Sharing Science Using Research Learning Center Models:

Nurturing Young Scientists--Inquiry Along the Lakeshore

Participant Guide

August 27, 2008

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Welcome

Welcome to today's TELNPS course titled, ***Sharing Science Using Research Learning Center Models: Nurturing Young Scientists – Inquiry along the Lakeshore***. This class will last from 1:00PM to 4:00 PM EST on August 27, 2008 and will consist of live instruction via Technology Enhanced Learning (TEL) from the US Fish and Wildlife Service National Conservation Training Center in Shepherdstown, West Virginia. Thank you for joining us today. We look forward to your participation.

Why a course on Sharing Science?

In order to take the best care of our natural and cultural resources, national parks draw on the results of scientific research. New scientific information helps managers make the right decisions, and sharing this information can help students and members of the public understand and support these decisions. The Natural Resources Challenge directs Research Learning Centers and national park units to increase collaboration with scientists to protect resources, serve visitors, and to expand opportunities for public learning about park resources, their significance, and their preservation.
National parks need researchers both now and in the future, to answer many questions about park resources. We need to encourage today's youth to develop an interest in and an understanding of science, and a view of national parks as "outdoor laboratories"… perfect places to conduct research.

We hope this TEL session will plant seeds amongst park staff and partners that will result in the creation of activities and products that can be utilized in classrooms, parks, or local communities. Activities you create can teach the scientific method and encourage an interest in research on the part of many participating students. Ultimately our aim is to help students and other citizens learn about our national parks, understand the value of sound scientific research, and realize that such research provides the basis for resource management decisions within the parks and throughout the world.

Additionally, this session will help you get the resource/science messages YOU want people to understand out to the public. It will help you generate ideas for interpretive components needed for many Servicewide Comprehensive Call funding sources for projects over $100,000, and it will help interpreters progress toward competency in the Interpretive Development Module 340: Interpretive Research and Resource Liaison. This course utilizes NPS Research Learning Center models to guide teams of NPS resource managers and interpreters, scientists, and community educators in planning

educational activities and products that will help students and other audiences understand key messages related to resource issues in national parks. This will ultimately lead toward increased resource stewardship and protection.

Audience

The course is designed for teams of individuals interested in designing activities and products that revolve around resource issues and research in national parks. Teams may include interpreters, resource managers, scientists, and teachers. Time will be available during the TEL session for these people to brainstorm messages they want to deliver, audiences they want to reach, and the techniques they feel would best reach those audiences. The instructors hope discussions that begin during this session will continue and that the ideas for activities and products will come to fruition. The presenters also hope that as interpreters, resource managers, scientists, and educators strengthen their relationship, they will continue to work together on projects that help people to become better stewards of our national parks.

Handouts

Please go to the TEL website (listed below) under the Participant Guide tab for *Sharing Science: Water Quality* to download and print additional handouts in pdf format, which are helpful to this class. Turn to pages 10 and 11 of this participant guide for a complete handout listing with page number references.

http://www.nps.gov/training/tel/participant_guides.htm

Instructors

Course Instructors:

Sara Melena, Education Specialist
NPS Office of Education and Outreach
Natural Resource Program Center
1201 Oak Ridge Dr., Suite 150
Fort Collins, CO 80525
(970)225-3525
Sara_Melena@nps.gov

Wendy Smith, Education Coordinator
Great Lakes Research and Education Center
Indiana Dunes National Lakeshore
1100 N. Mineral Springs Road
Porter, IN 46304
(219)395-1987
Wendy_W_Smith@nps.gov

Guest Presenters:

David Kronk, Park Ranger (Education)
Pictured Rocks National Lakeshore
N 8351 Sand Point Rd.
P.O. Box 40
Munising, MI 49862
David_Kronk@nps.gov

Richard Whitman, Ph.D.
Chief, Lake Michigan Ecological Research Station
U.S.G.S. Great Lakes Science Center
1100 N. Mineral Springs Rd.
Porter, IN 46304
(219)926-8336 ext.424
rwhitman@usgs.gov

Brian Forist, Education Director
Dunes Learning Center
700 Howe Rd.
Chesterton, IN 46304
(219)395-9555 ext. 3
bforist@duneslearningcenter.org

Stephanie Smith, Education Program Director
Alliance for the Great Lakes
17 N. state Street, Suite 1390
Chicago, IL 60602
(312)939-0838 ext. 226
ssmith@greatlakes.org

How to Interact with the Instructors

We encourage you to ask questions and share your comments with the instructors throughout this TELNPS course. If you were physically in the classroom with the instructor, you would raise your hand to let her/him know you had a question or comment. Then you would wait for the instructor to recognize you and ask for your question. We are all familiar with that "protocol" for asking questions or making comments. With TELNPS courses, there is also a "protocol" to follow to ensure you can easily ask questions and others can participate as well. It may seem a little strange at first asking a question of a TV monitor. Remember, it is the instructor you are interacting with and not the monitor. As you ask more questions and participate in more TELNPS courses, you will soon be focusing only on the content of your question and not the equipment you are using to ask it.

As part of the TEL station equipment at your location, there are several push to talk microphones. Depending on the number of students at your location, you may have one directly in front of you or you may be sharing one with other students at your table. When you have a question, press and hold down the push to talk button maintaining at distance at least 12-18 inches and say, "Excuse me [instructor's first name], this is [your first name] at [your location]. I have a question (or I have a comment)." Then release the push to talk button. This is important. Until you release the button, you will not be able to hear the instructor. The instructor will acknowledge you and then ask for your question or comment. Stating your name and location not only helps the instructor, but also helps other students who are participating at different locations to get to know their classmates.

Course Goal and Learning Objectives

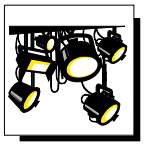
Coarse Goal:

This course emphasizes integration of research and education, and the development of educational activities and products that communicate resource stewardship messages.

Objectives:

After this workshop, learners will:

- understand the role of interpretation in science communication and resource management.
- be able to apply principles of Advanced KR and Resource Liaison to develop communication strategies for resource issues.
- be familiar with several strategies that can be used to integrate research and education in national parks.
- be prepared to engage students in inquiry based learning programs revolving around resource issues within national parks



Agenda

I. Introductions

II. The Role of Research Learning Centers in National Parks

III. Overview of Communication in Resource Protection

IV. Choosing Issues /Audience Break Out

V. Developing Messages

VI. Examination of Case Study: Kids Explore the Everglades DVD

VII. Developing YOUR Message/Audience Break Out

VIII. Choosing a Target Audience for YOUR Message/Audience Break Out

IX. Developing the Appropriate Technique

X. Examination of Case Study: Recreational Water Quality in Southern Lake Michigan

XI. Additional Case Studies: Pictured Rocks National Lakeshore Science Camp and Teacher Workshop

XII. One More Case Study: Nurturing Young Scientists – Inquiry Along the Lakeshore Educator Institute

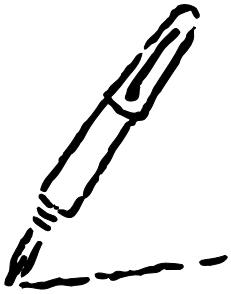
XIII. Audience Break Out: Determining the Appropriate Technique for YOUR Message

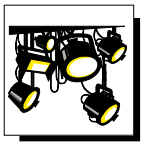
XIV. Tips for working with Researchers and Educators

XV. Discussion

Notes

Capture your notes here





References

Interpretation and Communication

Whatley, Michael E., *Interpreting Critical Natural Resource Issues in Canadian andUnited States National Park Service Areas*
Natural Resources Report NPS/NRCACO/NRR-95/17

Jacobson, Susan K., (1999). *Communication Skills for Conservation Professionals.* Washington, D.C.: Island Press.

NPS Interpretive Development Program readings and curriculum for Module 340: Interpretive Research and Resource Liaison
http://www.nps.gov/idp/interp/340/module.htm

Recreational Water Quality

Byappanahalli, M. N., R. L. Whitman, D. A. Shively, M. J. Sadowsky, and S. Ishii. 2006. Population structure, persistence, and seasonality of autochthonous *Escherichia coli* in temperate, coastal forest soil from a Great Lakes watershed. Environmental Microbiology 8:504-513.

Nevers, M. B., and R. L. Whitman. 2005. Nowcast modeling of *Escherichia coli* concentrations at multiple urban beaches of southern Lake Michigan. Water Res. 39:5250–5260.

Smith, W. W., M. B. Nevers, R.L. Whitman, 2006. Advances in recreational water quality monitoring at Indiana Dunes National Lakeshore. 24: 19-23

Whitman, R. L., K. Przybyla-Kelly, D. A. Shively, and M. N. Byappanahalli. 2007. Incidence of the enterococcal surface protein (esp) gene in human and animal fecal sources. Environmental Science and Technology 41:6090-6095

Whitman, R.W., M. Fowler, D.A. Shively and M.N. Byappanahalli. 2002. Distribution and characterization of E. coli within the Dunes Creek watershed, Indiana Dunes State Park. Report for: Indiana Department of Natural Resources, Indiana Dunes State Park.

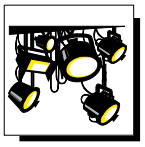
Whitman, R. L. and M. B. Nevers. 2003. Foreshore sand as a source of *Escherichia coli* in nearshore water of a Lake Michigan beach. Applied and Environmental Microbiology 69:5555-5562

NWS nearshore marine forecast:
http://www.nws.noaa.gov/om/marine/zone/gtlakes/lotmz.htm

S.A.F.E., USGS, Great Lakes Science Center URL:
http://www.glsc.usgs.gov/projectSAFE.php

On Citizen Science

A Director's Guide To Best Practices: Programming – Citizen Science, An Association of Nature Center Administrators (ANCA) Publication. Citizen science is a research and educational tool that involves everyday people in real and meaningful forms of science, including biological inventory, long-term monitoring, and research. This 52-page monograph was developed to outline best practices in developing a citizen science program. For more information, go to: http://www.natctr.org/index.php?id=9



Master Handout List

Handouts are either:

a.) printed in the following pages of this **participant guide**

Or

b.)posted within one**, 28 page pdf file (WQ Handouts 28 Pages.pdf)** on the **TEL Website** under the course title, *Sharing Science: Water Quality.* The handouts and their locations are listed below. For assistance, please contact Katrina_Fritts@nps.gov

Participant Guide Handouts

A. Sharing Science: Interpretation as a Resource Management Tool

- Pages 12-14 of Participant Guide

USGS Fact Sheets

B. *E.coli* Fact Sheet: New Approaches

- Page 15 of Participant Guide

C. *E. coli* fact sheet: Studies of Beaches

- Page 16 of Participant Guide

D. Adopt-a-Beach (AAB) Survey Form

- Pages 17- 23 of Participant Guide

E. Adopt-a-Beach (AAB) Litter Form

- Pages 24 – 25 of Participant Guide

TEL Website Handouts http://www.nps.gov/training/tel/participant_guides.htm

1. Recreational Water Quality in Southern Lake Michigan PowerPoint
   - See pdf posting, pages 1-4
2. Lead the Way Flyer
   - See pdf posting, page 5
3. Nurturing Young Scientists Educator Institute: Agenda
   - See pdf posting, pages 6-7
4. The Research Pit Game (Adaptation)
   - See pdf posting, page 8
5. Viewpoints on the Line Activity and Question Adaptation
   - See pdf posting, pages 9-11
6. Beach Mysteries Activity
   - Page 12 Participant Guide, pages 12-18
7. Hooked on Thinking
   - See pdf posting, pages, 19-24
8. Graphic Organizer – Skyscraper Thinking
   - See pdf posting, page 25
9. Bloom's Taxonomy Questions
   - See pdf posting, pages 26-27
10. Keywords for Skyscraper Thinking
    - See pdf posting, page 28

Resource management and interpretation bring complementary skills to a relationship that benefits the resource. Resource management provides a rich understanding of the resource issues facing the preservation of park resources. Interpreters are skilled at developing opportunities for visitors and other audiences to make both intellectual and emotional connections to the meanings inherent in the resource. Through interpretation the visitor can move from awareness and understanding about the resource, to caring for and caring about, stewardship, of the resource. Engaging audiences as resource stewards helps the National Park Service meet its mission.

This guide outlines the steps to consider when developing communication strategies that are aimed at addressing and resolving a resource issue.

Identify the natural resource issue(s) or topic the park seeks to address including explicit recognition of the ***human dimensions component(s)***;

The interpretive component should reflect the project proposal's criteria statements regarding the significance of the resource, severity of resource threat, and/or problem resolution. It should also discuss the direct or indirect link between humans and the resource issue.

Articulate the message(s) that the park wants to convey through outreach products or programs relevant to this issue. What is the ***interpretive intent***?

What is the most desired message that needs to be conveyed regarding the identified issue? What is the goal of the communication effort? Is it to encourage participation in stewardship? To simply inform? To instill appreciation? Different issues require different levels of acceptance, understanding, or response from the public for resolution.

Determine the most important ***target audience(s)*** for the message;

With many critical resource issues, the selected interpretive presentation should be designed to meet the needs or interests of the most appropriate target audience (the audience that needs to be reached to obtain satisfactory issue resolutions). Often, the best approach in dealing with critical resource issues is to use a variety of interpretive techniques that reach various audiences at different levels.

Individual critical resource issue programs may need to reach both a range of audiences with different values, interests and motivations, including internal NPS staff, external park communities, park partners, schools, local businesses, traditional visitors, park neighbors, tribal members, ranchers, in-holders, commercial fisherman, hikers, pet owners, urban populations, concessioners, etc. In seeking real solutions, the most appropriate target audience should not be missed by unwittingly delivering the message to a more convenient or traditional audience or using a 'one size fits all' approach for everyone.

Identify the specific ***media or method(s)*** that will be effective to communicate the message to the specific audience;

Consider a variety of techniques and determine which would best reach your target audiences needs and interests. A variety of techniques should be considered and can include: brochures, maps, signs, displays at trailheads, posters, personnel at school programs, hosting public meetings, slide shows, agency periodicals, guidebooks and identification checklists, commercial and agency radio, TV and/or periodicals, movies or short film segments, and bookmarks. Media can also be distributed in a variety of different domains including: agency offices, visitor centers, campgrounds, trailheads and backcountry areas. A multilayered approach often brings the best results in resolving critical resource issues.

Other useful components to include:
Budget: Itemize and briefly explain costs for materials, development and shipping, graphic design/artwork, installation/set-up or distribution, staff time commitment, and other considerations. Requested funding should be recognized in the Cost Component

Estimate. Funding to complete the Interpretive Component should not come at the expense of research or management dollars; rather it is an addition to the budget specifically allocated to communication.
Interpretive Specialist: Consult with an interpretive specialist from the park, regional office, or national office. Indentify an interpretive specialist who will collaborate on the implementation of the interpretive component. Use their input to explore the best techniques to connect the interests of your audience to the resource.
Evaluation: What is the intended outcome of the interpretive component? How will the success of the interpretive service or product be measured?

Interpretive strategies developed with consideration to these factors will support other efforts to provide long-term solutions to resolving natural resource issues. **The WASO Natural Resource Program Center, Office of Education & Outreach stands ready to help with this process, including assistance with the development of effective Interpretive Component proposals for NRPP projects, sample proposals, interpretive media, and development and implementation of the Interpretive Component.** A worksheet is provided to facilitate the development of your interpretive component. Contact OEO to request a TEL DVD on 'Sharing Science" which describes the key elements of an Interpretive Components using case studies from Research Learning Centers or download a report on ***Interpreting Critical Natural Resource Issues*****.** For further information and assistance, contact Sara Melena at (970) 225-3525 (Sara_Melena@nps.gov), Mike Whatley at (970) 225-3541 (Mike_Whatley@nps.gov), or Lynne Murdock at (202) 513-7195.

USGS
science for a changing world

Great Lakes Science Center

New Approaches May Improve *E. coli* Monitoring for Beaches

The USGS Great Lakes Science Center is studying more effective, reliable, real-time alternatives for monitoring swimming waters for* E. coli *bacteria.

Great Lakes beaches are occasionally closed to swimming due to high counts of *E. coli* bacteria. These bacteria are used as an indicator of sewage contamination, which can contain harmful pathogens that cause minor to serious illness. Scientists at the USGS Great Lakes Science Center (GLSC) have been studying the sources, survival, and predictability of *E. coli* bacteria to help inform beachgoers of risks and to improve monitoring effectiveness.

All swimming beaches on the Great Lakes are encouraged to be monitored for *E. coli*, according to the BEACH Act of 2000. At present, the *E. coli* assay requires a 18-24 hour incubation, so results are not available until the day after samples are collected. Due to this delay, people unknowingly swim in contaminated water or are turned away from safe water. Recent research by GLSC scientists at the Lake Michigan Ecological Research Station has shown that *E. coli* may be more widespread than previously suspected and may occur naturally in some environments. GLSC scientists are working to improve monitoring methods.

Using data on water and air conditions, GLSC scientists hope to develop a predictive model that relies on readily available information to determine whether conditions are safe for swimming. Ideally, this model would be used across entire regions such as southern Lake Michigan. Investigations of historical monitoring data have shown that there is some predictability to *E. coli* counts within regions, but local conditions and bacteria events must be incorporated for more accurate predictions.

E. coli contamination of our beaches not only poses a human health threat to visitors, but it affects tourism, the economy, and the region's image. USGS is working with community and state beach managers to make beach monitoring more effective and to solve this difficult problem.

Goals:

- **Develop predictive models for *E. coli* at Great Lakes beaches**
- **Study sources of *E. coli* including beach sands, shallow groundwater, and beach algae**
- **Improve effectiveness of *E. coli* monitoring to protect public health**

U.S. Department of the Interior
U.S. Geological Survey

Great Lakes Science Center
1451 Green Road
Ann Arbor, MI 48105
(734) 994-3331
http://www.glsc.usgs.gov

GLSC Fact Sheet 2004-3

USGS
science for a changing world

Studies of Indiana and Chicago Beaches Demonstrate Area-wide Understanding of *E. coli* Contamination

Great Lakes Science Center (GLSC) scientists have developed E. coli *predictive models for up to 23 Lake Michigan beaches that are as accurate as many models used at single beaches for managing swimming activities.*

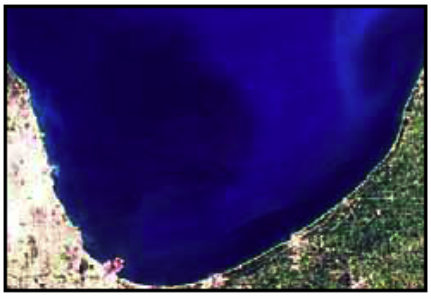

View of Chicago from Indiana Dunes

Predictive models are being incorporated into recreational beach bacteria monitoring programs at several beaches around the Great Lakes. GLSC scientists at the Lake Michigan Ecological Research Station in Porter, Indiana have determined that these models can be expanded to include more beaches, which may improve the accuracy of monitoring programs throughout the Great Lakes.

E. coli as an Indicator

Problem: Current recreational water monitoring protocols require 24 hrs. for results.
Current solution: Individual beaches use models to predict when *E. coli* concentrations are too high for swimming.
Future solution: Region-wide models can be used to predict high *E. coli* counts at numerous beaches simultaneously.

In order to provide real-time results, GLSC scientists and others have developed predictive models that are being employed at several beaches around the Great Lakes. These models incorporate weather and water conditions and, based on historical patterns, predict the concentration of *E. coli* in the beach water.


Aerial view of southern Lake Michigan, including Indiana and Chicago beaches.

Expanding Models to a Region

Scientists at the GLSC have determined that much of the variation in *E. coli* counts can be explained for numerous beaches simultaneously. Using historical data from a 35-km stretch of Indiana's Lake Michigan beaches, two measurements could be used to explain the fluctuations in *E. coli*. By measuring wave height and turbidity in river outfalls, and their association with wind direction, the predictive model could predict *E. coli* counts at 12 beaches with as much accuracy as some of the models developed for individual Great Lakes beaches. In another exercise, *E. coli* counts could be predicted with similar accuracy for 23 Chicago beaches using five hydrometeorological variables.

Regional models rely on the similarities in *E. coli* fluctuations between beaches, so the area of consideration may be limited by external influences that affect a limited number of beaches, such as river outfalls, breakwalls, or land use. In the Indiana model, some beaches are impacted by rivers and creeks, and others are not, indicating that some of the variation in *E. coli* counts at all beaches is due to factors independent of these sources. For the Chicago beaches, there are no river influences, but there are many breakwalls.

Usefulness of Regional Models

In many cases, a regional model may assist beach managers in assessing a number of beaches simultaneously, and significant insight into the dynamics of *E. coli* can be gained from the model results. By examining the coastline from a broader perspective, region-wide characteristics and fluctuations in *E. coli* can be assessed. GLSC scientists believe that, with this information, potential sources can be eliminated, community comparisons can be made, and swimming advisories can take into account neighboring beaches.

U.S. Department of the Interior
U.S. Geological Survey

Great Lakes Science Center
1451 Green Road
Ann Arbor, Michigan 48105
(734) 994-3331

GLSC Fact Sheet 2008-1

Adopt-a-Beach Routine Visit Form

Answer these questions during your beach visit. Use our companion Routine Visit Form Guide for question by question instructions on how to complete the form.

After each visit please enter your data online at *www.greatlakes.org*. If you have data to enter prior to June 15th 2008, email *adoptabeach@greatlakes.org* for data entry direction since the system will be under construction. If you have questions about Adopt-a-Beach, contact *adoptabeach@greatlakes.org*.

Beach name and location (city and state)

Adopt-a-Beach team name

Contact person

Visit date

Visit time of day (e.g. 11:00 a.m.)

Number of volunteers x Time spent = Total volunteer hours spent at this beach visit

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Describe the boundaries of the beach area you have adopted using fixed objects, street names or other fixed reference points. Some groups have adopted a portion of a beach area and some groups have adopted an entire beach.

General Beach Conditions

1. Air temperature _____ ☐ **Celsius** ☐ **Fahrenheit** (Check type of measurement taken.)

2. Wind direction ☐ **S** ☐ **SE** ☐ **SW** ☐ **N** ☐ **NE** ☐ **NW** ☐ **E** ☐ **W** (Check the answer that applies.)

3. What is the wind speed? (Circle one of the options below.) *See Beaufort Wind Scale detailed in the Routine Visit Form Guide.

Knots	Under 1	1-3	4-6	7-10	11-16	17-21	22-27	28-27	34-40
Description	Calm	Light air	Light breeze	Gentle breeze	Moderate breeze	Fresh breeze	Strong breeze	Near gale	Gale

4. When was the most recent rain event? (If it lasted more than one day, check the appropriate answer.) Consider that 24 hours = 1 day, 48 hours = 2 days and 72 hours = 3 days.

☐ Less than 24 hours ago ☐ Less than 48 hours ago

☐ Less than 72 hours ago ☐ More than 72 hours ago ☐ I don't know

5. Describe the rain event, if one has occurred in the past 72 hours (3 days).

☐ Misting ☐ Light rain ☐ Steady rain ☐ Heavy rain

☐ No rain event in the past 72 hours ☐ I don't know

Other (e.g. snow, hail) describe: _____

6. If it has rained within the past 72 hours and you have a rain gauge at the beach, measure the amount of rain in inches or centimeters. (If you do not have a rain gauge or have access to a rain gauge at your beach, please select no rain gauge.)

_____ in/cm ☐ No rain gauge

7. Longshore current: What is the amount of time (in seconds) _____ that it takes your floatable object to travel 10 meters. See Routine Visit Form Guide for instructions on how to measure the longshore current.

8. What is the speed _____ of the longshore current?

To determine the speed of the longshore current use the following equation:

10 meters ÷ by _____ time in seconds = _____ speed in meters per second

Example #1: 10 meters ÷ 30 seconds = .33 meters per second
Summary: Your floatable object moves 10 meters in 30 seconds. Therefore, the speed of the longshore current is .33 meters per second.

Example #2: 10 meters ÷ 40 seconds = .25 meters per second
Summary: Your floatable object moves 10 meters in 40 seconds, therefore the speed of the longshore current is 0.25 meters per second.

9. What is the direction_____ of the longshore current? (The longshore current runs parallel to the beach.)

10. What are the current sky conditions? (Check one of the options below.)

Sky condition	Sunny	Mostly sunny	Partly sunny	Mostly cloudy	Cloudy
Amount of cloud coverage	No clouds	1/8 to 1/4	3/8 to 1/2	5/8 to 7/8	Total coverage

11. What is the current wave height in feet? (Check one of the options below.) Wave height is determined by measuring the distance between the crest (tallest point of the wave) to the trough (the lowest point of the wave) just lakeward of where the waves are breaking.

☐ No waves ☐ 1-2 feet ☐ 3-4 feet

☐ 5-6 feet ☐ 6-8 feet ☐ Over 8 feet

12. Describe the intensity of the waves. (Check one of the options below.)

☐ Calm ☐ Medium ☐ Rough

Water Quality

13. Some adopters may have the ability to measure water pH. If you are one of these adopters, please enter the pH level of the water. _____

14. If a pH reading was taken, please indicate the testing method you used. (Check the appropriate answer.)

☐ pH paper ☐ pH liquid solution ☐ pH meter

15. Bacteria sample results. Please refer to Adopt-a-Beach guide for specific protocol and to determine results. Your water sample should be taken at the same location in the middle of your adopted beach where 24-30 inches (2 – 2.5 feet) of water depth is first encountered and at 6 inches below the surface. If you are using the Alliance's test kits, fill in: *E. coli* – water and Coliform and leave the results blank for other types of bacteria tests.

Sample #1

Test type	***E. coli* – water**	**Coliform**	**Enterococcus**	***E. coli* – sand**
Number of dots				

Sample #2

Test type	***E. coli* – water**	**Coliform**	**Enterococcus**	***E. coli* – sand**
Number of dots				

16. What is the water temperature? _____ ☐ Celsius ☐ Fahrenheit (Check type of measurement taken.)

17. Have you noted any changes in water color from previous visits? (Check the appropriate answer.)

☐ Yes ☐ No ☐ This is our first beach visit

If you have noted a change in color, describe it. _____

18. Describe the odor of the water. (Check one or more of the options below.)

☐ No smell ☐ Sewage ☐ Algae (decaying plants)

☐ Sulfur (rotten eggs) ☐ Musty (wet soil) ☐ Other If other, describe: _____

19. Describe the turbidity (cloudiness) of the water. (Check one of the options below.) Observe turbidity at the same location you take your water sample.

☐ Clear ☐ Slightly cloudy ☐ Cloudy ☐ Opaque (solid)

20. Additional observations about water quality: _____

Bather Load (Number of people at the beach)

21. What is the total number of people at the beach, excluding your group (this includes total number of people in the water, on the water and on the beach)**?** _____

22. What is the total number of people in and on the water? _____

23. For people in or on the water, describe the type of activity and number of people involved.
(Use the table below to fill in the number of people involved in the activities listed below.)

Type of activity	Sailing/ power boating	Canoeing/ kayaking	Jet skiing	Fishing	Surfing	Windsurfing/ kite boarding	Swimming/ wading	Other
Number of people engaged in this activity								

If other, describe the type of activity in or on the water: _____

24. General comments and observations on the number of people at the beach:

Potential Pollution Sources

25. Identify any of these features up to 500 feet from the beach boundary that are visible. (See Adopt-a-Beach Guide to determine flow rate)

Source Type	River/Stream/ Channel	Pond(s)	Wetland(s)	Outfall (pipe discharging to the beach)	Other
Amount (Check the answer that applies)	☐ Gushing ☐ Steady stream ☐ Trickle	☐ Gushing ☐ Steady stream ☐ Trickle	☐ Gushing ☐ Steady stream ☐ Trickle	☐ Gushing ☐ Steady stream ☐ Trickle	☐ Gushing ☐ Steady stream ☐ Trickle
Flow Rate (Record as M/sec)					
Characteristics (Check all that apply)	☐ Brown ☐ Green ☐ Black ☐ White ☐ Red ☐ Clear ☐ Foamy ☐ Things floating in water ☐ Oily sheen on water	☐ Brown ☐ Green ☐ Black ☐ White ☐ Red ☐ Clear ☐ Foamy ☐ Things floating in water ☐ Oily sheen on water	☐ Brown ☐ Green ☐ Black ☐ White ☐ Red ☐ Clear ☐ Foamy ☐ Things floating in water ☐ Oily sheen on water	☐ Brown ☐ Green ☐ Black ☐ White ☐ Red ☐ Clear ☐ Foamy ☐ Things floating in water ☐ Oily sheen on water	☐ Brown ☐ Green ☐ Black ☐ White ☐ Red ☐ Clear ☐ Foamy ☐ Things floating in water ☐ Oily sheen on water

If other, describe the feature identified: ______________________________

26. Bacteria sample results. If you did not have any features as outlined in question 25, you can skip this question. If you did have any of the features listed in question 25, use one of your *E. coli* test kits provided by the Alliance to test for bacteria in water at the feature listed above. Please refer to Adopt-a-Beach Guide #15 for specific protocol and to determine results. If you are using the Alliance's test kits, fill in: *E. coli* – water and Coliform and leave tests for other types of bacteria blank.

Sample #1 (from the water feature at your adopted beach.)

Test type	***E. coli* – water**	**Coliform**	**Enterococcus**	***E. coli* – sand**
Number of dots				

27. Are there floatables (items floating in the water) present? ☐ Yes ☐ No

If yes, please describe the floatables present. (Circle one or more of the options below.)

Type	Street litter	Food-related litter	Medical items	Resin	Sewage-related	Building materials	Fishing related	Household waste	Six-pack rings
Example	Cigarette filters	Food packing, beverage containers	Syringes	Tiny plastic pellets	Condoms, tampons	Pieces of wood, siding	Fishing line, nets, lures	Household trash, plastic bags	Use to contain beverages

28. Describe the amount of debris/litter on the beach. (Circle one of the options below.)

Amount	**None**	**Low**	**Medium**	**High**
Percentage on beach	0%	1-20%	21-50%	51% and up

29. Do you see an oily sheen on the water and/or along the beach? (Circle the appropriate answer.) ☐ Yes ☐ No

a. If yes, describe. _____

b. Can you identify the source? _____

30. Describe the amount of algae *in the water near the shore* along your adopted area of beach.

Amount	**None**	**Low**	**Medium**	**High**
Percentage	0%	1-20%	21-50%	51% and up

31. Describe the amount of algae *on the beach* along your area of adopted beach.

Amount	**None**	**Low**	**Medium**	**High**
Percentage	0%	1-20%	21-50%	51% and up

32. Describe the type of algae along the water's edge and on the beach. (Check one or more options below.)

☐ No algae ☐ Attached to rocks, stringy ☐ Blobs of floating materials

☐ No obvious mass of materials ☐ Matted ☐ Other

If other, describe: _____

33. Describe the color of the algae. (Check one or more options below.)

☐ No algae ☐ Light green ☐ Blue green ☐ Dark green ☐ Yellow

☐ Red ☐ Brown ☐ Other If other, describe: _____

34. Please describe and count the presence of wildlife and domestic animals on the beach.

Type	Geese	Gulls	Dogs	Other
Number				

If other, describe: _____

35. If you find dead birds along the shoreline, fill in the number found in the appropriate box below.
(Refer to Adopt-a-Beach Guide for identification.)

Type	Common loon	Herring gull	Ring-billed gull	Double crested cormorant	Horned grebe	Other
Number found dead						

If other, describe: _____

36. How many dead fish are on the beach? _____

37. How many garbage and recycling containers are there within 500 feet of your adopted beach boundary? _____
(If there are no garbage containers on your beach enter 0.)

38. Describe use and condition of garbage containers at this location. (Check one or more of the options below.)

☐ No garbage cans ☐ Designated carry in carry out policy ☐ Garbage cans present with no lids

☐ Garbage cans present with lids ☐ Garbage cans well maintained ☐ Garbage cans overflowing or knocked over

39. Please add any additional comments or notes about your visit here:

Thank you for your time and dedication to keeping our beaches and shorelines healthy!

Adopt-a-Beach Summary Card

Please pick up everything you find. Record only the items found on the data card.

Pick up "pieces" of items, but do not record these fragments on the data card as this can distort the data totals.

Please return this card along with all data cards and sign-up sheets to your coordinator or mail to:

Alliance for the Great Lakes
Adopt-a-Beach
17 North State Street, Suite 1390
Chicago, Illinois 60602

Coordinator Name _____ Date _____

Clean-up Site Name (beach, park, etc.) _____ State _____

Type of cleanup: ☐ Shoreline/Beach ☐ River/Stream/Tributary ☐ Lake

Distance cleaned: _____ in miles or yards Number of trash bags filled: _____

Total weight of trash collected: _____ Estimated time spent on cleanup: _____

List all the entangled animals found during the cleanup. Tell us what they were entangled in (fishing line, rope, net, etc.). Check if they were found dead or alive.

Type of Animal	Entangled in		
_____	_____	☐ Dead	☐ Alive
_____	_____	☐ Dead	☐ Alive
_____	_____	☐ Dead	☐ Alive

What was the most peculiar item you collected? _____

_____

_____

ALLIANCE FOR THE GREAT LAKES
ADOPT A BEACH®
Visit www.greatlakes.org

17 North State Street, Suite 1390
Chicago, Illinois 60602

312.939.0838
adoptabeach@greatlakes.org

ITEMS COLLECTED: Please pick up ALL debris that you find. Only record information for the items listed below. Keep a count of your items using tick marks and enter the item total in the box.
Example: [8] **Beverage Cans** 𝍸 III

Shoreline and Recreational Activities

- ☐ Bags (paper or plastic) _____
- ☐ Balloons _____
- ☐ Beverage bottles (plastic) 2 liters or less _____
- ☐ Beverage bottles (glass) _____
- ☐ Beverage cans _____
- ☐ Caps, Lids _____
- ☐ Clothing, shoes _____
- ☐ Cups, plates, forks, knives, spoons _____
- ☐ Food wrappers/containers _____
- ☐ Pull tabs _____
- ☐ 6-pack holders _____
- ☐ Shotgun shells/wadding _____
- ☐ Straws, stirrers _____
- ☐ Toys _____

Waterway Activities

- ☐ Bait containers _____
- ☐ Bleach/cleaner bottles _____
- ☐ Buoys/floats _____
- ☐ Crab/lobster/fish traps _____
- ☐ Crates _____
- ☐ Fishing line _____
- ☐ Fishing lures/light sticks _____
- ☐ Fishing nets _____
- ☐ Light bulbs/tubes _____
- ☐ Oil/lube bottles _____
- ☐ Pallets _____
- ☐ Plastic sheeting/tarps _____
- ☐ Rope _____
- ☐ Strapping bans _____

Smoking-Related Activities

- ☐ Cigarettes/cigarette filters _____
- ☐ Cigarette lighters _____
- ☐ Cigar tips _____
- ☐ Tobacco packaging/wrappers _____

Dumping Activities

- ☐ Appliances (refrigerators, washers, etc.) _____
- ☐ Batteries _____
- ☐ Building materials _____
- ☐ Cars/car parts _____
- ☐ 55-Gal. Drums _____
- ☐ Tires _____

Other Debris/Items of Local Concern

- ☐ Discarded food _____
- ☐ Firework debris _____
- ☐ Drug paraphernalia (crack pipes, bags, etc.) _____
- ☐ Misc. items _____

Medical/Personal Hygiene

- ☐ Condoms _____
- ☐ Diapers _____
- ☐ Syringes _____
- ☐ Tampons/tampon applicators _____

Note: Results must be tallied before they are entered online.

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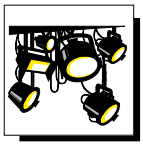

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