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MARINE BEACH ANNUAL SANITARY SURVEY

EPA 820-F-13-007

1. BASIC INFORMATION

Name of Beach:	Date(s) of Survey:
Beach ID:	Name of Waterbody:
Town/City/County/State:	Number of Routine Surveys Used:
Sampling Station(s)/ID:	Name(s) of Surveyor(s):
STORET Organizational ID:	Surveyor Affiliation:
Dates of Beach Season: Start:	End:

2. DESCRIPTION OF LAND USE IN THE WATERSHED

Current Land Use in the Watershed

Type	Residential	Industrial	Commercial	Agricultural	Other (specify):
Percentage					
% Impervious					

Development	Describe
% undeveloped	
% developed	

How was land use measured:

Beach Uses:

☐ Swimming   ☐ Boating   ☐ Fishing   ☐ Surfing   ☐ Windsurfing   ☐ Diving   ☐ Kayaking
☐ Jet skiing   ☐ Beachcombing   ☐ Vehicular traffic   ☐ Kiteboarding   ☐ Other (specify)

Are maps of the beach area attached? ☐ yes   ☐ no   Are maps of the watershed attached? ☐ yes   ☐ no

List maps and their sources:

Do the maps include locations of:

Sample points	☐ yes	☐ no	Describe:
Weather stations and rain/flow gauges	☐ yes	☐ no	Describe:
Pollutant sources	☐ yes	☐ no	Describe:
Boat traffic	☐ yes	☐ no	Describe:
Marinas	☐ yes	☐ no	Describe:
Boat dockage	☐ yes	☐ no	Describe:
Fishing	☐ yes	☐ no	Describe:
Bathing/swimming	☐ yes	☐ no	Describe:
Bounding structures:			
Jetty	☐ yes	☐ no	Describe:
Groin	☐ yes	☐ no	Describe:
Seawall/bulkhead	☐ yes	☐ no	Describe:
Other	☐ yes	☐ no	Describe:
Sanitary facilities	☐ yes	☐ no	Describe:
Restaurants/bars	☐ yes	☐ no	Describe:
Playground	☐ yes	☐ no	Describe:
Parking lot(s)	☐ yes	☐ no	Describe:
Shellfish-growing areas	☐ yes	☐ no	Describe:
Other	☐ yes	☐ no	Describe:

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Erosion/Accretion Measurements as Needed

High Watermark Location Identification	Fixed Object Description (e.g., tree, building)	GPS Reading	Distance from Fixed Object to High Watermark (m)	Distance between High Watermark Locations (m)
A				A↔B:
B				B↔C:
C				C↔D:
D (optional)				D↔E:
E (optional)				

Shoreline Hardening and Circulation Control Structures

Structure	Number	Description or Comment (include linear extent and width)
Jetty		
Groin		
Seawall		
Natural formation		
Pier		
Other (specify):		

Discuss whether shoreline hardening or circulation control structures are likely to affect water quality circulation and thus bacteria concentrations at the beach (include relevant studies, if available):

Beach Materials/Sediments

☐ Sugar sand	☐ Fine sand	☐ Coarse sand	☐ Wet sand	☐ Sand/shell mix
☐ Mucky	☐ Pebbles	☐ Rocky	☐ Shell	☐ Other:

Additional description, if needed:

OR Beach Materials/Sediments Lab Analysis (attach diagram or photographs of plot locations)

Name of lab used:	
Date of sample collection:	

Plot ID	Mean Grain Size Diameter	Uniformity Coefficient	Description of Plot Location:
Average			

Describe the results and conclusion of the sediment analysis and potential effects of the sediment distribution at this beach:

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Shellfish Growing Area

Describe any shellfish-growing areas near the beach, including size, distance from the swimming area, condition, issues, and results of any recent shellfish sanitary surveys (attach any relevant data or reports and cite sources):

Photos Taken in the Beach Area or Surrounding Watershed (attach copies of photos)

Image Number	Date/Time	File Name	Description of Photo (e.g., Land Use, High Watermark, Fixed Objects, Pollution Sources, Tide Pools)

Habitat around the beach:

☐ Dunes ☐ Wetlands ☐ River/stream ☐ Forest ☐ Park ☐ Protected habitat or reserve
☐ Urban/boardwalk ☐ Parking ☐ Other:

3. WEATHER CONDITIONS AND PHYSICIAL CHARACTERISTICS

Examine the weather data (at the beach) collected over the prior beach season(s) along with bacteria sampling results.
Do the bacteria concentrations at this beach appear to correlate with any of the following? Include the *r* value if calculated.

Weather Conditions

Rainfall	☐ yes	☐ no	Describe:
Air temperature	☐ yes	☐ no	Describe:
Water temperature	☐ yes	☐ no	Describe:
Cloud cover	☐ yes	☐ no	Describe:
Wind speed	☐ yes	☐ no	Describe:
Wind direction	☐ yes	☐ no	Describe:
Other weather	☐ yes	☐ no	Describe:

Physical Characteristics

Wave height or intensity	☐ yes	☐ no	Describe:
Tide stage	☐ yes	☐ no	Describe:
Longshore current	☐ yes	☐ no	Describe:
Other physical characteristics	☐ yes	☐ no	Describe:

Have any statistical analyses been done to calculate the degree of correlation? ☐ yes ☐ no

Average air temperature during beach season: °C or °F	Average water temperature during beach season: °C or °F

Average air temperature in the following seasons (for beaches that are open more than 3–4 months):	Spring °C or °F	Summer °C or °F	Fall °C or °F	Winter °C or °F
Average water temperature in the following seasons (for beaches that are open more than 3–4 months):	Spring °C or °F	Summer °C or °F	Fall °C or °F	Winter °C or °F

Average wind speed and direction during beach season (e.g., E or 90° at 15 mph):

Typical weather conditions in spring:	☐ Sunny ☐ Mostly Sunny ☐ Partly Cloudy ☐ Mostly Cloudy ☐ Overcast ☐ Rainy

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Typical weather conditions in summer:	☐ Sunny	☐ Mostly Sunny	☐ Partly Cloudy	☐ Mostly Cloudy	☐ Overcast	☐ Rainy
Typical weather conditions in fall:	☐ Sunny	☐ Mostly Sunny	☐ Partly Cloudy	☐ Mostly Cloudy	☐ Overcast	☐ Rainy
Typical weather conditions in winter:	☐ Sunny	☐ Mostly Sunny	☐ Partly Cloudy	☐ Mostly Cloudy	☐ Overcast	☐ Rainy

Rainfall total for the beach season (in):	Average rainfall for all beach seasons (in):
Number of significant rain events during beach season:	What constitutes "significant?" (e.g., 1 inch or more rain)

Describe any tropical storms or hurricanes that occurred (dates, magnitude, storm surge height, proximity to beach) and their effects on the beach:

Describe any analyses done and any trends or correlations found (add lines if needed to describe in detail):

Winds

What is the prevailing wind speed?

What is the prevailing wind direction?

How does the prevailing wind blow: ☐ from beach to water   ☐ from water to beach   ☐ across beach-sand interface (sideways)

Describe any effects the prevailing winds have on bacteria concentrations at the beach:

Waves

Describe the typical wave conditions during the beach season and how those conditions affect bacteria concentrations:

Tides

Tidal extent:	Mean high:	Mean low:

How does tidal flow manifest itself?

Do the tides create a cross-current?

Do tidal rivers or streams discharge near the beach? ☐ yes ☐ no   If yes, describe flow, tidal influence, salinity, proximity to swimming area, and so forth:

Describe the relationship of tidal flow to known point or nonpoint pollution sources:

Tide Pools

Describe the type of tide pools, if found, at this beach:

Are tide pools common at this beach? ☐ yes   ☐ no   How many pools are typically seen?

Average size:	Duration pools remain filled:

Are samples collected from tide pools? ☐ yes   ☐ no   If yes, describe:

Do children frequently play in the tide pools? ☐ yes   ☐ no   If yes, describe:

Longshore and Nearshore Currents

What is the highest speed of longshore or nearshore currents?

What is the typical direction of longshore or nearshore currents?

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Do currents change with the tidal phase? ☐ yes ☐ no   Describe:

Do the currents carry effluents from WWTP, CSOs, or other dischargers?

Provide any additional characterization of longshore or nearshore currents, including modeling results if available (attach or cite any relevant reports):

Additional comments or observations:

4. BEACH DIMENSIONS

Beach length or dimensions (indicate Z1, Z2, and Z3 on a map for each beach area)		
Length (m):	Width (average setback) (average, in m):	
Width Z1 (m):	Width Z2 (m):	Width Z3 (m):
Which direction does the beach face?		
Describe the splash zone at the beach (include sediment makeup, rate of erosion, presence of seaweed wrack):		

Description and date of last beach rehabilitation (example: new sand, nourishment, dredging, etc.; physical structures will be described in Sections 12 and 13):

Additional comments or observations:

5. BATHER LOAD (NUMBER OF BEACH USERS)

Is bather load measured? ☐ yes ☐ no

If yes, describe how beachgoer numbers are calculated (e.g., turnstile, counting at noon, photographs):

Beach Use

Beachgoer Category	Number of People Per Day Using the Beach					
	Peak Use for the Season (Daily Use)	Seasonal Average (Daily Use)	Holiday Average (Daily Use)	Weekend Average (Daily Use)	Weekday Average (Daily Use)	Off-Season Average if applicable (Daily Use)
Total people in the water						
Total people out of the water						
Total people at the beach						
Breakdown of Activities (if activities were broken down on the Routine-Onsite Sanitary Survey, summarize them here)						
Activity 1:						
Activity 2:						
Activity 3:						
Activity 4:						
Activity 5:						
Activity 6:						

Frequency of measurements (e.g., daily, weekly, monthly)

Examine bather load data along with sampling results for the past beach season(s). Look at each sampling point or different area of the beach (light use versus heavy use). Does bather load appear to correlate with bacteria concentrations at any of these areas? Does the number of people in the water or out of the water correlate with bacteria concentrations? Has a statistical analysis been done? Describe (add additional pages as needed, or attach a separate report if available):

Additional comments or observations:

6. BEACH CLEANING

Beach cleaning frequency during season:

Description of cleanup activities:

	Leveling of Sand	Trimming or Removing Vegetation	Removing Debris	Removing Trash	Construction and Maintenance of a Temporary Pathway Directly to Open Water	Other (specify):
Check activities that were done						
Specify equipment used (if applicable)						

How often are floatables found at the beach? ☐ Never ☐ Sometimes ☐ Frequently ☐ Very frequently

Known sources of floatables:

Types of floatables found:

☐ Street litter ☐ Food-related litter ☐ Medical items ☐ Sewage-related

☐ Building materials ☐ Fishing-related ☐ Household waste ☐ Other:

How often is beach debris/litter found on the beach? ☐ Never ☐ Sometimes ☐ Frequently ☐ Very frequently

Known sources of debris:

Types of debris/litter found:

☐ Street litter ☐ Food-related litter ☐ Medical items ☐ Sewage-related ☐ Building materials

☐ Fishing-related ☐ Household waste ☐ Tar/oil ☐ Oil/grease ☐ Other:

Additional comments or observations:

7. INFORMATION ON SAMPLING LOCATION

Description of Sample Points (include beach water and potential pollution sources):

Sample Point Name/ID	Location (include lat/long)	Description	Sample Frequency	Time of Day of Sample Collection	Tidal Stage during Sample Collection

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Are any of the sample locations near a possible pollution source? ☐ yes ☐ no   If yes, describe:

Description of hydrometric network (note that this is a network of monitoring stations that collect data such as rainfall and stream flow):

Additional comments or observations:

8. WATER QUALITY SAMPLING

Name of laboratory: _____   Distance to laboratory: _____ miles

What is the time between sample collection and sample arrival at the lab?

Algae

Percent of beach season when macroalgae were present in significant amounts in the nearshore water:
☐ None   ☐ Low (1%–20%)   ☐ Moderate (21%–50%)   ☐ High (> 50%)

Percent of beach season where macroalgae was present in significant amounts on the beach:
☐ None   ☐ Low (1%–20%)   ☐ Moderate (21%–50%)   ☐ High (> 50%)

List types of algae found:

Colors of algae most commonly found:

Are microalgae commonly found at this beach? ☐ yes ☐ no
Describe occurrence of microalgae (species, amount found, effects):

Harmful Algal Blooms (HAB)

Have HABs been observed during the beach season? (If so, specify dates, duration, species, and effects)

Were any dangerous aquatic organisms found at the beach?   ☐ yes ☐ no
Describe (include species, numbers, dates of occurrence, effects):

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Presence of Wildlife and Domestic Animals

Type	Degree of Presence (Low, Mod, High)	Does the Presence Appear to Correlate with Bacteria Results? (Yes, No, Don't Know)	Describe further. Do people feed waterfowl? Is there any management of pet waste? Are fecal droppings frequently seen? Are there ways to reduce the presence or effects of these wild and domestic animals?
Geese			
Gulls			
Shorebirds			
Ducks			
Pigeons			
Turtles			
Dogs			
Horses			
Rodents (specify):			
Other (specify):			

Describe any wildlife management areas near the beach:

Were significant numbers of dead birds found on the beach during beach season? ☐ yes ☐ no
Describe types and numbers found and possible causes (attach photos):

Were significant numbers of dead fish found on the beach during the beach season? ☐ yes ☐ no
Describe numbers found and possible causes (attach photos):

Bacteria Samples Collected at the Beach

Who conducts the sampling (job title, agency)?

What is the sampling frequency?

What time of day are samples collected?   Is the sampling time tide-dependent? Explain:

What year did you begin monitoring water quality at this beach?

Do you test for *Enterococcus*? ☐ yes ☐ no   Analytical method used:

Do you test for *Escherichia coli*? ☐ yes ☐ no   Analytical method used:

Do you test for fecal coliform? ☐ yes ☐ no   Analytical method used:

List any additional bacteria for which you tested and associated analytical methods:

Do you composite any bacteria samples? ☐ yes ☐ no   If yes, explain: _____

How do this past season's bacteria results compare to those of previous years?

Do the bacteria results correlate to other parameters, such as water quality, weather, flow, tidal stage, wind, longshore currents, bather load, or algae?   ☐ yes ☐ no

Describe in detail analyses that were performed on the water quality data (add additional lines/pages as needed or attach separate report):

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Did you collect bacteria samples from any potential pollution sources, such as streams or outfalls? ☐ yes ☐ no

Describe in detail analyses that were performed on sample results from pollution sources (add additional lines or pages as needed or attach a separate report if available):

Water Quality (check all that are measured regularly):

Temperature	pH	Rainfall	Turbidity	Conductivity	Salinity	TSS	DO	Other

Describe where water quality measurements are taken:

What is the trend in water quality data—improving, deteriorating, or about the same?

Examine the water quality data collected over the prior beach season. Do the bacteria concentrations at this beach appear to correlate with any of the following? Include the *r* value if calculated.

Temperature	☐ yes	☐ no	Describe:
pH	☐ yes	☐ no	Describe:
Rainfall	☐ yes	☐ no	Describe:
Turbidity	☐ yes	☐ no	Describe:
Conductivity	☐ yes	☐ no	Describe:
Salinity	☐ yes	☐ no	Describe:
DO	☐ yes	☐ no	Describe:
TSS	☐ yes	☐ no	Describe:
Other:	☐ yes	☐ no	Describe:

What factor appears to have the greatest effect on bacteria levels at the beach (add lines or pages as needed or attach a separate report if available)?

Were there any unusual results, such as extremely high or low values detected, or unusual trends? ☐ yes ☐ no If yes, explain what was found and any potential causes:

Are water quality annual trend data attached? ☐ yes ☐ no
Do you sample during adverse (e.g., wet-weather) conditions? ☐ yes ☐ no

Additional Comments or Observations:

9. MODELING AND OTHER STUDIES

Are models being used? ☐ yes ☐ no
If yes, list types of models being used and briefly describe the models:

Have you tested for stormwater cross-connections in the sanitary sewer? ☐ yes ☐ no If yes, describe results:

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Have you tested for human sources of contamination? ☐ yes ☐ no   If yes, describe results:

Have you performed visual screening to isolate discharge areas during dry and wet weather? ☐ yes ☐ no   If yes, describe:

Has microbial source tracking been done at this beach? ☐ yes ☐ no   If yes, describe results and cite any reports:

Additional comments or observations:

10. ADVISORIES/CLOSINGS

List any advisories and closings that occurred, whether bacteria levels were high, and any possible reasons for the advisory or closing or high bacteria level, such as stormwater runoff, sewage spill, or wildlife on the beach.

Advisory or Closing (specify one)	Start and End Dates	Length of Advisory or Closing (Days)	Did Bacteria Concentrations Exceed GM or SSM Criteria?	Reason for Advisory or Closing or Possible Contributing Factors

Total number of closings issued: _____   Total number of days under an advisory: _____

Total number of advisories issued: _____   Total number of days beach was closed: _____

Criteria used to issue advisory or close beach:

Additional comments or observations:

11. POTENTIAL POLLUTION SOURCES

Type of Source	Level of Concern (H, M, L, or NA)	Distance to beach (in m or km)	Latitude/ Longitude*	Does this source directly affect beach water quality (Y or N)?	Describe how this source might contribute to beach pollution and frequency of contribution
Wastewater discharges					
POTW outfalls					
OBDs					
Other?					
Other?					
Sewage overflows					
Septic systems					
Cesspools					
Stormwater outfalls					
Drains and pipes nearby					
Stream or wetland drainage					
Urban runoff, industrial waste					
Natural outfalls					
CAFOs or AFOs					
Wildlife (general)					
Wildlife (significant areas)					
Agriculture runoff					
Land application of biosolids and manure					
Marinas, harbors					
Mooring boats					
Domestic animals					
Unsewered areas					
Erosion-prone areas					
Landfills, open dumps					
Groundwater seepage					
Bathhouse leakage					
Wetland drainage					
Vacant areas					
Other (specify):					
Other (specify):					
Other (specify):					

*If latitude and longitude are unknown, show the location on the detailed map and describe in the additional comments or observations section below.

Have potential pollution sources identified above been included on the detailed map? ☐ yes ☐ no Describe:

Given your understanding of the beach, which fecal pollution sources are most likely to affect the levels of bacteria at the beach? If you have specific concerns about any of the fecal pollution sources as sources of specific pathogens, please describe.

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Has this beach been associated with the following?   ☐ Cases of swimmer's itch   ☐ Outbreaks of diarrheal disease?

☐ High incidence of skin infections   ☐ Other adverse health outcomes   If any are checked, describe:

Has a TMDL for bacteria been done on this waterbody or on any that discharge to it?   ☐ yes   ☐ no

If yes, summarize the results and attach report:

Are there any discharge reports available for dischargers near this beach?   ☐ yes   ☐ no

If yes, attach report or pertinent sections and summarize here, including permit limits for bacteria:

Have any sources been remediated, or have steps been taken to remediate sources?   ☐ yes   ☐ no   Describe:

Additional comments or observations:

12. DESCRIPTION OF SANITARY FACILITIES

Bathhouses: Total number of bathhouses and portable sanitation units (PSUs) at the beach:

Number or ID	Type (bathhouse or PSU)	Location	Condition (good, fair, poor)	Distance from Waterline (feet)	Frequency of Cleaning (Daily, weekly, monthly)

How are the sanitary wastes handled? ☐ Public sewers ☐ On-site treatment ☐ Septic field ☐ Pump-out ☐ Other:

Describe further. Include the number of toilets, showers, sinks, etc., and whether these facilities are adequate to support beach use.

Litter Bins: Total number of litter bins at the beach:

Number or ID	Location	Condition (good, fair, or poor)	Distance from Waterline (feet)	Frequency of Emptying (daily, weekly, monthly)

Describe further, including whether number and location of litter bins are adequate to support beach use:

13. DESCRIPTION OF OTHER FACILITIES

List facilities in the beach area, such as marinas, restaurants, bars, playgrounds, parking lots, and dog parks:

Facility Name/Type	Location	Condition (good, fair, poor)	Distance from Beach (feet)	What Is the Sewage Disposal Method Used (if applicable)?	How Might This Facility Contribute to Water Quality Problems?

Are there boat pump-outs nearby? ☐ yes ☐ no   If yes, describe:

Additional comments or observations: