Minnesota Lake Superior Beach Monitoring and Notification Program Annual Report
Beach Season 2008
Federal Fiscal Year 2007

Minnesota Pollution Control Agency

December 2008

Minnesota Lake Superior Beach Monitoring and Notification Program
525 South Lake Avenue, Suite 400 ♦ Duluth, MN 55802
www.MNBeaches.org ♦ 218-725-7724 ♦ 800-657-3864

Introduction

Going to “The Lake” is one of the most popular summer activities along Minnesota’s Lake Superior coastline. Whether visitors go to the beach to kayak, swim, surf or look for agates, water quality can have a significant impact on a beach-goers experience. However, despite their importance to the region's quality of life, beaches are being posted with “Water Contact Not Recommended” advisories because of sewage overflows, pet waste, storm water run-off and other kinds of pollution.

The Beaches Environmental Assessment and Coastal Health (BEACH) Act, passed in October of 2000, requiring States that border coastal or Great Lakes waters to develop beach monitoring and public notification programs. The BEACH Act also requires that States adopt EPA's new criteria for pathogen and pathogen indicators by April 2004. Minnesota’s revised rules Ch. 7050 were out for public review in the fall of 2007, adopted on December 18, 2007 by the MPCA Citizens Board, and approved by US Environmental Protection Agency on May 28, 2008.

In 2007 Minnesota was awarded $204,270 for continued implementation of the beach monitoring and notification program. The purpose of this project is to monitor selected beaches along the Great Lakes in accordance with BEACH Act requirements, allow for prompt notification to the public whenever bacterial levels exceeds EPA's established standards, and investigate alternative methods for public notification. This information is used to investigate long-term trends in water quality and to establish a beach monitoring and public notification plan that will assist communities along the lake shore to improve their ability to monitor and notify beach users of risks associated with high bacteria levels.

Program Overview

In Minnesota, this project brought together a Beach Team of state and local-level environmental and public health officials, local health officials, and other interested parties to design a beach monitoring and notification program. Approximately 58 miles of public beach miles and a total of 79 coastal beaches were identified along the Lake Superior (Appendices A & B). The definition of “beach” for the purpose of Minnesota BEACH Act implementation is:

“A publicly owned shoreline or land area, located on the shore of Lake Superior, that is used for swimming or other water contact recreational activity.”

The coastal beaches were geo-located using GPS technologies and maps were created for all beaches. Additional GIS data layers were added to include the location of all wastewater treatment outfalls along with their proximity to the beaches. Supplementary information was collected for each beach for evaluation: the potential for impacts from storm water runoff, bather and waterfowl loads,

and the location of outfalls and farms. This information was used to rank and classify beaches as "high," "medium," or "low" priority.

A standard sampling protocol was developed and standard advisory signs were designed based on feedback from Beach Team members and public meetings held in coastal communities (Appendices C).

The Beach Program Website was designed to include all public beaches monitored under the BEACH Act program. This site also provides information on beach logistics, amenities, monitoring data, a data visualization tool, and local weather. The website management is contracted through the Natural Resources Research Institute, a research facility of the University of Minnesota Duluth (UMD).

Goals and Objectives

The purpose of this project in 2008 was to continue a consistent coastal beach water monitoring program to reduce the risk of exposure of beach users to disease-causing microorganisms in water. Selected beaches along Lake Superior were monitored in accordance with BEACH Act requirements with prompt notification to the public whenever bacterial levels exceed EPA's established standards (Appendix D).

Time Schedule

The activities described in this report took place during Federal Fiscal Year 2007 (October 1, 2007 - September 30, 2008). This period encompasses the 2008 beach season, which is defined for Minnesota coastal beaches as a week before Memorial Day Weekend through a week after Labor Day Weekend. At some coastal beaches in Minnesota, swimming may not begin until mid-June due to colder water temperatures, but water recreationalists such as kayakers, surfers and sail-borders are in the water all year if ice conditions are suitable. Because of these hardy folks and UMD Outdoor Recreation classes held in Lake Superior both early and late into the typical swimming season, selected sites are monitored once a week starting in May until the end of October. This report describes activities before, during, and after the beach season proper, i.e. preparation, implementation and evaluation of the beach season.

Cooperators Involved

Beach Team:

Minnesota Pollution Control Agency (MPCA), Lake Superior Beach Monitoring and Notification Program,
- Program Coordinator ..... Heidi Bauman
- Information Technology ..... Melissa Rauner

Cook County Soil and Water Conservation District ..... Cindy Gentz
Cook County Soil and Water Conservation District ..... Tristan Beaster
Lake County Health Department ..... Deb Kosiak
St. Louis County Health Department ..... Guy Peterson
Minnesota Department of Health (MDH),
- Northeast District Epidemiologist ..... Amy Westbrook

Minnesota Department of Natural Resources (DNR),
- Lake Superior Coastal Program ..... Pat Collins

Western Lake Superior Sanitary District (WLSSD),
- Director Environmental Services ..... Joe Mayasich
- Director, Community Relations ..... Karen Anderson

City of Duluth,
- Stormwater Utility ..... Chris Kleist
- Parks and Recreation ..... Carl Seehus
- Information Office ..... Jeff Papas

University of Minnesota Duluth (UMD),
- Department of Biology ..... Randy Hicks
- Recreational Sports and Outdoor Programs .....
- Natural Resources Research Institute (NRRI) ..... Rich Axler
- Minnesota Sea Grant ..... Jesse Schomberg

Park Point Community Club ..... Kinnan Stauber
Duluth Boat Club ..... Keith Stauber
Clean Water Action ..... Rosie Loefler-Kemp
Minnesota Pollution Control Agency (MPCA),
- Watershed Unit Supervisor ..... Pat Carey
- Lake Superior Basin Program ..... Brian Fredrickson
- Water Quality Monitoring ..... Jesse Anderson
- Lake Superior Basin Initiative Coordinator ..... Marc Hershfield
- Information Officer ..... Anne Moore

Program Participants:

Cook County Soil and Water Conservation District
Lake County Human Services, Public Health

Historical and Current Budget Summary

- In September 2001 the MPCA was awarded a developmental grant for $58,694. The 2002 grant was also targeted for program development in the amount of $204,631. This resulted in a total of $263, 325 for program development. With these funds a pilot monitoring program at 35 Lake Superior beaches was implemented during the 2003 swim season.
- In June of 2003 the MPCA was awarded the first implementation grant in the amount of $203,309. The 2003 grant provided funding for the first year of full implementation of the beach monitoring and notification program at 38 beaches. Some of the funding was also utilized to develop a beach webpage. This webpage (www.MNBeaches.org) was launched in October of 2004 and quickly became the website to go to in Minnesota for beach and swimming related information.
- In June of 2004 the MPCA was awarded a grant in the amount of $204,490 for the continuation of implementation of the beach program. The second full year of implementation was funded with the 2004 grant and included the development of and purchase of promotional items such as beach balls, carabineer key chains, magnets, hand sanitizer, and sand pails to help spread the word about the webpage and hotline phone number.
- In October of 2005, the MPCA was awarded an amendment of the 2004 grant in the amount of $204,440 to continue the program thru September 2006. The 2005 grant funds were used to continue monitoring, notification, webpage maintenance, DNA fingerprinting research assistance, beach-goers notification survey, and assistance to other state beach managers.
- In May 2006, the MPCA was awarded an amendment of the 2004 grant in the amount of $204, 270 to continue monitoring, notification, webpage maintenance, research assistance, beach-goers notification survey, and assistance to other state beach managers.
- In June 2007, the MPCA was awarded a GLNPO grant in the amount of $62,000 to conduct a Beach Sanitary Survey at 2 beaches. These two beaches were the New Duluth Boat Club and Lakewalk beaches.
- In August 2007, the MPCA was awarded an amendment of the 2004 grant in the amount of $204, 270 to continue monitoring, notification, webpage maintenance, research assistance, beach-goers notification survey, and assistance to other state beach managers.

Contracts

2003	
Cook County, 10 beaches	$4,000
Lake County, 9 beaches	$4,000
North Shore Analytical, lab analysis	$15,444
2004	
Cook County, 10 beaches	$4,500
Lake County, 10 beaches	$4,500
NRRI Webpage Development	$9,000
North Shore Analytical, lab analysis	$19,674
2005	
Cook County, 10 beaches	$4,500
Lake County, 11 beaches	$4,500
NRRI Webpage Data Visualization Tool	$5,000
(Funded with Lake Superior Coastal Grant)	
North Shore Analytical, lab analysis	$16,233
2006	
Cook County, 10 beaches	$5,000
Lake County, 11 beaches	$5,000
NRRI Webpage Management	$3,200

North Shore Analytical, lab analysis	$11,781

2007

Cook County, 11 beaches	$5,000
Lake County, 11 beaches	$5,000
NRRI Webpage Management	$1,000
NRRI Webpage DVT upgrade (funded by BSS grant)	$2,000
North Shore Analytical, lab analysis (extra monitoring funded by the BSS grant)	$15,033

2008

Cook County, 11 beaches	$5,000
Lake County, 11 beaches	$5,000
NRRI Webpage Management	$11,000
North Shore Analytical, lab analysis	$11,796

Work Completed in 2008

The 2008 beach season was the sixth full season a consistently implemented beach-monitoring program was conducted in the coastal area of Minnesota. A total of 40 beaches were sampled. There were 935 monitoring visits during the 2008 beach season. Out of these samples, 45 of them exceeded the water quality limit of 235 MPN/100 mL for *e. Coli.* Below is a graph (figure 1) depicting exceedances per urban and rural area per county in 2008, and a graph (figure 2) comparing the number of advisories and their length over the 6 beach seasons.

Figure 1 – Comparison of number visits, number exceedances, number advisories by regional type for 2008

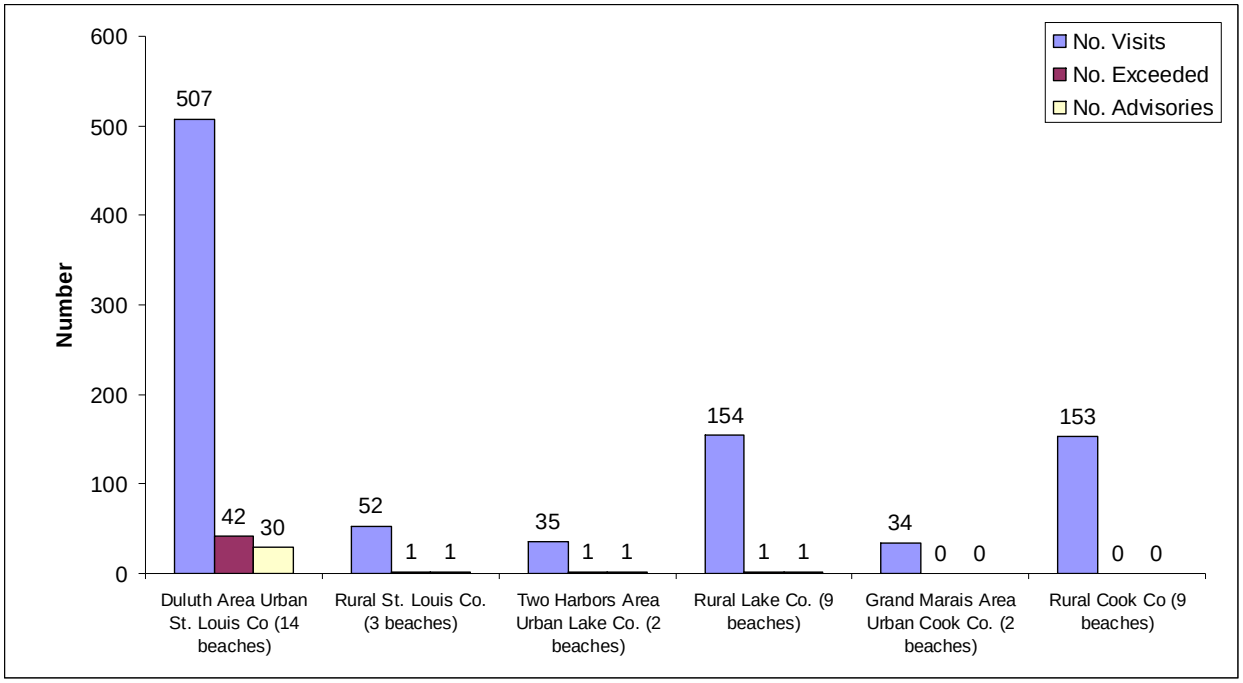
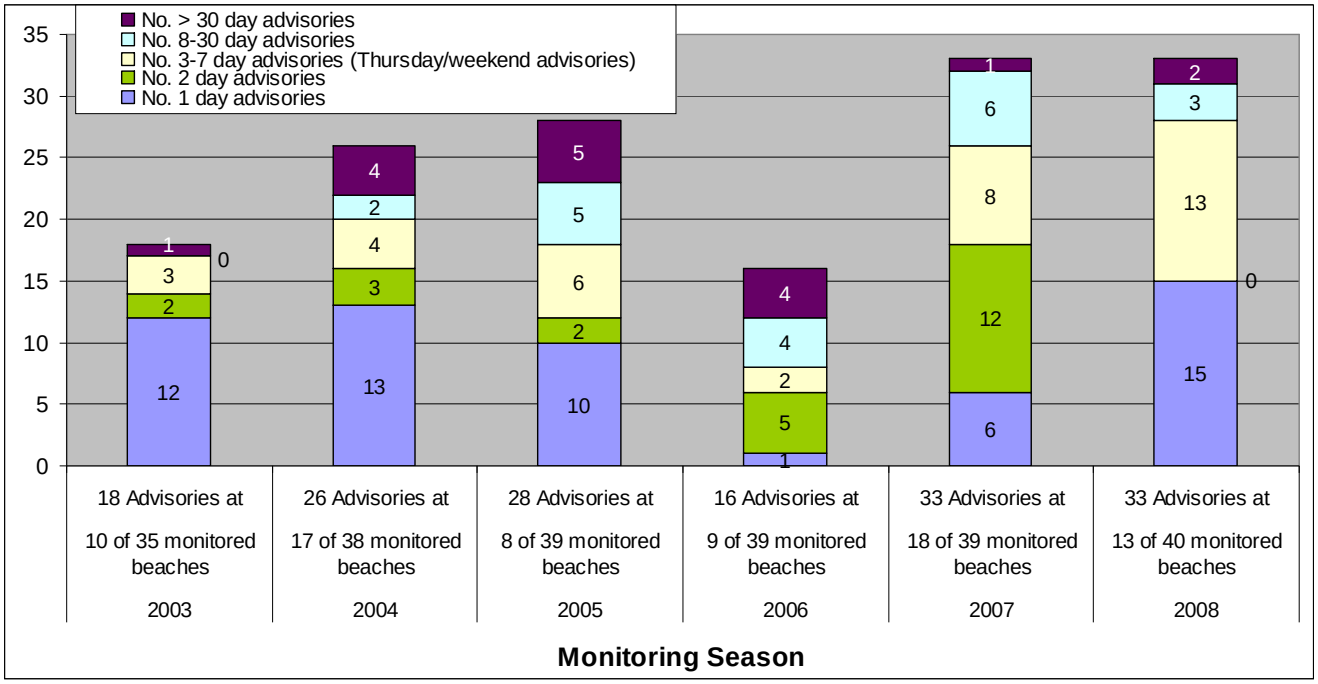


Figure 2 – Number beaches, number *e. Coli* exceedances, number advisories per monitoring season



- Implementation of Monitoring Program
  - 40 sites monitored once a week, May-October, for *e. Coli*
  - 9 of the sites were monitored twice a week
  - 13 of the monitoring sites had one or more advisories posted during the monitoring season
  - One of the monitored beaches was under advisory for most of July, August, and September
  - There were very few rain and wind events during the "swimming" season which resulted in a quiet summer for beach advisories
  - Continued participation in research DNA fingerprinting of the water, sediment, periphytin, and utilizing QPCR (rapid method) at two Duluth area beaches.
  - Participated in 2008 Beach Sweep trash pick-up in the Duluth area at one beach with the Beach Team members and MPCA Duluth Office staff
- Continued Implementation of Advisory Notification Program
  - Email alert to media and other interested parties when advisories posted or removed
  - "Water Contact Not Recommended" advisory sign(s) placed on the beach
  - "Water Contact Not Recommended" advisory posted on Beach Program webpage (www.MNBeaches.org)
  - Update local beach hotline with recorded message (218-725-7724)
- Education and Outreach Activities
  - Made presentations at public meeting/conferences
  - 1 television talk show presentation
  - ~3 internet news stories

- ~4 newspaper articles
- ~5 radio interviews
- ~4 television interviews
- Conducted survey of beach goers to find out what they know about beach monitoring and how they prefer to get information about beach water quality

♦ Maintained/Updated database
- Database maintained in compliance with EPA BEACH Act Data Element requirements, as well as EPA STORET database.

Beach Program staff met with the Beach Team once during 2008 to discuss the program and look for ways to make improvements in the program.

Success Stories and Concurrent Research Projects

The principal success of the Lake Superior Beach Program Monitoring Program is the continued public awareness the advisories bring to on-going water pollution issues. Residents and tourists are starting to realize that bacteria problems can occur in any part of the Lake Superior Basin but occurs with more frequency in the more urban areas and during storm events. Residents and visitors are picking up after their dogs on a more regular basis. They continue to be vocal about sewage overflows and demand they be corrected. The coastal cities are installing large holding tanks, back-up generators, and home sump pumps to slow and/or stop the storm related sewage overflows. Even though all these positive activities are happening the education and notification of the public needs some improvement and expansion, as evident by the number of survey responders that were not aware of the beach monitoring program.

UMD Research

Researchers at University of Minnesota Duluth, Dr. Randall Hicks and students, are finding that *e. Coli* bacteria at beaches do not always come from harmful sources, and in fact, some can take up residence in the sand, aquatic plants, and even in the fish from lakes. They are shedding light on this issue and paving the way to develop better detection methods and more meaningful beach advisories.

In several projects spanning the last seven years, Dr. Hicks, biology professor at UMD and Dr. Michael Sadowsky, professor of soil, water, and climate at the University of Minnesota St. Paul, have collected samples from Lake Superior streams and problem beaches in the Duluth-Superior harbor. They used a method called rep-PCR DNA fingerprinting to help determine the potential sources of *e. Coli* in the environment by createing a library of DNA fingerprints that are

specific to different animals and environmental sources.

They discovered that human waste pollution often accounts for only a tiny fraction of the *e. Coli* contamination in Lake Superior streams and Duluth-Superior beaches. By contrast, waterfowl and wildlife can sometimes account for up to 100 percent of the total *e. Coli* whose sources can be identified in water. Although ring-billed gulls are more abundant in this harbor, surprisingly Canada geese are usually the dominant source of the waterfowl *e. Coli*.

Winfried Ksoll and Satoshi Ishii, past graduate students, also found that *e. Coli* can survive, reproduce and form natural populations in riverine soils within Lake Superior's watershed, in algae washed up on beaches, and on periphyton covered rocks in the lake.

The latest discovery is that fish in the Duluth-Superior harbor are *e. Coli* carriers. Two of Dr. Hick's former students, Dennis Hansen and John Clark, found most of the *e. Coli* in the intestines of bottom-dwelling fish. Using their DNA fingerprint library, they matched the fish *e. Coli* to sources like bottom sediments, Canada geese, mallard ducks and treated wastewater. The researchers didn't test the *e. Coli* isolated from the fish to see if they were pathogenic strains that might be harmful to humans. But their previous work indicated that less than 1% of the *e. Coli* at one beach might be pathogenic strains.

Drs. Hicks and Sadowsky along with Ph.D. student Jessica Eichmiller are studying how quickly the numbers of fecal bacteria from waterfowl and humans change at beaches and if they are correlated with events like large rainfalls, high winds, wave action, changes in water temperature, or recent sewage overflows. They hope a better understanding of the relationships between these types of events and the changing sources of fecal bacteria at beaches on very shore time scales (daily) will lead to improved strategies to control contamination at beaches and possible fewer beach advisories.

Program Deficiencies

Funds for Source Tracking

Beach staff continues to work with city and sanitary district staff, and local researchers to find the sources of the bacteria but all entities are limited in staff, dollars and time in which they can commit to tracking the source. Minnesota has been involved in the research of DNA fingerprinting of the water, sediments, and periphytin of a couple of the more polluted beaches in the Duluth area. This research will continue in 2009. Minnesota Beach staff and the beach team are anxiously waiting for the results of this research, but because this research is occurring at only 2 of our more pollution prone beaches, source tracking will continue to be a priority for future funding.

Funds to Expand Program to In-land Lakes

Minnesota is the "Land of 10,000 Lakes." Our lakes provide shelter, food and water to countless wildlife, from tadpoles to moose. They also are a major recreation source for the citizens of Minnesota, for fishing, swimming, hunting and other sports. There are hundreds of public and private beaches on these inland lakes that are utilized to a much greater extent than the beaches on Lake Superior. These inland lakes are also where more of

the public health concerns and beach advisories occur. The Lake Superior Beach Program has been developed so it could easily be implemented by inland beach managers, but with the current poor fiscal situation the governments are dealing with, very few new programs are started and many are being discontinued or cut back because of budget shortcomings. Minnesota beach program staff would like to see the BEACH Act and funding expanded to include in-land lakes.

2009 Beach Season (FFY 2008) Scope of Work

- The overall objective of this Program is to continue implement a comprehensive beach monitoring and public notification plan for beaches adjacent to Lake Superior. The 154 miles of Lake Superior's Minnesota shore line include 79 coastal recreational water access points which have been identified, 40 of which will be monitored one or more times a week. More sites are being investigated to add to the monitoring and notification plan.

- The MPCA has developed and supports a Microsoft Access database to store field, notification, and lab data. Field data is provided by county staff via fax, and then manually entered by MPCA staff. Notification data is manually entered by MPCA staff. Lab data is submitted via e-mail in an Excel spreadsheet and transferred into the Beaches database. Current Beach status information is available via www.MNBeaches.org. All beach data is available by request.

- Monitoring data will be submitted annually to MPCA's new ambient water quality application (STORET replacement) which will interface to EPA via an XML Node. Notification data will be submitted annually to EPA via CDX.

- Signs, the MPCA Beach webpage (www.MNBeaches.org), beach hot line (218-725-7724), e-mail alerts, Earth 911 webpage and direct e-mails to the media will be utilized to alert the public to the hazards. Interested parties and managers of sites are also called when an advisory is posted and again when the advisory is removed.

- A central aim of the Beach Team is to produce a comprehensive communication plan to inform the public of beach water health risks and water quality issues in general.

- Beach program staff will continue to take comments at public meetings and is including a comment form on the new web page to allow public feedback opportunities all year long. Staff will continue to work with the local and state-wide media to provide information to the public and ask for comments from the public. Many comments are received via email and phone calls as well as at public meetings, festivals and other events.

- Beach staff will help organize and participate in 2009 Beach Sweep trash pick-up in the Duluth area with the Beach Team members and MPCA Duluth Office staff. Beach staff will also work with partners up the shore to recruit new Beach Sweep participants at new locations.

- Beach staff will continue conducting the beach-goer survey started during the 2006 monitoring season. After the 2009 beach season, beach staff will compile survey results and analyze those results to determine which notification method(s) beach-goers prefer and make necessary modifications to current notification practices.

Appendix A – Beach List and Priority

Tier 1 – High

Beach	STORET ID	County
Park Point Beach House	16-0001-B003	St. Louis
Park Point Harbor Parking Lot Beach	16-0001-B004	St. Louis
Park Point Southworth Marsh Beach	16-0001-B036	St. Louis
Park Point Lafayette Community Club Beach	16-0001-B005	St. Louis
Park Point 20th Street / Hearding Island Canal Beach	16-0001-B037	St. Louis
Pk Pt New Duluth Boat Club Boat Landing/14th Street Beach	16-0001-B007	St. Louis
Park Point Franklin Park / 13th Street Beach	16-0001-B006	St. Louis
Lakewalk Beach	16-0001-B008	St. Louis
Brighton Beach	16-0001-B012	St. Louis

Tier 2 – Medium

Beach	STORET ID	Location
Boy Scout Landing Beach	16-0001-B001	St. Louis
Clyde Avenue Boat Landing Beach	16-0001-B002	St. Louis
Leif Erickson Park Beach	16-0001-B009	St. Louis
Lakewalk East / 16th Avenue East Beach	16-0001-B038	St. Louis
42nd Avenue East Beach	16-0001-B010	St. Louis
Lester River Beach	16-0001-B011	St. Louis
French River Beach	16-0001-B013	St. Louis
Bluebird Landing Beach	16-0001-B014	St. Louis
Stony Point Beach	16-0001-B015	St. Louis
Knife River Marina Beach	16-0001-B035	Lake
Agate Bay Beach	16-0001-B039	Lake
Burlington Bay Beach	16-0001-B016	Lake
Flood Bay Beach	16-0001-B017	Lake
Stewart River Beach	16-0001-B018	Lake
Gooseberry Falls State Park Beach	16-0001-B019	Lake
Twin Points Public Access Beach	16-0001-B020	Lake
Split Rock River Beach	16-0001-B021	Lake
Split Rock Lighthouse State Park Beach	16-0001-B022	Lake
Silver Bay Marina Beach	16-0001-B023	Lake
Tettegouche State Park Beach	16-0001-B024	Lake
Sugarloaf Cove Beach	16-0001-B025	Cook
Schroeder Town Park Beach	16-0001-B026	Cook
Temperance River State Park Beach	16-0001-B027	Cook
Cutface Creek Wayside Rest Beach	16-0001-B028	Cook
Grand Marais Campground Beach	16-0001-B029	Cook
Grand Marais Downtown Beach	16-0001-B030	Cook
Old Shore Road Beach	16-0001-B031	Cook
Durfee Creek	16-0001-B032	Cook
Kadunce Creek Beach	16-0001-B033	Cook
Paradise Beach	16-0001-B034	Cook
Chicago Bay Boat Launch Beach	16-0001-B078	Cook

Tier 3 – Low

Beach	STORET ID	County
Morgan Park Beach	16-0001-B040	St. Louis
Smithville Park Beach	16-0001-B041	St. Louis
Indian Point Campground Beach	16-0001-B042	St. Louis
Waterfront Trail / Riverside Beach	16-0001-B043	St. Louis
Waterfront Trail / Radio Towers Beach	16-0001-B044	St. Louis
Waterfront Trail / Interlake Beach	16-0001-B045	St. Louis
Blatnik Fishing Pier Beach	16-0001-B046	St. Louis
Bayfront Park Beach	16-0001-B047	St. Louis
Minnesota Point Harbor Beach	16-0001-B048	St. Louis
Lakewalk East / 26th Avenue East Beach	16-0001-B049	St. Louis
Glensheen Cemetary Beach	16-0001-B050	St. Louis
North Shore Drive Wayside Rest / 72nd Avenue East Beach	16-0001-B051	St. Louis
Lakewood Pump Station Beach	16-0001-B052	St. Louis
North Shore Drive Wayside Rest / Cant Road Beach	16-0001-B053	St. Louis
McQuade Road Safe Harbor Beach	16-0001-B054	St. Louis
Stony Point Wayside Rest Beach	16-0001-B055	St. Louis
Two Harbors City Park Beach	16-0001-B056	Lake
Silver Creek Beach	16-0001-B057	Lake
Silver Cliff Beach	16-0001-B058	Lake
Split Rock Lighthouse State Park / Split Rock Point Beach	16-0001-B059	Lake
Split Rock Lighthouse State Park / Crazy Bay Beach	16-0001-B060	Lake
Split Rock Lighthouse State Park / Corundum Point Beach	16-0001-B061	Lake
Split Rock Lighthouse State Park / Gold Rock Point Beach	16-0001-B062	Lake
Blueberry Hill Beach	16-0001-B063	Lake
Palisade Beach	16-0001-B064	Lake
Tettegouche State Park / Baptism River Beach	16-0001-B065	Lake
Tettegouche State Park / Crystal Bay Beach	16-0001-B066	Lake
Manitou River Beach	16-0001-B067	Lake
Temperance River State Park East Beach	16-0001-B068	Cook
Ray Berglund Wayside Rest Beach	16-0001-B069	Cook
Cascade State Park West Beach	16-0001-B070	Cook
Cascade State Park Campground Beach	16-0001-B071	Cook
Butterwort Cliffs Beach	16-0001-B072	Cook
Croftville Beach	16-0001-B073	Cook
Red Cliff Beach	16-0001-B074	Cook
Coville Creek Beach	16-0001-B075	Cook
Judge C.R. Magney State Park West Beach	16-0001-B076	Cook
Judge C.R. Magney State Park East Beach	16-0001-B077	Cook
Horseshoe Bay Boat Launch Beach	16-0001-B079	Cook

Appendix B – Beach Miles

Monitored Minnesota Lake Superior Beaches

County	No. of Beaches	Total Beach Miles	Total Beach Feet	Total Beach Meters
Cook Monitored	11	11.41	60,219	18,355
Lake Monitored	11	6.73	35,509	10,823
St. Louis Monitored	17	12.13	64,040	19,519
Total	39 beaches	30.27 miles	159,768 feet	48,697 meters

All Minnesota Lake Superior Beaches

County	No. of Beaches	Total Beach Miles	Total Beach Feet	Total Beach Meters
Cook All	22	21.67	114,429	34,878
Lake All	23	16.05	84,744	25,830
St. Louis All	34	20.02	105,677	32,210
Total	79 beaches	57.74 miles	304,850 feet	92,918 meters


Chicago Bay Boat Launch Beach
Paradise Beach
Kadunce Creek Beach
Durfee Creek Area Beach
Old Shore Road Beach Area
Grand Marais Downtown Beach
Grand Marais Campground Beach
Cutface Creek Wayside Rest Beach
Temperance River State Park Beach
Schroeder Town Park Beach
Sugarloaf Cove Beach
Tettegouche State Park Beach
Silver Bay Marina Beach
Split Rock Lighthouse State Park Beach
Split Rock River Beach
Twin Points Public Access Beach
Gooseberry Falls State Park Beach
Stewart River Beach
Flood Bay Beach
Burlington Bay Beach
Agate Bay Beach
Knife River Marina Beach
Stony Point Beach
Bluebird Landing Beach
French River Beach
Brighton Beach
Lester River Beach
42nd Avenue East Beach
Lakewalk East/10th Avenue East Beach
Leif Erikson Park Beach
Lakewalk Beach
Park Point Franklin Park
Park Point New Duluth Boat Club
Park Point Hearding Island Canal
Park Point Lafayette Community Club Beach
Park Point Southworth Marsh Beach
Park Point Beach House
Park Point Sky Harbor Beach
Clyde Avenue Boat Landing Beach
Boy Scout Landing Beach

Appendix C – Tiered Monitoring, Sampling and Analysis Plans

Tiered Monitoring Plan
Tier 1 beaches are those that receive the most use by the public for swimming, bathing, surfing, kayaking, or similar water contact activities and/or have the highest potential risk of pathogen pollution within the immediate area. These beaches are sampled a minimum of twice a week on Mondays and Thursdays.

Tier 2 coastal recreational water sites usually receive moderate use by the public for water contact recreational purposes and have fewer source of pathogen pollution in the area. These beaches are sampled a minimum of once a week on Mondays.

Tier 3 sites typically receive sporadic use, have limited access, and few if any potential sources of pollution in the area. These sites are not sampled.

Sampling Protocol
To assure consistency in collecting samples for analysis, the following procedures will be used:

1. Specific sites will be designated for collecting samples during the bathing season. Samples will be collected exclusively at these sites for the duration of the sampling period.
2. Sample bottles will be prepared and provided by the laboratories charged with conducting bacteria analyses.

General Rules of Sampling
1. Take extreme care to avoid contamination the sample and sample container.
    - Do not remove bottle covering and closure until just prior to obtaining each sample.
    - Do not touch the inside of the sample container.
    - Do not rinse the sample container.
    - Do not put caps on the ground while sampling.
    - Do not transport the samples with other environmental samples.

2. Adhering to sample preservation and holding time limits is critical to the production of valid data.
    - Samples should be labeled, iced or refrigerated at 1 - 4 degrees C immediately after collection and during transit to the lab.
    - Care should be taken to ensure that sample bottles are not totally immersed in water during transit or storage.
    - Samples should arrive in the lab no later than 6 hours after collection. Whenever possible samples should arrive at the lab on the day of collection, preferably before 3 p.m.

3. The sampler will complete the laboratory data form noting time, date, and location of sample collection, current weather conditions (including wind direction and velocity), water temperature, clarity, wave height and any abnormal water conditions.

Sampling Method
- Label the bottle.
- Carefully move to the first sampling location. Water should be approximately knee deep. While wading slowly in the water, try to avoid kicking up bottom sediment at the sampling site.
- Open a sampling bottle and grasp it at the base with one hand and plunge the bottle mouth downward into the water to avoid introducing surface scum.
- The sampling depth should approximately 6 to 12 inches below the surface of the water.

- Position the mouth of the bottle into the current away from your hand. If the water body is static, an artificial current can be created by moving the bottle horizontally with the direction of the bottle pointed away from you.
- Tip the bottle slightly upward to allow air to exit and the bottle to fill.
- Make sure the bottle is completely filled before removing it from the water.
- Remove the bottle from the water body and pour out a small portion to allow an air space of 2 cm for proper mixing of the sample before analyses.
- Tightly close the cap.
- Store sample in a cooler immediately.

The laboratory data form serves as a Chain-of-Custody record for each sample collected and analyzed. In keeping with laboratory requirements (Standard Methods), all samples must be sealed, chilled, and transported from the sample point to the laboratory for analysis within six hours after sampling. Sample collectors have exclusive custody of any sample from the time of collection until the sample is deposited with the laboratory. The laboratory assumes custody of each sample it receives and is responsible for forwarding all sample analysis results to the Project Manager within twenty-four hours to forty-eight hours of receiving the sample.

Analytical Methods

All analyses shall be performed in laboratories certified by the Minnesota Department of Health for microbiological analysis of e*. Coli* in water.

Appendix D – Public Notification and Risk Communication Plan

The public notification and risk communication plan is to address all advisories for "water contact not recommended" at Minnesota's Lake Superior beaches. The plan is to provide the public with accurate and timely information regarding beach water quality, risks associated with water contact, and suggestions on how the public can assist in the protection and improvement of the beach water quality.

A. Public notification and risk communication plan

1. Identify measures to notify EPA and local governments when indicator bacteria levels exceed a water quality standard.

   a) The single sample maximum shall not exceed 235 cfu/100mL for *e. Coli*
   b) The geometric mean of 5 most recent samples collected during a 30 day period shall not exceed 126 cfu/100mL for *e. Coli*
   c) The Minnesota Lake Superior Beach Monitoring and Notification Program issues beach advisories when indicator bacteria levels exceed the above standards.

2. Identify measures to notify the public when indicator bacteria levels exceed a water quality standard.

   Signs, the MPCA Beach webpage (www.MNBeaches.org), Earth 911 webpage, email alerts to participants and media, local phone hotline message, and news releases to the media will be utilized to alert the public to the hazards. Interested parties and managers of sites are also called when an advisory is posted and again when the advisory is removed.

3. Identify notification report submission and delegation process.

   Currently, two of the three counties have health department staff that work directly on the monitoring and notification program. When indicator bacteria levels exceed a water quality standard the county staff are notified, the county staff post the sign, an email alert is generated by beach program staff and sent to interested participants and media, and appropriate parties are notified with a phone call. Because the program is coordinated through the MPCA office, including lab facilities and the notification process, there is no need for notification report submission to the MPCA from the county health departments.

B. Measures to notify EPA and local governments

1. Identify measures to notify EPA when a state water quality standard is exceeded.

   The EPA will be notified in the annual report of exceedances of state water quality standards. The EPA can be notified on a more timely fashion, if they so choose.

2. For states, identify measures to notify local governments when a water quality standard is exceeded.

   Minnesota has a small number of local governments to work with on the north shore of Lake Superior. There are 3 counties, 7 cities/towns, and 4 state parks. The MPCA will send out email notification with a follow-up phone call to make sure the information was received and the proper action taken.

3. States, tribes, and local governments must notify EPA annually of exceedances of water quality standards and actions taken to notify the public.

   The EPA will be notified in the annual report of exceedances of state water quality standards in the annual report. The EPA can be notified on a more timely fashion, if they so choose.

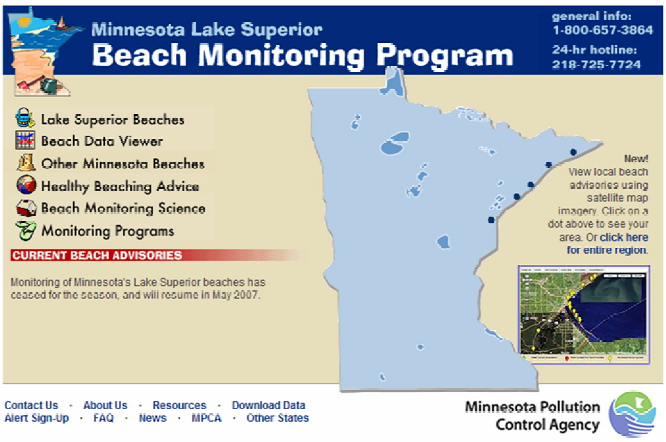
4. States only must notify local governments promptly of exceedances of water quality standards and actions taken to notify the public.

   When there is an exceedance of the bacteria standard the county is notified with a phone call and asked to post the sign, the public is notified through the media via a news release and posting on the webpage, and interested parties such as state park managers receive a phone call. We are using the same process for removal of an advisory.

C. Measures to notify the public

1. Identify measures to notify the public when a water quality standard has been exceeded.

   A central aim of the Beach Team is to produce a comprehensive communication plan to inform the public of beach water health risks and water quality issues in general. Several products were developed for previous beach seasons in Minnesota and will be updated for the 2006 season.



   Websites
   The Beach Act staff has developed and continues to enhance several Internet outlets to post updated beach water quality information. The MPCA website (www.MNBeaches.org) features a page about beach water quality and public health and the BEACH Act. The staff is also working with the Earth 911 website to post detailed information about Minnesota Lake Superior public beaches. Other webpages to have links to our webpage include: MN Department of Health, MN Planning, Duluth Streams (www.lakesuperiorstreams.org), MN DNR State Parks, WLSSD, and North Shore Water Trail.

   Brochures
   The Team has an informational brochure to distribute to the public. "Business" cards with website and program information have been developed and distributed. A series of fact sheets are also being developed with the FAQ already completed.

   Signs

   The Team has developed standard beach advisory signs. The signs clearly show when risk is present using both words and a "no-swim" icon. The sign presents information about causes of water contamination and shows how to contact authorities for more information.

Media partnering
The Team will continue working to partner with local mass media outlets to communicate beach health risk information to the public. This includes newspapers, radio and television. Program staff have done a number of interviews with all local television stations, a number of radio stations, and all local news papers.

MPCA Outlets
The Team will take advantage of MPCA information dissemination media, such as the Agency's quarterly "Minnesota Environment".

Other Outlets
The staff will be working to make presentations at appropriate public meetings such as the Park Point Community Club, North Shore Water Trail Board, County and Township Boards, and other appropriate groups. Other outlets could include articles in the Minnesota Volunteer, Lake Superior Magazine, a booth at the annual Boat Show, and participation in the RiverQuest.

Promotional Items
The Team has developed a number of promotional items – beach balls, hand sanitizer, carbineer key chains, magnets, sand pales and business cards – to get the word out about the new website and hot line number. These have been very well received at public meetings, festivals and other events.

Hotline
A local hotline (218-725-7724) which has a recorded message with updated beach advisories was started in the late summer of 2004 and will continue into the future.

2. Immediately issue a public notification or resample for bacterial exceedance of a water quality standard.

   When bacteria samples are exceeded the public is notified with news releases, webpage updates, emails, and phone calls. The site is resampled, as soon as possible (Monday through Thursday sampling only because of availability of the lab), and daily sampling continues until the site is back below the water quality standards.

3. Promptly notify the public of a water quality standard exceedance when there is no reason to doubt the accuracy of the sample.

   The "all clear" is issued through the same steps as the advisory. Signs are removed, a news release goes out, and appropriate phone calls are made.

4. Post a sign or functional equivalent when a water quality standard is exceeded.

   Advisory signs are posted on large portable orange and white hazard signs with reflective material. They are placed on the high traffic areas of the beach.

D. Notification report submission and delegation

1. State, tribes, and local governments must notify EPA and in the case of states, local governments must be notified annually of notification plan changes and any delegation of responsibilities.

The Lake Superior Beach Monitoring database is being designed to generate a variety of summary reports from a variety of categories. The following summary reports will be submitted to EPA on an annual basis:

a. Steps utilized for public notification of advisories
b. Beach descriptive data
c. Beach programmatic data
d. Station and method identification data
e. Beach advisory data

2. States, tribes, and local governments, as delegated, must:

There are no delegated local governments at this time. All local governments participate and coordinate through the MPCA Duluth office.