Mr. Jon W. Allan, Director
Office of the Great Lakes
Michigan Department of Environmental Quality
525 West Allegan Street
P.O. Box 30473
Lansing, Michigan 48909-7973

Dear Mr. Allan:

Thank you for your July 16, 2015, request to remove the “Beach Closings” Beneficial Use Impairment (BUI) at the Muskegon Lake Area of Concern (AOC), Muskegon, MI. As you know, we share your desire to restore all of the Great Lakes AOCs and to formally delist them.

Based upon a review of your submittal and the supporting data, the U.S. Environmental Protection Agency hereby approves your BUI removal request at the Muskegon Lake AOC. In addition, EPA will notify the International Joint Commission of this significant positive environmental change at this AOC.

We congratulate you and your staff, as well as the many federal, state, and local partners who have worked so hard and been instrumental in achieving this important environmental improvement. This progress will benefit not only the people who live and work in the Muskegon Lake AOC, but all the residents of the Great Lakes basin as well.

We look forward to the continuation of this important and productive relationship with your agencies and the Muskegon Lake Watershed Partnership as we work together to delist this AOC in the years to come. If you have any further questions, please contact me at (312) 353-4891, or your staff may contact John Perrecone, at (312) 353-1149.

Sincerely,

Chris Korleski, Director
Great Lakes National Program Office
cc: Stephanie Swart, MDEQ
    Sharon Baker, MDEQ
    Kathy Evans, Muskegon Lake Watershed Partnership
    Rick Hobrle, MDEQ
    Matthew Child, IJC
    Mark Loomis, EPA, GLNPO
July 16, 2015

Mr. Chris Korleski, Director
Great Lakes National Program Office
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (G-17.J)
Chicago, Illinois 60604-3507

Dear Mr. Korleski:

I am writing to request the United States Environmental Protection Agency (U.S. EPA), Great Lakes National Program Office’s (GLNPO) concurrence with the removal of the Beach Closings Beneficial Use Impairment (BUI) from the Muskegon Lake Area of Concern (AOC). The Michigan Department of Environmental Quality (MDEQ), Office of the Great Lakes (OGL) has assessed the status of the BUIs in accordance with the state’s Guidance for Delisting Michigan’s Great Lakes Areas of Concern and the locally-developed criteria that were approved by the MDEQ. The OGL recommends that the BUI be removed from the list of impairments in the Muskegon Lake AOC.

Enclosed, please find documentation to support the recommendation, including BUI Removal Recommendation documents prepared by MDEQ staff. The Muskegon Lake Watershed Partnership submitted a letter supporting the recommendation, which is included with this package.

We value our continuing partnership in the AOC Program and look forward to working with the GLNPO in the removal of BUIs in the Muskegon Lake Area of Concern. If you need further information concerning this request, please contact Ms. Sharon Baker at 517-284-5044, or at bakers9@michigan.gov, or you may contact me.

Sincerely,

Jon W. Allan
Director
517-284-5035

Enclosures
cc: Ms. Kathy Evans, Muskegon Lake Watershed Partnership
Mr. Marc Tuchman, U.S. EPA
Mr. John Perrecone, U.S. EPA
Mr. Mark Loomis, U.S. EPA
Mr. Richard Hobrta, MDEQ
Ms. Stephanie Swart, MDEQ
Ms. Sharon Baker, MDEQ
Removal Recommendation
Beach Closings Beneficial Use Impairment
Muskegon Lake Area of Concern

Issue

The Michigan Department of Environmental Quality (MDEQ), Office of the Great Lakes, Areas of Concern (AOCs) Program recommends removal of the Beach Closings Beneficial Use Impairment (BUI) for the Muskegon Lake AOC. The recommendation is made with the support of staff from the MDEQ Water Resources Division (WRD), the United States Environmental Protection Agency (USEPA) Great Lakes National Program Office, Public Health-Muskegon County, and the Muskegon Lake Watershed Partnership (MLWP), which also serves as the Public Advisory Council for the AOC. This request is made in accordance with the process and criteria set forth in the Guidance for Delisting Michigan’s Great Lakes Areas of Concern (Guidance) (MDEQ, 2015).

Background

Muskegon Lake is a 4,150 acre drowned river mouth located in Muskegon County. The Muskegon Lake AOC includes Muskegon Lake and portions of its tributaries: the Muskegon River, Ruddiman Creek, Ryerson Creek, Green Creek, Four Mile Creek, Little Bear Creek (including the unnamed tributary), and Bear Lake. Muskegon Lake was listed as an AOC primarily due to historic discharges of industrial process wastewater, municipal wastewater treatment plant effluent, combined storm sewer overflows, alterations of shoreline, excessive shoreline filling, and urban runoff. These discharges introduced elevated levels of PCBs, heavy metals, nutrients, oils, and other contaminants into the Muskegon Lake AOC (Michigan Department of Natural Resources (MDNR), 1987).

Six BUIs remain for the Muskegon Lake AOC: Loss of Fish and Wildlife Habitat; Degradation of Fish and Wildlife Populations; Degradation of Aesthetics; Beach Closings; Eutrophication or Undesirable Algae; and Degradation of Benthos. This document pertains only to the Beach Closings BUI.

The Beach Closings BUI was not originally identified in the 1987 Remedial Action Plan (RAP). The BUI was included in the 2002 RAP Update by the Muskegon Lake Public Advisory Council because of health concerns related to aging infrastructure and contact advisories related to force main and lift station failures, and the subsequent discharge of raw sewage into the lake and tributaries (Muskegon Conservation District).

The AOC program is non-regulatory and is intended to provide a framework to coordinate existing regulatory programs and other local, state, and federal resources to achieve restoration of impaired beneficial uses. Local, state, and federal regulatory activities continue to work on reducing E. coli inputs and implementing infrastructure improvements in communities surrounding Muskegon Lake.

Removal Criteria

On July 2, 2007, the MDEQ accepted a locally-developed target for the Beach Closings BUI as being functionally equivalent to the MDEQ's restoration criteria in the Guidance, while remaining within the scope of the AOC program. The MLWP’s AOC-specific criteria are as follows:

The Beach Closings BUI will be considered restored when: (1) no waterbodies within the AOC are included on the list of impaired waters in the most recent Water Quality and Pollution Control in Michigan: Section 303(d) and 305(b) Integrated Report and (2) contact advisories have not been placed on Muskegon Lake due to sewage infrastructure failure for three consecutive years beginning in 2006.
Analysis

Impaired Waterbodies

The only waterbody within the Muskegon AOC that is on the list of impaired waters for E. coli is Ruddiman Creek, on the southwest side of Muskegon Lake. A Total Maximum Daily Load (TMDL) for E. coli was approved in 2010 and Ruddiman Creek is part of the list of impaired waterbodies in the 2014 Integrated Report (MDEQ, 2014). A TMDL is written in order to provide a basis for determining the pollutant reductions necessary from both point and nonpoint sources to restore and maintain water quality. In the case of Ruddiman Creek, the main branch upstream to the headwaters was listed because of illicit connection sewage discharges. The TMDL indicates that 60 percent of the Ruddiman Creek watershed is below ground in storm sewers with only about 3 percent of the water naturally draining to the creek (MDEQ, 2010) (Attachment A). Since so much of the main branch watershed flow is through storm sewers, the presence of wildlife (i.e., raccoons, opossums) could also lead to exceedances of E. coli standards in the creek.

The cities of Muskegon, Muskegon Heights, Norton Shores, and Roosevelt Park and Muskegon County, which all have responsibilities for infrastructure around Ruddiman Creek, have Municipal Separate Storm Sewer System (MS4) permits. Under the jurisdiction of the MS4 permits, permittees are required to reduce the discharge of pollutants from their MS4 to the maximum extent practicable through the development of several plans. One such requirement is the cities and the county have developed Storm Water Pollution Prevention Initiatives (SWPPIs) as well as Illicit Discharge Elimination Programs (IDEPs).

The SWPPI provides a “description of watershed characteristics, identif[i]es watershed pollutants, and make[s] recommendations for the treatment, prevention, and reduction of pollution in the Muskegon Lake watershed” (Fishbeck, 2006). A specific goal of each of the SWPPIs is to “prevent pathogens from entering surface waters of Muskegon Lake Watershed and strive to meet applicable water quality standards in Ruddiman Creek” (Fishbeck, 2006a-e). Both the SWPPI for the city and the county assess the best methods to reduce pathogens into Ruddiman Creek, develop short term objectives, and set methods to assess progress for the goals. The IDEP for the city and the county was prepared as a requirement of the MS4 permits.

The IDEP is set up to work in conjunction with the goals of the TMDL, which is to reduce pathogens to Ruddiman Creek. Each municipality sends in an annual report to the MDEQ-WRD that indicates the efforts to meet the SWPPI and IDEP goals within the past year. Since 1998, the city has eliminated over 33 illicit connections and replaced, or significantly upgraded, six sewage lift stations in the Ruddiman Creek Watershed. The city and the county continue to implement the goals of the IDEPs as part of the ongoing MS4 permit requirements.

In addition to the MS4 efforts, the city of Muskegon, city of Muskegon Heights, Muskegon County, MLWP, and MDEQ partnered with the West Michigan Shoreline Regional Development Commission and Environmental Canine Services (ECS) in 2012 to locate the remaining illicit connections within the main branch portion of the Ruddiman Creek watershed (ECS, 2013). Sixty sites in the Ruddiman Creek watershed were investigated; nine of them received positive alerts for the presence of human fecal contamination (ECS, 2013). Those nine positive sites and an additional 30 were investigated in 2013, with nine new positive alerts to the presence of human fecal contamination in the storm drains (ECS, 2013). Staff from the MDEQ-Water Resources Division will be following up on several of the sites with additional sampling. All of the information was given to the jurisdictions affected and several of the locations with positive alerts have already been addressed. Public Health Muskegon County surveyed Ruddiman Creek in 2012 and found continued high levels of E. coli, particularly during rain events. Their work was
conducted prior to the findings of ECS and the results correlated with the additional illicit connections.

The TMDL report specifically notes that the continued work on the IDEPs and the requirement to meet the TMDL in the MS4 permits are the best methods to reduce \textit{E. coli} levels to Ruddiman Creek (MDEQ, 2010). The TMDL is the regulatory mechanism for the Ruddiman Creek watershed and the MS4 program, as well as additional work by the cities and county, it is the existing mechanism to achieve the \textit{E. coli} reductions. The MS4 program and the TMDL will continue to provide the means for oversight regardless of the status of the Beach Closings BUI. This same regulatory mechanism is used throughout the state of Michigan in other non-AOCs to achieve reductions in \textit{E. coli} in small urban watersheds. The \textit{E. coli} exceedances occurring at Ruddiman Creek are very similar to the Saline River TMDL in Washtenaw County and the Albrow Creek TMDL in Jackson County, and there is a regulatory mechanism in place to help the community reduce the numbers (MDEQ, 2002; MDEQ, 2007). In fact, there are 50 other \textit{E. coli} TMDLs across the state in non-AOCs and even more contact advisories listed in the 2014 Integrated Report (MDEQ, 2014). The ongoing work by the cities and the county to reduce \textit{E. coli} in the Ruddiman Creek watershed will take time, but it is an effort that is taking place across the state, not just in AOCs.

**Contact Advisories – Infrastructure Failure**

Prior to recent upgrades, the Muskegon County Wastewater Management system experienced several types of infrastructure failure. There were sanitary sewer line breaks from aging infrastructure in 1999, 2000, 2001, and 2007. The most recent failure occurred in the city of Roosevelt Park on July 11, 2010. Since 2004, Muskegon County has made significant upgrades to the county wastewater collection system (Eisenbarth, 2014a). Phase I of the effort replaced three pump stations; rehabilitated two pump stations; replaced two force mains; and eliminated six old pump stations and replaced them with a central station and trunk sewer. The Phase I work alone reduced the number of infrastructure failures by 90 percent (Eisenbarth, 2014a). Phase II of the work included replacing the main pump station and upgrading another, which greatly improved the reliability of the system. Another portion of this work included the replacement of an 11 mile 66-inch force main (Attachment B). The work around Muskegon Lake for infrastructure improvements totaled $65.1 million dollars of State Revolving Fund money. The city of Muskegon and county have also spent considerable time lining sewers and looking for illicit connections.

The Muskegon Lake AOC-specific Beach Closings BUI criterion requires three years of zero no-contact advisories at Muskegon Lake. More than three years have passed with zero no-contact advisories for Muskegon Lake as a result of sewage infrastructure failures (Eisenbarth, 2014). This meets the requirements in the local Beach Closings BUI criteria related to failure of aging infrastructure. The single failure since 2013 was the result of an electrical failure, not because of outdated infrastructure, something that happens in other communities. All lift stations will be retrofitted with backup systems in case of future electrical failures (Eisenbarth, 2014b).

**Conclusions**

To assess the standing of this BUI, the WRD and Office of the Great Lakes staff reviewed the current MS4 program status for the cities of Muskegon, Muskegon Heights, Norton Shores, Roosevelt Park, and Muskegon County as well as the requirements noted in the TMDL. The MLWP, in conjunction with the MDEQ and Public Health Muskegon County searched for illicit connections in the Ruddiman Creek area, remedied some of the connections, and conducted follow up sampling activities. After a review of the MS4 programs, TMDL, additional investigations, and communications with city officials, Ruddiman Creek remains on the list of
impaired waterbodies, but an established oversight mechanism is in place, and the issues are no different than a non-AOC.

The Technical Team for this BUI is confident that the Ruddiman Creek sites on the list of impaired water bodies in the *Integrated Report* will be addressed by applicable state programs and that the local BUI criteria related to impaired water bodies is satisfied.

Additionally, information regarding infrastructure failures and the resulting corrective actions was provided by the city of Muskegon and the Muskegon County Department of Public Works. Based on a review of infrastructure failures from the Muskegon County Department of Public Works, the area has met the AOC-specific criteria for three years of zero contact advisories on Muskegon Lake. In conclusion, removal of the Beach Closings BUI in the Muskegon Lake AOC is recommended by the Technical Team.

The removal recommendation was discussed with the MLWP at their regular meeting on September 25, 2014 (Attachment C). The MLWP submitted a formal letter of support for removal of the BUI, dated September 30, 2014 (Attachment D). The removal recommendation was on public notice from June 15 to July 15, 2015.

**Recommendation**

The MDEQ AOC program staff recommends removal of the Beach Closings BUI in the Muskegon Lake AOC.

Prepared by: Stephanie Swart
Great Lakes Management Unit
Office of the Great Lakes
Michigan Department of Environmental Quality
May 8, 2015

**Attachments**

A – Ruddiman Creek Storm Sewer System Map

B – Muskegon County Wastewater Management System Map

C – Muskegon Lake Watershed Partnership September 25th public meeting announcement

D – Muskegon Lake Watershed Partnership letter supporting BUI removal, September 30, 2014

**References**


Environmental Canine Services, LLC. 2013. Ruddiman Creek Bacteria Source Tracking Project, October 22, 2013.


Muskegon Lake Watershed Partnership. 2007. Target for Delisting the Beach Closings Beneficial Use Impairment in the Muskegon Lake Area of Concern.
**Agenda**

1. **Welcome and Introductions** - Dennis Kirksey, Chair  
   A. Meeting Summary  
   B. Treasurer's Report

6:15 - 6:45 p.m. (includes Q&A)

2. **Presentation:** **Coal Tar Sealcoats: Risks and Safer Alternatives**  
   - Tanya Cabala, on behalf of Freshwater Future
   
   Coal tar sealcoats are widely used to maintain parking lots and driveways. It is a significant source of polycyclic aromatic hydrocarbons (PAHs) to the environment. PAHs can impair water quality and aquatic life in lakes and streams. There are safer alternatives - asphalt based sealcoats – which are readily available and very affordable.

**Remediation and Restoration Progress**

6:45 p.m.

3. **Beach Closings Beneficial Use Impairment** -  
   A. Presentation of Final BUI Removal Document (review input received since August 14)  
   B. Vote on BUI Removal

7:00 p.m.

4. **Cleanup and Restoration – Brief Updates**  
   A. Great Lakes Legacy Act Cleanup Projects:  
      I. Zephyr Cleanup and Restoration  
      II. Ryerson / Muskegon Lake  
   B. NOAA Regional Partnership Habitat Restoration Projects:  
      I. Muskegon River Veterans Park Restoration  
      II. Mill Debris/Marine Debris  
   C. Bear Creek Hydrologic Reconnection and Restoration and Acquisition  
   D. Muskegon River Celery Flats Restoration and Acquisition  
   E. Fenners Ditch/Bear Lake - Oil Slick Containment  
   F. MDEQ SAW Stormwater Grant – Received  
   G. Proposed Grants: Phragmites/GLRI; Bear Creek/GLRI; Shoreline Cities Green Infrastructure

7:30 - 8:00 p.m.

5. **Public Input**

   **For Your Calendar/Announcements**

   **Muskegon Lake Perceptions Research Presentations on October 31:** A special MLWP public meeting will be held at 12:00 Noon and additional presentations will be given at the Michigan Statewide Public Advisory Council Meeting and the Muskegon Lakeshore Chamber Breakfast. Please watch future e-mails for more details

   **Adjourn**
September 30, 2014

Ms. Stephanie Swart
Michigan Department of Environmental Quality
Office of the Great Lakes
Lansing, MI, 48909

Dear Ms. Swart

Re: Recommendation to Remove the Beach Closings Beneficial Use Impairment

The decision to recommend removal of the Muskegon Lake Area of Concern (AOC) Beach Closings Beneficial Use Impairment (BUI) was made at a public meeting of the Muskegon Lake Watershed Partnership (MLWP) on September 25, 2014.

The MLWP recommends the removal of this BUI because of significant work completed by the Muskegon County Wastewater Management System and the City of Muskegon. Muskegon County upgraded and repaired sanitary and storm sewer infrastructure within the Muskegon Lake Area of Concern (AOC) Watershed. The City of Muskegon has made significant progress within the Ruddiman Creek Main Branch sub-watershed where the Michigan Department of Environmental Quality (DEQ) E.Coli Total Maximum Daily Load Assessment had identified elevated levels of bacteria associated with human sources.

The MLWP determined that the remaining source areas of human-related E.Coli within the Ruddiman Creek Main Branch storm drain system had been identified by a bacterial survey completed with support from a DEQ Public Advisory Council grant to the West Michigan Shoreline Regional Development Commission and Ecological Canine Services. The identified source areas were further investigated by the City of Muskegon and corrective actions were taken to eliminate sanitary/storm cross connections during the summer of 2014. This, along with the corrective work completed previously by the Muskegon County Wastewater Management System, we believe that the BUI Target for Beach Closings has been met for the Muskegon Lake AOC.

The public was notified about opportunities to review and discuss the bacterial survey and the progress being made to correct problems at several MLWP public meetings over the past year. The Draft DEQ BUI Removal Document was distributed at the July, 2014 MLWP public meeting for input. A public meeting of the MLWP was held on August 14, 2014 to discuss progress. Thirteen community members and the DEQ AOC Coordinator attended. The Final Draft BUI removal document was e-mailed to more than 450 watershed stakeholders for final input. At the September, 25 2014 MLWP public meeting, with 17 in attendance, the MLWP voted unanimously to recommend removal of the BUI.

We appreciate the work that the MDEQ is doing to support and partner with the MLWP to remediate, restore and delist the Muskegon Lake AOC, as well as for your work on other ongoing natural resource concerns in our watershed.

Sincerely,

[Signature]
Dennis Kirksey, Chair

CC: Kathy Evans, MLWP Support Staff - West Michigan Shoreline Regional Development Commission