who participated with helping to make this project a success.

