Removal Recommendation for the Beach Closings (Recreational Use) Beneficial Use Impairment in the Black River AOC

May 2024 DRAFT

Ohio Environmental Protection Agency | Lake Erie Commission

BLACK RIVER

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Purpose

The purpose of this document is to recommend the removal of the Beach Closings (Recreational Use) Beneficial Use Impairment (BUI) from the Black River Area of Concern (AOC). This document provides information and documentation of recreational contact advisories, *E. coli* concentrations and sources, bacterial reduction strategies, and measures the results of the assessments against applicable State of Ohio Area of Concern BUI restoration targets.

Background

The Black River, located in northeast Ohio, flows into Lake Erie's central basin at the city of Lorain (Figure 1). During industrial development in the early 20th Century, "the Black River, once majestic and teeming with life, became an inhospitable conduit of sewage, sediments, and toxic contaminants to the lake" (Black River Remedial Action Plan Coordination Committee [BRCC], 1994). In 1987, the International Joint Commission (IJC) designated the Black River as one of 43 AOCs in the Great Lakes basin. The original Black River AOC was limited to the lower 6.2 miles of the Black River mainstem due, in part, to the prevalence of fish tumors that were the result of "a legacy of contaminated sediments, mainly polynuclear aromatic hydrocarbons" (BRCC, 1994). Much of the environmental degradation that impaired the lower Black River was due to contaminants released from steel production in the City of Lorain. This was a predominant factor that led the IJC to list the Black River as an AOC (Lorain County Community Development Department [LCCDD], 2011). The BRCC was formed in September 1991 to investigate the BUIs, develop strategies to remediate the causes and sources of BUIs for their eventual removal, and to delist the AOC. In 1994, the Black River AOC was expanded to include the entire Black River watershed during the development of the Black River Stage 1 Report because the sources resulting in some BUIs were in the upper portions of the Black River watershed (BRCC, 1994). The Stage 1 report was approved in 1994 and the Stage 2 report was approved in 2011.

Based on improvements documented in the upstream subwatershed areas and adjustments made to Ohio's BUI Restoration Targets, the Ohio Environmental Protection Agency (EPA) and the Black River AOC Advisory Committee (BRAC) re-evaluated the boundary of the AOC in 2015. They determined that the upper portions of the Black River were similar to regional conditions and therefore were not significantly impacting the BUI status in the mainstem as thought in 1994 when the boundary was expanded. Therefore, the Black River AOC was re-delineated into two 12-digit hydrologic units (HU) and two beaches: French Creek HU (HUC 04110001 06 01), Black River HU (HUC 04110001 06 02) (the lower 15 miles of the Black River mainstem), Century Beach, and Lakeview Beach.

Nine of the 14 BUIs were identified as impaired for the Black River AOC. Five of the BUIs have been removed:

- #1 Fish Consumption REMOVED 2016
- #4 Fish Tumors or Other Deformities REMOVED 2023
- #7 Restrictions on Dredging Activities REMOVED 2022
- #8 Eutrophication & Undesirable Algae REMOVED 2016
- #11 Degradation of Aesthetics REMOVED 2021

Remaining impaired BUIs:

- #3 Degradation of Fish Populations
- #6 Degradation of Benthos
- #10 Beach Closings (Recreational Use)
- #14 Loss of Fish Habitat

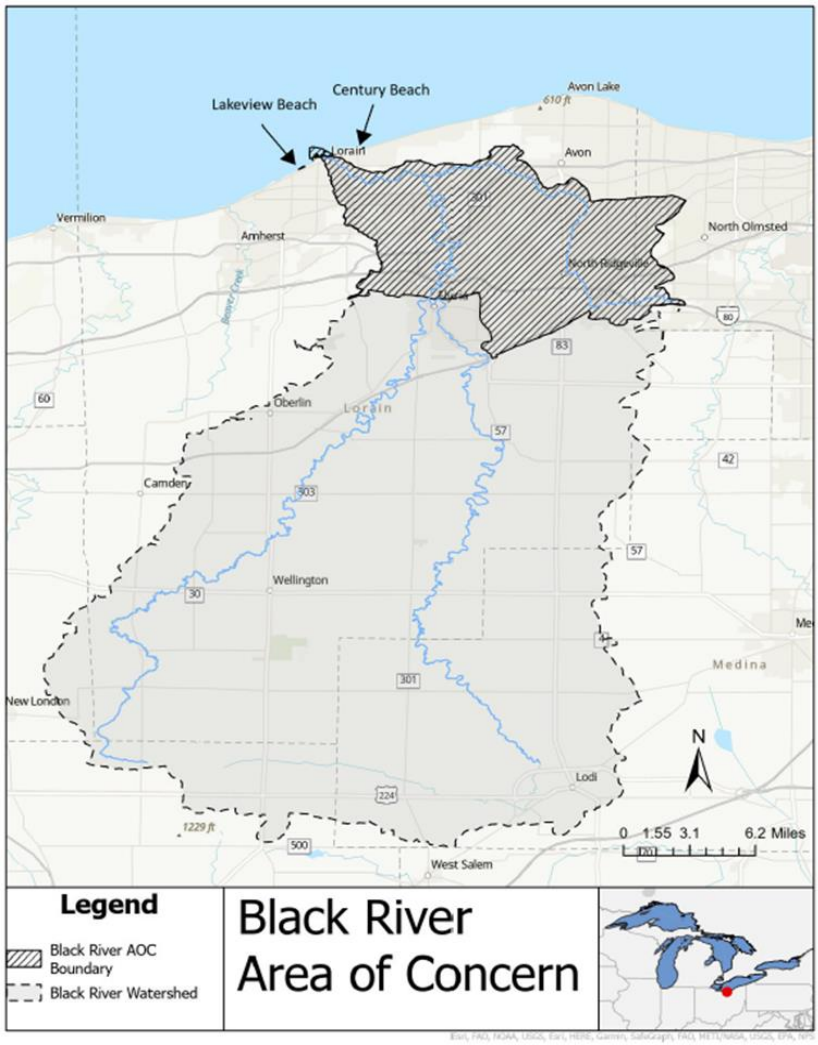

Figure 1. Black River AOC boundary

BUI Listing Criteria and Impairment Listing for Beach Closings

The Public Bathing Beaches restoration target applies to two recreational beaches within the Black River AOC: Lakeview Beach and Century Beach (figure 2). Lakeview and Century beaches are located 0.75 miles west and 1.5 miles east of the mouth of the Black River, respectively. Both beaches are located in the city of Lorain, and within Lake Erie's Central basin. Lakeview Beach and its surrounding park are approximately 20-acres in size, while Century Beach is 2.76 acres. Thousands of visitors each year partake in swimming, fishing, and other forms of recreation at both beaches. Lakeview Beach in particular draws in a high number of visitors, with an estimated 800,000 visitors reported in 2023. Century Beach had an estimated 51,000 visitors in 2023.

Figure 2. Lakeview and Century beaches

The Primary Contact Recreation restoration target applies to Ohio Department of Natural Resources designated paddling streams. The Black River from the confluence of the East and West

branches downstream to the mouth at Lake Erie is designated as a paddling stream. The Black River paddling stream (approximately 15 river miles) is located within the AOC boundary. Several boat and canoe launches exist along the mainstem of the river, providing access to thousands of visitors each year. Visitors can also access the river through several parks owned and maintained by Lorain County Metro Parks.

The Chemical Contaminant restoration target applies to all waters within the AOC. This includes Lakeview and Century beaches, the Black River, and French Creek.

The Beach Closings BUI was determined to be impaired in the Black River Remedial Action Plan (RAP) Stage 1 report based on the IJC listing criteria. The criteria stated that this BUI should be listed as impaired when "waters, which are commonly used for total-body contact or partial-body contact recreation, exceed standards, objectives, or guidelines for such use" (BRCC, 1994). The impairment was based on existing *E. coli* data and the Ohio Department of Health fish consumption advisory, which served as an advisory against recreational contact with water in the Black River mainstem. Fish consumption advisories no longer serve as advisories against recreational contact. Sources of fecal contamination to the Black River mainstem and nearshore areas included sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs) in the cities of Lorain and Elyria, on-site system loadings along the East and West Branches of the Black River, and animal waste from livestock, pets, and wildlife (BRCC, 1994).

The Stage 2 RAP stated that "although the two Lake Erie beaches within the AOC (Lakeview and Century beaches) do not meet delisting criteria due to bacterial contamination, no link to a source within the AOC has been identified. At these beaches, waterfowl is suspected as a major source of bacteria" (BRCC, 2004). For rivers and streams, the report identified high coliform bacteria counts due to failing and under-maintained home sewage treatment systems (HSTS), CSOs, livestock operations and other non-point sources. Because the Stage 2 Report included the entire Black River watershed as the AOC boundary, bacterial sources outside of the current AOC boundary may have been referenced.

BUI removal and restoration targets in Ohio's AOCs are guided by the "Delisting Guidance and Restoration Targets for Ohio Areas of Concern" updated most recently in 2023. The current listing criteria for this BUI contains conditions for Public Bathing Beaches, Primary Contact Recreation, and Chemical Containments (Ohio Lake Erie Commission [OLEC], 2023). Under the State of Ohio Listing Guideline, the beneficial use shall be listed as impaired if any of the following occur:

Public Bathing Beaches: Bathing beach advisories are posted for more than 10 percent of the recreational season due to bacterial contamination (*E. coli*) OR advisories are posted for more than 10 percent of the recreational season due to algal toxins. OR

Primary Contact Recreation (Paddling Streams): Ohio Department of Natural Resources designated Paddling Streams that are within the AOC are included on Ohio's most recent Clean Water Act, Section

303(d) list of impaired waters for recreational use due to bacterial contamination (*E. coli*) AND combined sewer overflows (CSOs) are either not present or not being addressed. OR

Chemical Contaminant (all waters): A state or local government agency has issued a warning to avoid contact with the water due to the presence of a chemical of concern, such as Polychlorinated biphenyls (PCBs) or Polycyclic aromatic hydrocarbons (PAHs).

State of Ohio Restoration Target and Removal Criteria

The Ohio AOC BUI Restoration Target guidance (Appendix A) states that a BUI can be removed under any of the following circumstances:

- Removal targets have been met and follow up monitoring or other evaluations confirm that the beneficial use has been restored;
- It can be demonstrated that the BUI is due to natural rather than human causes;
- It can be demonstrated that the impairment is not limited to the local geographic extent of the AOC, but rather is typical of lake-wide, region-wide, or area-wide conditions (under this situation, the beneficial use may be incorrectly recognized as impaired); or
- The impairment is caused by sources outside the AOC. The impairment is not restored, but the impairment classification can be removed or changed to "impaired-not due to local sources." (Responsibility for addressing "out of AOC" sources are assigned to another party or program, e.g., Lakewide Management Plan, TMDLs, or health department.)

The current restoration targets for the Beach Closings BUI state that this beneficial use can be removed when the following conditions are met for public bathing beaches, designated paddling streams, and chemical contaminant contact advisories:

Public Bathing Beaches: This BUI will be considered restored when posted contact advisory days due to bacterial contamination (*E. coli*) do not exceed 10 percent (or 19 days) of the recreation season; AND posted recreational public health advisory days due to algal toxins do not exceed 10 percent (or 19 days) of the recreation season. This target must be met in 3 out of the most recent 5 years; OR

In cases where public bathing beaches within the AOC have posted contact advisory days for either bacterial contamination (*E. coli*) or algal toxins that exceed 10 percent of the recreation season and Combined Sewer Overflows (CSOs) are the primary cause, the BUI will be considered restored when the bacterial impacts from CSOs are being addressed under an approved long-term control plan or other legally-binding document.

Primary Contact Recreation (Paddling Streams): No Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is included on Ohio's most recent 303(d) list of impaired waters due to bacterial contamination (*E. coli*) OR

If an Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is on the list of non-attaining waters because of bacterial contamination (*E. coli*) and the presence of Combined Sewer Overflows (CSOs) are the primary cause, this BUI will be considered restored when the bacterial impacts from CSOs are being addressed under an approved long-term control plan or other legally-binding document; AND

If an Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is on the list of non-attaining waters because of bacterial contamination (*E. coli*) and the presence of non-point source pollution is the primary cause, this BUI will be considered restored when a TMDL is approved and the State and RAP can document that the level of bacterial contamination is not significantly worse than similar watersheds.

Chemical Contaminant (all waters): No local or state contact advisories related to the presence of a chemical contaminant exist.

Data Sources

Data sources utilized for the Public Bathing Beaches evaluation include state and local bacteria surveys, algal toxin monitoring, and recreational contact advisory postings. These datasets are available on the Ohio Department of Health BeachGuard website (BeachGuard). Local bacterial studies and source evaluations were also used in this BUI evaluation.

Recreational contact advisories for Lakeview and Century beaches are issued by Lorain County Board of Health, typically between Memorial Day through Labor Day. *E. coli* sampling occurs four days per week (Monday – Thursday) at both beaches. Recreational contact advisories are issued when the previous day's *E. coli* concentration exceeds 235 Colony Forming Units per 100 milliliters (CFU/100mL), also referred to as the Beach Action Value. Advisory determinations for Fridays through Mondays are based on the *E. coli* sample results from Thursdays.

The Paddling Streams evaluation utilized data from Ohio EPA bacterial surveys, Total Maximum Daily Loads (TMDLs), and local Long-Term Control Plans (LTCPs).

Ohio Department of Health chemical contamination contact advisories were used to determine the Chemical Contaminants impairment status.

Beach Closings Evaluation

To evaluate the status of the Beach Closings portion of the Beach Closings BUI, Lakeview Beach and Century Beach bacterial contamination advisory data from 2019-2023 were compared to the state's restoration targets (Table 1). The restoration target states that advisory days should not exceed 10%, or 19 days, of the 184-day recreation season during three out of the five most recent years.

Table 1. Lakeview Beach and Century Beach Bacterial Contamination Advisories

	Lakeview		Century	
Year	Number of Advisories	Recreation Season Under Advisory	Number of Advisories	Recreation Season Under Advisory
2023	43	23%	26	14%
2022	59	32%	30	16%
2021	67	36%	35	19%
2020	18	10%	19	10%
2019	34	18%	43	23%

= does not meet 19 day or 10% restoration target

The evaluation determined that neither Black River AOC beach met the restoration targets for the timeframe of 2019-2023. Lakeview Beach exhibited a greater degree of impairment, with an average of 44 advisory days per year during the past five years, compared to the 29 advisory day average of Century Beach. Century Beach previously met the restoration targets during the timeframe of 2013-2017, where 19 or less advisories were issued during three of the five years. Lakeview Beach has never historically met the restoration targets but has exhibited a slight downward trend in number of advisory days since 2013.

The occurrence of recreational contact advisory days due to bacterial contamination is common throughout publicly owned beaches in Lake Erie's Central Basin. Bacterial contact advisories exceeding 10% of the recreation season during three of the five most recent years occurred at 41% of the non-AOC Central Basin beaches (Appendix B). This indicates that elevated advisory postings are not exclusive to the Black River AOC and are suggestive of a region-wide issue.

Bacteriological (*E. coli*) sampling results can also be used to assess recreational contact conditions at beaches. The *E. coli* seasonal geomean at Century Beach was less than the seasonal geomean average across all non-AOC Central Basin beaches in three of the five most recent years. This suggests that on average, Century Beach has not exhibited a worse degree of bacteriologic contamination than non-AOC beaches. Alternatively, Lakeview Beach *E. coli* seasonal geomeans have exceeded the non-AOC beach averages during the five most recent years. The primary reasons for the

higher degree of impairment, as determined by the 2019 Lakeview Beach Beneficial Use Assessment, is the presence of wildlife, general runoff from the two adjacent storm sewers, and poor circulation at the beach. Wet-weather events contribute the largest bacterial load to Lakeview Beach, suggesting that non-specific bacteria from the storm sewers during rain events are a key contributor to the BUI.

While neither beach met the restoration targets for posted beach advisories due to bacterial contamination, the removal of the Beach Closings BUI can occur under several circumstances referenced from Ohio's Delisting Guidance and Restoration Targets for Ohio Areas of Concern (Ohio EPA & Ohio Lake Erie Commission, 2023) and outlined in the State of Ohio Restoration Target and Removal Criteria section of this report. Removal of a BUI may be warranted if it can be demonstrated that the impairment is not limited to the local geographic extent of the AOC, but rather is typical of lake-wide, region-wide, or area-wide conditions. It has been documented that 41% (16 of 39) of non-AOC beaches within Lake Erie's Central Basin are impaired for the state's restoration targets for posted contact advisories due to bacterial contamination based on 2019-2023 data (appendix C). It can also be demonstrated that Century Beach is generally less impaired in terms of average *E. coli* concentrations than many non-AOC beaches. Furthermore, this document outlines previous efforts and studies that have taken place at each beach to determine bacterial sources. The AOC program and local partners have done their due diligence to identify actions that will assist with reducing bacterial concentrations at the beaches through other programs.

Century Beach is regularly less impaired than most non-AOC beaches, but Lakeview Beach routinely shows a higher degree of impairment due to the previously discussed variables. While BUI removal is recommended for Lakeview Beach, it is also recommended that bacterial reduction strategies are implemented outside of the Ohio AOC program. Bird management and infrastructure improvement measures should be evaluated by local agencies for future implementation. Improvements to the wastewater collection system, including SSO reduction projects, will limit the amount of sanitary sewage entering the Black River AOC beaches, but general stormwater runoff will continue to contribute to the bacterial load as demonstrated by the 2019 Lakeview Beach Study.

The Beach Closings portion of the BUI also contains a restoration target for contact advisory days due to algal toxins. Toxin producing algal blooms can occur in Lake Erie's Central Basin, but generally occur less frequently and are milder in severity compared to the Western Basin. No contact advisories due to algal toxins were reported at Lakeview or Century beaches from 2019-2023; therefore, both Black River AOC beaches have met the algal toxin advisory component of the restoration target.

Paddling Streams Evaluation

The Black River mainstem was included on Ohio's 2022 303(d) list of impaired waters due to bacterial contamination (Ohio EPA, 2022). The 2008 TMDL listed non-point sources as the primary cause of bacterial impairment (Ohio EPA, 2008). To meet the restoration target for paddling streams, the Black River mainstem requires an approved TMDL and documentation that contamination is not

significantly worse than a similar watershed. The 2008 Black River TMDL satisfies the first portion of the restoration target.

Rocky River mainstem *E. coli* concentrations were compared to Black River mainstem *E. coli* concentrations to determine whether contamination within the two rivers significantly differed (Appendix C). The Rocky River watershed is located in Northeast Ohio, immediately adjacent to the Black River watershed (Ohio EPA, 2001). The Rocky River watershed is determined to be a similar watershed because of its close proximity to the Black River (Figure 3), and comparable land use and drainage area (Ohio EPA, 2001; Ohio EPA, 2008). A Mann Whitney U test showed that there was a not a significant difference between *E. coli* concentrations for the Rocky River mainstem compared to the Black River mainstem, during both wet weather ($Z = 1.6697$, $p = 0.095$) and dry weather ($Z = 1.3895$, $p = 0.165$).

Figure 3. Rocky River and Black River watersheds

Bacterial Source Documentation and Remedial Actions

Lakeview Beach Study

The Stage 2 RAP stated that no sources of bacterial impairments at Lakeview and Century beaches from within the AOC were identified, and that waterfowl is suspected as a major bacterial source. Lakeview Beach in particular exhibits a high degree of bacterial impairment; consistently not meeting Ohio EPA Recreational Use standards for *E. coli*. Significant sources other than waterfowl were also theorized to contribute to the bacterial load. Additionally, the study hypothesized that poor circulation due to the configuration of breakwaters and jetties are impacting the persistence of bacteria at the beach. A 2019 study conducted by Coldwater Consulting and funded through the Great Lakes Restoration Initiative identified sources of *E. coli* and evaluated the circulation at Lakeview Beach that may contribute to the Beach Closings BUI (Coldwater Consulting, 2019) (supplementary report). The assessment also provided conceptual alternatives to improve water quality along Lakeview Beach.

In the 2019 study, water samples from Lakeview Beach and two adjacent storm sewer outfalls were evaluated for *E. coli* concentrations and underwent Microbial Source Tracking (MST) to identify source contributors to the bacterial loading (Figure 4). During the recreation season, samples were collected during dry weather, first flush of stormwater, post storm, and wind events. The MST markers used included human, avian/gull, goose, ruminant, and other/non-specific. A hydrodynamic circulation model was developed to assess circulation patterns in the vicinity of the beach, and diagnostic simulations run by the model were then used to gain a better understanding of nearshore bacterial transport. Once the bacterial sources and transport were determined, potential mitigation strategies were identified and are highlighted below.

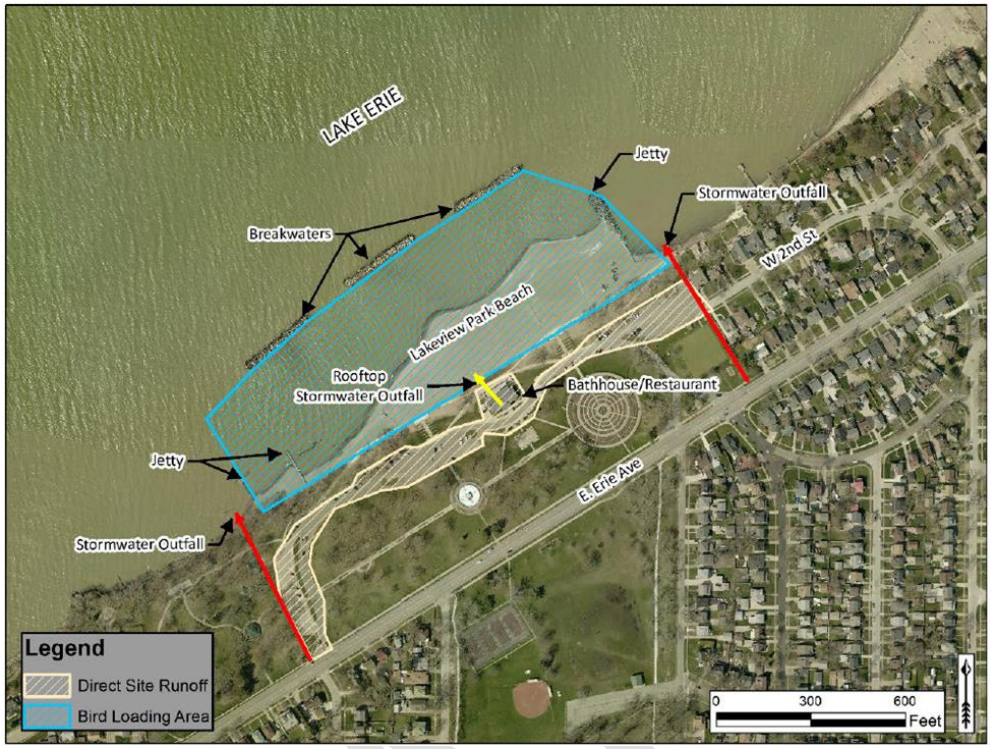

Figure 4. Lakeview Beach study area (Coldwater Consulting, 2019)

The study concluded that *E. coli* concentrations were higher during or following rain events compared to dryer periods. The storm sewer outfalls located to the east and west of the beach were significant contributors of *E. coli*, but only during first flush events. Human and non-specific bacteria were observed in samples from both storm sewer outfalls. The presence of human bacteria may be reflective of a possible sewage contribution to the storm sewer. The MST results also showed that non-specific bacteria, and no human bacteria, was detected in the beach samples following rainfall, which indicates a significant bacteria source other than waterfowl, human, or ruminant.

The *E. coli* concentrations at Lakeview Beach were lower during dry-weather events, but still elevated enough to cause recreational advisories on several occasions. During dry weather events, non-specific and gull bacteria were the predominant sources at the beach. This supports the hypothesis that waterfowl are a primary source of *E. coli* at Lakeview Beach during dry weather, and that there is at least one other significant source of the bacteria that has been detected. The elevated dry weather *E. coli* concentrations may be related to waterfowl, an unknown source, and poor circulation at the beach that allows bacteria to linger rather than being flushed out into the lake.

The hydrodynamic circulation model and diagnostic simulations determined that the Black River and Black River WWTP do not impact *E. coli* levels at Lakeview Beach (Figure 5). It was determined that wind speed and direction is primarily responsible for the circulation at the beach, and that the flushing time for the loading from stormwater outfalls and birds can range between 5-37 hours. Circulation can be impacted by the presence of the three break walls at Lakeview Beach for northerly or southerly winds.

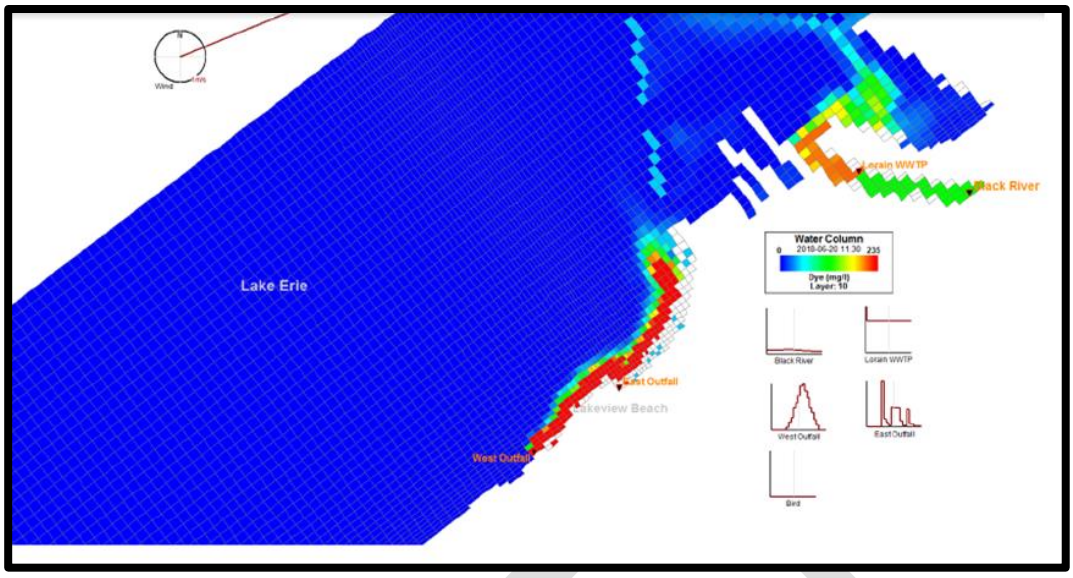

Figure 5. Lakeview Beach circulation model (Coldwater Consulting, 2019)

Based on the findings of the Lakeview Beach Study, several potential projects* were identified to reduce the *E. coli* levels at the beach:

Stormwater Management

- Onsite Treatment
- Outfall Relocation

Green Infrastructure (Dunes)

- Bird Management
- Anti-Loafing Devices
- Scare Tactics

Circulation Improvements

- Pumps/Circulators
- Alter Existing Structures (Breakwaters, Jetties)

Operations and Maintenance

- Beach Management
- Public Facing Activities

** Additional information on each potential project type can see found in the supplementary report (Coldwater Consulting, 2019)*

The results of the MST portion of the study indicate that the greatest *E. coli* loading at Lakeview Beach originates from the east and west outfalls during wet weather events. The most effective approach to reduce this fecal loading would include onsite treatment and outfall relocation. Green infrastructure, circulation improvements, and operations and maintenance could also help bacterial loading during both wet and dry weather. It was determined that any project that would significantly reduce *E. coli* loading to Lakeview Beach would need to occur outside of the AOC program. Infrastructure improvement and long-term source control projects are generally not implemented through the AOC program.

Beach Maintenance and Operations

Lorain County Metro Parks is responsible for maintenance of both beaches. Maintenance includes having personnel manually remove trash and debris from the beaches and their surrounding parks, sand raking, and encouraging the public to keep the beaches clear of trash. Cleanup efforts led by local volunteer groups regularly occur at both AOC beaches. These cleanup efforts are important in keeping the beaches free of debris and also in encouraging the public to be environmental stewards. The type and amount of debris at Lakeview and Century beaches is monitored 4 days per week during the swim season and reported on the BeachGuard website. In addition to beach maintenance, roadways and storm drains are frequently inspected and cleared of waste and obstructions.

A Lorain County Metro Parks levy passed in November 2023 will raise approximately 14.4 million dollars annually to advance the goal of "preserving the county's green space, educating and promoting healthy communities, sustaining clean and safe parks, and improving public access to natural resources, including Lake Erie" (Lorain County Metro Parks, 2023). These funds will contribute to the continued maintenance of the Black River AOC beaches and allow for additional shoreline green space to be preserved.

Black River TMDL

A TMDL for the Black River watershed was completed by the Ohio EPA in 2008. The analysis included the mainstem of the Black River within the AOC boundary, and three upstream sub-watersheds outside of the AOC associated with the east and west branches of the Black River. Causes for impairments included nutrients, siltation, organic enrichment/dissolved oxygen, unknown toxicity, other habitat alterations, and bacteria (Ohio EPA, 2008). The goals of the TMDL were to identify key issues associated with the impairments and pollutant sources, determine water quality conditions that will result in all streams meeting their designated uses, and provide information to stakeholders to facilitate activities to improve water quality (Ohio EPA, 2008). An updated TMDL based on the data collected in 2012-2013 is in progress and is anticipated to be finalized in the coming years. This document will provide an updated analysis of the bacterial loading to the Black River that reflects current conditions and land use.

Bacteria was determined to be a cause of impairment for all four of the Black River's sub-watersheds in the 2008 TMDL. Bacterial sources summarized in the 2008 TMDL include failing HSTSs, CSOs, manure from agriculture, and urban and feedlot runoff. Implementation actions to address these sources of pollution were outlined in the report, including methods to eliminate failing HSTSs, limit livestock access to streams, and improve manure management practices. A significant portion of the land that applies to these bacterial reduction methods is upstream of the Black River AOC boundary. A reduction in the bacterial load in the upper Black River watershed will have a positive effect on water quality within the lower Black River.

Wastewater Collection System and Treatment Plant Upgrades

Three wastewater treatment plants have effluent discharge points within the Black River AOC boundary, including the French Creek, Black River, and City of Elyria wastewater treatment plants (Figure 6). The effluent and treatment bypasses at these plants may contribute bacterial loading to

the Black River paddling stream. The communities treated by the Black River and French Creek wastewater treatment plants convey wastewater through separate sanitary and storm sewers, while the City of Elyria utilizes separate sewers and combined sewers (U.S. EPA, 2023). Sanitary sewer and combined sewer overflows can occur during wet-weather events, contributing *E. coli* loads to French Creek and the Black River (Ohio EPA, n.d). Sanitary cross connections to the storm sewers, inflow, infiltration, and blocked sanitary sewers can cause dry-weather sanitary sewage discharge to waterways as well. Municipalities are responsible for maintaining these sewer systems, including mitigation of the above mentioned dry-weather sources of contamination. Sewer relining and SSO and CSO abatement projects are ongoing through portions of the AOC, which will significantly reduce the volumes of untreated sanitary sewage entering the Black River and its adjacent shoreline (City of Lorain, n.d.).

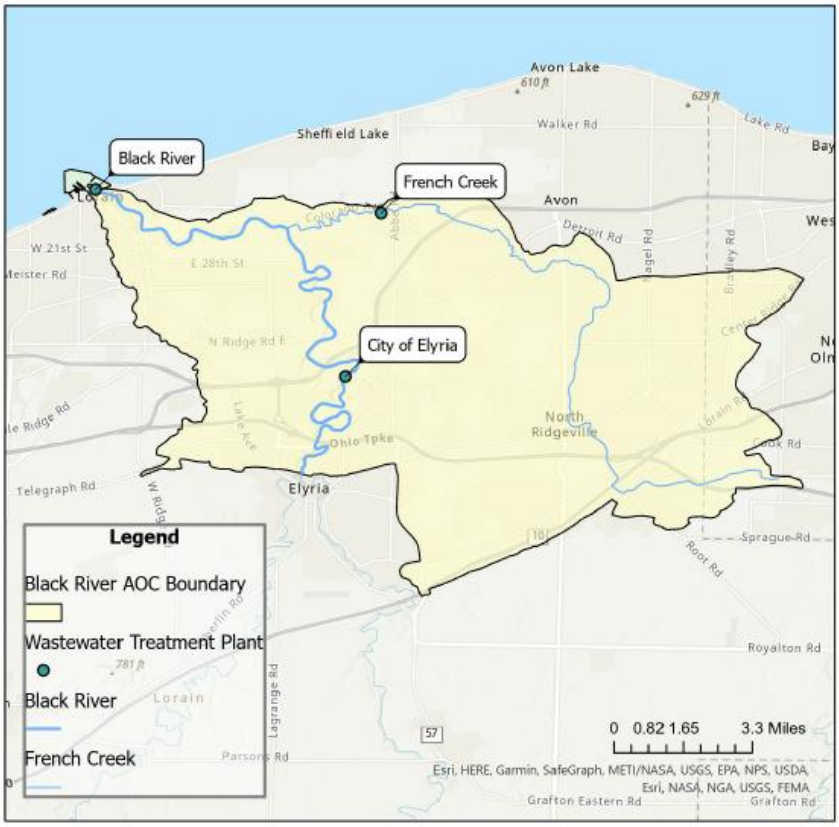

Figure 6. WWTP locations

Limited conveyance and treatment capacity of wastewater infrastructure, as well as aging infrastructure, are widespread issues throughout the state of Ohio (Ohio ASCE, 2021). Within the Black River AOC, all three wastewater treatment plants have made recent upgrades to their treatment system or have plans to do so (AWWA, 2020; MacMillan, 2023; City of Lorain, n.d.). Bacterial loading to the Black River and Lake Erie should continue to decrease through the implementation of these infrastructure projects.

On November 9, 2022, the city of Elyria entered into a CSO LTCP consent decree with the United States and the State of Ohio to complete a series of capital projects designed to control discharges of untreated sewage from its sewer system into the Black River. Under the consent decree and other regulatory programs, SSOs will be eliminated and CSOs and untreated bypasses will be significantly reduced. Construction of the various projects is expected to be completed in 2044 and will reduce the fecal contamination load to the Black River and improve the river's water quality.

Conclusion

Beach Closings

The results of the Beach Closings evaluation determined that Century Beach did not meet the BUI removal targets from 2019-2023. Century Beach had previously met the removal targets in 2015-2019 and has not exhibited a worse degree of bacteriological impairment compared to other non-AOC beaches in recent years. The bacterial sources contributing to beach closings at Century Beach have not been specifically identified, though possible sources include wildlife, waterfowl, and stormwater runoff.

Lakeview Beach did not meet the BUI removal targets from 2019-2023. The 2019 Lakeview Beach Study identified the primary sources of bacteria at the beach to include waterfowl and a source other than waterfowl, humans, or ruminant. Factors contributing to the elevated *E. coli* concentrations at the beach were the close proximity of two storm sewer outfalls at either side of the beach, as well as poor water circulation. The study outlined several projects to address the bacterial loading at Lakeview Beach, including projects relating to stormwater management, circulation improvements, green infrastructure, and operations and maintenance. Because the greatest bacterial loading is originating from the two storm sewer outfalls, infrastructure projects relating to stormwater management would likely have the most significant impact on the beach's water quality. Infrastructure improvement and long-term source control projects are generally not implemented through the AOC program; therefore, the implementation of stormwater management projects as well as the other projects outlined in the study would occur by entities outside of the AOC program. Ongoing maintenance and projects to reduce bacterial loading to the surrounding environment are being implemented by Lorain County Metro Parks and the City of Lorain. Examples include keeping both Lakeview and Century beaches free of trash and debris, signs discouraging littering, public beach cleanup events, and infrastructure improvement projects to limit the amount of sanitary sewage entering the environment. Additionally, the City of Lorain actively works to trace and remediate improper connections to storm sewers when they occur (i.e. sanitary sewer cross-connections, blocked sanitary sewers).

As stated in the United States Delisting Principles and Guidance (U.S. Policy Committee, 2001) and Ohio's Delisting Guidance and Restoration Targets for Ohio Areas of Concern (OLEC, 2023), a BUI can be removed if "it can be demonstrated that the impairment is not limited to the local geographic extent, but rather is typical of lake-wide, region-wide, or area-wide conditions". Beaches with closures to bacterial contamination exceeding 10% of the recreation season are a common occurrence in Lake Erie's Central Basin. Approximately 41% of the Central Basin public beaches had exceedances higher than the BUI targets from 2019-2023, indicating a region-wide issue. The AOC program has determined

that removal of the Beach Closings BUI is warranted based on the regional extent of beach impairments, as well as the thorough identification of bacterial sources within the Black River AOC and associated restoration actions.

Paddling Streams

The paddling portion of the Black River meets the BUI restoration target. The target requires an approved TMDL for the Black River and documentation that contamination is not significantly worse than a similar watershed. The 2008 Black River TMDL satisfies the first portion of the restoration target, and it was determined that the Black River does not have significantly different *E. coli* concentrations than the Rocky River watershed during wet or dry weather. Additionally, improvements to the three wastewater treatment plants located within the Black River AOC boundary have made recent upgrades to improve treatment capabilities. The City of Elyria's Consent Decree (2022) will also contribute improved water quality and reduced bacterial loading to the Black River.

Chemical Contaminants

There are no existing contact advisories due to chemical contaminants at Lakeview and Century beaches, in the Black River, or in French Creek; therefore, this component of the BUI was not considered impaired.

Recommendation

Based upon the findings of the BUI evaluation, the Ohio Lake Erie Commission and Ohio EPA recommend the removal of the Beach Closings BUI from the Black River AOC based on the following conditions:

- Posted contact advisories due to algal toxins meet the restoration target.
- Posted contact advisories due to bacterial contamination are a region-wide issue.
- Reduction of bacterial contamination from waterfowl and stormwater may include infrastructure improvements and long-term maintenance at Lakeview Beach, which are typically activities conducted outside of the AOC program.
- Non-point source bacterial contamination within the Black River paddling stream is addressed by the 2008 Black River TMDL.
- CSOs to the Black River paddling stream will be significantly reduced by the City of Elyria's long-term control plan.
- Bacterial contamination in the Black River is not significantly worse than a similar watershed.

A three-week public comment period was issued by Ohio EPA and Ohio Lake Erie Commission for the Draft BUI Removal Recommendation. The final BUI removal recommendation will include a summary of the public comment response (Appendix E).

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Appendix A - 2023 Delisting Guidance

BUI 10: Beach Closings (Recreation Use)

IJC Listing Guideline

An impairment will be listed when waters, which are commonly used for total-body contact or partial-body contact recreation, exceed standards, objectives, or guidelines for such use.

State of Ohio Listing Guideline

This beneficial use shall be listed as impaired if any of the following occur:

Public Bathing Beaches:

Bathing beach advisories are posted for more than 10 percent of the recreational season due to bacterial contamination (*E. coli)* OR advisories are posted for more than 10 percent of the recreational season for due to algal toxins. **OR**

Primary Contact Recreation (Paddling Streams):

Ohio Dept. of Natural Resources designated Paddling Streams that are within the AOC are included on Ohio's most recent Clean Water Act Section 303(d) list of impaired waters for recreational use due to bacterial contamination (*E. coli*) AND combined sewer overflows (CSOs) are either not present or not being addressed. **OR**

Chemical Contaminant (all waters):

A state or local government agency has issued a warning to avoid contact with the water due to the presence of a chemical of concern, such as PCB or PAH.

Note

- Ohio's water quality standards define the recreation season as May 1 through October 31, though Lake Erie beach monitoring typically is focused between Memorial Day and Labor Day weekends. The recreation season applies only to the public bathing beaches and designated paddling streams, not the Chemical Contaminant condition.

State of Ohio Restoration Target

This beneficial use shall be considered restored when the following conditions are met for public bathing beaches, designated paddling streams and chemical contaminant contact advisories:

Public Bathing Beaches:

This BUI will be considered restored when posted contact advisory days due to bacterial contamination (*E. coli*) do not exceed 10 percent (or 19 days) of the recreation season; AND posted recreational public health advisory days due to algal toxins do not exceed 10 percent (or 19 days) of the recreation season. This target must be met in 3 out of the most recent 5 years; **OR**

In cases where public bathing beaches within the AOC have posted contact advisory days for either bacterial contamination (*E. coli*) or algal toxins that exceed 10 percent of the recreation season and Combined Sewer Overflows (CSOs) are the primary cause, the BUI will be considered restored when the bacterial impacts from CSOs are being addressed under an approved long-term control plan or other legally-binding document.

Primary Contact Recreation (Paddling Streams):

No Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is included on Ohio's most recent 303(d) list of impaired waters due to bacterial contamination (*E. coli*) **OR**

If an Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is on the list of non-attaining waters because of bacterial contamination (*E. coli*) and the presence of Combined Sewer Overflows (CSOs) are the primary cause, this BUI will be considered restored when the bacterial impacts from CSOs are being addressed under an approved long-term control plan or other legally-binding document; **AND**

If an Ohio Dept. of Natural Resources designated Paddling Stream within the AOC is on the list of non-attaining waters because of bacterial contamination (*E. coli*) and the presence of non-point source pollution is the primary cause, this BUI will be considered restored when a TMDL is approved and the State and RAP can document that the level of bacterial contamination is not significantly worse that similar watersheds.

Chemical Contaminant (all waters):

No local or state contact advisories related to the presence of a chemical contaminant exist.

Note

- In Ohio, popular paddling streams with identified public access points have been designated by the Ohio Dept. of Natural Resources as Paddling Streams. This designation extends from the most upstream identified public access point to the mouth. These paddling stream segments are defined by the Ohio Dept. of Natural Resources and, in most cases; do not include the entirety of any Ohio AOC.
- For Cuyahoga AOC beaches, bacteriological sampling data may be used in lieu of advisory data if sampling was conducted 7 days per week during the entire sampling season. Exceedances of the Beach Action Value will be counted as Advisory Days if using bacteriological sampling data.
- The recreational season is designated as May 1 to October 31.

Potential Data Sources

- Ohio EPA and other local bacteria surveys
- Ohio EPA CSO/SSO database
- State and local algal toxin monitoring/contact advisory postings
- ODH BeachGuard website: publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx
- Ohio EPA Harmful Algal Bloom (HAB) website: epa.ohio.gov/habalgae.aspx
- Local Long-Term Control Plan computer modeling or Ohio EPA TSD/TMDL modeling

Rationale

Based on the IJC listing guideline, it is appropriate and protective of human health to include both public beaches and primary contact recreation waters. Ohio water quality standards for recreational use have changed since the previous targets were written; therefore, this target has been updated to reflect these changes. The AOC targets are directly tied to the advisories, so if the water quality standards used to list the advisories change, the BUI target is still viable.

When determining the status of the Algal Toxin Target condition it should be noted that once there is an exceedance of the cyanotoxin recreational threshold, a contact advisory is posted. It requires 2 consecutive weeks (14 days) below that threshold to remove a contact advisory. For purposes of calculating the number of advisory days, use the follow guidance:

- If the last weekly sample collected for a recreational season warrants an advisory, then 2 weeks (14 days) should added to the total number of advisory days for that season or the number of days to the end of the recreational season, whichever is less.
- If the second to last weekly sample collected for a recreational season warrants an advisory and the last weekly sample does not, then 1 week (7 days) should added to the total number of advisory days for that season or the number of days to the end of the recreational season, whichever is less.

- If data is not collected weekly, but shows a decline below threshold with subsequent samples, then 14 days should be added to the last date of exceedance or the number of days to the end of the recreational season, whichever is less.

This BUI should be applied only to public bathing beaches, including inland lake public beaches that are routinely monitored, and Ohio Dept. of Natural Resources designated Paddling Streams, as these are the areas that Ohio has determined to be heavily used or could support frequent primary contact activities. Appendix D contains a list of public bathing beaches and designated paddling streams in each AOC where this BUI applies.

Combining Ohio EPA's comprehensive stream monitoring and local health department monitoring data provides a comprehensive look at bacteria levels in waters across the AOCs and the state. Bacterial contamination represents a pervasive statewide problem and one that is exacerbated by weather. For example, in the 2012 Ohio Integrated Water Quality Monitoring and Assessment Report (which contains the 303(d) list of impaired waters), only 7% of the 12-digit assessment units attained the Recreation Use. Ohio has also completed a number of TMDLs to address bacteria impairments and additional assessments will be required in the future. As of 2012, TMDLs had been completed in 22% of assessment units and were needed in an additional 27%.

Sources of bacteria can include package plants, Combined Sewer Overflows (CSOs), Sanitary Sewer Overflows (SSOs), home sewage treatment systems (HSTSs), commercial on-site systems, land application of organic materials, storm water, concentrated animal feeding operations (CAFOs) and other livestock operations, and permitted wastewater treatment plants (WWTPs). These sources are present across Ohio AOCs, and the tools to manage and address each source range from regulatory to voluntary actions.

An evaluation of failing HSTSs in Ohio provides an illustration of how many of these sources are not unique to AOCs but represent basin-wide or statewide issues. According to the Ohio Department of Health Report (January 2013): *Household Sewage Treatment System Failures in Ohio*, approximately 31% of all household sewage treatment systems throughout the state are failing to some degree. This report provides a summary of local health department survey responses for the 2012 Clean Watershed Needs Survey.

The 2014 revised restoration targets for this BUI were designed to identify sources of contamination within the AOCs that represent extraordinary problems that can be addressed through implementation at the local level. It is also important to recognize the numerous ongoing efforts to address these widespread issues including Ohio's TMDL program, local health department efforts to identify and upgrade or replace failing septic systems, targeted state funding and programs to address unsewered areas, and non-point source reduction programs. Additionally, communities have made tremendous investments to address storm water and correct CSO/SSO issues and will continue to reduce sources of contamination as the long-term control plans are implemented.
Ohio's BUI Restoration Target for this BUI includes multiple conditions. Some conditions have multiple pathways for removal. If the primary cause of the impairment is believed to be due to CSOs or non-point sources of pollution, this cause must be documented before this pathway to BUI removal can be used. Ohio EPA and the local advisory committee will need to support the cause identification via computer modeling, or through other evidence, that clearly states and fully explains the cause of the impairment. Once the issue has been documented as the primary cause, and an approved LTCP or approved TMDLs are in place to address the issue, this BUI can be consider restored for this condition.

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Appendix B - 2019-2023 Ohio Lake Erie Central Basin Beach Advisories and Seasonal Geomeans

	2019		2020		2021		2022		2023	
Beach	**Seasonal Geomean**	**Number of Advisory Days posted**	**Seasonal Geomean**	**Number of Advisory Days posted**	**Seasonal Geomean**	**Number of Advisory Days posted**	**Seasonal Geomean**	**Number of Advisory Days posted**	**Seasonal Geomean**	**Number of Advisory Days posted**
Arcadia Beach	285	41	97	22	150	22	154	21	41	16
Bay Park Beach	35	14	15	3	24	3	68	22	125	19
Beulah Beach (Chappel Creek)	70	27	33	10	102	41	181	39	97	33
Cedar Point Chaussee	25	6	28	10	28	13	44	15	36	4
Century*	**117**	**43**	**41**	**19**	**101**	**35**	**61**	**30**	**42**	**26**
Clarkwood	140	22	55	2	126	25	192	19	81	21
Clifton	80	21	44	17	119	44	100	32	69	28
Columbia Park	122	21	121	21	134	32	134	20	251	39
Community Park	86	31	21	12	26	19	61	26	40	23
Conneaut	21	2	39	2	28	8	104	15	47	2
Cranberry	25	15	17	4	37	24	59	12	33	17
Darby	105	33	68	24	354	65	184	53	170	36
Edgecliff	100	19	57	2	57	2	211	40	28	8
Edgewater*	**57**	**21**	**31**	**24**	**34**	**41**	**35**	**38**	**44**	**30**
Euclid State Park*	**172**	**43**	**63**	**32**	**92**	**41**	**65**	**60**	**53**	**35**
Fairport Harbor	31	5	17	3	34	14	19	7	20	7
Fichtel Creek (Heidelberg Beach)	46	24	33	10	28	25	55	18	49	15
Geneva State Park	13	5	29	2	30	0	31	9	29	19
Headlands West	57	18	32	9	37	6	31	16	43	21

Huntington	32	20	51	24	63	30	59	17	85	23
Huron River East (Nickel Plate Beach)	41	8	49	12	34	23	59	17	45	8
Huron River West (Lake Front Park)	71	16	83	28	222	60	262	57	161	37
Lakeshore Park	50	5	101	11	315	40	166	19	125	31
Lakeview*	**139**	**34**	**87**	**18**	**254**	**67**	**332**	**59**	**158**	**43**
Lakewood Beach Park	68	29	25	10	49	20	106	38	37	17
Moss Point	197	26	53	10	90	9	158	32	50	13
Noble	127	17	94	10	67	13	212	45	92	19
Nokomis	181	46	82	24	118	34	109	36	40	24
Old Woman East (Oberlin Beach)	33	18	13	2	19	15	37	7	24	3
Old Woman West	17	9	13	8	21	9	36	7	18	5
Orchard Beach	54	20	29	13	80	37	79	19	81	13
Parklawn	51	6	30	0	95	4	59	12	104	12
Royal Acres	146	22	57	2	141	21	176	25	75	15
Sawmill Creek	23	6	27	6	44	14	110	34	45	11
Sherod Creek	95	34	66	23	88	40	91	33	158	31
Showse	55	25	21	5	19	8	44	22	19	13
Sims	196	26	116	15	221	35	349	41	142	16
Utopia	124	24	36	4	46	16	69	36	60	8
Vermilion East (Lagoons Beach)	98	27	44	27	115	39	102	36	50	8
Vermilion West (Main Street Beach)	96	32	71	22	98	39	102	22	143	36

Villa Angela*	**158**	**46**	**74**	**41**	**90**	**48**	**82**	**64**	**55**	**33**
Wagar	43	10	51	4	167	23	54	12	101	22
Walnut	13	0	24	2	22	7	55	13	7	2
Avg Seasonal Geomean - All	**86**		**50**		**93**		**109**		**74**	
Avg Seasonal Geomean - Non AOC only	**80**		**48**		**91**		**108**		**74**	

* = AOC Beach

Appendix C – Rocky River and Black River E. coli Results

River	Rive Mile	Station	Collector	Sample Dt	Parameter	Result	Unit	Notes
Rocky River	0.7	T01K02	NEORSD	6/24/2014	E.coli	27000	#/100ml	Wet weather
Rocky River	0.7	T01K02	NEORSD	7/1/2014	E.coli	620	#/100ml	Wet weather
Rocky River	0.7	T01K02	NEORSD	7/29/2014	E.coli	1400	#/100ml	Wet weather
Rocky River	0.7	T01K02	NEORSD	8/27/2014	E.coli	7700	#/100ml	Wet weather
Rocky River	0.7	T01K02	NEORSD	6/10/2014	E.coli	1300	#/100ml	Dry Weather
Rocky River	0.7	T01K02	NEORSD	8/7/2014	E.coli	780	#/100ml	Dry Weather
Rocky River	0.7	T01K02	NEORSD	9/9/2014	E.coli	400	#/100ml	Dry Weather
Rocky River	0.7	T01K02	NEORSD	9/25/2014	E.coli	55	#/100ml	Dry Weather
Rocky River	1.8	T01W03	NEORSD	6/24/2014	E.coli	24000	#/100ml	Wet weather
Rocky River	1.8	T01W03	NEORSD	7/1/2014	E.coli	490	#/100ml	Wet weather
Rocky River	1.8	T01W03	NEORSD	7/29/2014	E.coli	1800	#/100ml	Wet weather
Rocky River	1.8	T01W03	NEORSD	8/27/2014	E.coli	9100	#/100ml	Wet weather
Rocky River	1.8	T01W03	NEORSD	6/10/2014	E.coli	880	#/100ml	Dry Weather
Rocky River	1.8	T01W03	NEORSD	8/7/2014	E.coli	690	#/100ml	Dry Weather
Rocky River	1.8	T01W03	NEORSD	9/9/2014	E.coli	400	#/100ml	Dry Weather
Rocky River	1.8	T01W03	NEORSD	10/8/2014	E.coli	67	#/100ml	Dry Weather
Rocky River	3	501790	NEORSD	5/7/2013	E.coli	31	#/100ml	Dry Weather
Rocky River	3	501790	NEORSD	6/25/2018	E.coli	556	MPN/100mL	Dry Weather
Rocky River	7.6	T01W12	NEORSD	6/24/2014	E.coli	20000	#/100ml	Wet weather
Rocky River	7.6	T01W12	NEORSD	7/1/2014	E.coli	400	#/100ml	Wet weather
Rocky River	7.6	T01W12	NEORSD	7/29/2014	E.coli	1400	#/100ml	Wet weather
Rocky River	7.6	T01W12	NEORSD	8/28/2014	E.coli	780	#/100ml	Wet weather
Rocky River	7.6	T01W12	NEORSD	6/10/2014	E.coli	960	#/100ml	Dry Weather
Rocky River	7.6	T01W12	NEORSD	8/7/2014	E.coli	670	#/100ml	Dry Weather
Rocky River	7.6	T01W12	NEORSD	9/9/2014	E.coli	360	#/100ml	Dry Weather
Rocky River	7.6	T01W12	NEORSD	9/25/2014	E.coli	240	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	6/24/2014	E.coli	22000	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	7/1/2014	E.coli	470	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	7/29/2014	E.coli	930	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	8/4/2014	E.coli	280	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	8/13/2014	E.coli	5800	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	8/27/2014	E.coli	2300	#/100ml	Wet weather
Rocky River	11.65	T01W19	NEORSD	6/10/2014	E.coli	680	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	6/16/2014	E.coli	310	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	7/22/2014	E.coli	180	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	8/7/2014	E.coli	700	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	9/3/2014	E.coli	350	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	9/9/2014	E.coli	420	#/100ml	Dry Weather

Rocky River	11.65	T01W19	NEORSD	9/24/2014	E.coli	180	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	9/25/2014	E.coli	230	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	10/2/2014	E.coli	270	#/100ml	Dry Weather
Rocky River	11.65	T01W19	NEORSD	10/14/2014	E.coli	290	#/100ml	Dry Weather
Black River	6.2	B01S06	Ohio EPA	8/16/2012	E.coli	420	#/100ml	Wet weather
Black River	6.2	B01S06	Ohio EPA	7/16/2012	E.coli	39	#/100ml	Dry Weather
Black River	6.2	B01S06	Ohio EPA	10/9/2012	E.coli	450	#/100ml	Dry Weather
Black River	6.2	B01S06	Ohio EPA	10/10/2012	E.coli	98	#/100ml	Dry Weather
Black River	6.2	B01S06	Ohio EPA	10/17/2012	E.coli	97	#/100ml	Dry Weather
Black River	6.2	B01S06	Ohio EPA	10/25/2012	E.coli	41	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	8/16/2012	E.coli	230	#/100ml	Wet weather
Black River	9.8	501510	Ohio EPA	9/5/2012	E.coli	1800	#/100ml	Wet weather
Black River	9.8	501510	Ohio EPA	10/29/2012	E.coli	17000	#/100ml	Wet weather
Black River	9.8	501510	Ohio EPA	6/25/2018	E.coli	2140	#/100mL	Wet weather
Black River	9.8	501510	Ohio EPA	6/27/2012	E.coli	610	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	7/16/2012	E.coli	240	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	7/26/2012	E.coli	290	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	10/9/2012	E.coli	430	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	10/10/2012	E.coli	520	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	10/17/2012	E.coli	130	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	10/25/2012	E.coli	190	#/100ml	Dry Weather
Black River	9.8	501510	Ohio EPA	5/7/2013	E.coli	180	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	8/16/2012	E.coli	150	#/100ml	Wet weather
Black River	14.95	501520	Ohio EPA	9/5/2012	E.coli	1800	#/100ml	Wet weather
Black River	14.95	501520	Ohio EPA	10/29/2012	E.coli	8200	#/100ml	Wet weather
Black River	14.95	501520	Ohio EPA	6/27/2012	E.coli	170	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	7/16/2012	E.coli	720	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	7/26/2012	E.coli	120	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	10/9/2012	E.coli	330	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	10/10/2012	E.coli	120	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	10/17/2012	E.coli	110	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	10/24/2012	E.coli	120	#/100ml	Dry Weather
Black River	14.95	501520	Ohio EPA	10/25/2012	E.coli	60	#/100ml	Dry Weather

Appendix D – Public Comment

A summary of public comments will be added before the document is finalized.

Appendix E – Letter of Support Black River AOC Community Advisory Committee

A letter of support from the Black River AOC Advisory Committee will be added before the document is finalized.