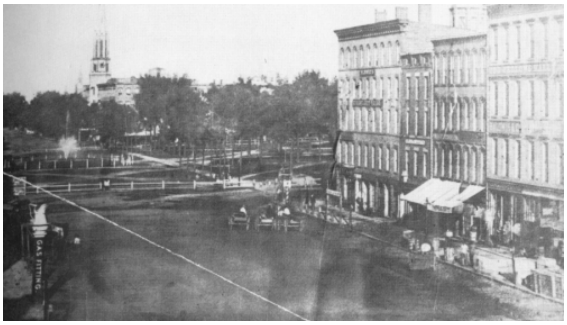
Arcadia Beach—Sanitary Survey Report

Fall 2011

Cuyahoga County Board of Health • 5550 Venture Drive • Parma, Ohio 44130 • (216) 201-2000 • www.ccbh.net • estaff@ccbh.net

Background



It is no secret that the Great Lakes are one of the nation's most precious natural resources. Local economies have flourished around these bodies of water since the time of the Civil War. Manufacturing and shipping, staples of the Cleveland area, have provided employment opportunities and growth in the region for well over a century. In turn, homes were built and families were raised, creating a demand for fresh water and waste removal systems. In addition to Lake Erie's role as a key resource for industry and infrastructure, it continues to thrive as a recreation destination. Anyone who has experienced a Northeast Ohio winter knows how to enjoy every last bit of summertime. From Toledo to Ashtabula, the shoreline is dotted with boat launches, marinas, bathing beaches, and parks just inviting you to the water and the beautiful views exclusive to Lake Erie.

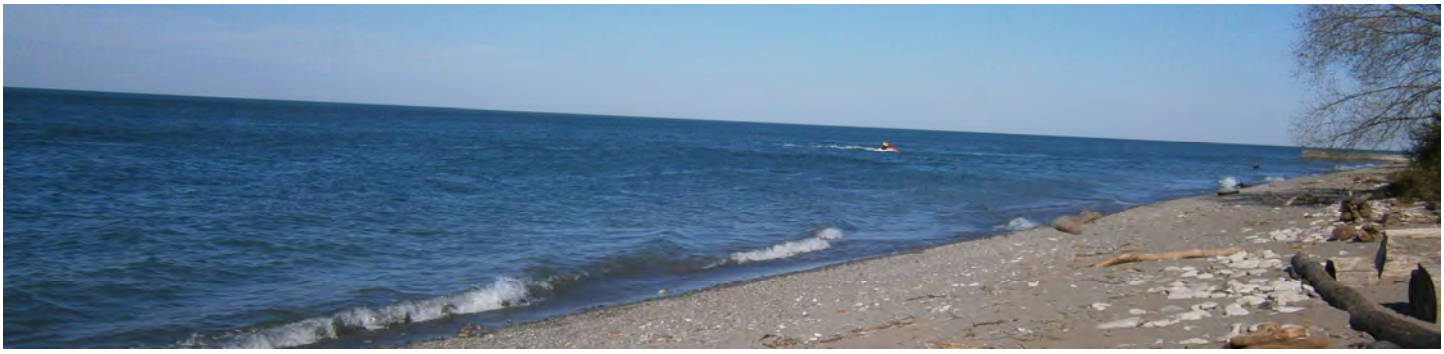
As the demand on Lake Erie and the other Great Lakes increased, managing the water quality became imperative. The health and well-being of humans and wildlife are dependent on good water quality. Realizing this fact, then-President Nixon and the federal government decided to take action in 1970 with the creation of the Environmental Protection Agency (EPA), which drafted the Clean Water Act in 1972 to protect surface waters from contamination.

To augment the efforts of the EPA, Congress amended the Clean Water Act with the passage of the Beaches Environmental Assessment and Coastal Health (BEACH) Act in 2000. The Act established uniform criteria for testing, monitoring, and notifying public users of possible coastal recreational water problems. For almost two decades, the Cuyahoga County Board of Health has maintained a beach monitoring program involving sampling and analysis for potential bacterial contamination in near shore waters.

In addition to routine beach monitoring, the Cuyahoga County Board of Health was awarded a grant to conduct Annual Sanitary Surveys at beaches along the Lake Erie coast. A sanitary survey is a method of identifying and investigating the sources of contamination in a body of water and assessing the magnitude of pollution through water sample analysis.

Beach sanitary surveys involve collecting information at the beach, as well as in the surrounding watershed. Information collected at the beach may include: number of birds at the beach, slope of the beach, location and condition of bathrooms, and amount of algae on the beach. Information collected in the watershed may include: land use, location of storm water outfalls, surface water quality, and residential septic tank information.

The following report contains all of the information obtained while conducting the sanitary survey, including the Annual Sanitary Survey field form, photos and GPS coordinates of sampling locations (if applicable), and sample results. Please contact Barry Grisez at (216) 201-2001 ext. 1232 or bgrisez@ccbh.net with any questions or concerns about this project.



Sample Results

As a result of the sanitary survey, one outfall was identified as a potential source of water pollution. An "outfall" is defined as the point where a storm water conveyance system discharges into a natural body of water such as a lake, river, stream, or wetland. The photo to the right shows the outfall along with the GPS coordinates. As part of this project, water samples were taken during both dry weather and after rain events. They were then analyzed for bacterial contamination. This analysis was used as an indication of whether this outfall was contributing to the higher bacteria counts occasionally observed in the Lake. Sampling was conducted weekly, beginning August 17th and concluding on October 12th. The table below provides the *E.coli* concentrations found as a result of sample analysis.

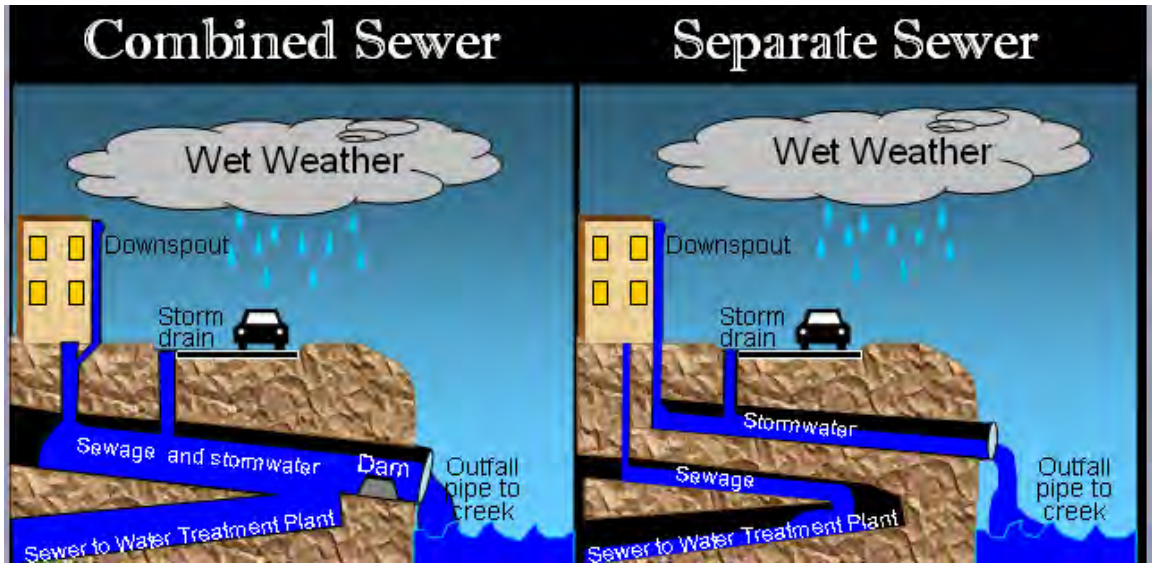
GPS: 41.60650, -81.54183

BEACH NAME	OUTFALL LOCATION	GPS (N)	GPS (W)	COLLECTION DATE	E COLI CFU/100mL	RECENT RAINFALL	RAINFALL AMOUNT (INCHES)
Arcadia	Outfall at Beach	41.60650	-81.54183	8/17/2011	1236	<72 hours	0.35
Arcadia	Outfall at Beach	41.60650	-81.54183	8/24/2011	14800	<24 hours	0.46
Arcadia	Outfall at Beach	41.60650	-81.54183	8/31/2011	200	>72 hours	0.22
Arcadia	Outfall at Beach	41.60650	-81.54183	9/13/2011	860	<72 hours	0.28
Arcadia	Outfall at Beach	41.60650	-81.54183	9/20/2011	2200	<48 hours	1.06
Arcadia	Outfall at Beach	41.60650	-81.54183	9/26/2011	3800	<24 hours	1.48
Arcadia	Outfall at Beach	41.60650	-81.54183	10/12/2011	72400	<24 hours	0.38

Discussion of Sample Results

To interpret the results, the *E.coli* concentration listed in the table above is compared to a water quality standard of 576 CFU/100 mL. The threshold of 576 was created by the USEPA for storm water analysis. Results exceeding 576 are an indication of a high bacteria load and will most likely affect the water quality at the beach. The results show that the outfall located on the beach is primarily influenced by rain. This is common among beaches in Cuyahoga County and other areas where older infrastructure is still present. There are a number of options available to help effectively reduce the amount of pathogenic bacteria such as *E. coli* flowing into Lake Erie from these outfalls, including:

Modifying the existing sewer system and separating sanitary waste lines from storm water lines. On average, this is the most expensive and time-consuming solution. However, completely separate conveyance systems ensure that only storm water runoff enters the outfalls and eventually Lake Erie. Keep in mind that storm water runoff can still contain bacteria from other sources; local wildlife (geese), pet waste, agricultural waste, and discharge from impervious surfaces like streets and parking lots.



Creating an overflow tank to capture excess storm water - As opposed to revamping the entire sewer system, these tanks or "tunnels" act as a retention basin by capturing the excess flow and slowly return the water back to the wastewater treatment plant. The Northeast Ohio Regional Sewer District has completed projects such as these throughout the area. Currently, they are working on the Euclid Creek Tunnel Project. When completed, it will have the capacity to hold 70 million gallons of combined storm water and wastewater which would otherwise have ended up in Lake Erie.

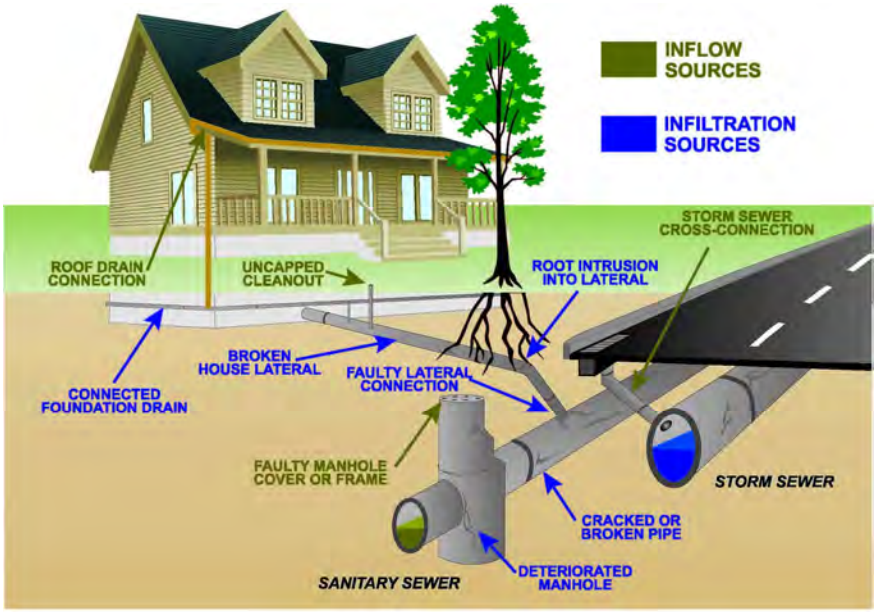
Green Infrastructure – A relatively new concept, green infrastructure involves creating wetlands, large rain gardens, and other natural "speed bumps" that help slow down the flow of water to Lake Erie by diverting it and allowing for treatment. Similar to the "tunnels" mentioned above, these types of projects create a holding area for excess storm water runoff. The only difference is that these green solutions call for natural treatment of the water through soil absorption as opposed to piping the water back to a treatment plant.

All of these solutions are viable ways to deal with bacteria-laden storm water. By conducting sanitary survey projects such as this, information is obtained on where the bacteria concentrations are of greatest concern allowing for a strategic approach to eliminating these problem areas.

Tips for Homeowners

The management of large quantities of excess rainwater discussed above is rather complex and normally taken on by municipal or regional entities, such as streets/sewer departments and regional sewer districts. However, homeowners can also take a few small steps to help keep Lake Erie clean. Here are a few tips for around the home:

Prevent rain water from infiltrating sanitary sewers. Just like any other structural component of a house, storm water drain lines periodically need to be repaired or replaced. Rain water from gutters, downspouts, footer drains and lateral lines can infiltrate the sanitary sewer system if cracks or leaks are present. Too much rainwater in sanitary sewers often results in overflows at the sewage treatment plants which spill into area waterways and eventually Lake Erie. Homeowners interested in an evaluation of their drainage system can contact local storm water consulting/engineering firms or their municipal sewer department.



Make sure all household waste goes to the right place. Some houses, especially older homes, were built or remodeled without much consideration given to waste water management. Over the years, homeowners added plumbing fixtures (bathrooms, laundry/utility sinks, etc.) to their basements or garages. The waste water from these fixtures was connected to the storm water drains since those lines are generally much more accessible than sanitary lines. As a result, untreated sanitary waste ends up in Lake Erie contributing to the buildup of bacterial contamination.

On that note, another consideration for homeowners is the storage and disposal of hazardous household waste. Items such as cooking oil, automobile fluids, lawn products, and unused medications are just a few of the hazardous materials that require special attention when handling.

Maintain septic systems as needed. Believe it or not, there are still approximately 10,000 households in Cuyahoga County that require an individual household sewage treatment system in place of sanitary sewers. Routine maintenance of these systems will not only ensure that the resulting waste water is properly treated but will also extend the life of the system and allow for optimal operation.

Discover your green thumb. If the yard could use a little attention, consider creating rain gardens to help buffer runoff from storm water. Rain gardens are very attractive beds of native vegetation that also serve as a way to prevent excess water from entering the drainage system. Also, though native wildflowers, plants, and shrubs are hardy and drought –resistant, adding a rain barrel to your downspout is a great way to keep your flower beds watered during those dry spells. For those looking to take their projects to the extreme, there are ways to replace a standard, shingled roof with a thatched or vegetative green plants designed to retain a significant amount of rainfall. Other small projects, such as replacing impervious concrete surfaces with pavers or decorative stone, can also reduce the amount of rainwater entering the sewers.

Clean up after pets. It seems like common sense, but cleaning up pet waste is the simplest way to prevent bacterial contamination of storm water runoff.

Summary

This Sanitary Survey Project was made possible through grant funding obtained by the Ohio Department of Health from the USEPA Great Lakes Restoration Initiative (GLRI). As a result of the survey, it was concluded that rainfall plays a significant role in determining water quality. The sewer systems installed years ago were designed to overflow into Lake Erie during periods of heavy rain. Although this was a great way to help out homeowners and prevent basement floods, these types of systems created a pollution problem in Lake Erie that has been a challenge to resolve. The Clean Water Act, implemented by the USEPA, requires that municipalities correct these sewer overflows within a specified timeframe and there are a number of possible solutions to address this issue that range in cost and effectiveness. A copy of this report will be shared with municipal sewer departments and other interested parties to discuss the results of this project and begin exploring ways to address the sources of pollution.

Useful Links

Cuyahoga County Board of Health 5550 Venture Drive Parma, OH 44130 Phone: (216) 201-2000 Fax: (216) 676-1317 E-mail: estaff@ccbh.net Website: www.ccbh.net	Northeast Ohio Regional Sewer District 3900 Euclid Ave. Cleveland, OH 44115 Phone: 216-881-6600 Website: www.neorsd.org	Cuyahoga County Solid Waste District 4750 East 131 Street Garfield Heights, OH 44105 Phone: (216) 443-3749 Fax: (216) 478-0014 E-mail: swdinfo@cuyahogacounty.us Website: www.cuyahogaswd.org
United States Department of Agriculture Natural Resources Conservation Service - State Office 200 North High Street, Room 522 Columbus, OH 43215 Phone: (614) 255-2472 Website: www.nrcs.usda.gov	United States Environmental Protection Agency (USEPA) Region 5 (IL, IN, MI, MN, OH, WI) 77 West Jackson Boulevard Chicago, IL 60604-3507 Phone: (312) 353-2000 Fax: (312) 353-4135 Toll free within Region 5: (800) 621-8431 Website: www.epa.gov	

GREAT LAKES BEACH ANNUAL SANITARY SURVEY

1. BASIC INFORMATION

Name of Beach: ARCADIA BEACH	Date(s) of Survey: 8/30/2011
Beach ID:	Name of Waterbody: LAKE ERIE
Town/City/County/State: EUCLID, OH	Number of Routine Surveys Used: 18
Sampling Station(s)/ID:	Name(s) of Surveyor(s): HEATHER GRISEZ, TIM GOURLEY
STORET Organizational ID:	Surveyor Affiliation: C.C.B.H.

2. DESCRIPTION OF LAND USE IN WATERSHED

Current Land Use in Watershed

Type	Residential	Industrial	Commercial	Agricultural	Other (specify): PARK
Percentage	93		5		2

Development	Describe
% undeveloped	
% developed	

How was land use measured:

Waterbody Uses: ☒ Boating ☒ Fishing ☐ Surfing ☒ Windsurfing ☐ Diving ☐ Other (specify)

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

List maps and their sources:

Does the detailed map include locations of:

Sample Points	☒ yes	☐ no	(explain):
Hydrometric Network	☐ yes	☒ no	(explain): N/A
Pollutant Sources	☒ yes	☐ no	(explain):
Boat Traffic	☐ yes	☒ no	(explain): N/A
Marinas	☐ yes	☒ no	(explain): N/A
Boat dockage	☐ yes	☒ no	(explain): N/A
Fishing	☐ yes	☒ no	(explain): N/A
Bathing/Swimming	☒ yes	☐ no(	explain):
Bounding Structures:			
Jetty	☐ yes	☒ no(	explain): N/A
Groin	☐ yes	☒ no(	explain): NOT VISIBLE ON MAP
Seawall	☐ yes	☒ no(	explain): N/A
Other	☐ yes	☒ no(	explain): N/A
Sanitary Facilities	☐ yes	☒ no(	explain): NOT VISIBLE ON MAP
Restaurants/Bars	☐ yes	☒ no(	explain): " " " "
Playground	☐ yes	☒ no(	explain): " " " "
Parking Lot(s)	☐ yes	☒ no(	explain): " " " "
Other	☐ yes	☒ no(	explain):

Erosion/Accretion Measurements

High Watermark Location Identification	Fixed Object Description (e.g., tree, building)	Distance from Fixed Object to High Watermark	Feet or Meters?	Distance between High Watermark Locations	Feet or Meters?
A	OUTFALL	0	FT	A↔B: 95	FT
B	"V" STRUCTURE	43	FT	B↔C: 338	FT
C	STAIRCASE	33	FT	C↔D: 162	FT
D (optional)	SPILLWAY	0	FT	D↔E:	
E (optional)					

GREAT LAKES BEACH ANNUAL SANITARY SURVEY (continued)

Bounding Structures

Bounding Structure	Number	Description or Comment
Jetty		
Groin	1	EAST END of BEACH
Seawall		
Natural formation		
Other (specify):		
Other (specify):		

Beach Materials/Sediments:

☒ Sandy ☐ Mucky ☒ Rocky ☒ Other: CONCRETE

Or, Beach Materials/Sediments Lab Analysis (attach diagram or photographs of plot locations) N/A

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:

Photos Taken in the Beach Area or Surrounding Watershed (SEE ATTACHED)

Image Number	Date/Time	File Name	Description of Photo (Include Pictures of High Watermark Locations and Corresponding Fixed Objects)

Habitat around beach:

☐ Dunes ☐ Wetlands ☐ River/stream ☐ Forest ☒ Park ☐ Protected Habitat or Reserve

☐ Other:

3. WEATHER CONDITIONS

Examine the weather data 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?

Rainfall	☒ yes	☐ no	(explain):
Air Temperature	☐ yes	☒ no	(explain):
Water Temperature	☐ yes	☒ no	(explain):
Cloud Cover	☐ yes	☒ no	(explain):
Wind Speed	☐ yes	☒ no	(explain):
Wind Direction	☐ yes	☒ no	(explain):
Longshore Current	☐ yes	☒ no	(explain):
Wave Height or Intensity	☒ yes	☐ no	(explain): HIGH WAVES = HIGH TURBIDITY
Other Weather	☐ yes	☒ no	(explain):

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

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

N/A

Average air temperature during beach season: 74.6 ° C or (° F) | Average water temperature during beach season: 74.6 ° C or (°F)

Average wind speed and direction during beach season (e.g., E or 90° at 15 mph): SW at 9 mph

Typical weather conditions: ☐ Sunny ☒ Mostly Sunny ☐ Partly Cloudy ☐ Mostly Cloudy ☐ Overcast ☐ Rainy

Rainfall total for the beach season (in): 20.46 | Average rainfall for all beach seasons (in): 12.68

Does rainfall intensity correlate with bacteria sample results? ☒ yes ☐ no Describe:

Number of significant rain events: 8 | What constitutes "significant?" (e.g., 1 inch or more rain) 0.75 (per CSO/SSO DATA)

Additional Comments/Observations:

RAINFALL & AIR TEMP. DATA OBTAINED FROM NWS/HOPKINS AIRPORT

4. PHYSICAL BEACH CONDITIONS

Beach length or dimensions (indicate Z1, Z2, and Z3 on a map)

Length (m): 180 | Width (average, in m): 30.0

Width Z1 (m): 11.0 | Width Z2 (m): 15.5 | Width Z3 (m): 63

Local water level variation: feet inches | Hydrographic influences (e.g., seiches):

Characterize any longshore or nearshore currents and their potential effects based on bacteria sampling results

Approximate beach slope at swim area: 1 %

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

N/A

Comments/Observations:

5. BATHER LOAD (# OF BEACH USERS)

Is bather load measured? ☐ yes ☒ no

If yes, describe how beachgoer numbers are calculated (i.e., 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		<1				
Total people out of the water		<1				
Total people at the beach		<1				
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)	WEEKLY IN THE AM					

Examine bather load data along with sampling results for the past beach season(s). Look at each sampling point. Does bather load appear to correlate with bacteria concentrations at any of these sampling points? Does the amount of people in the water or out of the water correlate with bacteria concentrations? Has a statistical analysis been done? Describe:

NO CORRELATION. NO STATISTICAL ANALYSIS PERFORMED.

Comments/Observations:

6. BEACH CLEANING

Beach cleaning frequency during season: AS NEEDED

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		✓	✓	✓		
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:

Type of Debris/Litter Found

☒ Street litter ☒ Food-related litter ☐ Medical items ☐ Sewage-related ☒ Building materials
☐ Fishing related ☒ Household waste ☐ Tar ☐ Oil/ Grease ☐ Other:

Comments/Observations:

7. INFORMATION ON SAMPLING LOCATION

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

Sample Point Name/ID	Location	Description	Sample Frequency	Time of Day of Sample Collection
BEACH-CENTRAL		ROUTINE MONITORING PT.	WEEKLY	AM
OUTFALL		WESTERN END	WEEKLY	AM

Description of hydrometric network [note that this is a network of monitoring stations that collect data such as rainfall and stream flow]

NWS/ HOPKINS AIRPORT

Comments/Observations:

8. WATER QUALITY SAMPLING

Name of laboratory: NEORSD Distance to laboratory: 17 miles

Is there a sampling and analysis plan? ☒ yes ☐ no Is it adequate? ☒ yes ☐ no (explain):

Are the sampling staff properly trained on sampling techniques, equipment maintenance, and calibration procedures? ☒ yes ☐ no

Biological Survey Results:

Were invasive/nonnative species present? ☐ yes ☒ no (describe):

Have algae blooms been observed during the beach season? (If so, specify duration and algae species) YES, INFREQUENTLY THROUGHOUT THE SUMMER

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

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

List types of algae found: GLOBULAR

Colors of algae most commonly found: DARK GREEN

List any infectious snails that were found: NONE

List any dangerous aquatic organisms that were found: NONE

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 (include whether fecal droppings are seen and are a problem)
Geese	LOW	NO	NOT SIGNIFICANT
Gulls	LOW	NO	"
Dogs	LOW	NO	"
Other (specify):			
Other (specify):			
Other (specify):			

Was a significant number of dead birds found on the beach during beach season? ☐ yes ☒ no
Describe types and numbers found and possible causes: _____

Was a significant number of dead fish found on the beach during the beach season? ☐ yes ☒ no
Describe numbers found and possible causes: _____

Bacteria Samples Collected

Do you test for *Escherichia coli*? ☒ yes ☐ no Analytical Method Used: _____
Do you test for *Enterococcus*? ☐ yes ☒ no Analytical Method Used: _____
Do you test for fecal coliform? ☐ yes ☒ no Analytical Method Used: _____
List any additional bacteria 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 that of previous years'? 8 EXCEEDENCES IN 2011 : THE MOST IN RECENT HISTORY - DUE TO RECORD RAINFALL & INCREASED SAMPLING FREQUENCY

Do the bacteria results correlate to other parameters, such as water quality, weather, flow, bather load, algae, or wildlife? ☒ yes ☐ no Describe in detail analyses that were performed on the data (add additional lines as needed).
WATER QUALITY / RAINFALL

Water Quality (check all that are measured regularly)

Temperature	pH	Rainfall	Turbidity	Conductivity	Other
X		X	X		

How does the water quality data compare to data from previous years? TEMP.: 68°F-76°F, 74.6°F for 2011
RAINFALL: UNTIL 2011, RAINFALL WAS A QUALITATIVE ASSESSMENT
TURBIDITY: QUALITATIVE ASSESSMENT ONLY
Do any data correlate with bacteria sample results? ☒ yes ☐ no If yes, explain: RAINFALL

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

Comments/Observations:

9. MODELING

Are models being used? ☐ yes ☒ no

If yes, list types of models being used and a brief description of the models:

Comments/Observations:

10. ADVISORIES/CLOSINGS

List any advisories and closings that occurred, whether bacteria levels were high, and any possible reasons for 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
ADVISORY	6/10 - 6/17	7	SSM	RAINFALL
"	6/22 - 6/24	2	"	"
"	7/7 - 7/13	6	"	"
"	7/20 - 7/27	7	"	"
"	8/10 - 8/18	8	"	"

Total number of closings issued: 0

Total number of advisories issued: 5

Total number of days under an advisory: 30

Total number of days beach was closed: 0

Comments/Observations:

11. POTENTIAL POLLUTION SOURCES

Type of Source	Level of Concern (H, M, L, or NA)	Latitude*	Longitude*	Describe how this source might contribute to beach pollution and frequency of contribution
Wastewater discharges	N/A			
Sewage overflows	M			CSO IN AREA
Septic systems	N/A			
Subsurface sewage disposal	N/A			
Stormwater outfalls	M			
Natural outfalls	N/A			
CAFOs or AFOs	N/A			
Wildlife	L			NOT A SIGNIFICANT AMT. OF GULLS/GEESE
Agriculture runoff	N/A			
Urban runoff, industrial waste	N/A			
Marinas, harbors	N/A			
Mooring boats	N/A			
Domestic animals	L			DOGS ON BEACH
Unsewered areas	N/A			
Erosion-prone areas	N/A			
Landfills, open dumps	N/A			
Groundwater seepage	N/A			
Bathhouse leakage	N/A			
Drains and pipes nearby	N/A			
Stream or wetland drainage	N/A			
Vacant areas	N/A			
Other (specify):				
Other (specify):				
Other (specify):				

*If latitude and longitude are unknown, show the location on the detailed map and describe in the Comments/Observations section below.

Have potential pollution sources identified above been included on the detailed map? ☒ yes ☐ no (explain):

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

If yes, describe any analyses performed and a summary of the results: E. COLI ANALYSIS. 7 of 8 SAMPLES EXCEEDED THE NUISANCE THRESHOLD OF 576 CFU/100 ML FOR STORM WATER.

Are there any discharge reports available for dischargers in the watershed? ☒ yes ☐ no If yes, attach report or pertinent sections and summarize here: SSO/CSO REPORTED BY EUCLID STREETS/SEWERS DEPT.

Have any sources been remediated, or have steps been taken to remediate sources? ☐ yes ☒ no (explain):

SOURCE TRACKING MUST BE CONDUCTED TO IDENTIFY POINT-SOURCE POLLUTION

Comments/Observations:

12. DESCRIPTION OF SANITARY FACILITIES

Bathhouses: Total number of bathhouses at the beach: N/A

Number or ID	Location	Condition (Good, Fair, or Poor)	Distance from Waterline (feet)	Frequency of Cleaning (Daily, Weekly, Monthly)

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

Litterbins: Total number of litterbins at the beach: NONE

Number or ID	Location	Condition (Good, Fair, or Poor)	Distance from Waterline (feet)	Frequency of Emptying (Daily, Weekly, Monthly)

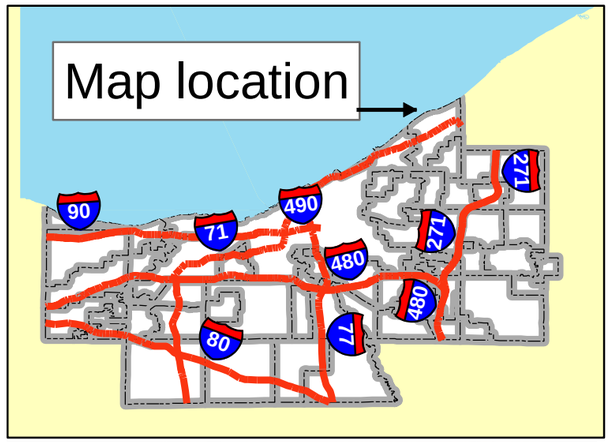
Describe further. Include whether number and location of litterbins is adequate to support beach use.

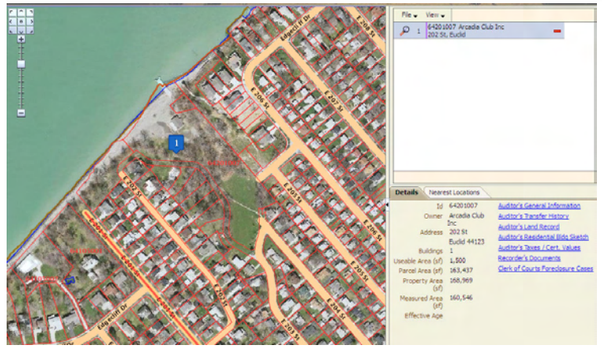
13. DESCRIPTION OF OTHER FACILITIES

List facilities in the beach area, such as restaurants, bars, playgrounds, parking lots, and dog parks. NONE

Facility Name/Type	Location	Condition (Good, Fair, or Poor)	Distance from Beach (feet)	How might this facility contribute to water quality problems?

Comments/Observations:





Legend

- CSO SSO Locations
- Sampling Locations 2011
- Stream
- Streets
- Municipal Borders

N W E S

Arcadia Beach Area

Public Health
Prevent. Promote. Protect.
Northeast Ohio Public Health Partnership

Cuyahoga County Board of Health
PREVENT + PROMOTE + PROVIDE

By Timothy A. Gourley, R.S., M.P.H.
Coordinate System: GCS North American 1983
Datum: North American 1983
Units: Degree
Path: C:\Documents and Settings\tgourley\My Documents\beach survey 2011\Arcadia.mxd

Combined Sewer Overflow Events 2011						
CITY	**EVENT LOCATION ID#**	**EVENT LOCATION**	**EVENT START DATE**	**EVENT END DATE**	**FACILITY NAME**	**COMMENTS**
Euclid		Brandywine Pump Station	8/1/2011	8/1/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	8/1/2011	8/1/2011	City of Euclid	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/3/2011	8/3/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	8/3/2011	8/3/2011	City of Rocky River	Heavy Rain
Euclid	3025	End of East 194th Street	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid		Brandywine Pump Station	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3037	Babbitt Road & East 222nd Street	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3036	Effingham Drive at Glenbrook Boulevard	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3032	East 273rd Street & Parkwood Drive	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3031	East 275th Street at East 274th Street	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3030	East 274th Street at East 275th Street	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3026	East 215th Street & Crystal Avenue	8/7/2011	8/7/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	8/9/2011	8/9/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	8/14/2011	8/14/2011	City of Euclid	Heavy Rain
Euclid	3026	East 215th Street & Crystal Avenue	8/14/2011	8/14/2011	City of Euclid	Heavy Rain
Euclid	3031	East 275th Street at East 274th Street	8/14/2011	8/14/2011	City of Euclid	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/14/2011	8/14/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	8/14/2011	8/14/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	8/15/2011	8/15/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/15/2011	8/15/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	8/20/2011	8/20/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/21/2011	8/21/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/24/2011	8/24/2011	City of Rocky River	Heavy Rain
Euclid		Brandywine Pump Station	8/25/2011	8/25/2011	City of Euclid	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	8/25/2011	8/25/2011	City of Rocky River	Heavy Rain
Euclid	3036	Effingham Drive at Glenbrook Boulevard	8/25/2011	8/25/2011	City of Euclid	Heavy Rain
Euclid	3032	East 273rd Street & Parkwood Drive	8/25/2011	8/25/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	8/25/2011	8/25/2011	City of Euclid	Heavy Rain
Euclid		Brandywine Pump Station	9/1/2011	9/1/2011	City of Euclid	Heavy Rain
Euclid	3032	East 273rd Street & Parkwood Drive	9/1/2011	9/1/2011	City of Euclid	Heavy Rain
Euclid	3031	East 275th Street at East 274th Street	9/1/2011	9/1/2011	City of Euclid	Heavy Rain
Euclid	3030	East 274th Street at East 275th Street	9/1/2011	9/1/2011	City of Euclid	Heavy Rain
Euclid	3027	East 220th Street & Christine Avenue	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Euclid		Brandywine Pump Station	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Euclid	3031	East 275th Street at East 274th Street	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Euclid	3030	East 274th Street at East 275th Street	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Euclid	3036	Effingham Drive at Glenbrook Boulevard	9/4/2011	9/4/2011	City of Euclid	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	9/4/2011	9/4/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/4/2011	9/4/2011	City of Rocky River	Heavy Rain

Combined Sewer Overflow Events 2011						
CITY	EVENT LOCATION ID#	EVENT LOCATION	EVENT START DATE	EVENT END DATE	FACILITY NAME	COMMENTS
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/7/2011	9/7/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/8/2011	9/8/2011	City of Rocky River	Heavy Rain
Euclid		Brandywine Pump Station	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Euclid	3037	Babbitt Road & East 222nd Street	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Euclid	3031	East 275th Street at East 274th Street	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Euclid	3030	East 274th Street at East 275th Street	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Euclid	3026	East 215th Street & Crystal Avenue	9/10/2011	9/10/2011	City of Euclid	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/15/2011	9/15/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/21/2011	9/21/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	9/21/2011	9/21/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/23/2011	9/23/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/25/2011	9/25/2011	City of Rocky River	Heavy Rain
Rocky River	306	Westway Drive & Magnolia Drive (306)	9/26/2011	9/26/2011	City of Rocky River	Heavy Rain
Rocky River	302	Beach Cliff Boulevard & Falmouth Drive (302)	9/26/2011	9/26/2011	City of Rocky River	Heavy Rain
Euclid	3028	East 217th Street & Edgecliff Drive	9/26/2011	9/26/2011	City of Euclid	Heavy Rain
Euclid		Brandywine Pump Station	9/26/2011	9/26/2011	City of Euclid	Heavy Rain
Euclid	3026	East 215th Street & Crystal Avenue	9/26/2011	9/26/2011	City of Euclid	Heavy Rain
Euclid		Brandywine Pump Station	10/19/2011	10/19/2011	City of Euclid	Heavy Rain


13/09/2011


11/02/2011


11/02/2011


11/02/2011