CHAPTER 5

Sampling for Recreational Water Quality Monitoring

In this chapter, we will focus on sample collection and transport for qPCR testing.

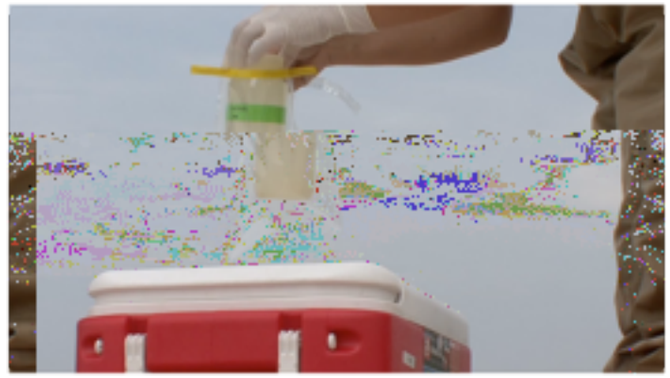
Sample Collection and Transport

CONTENTS

Please see the training video at http://cws.msu.edu/videos/videos.php

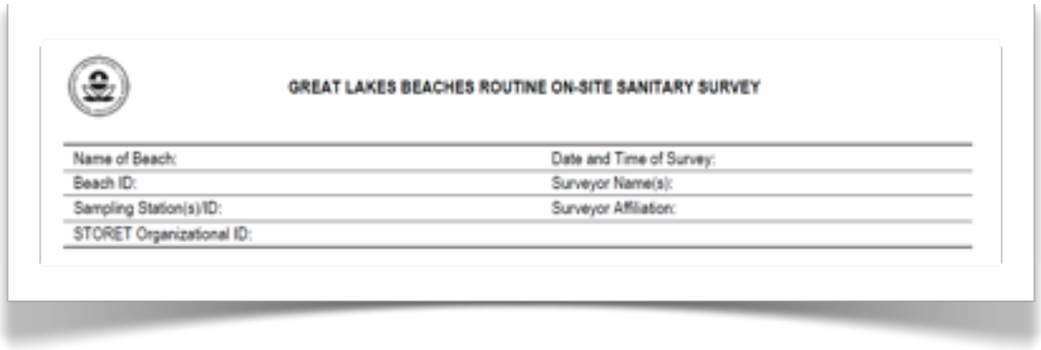
5.1 Sampling Equipment

- Nalgene™ autoclavable bottles
- Whirl–Pak™ Bags
- Cooler with ice packs
- Thermometer
- Gloves
- Paper towels
- Waders
- Permanent ink markers
- Chain of custody form
- Sampling form
- DO meter (optional)
- Turbidimetry (optional)



5.2. Sample Collection

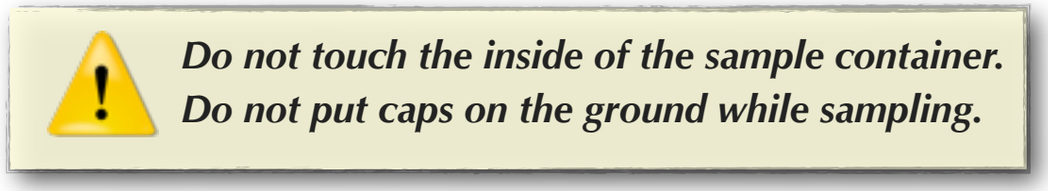
- Designate specific sites for collecting samples during the bathing season. Collect samples exclusively at these sites for the duration of the sampling period. Record the beach sanitary survey data in the on-site sanitary survey form. This form is available at http://water.epa.gov/type/oceb/beaches/upload/2008_05_29_beaches_sanitarysurvey_survey-routine.pdf.



GREAT LAKES BEACHES ROUTINE ON-SITE SANITARY SURVEY

Name of Beach:	Date and Time of Survey:
Beach ID:	Surveyor Name(s):
Sampling Station(s)/ID:	Surveyor Affiliation:
STORET Organizational ID:	

- Carefully move to the first sampling location while wading slowly in the water, try to avoid mixing bottom sediment at the sampling site.
- Wade out until you reach an approximate depth of 1 m. The sampling depth should approximately 6 to 12 inches below the surface of the water.
- 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 suspended material.
- 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 and label the bottle.
- Store sample in a cooler filled with ice or suitable cold packs immediately.
- Note time, date, and location of sample collection, current weather conditions (including wind direction and velocity), water temperature, clarity, wave height and any abnormal environmental conditions.

5.3. Sample Transport

> ***Immediately store collected samples on ice.***

Samples should be labeled, iced or refrigerated at 1 – 4 °C immediately after collection and during transit to the lab.

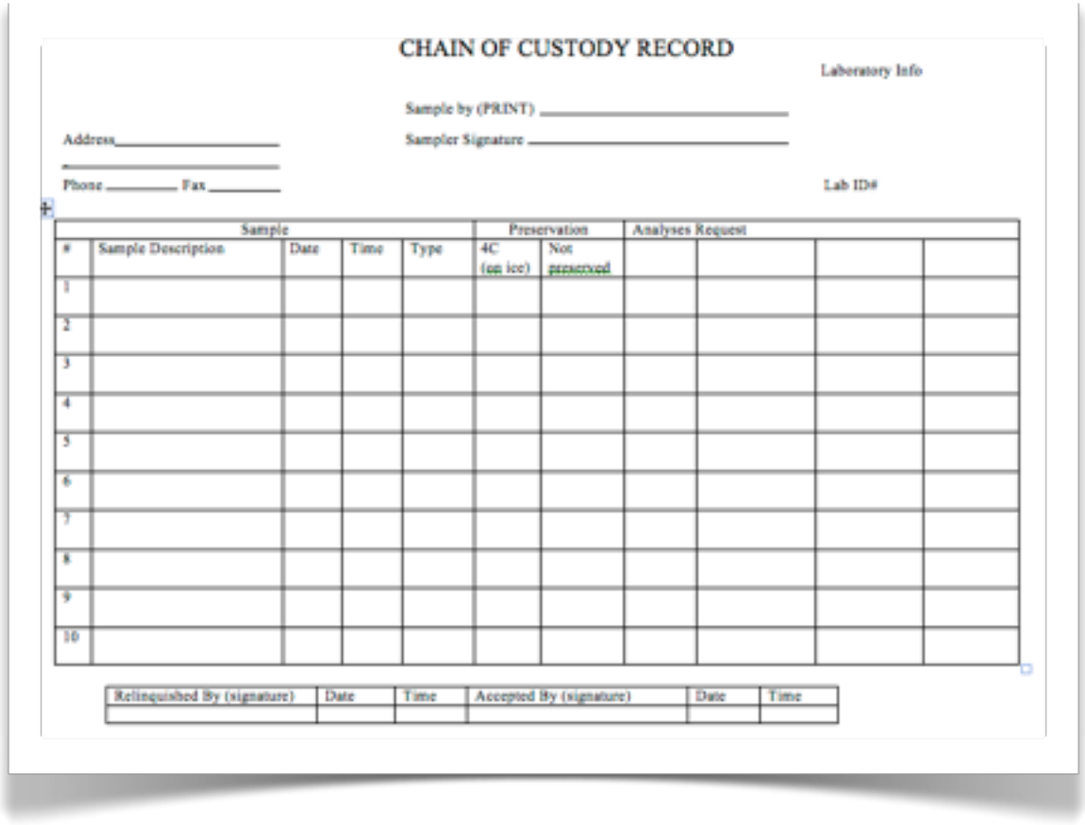
Once samples are transferred to the laboratory, they should be stored at 1-4 °C, and processed (ideally) within 6 hours of sample collection.

Care should be taken to ensure that sample bottles are not totally immersed in water during transit or storage.

> ***Do not transport the samples with other environmental samples.***

5.4. Environmental Sample Acceptance Protocol

According to USEPA (2004), laboratories should have a protocol in place for the acceptance of environmental samples for qPCR analysis. This protocol should be documented and archived as a “chain of custody form” and include sample acceptance criteria and corrective actions for samples that do not meet the criteria (e.g., recollection of the sample or follow up with the sample collector to obtain missing information).



CHAIN OF CUSTODY RECORD

Laboratory Info

Sample by (PRINT) _____

Address_____

Sampler Signature _____

Phone _____ Fax _____

Lab ID#

	Sample				Preservation		Analyses Request			
#	Sample Description	Date	Time	Type	4C (on ice)	Not preserved				
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Relinquished By (signature)	Date	Time	Accepted By (signature)	Date	Time

The sample should be assessed when it is received at the laboratory to verify that the sample volume was adequate, the sample was handled and preserved appropriately (e.g. chilled, labelled), the holding time requirement was met, and that all required sample collection information was recorded by the sample collector.

Sample volume, sample handling, and holding times will be method dependent, so sample acceptance criteria should be based on the specifications described in Method 1611 for this particular sampling.

After the sample is assessed, information on the date and time of sample receipt and sample condition should be recorded.

The sample should be marked, logged, and tracked carefully in a chain of custody record form as below: