

April 30, 2020

Springfield Lake Task Force - Summary Report and Recommendations

Over the past nine months the Springfield Lake Task Force has been investigating and collecting information and data about Springfield Lake (the Lake) and its water quality, and the limited area and uses within the watershed for this Lake is conducive in identifying the major sources of its pollution.

The surrounding communities of Lakemore and Springfield Township agree on the need for change to improve Lake health and water quality and that it would be neglectful to simply maintain the status quo or historical ideas of lake management. The surrounding communities must also agree to move forward with commitment toward major changes, aggressive management and pressured timelines.

This will require integrated planning, not simply replacing septic and sanitary systems while continuing to discharge storm water to the Lake. With a comprehensive outline and integrated planning, there is opportunity to save both time and financial resources.

Focusing on each Clean Water Act (CWA) requirement individually may constrain a municipality from addressing its most serious water quality issues first. Recognizing the limits of this approach, in 2012, EPA developed an integrated planning framework that offers a voluntary opportunity for a municipality to develop an integrated plan to meet multiple CWA requirements.

On January 14, 2019, Congress passed the Water Infrastructure and Improvement Act (WIIA) (HR 7279) to amend the CWA to include the 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework. WIIA provides greater certainty that integrated planning provides a comprehensive path a municipality can voluntarily take to meet CWA requirements.

Integrated Planning Elements

An integrated plan is a process that identifies efficiencies from separate wastewater and stormwater programs to best prioritize capital investments and achieve our human health and water quality objectives. This approach can also lead to more sustainable and comprehensive solutions, such as green infrastructure, that improve water quality and provide multiple benefits that enhance community vitality.

US EPA, *National Pollutant Discharge Elimination System (NPDES), Integrated Planning for Municipal Stormwater and Wastewater, Overview*, April 2020,
www.epa.gov/npdes/integrated-planning-municipal-stormwater-and-wastewater. April 28, 2020

Lake water testing collected and resulted by the Ohio Department of Natural Resources from 2006-2019 demonstrates definite increases and trends in the quantity and concentration of nitrogen (196%) and phosphorus (119%) over that time period. (Appendix A)

According to additional studies from the US EPA and other environmental experts, the overwhelming causes of increases in phosphorus and nitrogen nutrients to water sources in the urban setting are sanitary, septic and stormwater *contamination*. These are the nutrients known to cause harmful algal blooms (HABs)¹ such as those that have recently plagued Lake Erie and other inland Ohio lakes.² In the case of Springfield Lake, these same causes have been identified by known stormwater runoff and septic systems in the watershed, and by direct and indirect sanitary overflows to the Lake.

Sanitary Waste

Lakemore is using an 80-year-old sanitary infrastructure that is well past its usable working life and in need of entire replacement, and was reported as such to the Ohio EPA by Lakemore officials in 2011 after a sanitary sewer overflow event. (Appendix B) Along with other yearly events, a single sanitary sewer overflow (SSO) event in 2019 involved pumping approx 440,000 gallons of sewage from the main pumping station of Lakemore into the Lake. Events SSO occurrences are obviously concerning to both

“Lacking adequate focus on operations and maintenance, many collection system utilities have slipped into a reactive mode, with most of the operational resources allocated to emergency response and rehabilitation or replacement of failed components. Meanwhile, sewers that have not yet manifested failures are aging, undiscovered defects are worsening, and the problems of the next year and decade are developing.”

“Run-to-Failure Management Model—

Sewer system assets that are not regularly maintained usually deteriorate faster than expected and lead to higher replacement and emergency response costs.”

US EPA. *FACT SHEET - “Asset Management for Sewer Collection Systems”*, April 27, 2020
www3.epa.gov/npdes/pubs/assetmanagement.pdf. April 27, 2020

communities, and the Ohio EPA district office was asked to meet and speak to this very point by the Springfield Lake Task Force and again by the Springfield Township trustees. However, the Ohio EPA declined to do so, citing a lack of reason or concern, and because these SSO events have been reported as required. (Appendix C)

Unfortunately, not only are sanitary discharges and SSO’s and sewage pumped directly to the Lake, but unseen broken sewage pipes, mixing and cross flowing with storm water are silent sources of pollution and discharge also to the lake, especially during rains.³

¹ US EPA. “Nutrient Pollution, Sources and Solutions”. April 28, 2020,

www.epa.gov/nutrientpollution/sources-and-solutions, accessed April 28, 2020

² Ohio Department of Health. “Know Our Programs/Harmful Algal Blooms”. April 27, 2020,

odh.ohio.gov/wps/portal/gov/odh/know-our-programs/harmful-algal-blooms/welcome/, accessed April 27, 2020

³ Tuscarawas County Metropolitan Sewer District. “Infiltration & Inflow (I/I) Reduction Program

What is Infiltration & Inflow?”. April 27, 2020, www.tcmsd.org/infiltration-and-inflow-i-i-reduction-program, accessed April 27, 2020

Failing infrastructure can cause increased inflow and infiltration due to the hydraulic pressure changes between separate storm and sanitary systems associated with rainfall. This effect is the reason lowering the Lake level and has been supported and reported by Lakemore in a 2013 SSO Overflow Report and in the 2019 City of Akron Tributary Community Permit Program Community Status Sheet, which are both filed with the Ohio EPA.

According to Summit County Engineer Mike Weant, the solitary sewage pump and its

building on the lakefront is in need entire replacement and should this pump fail, *there is no bypass in place for sewage other than to discharge directly to the Lake until a contingency plan and pump are installed.* It is unknown why this has not been investigated further by the Ohio EPA or Akron, since this main pump would certainly be a part of a infrastructure and sewer maintenance program.

The impact of these issues to Lakemore, other than adding pollution to the Lake, is also of note for Lakemore residents. On average, Lakemore was charged for 338 million gallons of sewage pumped annually to Akron for treatment from 2014-2018. Comparatively, from 1999-2003 Lakemore's metered average was 266 million gallons of sewage pumped to Akron. That's an averaged difference of 72 million gallons/year. Lakemore is not adding homes or tie-ins that account for this, but has removed residences, so the total gallons pumped for treatment annually should actually be reduced. In 2018, Lakemore paid to Akron over \$933,000 just for sewage pumped, for 366 million gallons of sewage or nearly \$1 Million dollars. (Data collected from the City of Akron Ohio Annual Informational Statements, 2004-2018).

According to research of the US EPA in a system 50+ years of age, sewage treatment total could be reduced by approximately 50%-75% should such a sanitation system be replaced. *That could be an annual cost savings of \$500,000 to \$700,00 per year, and would be a long term investment to the Village and its residents.*

Clearly, this highlights the financial impact of deficiencies within sanitary and storm infrastructure in Lakemore as well as the unwillingness of the Ohio EPA to act upon these facts and offer assistance for remediation.

According to Richard Blasick of the Ohio EPA, the sanitary overflows of Lakemore have been properly reported, and are allowable under the Akron Permit. " Each of these events was associated with a

"Aging or failing sewer infrastructure often signals potential illicit discharges, and can be defined by the age and condition of the sewer network subwatershed. High IDP (Illicit Discharge Potential) *is indicated when the sewer age exceeds the design life of its construction materials (e.g., 50 years) or when clusters of pipe breaks, spills, overflows or infiltration and inflow (I&I) are reported by sewer authorities. Older and aging sewer infrastructure experience more leaks, cross-connections and broken pipes that can contribute sewage to the storm drain system."*

Robert Pitt, University of Alabama, US EPA Center for Watershed Protection. *"Illicit Discharge Detection and Elimination A Guidance Manual for Program Development and Technical Assessments"*, October 2004, pg 52-53.
www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf, accessed April 27, 2020.

significant rainfall event when the storm and sanitary sewer systems can become overloaded.” “While any pump station or sewage bypass is unauthorized and would result in the release of untreated pollutants to the environment, these events associated with significant storm flow are less likely to have a significant impact to the health of the lake.” (Appendix C)

Those statements do not parallel the initiatives of the Clean Water Act^{4,5}, and are accentuated by the lack EPA enforcement of the National Pollutant Discharge Elimination System (NPDES) permit and Master Meter agreement signed in 1994 by Lakemore, and allows the continuation of dangerous conditions that can affect human health and have significant environmental impact, particularly Springfield Lake water quality. The purpose of the NPDES program is to regulate pollutant discharges such as these SSO events, and the conditions of this permit are to be enforced by the Ohio EPA.

This lack of acknowledgment, enforcement, and minimization by the Ohio EPA is both concerning and discouraging, because the involvement of the Ohio EPA for assistance and funding will be required in all stages of integrated systems planning.

Aggressive and immediate actions are required to eliminate these sanitary and infrastructure failures.

Lakemore officials have confirmed they are currently taking steps to identify manholes and also map the Village sanitary and storm systems, and continue to explore funding sources for testing and replacement costs of each system.

Home Sewage Treatment Systems

The McKnight subdivision and Sawyerwood areas utilize home sewage treatment systems (HSTS), and each household must be addressed and held accountable for maintenance and function. Future plans by the Township must include greater involvement by the Summit County Health Department (SCPH) for this purpose. *Unfortunately, as in the case of sanitary overflows and stormwater crossflow, septic inspection by SCPH is limited to gross evidence instead of proactive and routine HSTS testing and cannot be solely relied upon for elimination of potential septic failures.* Neighborhood and self-reporting information can aid efforts to improve the ability of SCPH to respond to HSTS concerns in a timely way. Progress toward central sanitation for this area must involve the Township for planning, and this request has been brought this to their attention.

Springfield Township Trustees have confirmed, that they have been in contact with Summit County Engineers to move forward on this matter.

⁴ Tim Martins. “Clean Water Act Abstracts. What is the Clean Water Act?”. Glenn Research Center, NASA. www.grc.nasa.gov/WWW/k-12/fenlewis/cwa.htm, accessed April 28, 2020

⁵ US EPA. “Laws & Regulations. History of the Clean Water Act”. April 28, 2020. www.epa.gov/laws-regulations/history-clean-water-act, accessed April 28, 2020

Stormwater Management

Stormwater measures and green infrastructure begins with every residence and business, and should also be on the agenda of zoning policy and future development and a part of integrated planning measures that focus on the future.

During the early 2000's, SR 224 or Waterloo Road underwent expansion by the State. During this project, open ditches were eliminated and an underground stormwater system moves a majority of the road salts and road waste/automotive runoff directly to Springfield Lake, unmitigated without its previously open ditches and wetlands. During this same timeframe and thereafter, an additional 17 acres of recognized wetlands along the same portion of 224 was back filled. This loss of open ditches and wetlands results in a loss of natural biofilters and ground absorption of rainwater.

This idea of "recharging"

underground sources is a key initiative in watershed management.⁶

"Stormwater runoff is a major cause of water pollution in urban areas. When rain falls on our roofs, streets, and parking lots in cities and their suburbs, the water cannot soak into the ground as it should. Stormwater drains through gutters, storm sewers, and other engineered collection systems and is discharged into nearby water bodies. The stormwater runoff carries trash, bacteria, heavy metals, and other pollutants from the urban landscape. Higher flows resulting from heavy rains also can cause erosion and flooding in urban streams, damaging habitat, property, and infrastructure."

US EPA, "*Green Infrastructure, What is Green Infrastructure?*", April 28, 2020
www.epa.gov/green-infrastructure/what-green-infrastructure, accessed April 27, 2020

Gutter discharge to lawns is a key beginning to the reduction of stormwater runoff to not only the Lake but indirectly through ditches and other storm systems. Every resident and property owner can actively participate in restoring Lake health by allowing buried gutters to discharge rainwater to lawns instead of burying downspouts. The use of lawn chemicals is also discouraged due to runoff, and other means of enhancing green lawns should be considered, including the use of stormwater infiltration.

⁶ * US EPA. "*Green Infrastructure, Estimating Monetized Benefits of Groundwater Recharge from Stormwater Retention Practices*", April 28, 2020, www.epa.gov/green-infrastructure/estimating-monetized-benefits-groundwater-recharge-stormwater-retention, accessed April 28, 2020

OUTLINE OF RECOMMENDATIONS

It is recommended by the Springfield Lake Task Force to the jurisdictions of Springfield Twp. and the Village of Lakemore the following actions and initial groundwork be initiated. (*)

Storm Water Control Measures

Use of conservation properties for storm water control and dispersion of water over greater area of ground

1. Several parcels will be contracted for purchase and conservation use timed with grant awards

* Pursue these parcels as outlined and follow timeline

2. Springfield Twp. and Lakemore administration and other municipal building rainwater

* Change gutters to above ground dispersal of rainwater to provide visible example of possible change in present practices of homeowners and promote community involvement

* Utilize opportunity to demonstrate and lead community by example through these modifications

3. Springfield Twp owns parcels ideal for collection basins of runoff from the Sawyerwood area, including possible septic effluent and storm water.

4. Businesses to McConnell ditch empty directly to the Lake, (new bus station and rehab center will have minimal SW BMP)

* Add conservation area behind and adjacent to same property for conservation

* Approach SSWCD about this possibility and needed planning associated

5. End of McConnell ditch off Main street could be key for conservation and environmental rehabilitation and storm water projects

* Purchase this property and Trolley line adjacent as it accepts all the Plaza runoff for environmental planning and remediation with other parcels

Septic Inspections and Replacement

1. Primary impact is possibly from the Park Way homes at the Northeast corner of the Lake by the Springfield Lake Outlet as well as 7 additional homes and 2 businesses along 224 and Canfield Rd.

* Request detailed investigation of all parcels by SCPH as well as recommendations for remediation

* Contract engineering firm for design/planning of possible future sanitary infrastructure

Sanitary System Inspection and Infrastructure Replacement

1. System failure including sanitary sewer overflows and possible stormwater crossflow

* Request immediate OEPA involvement for investigation of probable sanitary system failures and to aid finance of infrastructure projects

* Contract engineering firm for design/planning of possible future sanitary infrastructure

Integrated Water Quality Testing (Temporarily suspended)

Site testing to determine more specific point and non-point sources of pollution at this stage in Lake restoration and mitigation will be futile when considering the overwhelming scope and complexity of the primary problems and the major causes of nutrient pollution to Springfield Lake. Although there could be other non-point sources, investigation focused on the most likely and impactful causes as suspected will expedite remediation efforts without wasting monetary and other resources.

Lake water testing to evaluate primary nutrient loads of nitrates, nitrites, and phosphorus, and pH, turbidity, and O2 concentration, including wet weather testing

* Suggest that we follow guidelines and recommended practices from KSU and OSU experts: *

Bimonthly testing of water quality using mapped locations:

1. Secchi disc for turbidity (90% accurate for measuring suspended solids)
2. Lake/pond test strips for nitrates, nitrites, pH, phosphorus
3. O2 concentrations using probe

APPENDICES

Appendix A

Water quality has been sampled and recorded by the Ohio Department of Natural Resources (ODNR) as follows:

Springfield Lake water data sampling for years 2006, 2007, 2012, 2016, 2019

Location	Date	SD cm	TSS mg/L	TP ug/L	TN ug/L	Chla ug/L
80340	07/19/2006	107	7.5	36.1	648	22.4
80340	07/25/2007	113	4.3	36.7	884	28.0
80340	07/17/2012	89	35.2	45.7	1394	35.3
80340	07/21/2016	78	35.2	46.5	1898	42.8
80340	07/18/2019	68	50.1	79.2	1918	62.1

Parameter Name and Abbreviations

Secchi disk transparency depth, SD

Total suspended sediment, TSS

Total phosphorus, TP

Total nitrogen, TN

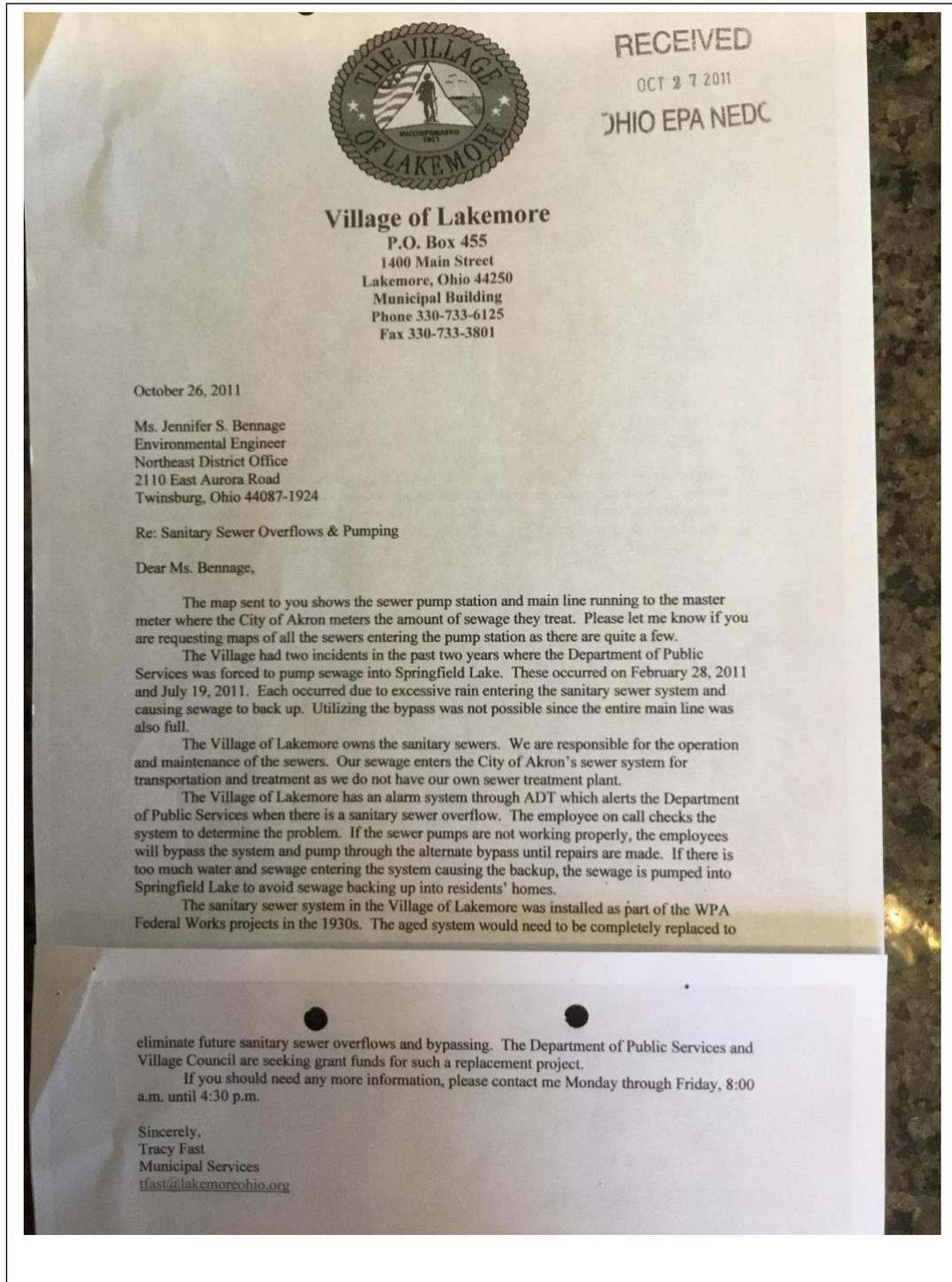
Chlorophyll a, Chla

Data increase 2006-2019

<i>Phosphorus:</i>	<i>119%</i>
<i>Nitrogen:</i>	<i>196%</i>
<i>Chlorophyll:</i>	<i>177%</i>
<i>Suspended Solids:</i>	<i>568%</i>
<i>Transparency Depth:</i>	<i>-39 inches]</i>

Data collected from ODNR records archive

Appendix B - Letter from Lakemore in response to Ohio EPA, October 26, 2011



Appendix C - Correspondence with Ohio EPA Officials via Email

9/25/2019

Ms. Moyer,

In each of the past three years, there has been a single pump station overflow event reported by the Village of Lakemore. Each of these events was associated with a significant rainfall event when the storm and sanitary sewer systems can become overloaded. Some situations are unavoidable as it is a decision to bypass or create a potential human health concern with basement back-ups within the community. While any pump station or sewage bypass is unauthorized and would result in the release of untreated pollutants to the environment, these events associated with significant storm flow are less likely to have a significant impact to the health of the lake. In our previous discussions with Mayor Justice of Lakemore, they are in discussion with Summit County Department of Water Resources regarding management of their sewer system.

You may also be interested in what the state is doing to combat algal blooms here as many lakes across the state are experiencing similar algal concerns.

Going forward, please work with Kristopher Weiss in our Public Interest Center as the primary contact for Ohio EPA on any questions you may have. Kristopher is the Agency's dedicated citizen contact for Northeast Ohio and can coordinate with regulatory and other staff to get you any answers you may need. He is in the office from 8 a.m. to 4:30 p.m. weekdays and can be reached at (614) 644-2160 or Kristopher.weiss@epa.ohio.gov. I will call you in the next day or two with Kristopher to do an introduction over the phone.

Thank you,
Rich

Richard D. Blasick, P.E.
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Appendix C (continued) - Correspondence with Ohio EPA Officials via Email

12/6/2019

Ms. Moyer,

As requested, here a recap of our Nov. 22, 2019, telephone conversation:

Previous citation of the Village of Lakemore for discharge of sewage and inflow/infiltration (I/I) into Springfield Lake, indicating failing infrastructure of the Lakemore collection system.

We explained that there are not any currently outstanding notices of violation regarding the Lakemore collection system.

Reports of continued discharge and sanitary sewer overflows and I/I into Springfield Lake under the authority of the City of Akron's NPDES permit.

Any overflows reported by the Village are posted to our electronic records repository (eDoc). If there were any overflows that occurred and were not reported by the village, Ohio EPA would be unaware of them. Pursuant to an email received from the Village of Lakemore, they are currently evaluating their sanitary sewer collection system. They are working with Summit County Department of Sanitary Sewer Services to televise the system and the Rural Community Assistance Program (RCAP) to map the collection system.

Based on the agenda items provided and information readily available, a meeting is not warranted at this point in time. If there are other topics or information, please let us know.

Thank you,

Kristopher Weiss
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